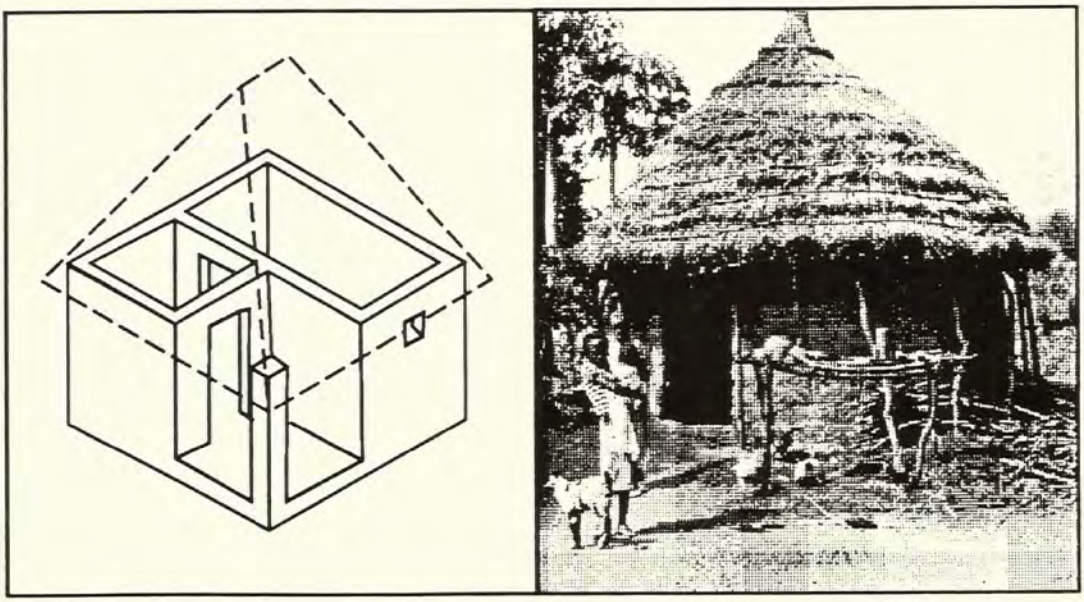
SIDA Evaluation Report, Construction Sector, Tanzania

1992/1

BIRCHES DON'T GROW IN SERENGETI

An Evaluation of Development Policy and Nordic Support to the Construction Sector in Tanzania 1975–1990



by Sune Björklöf, Tage Klingberg, Boniface Muhegi, Abisai Temba

SIDA

This evaluation was carried out in 1990
by an independent team consisting of
Sune Björklöf,
Tage Klingberg,
Boniface Muhegi and
Abisai Temba.

The views and interpretations expressed in this report
are those of the authors and should not be attributed
to the Swedish International Development Authority,
SIDA.

General Editor: Stefan Dahlgren
Editing: David Strömberg

Printed by: Gotab 1992

ISBN: 91-586-7142-0
ISSN: 0283-0736

SWEDISH INTERNATIONAL DEVELOPMENT AUTHORITY
S-105 25 STOCKHOLM, TELEX 114 50 sida sthlm

SIDA Evaluation Report 1992/1, Construction, Tanzania

BIRCHES DON'T GROW IN SERENGETI

An Evaluation of Development Policy and Nordic Support to the Construction Sector in Tanzania 1975–1990

by

Sune Björklöf

Tage Klingberg

Boniface Muhegi

Abisai Temba

SIDA
STOCKHOLM 1992

TANZANIA


KAMPALA
UGANDA
Victoria-
sjön
RWANDA
KIGALI
BURUNDI
BUJUMBURA
ZAIRE
Kigoma
Ujiji
Tanganyikasjön
Musoma
Mwanza
Serengeti
Shinyanga
Singida
Tabora
TANZANIA
DODOMA
Sumbawanga
Mbeya
Mufindi
Iringa
Mteradammen
Morogoro
Kibaha
DAR ES SALAAM
Great Ruaha
Kidatu
Rufiji
Kilwa Kivinje
OCEANEN
Lindi
Mtwara
Masasi
Mikindani
Ruvuma
Tunduru
Songea
Nyasa-
sjön
Mbamba Bay
Malawi-
sjön
ZAMBIA
MALAWI
MOCAMBIQUE
NAIROBI
KENYA
Kilimanjaro
Meru
Arusha
Moshi
Tanga
INDISKA
Pemba
Wete
Chake Chake
Unguja
Zanzibar
SOMALIA
0 100 200 300
km
väg
järnväg
Karta: Stig Soderlind, SIDA

FOREWORD

This study was initiated by the national Construction Council (NCC) in Dar es Salaam and the Swedish International Development Authority (SIDA in Stockholm. The study has been funded by SIDA.

We owe thanks to many who have contributed to our work. Experts in Tanzania as well as in Sweden have given us of their time for discussions. Some participated in our seminar in the outskirts of Dar es Salaam last April. Four experts have contributed with papers.

We also are thankful to Mr K M.I.M. Msita of NCC and Mr Stefan Dahlgren, Mr Hartmut Schmetzer and Mr Göran Tannerfeldt of SIDA for their constructive criticism of our preliminary report. Particularly we would like to express our gratitude to professor Bo Vagnby at the University of Aalborg in Denmark. He took part in the initial phase of the project and has all through this work shared with us his broad knowledge and experience in the field.

Conclusions and recommendations expressed in the report are those of the authors, who also bear the responsibility for mistakes and errors.

Dar es Salaam and Stockholm in January 1991

Sune Björklöf
Tage Klingberg,
Boniface Muhegi
Abisai Temba

CONTENTS

ABBREVIATIONS

Ardhi	ARDHI/Ardhi Institute
BRU	Building Research Unit
CDA	Capital Development Authority (in Dodoma)
COMWORKS	Ministry of Communications and Works
DANIDA	Danish International Development Agency
ERP	Economic Recovery Programme
FINNIDA	Finnish International Development Agency
GDP	Gross Domestic Product
GFCF	Gross Fixed Capital Formation
IRP	Integrated Roads Project
MECCO	Mwananchi Construction and Contracting Co.
NBAQSBC	National Board of Architects, Quantity Surveyors and Building Contractors
NCC	National Construction Council
NEDCO	National Engineering Design Company
NESP	National Economic Survival Programme
NHC	National Housing Corporation
NORAD	Norwegian Agency for Development
QS	Quantitative surveyor
RB	Registrar of Buildings
SAP	Structural Adjustment Programme
SEK	Swedish Crowns
SIDA	Swedish International Development Authority
TABCA	Tanzania Building Contractors' Association
TANESCO	Tanzania Electrical Supply Company
TAU	Technical Audit Unit (within NCC)
TBR	Tanzania Building Regulations (in draft)
TBS	Tanzania Bureau of Standards
THB	Tanzania Housing Bank
TISCO	Tanzania Industrial Studies Company
Tsh	Tanzanian Shillings
TWICO	Tanzania Wood Industry Corporation
VTC	Vocational Training Centre

INTRODUCTION

The construction sector holds a key position in every country. Some argue that the construction industry is a motor of the domestic economy, while others see it as a reflection of this economy. But everyone agrees that buildings are important in economic as well as in social terms. Only in a wide social and economic context can we evaluate the construction sector's success, its strength and its problems.

The Swedish International Development Authority (SIDA) has been engaged in the construction sector as in Tanzania since 1961. The engagement has included almost all types of buildings and engineering works through all stages from planning and design to construction and operation. In addition, the cooperation has included the creation and support of several institutions aimed at strengthening the sector.

The concept *"construction sector"* may have two meanings. The first is the obvious one: companies dealing with the direct and tangible production of buildings and engineering constructions. This definition will include contractors and subcontractors, architects, technical consultants, producers of building materials and their sales' organizations. Within this narrower definition, investigations and studies usually concentrate on building techniques, materials and project organization. But "construction sector" can be used to mean more than this, it may also cover proprietors, authorities and institutions connected to construction activities; professional associations of different kinds as well as parts of the educational system. We have used this broader definition.

From our study of documents and our interviews, it is obvious that SIDA has never regarded building activities as a separate sector. Instead, building has been considered a component of aid programmes.

In Western Europe construction companies and their employees (irrespective of the size of the companies) have a strong feeling of belonging to a proud corps: "Us Builders". Not so in Tanzania. Another big difference is that 65 to 80 percent or more of all building in Tanzania is carried out by the informal, i. e. the non regulated part of the construction sector.

A third difference is that professional associations in Tanzania are weak and have

a limited influence on events. These three differences mean that the content of the concept "construction sector" must be different too.

When first studying the *terms of reference* given by SIDA — "an analysis of the role and the impact of the assistance to the sector, a discussion of alternative ways of designing the support, possibilities for improvements" we thought that we would be able to apply a system analysis model. [2] We expected that this model, with its study of the correspondence between objectives and actual results, would give us an adequate basis for a discussion on measures for the future.

However, our observations and interviews as well as discussions within the team, forced us to reconsider. We found that building activities had increased over the last two years, while for institutional development it was quite apparent that more than twenty years of efforts had almost totally failed. The essential question then was why.

Instead of a detailed description, we have tried to analyse some key features. The emphasis has been put on the conditions for the actors in the market and on the effects of the support.

This is not a deviation from the terms of reference, but rather a shift of accent. This shift has led us to a more penetrating investigation than we had originally intended. We found it necessary to consider general and basic prerequisites for *transfer of technology*.

Transfer of technology is difficult enough, but transfer of design and construction embraces elements which have deeper roots than other types of technology. The building process is *social and cultural* as much as technical.

Houses and public buildings, streets, churches, yards and bridges — all of these contribute to the feeling of self-respect and kinship, to identity. We are not convinced that the "donors" have always had this insight.

The report is arranged as follows: after the summary, the third section describes our field of study and outlines some key issues. The fourth section gives the objectives, the limitations and the approach of the investigation, and the fifth section the results. The report ends in section six with our recommendations.

The evaluation team

Sune Björklöf received his Ph. D. in Industrial Economy and Organisation at the University of Linköping, Sweden. After being employed in both the private and public sectors, he is now working as a consultant, mainly within his special field. He has also been involved in several cultural projects.

Tage Klingberg graduated as Civil Engineer from the Royal Institute of Technology in Stockholm. He obtained a Ph. D. in Business Administration at the University of Stockholm and is an Associate Professor at the College of

2. Since our retrospective study was of a key-sector over a long period, SIDA asked us to pay special attention to methodology (See appendix 2).

Gävle/Sandviken. He was previously employed at the the National Swedish Institute of Building Research where he made studies of real estate economy and energy issues.

Boniface Muhegi is Head of the Training Section at the National Construction Council (NCC) in Dar es Salaam. He has a degree in Civil Engineering and has studied at several European universities.

Abisai Temba has held several posts in different Ministries in Dar es Salaam and is now Head of the Research and Planning Division at the Ministry of Communication and Works. He obtained his Master in Economy and Trade after studies in Europe.

SUMMARY

Aspects of the construction sector and its super-structure

The construction sector is important in every society. We may regard the building trade as a motor of domestic economies, or alternatively as a somewhat retarded reflection of a society's total economic undertakings.

In no other nation has SIDA had such a long and wide experience of cooperation within the construction sector as in Tanzania. The engagement reaches over more than three decades and has included almost all types of buildings and engineering works. It has covered all stages from planning and design to construction work and operation. In addition, the cooperation has included the creation and support of several institutions aimed at strengthening the sector. It seems natural then, to look at what has been achieved. This is what this report does.

The concept "construction sector" must be defined. It is often thought of as the design and tangible production of buildings and engineering constructions. This definition will include contractors, architects, technical consultants, producers of building materials and their sales organizations. With this definition evaluation would concentrate on building techniques, materials and project organization.

But "construction sector" may also refer to a broader concept. This would include proprietors, authorities and institutions connected to building; research institutes, professional associations of different kinds as well as parts of the educational system. It is possible to distinguish traditional features, a subculture of the sector which cannot be ignored when confronted with values of other subcultures, for instance those of social or health care systems.

So we prefer a wider definition; the construction sector includes not only the technical and economic resources, organized one way or another, but also its institutions and even its set of mental yard-sticks and governing ideas of how to act. We could call this the sector's super-structure and its value-system.

When studying patterns and processes using this broader definition, institutional factors and political instruments usually come to the forefront of the observer's interest. The Swedish aid agency has never regarded building and the companies involved as a separate sector. Building has been considered a component, an input into the basic, more far-reaching aid programmes.

Our initial approach was according to the latter and wider concept, and in accordance with our terms of reference, the investigation focused on institutional support.

After a short time, however, our observations and interviews, as well as our discussions within the team, forced us to reconsider this initial approach. The impact achieved by the sector was much less substantial than could be expected. When seeking possible explanations we found that we had to broaden our view still further.

This broader view led us to a more penetrating discussion than we had originally intended. We decided we needed to consider general and basic prerequisites for this kind of support: i. e. factors connected with transfer of technology.

Features of the sector

As is the case in all developing and less industrialized countries, the construction sector in Tanzania substantially differs from that in highly industrialized nations.

First of all the market in Tanzania is clearly divided in two: the regulated and the non-regulated. Owing to lack of reliable, elementary facts such as size or value of volume erected, number of units built, supply of building materials, import and export, and the size of the labour force, it is difficult to ascertain which one is most important.

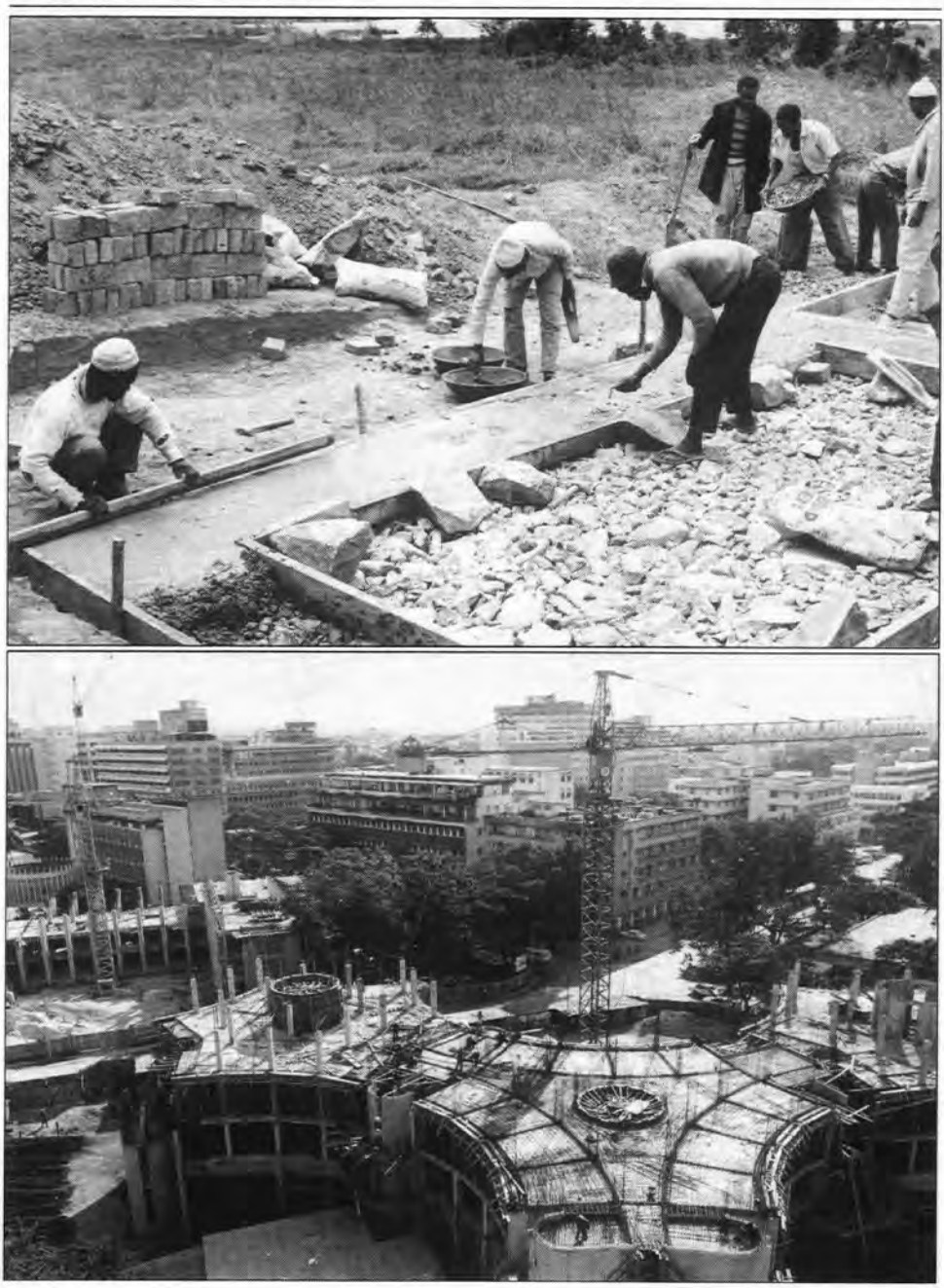
The regulated part is equipped with a heavy and elusive super-structure. Building regulations seem to work only partially or capriciously. More advanced projects are generally in the hands of foreign contractors using the codes and standards of their home countries. In so far as domestic enterprises have adopted standards, these are British.

Maintenance has been neglected. The infrastructure is in a bad shape. Supply of capital has been more or less accidental. Both in Dar es Salaam and in the countryside we can see half-finished constructions. The search for raw materials and development activities, aiming at a greater share of domestic products for building purposes, have both come to a standstill.

There seems to be a lot of building in the capital, but the institutional set-up seems to be largely out of function or have low capacity. One gets the impression that right now it is the contractor's market. Observations, however, are difficult to verify because of the poor statistics. Interviews must be corroborated by other interviews.

The formal (regulated) construction sector

In the 1970s ambitions for the regulated sector were set high. A strong government policy of centralized decision-making and public ownership was enforced. Private firms were hampered by rules and regulations. The dominance of public actors was accentuated by the fact that a most regulated construction was ordered by government agencies: parastatal firms enjoyed preferential treatment.



The building industry in Tanzania is divided in two: the informal sector — above — which is labour-intensive and mainly uses local materials, and the formal sector — below — which is capital-intensive and uses mainly imported materials. SIDA almost exclusively supports the formal sector.
Photo: Charlotte Thege and Göran Anttila, Bazaar Photo Agency.

Development since 1975 has suffered from two main problems. The first is a weak national economy, the second is lack of efficiency of the government agencies and parastatals. The deteriorating economy during the late 1970s and the 1980s hit the construction sector hard. Building materials and fuel were short. Lack of foreign exchange meant that imports were restricted. Domestic materials were often in short supply due to inadequate transport. Demand for building fell and payments were often late — even from public clients. The result has been that most contractors are under-financed and short of qualified staff and equipment. Poor maintenance has meant that much of the scarce equipment is hardly serviceable.

The second development is the obvious failure of the government agencies and parastatals to develop adequate efficiency. The public firms were intended to become economic assets for the government. As in many other countries such hopes have proved unrealistic. Most parastatal firms have become economic burdens.

Far-reaching programmes to stabilize the economy have been in effect since 1980. Under the present Economic Recovery Programme (ERP) the economy in fact seems to be recovering. Demand for building services has increased, but then largely from private clients — and often to non-government firms. The number of private consulting firms and contractors has increased. The informal sector, maybe less vulnerable to the faltering official economy, plays a role of increasing importance.

The informal (non-regulated) sector

When characterizing the non-regulated or informal sector we follow the pattern of most other studies in choosing an operational definition by listing such typical traits as a small number of employees, a small volume of out-put per case, low capital investment, reliance on locally available raw materials, service to close-by markets etc.

It is evident that the size and output of the unregulated sector is substantial. It provides not only shelter for the poor but also shops and workshops. The same structure often serves as a home. In rural areas, the informal sector supplies farmers with barns and silos, in other regions it contributes to the building of infrastructure.

Production is based on small-scale techniques and local resources so it can build and bring jobs and accommodities to rural areas. Its labor-intensive nature allows it to generate jobs in cities as well.

The informal production of building materials uses almost no imported inputs. Thus it conserves scarce foreign exchange and instead stimulates the demand for domestic resources, machinery, and labour.

The sector has strong backward linkages to the formal as well as to the informal economies, creating a demand for providers and carriers of raw materials, i. e. sand, lime, stone and sawn; makers of tools such as wheelbarrows and pickaxes; mechanics, suppliers of fuel, chemicals and adhesives.

So, the informal sector employs a lot of people. Jobs created in this sector also increases the demand for the goods and services of other small-scale enterprises,

Plaiting of palm-leaves for roof covering. The art of building is founded on inherited knowledge. When building methods change, social and cultural patterns must also change.
Photo: Charlotte Thege, Bazaar Photo Agency.

multiplying the effects of job creation. Workers acquire skills that can be transferred to the formal sector.

The problem

From our interviews and observations we found that building activities have increased in the last two years. As for institutional development, on the other hand, it is quite apparent that more than twenty years of efforts have almost totally failed.

The Building Research Unit (BRU) has no visible activity. The Tanzanian Bureau of Standards (TBS) is a nicely run institution, but the sector ignores its results and recommendations. The Tanzania Housing Bank (THB) had a tiny business, almost no working capital and inadequate pay back on loans given. The institution was planning a new career as a commercial bank. The parastatals TISCO and MECCO, a consultancy firm and a building company, had very small volumes of orders and had never experienced a year without substantial support from aid funds.

One institution, offering education for the construction sector, the Ardhi

Institute, seems to function well. It has a good output, although its architectural graduates have not been accepted on the market as expected by the Tanzanian government. It is a "DANIDA-institution" founded in 1974, still with expatriates in key positions.

The question which must be asked is: Why has not institutional support succeeded? For instance, the regulation drafts or the standards proposed have met no respons. Why is the story of the THB such a gloomy one?

This general failure of the institutions supported cannot satisfactorily be explained. We have heard all sorts of suggestions: the colonial past, the one party system, the erosion of the Arusha declaration, the economic effects of the oil crisis, the changes dictated by recovery programmes. We cannot accept that these are the reasons.

Two aspects of "Transfer of technology" and the concept "Social carriers of techniques"

When searching for explaining factors we first considered the process of technology transfer. In the reports and studies referred to below, we can distinguish two divergent aspects of the concept "transfer of technology".

For one group of authors technology transfer is essentially equal to transfer of techniques. Social problems in a wide sense are regarded as connected to undeveloped technologies. The problems, they argue, can be solved or at least relieved, by use of better, "appropriate", techniques.

Other authors maintain that transfer of technology cannot be separated from social or economic processes. Every technology has its origin and its prerequisites based on its specific social structure. Technology transfer is a means to reach certain goals such as political influence and economic dominance.

Edquist and Edqvist belong to this second group. They have introduced the concept"social carriers of techniques", by which they mean entities — companies, agricultural cooperatives etc, or individuals — that choose and implement a technique and "carry" it into the society.

Our basic hypotheses

Building reflects the culture of a people. Building is deeply steeped in tradition: the art of building is founded on inherited knowledge.

Any new building irrevocably affects the environment. A new and previously unknown type of construction shows new impulses. The new building — either through its shape or its function — influences our habits. Our frames of reference and our values interact with our built environment and vice versa. Constructions unavoidably interfere with firmly-rooted cultural patterns.

The built environment — dwellings, industrial facilities and public buildings, streets and roads, churches, yards and bridges — all contribute to the feeling of self-respect and kinship, to identity. The building process, as we defined it above, is a social and cultural as much as a technical activity.

Transfer of technology thus involves a conveyance of cultural patterns, including the exporting society's views on e.g. economic systems and economic power. Consequently the process also demonstrates attitudes and behaviour of the "conquering" culture towards the host. The donor presupposes that the host shares the same attitude to the technology system that is about to be transferred.

Institutions serve as bridges over which we can carry new building techniques, new architecture, new scales of sizes and colours, new patterns of living. A building is never neutral. To support construction means to carry new cultural features into another culture. In order to emphasize this, and influenced by the concept "social carrier" we have coined the term *cultural carrier/culture carrier*.

On the basis of our reasoning we have outlined two assumptions, our two main hypotheses:

1. Transfer of technology means transfer of techniques, but also of some elements of the culture from which the technology is transferred.
2. cIn establishing and supporting projects, aimed at transfer technology via institution-building and institution-development, SIDA has either not been aware of, or has not seriously enough considered, this close connection between transfer of technology and culture.

One objection that may be raised is that all aid agencies have been aware of this since the beginning. This is certainly true when applied to "soft" activities such as educational and health care programmes. We may be aware of "cultural clashes", but seem seldom to take sufficient account of the consequences. When dealing with matters of technique, according to our findings, the donor agency and the project participants usually seem to be oblivious even of the existence of a problem.

Execution of study undertaken

We thus gradually became convinced that transfer of design and construction involved deep cultural roots. Patterns of thinking bound to a certain culture and a certain technology stand out clearly when confronted with the logics of other cultures. One advantage of studying the construction sector is that the contrasts are so evident.

We have studied reports on projects in Tanzania, scientific and academic publications, SIDA's terms of reference for some projects, and we have interviewed experienced people.

As we have said, the explanations usually given appear incomplete. The input of technical know-how had been sufficient, the initial funding adequate, the project period long enough to get a good start, and the institutions — thanks to the donors' — fairly well protected from abrupt changes in the economic-political environment.

In spite of this, only one of the six institutions studied functions suitably today. What is the explanation? We made some elementary observations and found a more complex picture than economic or technological models could show.

A tentative explanation

What do we mean by culture? In this context we identify culture as a certain way of looking at the role of the State and the means of carrying out the State's intentions. Culture includes the general position regarding use of natural and economic resources and their distribution, the attitude to education, the outlook on what are proper instruments when implementing a plan or a programme.

It also includes basic concepts such as "time" and "responsibility" — for instance attitude to a time schedule, or questions of loyalty in a situation of choice. In our use of the term "culture" we thus include the "mentality" and the "world view" of a vast group, a certain collective, e. g. the "Scandinavians" or the "Tanzanians".

We have pointed to the sharp contrast between the cultural traits of the Scandinavian/Swedish and the East African/Tanzanian societies. In Sweden's highly industrialized society, science and technology are of supreme value, the "*nature artificielle*" is a daily source of information, and the administration is impregnated by the Lutheran ethic stressing duties to the State. All this we have compared to the young and loosely united, agrarian-based society. This Tanzanian society still struggles with its colonial past, governed by an administration that seems still influenced by the values well expressed in *Hydén's* concept "economy of affection", an extensive network of family and kinship relations competing with the "soft" State.

The values of the donor is the most decisive factor for his choice of recipient country and for his selection of projects and programmes. Contemporary solutions and favourite models at home are carried over to the receiver. Sometimes we even got the impression that the carrier believes the technical environments in the two countries to be similar.

It is possible to trace distinctive Scandinavian and North European thinking and models in the projects, in the analyses and in the administrative solutions. Self-knowledge and reflexion by the donor would have meant that a building research institute for example was doomed already at its launching.

Concerning the receiver's preparedness, it seems as if Tanzanian society has been overwhelmed by large-scale organizations before officials have adopted an appropriate bureaucratic behaviour, i.e. being ready to accept subordination to organizational demands. Lacking a "nature artificielle", bureaucracy married to politicization, and charismatic leadership, has become a substitute for instrumental rationality.

One characteristic of the true builder is his concentration on the problems of hard-ware techniques. Of less importance is whatever precedes or follows. This effectively shuts off the project and the management from Tanzanian influences. The result is a dumb mixture of bloodless West and East European styles. The built environment in Tanzania doesn't show a character of its own.

In the Nordic countries, the professional organizations are strong, in Tanzania they are weak and their influence is weak too. Apparently, solidarity is not cultivated, and contacts between government and organizations could be more frequent and fruitful.

Recommendations

The carriers of SIDA policies

If a person has no awareness of the peculiarities of his own country, he cannot understand nor fully communicate with other cultures. SIDA must always see to it that the carriers of its policies are aware of the basic traits of Scandinavian culture, and their roots.

Involvement in construction projects should be made with regard to cultural and social factors. A technical problem of magnitude, should always be described and handled in terms broader than only technique and economy.

The preferential treatment given to public consulting and building organizations in the tendering process is highly questionable. When procuring design or building services domestic firms ought always to be invited to tender.

Technology transfer should be a standard element when using external support in construction projects, and anybody should be permitted to employ Tanzanian academic professionals.

The formal sector

The system of registration and authorization of professionals needs radical review. The registration of contractors should be independent of project value. The register should serve as a source of information only, not as a tool for regulation.

Voluntary and professional organizations ought to be offered training programmes, and given advice concerning legal and procedural questions etc.

Building indices — or other types of standards — ought to be developed to make adjustments of contract fees possible.

The building codes ought to be performance-oriented rather than prescriptive. Performance standards would encourage not only the use of local materials but also the reduction of design requirements to affordable levels appropriate to local conditions.

The informal sector

Disenchanted with the public sector, in the last decade policy makers have turned to the private sector. The question remains as to which firms in this sector — large or small, formal or informal — are the best agents to produce shelter for the poor.

The need for housing in the cities is tremendous, in our opinion, the best way to satisfy this need — and maybe the only — is through the many small-scale firms. It seems pointless to try to judge whether the formal or informal sector is the better provider of low-cost shelter. The informal construction sector has quietly been fulfilling a staggering percentage of demand for urban housing.

The government should remove constraints (section 11.2) rather than ignore the

informal sector altogether. The non-regulated sector should be approached and supported. This is urgent. One possibility is a fund to finance small contractors.

Recommendations on institutional support

Institutional arrangements at all levels of the bilateral development cooperation are excessively complex. This is reflected in four major problems.

Central decision making. Typical for the 1960s and 1970s was a top-down approach. The result was a series of vertical projects with hierarchical decision-making, and career structures designed by donor and government officials at the national level.

The coordination requirement. The weak public sector institutions cannot cope with the coordination required by the donor countries. The demand is even counter-productive. What happens is the scarce professional resources are often wasted on committees, instead of being deployed on improving actual delivery.

Lack of sustainability. Projects are intended as ad hoc institutions, but when the project is completed they seldom disappear. They hang on but their role changes.

Grand designs and institutional reforms. The donors pre-occupation with institutional issues in the 1980s increased the risk for an excessive belief in the use of fundamental institutional changes as instruments to achieve policy changes.

The perennial reorganizations which characterizes public sector bodies in developing countries often results in a vicious circle of institutional trials and errors.

In the construction sector Scandinavian countries have been engaged in institutions dealing with building research, standardization, implementation of planning instruments, education and training, and financing of housing. Nordic countries have also supported parastatals, specializing in construction and consulting.

Referring to the DANIDA report (Febr 1988) and the four problems mentioned above, our main recommendations are:

- To reduce the coordination requirements, projects should be more self-contained.
- The donor must establish long-term relations with existing institutions. The aim is to make marginal improvements through institutional development.
- Assess organizations, which are candidates for project implementation.
- Choose partner organizations at the identification and pre-appraisal stage.
- Improve partner organizations gradually through long-term collaboration.

Chapter 13 gives more detailed recommendations.

PART III

FIELD OF STUDY & KEY ISSUES

CHAPTER 1

THE CONSTRUCTION SECTOR IN TANZANIA

This chapter gives an overview of the sector and its role in the national economy. The role of government vis-a-vis the sector is discussed in later chapters.

1.1 Some characteristics of the sector 1975–1990

The term construction industry is here used in a wide sense, i. e. it includes activities ranging from making feasibility studies to completing the structure and maintaining it. Plumbing, drainage, sanitary and electrical installations are included, as are logistics, consultancy services, provision of building materials etc.

The salient features of the Tanzanian construction industry that make it differ from other types of industry, such as manufacturing, are:

- A considerable portion of the demand comes from the public sector, i.e. the government and the parastatals. Between 1974 and 1982 over 75% of the demand in the formal (regulated) sector came from public bodies. All infrastructural facilities, e.g. roads, railways, ports and water works are ordered by the public sector.
- A high degree of stop-go. This is partly due to seasonal fluctuations — most construction takes place in the dry season. But delays may occur when a contractor shifts from one project to the next, due to lack of machinery. Small, indigenous contractors are affected.
- A wide variety of technologies can be used. According to the International Labour Organization (ILO) most rural roads ought to use labour-intensive techniques. For urban areas, however, they recommend equipment-based operations. Most house building takes place in the informal (unregulated) sector where labour-intensive techniques are usual.
- Geographical dispersion of operations means supervision is difficult and moving people and equipment is expensive.
- Special risks inherent in long-term contracts. Large buildings have taken up to 10 years to erect. The New Africa Hotel took 15 years. With high inflation at 30% per year, costs increase rapidly during the process causing financial problems.

Public ownership

Since 1967 the aim has been to socialize the construction industry so that the public sector should be able to provide most of the construction services. The first ten years were used to establish public construction organizations. In order to socialize the housing sector all high-cost buildings were nationalized in 1971 and put under the Registrar of Buildings (RoB). Private ownership of large, commercial buildings valued over Tshs 1 million (USD 14 000 in 1971) for rent was prohibited.

However, the public sector construction institutions have not lived up to expectations. Most of them have depended almost entirely on subsidies, even in the cases where they were expected to operate purely commercially. MECCO is an example. It received massive assistance between 1975 and 1979.

From 1980 to 1989 production of housing by the National Housing Corporation (NHC) has been almost impossible, largely because of inflation. Maintenance of the existing structures has existed only on paper. The performance of the parastatals and the construction sections within different ministries has been equally poor. For these reasons RoB is officially dissolved and NHC will be reorganized.

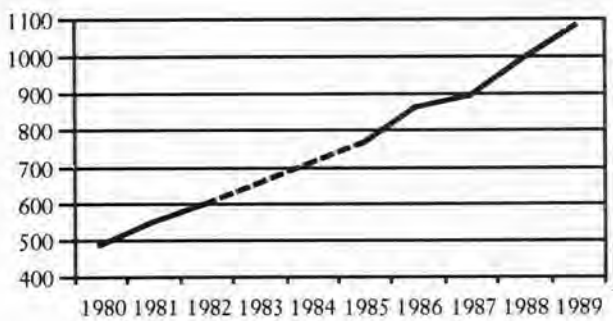
In 1977 the public sector provided 12–15% of the construction services, in 1988 only 7%, mostly direct labour. Since 1985 the government policy has been not to encourage subsidies to inefficient institutions.

The construction firms

The industry is dominated by an increasing number of private contractors (see *table 1.2*). The largest of these are foreign. Only one of the contracting firms is publicly owned.

Table 1.2 Number of registered contractors,(Source: Planning Commission)

Year	Number
1980	479
1981	542
1982	591
1985	757
1986	861
1987	889
1988	986
1989	1 078



Equipment and financing

Most big projects in Tanzania are mainly funded by external donors. In most cases the funding is tied to conditions regarding choice of consultants and contractors.

Local construction companies have been required to quote in local currency. Since contract prices are fixed, they suffer from inflation. Foreign companies quote their costs in hard currency, which makes them less vulnerable to the rapid deterioration of the Tanzanian shilling. Also, they can more easily import the materials, equipment and skills required for big projects.

Most smaller contractors specialize in erecting buildings. Larger contractors, particularly the foreign ones, go for larger contracts, mostly in civil works. Domestic companies often lack capital — and thus equipment — to take on more complicated projects. The equipment they have managed to acquire may not be operational due to lack of maintenance and spare parts.

A study in 1988 for the World Bank (*Singh* 1988) revealed a critical equipment situation for local contractors. Where equipment exists it is old. MECCO, for instance, has not managed to procure any new heavy equipment (such as bulldozers, scrapers, excavators, wheel loaders etc) since 1981. Of the nine rollers owned by MECCO in 1980 only one was in good operating condition in 1988 while four were in fair condition. The total cost for rehabilitation of MECCO's equipment in 1989 was estimated to be USD 2 million, equivalent to 380 MTsh, i.e. slightly more than MECCO's annual turnover.

Data on the equipment situation in private companies is scarce, in general they have spent more on equipment, than public bodies. The equipment has been better managed and maintained in private companies. UNICO for instance, which is a private company comparable to MECCO in size, bought all its equipment before 1981 but more of it was found to be in working condition than in MECCO.

Private companies have used less equipment than MECCO for similar works yet private companies have been operating profitably for the last decade. Without institutional support MECCO cannot catch up with foreign or other companies.

Due to the high cost of satisfying the national needs for equipment and plants and due to the high cost of foreign currency the development policies and programmes are targeted at the rehabilitation and maintenance of existing facilities. In 1988 USD 13 million were required by the 12 major contractors for import of components vital for the revival of their existing capacities. That would make local firms capable of undertaking regravelling work totalling 1 245 km of roads per year and at the same time they could do resealing work on 680 km per annum. This is, however, only about 30% of the resealing work to be executed in Tanzania during 1991–1998.

Plant pools

Despite the fact that only a small part of the existing equipment is available for execution of work, equipment remains idle. To increase utilization of existing

equipment the government in 1986 decided to establish plant pools. Most government equipment would be managed under one organization, from which any contractor could hire machinery.

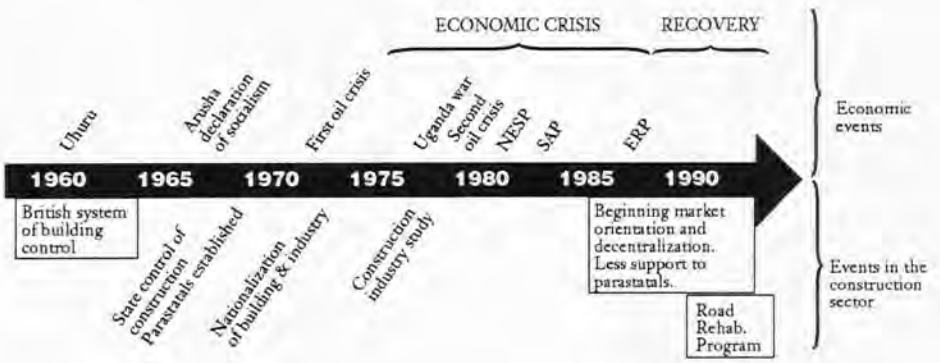
So far, one plant pool exists in Morogoro. However, it has not managed to realize the plans of better equipment utilization. An inspection revealed that the equipment was old and from completed projects such as the Songea-Makambako road. Most of it is not usable due to lack of spare parts and maintenance. The cost of spares has been assessed — based on the 1988 situation — to almost USD 3.5 million (over 600 MTsh). The situation has deteriorated since then.

Road rehabilitation

The government has planned a major rehabilitation and maintenance programme for the entire road network for 1990–1998. The estimated cost is almost USD 1 000 million. The bulk of the work is expected to be funded through donor assistance.

Equipment for the maintenance after the rehabilitation is an issue given much thought. Establishment of zonal plant pools is one of the strategies for handling that problem. During the next five years seven zonal workshops are to be established. They will be located in Morogoro (upgrading of existing facilities), Dodoma, Mbeya, Moshi, Mtwara, Mwanza and Tabora. The workshops are intended to serve both the plant pools and other equipment owners.

Figure 1 Major events in the economic development of Tanzania affecting the construction sector



1.2 Construction in the national economy

Objectives and economic programmes. Price index

The *Construction Industry Study* in 1977 gave a clear picture of the status of the industry. That was a time when Tanzania vigorously pursued its policy of socialism and self reliance, which was geared towards achieving objectives such as

- public control of the major parts of the economy
- self sufficiency in food and other basic needs for economic development
- economic and social development.

Concerning the construction industry the objectives have been

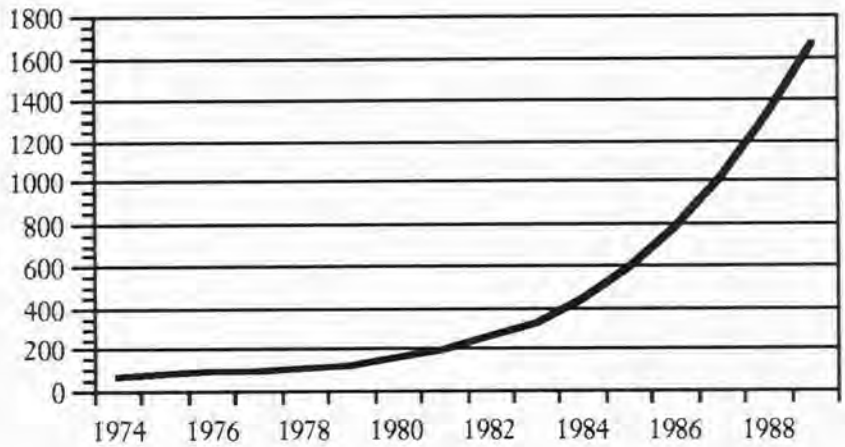
- control of supply of construction, including increasing capacity. Effective technological transfer from developed countries
- sufficient supply of construction materials, including establishment of local materials industries
- increased public institution participation in the industry aiming at full public control
- proper costing of construction work. Control over the development of construction costs
- control of capital flight by contractors, e. g. profit repatriation
- enhancing quality of design and workmanship on a "level compatible with the existing economic and social limitations in the country".

Several public institutions and industries had been established at the time of the study. In the thirteen years since the 1977 study many structural changes influencing the construction sector have taken place, e. g.

- The National Economic Survival Programme (NESP) 1980/81 and the Structural Adjustment Programme (SAP) 1982–1984. The programmes called for streamlining of operations in all sectors. The NESP targeted Export Promotion while the SAP emphasized more economic structural changes. With regard to the construction industry, this meant the rationalization of supply of materials e. g. by removal of restrictions on imports.
- Recommendations by a Presidential Commission on public institution management reform in 1983 focusing on the rationalisation of public management, e. g. recommendations to close down and withdraw subsidies from unprofitable public corporations .
- The Economic Recovery Programme (ERP) 1986–1989, which outlined the revival of the almost collapsing economy. Structural weaknesses concerning e. g. money supply, inflation and exports were squarely addressed. In the construction sector the issue of competition was underlined as well as removal of subsidies to inefficient parastatals, strengthening of public management and the removal of restrictions on import and distribution of construction materials.
- The Development Plans have outlined policies for the construction sector. The current plan (1988/89–93) emphasizes the need to strengthen the construction industry as a prerequisite for quick economic recovery.

By the late 1970s the economy had started to falter severely. Industrial output declined and the budget deficit averaged about 16% of the Gross Domestic Product (GDP). Inflation was high, as can be seen below.

Table 1.3 Consumer price index for urban dwellers in Tanzania, 1977 = 100.
(Source: Bureau of Statistics)



Inappropriate project designs in industry led to import dependence and in many instances an inefficient production structure. Until 1982/83 supply of domestic construction materials and equipment and dependency on imports was heavy. Lack of foreign currency constrained imports. Thus, the Tanzanian economy became largely dependent on donor assistance even for the most simple inputs to construction. Serious measures to correct these anomalies were taken towards the second half of the 1980s. The Economic Recovery Programme, launched in 1986, included:

- Exchange rate adjustment
- Interest rate adjustment aimed at achieving a positive, real interest rate
- Reduced price controls. Increased producer prices for export goods
- Trade liberalisation
- Reduced ministerial control over parastatal organizations.

The economy started to move away from stagnation. In 1988/89 the Tanzanian economy grew 4.0% while the population growth was 2.8%. The GDP increased, in fixed prices, from Tsh 21.7 billion in 1976 to Tsh 27 billion in 1988 (in 1976 prices).

The well-being of the Tanzanians had worsened considerably over the decade

up to 1986: the per capita income declined from Tsh 1 328 in 1976 to 1 181 in 1986, but then it started to increase. In 1988 it reached 1 202 (All figures in 1976 prices, *Planning Commission* 1988/89 and 1989/90).

Contribution to the economy of the nation

A basic problem of the construction industry in most developing countries — Tanzania being no exception — is that it is not capable of meeting demand for shelter, infrastructure and amenities. Poor organization and lack of resources and so on contribute to this. But problems originate from the demand side too. There may be a poor demand, a lack of buying power, or financial or other constraints.

The construction industry contributes to the socio-economic development process. The contribution is measured in several ways, often in terms of gross domestic product (GDP) or gross fixed capital formation (GFCF). Available statistics indicate that the construction industry attained a peak level in 1976 with 4.1% of GDP. (see tables 1 a & b). Subsequently a decrease was registered. In 1978 it was 3.7% declining to 2% in 1983 and further down to only 1.7% in 1988. (*Maro & Moshi*, 1990 p 3). The output of the construction industry fell even in current prices during 1981–1983 and then started to increase.

In a report from the *Swedish Ministry of Housing and Physical Planning* referring to BRU, there is a general statement (1982 p 5), that the construction sector may be larger than indicated by the official figures.

Capital Formation

Capital formation in building (residential as well as non-residential) in 1987 was Tsh 4 339 million and in other types of construction 3 936 million. The sector contributed 20.4% of the total capital formation in the country in 1987. The corresponding figure was around 30% in 1981 and fell to only 15% in 1988. The formal sector has been stumbling towards a general collapse.

In the formal sector, housing has received only a minor part of the resources. In 1986 only about 5% of the investments in the construction sector in urban areas went to residential buildings. In rural areas the figure was 18%.

Civil works activities (roads, water works etc) amounted to 57% of the investments in the construction sector in 1980, but fell during the 1980s to an average of 42%. (For the 1970s the average was about 54%. The 1970s was when projects such as the TANZAM highway, TAZARA railway and Kilimanjaro airport were under construction.) Today the major endeavours are focused on rehabilitation of the structures produced in earlier decades.

In later years the decreased amount of work on infrastructure has partly been replaced by increased private investments. The low proportion of private investments in housing earlier is explained by the 1971 nationalisation of buildings. In 1986/87 this policy was changed which accounts for the expansion of private investments in 1986–1988.

1.3 Public actors

To describe the public organizations active in the construction sector we will here group them in eight categories.

Planning, coordination and policy issues

Planning and policy issues are the responsibility of several ministeries as well as the Planning Commission, which is charged with responsibility for all economic and social development issues. The construction industry is directly affected by decisions regarding money supply, employment etc.

The Ministry of Communication and Works (COMWORKS) handles policy matters for technical issues related to the construction industry. The Ministry is supposed to ensure that construction standards and construction ethics are followed. COMWORKS shall formulate a training policy for construction personnel, especially engineers and technicians; oversee technology transfer, prepare construction manuals and procedures for procurement and tendering. The National Construction Council (NCC) plays an advisory role. The Ministry of Local Government, Cooperative and Marketing is concerned mostly with housing development matters including building research, estate management, cooperative housing development and so on.

Other institutions involved are the Prime Minister's Office, which among other issues is concerned with regional and rural roads and housing development schemes and the Ministry of Education which deal with school design.

Financing issues

At the central level the Planning Commission determines how much of the national "cake" should go to construction. It determines which projects are to be retained in the five year plan is given by the Commission. This is especially true for government-funded projects, such as roads, airports and government housing schemes. However, the actual funding is done by the Ministry of Finance.

All other ministeries, e. g. COMWORKS, Lands Natural Resources and Tourism, Local Government Cooperative and Marketing, Agriculture and Industry themselves prepare the cost estimates for projects. These estimates are presented to the Planning Commission and to the Ministry of Finance for approval.

Beside the Ministries there are about 30 donor agencies including the World Bank, SIDA, DANIDA, CIDA, NORAD, GTZ, USAID, ODA and EEC. They contribute over 60% of the funding for big projects. For civil works the donor involvement is especially high.

Parastatal organizations such as the Bank of Tanzania, the National Bank of Commerce, Tanzania Harbours Authority, the Post and Telecommunication Corporation and Urafiki (a textile company) finance housing for their employees. Most parastatals also fund the construction of their own offices, godowns or warehouses.

Private companies or individuals fund a lot of construction, particularly housing. Rural roads are partly private, but village governments will decide how much each villager should contribute towards cooperative village schemes such as the construction of a primary school, a dispensary or a village road.

Finally there are financial institutions such as THB, NBC and CRDB, supposed to extend credits to construction.

Regulatory issues

Several institutions regulate various functions in the construction sector.

a) The Ministry of Justice advises the government in legal matters e. g. regarding contracts. The Ministry plays a leading role in the formulation of laws governing tendering, award of contracts etc.

b) The Board of Architects, Building Contractors and Quantity Surveyors (NBABC & QS) is a leading regulatory body in matters of building design, quantity surveying and building contracts. The Board monitors the behaviour of actors concerning adherence to professional ethics. The Board has the power to register or dismiss professionals. Also the Board advises on suitable contractors for certain sizes of projects.

c) The Engineers Registration Board is expected to ensure that construction jobs can be entrusted to competent professional engineers.

d) The urban authorities regulate urban housing development oversee all physical planning. They are supposed to ensure that projects in surveyed areas adhere to minimum rules and standards. This includes requiring the developer to obtain a building permit. Also structural designs etc are supposed to be checked against regulations and standards. .

e) The National Construction Council is an advisory organisation on matters of policy, price structure, contractor development etc.

f) COMWORKS provides procedures for designs, tendering and awarding, especially for civil works.

g) The Central Tender Board and Regional Tender Boards and Institutional Tender boards (e. g. in parastatals) actually award the contracts.

Physical Planning Issues

Physical planning is mainly the responsibility of the Ministry of Lands, Natural Resources and Tourism. The Ministry prepares master plans or interim land-use plans for smaller urban centres and regional physical plans to guide development of the infrastructure.

A master plan is a prerequisite for the development of roads, social services etc. With a master plan, plots can be surveyed and construction start. The rate of construction in urban areas has been hampered by lack of master planning and surveying.

Construction Materials

In the rural areas, where 80% of the population lives, most construction materials are local and are provided by the households themselves.

For the provision of manufactured building materials for modern construction many institutions are involved. Government agencies and parastatals dominate the production of cement, timber and galvanized corrugated iron sheets and aluminium.

See further chapter 5.

Construction Equipment Supply

The government imports equipment for its projects. "Plant Pools" are planned to ensure better utilization of available equipment. Almost all contractors for big construction projects procure equipment themselves.

Franchise holders participate fully in the repair of construction equipment. Examples are Caterpillar and Komatsu.

Construction execution

The actual building is carried out by the contractor's own staff or by hired contractors. One large contractor (MECCO) is a parastatal. Several Ministries have their own direct labour forces.

Particularly in the rural areas houses are usually built not by professionals but by the people themselves. This may be done by the individual household or on a communal basis.

Skill development and technological enhancement

There are training institutions at several levels. At the university level the University of Dar es Salaam dominates. The Ardhi Institute provides training in architecture, land planning and quantity surveying. There are technical colleges in Dar es Salaam and Arusha. Vocational training schools are found in e. g. Changombe in Dar es Salaam and Butimba in Mwanza. See further chapter 6.

Chapter 2

REGULATIONS AND INSTITUTIONS

2.1 Laws and regulations

Laws and regulations in the country are generally old and unrevised. Not much effort has been devoted to the study of how rules in one institution may act as stumbling blocks for activities in another institution. One example is the Treasury, which is a watch dog in matters related to financial regulations. It has stringent rules for procurement in Tanzania as well as from abroad. Until now purchase by a government department of any item costing more than Tshs 100 000 must go through the Regional or Central Tender Board. These tender boards have limited evaluation capacity, which causes delays even for urgent procurements — for example, spare parts.

The government has started to look at some of these regulations, particularly those which will enable faster execution of the Integrated Road Project (IRP).

Surveying, plot allocation and building regulations are not harmonized with building designs and availability of materials. Most designs specify materials such as cement and corrugated iron sheets although these are expensive and often in short supply. On the other hand, urban authorities have begun to realize that clearance of squatter settlements does not necessarily assist in solving the urban housing problem. Building regulations have neither sufficiently recognized the availability of local construction materials nor the existence of low income people and the skills they possess, as well as their determination to provide an adequate home for their families.

The Tanzania Building Regulations

The aim of building regulations is to ensure safety, health, welfare and accessibility as well as a rational use of resources.

A draft for the Tanzania Building Regulations (TBR) was prepared in 1981. Together with a Building Act of the same year they were intended to replace the building regulations contained in the township rules (see chapter 12.1). The proposed TBR has remained a draft.

Since the draft in 1981 the structure of the Ministries has changed twice. Previously, building was handled by the Ministry of Lands Housing and Urban

Development. Now, in 1990, Land and Urban planning merges with Natural resources and Tourism while housing is merged with Ministry of Local Government, Cooperatives and Marketing.

The proposed TBR would apply to all new buildings up to eight storeys. For buildings up to two storeys and a maximum width of 10 meters simplified regulations would apply. For non-storeyed houses on surveyed plots the Township Building Rules of 1980 would continue to apply.

The drafted TBR of 1981 state the requirements in general terms. The main idea is to make references to other, more detailed documents such as standards and technical guidelines. The level of detail varies according to what is considered important. Structural safety is discussed at length while ventilation is covered only briefly.

In the TBR the following formalities are outlined:

- A Local Building Authority supervises building projects locally while a Regional Authority supervises planning and building regionally
- Approval for erection of a building must be sought from the Local Building Authority
- Construction control is expected to be carried out by the Ministry of COMWORKS through the Tanzania Board of Architects, Quantity Surveyors and Building Contractors and the Urban Councils
- Testing is deemed necessary.

TBR is still not put into effect. The drafting does not seem to have been harmonized with the existing regulations in other ministeries. Various bodies with legal responsibilities have been demanding strict adherence to the laws which are under their respective jurisdiction. The Ministry of Finance demanded that it should scrutinize all contracts in matters of financial transactions. The Central Bank demanded to scrutinize the same contracts concerning foreign exchange regulations. The Attorney General's Chamber demanded to scrutinize contracts involving foreign agencies to eliminate faulty clauses. This long chain of check points means getting approval for projects takes a very long time. The lack of building regulations makes matters worse.

Surveying and plot allocation

In urban areas there is a shortage of land available for building. Surveying and the formalities connected with establishment of plots are tedious. Without legal title to a plot the prospective owner has little chance to get a bank loan. The problems of the bureaucracy connected with land allocation is described by *Kalabamu* (1985), who illustrates the difficulties and delays facing those intending to build.

2.2 Procedures for design and commissioning

It is common that projects are commissioned without going through proper design stages. When the project is funded by a donor the process is often cut short.

However, shortcuts in the design process, as experiences from other parts of the world show, may not give sufficient room for thorough consideration of e. g.

- the economic viability of the project (to avoid misallocation of resources)
- social acceptability, what society is likely to gain or lose if construction goes ahead
- environmental factors
- over-reliance on imports.

Perhaps more serious is the long-term effect of such direct donor-appropriations. Its ad-hoc nature does not promote institutional development; rather it undermines the authority and status of the institution.

The government has some design capacity, primarily in NEDCO. Other public institutions with design capability are the Ministry of COMWORKS, The Capital Development Authority and parastatals such as Posts and Telecommunications, Tanzania Railway Corporation and a few more. In all, the public design capacity is negligible in relation to the total amount of design work required.

The Ministry of COMWORKS now plans to decentralize its construction execution role to the regions, primarily to the Regional Engineers. However, they will report directly to the Ministry. Thus, it seems likely that the centralized decision structure will remain. The Ministry of Education has managed to sustain its capacity to design schools. Other Ministries largely depend on hired services.

Despite an increased number of design firms registered the basic problem, i.e. heavy reliance on imports, remains almost untackled. When local materials are stipulated in the design specifications local firms have a better chances to compete.

Government scrutiny of projects

Rural housing depends largely on crude designs prepared by the individual for whom the building is to be constructed. Such building is not subject to government supervision. For larger projects the design process is more complicated, often including mathematical calculations, and the demands on the building are more complex. This often results in a larger portion of imported materials. Such buildings are normally subject to extensive government control.

In the first half of the 1970s the government emphasis was geared towards achieving public control over design and construction in the country. In 1972 the Ministry of Works instructed all departments and parastatals to seek the Ministry's approval before they commissioned any project. The aim was not only to check the consistency but to ensure that public design and contracting organizations (mainly NEDCO for design and MECCO for construction) got priority over the private organizations — local or foreign.

Compliance with this directive was almost non-existent. One reasons was the lack of clarity concerning how the government department or parastatal would recover the extra cost incurred if they had to refrain from competitive institutions and instead go for more expensive public ones. Another reason was the lack of business drive in the parastatal design and construction organization.

The Ministry of COMWORKS is still charged with providing the necessary procedures for construction of public buildings. The Ministry is expected to advise clients in the preparation of briefs, employment of consultants, preparation of cost estimates, negotiation of contracts and in tendering procedures. Other departments or ministries are supposed to inform the Ministry of COMWORKS of the nature of the project that they intend to undertake, the functions of the building and the construction needs. The Ministry is then supposed to prepare a comprehensive project brief, cost estimates and sketch designs if needed. When necessary, it is to act as client on behalf of the implementing department or ministry.

The expectation had been that the Ministry would be able to solicit many design and construction projects. As our informants put it, make the Ministry a "real blue-collar" organization. The surplus workload would be directed to the parastatals (NEDCO & MECCO), which would enable the public sector to control the construction industry, particularly considering the fact that most construction was for the public sector anyway.

The last decade has seen a development in the opposite direction. The public capacity has dwindled while the private sector has taken on an increasing proportion of works.

In 1986 the government made yet another move aimed at regulating performance in the industry. A Technical Audit Unit (TAU) was established under the National Construction Council. TAU is charged with the independent examination of planning and design of construction projects. The idea was that an independent technical auditor would report whether or not the design or planning was appropriate, and how the construction cost could be reduced.

Tendering procedures

For civil works, particularly for large projects, standard international procedures are generally adopted. They include detailed procedures invitation, pre-qualification, selection of tenderers ("short-listing"), tendering procedures, evaluation of tenders and preparation of contracts.

The Ministry of COMWORKS is now cooperating with the Ministries of Justice and Finance to harmonize procedures. The proposal for procedure is detailed, including criteria for award of contract. The major difference from the present procedures is that the award of contracts concerning road works also is specified. The proposal suggests that

- Regional Engineers be empowered to award construction works up to a limit of one million USD
- Ministry of COMWORKS Chief engineers or Divisional Directors be given mandate to procure goods for up to USD 0.5 million and award consultancy contracts up to USD 0.25 million
- the Permanent Secretary of COMWORKS should be allowed to award construction works up to USD 5 million, procurement of goods for up to USD 3 million and award consultancy contracts for up to USD one million

- tenders for contracts larger than these should be submitted to the Central Tender Board for approval.

If accepted, this delegation of responsibility should certainly facilitate the major road rehabilitation programme starting in 1990/91. At present even very small contracts have to pass through the sluggish procedures of the Central Tender Board.

Irregularities (corrupt practices)

Corruption of different kinds is a major problem in the construction sector as well as in other sectors. It is often brought up in newspapers (see e. g. *Family Mirror*, April 1990). In donor-funded projects corruption may be a major problem, even leading to dismantling of projects (see *Nilsson* 1990). One reason for the wide spread practice of taking bribes is the low salaries for public servants. This is offered as an excuse for the every-day small-scale bribing which costs and causes delays.

Low salaries can hardly be offered as an explanation for irregularities in government departments, tender boards etc. Corruption here will have serious consequences on land use, selection of contractors and costs.

In a 25-30% of our interviews corruption of different kinds has been mentioned as one of the major problems.

2.3 Institutions

Many institutions participate in the design and constructions process. Grouped in four categories we have

*1 **Physical planning and design***

- Ministry of Communications and Works
- Ministry of Lands Natural Resources and Tourism
- Ministry of Local Government, Social Welfare, Cooperatives and Marketing
- Urban and District Councils
- Ministry of Water
- Ministry of National Education
- National Engineering Design Company (NEDCO)
- Capital Development Authority (CDA)
- Regional Authorities

*2 **Legal and procedure enforcement***

- Ministry of Justice
- Ministry of Communications and Works
- National Board of Architects, Quantity Surveyors and
- Building Contractors
- Engineers' Registration Board
- Tanzania Bureau of Standards (TBS)

- Bank of Tanzania
- Ministry of Industries and Trade
- Ministry of Finance
- Urban and District Councils
- Ministry of Local Government, Cooperatives and Marketing
- Ministry of Industries and Trade
- Ministry of Lands, Natural Resources and Tourism.

3 Client and user role
- Ministry of Water
- Ministry of Communications and Works
- Ministry of Lands, Natural Resources and Tourism
- Ministry of Labour
- Ministry of Health
- Ministry of Agriculture
- Ministry of Education
- Ministry of Finance
- Ministry of Industry & Trade
- Private individuals
- Parastatal organizations such as Tanzania Railway Corp. , Tanzania Harbour Authority, Tanzania Post and Telecommunications, and the National Urban Water Supply Corp.

4 Financial control role
- Ministry of Finance
- Bank of Tanzania
- National Construction Council
- Ministry of Communication and Works.

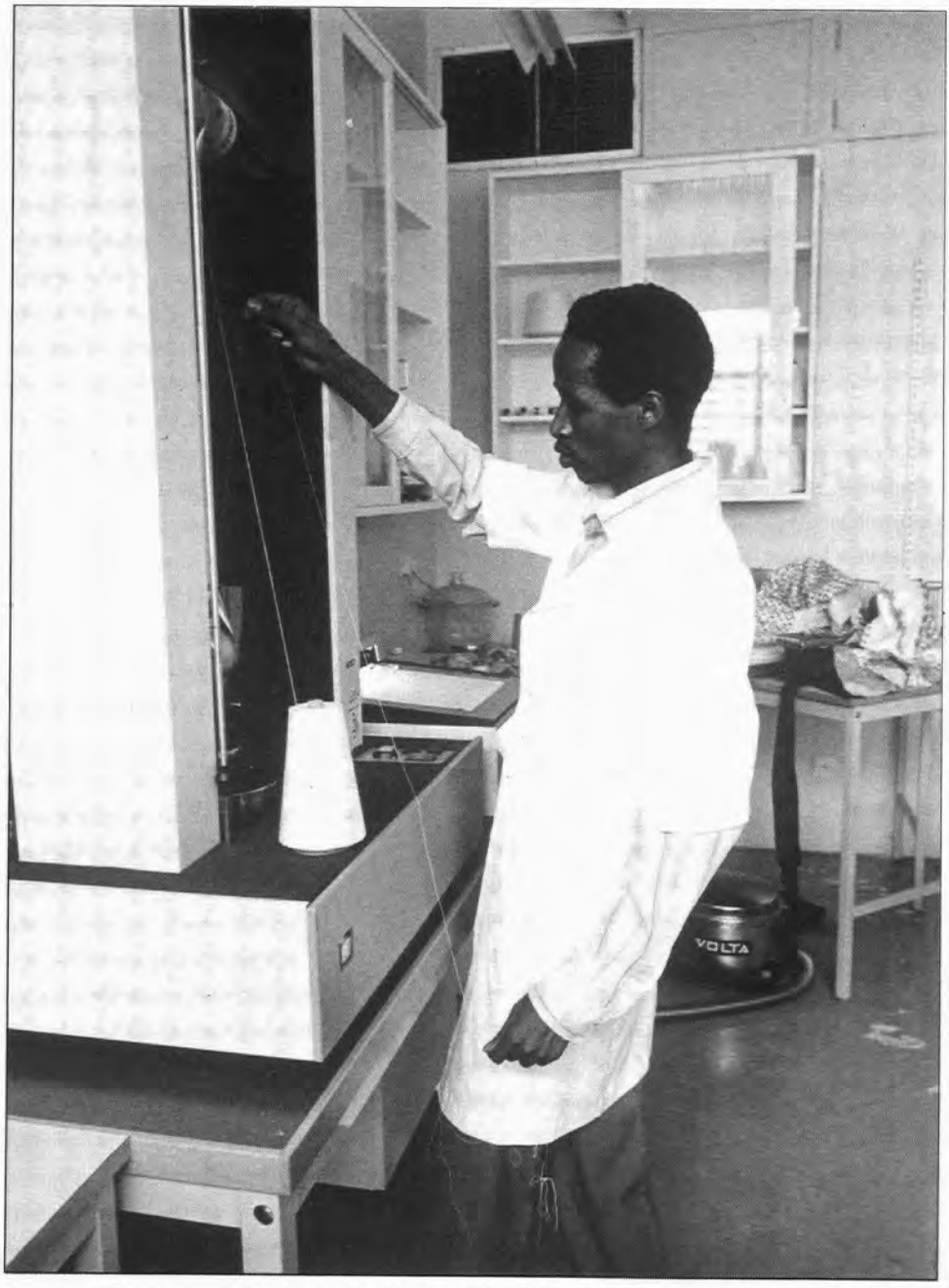
We will here give a more detailed description of some institutions which — as receivers of substantial amounts of aid from the Nordic countries — are of special interest to this evaluation.

The Building Research Unit (BRU)

BRU was formed about two decades ago to undertake research on ways to improve housing in Tanzania. The emphasis was on low-cost housing. In earlier years ambitious projects to document and develop traditional techniques for house building, known to be suitable for the climate etc. were performed. The results have, however, been insufficiently made known.

During the 1970's BRU undertook research on building types, designs, construction methods including site management, building costs and material for low-cost housing. During the 1980's these efforts have continued although the research budget has dwindled.

BRU undertook the task of working out a draft for new Building Regulations in



Testing at the Tanzania Bureau of Standards, TBS. Although TBS seems well-funtioning and has adequate facilities and personell, its standards are largely ignored.
Photo: Charlotte Thege, Bazaar Photo Agency.

the early 1980's. They are still in draft form. We will return to this issue in later chapters.

The effectiveness of BRU's research decreased since the early 1980s. Research initiatives have not been fulfilled. One example is the studies of types of rural housing, intended to result in type-designs. It took four years to publicize the field study and the type designs are still to be made.

Possibly BRU has information that could be of value to the housing sub-sector if fully utilized. Now the research findings do not reach the people who could use them, they barely get further than the research team at BRU.

An evaluation by the Norwegian agency NORAD (*Eidhammer* 1982) pointed to BRU's poor management and lack of research planning. Lack of indigenous research personnel was a major obstacle to carrying through research projects. Earlier recommendations to strengthen the information activities had not been put into effect.

Tanzania Bureau of Standards (TBS)

The TBS was established during the first half of the 1970s. It was charged with responsibility for the formulation and application of standards for industrial and other products, applied research and development, quality control and certification, pre-shipment inspection for export, testing, meteorology and calibration services. The construction industry has been covered as well.

Relevant for the construction industry have been administrative standards and documentation, measurement tools, tests, design and workmanship standards. The Bureau has a section dealing with building. TBS gives an impression of a well-run organization with considerable personnel and facilities. However, we have not found any sign in the construction sector of use of their standards. Our interviews indicate that most formal projects are built according to the standards normally used by the consulting firm in charge — often foreign. Domestic consultants mostly use the same because of where they were trained. British standards dominate.

TBS is not in a strong position when it comes to getting domestic standards formally enforced. This may explain the absence of practical influence by TBS on construction.

TBS also has testing facilities for concrete blocks, reinforcement bars etc. So have the University of Dar es Salaam, the Ministry of Comworks and BRU. TBS's testing facilities are very little used.

In the fields of electricity and telephone systems standardization is crucial. This however, is handled by TANESCO and Post and Telecommunications, respectively.

Tanzania Housing Bank (THB)

THB was established in 1973. Support has mainly come from Norway. The bank was charged with financing low and medium cost housing in urban as well as

in rural areas. It took over the responsibilities of the then defunct Tanzania Permanent Housing Finance Company (TPHFC), which specialized in medium and high cost housing. It was hoped that the financing needs of low and medium income people would have been solved. At first THB received massive assistance from external donors such as the World Bank and the Nordic countries. Financing of housing for the first six years reached a maximum of 4 500 dwellings in 1981. Almost 40 000 dwellings had been financed by the Bank up to 1987. The details are shown below.

Table 2.1 Lending to housing from *THB. Number of dwelling* units per year. Average per period. (Based on THB statistics)

	1973/78	1979/81	1982/85	1985/87
Low-cost units	654	2 464	960	176
Medium-cost	1 378	1 997	1 028	211
Average per year	2 032	4 461	1 988	387

After the first few years the performance of the bank started to deteriorate. From 1980 THB was in poor shape. In 1987/88 the financing of low and medium cost housing dropped from several thousand houses per annum to less than 50. Today, very few Tanzanians can afford to borrow from THB. For commercial loans the interest rate is about 30% annually.

Up to 1985 THB enjoyed substantial funding from the Workers' and Farmers' Housing Development Fund. This fund got the two percent levy on the wage bill of every employer with more than ten employees. This financing was inexpensive and permitted low interests rates on housing loans (about 8%). In recent years the government has cut off this source, forcing THB to depend heavily on savings accounts, with higher interest rates as a consequence.

Poor recovery of outstanding loans has not helped. There is a serious drop in buying power in Tanzania. This reduces the demand for new housing loans. In the absence of government subsidies the intended THB-mode of financing low-income housing is impossible.

At the moment efforts are being made to improve the management as well as the capital of the bank. Further, the THB is planning to change from being a purely housing development bank to a commercial bank. It is believed that this change will attract deposits not only from those intending to build a house but from other sources as well.

The National Housing Corporation (NHC)

NHC was established in 1962, charged with responsibility for housing development in the country. It performed quite promisingly during its first eight years of operation when it made marginal surpluses from its operations. NHC received massive assistance from both bilateral and multilateral external sources.

When THB was established in 1973 it became NHC's major source of funding. But this situation lasted for only a few years because of failure by NHC to service its loan commitments. This failure meant that THB's external funding was drastically reduced.

NHC continued to deteriorate. In 1989 it was officially reorganized and is now charged with the responsibility for running the housing estates owned by the Registrar of Buildings (RB), which managed buildings nationalized by the government in 1971.

The Tanzania Industrial Studies Company (TISCO)

TISCO has been active in the construction industry only in studies related to sector development. As a public consulting institution it has been expanding to almost all sectors in the country. In recent years TISCO has managed to get assignments outside Tanzania, e. g. in SADCC countries.

Like other institutions TISCO has enjoyed a lot of assistance from outside — particularly technical assistance. However, of late TISCO has been faced with a mass exodus of key technical who are offered better salaries and incentives by local or foreign private firms. It has therefore been recommended that TISCO would prepare an incentive package for its key personnel. Resources have been channelled to benefits for the staff, e. g. staff quarters.

There are recent examples of TISCO not being able to take on assignments outside Dar es Salaam because its staff was unwilling to travel due to private engagements in business operations etc. TISCO's capacity is thus smaller than it looks on paper.

Mwananchi Engineering and Contracting (MECCO) and other institutions

MECCO is a public contracting company while NEDCO, the National Estates and Designing Company, is a public design consulting company. Both companies got massive assistance during the mid-1970s. MECCO got assistance from 1974 to 1979 — mostly from Finland. It was hoped that MECCO would be able to meet stiff competition and become a leading contractor in the country.

The Finnish support was mainly aimed at supplying machinery and was to a large extent tied to Finnish suppliers. According to information from the management of MECCO the training was not sufficiently tied to the Tanzanian counterparts. Furthermore, when the resources had been built up, there were hardly any projects to tackle.

MECCO has today about 700 employees in Dar es Salaam. In addition it has

three regional branch offices. Today the actual construction capacity of MECCO is extremely low. The capital structure and management is inadequate.

The National Construction Council (NCC)

NCC was formally established in 1979 as a result of the Construction Industry Study of 1977, but became operational in August 1981. The Council should — over the long term — solve the problems afflicting the construction industry. It is a vehicle for coordinating activities in the industry to promote its development through increased capacity and efficiency.

NCC's specific functions are to;

- provide advisory services, technical assistance and training facilities. Arrange conferences and seminars.
- advise the government on matters relating to the development of the construction industry and the adaptation of technology
- carry out and coordinate research and promote documentation and dissemination of information from research
- monitor the implementation of standards and regulations, monitor construction costs and make suggestions for their control
- participate in or arrange conferences, seminars etc on matters connected with the activities of the council
- establish and monitor guidelines for tendering procedures.

So far NCC has been active in, among other things, conferences, training activities and in arbitration between disputing contract parties. NCC is faced with problems of dearth of experienced staff and inadequate financing coupled with lack of facilities such as vehicles and computers.

2.4 Major changes 1975–1989

Important changes have affected procedures and performance of the construction industry since 1977. Some of the most crucial changes regarding regulations and the institutions are discussed below.

Strategy of national economic development

The Tanzanian policy of socialism declared in 1967 remains formally — but not in reality — the basic guideline for economic development. In the 1960's and 1970's all government efforts were directed at controlling the economy via the banking system, insurance, manufacturing, minerals, large-scale agricultural production etc. A large part of the construction industry was a key area still in private hands, but government efforts were geared at giving support to public institutions to act as nuclei for taking over the construction industry as well.

By 1984 the government had involved itself in almost every sector, some of which could not be described as progressive. Housing was to be a monopoly of the

NHC and the Registrar of Buildings (RoB). The RoB had been established to manage all buildings that were nationalized in 1971. Import and distribution of construction materials was confined to parastatals such as the Building Hardware and Electrical Supplies Company (BHESCO), Regional Trading Companies (RTCs) which together with their holding Corporation. the Board of Internal Trade (BIT), had their own transport wings. Other public institutions which dealt either with the production or distribution of construction materials included

- Tanzania Saruji Corporation for cement
- Tanzania Wood Industries Corporation for timber
- Tanzania Steel Corporation for import of reinforcement bars
- Steel Rolling Mill for production of steel bars
- Aluminium Africa Company for production of galvanized roofing sheets, aluminium sheets and asbestos sheets.

By 1985 Tanzania had more than 440 parastatals, most of them dependent on government subsidies. Instead of being a source of revenue they became a major drain of money from the government. Imports were restricted to the selected public institutions. So was distribution of all important products. Prices were controlled using the mechanism of "Price Commissioner".

The control , however, did not adequately consider the costs of operations. Thus distribution of materials was confined to a few largely inefficient parastatals. Time came when only favoured institutions or individuals got materials. Corrupt practices cemented their existence.

In 1985 the government came up with the Economic Recovery Programme (ERP) meant to reverse the problem situation described above. Import was opened to all. Parastatals were required to be competitive. Subsidies were withdrawn and so was the policy of confining construction materials to a few public institutions. In 1988 most price controls were withdrawn. According to numerous interviews, the changes have led to competition and as a result the supply of materials has improved considerably compared to the early 1980s.

The new policy has also meant that the demand for foreign exchange has decreased. While major construction projects still depend on resources procured from external sources an "Open General Licence" facility exists in the Bank of Tanzania for anybody intending to import spares or machinery needed in production. The importer must be able to pay an equivalent amount in Tanzanian shillings. This has brought an end to the rationing of foreign exchange, practiced from 1976 to 1985.

Participation of local institutions

The present policy is to explore ways to improve and enhance local engagement in the construction industry. Participation should not be limited to public institutions. Firms are now expected to receive equal treatment.

Since 1988 the National Construction Council has been training local contractors in tendering and management of projects. Some of these contractors

Due to lack of maintenance, the roads in Tanzania are in poor shape. Rehabilitation today will cost more than three times what regular maintenance would have cost. Photo: Tage Klingberg.

have been awarded road rehabilitation contracts to test the skills acquired in training. It should be noted that the training is aimed at civil engineering works, where participation by local contractors so far has been negligible. One reason has been their lack of heavy equipment. Another their lack of training.

Worth noting is the three-fold increase of local contractors in the last ten years. Today, some of them are showing interest in road works.

Another change is that the number of consulting firms (local and foreign) has multiplied five times in ten years. Earlier, domestic participation was represented by the parastatal NEDCO.

Awareness of the importance of rehabilitation and maintenance

For 20 years after political independence in 1961, all efforts were directed to new investments. As mentioned in the previous chapter, the most ambitious construction projects were undertaken between 1971 and 1978. Success was measured by the number or value of new structures produced.

Maintenance was regarded as a side issue. The result was that most of the infrastructure — roads, aerodromes, and buildings — were worn down while large sums of money were spent on new constructions. Eventually the whole in-

frastructure as well as construction equipment and plants had to be replaced. The government is preparing an eight year programme to rehabilitate and maintain its road net-work. It is estimated that over 70% of these resources could have been spent on other activities if necessary maintenance programmes had existed for the road network.

Chapter 3

THE INFORMAL CONSTRUCTION SECTOR

3.1 Structure and economy

The data collected about the informal sector is for natural reasons most uncertain. Irrespective of the low reliability of data, there is a general opinion that the immense total volume of its production as well as its problems, is of greatest importance for a developing country's economy.

An operational definition

ILO (1972) has made an operational definition of the informal sector, which we have found manageable and comprehensive. It is defined by

- Scale of operation
- Labor intensive production
- Lack of official regulation
- Ease of entry
- Location and condition of worksite
- Demographic characteristics of labour force
- Degree and stability in employment
- Semi-factor acquisition

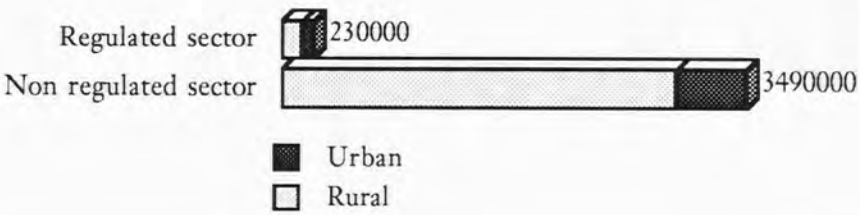
Extension

The extension of the unregulated sector is elusive. The current figure (1988) for the *housing units* in the squatter areas in Dar es Salaam is estimated to more than 120 000. Investigations conducted by the Housing Development Division have indicated that about 65 percent of all residental houses constructed in urban areas in 1980 were squatter settlements.

Nuru (1990) claims that more than 95 percent of the rural homes and 85 percent of all urban houses are built by self-help, which indicates a number of about 230 000 units produced within the non-regulated sector during the last years. Based on Nuru's figures (p 13) we can make the following table describing the situation in the middle of the 1980s.

According to Nuru (1990), more than 95 percent of the rural homes and 85 percent of all urban houses are built by self-help. Photo: Charlotte Thege, Bazaar Photo Agency.

Table 3.1 Residental houses built in rural and urban districts respectively about 1985. Source K Nuru 1990



In addition to this, "informal" constructions — premises for small-scale suppliers of lime, aggregates and laterite, workshops, commercial cooking areas, market stalls, kiosks, restaurants, day-nurseries etc — have been erected.

Riedel and Schultz (1977) suggest that the dwellings built by the non-regulated sector in developing countries is about four times the number reported in official statistics. If their suggestion is correct, the true number of "informal" constructions built during the 80s could be about one million.

Design and commissioning

By definition, in this sector design and commissioning seldom follow standardized rules and procedures. In traditional rural house building the builder has the design in his head and his hands. He draws the design on the ground and the construction starts. Materials — poles, clay, grass as well as steelsheets and concrete building blocks — are found in the surroundings or at the local market.

A key-person is the "fundi", a handiman with a wide network of contacts. Factors such as wind-load, humidity, precipitation and solar radiation are considered and rough estimates made by rule of thumb. The end result is a traditional structure, usually with a short life span.

The authorities' laxity in enforcing existing regulations combined with the wearysome bureaucratic procedures have made informal practices popular even in areas where we could expect the industry to be fully regulated, e. g. in planned urban zones for residential housing. Here the clients are usually people with very low incomes which may prevent them from bribing officials to speed up the decision process.

Some "fundis" alternate between small projects of their own and ad hoc employment within the formal sector.

Contributions to GDP and GFCF

The construction industry's contribution to gross domestic product (GDP) in developing countries is, if we accept *Riedel & Schultz* (1977), 3 to 8 percent. *Maro & Moshi* give the average figure of 3 and NCC 3,5 percent for Tanzania during the period from 1976 to 1988. In industrialized countries the mean share is substantially higher, 7 to 10 percent.

The sector also plays a dominant role in gross fixed capital formation (GFCF). According to *Moavenzadeh and Hagopian* (1983) in developing countries the sector's contribution is between 40 and 70 percent of GFCF. In countries with relatively high per capita GDP, the role of construction in GFCF is towards the lower end of this range, whereas nations that are less developed approach the upper limits. *Maro & Moshi* say 20 and *NCC* 33 percent as an average for Tanzania 1977 — 1988. As with the share of construction in GDP, proportions depend on the circumstances of individual nations.[3]

Maro & Moshi and NCC both based their calculations on formal sector statistics. Since we have no firm statistics on the non-regulated building sector, one

can hardly even guess what its contribution to GDP or GFCF could be. This insight, how-ever, must not hinder us from being aware of its economic importance.

Backward linkages

A paper prepared for the UN Center for Human Settlements (*CMT Inc* 1982) shows that backward linkages — in this case equal to the value of the intermediate inputs — represented an average of 55 percent of the total value of the sector's output between 1970 to 1975. The calculations were based on data from eleven developing countries.[4]

3. GFCF includes the outlays of industries, government, and private non-profit intitutions for their stock of fixed assets, which includes the infrastructure for vital social and economic activities, such as the provision of safe drinking water, adequate sanitation and power, transportation and communications, schools and hospitals, and facilities for a wide range of industrial activities (See further Moavenzadeh & Hagopian 1983 and Moavenzadeh 1987).

4. Backward linkages (b.l.) are measures of the demand created by one economic sector for the products of other sectors. For construction backward linkages usually represent a value which exceeds the value added by the sector itself. We have not been able to find any specific investigation of b.l. concerning Tanzania.
Forward linkages, i.e. the patterns of consumption encouraged by the production of intermediate goods, are more difficult to establish for construction than b.l. The value of investment is almost impossible to separate from the value of the activities inside.

Chapter 4

FIRMS AND PROFESSIONAL ASSOCIATIONS

The large need for construction activity calls for a review of the organization, capacity and utilization of the construction sector. We will here briefly describe the resources for design and construction, primarily in the non-government sector.

4.1 Private design services

Though we have recently witnessed an upsurge in the establishment of local consultancy firms, in reality the development of local design capacity is limited. Major civil works such as roads, bridges, airports, harbours and irrigation schemes are still designed by foreign consultancy firms. NCC estimates that nearly half of government financed projects are awarded to foreign consultant firms. Local private consultants account another quarter while public institutions such as NEDCO, Ujenzi and Elimu account for the rest.

Table 4.1 Registered consultancy firms in 1990
(source NCC)

	Domestic	Foreign
Firms for architecture only or architecture and planning	20	5
Firms for engineering only	27	12
Architecture and engineering	12	9
Engineering, architecture and QS	4	2
Quantity surveying firms	6	4
Total number of firms	69	32

The capacity of the local firms remains small and in any case some are only branches of foreign firms. Foreign firms with offices in Tanzania complete their design in their home offices, which does not enhance local capability.

Since designers have been trained in various countries, each with their own standards and guidelines, products are often based on different standards and sets of rules. An in reality there are hardly any domestic standards or guidelines.

4.2 The growth and performance of contractors

In a country like Tanzania contractors face a difficult growth path. They, as well as their business environment, are underdeveloped. The list of constraints and obstacles is long. It includes lack of education and training, fluctuating work load, delays in payments, lack of equitable contract documents, problems of bonding and insurance, weak financing, restrictions on import of equipment and so on.

Lack of plant and equipment

Even the smallest contractor needs a lorry, a pick-up, a welding unit, carpentry machinery, blockmaking machines, surveying instruments, a small office, godown, tools etc. A contractor aspiring to carry out road rehabilitation requires heavy equipment, which means substantial foreign exchange. Local contractors simply don't have access to this.

With the devaluation of the Tanzanian shilling, prices for equipment soared. The price for an Isuzu 7 ton Tipper was 600.000 Tsh in 1985 but over 5 million Tsh in 1990. The unfortunate consequence is that local contractors with their lack of equipment cannot qualify for foreign funded projects, which could have earned them foreign exchange and consolidated their ability to take on bigger jobs.

Classification of contractors

Contractors are classified according to the size of projects they may take on. Inflation means that the cost of even small projects is high. Many small projects are being awarded to higher class contractors, because the classification of contractors based on project costs is not revised often enough according to inflation. (see table below)

Table 4.2 Contractor's classes according to project size in 1989, 10 million Tsh equals about USD 50 000 or SEK 300 000
(Source: National Board of Architects, Quantity Surveyors and Building Contractors)

Class	Number of firms	Limit of project cost allowed for any one contract (Tsh)
I	41	over 240 million
II	20	up to 240 "
III	59	up to 150 "
IV	96	up to 80 "
V	137	up to 50 "
VI	152	up to 20 "
VII	573	up to 10 "
Total	1 078	

Since there are few contractors in the higher classes, and some are foreign, they tend to overprice due to lack of competition. The country may therefore be getting less for its money as the bulk of contractors are restricted to small and smaller projects each year as inflation goes on.

Capital and interest rates

Interest rates are shockingly high — almost 30% for overdraft facilities. To obtain loans securities are required: small contractors don't have these. Better securities and competence in financial management is needed.

Both private and public construction enterprises show a low return on capital compared with similar enterprises in Africa. This is probably due to site delays, old equipment and lack of spare-parts.

The construction industry receives 1–2 percent of the total credit available, whereas its share of GDP is about 3–4% and its share of total investments about 40%. The sector is thus under-financed. It has hardly any access to medium or long-term credits. This problem is worsened by the fact that payments for building services are often late. Public agencies are among those delaying payments.

Manpower

To be able to build structures correctly, contractors need trained engineers, quantity surveyors, land surveyors, technicians, tradesmen, artisans and so on. Up to now, private contractors have been forbidden to hire graduates straight from Universities and Colleges. They only managed by "poaching" from Government and parastatal institutions or by employing expatriates — sometimes of poor calibre.

Even in large contracting firms you may find only one qualified engineer and maybe no personnel to measure work correctly. This results in poor pricing during tendering and often over-pricing as a safety measure.

There is also poor financial management as most of the contractor's senior personnel do not understand the implications of e. g. provisional and prime cost sums, advance payments, extension of time, liquidated damages etc. When a contractor sees that he is finally going to loose money either because of wrong pricing or poor money management, he may in desperation look for improper ways of influencing the client or consultant to change things.

So long as contractors were denied access to well qualified technical personnel but were still awarded contracts they even developed a feeling that competence is not necessary, "anybody can become a contractor".

In the 1988/89 budget the Minister of Manpower announced that — in order to enable free movement of manpower — graduates will no longer be obliged to enter government service and allocation of university graduate man-power will be reviewed.

4.3 Professional organizations

Voluntary associations of professionals contribute to the increase of competence by exchanging information and experience. As pressure groups, they improve business conditions for their members.

The following professional associations are known to exist (source: NCC):

- Tanzania Building Contractors Association (TABCA)
- Association of Consulting Engineers Tanzania (ACET)
- Architectural Association of Tanzania (AAT)
- Tanzania Institute for Quantity Surveyors (TIQS)

Thus, several major professions of the building trade have their associations. However, they lack efficiency and resources.

The contractors need joint action to improve contract conditions, faltering payment practices, assistance in arbitration etc. TABCA makes efforts to get the "Contract Agreements" amended so they will not be so one-sidedly in favour of the clients. Also, they are trying to include a devaluation factor against the US dollar, making building contracts less vulnerable to inflation. However, the Contractors' Association (TABCA) does not, despite its 500 members, have adequate power to solve these matters. Leadership problems since TABCA was established in 1983 is one explanation.

Chapter 5

SUPPLY AND DISTRIBUTION OF BUILDING MATERIALS

According to the *1977 Sector Study* (Ministry of Works, 1977) construction materials represented about 43% of the direct value of construction in Tanzania 1970. 47% was imported. It was further estimated that the total cost for supply of materials to construction sites added up to over 60% of the total construction costs.

The 1977 study proposed increased import substitution through e. g. use of natural pozzolanas as mixture to cement, lime stabilization, bamboo for pipelines etc. Little research has been carried out in this direction, however.

Key materials such as cement, steel, timber and corrugated steel sheets are scarce and expensive. The general situation can be summarized as follows:

- a high degree of dependence on imported materials, even for those types of materials that are produced in the country. Our interviews consistently indicate that for formal buildings the import ratio for building materials has probably risen further (compared to 1977)
- a general inadequacy of local production
- export of some materials even when local demand is high
- very low capacity of industries producing sanitary wares, sheet glass and various metal fittings
- high cost of local production of materials due to small scale of operations and low productivity
- lack of technical and managerial skill
- inefficient plants
- lack of policy regarding the development of building materials.

5.1 Structure of demand for materials

In the rural areas, where 80% of the population lives, construction materials include wooden poles, soil, clay bricks and grass. These are available locally. In urban areas low income people also mainly use such materials.

For most urban buildings, and especially for larger buildings and civil works,

Local timber is becoming increasingly popular as building material.
Photo: Esa Hurtig, Bazaar Photo Agency.

dependence on industrially produced materials is of course high. These are imported or made in Tanzania — usually by government institutions.

The popularity of materials depends on many factors such as costs and local availability and ease of use. Iron roofing sheets for example are very popular because they are easy to use and have a long life.

Until about 1976 local construction materials were considered inferior and were rarely specified, particularly for complex structures. Most architects, engineers and quantity surveyors were trained abroad and tended to apply foreign solutions to Tanzanian problems. For the last 10 years or so, the Ardhi institute has trained some of these professionals, e. g architects, building economists and land surveyors.

Perhaps this is one reason why there seems to be a new trend. Timber is being specified for flooring, walling and roofing and for internal use in place of imported tiles. Research on methods for use of abundant resources like soil (lime) has continued with positive results. The problem is the dissemination and acceptance of research findings.

5.2 The production and supply situation

Tanzania is well endowed with such natural resources as wood, sand and stone. The local production of materials has, however, been inadequate in many respects. The table below gives a picture of the production of some materials.

Table 5.1 Industrial production of some building materials in Tanzania
(Source: Ministry of Industries).
Ktons = thousand tons. Mlitres = million litres

		1986	1987	1988	1989
Cement	Ktons	435	498	591	595
Steel	Ktons	11.3	9.6	10.5	15.3
Iron sheets	Ktons	8.9	16.6	14.7	20.3
Aluminium	Ktons	1.5	2.7	2.6	1.5
Paints	Mlitres	1.7	2.4	2.0	2.0

During the 1980s construction materials made up 6–8% of the total imports to the country. According to official statistics, in 1988 this cost Tsh 7,3 million.

Up to 1985 imports of materials were restricted. Under the policy of confinement, priority was given to government users. Several problems were notable during that period:

- Low import capability by the assigned public companies
- Local factories produced less than 30% of capacity
- Individuals were not encouraged to invest in the production of building materials
- Traders with transport facilities were not allowed to use these for distribution of building materials
- Most industrially produced materials were handled by the black market

An important factor is of course availability. Materials are popular where they are abundant. In arid regions, e. g. in Dodoma, soil is used for walling and roofing. Burnt clay bricks are popular in Iringa, Mbeya and Rukwa. Cement blocks are popular around Dar es Salaam, Tanga, Dodoma, Moshi and Arusha.

Since 1986 the supply situation has improved — *table 5.1* above. Improved availability has been recorded for other materials too, e. g. nails and wiring. Under the ERP the liberalization of trade boosted the supply of many materials as well as of equipment for the industry. The ERP aims at revitalizing local manufacturing by allocating foreign exchange for spares and some raw materials.

Cement factory in Dar es Salaam. In 1988 Tanzania became a net exporter of cement. Production is a minor problem. But inadequate transportation and bad roads means high prices and occasional shortages in remote areas. Photo: Charlotte Thege, Bazaar Photo Agency.

5.3 Prices and affordability

The good news related above has, however, not necessarily meant an increase in construction: prices for materials have gone up too. A 50 kg bag of cement cost Tsh 13 in 1977 but Tsh 1,200 in 1990. Galvanized iron roofing sheets cost Tsh 50 in 1976 as compared to Tsh 2,600 in 1990. The same trend has been followed by most other industrially produced materials.

Prices continued to go up during the 1980's, for some even in real prices (see table below, where consumer prices are shown at the bottom for comparison).

Table 5.2 Development of prices for construction materials 1982 prices = 100. (Source: BRU)

	1985	1988
Sand	530	707
Aggregates	100	175
Cement	201	560
Lime	179	298
Timber	160	180
Steel	185	184
Paints	144	642
Glass	118	178
Iron roofing sheets	151	561
Water pipes	203	445
Cables & electric eqp.	129	382
Consumer price index	230	520

The incomes of urban dwellers have not developed so quickly: real incomes actually have dropped. The only people who can afford to build their own houses in urban areas is a minority with high incomes.

5.4 The supply of some key materials

Cement

Cement is becoming more and more popular. There was a severe shortage of cement in the 1970s. Today cement is produced by the parastatal Saruji Corporation in factories in Dar es Salaam, Mbeya and Tanga. Between 1978 and 1988 imports dropped from 75 000 tons to 8 000 tons per year while domestic production has more than doubled from 250 000 tons per year to 595 000 tons. In 1988 export of cement exceeded import.

The major supply problem is inadequate transport and bad roads. Plants usually distribute cement on their own trucks. Until recently traders were prohibited by law to distribute cement. The policy of a standard price has now been changed to enable

traders to charge prices reflecting transportation costs. This has encouraged traders to supply material even to remote centres. Now the major impediments are high prices and occasional shortages.

The *1977 study* recommended bulk transport of cement to key centres. Bags of 50 and 25 kg were to be packed at these centres. This would mean that a man could buy a bag and take it home on his bicycle or even carry it on his head. This recommendation has not been put into effect.

Lime

Lime continues to be expensive compared to the price of cement, because of insufficient production. Lime and sand as a mortar is still an unknown technology. Lime is used as whitewash for walls, and in some areas for soil stabilization. Demand is increasing, but production is not. The 1977 study recommended increased production of burnt lime. Again, no steps have so far been taken to realize this.

Clay bricks and tiles

During the 1980's shortage of cement increased the demand for burnt clay bricks. There is industrial production in Dar es Salaam and Tanga, but individuals in several regions produce bricks. However, supply is inadequate and the quality is mostly medium to low. The same applies to roofing tiles.

The *1977 study* also recommended that existing facilities should be improved and an automated plant established in Dodoma. The plans have not been realized, partly due to inadequate funding. To sum up, it doesn't look as though burnt clay bricks and tiles will be much used materials in the near future.

Wood

Since 1980, there has been a gradual increase in the use of softwood. Production has increased. In 1975 about 30% of the wood was softwood. The rest was hardwood. Today almost half of the wood used is softwood. Probably about 70% of the timber is converted in private sawmills, and the rest in government-owned enterprises.

Factors limiting use of timber for construction are:

- risks related to fire, insects and fungi. There are ways of protecting timber from fungi and insect attack, but these are rarely known in rural areas.
- the price level; the prices have grown steadily since 1985, due to operational costs, costs of transport etc. The parastatal enterprises producing sawn wood for construction have not performed well.

Iron, aluminium and asbestos sheets for roofing

Galvanized corrugated iron roofing sheets are produced locally from scrap iron. Production has shifted from a record of over 22 000 tons in 1984 down to less than 9 000 tons in 1986. In 1990 the level is about 16 000 tons.

The demand has grown from about 35 000 tons in 1980 to 45 000 tons in 1989. There was a severe shortage in 1979–1983, but since then supply has improved. Demand is expected to remain high.

The problem with iron roofing is its high heat conductivity:If there are no ceilings, homes become owens.

Corrugated aluminium sheets are produced from imported flatsheets. Aluminium reflects heat better than steel and is thus more suitable. Unfortunately, only small quantitites are produced and prices are high.

Asbestos sheets reflect the heat well, so that even houses without ceilings are cool. Asbestos sheets are suitable, since they make the houses cool even when there are no ceilings.

The *1977 study* cautioned about the health risks of asbestos, which researchers around the world talk about. It recommended that further studies should be made and that its use should be discouraged when proven unsuitable. By 1990 no serious studies had been made in Tanzania.

Stone quarries, chippings, gravel

Good stone for aggregates and stone materials are found in some parts of the country, particularly in central Tanzania. Quarries are either government owned or run by private firms — often contractors engaged in large projects.

The crushers owned by the Ministry of Works, for example Morogoro and Mwanza, have been seriously under-utilized (less than 20% of capacity). The low production rate is explained by inadequate maintenance of the plants and — probably — weak incentives to exploit the existing and potential market.

Other important materials are gravel, sand, stone, silts, natural slate and gypsum. Slate is found in some parts of Tanzania, but its suitability for roofing has not been fully studied. Gypsum exists in the Kilimanjaro and Tanga regions and is used for the manufacture of cement. Attempts in the 1970s to produce gypsum ceiling boards reinforced by sisal fibres have not yet been further developed.

5.5 Environmental problems

If the efforts to produce materials in the country by exploiting domestic resources are successful, environmental problems may be a negative consequence to consider.

Chapter 6

MANPOWER AND KNOW-HOW

6.1 General aspects

Labour is the second most important input. According to an investigation of several developing countries (*CMT* 1982) it constituted 19 to 27 percent of the total value while materials represented 37 to 55 percent.

In the 70s, regulated construction activities accounted for 5 percent of employment in developing countries, in industrialized economies 7 to 9 percent (*Riedel & Schultz* 1978). The public statistics of Tanzania from the late 80s report an average of 8 percent of the total labour force. [5]

Data compiled by NCC indicates that wages are higher than in other sectors. This is contrary to the usual situation in other developing countries.

6.2 Demand and supply of manpower

Manpower is abundant. Published prognoses and our interviews with ministerial officials show that the big problem is the scarcity of skilled personnel, mainly caused by lack of resources for education and training. We learned that existing training institutions did not have the necessary capacity, neither regarding number of apprentices required nor number of appropriate courses.

From other sources, however, we got some contradictory pieces of information. Some argued that the market was quite restricted. The main client — the State through the ministries — will have thin budgets for years ahead. In the regions, our informants said, the economy and thus the construction activities were so slow that even well educated technical personnel were out of work.

The available statistics are unfortunately of only limited value. The figures for today's situation are uncertain, and the prognoses are more wishful thinking than a realistic assessment of the market.

Characteristic for the construction sector, irrespective of country and its

5. Sweden 1988, 6,5 percent. If we add the building materials' industry, transports, distribution and selling of building materials and routine maintenance of buildings and civil constructions and parts of other sectors, we will find that about 15 % of the entire labour force in Sweden is directly or indirectly dependent on the con-struction industry. (Byggentreprenörerna 1989 p 3)

structure of trades, is that the industry is markedly exposed to fluctuations in the economy. The consequence is a periodic unemployment of the labour force.

The large proportion of untrained personnel, lack of skilled production managers — something that everyone agreed on — and an unsatisfactory transport system lead to a low productivity, and consequently to a stronger demand for manpower and training resources.

Information obtained from the Ministry of Education (1988) gives availability of four groups:

1. Engineers, i.e. persons who have a professional education at a technical or scientific faculty at a university in Tanzania or abroad. The courses are generally of four years. This group includes architects and quantity surveyors.
2. Scientists, i.e. university-educated and trained professionals such as physicists, mathematicians, chemists and biologists, (this means they are not engineers).
3. Technicians, i.e. persons who have completed a three- year technical college course.
4. Craftsmen and artisans, i.e. persons who have been trained at a vocational training centre for one year.

According to an estimate made by the Ministry of Education in 1990, the following number of qualified personnel was at the construction industry's disposal that year (*Table 6.1*). From the table we can also see that there is a wide gap between supply and demand.

Table 6.1 Qualified technical personnel. Supply and demand and output from the educational system.
Source: Estimates by the Ministry of Education 1990

Category	Supply	Demand		Output per year
	1988	1988	2000	
Engineers	4 507	7 253	11 344	369
Scientists	3 442	5 920	-*	-*
Technicians	16 380	23 131	36 176	845
Artisans/ Craftsmen	103 060	122 327	191 315	11 165

* no information available

According to this table, in 1988 the ratio between supply and demand for each group was disadvantageous: engineers 62%, scientists 58%, technicians 71% and artisans/craftsmen 84% respectively. We must, however, not forget our initial remark concerning the reliability of the prognoses. [6]

6.3 Education and training

Current capacity

The current capacities are summarized in the following table in terms of output per year.

Table 6.2 Educational capacity for the construction industry in 1988.
Source: Ministry of Education 1990

Engineers	Univ of Dar es Salam	160
	Technical colleges and Ardhi Institute	209
Total		369
Technicians	Technical colleges and equiv.	845
Total		845
Craftsmen and Artisans	Vocational training schools	3 570
	Technical schools	750
	Parastatal training schools	2 565
	Trade school	2 140
Total		9 025
Total educational capacity, technical personnel for the construction sector		11 165[7]

Maro and Moshi (See appendix) have pointed out the problematic asymmetry in the education output specially between engineers and craftsmen, a problem that affects small contractors. It has been recommended that for every engineer there should be about five technicians and twentyfive craftsmen.

Ardhi Institute

There is no university courses for architects and quantity surveyors (QS) in Tanzania. However, training is available at the Ardhi Institute. The Scandinavian countries, especially Denmark, have showed an explicit interest in this institute. Since 1976 DANIDA has been responsible for the management. In recent years the activities and the economy of the Institute have been evaluated four times *(DANIDA April/ May 1983, November 1984, August 1988 and August 1989).*

Ardhi Institute (the word "ardhi" can be translated as "land") as an institute of higher education was established by act of Parliament in 1974. Training programmes were originally conducted by the Ministry of Lands, Housing and Urban Development. Today it is a parastatal organization under the Ministry of Land, Natural Resources and Tourism.

There has been a gradual development from the original two-year technician courses based on form IV leavers over a two-year diploma programme based on form VI leavers, to a three-year advanced diploma programme (1977). The plan now is that this should gradually be expanded to a five-year B. Sc. programme for some fields, while a fourth year is added to some of the AD-programmes. In 1988 a fourth year course for architects was introduced (*DANIDA August 1988* p 16).

As a professional training institution ARDHI has the following objectives.

- To provide facilities for *study of and training in the principle procedures and techniques* of Land Surveying, Physical Planning, Estate Management and Valuation, Design, Building Construction, Housing Management and Public Health Engineering.
- To engage in *research* into theoretical, operational and organizational problems and training needs in the areas specified above.
- To *provide consultancy services* to the government, parastatal bodies and others in the fields of Land Surveying, Building Design, Estate Management Valuation, Planning etc.

(*Ardhi Inst*, p 1. Our italics.)

The entry requirements are generally Advanced Certificate of Secondary school and Principal Level pass of grade D and above in one or two main subjects and two subsidiary level passes in two others.

For the courses offered during the academic year 1989/90 Ardhi Institute received 633 applications. However, many of the applicants had examination results well below the official entry requirements (*DANIDA august 1989* p 6). In 1988 the capacity was 150 students and the actual intake 132 (*op cit* p 34) and the total output was 86 graduates (p 45).

---

6. In comparison with the figures presented in the Local Construction Industry Study (pp 236, 239 and 343) the number of employees 1988 seems to be substantially exaggerated. According to that report the current employment in 1974 was: Manpower at university level (civil/ construction, mechanical, electrical and other engineers, architects, Quality surveyers, town planners, geologists), total amount within the construction sector, 1 269. Technicians (civil, senior water, electrical et al. engineers),total amount 1 968. It is not very likely that the increase of the categories mentioned has been as steep as the 1990-figures seem to indicate.

7. The undergraduate engineering programme (Faculty of Engineering, Dar es Salaam) covers five disciplines with a total intake capacity of 160 student per year:

- civil engineering 60
- mechanical 40
- electrical 20
- process 20
- chemical 20

In addition to that the university of Sokoine offers education for agricultural engineering, which has an annual capacity of 20 students.
Engineering technicians are trained mainly at technical colleges in Dar es Salaam, Arusha and Mbeya. The courses range over three years. In 1986 the colleges enrolled 400 first year trainees. Three year diploma-courses in engineering are given at the Dar es Salaam training college. In 1988/89 78 students were enrolled in the Diploma programme.
Craftsmen/artisans are trained at 12 vocational training centres (VTC) under the Ministry of Labour and Manpower Development. They turn out about 3 500 pupils per year, who can chose between the following courses: Civil draughting, masonry/bricklaying, carpentry and joinery, painting, plumbing, electrical installations, road construction/drain laying and building supervision.
Remark: As regards scientists there are no figures available in current statistics

The graduates and the labour market

Information collected by the Danish mission in 1989 shows that most graduates were employed in the public sector at national, regional, and district level. This is the traditional pattern and the trend has been maintained, the private sector in Tanzania is still very small. The architects and building economists are predominantly to be found in larger urban centres and, primarily, in Dar es Salaam. More building economists are in private employment than other graduates.

The Danish team says:

"Reports from both the public and private sector indicate that the Ardhi graduates are working at posts rated below professional level and especially the private sector is dissatisfied with the professional capabilities of the graduates and tends to deploy them in technician level positions. Many of the graduates working in the public sector are at present under-utilized, mainly due to lack of proper facilities and budgets for recurrent costs, rather than lack of knowledge or qualifications. " (*DANIDA August 1989* p 41-42)

This points to a serious problem. To say that there is a weak correspondence between the number of graduates from the technical universities and the number of registered professionals is an understatement. Since 1980, there has been an average output of 25 graduated architects and 25 QSs each year (Source: *NCC*). Of these only two architects and one QS have been registered by the National Board of Architects, Quantitative Surveyors and Building Contractors. The others have graduated from foreign universities.

Unskilled labourers

The construction industry attracts a lot of unskilled labourers employed on a daily basis. The problems connected with this system have been thoroughly and discerningly described in the *Local Construction Industry Study* pp 227–228. The situation for this group has not changed since the middle of the seventies.

Small contractors

The typical small contractor is a sole owner who manages most of the activities himself. He learns by taking on many types of jobs. He is rarely willing or able to employ formally qualified personnel and is too busy with the problems of getting jobs, starting them up, getting payments and dealing with a host of other small or large difficulties, to allow himself time for formal training.

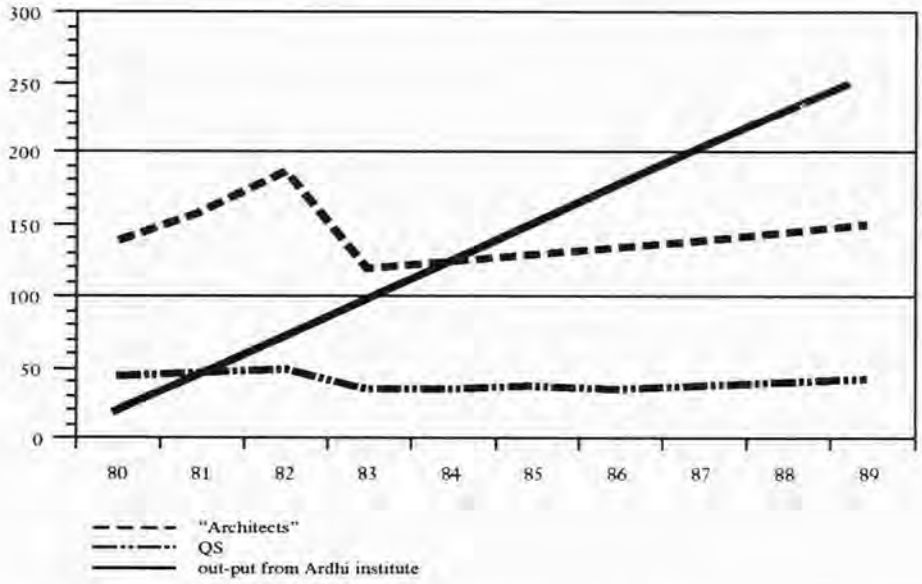
So, the small contractor acquires his skill on the job. His unskilled or semi-skilled trainees earn while they learn too, and the contractor produces while he trains them. Productivity may be low at first, but the employer does not lose because he pays low wages until his apprentices are fully trained.

NCC has planned a training program for road construction, rehabilitation and

maintenance for people working for small contractors. The project has been postponed due to lack of public funds.

We will return to these questions in the paragraphs 12.2 and 12.4

Figure 2 The number of registered architects and quantitative surveyors 1980–1989 and the average output from Ardhi Institute during the same period.



Sources: National Board of Architects, QSs & Building Contractors and NCC

PART IV

THE STUDY'S OBJECTIVES, SCOPE AND LIMITATIONS & APPROACH

Chatper 7

OBJECTIVES, SCOPE AND LIMITATIONS

7.1 Definition of "construction sector"

When we talk of the construction sector we think of a production system: builders build buildings. Sometimes, however, it can be more fruitful to look at the system from quite another angle, for instance to scrutinize its value structures and its working conditions from a cultural point of view.

Formal sector

We can define the sector as companies dealing with the direct, the tangible production of buildings and engineering constructions. Such a definition includes contractors and subcontractors of different kinds, architects, technical consultants, building materials' producers and the organization of sales activities.

But we can also use a wider definition and so include proprietors, authorities and institutions connected to the industry, research institutes, professional associations and also parts of the education system.

An investigation within the more limited framework usually concentrates on building techniques, materials and project organization. When using the broader definition the observer will study patterns and processes in the broader environment, generally institutional factors and political instruments.

To build is to change an environment, and for ever. A new construction does not only change the horizontal line and the sense of space, but also our habits and traditions. Our values interact with our built environment.

We also have to consider the internal value system of the construction sector. The sector operates in a mixed environment. What we mean by this is that it must on the one hand meet political goals while on the other it is expected to make economic sense.

Informal sector

So far we have mainly considered that part of the sector which has about the same structure as in Scandinavia. In Tanzania and other developing countries, the

informal or non-regulated sector is most important. It is harder to grasp, but we must try to examine this too.

The terms "formal" and "informal" have been discussed in several papers (See for instance *Moser & Marsie-Hazen* 1984 and *Riedel & Schultz* 1977). There is a problem of definition. In rural areas practically all shelters are built in a traditional way. The term "informal" in that context doesn't give us much information. "Traditional" would be more appropriate. Most authors use informal to mean squatter areas in the urban environment which we cannot really give the notation "traditional". "Informal" does make some sense, although the polar terms "regulated" and "non-regulated" would more clearer. Most researchers have chosen an operational definition, a list of typical traits: a small number of employees with subsequent small volume of output, low capital investment, reliance on locally available raw materials, service to closeby markets etc.

We gave some characteristics, important for our study, and we will discuss some of the non-regulated sector's problems in chapter 11.

The construction sector is more than production

Some features of the socio-cultural tradition of the sector play a role when confronted with a divergent culture. For that reason we will pay attention to certain values of the building sector. Such an approach differs from what is usual in this type of reports.

By "construction sector" we mean not only the organisation of technical and economic resources, but also it is constituted by its set of yard-sticks and governing ideas of how to act, i.e. the sector's value-system.

7.2 SIDA's terms of reference

According to SIDA's terms of reference 1989 09 12 (*Appendix*) the objectives of the evaluation are:

(1) to analyse the role and the impact of the assistance given to the construction sector with special emphasis on assistance from Sweden and other Nordic countries;
(2) to broaden the knowledge about the development of the construction sector in Tanzania since the Local Construction Industry Study in 1977;
(3) to discuss alternatives and give recommendations on ways to design assistance to the construction sector in African countries; and
(4) to discuss possibilities for improvements in the construction sector in Tanzania.

Referring to point (1), the first question is whether it is possible to trace the effect of Swedish assistance within the sector and to separate Swedish assistance from that of other Nordic countries.

Because this is rarely the case, we have chosen a somewhat wider basis for our investigation. We include projects and institutions that have had Swedish *financial*

support, notwithstanding the fact that some of them have been only partly financed by Sweden. As to point (3), we have looked for general features and factors which would be relevant also for other African countries.

7.3 Scope of work

The study covers about one third of the period that SIDA has provided aid to Tanzania. The team was given the task of testing the relevance and effectiveness of the support in relation to both the public and the private sectors. Tanzania's changing economic situation during the period and efforts by other donors has been taken into account. The study particularly concentrates on development and sustainability of institutions.

We have chosen to study:
Building Research Unit (BRU)
Tanzania Housing Bank (THB)
The Ardhi Institute (ARDHI)
Tanzania Bureau of Standards (TBS)
Tanzania Industrial Studies and Consultants Organisation (TISCO)
National Construction Council (NCC)
Mwananchi Engineering & Contracting Company (MECCO).

The intention has not been to evaluate particular building projects nor to evaluate supported institutions in detail. The reader may look at the descriptions of the institutions as case stories. Our study includes civil works, but our main emphasis is on building.

7.4 Key issues

Key issues for our study can be boiled down to the questions below:

- What explains the lack of success for the institutions supported under the earlier and present policies, and especially, what is specific for the relations between the Scandinavian countries and Tanzania for that explanation?
- How can institutional support be a successful link in the transfer of technology?
- What implications do these explanations have for the future design, development and operations of government rules and institutions?
- What are the consequences for the policy of the donors visavi support to government institutions?

Chapter 8

APPROACH AND METHOD

8.1 Our point of departure

Frame of reference

When starting a study — no matter of what type or for what purpose — one has some ideas of the object or the phenomenon. One has a ready-made mental framework. This framework governs our approach and plays a decisive role in the choice of questions.

We agreed that many difficulties connected with the implementation of aid programmes had to do with basic cultural differences between "donors" and "receivers". We searched the literature dealing with these matters, but were left more or less empty-handed.

This might have been foreseen: until recently even the academic world (See *Daun 1989* pp 11-22) has been shy of "mentality" or "cultural features", not to talk about the impossible "national character". Now we find a newly-awakened interest in this field of study. Today's studies have other starting-points than those from the early part of this century.

Although it is widely accepted that there are considerable cultural differences between the Scandinavian/ North European and the Tanzanian/ East African cultures, and that these differences are obstacles to communication and understanding, the differences have not been very thoroughly discussed or analysed.

We decided to attempt to trace those cultural differences that could be of consequence for the process of technology transfer. Lacking a comparative analysis we have been compelled to chose an indirect method. From literature, from interviews and observations we have *deduced* a few characteristics that could be worth discussing. [8]

Our basic hypothesis

Our tentative findings from the initial survey of literature together with our frame of reference made it possible for us to formulate a few preliminary

8. Our viewpoints and tentative explanations in section VI are mainly based on our reading of works by sociologists and economists and of reports of the type mentioned in Appendix 1. We have also interviewed people and collected articles in newspapers. Certainly a thorough reading of novels, poetry, short stories and essays would have given us a more complete background.

hypotheses. Gradually we added new elements to our first impressions until we reached the concept described below.

Transfer of technology involves conveyance of a *cultural* pattern, which includes the technology-exporting society's attitudes to economic systems and economic power. The process also involves the exporting — if you like, the conquering — culture's attitude to and behaviour towards technologies. *The donor presupposes that the receiver has the same attitudes to the technology systems as has the donor himself.* Sometimes the carrier even appears to believe that the "beneficiary" lives in a similar technical environment. On the basis of our reasoning we have outlined our main hypothesis. It says:

Transfer of technology means not only transfer of techniques but also, inevitably, aspects of the culture from which the technology is transferred.

I could be claimed that aid agencies have always been aware of this. It is certainly true for "soft" activities such as educational and health care programmes. For "soft" activities we sometimes hear general reflexions on "cultural clashes" etc, but these are seldom more precisely developed. When dealing with matters of technique, we have found that the donor agency and the participants in a project usually seem unaware that the problem exists.

The social carrier-concept and our working hypothesis

Edquist and Edqvist (1979) have a perspective that is very like ours. They conclude that technique is not neutral in relation to society. The choice of technique implies social consequences, favouring some social groups or classes, while disfavouring others. To that end they introduce the concept "*social carriers of techniques*". [9]

It is important to investigate *who* has the interest and power to choose a certain technique, i.e. who is the actual social carrier. But the *constraints* to which the carriers have to adapt when choosing technique are also important. The different *structures* are important because the properties of the structure influence the action of the social carriers.

In our view, the authors are focus too much on power relations in the (world-) society. At least Scandinavian support to East Africa is hard to understand in terms of a wish to gain economic or political dominance. But we share their main point, i.e. that transfer of techniques is a process of socialization, whether forced upon the receiver or not, and we will bear in mind their remark about the importance of not forgetting the total context of the process.

9. A social carrier of technique is a social entity - a company, an agricultural cooperative or an individual - which chooses and implements a technique and "carries" it into the society.

Our second statement, our working hypothesis, is derived from the first one. It is connected to the social carrier role of SIDA and is limited to institutional support:

In establishing and supporting projects, aiming at transfer of technology via institution-building and institution-development, SIDA has not been aware of, or has not sufficiently taken into account, this assumed close connection between transfer of technology and culture. [10]

8.2 The concept transfer of technology

Two aspects on transfer of technology

In Scandinavian literature, and specially in Sweden, Tanzania is probably the most elucidated and discussed developing country. Most reports and evaluation studies describe the current situation and the problems. A valuable source is the annual country reports. From about the last decade, we can also find broad reviews and analyses using a long-term perspective.

Our choice of works has been governed by two principles:

1) At least to some extent, they should deal with transfer of technology, no matter if the concept has been regarded in a wide or in a narrow sense.
2) They should reflect experiences of working conditions in East Africa, primarily in Tanzania.

We can distinguish two divergent aspects of the concept transfer of technology. For some authors, technology transfer is essentially equal to *transfer of techniques*. Social problems are regarded as connected to undeveloped technologies so they can be solved or at least relieved, by the use of better,"appropriate", techniques.

A unifying idea for other authors is that *transfer of technology cannot be separated from social or economic processes*. Every technology has its origin and its prerequisites founded on its own specific social structure. Here, technology transfer is regarded as a means to reach goals such as political influence and economic dominance.

Two types of transfer of technology

For our purpose we define two categories; Transfer of technology I, and Transfer of technology II.

Transfer of technology I is of a "hard-ware" type. It consists of technical assistance mainly given to projects, e. g. know-how, machines, working methods and sometimes management. It may also include efforts aiming at strengthening the target

10. SIDA is here the composite concept for the authority and for other Swedish governmental authorities and private agencies which have been engaged in aid projects. In all cases studied by us SIDA has written or has had the opportunity to write terms of reference.

groups (for example local bodies). Transfer is mainly indirect through on-the-job training.

Transfer of technology II is of a "soft-ware" type. It is connected to central or local government. Social-cultural elements are more evident than in type I. Education and training, institution-building and institution-development, strengthening the governmental level and administrative tools are typical means in the transfer II process.

These operations result in the following scheme, *figur 3.*

Figure 3, Scheme for analysis of the concept "Transfer of Technology"

		Aspect	
		Transfer is = transfer of techniques	Transfer is = transfer of social/economic or cultural values as much as technology
		A	B
Field of study: Transfer of technology Type I ("hard-ware")	I		
Field of study: Transfer of technology Type II ("soft-ware")	II		

The figure is a derivative of findings in literature and it is possible to use use it to classify for example reports, scientific studies, and surveys on transfer of technology. On the one hand the scheme shows the author's *aspect* of the concept and on the other hand the expert's / author's *recommendations* or *field of study*. [11]

Judging exclusively from their reports, the authors in the A-column seem to have or have chosen a more limited view of the content of the concept "transfer of technology" than those in the B-column. We may call their approach the *"appropriate-techniques" aspect.*

11. "Aspect" is here equal to the content of the single author's concept of T. of T. When dealing with follow-up studies, instead of the term "aspect", we could also use the term "range of explanation", which could be subdi-vided into "narrow explanation" and "comprehensive explanation".

A I. To the A I-category we can assign the report by Dahlstedt, Lindstrand and Lindståhl (The Da-Li-Li report, 1980), an evaluation which is *concentrated on the construction component* — the building project and its management. For this team transfer of technology is equal to the donor's handing over of a ready built object, designed and erected in the shortest time and most efficient way.

A II. In principle of the same type, but dealing with transfer of soft-ware technology, is the A II-category. To this category we may attribute the Holm & Hjelm report (1972), the Local Construction Industry Study (1977) and the DANIDA-report Institutional Aspects (1988). All three reports have elements of *social engineering*, i.e. appropriate techniques applied to institution-building or institution-development.

B I. Our example of a report representing the B I-category is the Edquist & Edqvist about social carriers. Their aspect on transfer of (hard-ware)technology says that the transfer is governed by and intertwined in a pattern of *economic values and interests*.

B II. We might place our own study in category B II. We have been much influenced by Hydén's "No Shortcuts to Progress" which we also place in this group. We prefer to regard his concept "economy of affection" as a theory on East African *culture*. Summing up, the figure looks like this (*figure 4*):

Figure 4, Examples of reports and studies according to their fields of study and their aspects of technology transfer.

	A	B
I	*Da-Li-Li* Problem-solving by appropriate techniques	*Edquist & Edqvist* Economic interests govern the "Social carriers"
II	*Holm & Hjelm* *Local Construction Industry Study* *DANIDA: Institutional aspects* Problem-solving via appropriate institutions/ social engineering	*This study* "Cultural carriers" *Hydén* "Economy of affection" General values of confronting cultures decisive for the result (and the choice of means)

8.3 A few technical remarks

Quantitative and qualitative data

General aspects on this type of study have been given in *Appendix 2* in the original report of this evaluation delivered to SIDA. We have pointed to the necessity of collecting information from various sources. The result will be qualitative data, i.e. data expressed and measured in terms other than figures. Quantitative data are important. They form an essential part of our basis for the description of the field of study.

This "soft" data does not make the judgements less valid or certain. Sometimes we see numeric values glued to these qualitative statements; to make them "operational" is the expression. This only gives qualitative data a false air of exactness.

Reliability

As will become clear, we have tried in various ways to ensure that our approach is valid, our data reliable, and our findings consistent. Despite formal precautions; we all know that ultimately the validity and reliability are dependent on the quality of the researcher and his analyses.

Period studied

The sub-title of the report, gives 1975–1990 as the period for examination. In fact 1972–1988 is more correct. The 1973 oil crisis had serious consequences for Tanzania. A second reason is that the Holm & Hjelm's report was published in 1972. We cannot obtain more recent statistical data than from 1988. These are the occasions why 1972–1988 would be more correct.

Testing

We have tested and examined material and our basic idea in various ways:

- by application of the "social carrier" concept to our material and findings
- by being guided by the discussion in the DANIDA report on institutional assistance
- by interviewing persons of experience in Tanzania and the Scandinavian countries,
- by literature studies, and
- by analyses and reasonings within the team

Chapter 9

PERFORMANCE OF THE INVESTIGATION

To cover the vast field of study in only three quarters of a year on a limited budget we have used different sources of data and performed parallel activities, as is further discussed in *appendix 2* in the original report delivered to SIDA.

9.1 Some basic documents

We have consulted books, reports etc. mainly covering three topics, namely the construction sector, Scandinavian support projects and Tanzania in general (See the reference list).

Literature covering the development of the Tanzanian construction sector is scarce. One of the few examples of broad overviews is the *Construction Industry Study* (Ministry of Works, 1977). Besides this we have mainly relied on government reports and statistics. Much of the data has been supplied by NCC.

Among more problem-oriented documents we have used *C Edquist and Edqvist* study on Social Carriers, *E J Well's* studies of the sector, *E Simkoko*'s work on Transfer of Technology , *K Nuru* on African Architecture, *Å Daun*'s work (on the Swedish mentality), and proceedings from a number of seminars in the early 1980s concerning the development of the construction sector.

SIDA and her counterparts in Denmark, Norway and Finland have, over the years, made evaluations of support projects. Studies of health-care projects, school support and so on throw some light on the workings of the construction sector. However, none has had the task of presenting a comprehensive analysis of this sector.

Of course we have also used general literature on the development of Tanzania, e. g. books by *G Hydén* and *O Therkildsen*.

9.2 Interviews and visits

We visited building sites, enterprises and government institutions; we interviewed Scandinavians as well as Tanzanians. The aim was to get a multi-faceted picture of the sector.

Scandinavians were primarily questioned about the effects of projects and about contacts with the construction sector. Most Tanzanians interviewed worked in the sector and have therefore mainly been questioned about the structure and procedures of the sector.

9.3 Seminar and papers

To penetrate certain topics more deeply we commissioned Tanzanian experts outside the study team to write papers. These were mainly about the relationships between the construction sector and the economic development, the informal sector, foreign support and foreign expertise.

The key parts of our materials as well as the commissioned papers were discussed at a seminar in Dar es Salaam, to which representatives of various organizations and ministeries were invited.

9.4 Time schedule

Planning of the evaluation was commenced in October 1989. The Swedish part of the team visited Tanzania in December. The seminar was held in April 1990 and the study was finalized later in 1990.

PART V

DISCUSSION AND ANALYSIS

Chapter 10

QUALITY OF DATA

The descriptive parts of this report (i.e. chapters 1–6) are largely based on statistics, mostly originating from government sources such as the Ministries concerned, the Planning Commission, the Bureau of Statistics and BRU. The quality of the data is not consistent. Economic data on production, prices, volume of investments etc. suffer from the turbulent economic development during the last decade, making comparisons difficult and sometimes meaningless.

Activities in the informal sector are, by definition, not registered and there is thus very little data on the substantial amount of non-regulated building and local production of materials. Unfortunately then, we can only give a rough picture of the informal sector.

The major tendencies and events of the 1980s have been substantial and so that they are not seriously obscured by weak data. The problematic development of the construction sector, the poor performance of many parastatals and government agencies and the lack of efficiency of the donor-supported institutions are clear enough. Thus, despite poor statistics we can devote the analytical part of our report to our attempt to explain those facts.

Chapter 11

INFLUENCING FACTORS

11.1 Domestic economy and policy

Determinants of demand and general constraints

No matter how great the real need for construction in a country, the effective demand for construction depends on the ability and willingness of private households, business, and public agencies to pay for these products.

Among the most important determinants of effective demand are the distribution of population cities and the countryside, the per capita income, and the distribution of resources. In developing countries, most people are unable to afford housing produced by the formal sector.

A second significant determinant is the national propensity to save and to channel these savings into capital formation and investments. Here the type of building projects/investments is important. The resources available for the construction of shelter will be affected by the demand for non-residental buildings and infrastructure.

Government policy and demand

The deteriorating economy of the 1980s naturally decreased the effective private demand for construction. Provisions to subsidize housing, e. g. through the Tanzania Housing Bank, became useless due to inflation and lack of funds.

When people had raised adequate funds other obstacles appeared. Plots were often hard to get due to inadequate surveying and land registration. This not only hindered the physical erection of a building, it made it impossible to get a bank loan, since title to the property is required as security.

In 1971 all privately owned buildings for rent were nationalized and put under the Registrar of Buildings (RoB). RoB has not been active in erecting new buildings and, of course, private investors could not build any.

The demand for buildings other than dwellings has been dominated by government. Funding, land and other resources have, according to government policy, been channelled to government bodies. Most of the government projects have been subject to foreign support.

The economic recession and government policy has thus substantially reduced demand for formal building contracts during the 1980s.

This has forced people in urban or suburban areas to provide their shelters — often as squatters. Thus, informal building has probably increased. In rural areas the economic problems have meant that there has been little demand for houses built by the formal sector. Instead local materials and traditional building methods have continued to be used.

Government policy and supply

The supply of design and building services has also been strongly influenced by the government. The policy of socialism and the bureaucratic system has concentrated building materials, imported equipment, qualified personnel as well as building contracts to parastatal building companies and government projects. Even the selling and transport of e. g. cement and imported materials has been confined to government bodies. Thus, non-government building firms have to a large extent been forced to use the informal market.

Most projects, even those given preferential treatment, have suffered from a lack of materials and funding. However, governmental projects have been in a better position than private firms to save the situation by exerting influence.

All of these factors have caused serious set-backs to building in Tanzania.

The private sector especially faced obstacles hindering development of consulting and building firms. However, as will be discussed below, one consequence was that non-regulated production has remained substantial, indirectly and unintentionally boosted by the government policy.

Government intervention

A fundamental question, related to almost all problems of the construction sector, is that of the government's role versus the role of market forces. It is a question of how the sector is viewed and planned. The functioning of the sector may be perceived in two opposing ways.

On the one hand the sector may be seen as suffering from poor planning and inadequate regulation resulting in fragmentation, waste, duplication, inefficiency and inability to plan for total development. On the other hand, waste and inefficiency may rather be seen as the result of government interventions disrupting a sector which functions better in open competition where it can adapt to the reality of demand and resources. Thus, government planning and regulation can be seen either as the solution to problems or as the cause of them.

The review of the construction sector in 1977 indicated considerable shortfalls in the performance of the sector. This was ascribed to the fact that the construction sector per se was not viewed as a sector by national planners. The result was a lack of development objectives for the construction industry. The basic view of the 1977 study was that more government planning and regulation was needed.

rural areas, the informal sector supplies farmers with barns and silos, and contributes to the building up of the infrastructure.

The production is based on small-scale techniques and local resources; it is therefore able to provide jobs in rural areas as well as in cities. (*Moavenzadeh* 1987 p 86)

Since the informal production of building materials uses almost no imported materials, it conserves scarce foreign exchange and stimulates demand for domestic rather than imported resources, machinery, and labour.

The sector has strong backward linkages to the formal as well as to the informal economies. It creates a demand for the providers and carriers of raw materials such as sand, lime, stone and sawn lumber, for the makers of tools such as wheelbarrows and pickaxes as well as more complex tools and machinery for mechanics, and for the suppliers of fuel, chemicals and adhesives. (*UNCHS* 1984)

So, the informal sector provides work for a large share of those employed by the construction industry. Jobs created in this sector also increase the demand for the goods and services of other small-scale enterprises, multiplying the effects of job creation. And workers who produce building materials, even with traditional techniques, acquire skills that can be transferred to the formal sector.

Disenchanted with the public sector, policy makers have recently turned to the private sector. The question remains as to which firms in this sector — large or small, formal or informal — are the best agents for the production of shelter for the poor. *Moavenzadeh* (1987 p 96) says:

"Although the need for housing in the cities of the developing world is tremendous, the only hope of meeting that need is through the efforts of many small-scale firms, some in the formal, others in the informal sector; since the two sectors share so many characteristics, it seems pointless to try to judge which is the better provider of low-cost shelter. Policy makers are beginning to recognize that the informal construction sector has quietly been fulfilling a staggering percentage of demand for urban housing. " [12]

11.3 Organization, structure and procedures

The professional organizations

The formal part of the building sector has been dominated by government and parastatal bodies for procurement of buildings as well as production of them. Decision-making is largely centralized.

Voluntary organizations to promote the interests and businesses of private or professional firms are not much developed — if they exist at all. One reason for this

12. According to Okpala (1990 pp 214-217) human settlements accounted for between two and three per cent of the total capital and technical assistance to the African Region in the first half of the 1980s. For Tanzania the figure is two per cent. Settlements, thus, have not been and still are not a priority for external assistance.

may be the heavy focus on government activities and decision-making. One example the building contractors association formed as late as 1983. It now counts less than 30 percent of the building firms as members[13]

In Western countries, professional and business associations play an important role in influencing government polices, contractual procedures, rules of conduct etc. The absence of such organizations in Tanzania hinders the development of business procedures. The dissemination of information to professionals and firms is much easier where there is a professional organization.

The formal procedures and improper practices

In urban areas suitable sites for building have been hard to find. Zoning, mapping and surveying takes time and in most cities there is a considerable backlog of work.

Given this situation the risk for bribes to get a quick and favourable decision, is evident. To the extent that such practices exist, they disrupt normal procedures and thus make things worse.

Public buildings and civil engineering works, a major part of formal construction activities, are subject to centralized decisions. The ministries play a key role. This may explain why designs — type of building, materials etc — are often not appropriate to the needs. Tendering is controlled by tender boards. Besides being known for taking a long time the procedures lend themselves to irregular, i.e. dishonest, procedures.

In towns building projects shall be scrutinized by the local authorities and a building permit granted. The local authorities are also supposed to supervise construction on site. However, according to representatives of consulting firms, building firms as well as government agencies, these local control procedures normally do not function as intended.

However slow they may be, they are often mere formalities. To get a supervisor to visit a site the builder has to pay the cost including transportation. For small projects, this is often a lot. Here too there are obvious risks for improper influences being exerted to get a project approved.

We have pointed at different instances where corrupt practices may disrupt effectiveness and influence decisions in a negative way. We have not aspired to present proof of actual cases of corruption, but rather draw attention to situations where it may occur. Many people mentioned it and none denied that it happens.

In Tanzania, corruption is well-known and often discussed. (see e. g. *Family Mirror* 1990). Corruption in connection with projects is problem common to several countries. (*Hydén* 1983 and *Nilsson* 1990 p 28)

13. Referrring to our interviews, less than 30 per cent of architect firms are associated members of TABCA. Of those belonging to class 1, (41 firms in 1988), only 3 are members.

The choice of technology

The *1977 study* and *Well's reports* (1984 and 1986) as well as a recent Norwegian study (*Havnevik* 1988) all point at the frequent and unnecessary use of large, complicated buildings and high technology as a key problem. We agree.

Office complexes, hotels etc seem more adapted to Western conditions than to the Tanzanian scene. This drains resources and causes future problems with operation and maintenance.

The tendency in the responsible departments and agencies to order conspicuous, expensive and complicated buildings seems difficult to counteract. A Technical Audit Unit (TAU) was set up within the NCC. Agencies were supposed to have their projects voluntarily scrutinized by TAU to achieve more reasonable and appropriate design. This has only come about in a handful of cases.

It seems then, that as long as someone is prepared to foot the bill, departments and agencies will continue to compete for high-status buildings.

Technical auditing is important, but should auditing be performed by TAU or left to the individual client agency? In the latter case the system of budgeting and economic control has to be changed, to motivate agencies to economize with investment funds. TAU may, in any case, have a role to fill in problem cases.

11.4 Sustainability

Maintenance

In industrialized countries a common question is whether resources should be used for new projects or for maintenance. [14]

The modest share given to maintenance in developing countries can be partly attributed to the low age of their facilities. If this were the principal cause, the proportion spent on repair and maintenance would rise as these facilities aged.

Moavenzadeh & Hagopian (1983) have studied the occurrence of maintenance in fourteen developing countries with a wide range of per capita income. No such pattern was seen. Visits to many developing countries, among them Tanzania, confirm that facilities are simply not being maintained. Other studies affirm this. See e. g. the evaluation of health-care facilities supported by SIDA, according to which the units suffered "a total lack" of maintenance (*Andersson-Brolin* 1987).

In the long run such neglect can have serious economic and social consequences. Extensive repairs are more costly than routine upkeep, they require higher capital expenditure and more advanced labour skills. Not only this, if repairs are ignored, the building may be a write-off. Andersson-Brolin 1987 found that the rate at which official housing for the poor is built is slower than the rate at which it collapses or must be demolished because it is unsafe.

14. As an exemple we can mention that in 1988 the total cost of investments and repairworks in Sweden amounted to 155 billion SEK, out of which repair works and mainte-nance represented 45 billion SEK or almost 30 percent of the total. (Byggnadsentreprenörerna 1989 p 6).

Road rehabilitation

The roads built in earlier decades have not been maintained. A huge programme, Integrated Roads Project (IRP) aiming at rehabilitation and sustained maintenance of the roads has been launched. It is financed by the World Bank and supported by several other donors. The cost of the program for the 1990s is over USD 800 million. The aim is to train and equip local and private contractors and give them the responsibility for a section of a road each. Training to achieve sustainability in the transfer of knowledge and technical resources is an important part of the programme (*Lööf* 1989).

Availability of recurrent funds

The actors in the market must obtain *financing* for their operations. The difficulties that the owners of land or property (houses) have in that respect aggravate the problems of contractors and manufacturers of building materials. As a rule, contractors in formerly British colonies are paid in instalments for work completed — a sum which is often methodically underestimated by the client.

Unlike the situation in more developed economies, where suppliers often extend short-term credits to contractors, in developing countries materials must be paid for on delivery or even in advance. Payment from client may be unreasonably delayed — even when the client is the government. [15]

Equipment rentals, which would reduce the need for heavy investment, is practically non-existent. Equipment purchases and repairs are expensive, especially when spare parts — almost without exception — must be imported, and when transport in the country is insufficient. Lack of skilled personnel means that repair is sometimes impossible.

The banking system has only partially been able to fill the need for operating capital. Many banks are reluctant to extend credit even to the formal sector — especially if the firms are small or new. Unregistered firms in the non-formal sector are even less likely to have working capital lent to them. Those who cannot obtain loans from banks, have no alternative than to turn to relatives, personal savings,chit funds, private financiers, or to moneylenders who charge awfully high interest rates.

Complaints about shortages of storage facilities and factory space, and of efficient machinery, indicate that owners have problems getting money for capital expansion as well as working capital. (UNCH 1984 p 12)

15. In all our interviews, contractors and technical consultants constantly brought up the problem of capital and terms of payment.

11.5 Standards, rules and procedures

Codes and practice

Government agencies have set unrealistically high standards for building materials and construction designs. Many of these have been imported from developed countries or formulated by people educated in the west.

Such regulations have often not been appropriate to local conditions. They have limited the number of homes that could be built, raised the cost beyond the reach of the poor, and prevented use of local resources and labour. Standards for building materials have sometimes made it necessary that these materials be produced by large-scale facilities, with the attendant requirements of imported machinery, and skilled workers.

A key question is, whether the lack of domestic codes is an acute problem. The problems of financing, getting formal decisions, getting hold of scarce building materials and equipment etc. overshadows everything else. Whatever materials are acquired are used. In this situation, building codes must seem irrelevant.

This is the attitude of some of the builders, at least. One builder with nine years of experience told us that he had had no contact with codes or standards at all!

Codes are intended to ensure an adequate standard. For many projects in Tanzania the problem is rather too high a standard in relation to the function (compare *Wells* 1986 p 9 f.). Thus, a new set of regulations and standards ought to depart from the issue of appropriate function. This would prevent waste of resources.

The choice of technology

Donor policy and the relations between donor agencies and Tanzanian officials, may contribute to the tendency to choose costly unsuitable designs, high standards and expensive materials.

Havnevik et al in their recent study (1988 p. 81) describe how institutional phenomena on both donor and recipient sides lead to mutual promotion of large and new industrial projects — e. g. new plants with advanced technology — at the expense of improving existing facilities.

Normally, this combination of interests lead to import-intensive undertakings. The earlier over-valuation of the shilling strengthened this tendency. Havnevik mentions a road project as an example. The equipment chosen was too heavy and complicated to operate and maintain. However, the Tanzanian authorities were reluctant to modify the technology and the donor meekly agreed.

Donors tend to select — or push — technology from their countries. To the extent that Tanzanian authorities expressed any preferences, they ". . . were almost consistently in favour of high technology, without any consideration of how to adapt and assimilate it into the Tanzanian economy. " (*Havnevik et al.* p 134)

Chapter 12

TRANSFER OF TECHNOLOGY AND CULTURE

12.1 Technology and culture and the carriers

As described above, we have distinguished two ways of looking at the process of transfer of technology. T I is equal to transfer of techniques, representing the "appropriate techniques' aspect" and T II is transfer and techniques plus transfer of values and culture.

In this context, by culture we mean a certain way of looking at things. What is the role of the state? How are policies carried out? What is the general attitude towards natural and economic resources and their distribution, and towards education? What are proper instruments when it comes to effect a plan or a programme? These are some of the questions.

Culture here also includes such basic concepts as "time" and "responsibility". For instance, what is the attitude to a time schedule, or to whom am I loyal in a situation of choice? Am I loyal to my family or to my employer? And what do we mean by "family" ? So, in our use of the term "culture" we thus include the "mentality" and the "world view" of a certain collective, e. g. "the Scandinavians" or the "Tanzanians".

In the following passages we will discuss a few distinctive features of Scandinavian/Swedish and East African/Tanzanian cultures which may have influenced the process of transfer.[16] Implicit in this discussion is an attempt to catch some features of the imaginary "cultural carrier" (of techniques and technologies). We will start with the story of the fourth building regulation adviser. He might permit our using him as a representative "Scandinavian" but also as a representative for a project and an institution.

16. For a general, elaborated discussion about studies of this kind see Daun 1989 pp 11-21. In Gaunt and Löfgren (1985) we meet two ways of looking at the concept "Culture", as the way of living and thinking, our daily life and as the collective consciousness of a group of people, their common ideas, knowledge,

12.2 The story of the fourth building regulation adviser

In November 1982 Mr N took up his duties as a building regulation adviser — the last in a succession of highly qualified Swedish engineers — at the Building Research Unit (BRU). Three years later he put down his observations and reflections in an unusually frank report.

On the spot, in Dar es Salaam he prepares himself carefully, "according to the job description", by reading and planning his work. Soon he discovers that "the key documents were not very well adopted to Tanzanian construction conditions". Only one draft was satisfactory but later he could verify that it had "most certainly never been used or tested in the country".

Waiting for an assistant (who never turns up), he works with a document for months and sends it out to a large number of authorities concerned. At last, one answer arrives.

He was told by the management of BRU that the Ministry was anxious to introduce new building regulations. Mr N took part in a series of meetings with officials and industrial managers. All said that new regulations were necessary. They were all willing to assist if needed. They repeatedly discussed how to cooperate, but no agreements were ever reached. However, two persons at BRU were appointed N's counterparts. "They were not very much engaged in the work to be carried out and quit abruptly, both of them after a short time. "

The weeks and months pass. Mr N works hard. New drafts of regulations and new memos are prepared. Meetings were decided but regularly cancelled without explanation. Mr N notes:

"After some time, I realized that the work was very difficult. - - All persons contacted gladly accepted to assist, but in reality had very little time to study carefully the material presented - -. "

The attitude of the market can be seen from the following quotation.

"The first indication that persons in the construction industry did not regard building regulations as very important or that they had little confidence in the BRU handling of the job, was the fact that only one cared to comment on the drafted building regulations sent out for consideration.

I got a clear indication of this during a seminar, arranged by NCC - -. During a discussion about building regulations one representative of the Univ of DAR remarked that the work to prepare regulations had been going on since 1973. Numerous invitations to comment on various documents had been sent out. Nothing had so far come out of it. Why care to answer now?"

Anticipating that nothing would come out of all his efforts, disappointed Mr N returned home. His prognosis was correct. No regulation drafts worked out at BRU have been approved or put into effect.

Mr N's report is an interesting document, not because it describes a ten year project that didn't succeed — such things belong to the everyday life of an aid agency — but because it gives us some hints of why it didn't. We will return to this case below.

12.3 Swedish mentality and cultural features

Daun (1989) in a comprehensive study of the Swedish mentality pointed to a typical trait

". . . a strong preference for rational argument, facts and concreteness, as opposed to emotional and speculative imagination. . . Swedish social science is immensely tied to concrete facts. " *(pp 260-261)*

Other things often mentioned as significant for the Swedish mentality, are the deep-rooted loyalty to the State and public authorities, the almost total submission to the clock and the willingness to seek compromises and solutions founded on negotiation. [17]

The society is impregnated by organizations and associations. The trades unions and the employers' associations have a position that is unique in the world.

Generally, "family" means the nuclear family and the ties to relatives outside this nucleus are weak. The social security systems are public and well developed. To a great extent, at least economically, they have taken over responsibilities that earlier rested on the nearest relatives.

The differences between urban and rural districts are not conspicuous. Wherever you live you meet a well functioning school-system. Working places are characterized by a high degree of mechanization/computerization and the physical infrastructure is of high quality.

The use of the best technology available is a matter of course. Science and technology have high status and exercise their influence on society at large. In combination with a careful collection and use of statistical data from different parts of the society, a "nature artificielle" has since long been created. [18]

Statistical data of all kinds are easy of access and usually most reliable. Traditionally, Scandinavian countries are open societies. In Sweden, governmental administration was already in the seventeenth century well developed. Nowadays, the local, sometimes quite large municipal administrations are the result of a pronounced expansion of the public sector during the 1960s and 70s. The local governments have a marked independence vis-a-vis the State. They have the power to tax their citizens.

The standard of living is high and strikingly so right through the society. Apart from a relatively large population of Finnish origin, the immigrant groups — chiefly from other European countries — are quite small. Ethnical antagonism between groups is very limited.

---

17. Several observers have through the years been inclined to trace the attitude of loyalty to the State back to the seventeenth century when the true Lutheran faith was hammered into the heads of the Nordic peoples. The submission to the clock is a prerequisite for the function of a highly industrialized society, but makes it vulnerable to disturbances.

18. The concept "nature artificielle" is usually regarded as the core of "western thinking" and one of the key traits of its culture. Instrumental rationality, i.e. thinking and solutions founded on science and technology have primary value.
"No approach to development has proved feasible without the subordination of individuals to a cultural super-structure in which the rules of science and technology reign"(Hydén 1983 p 5).

12.4 Reflections of "Swedishness" in reports

We will exemplify what we have recognized as Swedish or Scandinavian features of culture which may have influenced the process of technology transfer.

We have chosen the *Holm & Hjelm study* exemplifying reports that deal with transfer of soft-ware technology, i.e. techniques meant to strengthen institutions. The experts founded their suggestions on observations of the urbanization process. The key problems were the uncontrolled growth of settlement areas and the weak or non-existing physical infrastructure.

They recommended support of building research, a revision of the building regulations, a coherent planning system and training of local managers in economics, management, and basic technology. Two recommendations they regarded as highly important, the establishment of THB and the introduction of accommodation allowances.

It is easy to trace the authors' proposals back to Scandinavian thinking of the sixties and seventies, the base of which was the idea of the strong and good society, the Welfare State, with a firmly established public sector and a solid confidence in rationality and planning.

The following passage gives a good example.

"Still the weakness of physical planning is neither the rigid legislative boundaries, nor the building regulations which are made effective by planning. The lack which is most experienced — and perhaps more upcountry than in Dar — is the lack of coordination with planning of other activities. The localisation of housing and the localisation of industry, infrastructure, communications etc. must be treated together in a comprehensive planning where the timing is a main dimension, responsible for a positive social and economic result. We therefore will encourage a comprehensive planning in local development plans. - - - With a bigger staff of planners the dialogue with the local representatives could be more thorough." *(Holm & Hjelm p 3)*

To the Swedish officials, the natural way to create better conditions was through government institutions. Planning, coordination and timing are words of high value.

Brodén (1983), has analysed transfer and acquisition of techniques in small-scale industry. Both she and *Simkoko*, who has concentrated on projects, arrive at the same conclusion: Client involvement, participation of local firms, and local employment should be more emphasized to achieve better results. A short quotation from *Brodén* (p 143) exposes influence of Scandinavian thinking: the belief in planning and guidelines — as a matter of course, via the government.

"Unless the development of absorptive capacity is given appropriate attention both in sectoral and project planning, the possibilities of acquiring or "indigenizing" foreign technology are small. - - With little industrial know-how, the government has had difficulties in providing guidelines for how "indigenization" in industry should take place.

LDC planners will require better methods for handling this new situation. "

Alänge (1987 pp 240-41) is of the opinion that it would be possible for the State to cultivate a small-scale industry by substituting the market mechanism for a careful selection of potential entrepreneurs.

This idea was popular in Sweden and Great Britain during the late 70s. A lot of industry development agencies and joint venture funds etc, public as well as private, grew up. By the beginning of the 80s almost all of them had disappeared from the market. We regard Alänge's idea as a reminiscence of an experiment that went wrong — at least in Sweden.

12.5 Features of the Tanzanian culture

"The economy of affection"

We have not found any thing like Daun's study applied to Tanzania. The works of *Göran Hydén* from the 70s and 80s might be regarded as a continuous discussion of the African lifestyle and its relation to the State and the domestic economy.

In "*No Shortcuts to Progress*" (1983), and in several later papers, for instance "*Political Conditions for Development*" (1988), he set forth his theory on "economy of affection".

He and many other economists have regarded his concept and its implications as a theory of economics. We are more inclined to look at it as a theory of a coherent system of basic *cultural* features of the Sub-Saharan societies, which manifestly gears or dominates a number of domestic economies. [19]

A general description of Hydén's idea must begin with the remark that the economy of affection has nothing to do with fond emotions, a shortage of love.

Economy of affection denotes a network of support, communication and interaction among structurally-defined groups connected by blood, kin, community or other affinities — for example, religion.

It links together in a systematic fashion a variety of discrete economic and social units which in other regards may be autonomous. In spite of the cellular structure of the production system, household units cooperate for both productive and reproductive purposes.

Because such a co-operation is not an inherent and permanent part of the productive system, it tends to be ad hoc and informal rather than regular and formalized. These are 'invisible organizations'; they are single-purpose, small-scale and chiefly confined to the rural areas. [20]

While it has been commonplace to think of these phenomena only in relation to customary functions, it is all too often forgotten that the economy of affection survived the onslaught of colonialism and has experienced a revival in importance after

19. Hydén himself seems not to be entirely out of sympathy with such an interpretation. "The cycle of life - -, giving rise to both joy and sorrow, hard work and leisure for which local people have developed their own institutions. They relate to each other - - because they share a common destiny over which they believe they have some control only if they can live and work together. Such is the logic behind what may be described as the relations of affection, or the "economy of affection"." (Hydén 1988 p 152) As Hydén has pointed out (1983 p 9) we can recognize this mode of thinking in Karl Polanyi, for example in "The Great Transformation" (Beacon Press Boston 1957).

20. Because this type of organizations makes no direct contribution to macro-economic flows, their full significance is not fully recorded and analysed.

independence. To be sure, the economy of affection is most prevalent in the rural community but it is an integral part of society at large. Its influence stretches right from the grass-roots to the apex of society. *(Hydén 1983 pp 8-10)*

The Sub-Saharan society is basically pre-capitalistic and the State is incapacitated because its administrative systems are penetrated by the relations of affections. At national level these relations and the associational mode of organization prevent, or in any case make it more difficult to build up a government administration, primarily loyal to the State.

Hydén's concept has not gone unchallenged. *Beckman* (1988 p 159–163) attacks his views; The theory is said to "offer a scientific political theory that is supportative of this (i.e. IMF's and WB's) neo-liberal strategy. It helps the effort to roll back the state by ruling it out as an agent of development on scientific grounds". *Hettne* (1988 p 166) is hesitant about a couple of key concepts in Hydén's reasoning.

Beckman is indignated about Hydén's critical attitude towards both "Liberal" and "Marxist" analyses of the situation in Tanzania. He never reaches arguments of substance closer than the statements that Hydén gives a false picture of an egalitarian African society, and that his critical analyses of the government administration is built on "a Weberian ideal-type notion of bureaucratic rationality".

Hettne says:

"The contemporary retreat of the State . . . often occurs in a moral vacuum. The expanding market is by definition amoral. So-called informal activities emerging in periods of crisis reflect this amoralism rather than pre-capitalist values. Thus what Hydén calls the 'economy of affection' probably represents rather flexible principles, adaptable to different contexts: statism,[21] mixed economy, market dominance. "

Hettne does not elaborate this further so it is not easy to catch his point. Most works on capitalism and its origin presuppose a capital market and institutions. These are still not very well developed in Tanzania, and are probably prerequisites even for the contexts mentioned by Hettne. We agree that "pre-capitalist values" has a limitation. In our view the term is connected to the sphere of economy in a narrower sense than Hydén describes it. That is one reason why we prefer to regard Hydén's analysis as a theory about culture rather than economics.

Bureaucratization

Bureaucratization after independence is a frequently commented trait in African society. Usually the phenomenon is explained as an heritage from the colonial period. Hydén, however, states that this explanation is in-complete; the inclination to bureaucracy has its roots in pre-capitalist values.

The first generation of African leaders, he argues, were all essentially products of pre-capitalist environments. Although they were educated in Western institutions,

21. Hettne distinguishes between "strength" of the central State, statism, which emphazises the instrumental aspect, the role of the State as a political and bureaucratic organization, and stateness, "strength" of the nation-State, i.e. the political territorial organization.

that experience didn't wipe out their early values. When they reached their leading positions they preferred the bureaucracy since the market — in Hettne's words above, the amoral market — was regarded as the biggest threat to the very foundations of their society.

"Bureaucatization of African society after independence, therefore, is not just a matter of 'rational' choice but one of inherent attitude and inclination among leaders who see themselves as guardians of African (that is pre-capitalist) values and institutions.

Typical of pre-capitalist society, feudal or non-feudal, is the pressure towards centralization of authority. With low levels of technology and thus limited interdependencies among groups in society, strong central direction is a prerequisite holding society together." (*Hydén 1983 pp 50-51*)

Given the marginal influence of the market on Sub-Saharan societies, and especially in Tanzania, it is likely to be these pre-capitalist forces rather than socialist convictions that have been the real reasons why bureaucracy has been given such distinct preference by political leaders, irrespective of the ideology they adopted in the course of the struggle for independence.

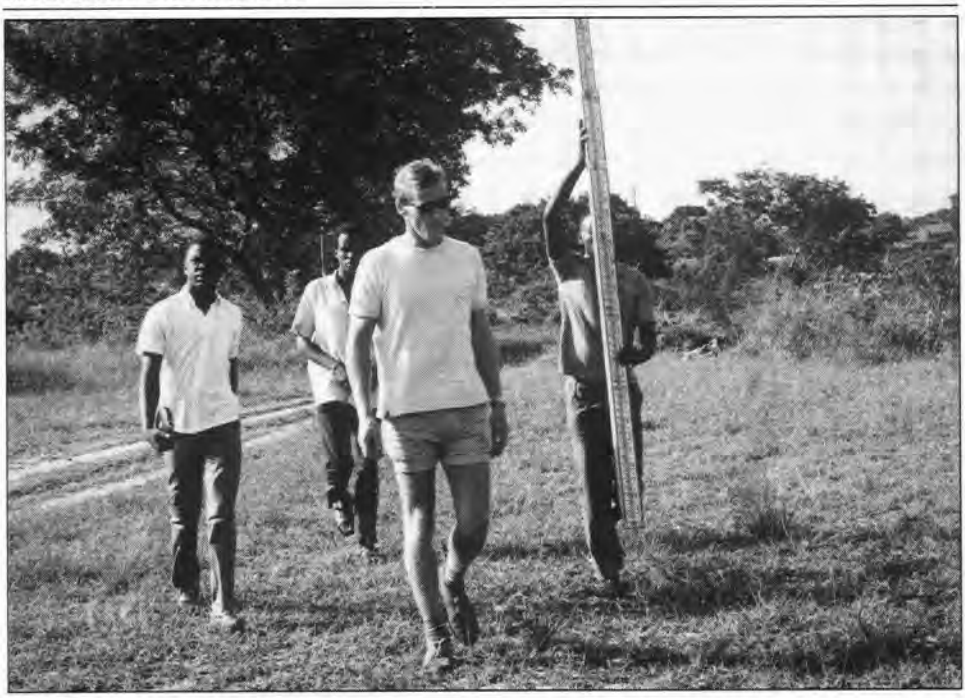
Hettne (op cit p 166) has underlined the differences between the State ("the first system"), the Market ("the second system") and the Public (the organized community, "the third system").

"Historically the third system contained a public sphere distinct from the state. With the growth of the first and second systems many vital functions of the third system were usurped, and its moral traditions eroded. Although many welfare functions were taken over by the state, this did not automatically give it the necessary moral authority or political legitimacy."

Hydén has a similar thought (1983 p 72). He discusses policy-making models in Sub-Saharan Africa compared to those of industrialized countries. In industrialized economies, he says, collection of statistics makes a lot of sense as it facilitates calculations that span over several parts of the economy and thus strengthens macroeconomic concerns like planning and finance management. In Africa these linkages or interdependencies are still only partially developed and are anyway confined to the modern sector of economy.

To make national policies based on a system of shared values and respect for institutional demands is close to impossible. Officials in African governments are not so closely absorbed by roles and institutions as their counterparts in the industrialized world. *They have more social space to move in* and, as a result, their behaviour is more difficult to predict.

Hartmann (1988 p 182-83) shares the general view of the writers just quoted. She calls our attention to the fact the Tanzanian society is becoming more socially differentiated as new forces, new identities and new thinking are developing among the different social classes and groups in society. "The State" she says, "is suspended in mid-air somewhere, away from these processes". Her idea of how to distribute new impulses is the tested model, i.e. by means of the Party. This is because the Party and Government are essential institutions in the political and economic



Rationality and planning are standards held high in Scandinavia. When transferring technology, the donor also transferes his cultural values.
Photo: Per Gunvall, Bazaar Photo Agency.

development of the country. The party structures, reaching even the most remote area in Tanzania, have the capacity to complement Government's efforts to maintain peace and stability in the country and to achieve development.

Winding up this passage on bureaucracy, we can draw a couple of conclusions.

1) It seems Tanzanian society has been over-whelmed by large organizations before officials have adopted a bureaucratic behaviour, i.e. before being ready to accept subordination to the organizational demands required of a functioning administration.
2) Lacking a "nature artificielle" (footnote 18, p. 84), bureaucracy married to politicization, including a charismatic leadership has become a substitute for instrumental rationality.

We have summarized some characteristics of Swedish/Scandinavian and Tanzanian/East African cultures discussed above in *figure 5* (next page).

Figure 5, Some characteristics of Scandinavian/Swedish and of East-African/Tanzanian cultures

Characteristics of Swedish/ Scandinavian culture	Characteristics of Tanzanian/ East African culture
Instrumental rationality, based on science and technology,has a supreme value	Values behind the"economy of affection" is a hindrance to instrumental rationality
High degree of technology	Low degree of technology
Deeply rooted loyalty to the State and Public authorities	Loyalties to the family in a wide sense. Weak loyalty to the State."Soft" State.
Submission to the clock	Flexible attitude to time
Very well functioning infrastructure (communications and transports)	Infrastructure largely out of function
Negligible differences in living conditions between urban and rural environments	In the cities, great differences between the poor and well-off. In rural districts the differences are less visible.
A dense net of formal powerful organizations and associations	Few formal organizations and associations: these are generally weak
Most influential middleclass	Thin and not very influential middleclass / "petty bourgeoisie"
Nuclear family = parents and children. Weak ties to other relatives	The concept "family" is very wide. Strong ties to a vast circle
Strong security net guaranteed by the State	Weak security net. Security to high degree based on kinship
"Summary"	
A highly industrialized Welfare State with a capitalistic or "mixed" economy, dominated by a powerful group of public officials with "Lutheran" values (duty and loyalty).	A rural, "soft" State. The formal sector(concentrated to a few cities) and trade bureaucratic. Huge informal sector. Values & network of relations characterized by "economy of affection".

Let us now return to the building regulation adviser, Mr N. The failure of the project had nothing or very little to do with the economic crisis. Rather the failure was a collision between two value systems, developed in two most different countries.

We can hear the inner monologue:

— A good and proper system of regulations and standards is rational and, in the long, run economical. Scandinavian countries have long had regulations. They have contributed to a decent built environment and a high level of hygiene. This is a prerequisite for better health; Scandinavian statistics verify that. With a few amendments (and simplifications) they would certainly be a success in Tanzania — etc.

And the real situation?

— So what, if you have no cement, a lack of steel and almost all sorts of building materials. If there is no organization to implement the regulations, and if the construction firms ignore them. If the great problem is survival of the nearest family or the extended family in Mbeya, why attend a meeting to discuss regulations, the usefulness of which we don't understand anyway - ?

The four Swedes on duty had tried hard. They had written memos and time schedules, they repeatedly improved the drafts. They initiated or attended a series of meetings, seminars with lots of people in the governmental administration and in the building sector. So, why did it take more than ten years to be aware of the fact that this project and all of BRU worked in a vacuum?

One answer could be that the donor agency found it difficult to see beyond its own frames of reference. Let us discuss that when we look at the other institutions.

12.6 Transfer of building technology and values

The built environment
- a most important element of the domestic culture

Few things reflect the culture of a people as its buildings. How a society organizes the single living-house, the shamba, the village or the suburb; facilities such as barns and wells, storehouses, harbours, wells and pump-stations, the infrastructure, and the city.

Less than a generation ago, even in the most industrialized region, the built environment was a product of raw materials and skills, both local. The art of building a house, or a bridge, was inherited knowledge. The activities were deeply steeped in tradition.

Contrary to what is often said, technical development in the construction sector the last fifty years has been rapid. New materials, new technical solutions and facilities, and especially new means of transport have radically changed building technology in industrialized countries. To a great extent craftsmanship has been replaced by industrial products and methods.

In chapter 7, where we discussed our approach, we mentioned that building

activities result in irrevocable environmental changes. A new type of building or construction is a proof of new impulses. When in place the new element — either through its shape or through its content, its function — influences our habits and traditions.

Our frames of reference and our values interact with our built environment and vice versa. Construction activities unavoidably interfere with firmly-rooted cultural patterns.

A couple of features of the socio-cultural tradition in the sector

The socio-cultural tradition of the Swedish construction sector has been described by *Björklöf* (1986). One of the features which he points to is that production aspects have brought to the forefront the energetic practitioner. His values are strictly professional and narrow; the construction process, its problems and requirements prevail. Of less importance is whatever precedes or follows. A typical example of this attitude is the *Da-Li-Li-report*.

The general attitude to research and "paper work" is not very positive. Research contrasts with the product-oriented practitioner. It cannot be denied that a certain streak of marginalism exists in the builder's pattern of action. [22]

During the building phase, there is a total concentration on the technical problems. The project and the (foreign) building management team are totally cut-off from domestic influences.

A Swedish team constructs a Swedish building, an English team an English one, an Indian project results in an Indian type of construction. This is not quite true. International building companies tend to build in an international, mixed West or East European style. These buildings have little character, are difficult to "read" and don't tell us anything about the indigenous culture.

Another feature — in spite of being in competition — is fellowship, the brotherhood of "us builders". This trait is known not only in Scandinavia, but also in Northern Europe; it coincides with strong professional associations.

A contributory cause is the ambulatory character of the profession. The projects are ad hoc organizations, and over the years a lot of people have worked together in different conditions. Working together creates a feeling of kinship.

In Scandinavia the organizations are strong, their status is high and there is a strong feeling of fellowship in the profession. In Tanzania organizations are weak, and their position uncertain. Solidarity within the sector seems not very well developed.

22. Marginalism (from the American sociologist C E Lindblom 1959) is tendency to avoid strategic planning. You take the problems as they occur. Lindblom's name for it, "the Art of Muddling Through", has become well known. Instead of attempting to solve a problem, as a rule you try to go around it for as long as you can.

12.7 SIDA's institutional support, a balance sheet

Education and range of influence

The main task of ARDHI Institute is education and training. Two other institutions, BRU and TBS, are also concerned with education but less directly: their task is to inform and "teach" the sector about their results. In view of this we will first make a short general comment on education and its range of influence.

Construction projects are perhaps the most powerful social and cultural carriers. In the transfer process institutions have a strategic role, something which the Scandinavian countries realized early. In the sixties, when aid started, all Scandinavian countries were involved in thorough changes of their educational systems from primary schools to university level. Education has always been regarded as a most effective way to change society. And education was the foremost weapon in the missionary work.

Education is an important agent for change but we must not expect too much of it. An educational system takes risks or is anyway not very successful if it is up in arms against basic values of the society.

BRU and TBS

When we visited BRU outside Dar es Salaam, we found an institution out of function. A cow grazed the front yard beside a wrecked car. Laboratories and offices were empty, dusty, silent. There was not a trace of maintenance. We met five idle officials. The director gone to the city, "may be back tomorrow". A row of books covered by dust was the "library" — with the latest addition dated 1978.

This had been the workplace for the regulation advisers. At first it had been filled with discussions and technical activities, but then gradually the spirit had died. Today there was no visible activity. From our interviews and visit it was quite clear that BRU was sleeping and was not expected to wake up.

TBS made quite another impression. Trim lawns and flowering trees surrounded the institution. Facilities were clean and tidy. The air condition system worked. The meeting, scheduled to start at a certain point of time had been prepared by the director and we could begin our talks immediately. There were newly-written pamphlets and information materials. No people just hanging around. Not far away we found new, nicely-built staff houses.

When we asked about TBS, everybody testified to the good management of the institution. In contrast to the case of BRU, they knew where TBS was situated — they had been invited there once or twice.

However, people in the business had made no use of TBS's recommendations. In fact, they said they hardly knew about them. They had never been asked for their services. When testing building materials — done very seldom — they preferred to go to the University of DAR. The university had the same equipment and services but cost less.

Building regulations, building codes, and standards were instruments that had worked well

in Sweden. Mistakes had been avoided: they were a rational way of solving a lot of problems; why shouldn't they also work in Tanzania? We can still hear the rhetorical questions from the time when SIDA decided to launch the two projects.

What is the situation fifteen years later? One totally inactive institution. No output, except for the monthly payments of wages to a handful of officials. The other one, perfectly run — but a self-playing piano. Its output never seems to reach the people who should be using it. Why hadn't the projects been successful? Why hadn't the regulation drafts or the standards met any interest?

First we must keep in mind that building research is the top of the pyramid of construction activities. Sweden didn't get its abundant resources for research until after the Second World War in spite of the fact that construction has for the last hundred years at least been a prosperous industry. It was as late as 1967 when a powerful authority with qualified experts, among them engineers, architects, lawyers and mathematicians, was established.

The agency's main functions were to up-date and watch over building codes, to make plans and to develop methods for planning at national level. It co-operated closely with the rich Building Research Council and the Building Research Institute, an institution with modern laboratories and experienced researchers. The authority also co-operated with the rapidly expanding and well equipped technical universities. Local authorities and building firms with well-educated and experienced personnel, were not always positive to being given directions, but very well understood the need for standards.

In Tanzania the situation was quite different — only a few university educated people, no technical tradition. Instead there was a rudimentary building industry based on expatriate construction companies using building codes and standards brought from their home countries. The new State of Tanzania had problems of quite other dimensions than the proper formulation of building regulations. It still has.

The BRU-experiment and the foundation of TBS was an ill-advised attempt to apply a an inappropriate Swedish model to an indifferent receiver. The environment was non-industrial, with practically no technically educated people, no organization to disseminate and put the results into effect and, in the market, little understanding of the need for regulations.

The failure was of management or of timing.

The fundamental assumptions were wrong, too little was known of conditions in the country. Planting a building research unit and a bureau for standardization in Tanzania in the 70s was like planting a couple of arctic birches in the Serengeti savannah.

Ardhi Institute

We have described the Ardhi Institute in section 6.3. The institute has a good name and it functions well. We agree with the evaluation reports of 1983 and 1984: Ardhi offers a high standard of training.

The teaching staff is a mixture of Tanzanians and expatriates from several countries. DANIDA has been responsible since 1978.

As we have already said, education and training are established Nordic specialities. When visiting the Institute we noticed a certain concern among the students and some teachers about ministerial plans to change the Danish management into a domestic as soon as 1990.

One problem, which should be investigated further, is that remarkably few of the architects and quantitative surveyors graduates have been registered by the regulatory body, the Board of Architects, Building Contractors and Quantity Surveyors — only three out of roughly 450 graduates.

Concerning the problem of the graduates' underemployment we share the opinion of the Danish appraisal mission (*Danida August 1989* p 42):

"It is the opinion of the appraisal mission that the real problems of evolving a well functioning and competent land development sector in Tanzania are mainly to be found outside the walls of the Ardhi Institute, and any effort to improve the institute, and its programmes, will only have a marginal effect on the sector as a whole, unless the external conditions follow suit".

Our impression is that the Ardhi Institute stands out as a successful development of an institution. However, it has always been in the hands of expatriates. The real proof of the project's success will come when the Institute is taken over by Tanzanian management and staff.

Tanzania Housing Bank (THB)

The bank is an example of social engineering transferred from Scandinavia to the Third World. Its first management was Norwegian.

Domestic economical troubles explain to a great extent the failure. The bank has been robbed of its assets by the government and is not active today. Loans and favourable financing of housing is arranged mainly for the bank staff.

We found this syndrome in other institutions: the employees were the first row to get financial support. The usual explanation by the management was that this was necessary if they wanted to keep the personnel.

This seems to confirm the existence of "economy of affection", a weak loyalty to the idea of the Bank. Kinship goes first.

TISCO and MECCO

The consulting enterprise TISCO and the building contractor MECCO were both established as part of the policy of government dominance in building and industrial activities. They were given preferential treatment for tendering, financing and technical assistance. Nevertheless they find competing for contracts difficult. They also face internal organizational and staffing problems. Neither firm has lived up to the expectations.

The shift in economic policy away from centralized government control and public ownership completely changes the premises for TISCO and MECCO. Government-owned firms given special treatment in tendering will hinder rather

than enhance the development of the construction sector's capacity. Thus TISCO and MECCO should no longer be granted special advantages.

We propose that they should operate on the same term and in competition with other firms. If they can't compete then they disappear. The government should act as any profit-seeking owner would. The alternatives open should include selling off the companies.

A summing up

In this chapter we have emphasized that construction and the built environment is imbued with values deeply rooted in every culture. Our values govern the built environment and we in turn are influenced by it. Institutions may serve as bridges over which we can carry new building techniques, new architecture, new scales of sizes and colours, new patterns of living. A building is never neutral. To support construction is equal to carrying new cultural features into another culture.

In order to emphasise this we have coined the term "cultural carrier"(of techniques or technology). [23]

The Scandinavian aid agencies have supported institutions as well as projects aiming at strengthening the formal sector. We have looked at a handful of institutions. In our judgement Ardhi Institute is the only successful venture. Of course the economic climate has been severe. This has certainly not helped. But our assessment is that this support would have failed anyway.

Before starting up the projects, SIDA did not thoroughly analyze the situation in terms of the marked cultural differences — the technological levels, the significance of a "nature artficielle" and the impact of the "economy of affection". By that reason the institutions have turned out to be almost unrecognizable copies of highly qualified and specialized Swedish institutions.

The Scandinavian aid agencies have given generous support over the years, but the chances of the institutions being able to survive and develop in the Tanzanian culture are minimal unless this support is prolonged.

12.8 The new economic policy and the construction sector

Unfortunately, in the present economic climate in Africa and considering new trends in aid policies, socio-cultural factors are even less likely to be taken into account than earlier.

At the turn of the year 1989/1990 there was a debate in Svenska Dagbladet, one of the leading newspapers in Sweden, about Swedish support to developing countries. In focus was Tanzania. Essentially the discussion turned was an

23. That is: He who carries a type or a part of a certain culture by help of a set of techniques; if we add their superstructure - institutions, supporting education and training etc - we would rather use the term "cultural carrier of technology".

examination of Swedish policy during the 60s and 70s in relation to the IMF's and the World Bank's recovery programmes of the 80s.

Karlström, Tham, and Kalderén seemed to agree that third world partners should be incorporated into a global process — economic and political — implying an international exchange of goods, services and ideas. This is most efficiently achieved by an export- and market-oriented policy, and outside the huge, regulating governmental bureaucracies, which suppress fertile imagination and inventiveness. *(Karlström 1989)*

Odén (1990) had an opposite view. He replied that the developing countries had no other choice than to adapt themselves to the economic policy dictated by Washington (WB and IMF) and backed by all donor-countries. "This means that in many countries economic adjustment policy to be put into effect is supported neither by the people nor by the government. Success seems doubtful. "

Such a critical attitude to the State and to public institutions and such a tribute paid to market forces, as Karlström demonstrated, would have been regarded as a sign of excentricity during the first two decades of Swedish aid.

Hartmann (1988 p 176) has summarized the initial period: "In this environment of social transformation Party leaders and the President appeared to be confident that they were transforming society through socialism. This belief was equally shared and generously supported by the World Bank and the Scandinavian countries. Aid increased and, indeed, the statist model could not have been implemented and sustained for so long without the generous assistance of the donors. " The very same picture is conveyed by *Radetzki* (1990).

A wave of criticism against the State and a depreciation of the whole public sector has since the beginning of the 80s swept over the western countries. Neoclassical or neo-liberal economic ideas — sometimes under the name of reaganomics or thatcherism — have influenced even the Scandinavian countries.

Commenting on a paper by *Hans Lundström* (1988), *Stefan de Vylder* (1988 p 137) characterizes the climate of today's debate on aid. "These questions — (among others:"The role of peasant agriculture. Basic needs. Democracy. The role of the State and of the civic community. The colonial heritage, and how to transform it. The problems of accountability in Africa today. ') — keep being asked, but seldom by representatives of the economic profession, whose imperialist ambitions vis-a-vis all other social sciences are getting more and more accentuated. " *Gulhati* (1988) and *Beckman* (1988) too indicate that questions like these are today low ranked by the donors and trendsetters.

If de Vylder, if Gulhati and if Beckman are right, this change of policy means that the observing of critical cultural factors when planning for aid has declined. Rallying around the policy of the World Bank and IMF can get the unwanted effect that the Western countries press their economic, technical and cultural patterns on countries like Tanzania.

On the other hand there may be some ways to balance less desirable influences from the mighty cluster of donors and to strengthen the domestic capacity as well. Our last section will discuss this.

PART VI

CONCLUSIONS & RECOMMENDATIONS

Chapter 13

SIDA'S SUPPORT TO THE CONSTRUCTION SECTOR

Of the institutions studied only the Ardhi Institute has not achieved the functions and importance expected. Why have the others failed? Economic and organizational factors can be pointed to as the most tangible causes. However, there may be more profound and at the same time more elusive causes. These would certainly influence all SIDA support.

13.1 Swedish support and Swedish culture

We have emphasised the sharp contrast between the cultural traits of the Scandinavian/Swedish and the East African/ Tanzanian societies.

On the one hand there is the highly industrialized society. Science and technology are given supreme value, public administration is impregnated by the Lutheran ethic that stresses one's duty to the State. On the other hand there is the young, loosely united agrarian society. It still struggles with its colonial past and its public administration is influenced by "economy of affection" — a vast network of family and kinship loyalties competing with the "soft" State.

The system of values is the most decisive factor for his choice of recipient country and for his selection of projects and programmes. He points his cultural carrier. The donor's gifts — a health care system or building technology — but also his values and solutions, his restrictions and non-solutions, his languages and frames of reference, all of these are to some extent carried over.

Okpala discussed this recently in a paper. Based on *McAuslan* (1982) and *Court & Kinyanjui* (1986), he summarizes: "The significance of the influence of technical assistance (i. e supply of experts/consultants or other types of personnel assistance,

24.

Goal is	Means are	The resulting type of process
agreed	known	Safe/undisturbed ("rational" use of knowledge). Square A.
	unknown	Learning process. Square B.
not agreed	known	Negotiation process. Square C.
not agreed	unknown	Searching for order/structure (in "chaos"). Square D.

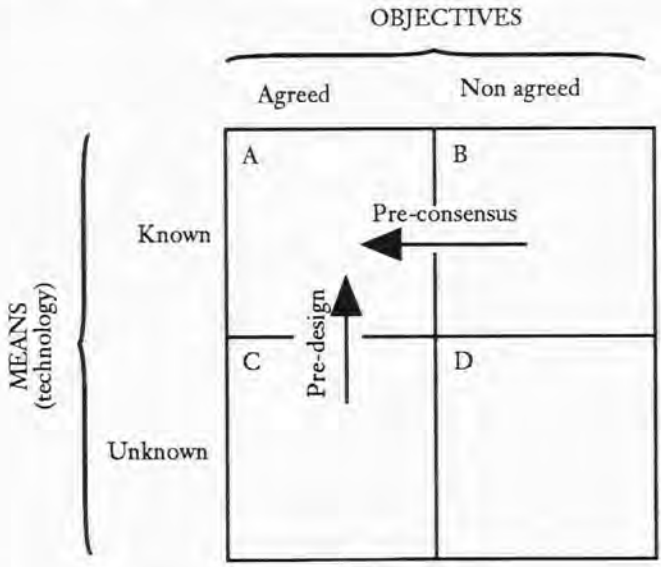
particularly) is that the technical and economic perspectives of these professionals, their analyses and prescriptions as well as the prevailing theories in the donor countries, have considerably influenced not only the identification, but also the design and implementation of the aid programmes and projects.

Common to many donors of course, is the desire to make quick and distinctive impact. It has been noted that Africa has been host to innumerable projects, experiments and models, which in some cases reflect the wholesale of foreign models – – and in others reflect the powerful and often passing fashion of donor conviction. " (*Okpala* 1990 p 222)

SIDA obviously hadn't the slightest idea of how outlandish the two most typical Swedish institutions — BRU and TBS — would be in the Tanzanian cultural environment. Already by the choice of these two projects, their pitiful performance was determined.

Professor *Bo Vagnby* (Institute for Development & Planning at Aalborg University in Denmark) has designed a series of matrices of interest for our discussion. We choose the one that describes the direction of the process towards consensus in the planning stage.

Figure 6, Goals, means and the resulting planning process
Source: *Vagnby* (1991 p 9)



The matrix says that, when developing strategies and solutions, we generally have a tendency to move towards square A, i.e. towards objectives and techniques accepted and well known. [24] The figure also shows why a "carrier" finds it difficult

to apply or adjust his favourite models to a new and different cultural environment. If the total context is unstable, he has at least his well founded knowledge and experience to lean on. When a carrier of Western thinking stays in square A, he feels safe. In his society rationality is ranked high. The problem is that rationality is relative.

Ruth Benedict once said something like this: "We do not see the lens through which we watch the world". If a person doesn't know the singularities of his own culture, he can't fully communicate with other cultures. Our *recommendations* for institutional support and choice of project are these.

- SIDA must ensure that its "carriers" are aware of basic traits of Scandinavian culture and of their roots. Some Nordic cultural patterns are unique and may be considered odd by other westerners.
- All policy-makers and all "carriers" however employed must learn about Scandinavian culture — there should at least be a recommended reading list relevant to the country.
- Involvement in the construction sector or in projects including or civil works, should be made with proper regard for cultural and social factors. A technical problem should always be described and handled in broader terms than just technique and economy.

The decisive thing, says *Nuru* (1990 p 13), is that innovations must not contradict the social and cultural values of the society.

13.2 Support to the formal sector

In the following two sections we give a few recommendations based on our observations. The first deals with production resources. The next section concentrates on the sector's super-structure, i.e. its institutions, its firms and associations and, to some extent, its regulation system. We summarize our recommendations as follows:

- Stop giving preferential treatment in the tendering process to public consulting and building organizations.
- Always include domestic firms when procuring design or building services.
- Question the requirement to channel all procurement of building services through separate Tender Boards.
- When foreign firms are engaged, require co-operation with domestic firms — consulting firms as well as contractors. Establish Technology Transfer Programmes of the type suggested by *Simkoko*(1990).
- Jointly develop equitable contract documents to be accepted by all parties. The government should promote the use of such documents.
- Develop jointly uniform rules and procedures for supervision of building and the liabilities of the contractor — also for the guarantee period.

- Permit anybody to hire academic professionals.
- Review the system of registration and authorization of professionals.
- Change the registration of contractors so that it is independent of contract value, in other words, abolish the British system. Abolish the seven categories. Instead, specify the number of employees, projects completed etc. The register should be a source of information only and not a tool for regulation.
- Support voluntary organizations, e. g. business associations, by offering training programmes, advice etc.
- SIDA and NCC should invite e. g. the Association of Contractors to participate in developing contractual rules and procedures.
- Develop building cost indices to make adjustment of contract fees possible. Delayed payments should be subject to interest payments. The government should always accept such clauses.
- Investigate how the financing needs of contracting firms may be solved by financial institutions.
- Encourage training programmes for contractors, such as the training given within the IRP.

13.3 Support to the informal sector

The informal sector is subject to the constraints discussed in section 11.2 but it has the potential to create low-cost building materials from domestic resources. The government would do better to remove these constraints than to ignore the informal sector altogether, or to place it in competition with the public sector.

Building codes must be performance oriented rather than prescriptive. This would encourage the use of local materials and the reduction of design requirements to levels appropriate to local conditions.

The non-regulated sector by definition would not be affected by a change in government regulations, but if standards became more reasonable, an "informal" firm would find it easier to meet requirements and so enter the formal market.

SIDA should investigate how the non-regulated sector could be approached and supported.

13.4 The institutional support

When analyzing the information collected about the institutions we have found the model used in the DANIDA-report on institutional support (*DANIDA* 1988) of great value. We have taken up quite a number of the general recommendations of this report.

Four major problems

The thirty years or so of independence has been a period of institution building. The network is now very comprehensive. The Danish team argues that the public sector should certainly not be further extended. Institutional development should

now be a matter of improving the performance of those institutions that already exist. This is a major task for both donor and host.

Institutional development should always aim at strengthening indigenous capacities to perform functions on a sustainable basis (*World Bank, 1984*). But the choice may be between establishing new effective institutions, and improving the performance of existing ones.

Institutional arrangements at all levels of the bilateral development cooperation are excessively complex. This is reflected in the following four major problems.

1) The coordination requirement

Coordination and integration are standard requirements. The driving force has often been donor officials and technical assistance personnel (TAPs), who aim for optimum planning, service, activities, delivery, etc. It is clear, however, that the weak public sector institutions in most developing countries cannot cope. The demand is even counter-productive. Scarce professionals sit in coordination committees, instead of being deployed in production.

2) Lack of sustainability

Project organizations are intended as ad hoc institutions. They should implement certain time limited activities. In fact in the recipient countries they seldom disappear from the institutional set-up. The result is an institutional dilemma: the structure and concept of project organizations have not changed, but their function has.

3) The supply of services

Typical for the 1960s and 1970s was a top-down approach to the extension of service delivery capacities at local government level. This approach has implied a supply focus in much service delivery. The results are:

- a series of vertical projects
- with hierarchical decision-making and career structures
- designed by donor and government officials at the national level, and
- resulting in heavy demands for coordination at the local level.

4) Grand designs and institutional reforms

The greater preoccupation with institutional issues among donor agencies in the 1980s resulted in excessive belief in the use of fundamental institutional changes as *instruments* to achieve policy changes and a greater development impact. This belief is found at both project and policy level.

The *institutional turbulence* and perennial reorganizations which characterize public sector bodies in developing countries, often result in a vicious circle of institutional trials and errors. Donor officials and government managers react to the lack of efficiency and effectiveness by demanding institutional changes. These changes prevent the gradual build up of administrative capacities. The lack of this

capacity again invites donor demands for institutional changes. The existing turbulence encourages further changes and deeper turbulence, thus sacrificing crucial continuity in institutional development. These four major problems challenge donors. What should be done is:

- define self-contained projects and service delivery programmes, i.e. *reduce the coordination requirements*,
- transfer the burden of integration of services as *close as possible to the intended receiver*,
- employ TAPs with capacities in the fields of the relevant *technical operations as well as institutional development*,
- establish *long-term relations* of co-operation with existing institutions, aimed at *marginal improvements*.

Institutional development in the project cycle

During the 1960s and into the 1970s, the ideal sequence of administrative steps may have been: 1) Setting up a project organization, 2) Direct technical assistance support (expatriates sometimes taking executive roles), 3) Institution-building (establishment of new extension services, co-ordination committees and financial procedures) and 4) Capacity development with the aim of phasing out the donor's involvement.

There is a need to redesign this sequence. Based on the Danish report we suggest the following institutional arrangements:

1) Implement *institutional screening* and of organizations within or outside the public sector, which are candidates for project implementation. [25]
2) Allow *institutions to choose* partner organizations, preferably at the identification and pre-appraisal stage.
3) Develop the effectiveness of the present functions of the partner institutions.
4) Agree with the recipient government that *continuity* should be a guiding principle. The donor should expect a long-term presence in the partner organization, though preferably in more flexible forms than in the past.

13.5 Swedish support to the institutions studied

Our recommendations:

BRU

Our recommendation is that BRU should be dissolved. If it is not dissolved then its role must be fundamentally changed.

BRU might find a fruitful function by returning to one of its original tasks, i.e.

25. An institutional assessment of individual implementing organizations must have three components. 1) a review of internal consistency of its functions, its resources, and its structure 2) an assessment of its practice (willingness and ability of management and staff to exploit its assets) and 3) a comparison of its capacities with the requirements of the proposed project.

to promote traditional housing considering varying local customs and conditions. This would mean disseminating knowledge already assembled. It might also usefully, work to develop traditional building techniques.

Another function for BRU could be to provide basic data, building indices, for use in building contracts. This might be done in cooperation with the Bureau of Statistics.

THB

There will always be a need for favourable financing of housing. Can THB reestablish itself in this role? Subsidies and new low-cost projects should be considered.

The informal sector should be encouraged. Is it possible to arrange reasonable securities for informal building?

If no reasonable function for THB is found in housing then it might be made into a commercial bank and operate on a competitive basis.

Ardhi Institute

The Ardhi Institute functions well. One of the original ideas was to produce planners for non-urban areas. This idea might go well. It would tend to strengthen the informal sector.

Students at the institute should be made aware of the importance of the informal sector and how they might promote its development.

TBS

The basic question is: what standards does the construction industry need? This question must be answered by the actors working together.

The informal sector might require standardization for non-regulated house-building and local production of materials (compare BRU above). The disseminating of knowledge of suitable techniques to the public at large might be a link.

Also, it might enhance possibilities to arrange securities for loans (See THB above). (TBS does not only work with standards for the construction industry.)

TISCO

TISCO should receive no further subsidies or preferential treatment. Instead it should operate on the open market.

MECCO

If it is competitive and profitable it will be an asset to the market and the government; if it is not, it would have been an expensive burden.

APPENDIX 1

LITERATURE

Alopaeus-Ståhl D, ***"The Invisible Resource"*** in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish Ministry for Foreign Affaires, Stockholm 1990

Alänge S, ***Acquisition of capabilities through international technology transfer — the case of small scale industry in Tanzania***, Chalmers Univ of Technology, Gothenburg 1977

Andersson I, ***"Rural Water Supply and Economic Crisis"*** in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish Ministry for Foreign Affairs, Stockholm 1990

Andersson-Brolin L et al. ***,Health centres — in need of treatment***, SIDA Stockholm 1987:4

Ardhi Institute, ***Training in Land Development***, Dar es Salaam, (information leaflet, undated)

Blach K, Baastrup P, Limbumba G E, Skjerdal K, Tolle A,

Efforts in Housing, Tanzania — Norway, NORAD Report 78, Dar es Salaam 1978 10 25

Beckman B, ***"Comments" to Hydén G, 'State & Nation under Stress'***,in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish ministry for Foreign Affairs, Stockholm 1990

Benedict R, ***Patterns of Culture***, New York 1934

Björklöf S, ***Byggbranschens innovationsbenägenhet,***(English summary *The building sector's propensity for innovation)*, Linköping Studies in Management and Economics, Linköping University 1986

Brodén M, ***From transfer to acquisition of technology. A study of the industrialization process i Tanzania***, Linköping University 1983

Building Research Unit, ***Proposal for Tanzania Building Act***, Dar es Salaam 1981

Building Research Unit, ***Draft for Tanzania Building Regulation***, Dar es Salaam 1981

Byggentreprenörerna, ***Fakta om byggandet***, Stockholm 1989

Caiden G E, ***International consultants and development administration***, International Review of the Administrative Sciences, No 1:1976

CMT Inc. 1982, ***Role and contribution of construction industry to the socio-economic growth of developing countries,*** paper prepared for the United Nations Center for Human Settlement, Cambridge Mass 1982

Court D and Kinyanjui K, ***African Education, Problems in High-growth Sector***, in Berg R J and Whitaker J S (eds), *Strategies for African Development*, Berkely, UCLA Press 1986

Dahlstedt F, Lindstrand L, Lindståhl M, (in this report "the Da-Li-Li report") ***Evaluation of SIDA supported building projects in East Africa,*** Lidingö, June 1980

DANIDA, ***An Evaluation of Ardhi Institute, Ministry of Lands, Natural Resourses and Tourism,*** Tanzania, April/ May 1983

DANIDA, ***Ardhi Institute, Review of a DANIDA-supported project in Tanzania***, Dar es Salaam and Copenhagen, August 1988

DANIDA, ***Consolidation of the Ardhi Institute, Ministry of Lands, Natural Resourses and Tourism***, Tanzania, November 1984

DANIDA, ***Further Support to Ardhi Institute, Draft Appraisal Report prepared by a Danida Missiom visiting Tanzania from 11 May to 30 May 1989***(Danida 104. Tanz. 71), Copenhagen, August 1989

DANIDA, ***Institutional aspects of Danish project assistance. Issues and recommendations on institutional development***, February 1988. /The team was: S Christensen, P Engberg-Pedersen (team leader), J Fenger, P Kirkemann Hansen and J E Steenstrup. /

Daun Å, ***Svensk mentalitet***, (English summary *Swedish mentality*), Rabén & Sjögren 1989

Edquist C and Edqvist O, ***Social carriers of techniques for development***, Sarec Report R 3: 1979

Eidhammer, A, ***Forskning i Tanzania. Norsk stönad til kompetenseoppbyggning***, NORAD maj 1982

Eriksson G and Lundahl M, ***Ekonomisk återhämtning och strukturella problem***, Stockholm School of Business, June 1989

Family Mirror, ***People aren't corrupt, the system is***, FM nr 31, April 1990

Gaunt D and Löfgren O, ***Myter om svensken***, Forskningens frontlinjer, Stockholm 1985

Hartmann J,***"Crisis & Reform in Tanzania"*** , in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish Ministry for Foreign Affaires, Stockholm 1990

Havnevik K J, Kjaerby F, Meena R, Skarstein R, Vuorela U, ***Tanzania. Country study and Norwegian Aid Review***, Centre for development studies, Univ of Bergen, October 1988

Hettne B,***"Comments" to Hydén G, 'State & Nation under Stress'***,in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish Ministry for Foreign Affaires, Stockholm 1990

Holm L, Hjelm S, ***Urban housing i Tanzania***, report of a study mission February 24–March 2 1972, SIDA /In this report referred to as the Holm & Hjelm report/

Hydén G, ***No shortcuts to progress, African development management in perspective***, London 1983 (Swedish version, ***Utveckling utan genvägar, Ett perspektiv på krisen och biståndet i Afrika***, translated by Mona Lagerström, W & W 1985)

Hydén G, ***State & Nation under Stress***, in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish Ministry for Foreign Affaires, Stockholm 1990

International Labour Organization (ILO), ***Employment, Incomes and Equality — A Strategy for Increasing Productive Employment in Kenya***, Geneva 1972

Johansson B / Wieslander A, ***Hem till Tanzania. Boken om Barbro Johansson berättad för Anna Wieslander***, Stockholm 1989

Kalabamu, F T, ***Problems of a bureaucratic housing land alienation process — The case of urban Tanzania***, (Dar es Salaam, undated stencile, 1985?)

Kalderén L, ***Bistånd bygger på samarbete***, Svenska Dagbladet 1990 02 05

Karlström B, ***Har vi älskat ihjäl Tanzania?***, Svenska Dagbladet 1989 12 29

Karlström B, ***Systemfel i biståndet***, Svenska Dagbladet 1989 12 31

Lindblom C E, ***The science of "Muddling Through"***, Public Administration Review 1959

Lööf S, ***PM angående förslag till upprustning av Tanzanias vägnät,***(*Memo on proposal to rehabilitate the road net of Tanzania*), SIDA, Dar es Salaam 1989 02 23

Macedo N and Zachrisson M, ***Konkreta resultat av 25 års svenskt bistånd***, *En sammanställning ländervis och sektorvis av de resultat som uppnåtts i drygt 500 SIDA-stödda biståndsinsatser i Tanzania*, SIDA Stockholm, April 1986

McAuslan P, ***The Urban Land Question***", Habitat International nr 6, 1982

Ministry of Lands, Housing and Urban Development, ***Housing and Construction in the Tanzanian Economy 1969–1978, An Economic Analysis of the past ten years Struggle for Progress and Self-reliance***, by Rudiger Neumann, BRU Dar es Salaam, October 1978

Ministry of Lands, Housing and Urban Development, ***Reducing Housing Costs***, paper prepared by the Housing Development Division in collaboration with the Building Research Unit, Dar es Salaam, 31 May 1978

Ministry of Lands, Housing and Urban Development, ***Regu***

lations for Simplified Building Control, Draft Proposels, Dar es Salaam, September 1975

Ministry of Lands, Housing and Urban Development, ***Towards a National Housing Policy***, Report on a Conference organized by Building Research Unit and Centre for Housing Studies, Arusha, March 3rd-8th 1980

Ministry of Works, ***Local construction industry study, general report***, Tanzania 1977

Moavendzadeh F, ***The construction industry***, in Rodwin L (ed), ***Shelter, settlement and development***, MIT, Boston 1987.

Mohegi B C, ***Registration of Professionals, Firms and Companies engaged in Construction Industry and the role of the National Construction Council***, NCC, Dar es Salaam January 1990

Moser C & Marsie-Hazen J, ***A survey of empirical studies in the industrial and manufacturing activities in the informal sector in the developing countries***, UNIDO-IS 470, Vienna 1984

National construction council (NCC), ***Expansion of public sector, Construction i Tanzania***, A technical report prepared by E J Wells, Dar es Salaam 1984

National construction council (NCC), ***Seminar on Role of Contractors in National Development***, Arusha, May 31–June 2 1982

Neumann R, See Ministry of Lands, Housing and Urban Development, October 1978

Nilsson P-U, ***Korruptionen***, SIDA, rapport nr 4 1990

Nuru K, ***African architecture between tradition and innovation***, paper presented at the International conference "Sustainable habitat on an urbanized planet?", Berlin March 1990

Odén B, ***Svårt lyckas utan förankring***, Svenska Dagbladet 1990 01 16

Odén B, Sedin B, ***"På biståndets bakgård" — Oönskade sidoeffekter av långvarigt bistånd***, DebattSida nr 3/88,

Ogondiek W Y, ***"Uchambuzi wa Elimu ya Sayansi na Technolojia na Matumizi yaki nchini"***, Seminar on Science & Technology, organized by CCM in Dar es Salaam 16th-18th October 1989

Okpala D C I, ***The roles and influences of external assistance in the planning, development and management of African human settlements systems***, Third World Planning Review, vol 12 nr 3, 1990, UNCH (Habitat), Nairobi

Planning Commission, ***Annual Economic Survey for 1988/89 and 1989/90***, Dar es Salaam 1990

Radetzki M, ***Dags att ompröva svensk u-hjälp***, Dagens Nyheter 1990 09 13

Riedel J & Schultz S, ***Summary of the role of the construction industry in the developing countries' economic growth process***, Paper prepared for the Federal Ministry for Economic Co-operation, Munich 1977

Riedel J & Schultz, ***Bauwirtschaft und Baustoffindustrie in Entwicklungsländern***, Weltform, München 1978

SIDA, ***Development Cooperation between Tanzania and Sweden***, Stockholm September 1986

SIDA, Regionsekr för östra och västra Afrika, ***Utvecklingssamarbetet med Tanzania budgetåren 1987/88–1988/89*** (Behandl i SIDAs styrelse 25 mars 1987)

Singh R K, ***"Review of the Local Construction for Roads in Tanzania — under Proposed Transport Sector Adjustment Programme***, April 1988

Svendsen K E, ***The creation of macroeconomic imbalances and a structural crisis***, from Boesen J, Havnevik K J, Koponen J, Odgaard R, (editors), Tanzania — crisis and struggle for survival (pp 59-78), Scandinavian Institute of African Studies, Uppsala 1986

Swedish Ministry of housing and physical planning, ***Swedish assistance to human settlements in Tanzania — a feasibility study***, March 1982

Tanzania Housing Bank, ***Report and statement of accounts***, June 1986

Tanzania Housing Bank, ***Seminar on Lending for Sites and Services***, Dar es Salaam, 28–31 August 1978

Tanzania Housing Bank, ***THB, A brief account on its background and activities, February 1990***

Tham C, ***Systemfelen i biståndet rättas nu till***, Svenska Dagbladet 1990 01 07

Therkildsen O, ***Watering white elephants? , Lessons from donor funded planning and implementation of rural water supplies in Tanzania***, Scandinavian Institute of African Studies, Uppsala 1988

TISCO, ***"Annual Report and Accounts, July 1 1988 — June 30, 1989"***, Dar es Salaam, August 1989

United Nations Center for Human Settlements (UNCHS), ***Small-scale building materials production in the context of the informal economy***, Nairobi 1984

Vangby B, ***Fra producent-baseret til stoette-baseret boligbyggeri — om strategi og metode i boligforsyningen***, Institut for Samfundsudvikling og Planlaegning, Aalborgs Universitet, Marts 1991 (Skriftserie nr 63)

Vilby K, ***Afrika på fel spår. Utvecklingens och biståndets kris i ett allt fattigare Afrika***, Nordiska afrikainstitutet, Uppsala 1984

de Vylder S, ***"Comments to Hans Lundström, 'Policy-Related Swedish Assistance'"*** in "Recovery in Africa, a challenge for development cooperation in the 90s", Swedish Ministry for foreign affaires, Stockholm 19901

Wallin A, ***Tanzania building regulation advisor. Final report***, SIDA (stencil), October 1985

Wells E J, ***Expansion of Public Sector, Construction in Tanzania***, See NCC

Wells E J, ***The construction industry in developing countries***, London 1986

World Bank, ***Institutional Development in Africa, A view of World Bank Project Experience***, Report No 5085, May 1984, Appendix 1).

Appendix 2

TERMS OF REFERENCE

FOR DISCUSSION AND ASSESSMENT OF EXTERNAL SUPPORT TO THE CONSTRUCTION SECTOR IN TANZANIA

1 BACKGROUND

Sweden and other countries have, beside the financing of building projects, throughout the years given support in various ways to the construction sector in Tanzania. No other developing country has received more general support to the construction sector from Sweden.

Examples of such support, which has been part of Swedish development assistance to Tanzania, are technical assistance to the Ministry of Works, the Building Research Unit (BRU), Tanzanian Housing Bank (THB), and Tanzania Bureau of Standards (TBS). Sweden has also been involved in the development of reformed Building Regulation and Technical Guide-lines and in major sector studies, e.g. "Local Construction Industry Study" (1977), and in rehabilitation and development of industries producing building materials and tools.

This assistance started already at the beginning of the 1970's and is still going on as regards industrial development and the TBS.

In view of the broad and long term engagement SIDA has decided to carry out an evaluation of the support, concentrating on institutional development in the construction sector.

It is expected that the findings of the evaluation would guide future assistance to projects in the field, not only in Tanzania but also in other African countries.

In discussions with SIDA the National Construction Council (NCC), which was created as a result of the study on the construction industry, has suggested that a review should be carried out as a follow-up to the study in 1977 in order to broaden the knowledge of the development and the prsent status of the sector and to allow formulation of strategies for its future improvement.

In view of the mutual interests indicated above a joint study shall be carried out.

2 OBJECTIVES

The objectives of the evaluation are:

(1) to analyse the role and the impact of the assistance given to the construction sector with special emphasis on Swedish assistance and assistance from other Nordic countries;

(2) to broaden the knowledge about the development of the construction sector in Tanzania since the Local Construction Industry Study in 1977;

(3) to discuss alternatives and give recommendations on ways to design assistance to the construction sector in African countries; and

(4) to discuss possibilities for improvements in the construction sector in Tanzania.

3 SCOPE OF WORK

The evaluation shall cover the whole period during which SIDA has provided support to the construction sector (1970-1988). It shall particularly study the development and sustainability of institutions.

It shall consider the relevance and effectiveness of the support in relation to both the public and the private sectors. Tanzania's changing economic situation during the period and efforts by other donors shall be taken into account.

The term "construction sector" refers to the production of buildings, including housing, and the production and distribution of building materials.

The intention is not to evaluate the various building projects which have been financed by Sweden. It is further not a major objective to evaluate in detail individual supported projects as such.

Specifically, the evaluation shall include, but not necessarily be restricted to, the following.

(A) Review

A brief review shall be carried out of the development of the sector during the late 1970's and 1980's, its size and role in the formal part of the national economy. The review should include both government and private activities. Also, a brief historical account should be made of the development of institutions, training facilities and policy measures related to the sector, and the involvement of donors.

(B) Case studies

A number of selected projects shall be discussed and an assessment shall be made of their relevance, various roles, resources supplied in relation to output, and the likelihood for sustainability. (A list of projects and institutions supported in the construction sector is attached in Appendix 1.)

(C) Analysis

Possible long term and short term effects of the support on the performance of the construction sector shall be discussed, as well as the likely benefits to the national economy. Special attention shall be made to problems of development of institutions and practices and transfer of knowledge. The analysis shall be made taking into account Tanzanian policy goals and objectives of the SIDA support.

(D) Methodological discussion

The final report shall include a brief discussion on the methodology of the evaluation.

4 METHOD OF WORK

The evaluation is to be carried out in three stages. The first part will be a preparatory phase where the team decides on methodology and limitations of the study, initiates descriptive data collection and start making case studies. The second part will be a descriptive study on the development of the construction sector and its institutions. During the third part final data collection will be made and the data are analysed.

The tasks in part II shall be based on these ToR but may be further specified in separate agreements after discussions with the consultants.

It is expected that the Swedish team members will visit Tanzania during the first and the third phases of the evaluation.

The evaluation will be based on documents, statistical data and interviews.

4.1 Consultants

The evaluation will be carried out by a team comprising 3-5 Tanzanian and Swedish consultants, if necessary supported by assistants. The team should have knowledge in macro and micro economics, political science, public and private business administration, civil engineering and construction, and education and research. The team leader should have a solid experience in evaluating the impact of policy and administrative measures applicable to both micro and national levels in the construction industry.

5 TIME SCHEDULE

Part I shall be carried out before the end of 1989. The time required is estimated to four working weeks per person, including preparation of a short interim report.

The volume of work for part II will be decided later but shall not exceed eight person weeks for locally engaged consultants outside the evaluation team. In addition, it may require one working week per person in the evaluation team. (Attention should be exercised so that the on-going World Bank study on the construction sector is not duplicated.) A report in draft form shall be submitted.

Part III shall be carried out as soon as possible after Part II, and at the latest in March 1990. It is estimated to require maximum five working weeks per person.

5.1 Reporting

During part I an inception report shall be submitted to SIDA well before the first visit to Tanzania by the Swedish members of the team. The inception report shall include an outline of the method of work, a work plan and proposals, if any, as to modifications in the ToR.

An interim report shall be submitted upon completion of part I. (It may be an up-dated and enlarged version of the inception report.)

An outline of the final report and the main conclusions shall be presented in Dar es Salaam before the Swedish part of the team leaves Tanzania. Preferably this should be made by way of a seminar. A draft report shall be submitted to SIDA, Stockholm within three weeks after this presentation and the final report two weeks after receiving comments from SIDA.

SIDA EVALUATION REPORT SERIES

1988/1 **MIGRANTS BY NECESSITY**
A report on the living conditions of forestry workers in the SIDA supported Bai Bang Programme.

1988/2 **SISTERHOOD ON TRIAL**
An Evaluation of the performance and linkages of the sister industries in Tanzania
by Jerker Carlsson, Sverker Alänge, Kim Forss, Serve Malai, Sari Scheinberg

1988/3 **IMPROVE YOUR BUSINESS**
An Evaluation of a ILO/SIDA Regional small scale business promotion Project in Africa
by Claes Lindahl and Rob Dainow

1989/1 **THE KOTMALE ENVIRONMENT**
A study of the environmental impact of the Kotmale Hydropower Project in Sri Lanka
by Dick Johansson

1989/2 **FISH FARMING FOR RURAL DEVELOPMENT**
An Evaluation of SIDA/FAO supported aquaculture in southern Africa
by Karlis Goppers and Jim Miller

1989/3 **NO SHORT CUTS TO HEALTH**
An Evaluation of SIDA health sector support to Zambia 1979–1988
by S. Dahlgren, V. Diwan, K. Eduards, A. Gunnarsson, L-K.J. Mwansa, R.S. Patel, O.S. Saasa, T.K. Sinyangwe

1989/4 **FROM COMPETITION TO CO-OPERATION?**
An Evaluation of MEIDA and its impact on the engineering industries in Tanzania
by Jerker Carlsson, Kim Forss and Serve Malai

1990/1 **CONCERN AND RESPONSIBILITY**
An Evaluation of the Dodota Water Supply project
by Eva Poluha, Göran Engstrand, Annika Idemalm, Johan Melchert and Judith Narrowe

1990/2 **CENTRAL AUTHORITY BLOCKS LOCAL AUTONOMY**
An Evaluation of SIDA Support to Local Government in Zimbabwe 1983–1989
by Lennart Gustafsson, Anthony Redmond, Christopher Rambanapasi

1990/3 **NEW PATHS FROM POVERTY**
An Evaluation of SIDA Rural Employment Sector Support to Bangladesh 1986–1989
by Nigel Hawkesworth, Md. Mainul Islam, Mahmuda Islam, Ton Jansen, Ole Lindberg, Sadrel Reza, Else Skjønsberg

1991/1 **AID UNDER FIRE**
An Evaluation of the Mozambique-Nordic Agricultural Programme (MONAP),
by Yussuf Adam, Robin Goodyear, Martin Greeley, Mick Moore, Julio Munguambe, Miguel Neves, Penelope Roberts, Gulamo Taju and Sergio Vieira

1991/2 **A FLAWED SUCCESS**
An Evaluation of SIDA Support to the Kotmale Hydropower Project
by Bjørn Gildestad, Erland Kleivan and Tor Stavsholt

1991/3 **THE ART OF SURVIVAL**
A study on sustainbility in health projects
by Lillemor Andersson-Brolin, Birgitta Lorentzson, Ole-Memiri, Elisabeth Michanek, Daniel Ndagala

1991/4 **KEEPING THE GOALS IN SIGHT**
An evaluation of Swedish support to public administration in Zimbabwe
by Lennart Gustafsson, Peter Blunt, Duduzile Chandiwana, Peter Gisle, Charles Katiza, Desire Sibanda, Stefan Sjölander and Robert Tendere

1991/5 **JOINING FORCES**
An Evaluation of the Cooperative Integration in Central America and the Caribbean through CCC-CA/SCC
by Elisabeth Lewin and Guido A. Monge

1992/1 **BIRCHES DON'T GROW IN SERENGETI**
An Evaluation of Development Policy and Nordic Support to the Construction Sector in Tanzania 1975–1990
by Sune Björklöf, Tage Klingberg, Boniface Muhegi, Abisai Temba

BIRCHES DON'T GROW IN SERENGETI

Of the six institutions in Tanzania's construction sector studied, only one – a training institution – is really successful. Twenty years of SIDA support appears to have had little effect. Why has this support failed?

SIDA's and Tanzania's lack of interest in the 80% of the construction sector that is informal is part of the explanation. However, the authors attach greater importance to a seemingly elementary factor: the transfer of technology, and in particular of building technology, is equally a transfer of culture. Technical experts transfer not only techniques but also, among other things, their view of the role of the state and how the state's intentions should be put into effect.

The authors found that contemporary solutions and favourite models from home have been carried over to the recipient country with too little considerations of the differences in environment. Planting a unit for sandardization in Tanzania, was a bit like planting a birch in Serengeti, and hoping it would grow.

Sweden's bilateral development co-operation, administered by SIDA, comprises 19 programme countries: Angola, Bangladesh, Botswana, Cape Verde, Ethiopia, Guinea-Bissau, India, Kenya, Laos, Lesotho, Mozambique, Namibia, Nicaragua, Sri Lanka, Tanzania, Uganda, Zambia, Zimbabwe and Vietnam.

Each year about 30 of SIDA's over 200 projects are evaluated. A number of these evaluations are published in the SIDA Evaluation Report series. Copies of the reports can be ordered from SIDA, S-105 25 Stockholm, Sweden.

ISBN: 91-586-7142-0
ISSN: 0283-0736