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RURAL ROAD MAINTENANCE, MBEYA AND TANGA, TANZANIA

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The views and interpretations expressed in this report are those of the authors and should not be attributed to the Royal Norwegian Ministry of Development cooperation

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LIST OF ABBREVIATIONS

ADT	AVERAGE DAILY TRAFFIC
AFRS	AGRICULTURAL FEEDER ROADS STUDY
B/C	BENEFIT-COST RATIO
CDA	COMMUNITY DEVELOPMENT ASSISTANT
CV	CURRICULUM VITAE
DANIDA	DANISH INTERNATIONAL DEVELOPMENT AGENCY
DA	DISTRICT AUTHORITIES
DC	DISTRICT COMMISSIONER
DDC	DISTRICT DEVELOPMENT COMMITTEE
DDD	DISTRICT DEVELOPMENT DIRECTOR
DE	DISTRICT ENGINEER
DED	DISTRICT EXECUTIVE DIRECTOR
DPLO	DISTRICT PLANNING OFFICER
DSM	DAR ES SALAAM
EEC	EUROPEAN ECONOMIC COMMUNITY
ERP	ECONOMIC RECOVERY PROGRAMME
GDP	GROSS DOMESTIC PRODUCT
GNP	GROSS NATIONAL PRODUCT
GOT	GOVERNMENT OF TANZANIA
GTZ	GERMAN AGENCY FOR DEVELOPMENT ASSISTANCE
IBRD	INTERNATIONAL BANK FOR RECONSTRUCTION AND DEVELOPMENT
ILO	INTERNATIONAL LABOUR ORGANISATION
IRR	INTERNAL RATE OF RETURN
KURRP	KILOMBERO AND ULANGA RURAL ROADS PROJECT (MOROGORO)
MAENDELEO	THE MINISTRY OF COMMUNITY DEVELOPMENT
MCU	MBEYA CO-OPERATIVE UNION LTD
MCW	THE MINISTRY OF COMMUNICATIONS AND WORKS
MDC	MINISTRY OF DEVELOPMENT COOPERATION
MLGC	THE MINISTRY OF LOCAL GOVERNMENT AND CO-OPERATIVES
MP	MEMBER OF PARLIAMENT
NOK	NORWEGIAN CROWNS
NORAD	NORWEGIAN AGENCY FOR INTERNATIONAL DEVELOPMENT
NPV	NET PRESENT VALUE
NTP	NATIONAL TRANSPORT POLICY
NSAWD	NORWAY'S STRATEGY FOR ASSISTANCE TO WOMEN IN DEVELOPMENT
ODA	OVERSEAS DEVELOPMENT ASSISTANCE
PC	PROJECT COORDINATOR
PMO	THE PRIME MINISTER'S OFFICE
RA	REGIONAL AUTHORITIES
RADO	REGIONAL AGRICULTURAL DEVELOPMENT OFFICER
RC	REGIONAL COMMISSIONER
RCDO	REGIONAL COMMUNITY DEVELOPMENT OFFICER
RDC	REGIONAL DEVELOPMENT COMMITTEE
RDD	REGIONAL DEVELOPMENT DIRECTOR
RE	REGIONAL ENGINEER
RPLO	REGIONAL PLANNING OFFICER
RRD	RURAL ROADS DIVISION
RRE	RURAL ROADS ENGINEER/REGIONAL ROADS ENGINEER
RRM	RURAL ROADS MAINTENANCE

SIDA	SWEDISH INTERNATIONAL DEVELOPMENT AUTHORITY
SPWP	SPECIAL PUBLIC WORK PROGRAMME
TAS	TANZANIAN SHILLING
TCU	TANGA CO-OPERATIVE UNION
TIRDEP	TANGA INTEGRATED RURAL DEVELOPMENT PROGRAMME
TRM	TRUNK ROAD MAINTENANCE
TRRL	TRANSPORT ROAD RESEARCH LABORATORY
TSRP	TRANSPORT SECTOR RECOVERY PROGRAMME
UCLA	UNIVERSITY OF CALIFORNIA, LOS ANGELES
UNDP	UNITED NATIONS DEVELOPMENT PROGRAMME
USD	US DOLLAR
VDP	VILLAGE DEVELOPMENT PROGRAMME
VOC	VEHICLE OPERATING COSTS

EXECUTIVE SUMMARY

ROLE OF THE ROAD TRANSPORT SECTOR

1. Most areas in Tanzania are totally dependent on the road sector since there are no other transport alternatives available. As such the poor performance of the road transport sector has been a contributory factor to the decline of Tanzania's economy since the mid - 1970s.

2. The Government of Tanzania has recently formulated proposals for a coordinated programme of investment in the road transport sector in support of its policy for national economic recovery. The proposals include fundamental changes to the system of administering rural roads. They also include a Core Roads Rehabilitation and Maintenance Programme. This seeks to rehabilitate some 10,000 km of "essential" roads, or on average roughly 500 km per region.

3. Under the "Core Programme" rehabilitation and maintenance of rural roads will be limited to the agriculturally most productive districts. Roads outside this essential category will receive only minimum maintenance to provide reasonable access.

4. It is not clear how the Transport Recovery Programme proposals should be interpreted in relation to externally funded projects. This needs to be clarified with the Government of Tanzania as a matter of urgency, since they will have major implications for the future of the Norwegian funded Rural Roads Maintenance Project (RRM),i.e. its role, organisation, technological orientation and level of funding.

5. The RRM project is making an important contribution in ensuring that the rural road networks of both regions do not deteriorate through lack of maintenance. However, both regions have been in receipt of funds for road improvement and maintenance at a level substantially above that the Government can provide in other regions.

PROJECT BACKGROUND AND PROGRESS

6. The RRM project was initiated in 1979, and designed to strengthen existing institutions in upgrading and maintaining rural roads in Mbeya and Tanga regions. In the period 1979-87 the Norwegian inputs comprised approximately NOK 200 mill., with a technical assistance component of approximately 100 man-years. The Tanzanian inputs are estimated at TAS 160 mill. (NOK 80 mill.) in the same period.

7. During its entire implementation period the project has had a dual aim: institution building; and maintenance/rehabilitation of rural roads. Initially it focussed on supporting the districts directly, but was centralised to regional level in 1984, and further reorganised as an organisation directly under the RDD in 1986, in order to improve efficiency. 15 expatriates are currently assigned to the project, plus 2 ILO experts.

8. The project has achieved a great deal in terms of rehabilitation and maintenance of roads, especially in recent years. The physical outputs of the project in the two regions are comparable. However, during the whole period since 1979, the emphasis has been on improvement, rehabilitation and periodic maintenance, and much less on establishing systems for routine maintenance as envisaged in the project agreements.

9. The training activities of the project clearly reflect the bias towards machine-intensive methods in the earlier years, and the neglect of senior staff development and hence progress towards Tanzanisation. As a result the project is still entirely dependent on expatriate assistance and vulnerable to the effects of the regular replacements of expatriate staff.

10. RRMs recording of project outputs is not very detailed, complete or consistent between the two regions. It is also largely subjective. The system ought to be made more comprehensive, consistent and quantitative so that the measures can be used to monitor and assess efficiency.

ORGANISATIONAL ASPECTS

11. Like many other externally funded projects in rural roads maintenance the RRM organisation does not conform with Government practice in Tanzania. This situation has partly arisen as a result of the frequent organisational changes in the roads sector. The proposals contained in the Transport Recovery Programme are designed to address this issue, but at present the situation is confused which does not help RRM's efforts at institutional developmen

12. In the present situation, resources for maintenance and rehabilitation of rural roads are scattered among several institutions in each region. This problem has been aggravated rather than reduced by the introduction of the present RRM institution, and there is a great need to establish co-operation between the various regional institutions.

ROAD SELECTION CRITERIA

13. The RRM project does not have adequate criteria for the selection of roads for maintenance and upgrading, since there is no means of comparing the costs and benefits of investment. Fundamental to the development of more rational selection criteria is the resolution of the present confusion over just what should be the future role of the RRM organisation in the road sector.

TECHNOLOGY

14. A thorough assessment of RRM's proposed changes in rehabilitation and maintenance technology can only be made when its future role in the rural roads sector is defined. Notwithstanding this a clear case already exists for RRM to adopt equipment technologies that are simpler to operate and maintain, cheaper to purchase, and more maneuverable than its existing plant, e.g. a more tractor-based technology.

15. The case for using more labour-based methods in a country like Tanzania is essentially economic. However, at present the economic framework simply does not exist to enable confident choices to be made by RRM about the appropriate uses of labour and equipment. Some plant is certainly necessary, but its true economic operating costs have yet to be determined, and compared with alternative labour-based methods of doing the same operations.

16. The initiation of more labour-based methods of working has got off to an uncertain start. More effort is required by RRM at both the public relations and technical levels. It is also essential that a clear commitment is obtained from the Government of Tanzania to the institutional changes necessary to allow labour-based methods to succeed.

INSTITUTIONAL DEVELOPMENT

17. RRM is a relatively efficient institution, but it is still very dependent on external funding and expatriates filling key positions. Future efforts at institutional development have to be based on a comprehensive survey of existing capabilities and needs, and must involve complementary activities by the Government of Tanzania or they will be as unsuccessful as past efforts.

18. The current size of the RRM institution is clearly out of scale with anything that could be supported by Tanzania in the foreseeable future and must be reduced. Institutional development of the reduced RRM units has to be based on a clear strategy of cooperation with the districts.

SAVINGS AND GAINS FOR USERS

19. The main user benefits resulting from the RRM project are savings in vehicle operating costs. These are estimated at 17-20 TAS per vehicle km. Users also benefit from the continuation of vehicle services. Without the RRM project many roads would quickly deteriorate to the point that transport services would cease.

BENEFITS TO WORKERS

20. The most valued benefit of the RRM project is the opportunity it provides for the workers to earn cash. The money earned is seen as beneficial only for short-term needs. In October 1987 some 1500 people were employed, and their wages comprised some 3 per cent of the total wages earned in the two regions. Earnings of the workers clearly do have a multiplier effect due to the

circulation of cash in the local economy. Because of these benefits it is of concern that wages only comprise some 10 per cent of project expenditure, which is low in comparison with more established labour-based programmes.

FEMALE PARTICIPATION

21. Participation of women in development is a main concern of both Tanzania and Norway. In 1984 a target of 20 per cent female employment was suggested for 1988. This target has been reached in Tanga, while in Mbeya the percentage is less than half the target.

22. However, most women have been employed either as casual labourers or in activities traditionally performed by women. Only in Tanga have attempts been made to offer them a broader range of employment opportunities. This trend should be strengthened in the future by establishing detailed targets for female participation in staff development plans and training programmes. It is important that more women are recruited and trained as forewomen and road attendants, as well as drivers and machine operators, and that attempts are made to meet the constraints of women workers, e.g. by means of organised transport, child care, etc.

ENVIRONMENTAL CONSEQUENCES

23. The RRM project is unlikely to have had any adverse effects on the environment. It has given rise to a major environmental benefit by preventing the erosion of the road network. These benefits have a conservatively estimated current value of some 310 mill. TAS per region.

BUDGETED VERSUS ACTUAL EXPENDITURES

24. The RRM project does not have a satisfactory system for recording costs and expenditures. This is clearly unacceptable from both an audit and policy point of view. It also prevents the development of an acceptable basis for the costing of individual road rehabilitation and maintenance activities, which is needed so as to rationalise investment priorities.

COSTS COMPARED WITH OTHER PROGRAMMES

25. No satisfactory basis exists for comparing road maintenance and rehabilitation costs under the RRM project with those of other programmes. The main reasons for this is the lack of quantitative methods of work estimation, and distortions in the way equipment hire costs are calculated. A more quantitative approach to costing is essential if Tanzanian staff are to quickly acquire the skills to do this work.

COSTS AND BENEFITS

26. Inclusive of expatriate costs the RRM project is found to be justified economically since its benefits exceed costs and provide a return on investment greater than the opportunity cost of

capital in Tanzania. The most direct benefits from road rehabilitation and maintenance projects are relatively easy to quantify and could provide the RRM project with a simple means of screening all future investment decisions.

RELEVANCE OF THE PROJECT

27. The project was designed without any stated overall development objectives. Moreover, insufficient attention has been paid during the implementation period, to analysing the relevance of the project as seen in a wider development perspective. Prevailing problems related to the scope of activities, the definition of objectives, organisation and choice of technology are the result.

INTEGRATION

28. The RRM institution is not well integrated into the Government's organisational structure. Plans for achieving full integration will depend on the establishment of a new national roads policy and road maintenance organisation, and the acceptance of the staff development plan.

29. RRM must adopt a uniform system for work planning and monitoring if it is to have any claim to be a "model" organisation. RRM's hand-over and induction procedures for expatriate staff are unsatisfactory and ought to be improved.

MODEL VALUE AND SUSTAINABILITY

30. The present lack of a national policy for the road sector suggests that the whole question of creating a model organisation that should be replicated in other regions is premature at present. The establishment of RRM in its present form was done for a trial period 1986-89, after which experience with the model should be appraised. Only national policy will determine whether the organisational model is viable in the future.

31. The RRM model, in its present form, could not be replicated by the Tanzanian Government in other regions of the country. The main reasons for its technical success is not its organisational model, but its access to resources, especially foreign funds and trained engineers.

32. Both RRM's recurrent and particularly its development expenditure levels are well above those the GOT is able to provide to other regions.

33. National priorities and the need to establish a sustainable system for road maintenance strongly suggests that the overall level of expenditure should be reduced, and that the emphasis should switch from development to maintenance - in particular to support initiatives towards sustainability. It is realized that this decision will be very unpopular in the regions and districts concerned, since they want RRM to do more, not less.

FUTURE STRATEGY AND NEEDS

34. Since it has not yet been resolved by Tanzania whether regional roads should be the responsibility of the[1] RDD/RE, RDD/RRE, MCW or MCW/RRE, or which rural roads should be maintained by regional or district authorities, the logical position of RRM today will be to support existing institutions in the sector, while at the same time keeping up a reasonable level of operating capacity, in order to prepare for an eventual integration into existing institutions - or a continuation and consolidation of present activities - whichever national policy dictates.

35. In the immediate future, therefore, the project should:

(a) Train personnel at various levels and from different institutions through in-service training, courses, and scholarships, which will enable them to perform within their own institutions. Beneficiaries would be the RE, DE, Marketing Boards, Cooperative Union, TRM, etc. Training should cover machine-based and labour-based operations as appropriate. Expenditures should come out of the existing grants.

(b) Develop and introduce a labour-based, tractor-supported technology in the districts - through pilot projects and systematic training and supervision. RRM should provide the districts with the necessary and appropriate tools and equipment. Funds for equipment should come out of the project. RRM should then initiate a process whereby the districts are gradually encouraged to extend their activities to maintenance of parts of the RRM network on a limited contract basis.

(c) Support the districts in repair and construction work that require engineering skills and heavy equipment. Such work should predominantly be done on a contract basis, using funds from the districts. This has been successfully experimented with in Tanga.

(d) Offer maintenance services for equipment, logistic support and technical advice for TRM and others in the region on a commercial basis, and train/assist TRM with mechanics.

(e) Upgrade an agreed, limited network of essential roads to a maintainable standard. The length of the network should be different in the two regions, since more roads have been rehabilitated in Tanga than in Mbeya.

(f) Maintain a network of rural roads which would eventually be reduced as the districts build up their capacity for road maintenance.

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[1] RDD : Regional Development Director
RE : Regional Engineer
RRE : Regional Roads Engineer
MCW : Ministry of Communication and Works

(g) Reduce the technological level used for the maintenance of regional roads, by the introduction of simpler, low-cost equipment.

(h) A Women's Coordinator should be recruited in both regions, assistant to the RREs, and responsible for the monitoring, action plans and mobilisation required to increase women's participation in road works. The activities of the Women's Coordinator should have it's own budget.

36. Supporting women in development is one of the main aims in Norwegian development policy. If this aim is to have any meaning, it is of fundamental importance that external development projects are used to introduce changes in traditional socio-cultural patterns, e.g. by recruiting and training women in positions traditionally dominated by men. The issue of women's participation is taken too lightly both by RRM, the Coordinating Committee, and other Tanzanian institutions.

37. RRM should address the issue on several fronts: Through monitoring and follow up action/strategy; in its training and staff development programmes ensuring that a proportion of trainees employees be women; through mobilisation at Regional and District levels. The Coordinating Committee should follow a similar line at national and overall project level by making it an item on the agenda at every meeting.

38. RRM should improve its management procedures by:

- introduction of quantitative planning procedures;
- improved monitoring of inputs, especially costs and expenditures, and outputs at all operational levels;
- definition of a strategy for the promotion of greater participation by women;
- improving the handing-over procedures between expatriate staff joining and those leaving the project;
- unifying the procedures and standards used in the two regions.

39. The Tanzanian government for its part should be requested to show greater commitment to the road sector by:

(a) defining a clear national road policy;

(b) detailing specific measures to tackle those institution building aspects that can only be effected by government, e.g. accountability, incentives, procedural flexibility, etc.

(c) allowing RRM the flexibility to experiment - in the context of pilot projects and pending review of the results before wider implementation - with casual labour wage rates, wage payment systems, and improved tools and equipment.

SECTION 1

THE BACKGROUND, IMPLEMENTATION AND STATUS OF THE PROJECT

CHAPTER 1
INTRODUCTION

1.1 BACKGROUND TO THE EVALUATION

The Rural Roads Maintenance (RRM) Project in Mbeya and Tanga regions was initiated in 1979, in response to a request made by the Government of Tanzania (GOT) in 1977. The project is based upon a pre-feasibility study in 1977. Project reviews were carried out in 1980, 1982, 1983, 1984, 1985 and 1987. In 1987, after 8 years of operation it was decided to undertake a comprehensive and independent evaluation of the project. The Terms of Reference for the evaluation is included as Appendix 1.

It was decided that the evaluation should cover the whole period 1979-87, but to a large extent should focus on the changes in the project design introduced in 1985.

After consultation with Tanzanian authorities, the following evaluation team was appointed by the Norwegian Ministry for Development Cooperation (MDC):

John D.G.F. Howe,	Transport Economist/Civil Engineer, Ph.D., Independent Consultant, Oxfordshire, U.K. (Team leader)
Knut F. Samset,	Civil Engineer/Sociologist, Independent Consultant, Oslo, Norway (Coordinator)
Ophelia C. Mascarenhas,	Geographer, Ph.D., University of Dar es Salaam, Tanzania
Kjell A. Solberg,	Civil Engineer, Independent Consultant, Asker, Norway

Further details are included as Appendix 2.

As part of the preparation for the evaluation a review and assessment of the available information was made, which resulted in a request to the project staff for additional information, and a background document was produced. These were used as major inputs to the evaluation work.

The Evaluation Team worked in Tanzania in the period November 15th-December 12th. The work included discussions with Tanzanian authorities at national, regional and district level; and project staff, labourers and other individuals directly or indirectly involved with the project. A large number of roads were inspected, and several visits were made to project sites, regional and district authorities, and various organisations involved in the transport sector in the two regions. In the period December 14 - 15, the Team Leader also attended the Transport Sector Donors Conference in Arusha. The itinerary for the evaluation,

Appendix 3, and the list of individuals met, Appendix 4, refer.

On December 11th, a meeting was held with representatives of Tanzanian authorities, NORAD and the Project Coordinator where the preliminary findings and recommendations of the Evaluation Team were presented and discussed.

1.2 ACKNOWLEDGEMENT

The Evaluation Team would like to express its appreciation for the helpful cooperation and good will it received from all individuals met with, and for the efforts by the project staff and individuals in the regions to provide the team with the necessary information. We should also wish to thank all those whose ideas and suggestions have contributed to this report. We are particularly grateful to all those in Tanga and Mbeya, Dar es Salaam and Norway who gave of their valuable time to ensure that the factual basis for this evaluation was as comprehensive as possible.

CHAPTER 2

ROLE AND DEVELOPMENT OF THE ROAD TRANSPORT SECTOR IN TANZANIA

2.1 RECENT DEVELOPMENTS

Since the present evaluation was initiated, three reports have been completed by the GOT which contain far reaching proposals for the way rural roads are financed, planned and administered. These reports are:

1. Agricultural Feeder Roads Study (AFRS), September 1987
2. National Transport Policy (NTP), December 1987; and
3. Transport Sector Recovery Programme (TSRP), December 1987

The AFRS and NTP reports were in effect the basis of the TSRP document which formed the foundation for 'The Transport Sector Donor's Conference', held in Arusha from 14-15 December 1987. A delegation from MDC/NORAD in Dar es Salaam, including the Evaluation Team Leader, attended the conference. Appendix 5 is an aide memoire summarizing the most important conclusions of the conference and the delegation's interpretation of these for the future of the RRM project.

It should be stressed that the TSRP contains only proposals, however, they do have the backing of all the main ministries involved[1]. The GOT has initiated further studies of these proposals which are scheduled to be completed by July 1988. They will then have to be formally approved by cabinet.

The two most important proposals in the TSRP are that:

i) The Ministry of Communications and Works (MCW) is to be responsible for the execution of all rural road development, rehabilitation and maintenance. This responsibility will be managed through a, newly created, Rural Roads Engineer (RRE) in each region;

ii) The rehabilitation and maintenance of rural roads should be limited to a 'Core Programme'. Under this programme:

   * No roads have been selected for rehabilitation in Tanga region

   * Some 194 km of road in Mbozi (164) and Kyela (30) districts of Mbeya region are to be rehabilitated.

   * Mbeya and Tanga's essential rural road networks will be

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1 The official minutes of the Conference (received 27 January 1988) reaffirm the GOT's commitment to the implementation of the action programme outlined in the conference document

reduced to 383 and 348 km respectively

* Other rural roads - outside of the "essential" category- will receive only "minimum maintenance to provide reasonable access". (This last phrase has not been defined and is probably not capable of precise definition).

It is not entirely clear how these proposals should be interpreted by NORAD in terms of the future of the RRM project. However, the following interpretation seems to be consistent with both the "Core" and RRM projects:

* No further roads should be rehabilitated in Mbeya or Tanga unless they form part of the core programme, or the economic benefits of doing so can be shown to exceed the costs by more than the opportunity cost of capital, currently 12 per cent.

* RRM should give greater emphasis to the maintenance of its existing network and develop a quantitative basis for the determination of maintenance priorities.

To place the radical nature of the proposals in the TSRP in context it is necessary to understand the role and development of the road transport sector in Tanzania and how the road maintenance trends evident in the country compare with those in similar developing countries.

2.2 HISTORICAL PERSPECTIVE

DEPENDENCY ON ROADS

Tanzania is to all intents and purposes totally dependant[1] on the road transport sector, particularly that operating on the regional and district road network, for the primary collection and distribution of agricultural outputs and inputs (ie. between village and co-operative, and co-operative and major collection/distribution centre). This dependence is equally true for the functioning of most commercial, government, welfare and social services. Thus, the poor performance of the road transport sector over the past decade or so has undoubtedly been a contributory factor in the decline of Tanzanian's economy since the mid - 1970's. A reduction in the quality and quantity of the road system, largely through inadequate maintenance, and in the size and efficiency of the vehicle fleet, due to an inability to fund replacements, have both contributed to the deterioration of the sector.

SHORTAGE OF RECOURCES FOR MAINTENANCE

According to the World Bank a broad indicator of the economic burden of road maintenance is the ratio of a country's road network length to

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1 Trucking is estimated to move over 70 percent of total domestic traffic (see Programme For Transport Sector Recovery: Report Prepared by the Government of Tanzania for The Transport Sector Donor's Conference. Arusha, December 1987.

gross national product (GNP), with an allowance for the lower traffic volumes in poorer countries. In 1984 the ratio for main roads ranged from 0.3 km per million dollars of GNP for Korea and 0.4 for Nigeria to more than 8.0 for Zaire and Botswana and 14.8 for Guinea - Bissau. For Tanzania the ratio was 11.9. Of the 36 countries with the highest ratio's 32 are in sub-Saharan Africa.

Even with the best management, these countries face the world's highest burden of road maintenance requirements relative to income and are likely to have lower than average maintenance. Such has proved the case in Tanzania. Available statistics suggest declining real expenditures on road maintenance throughout the late 1970's and early 1980's.

CONCENTRATION OF RESOURCES ON CONSTRUCTION

As in the case in much of sub-Saharan Africa, the condition of an already poor network was worsened because of the over-emphasis on trunk road construction, at the expense of maintenance, in the 1960's and early 1970's. With continually increasing traffic and axle loads a huge backlog of expensive periodic maintenance was created. Much of this - resealing and overlaying of bitumen surfaced pavements - had a very high overseas expenditure component, precisely when foreign exchange was in greater shortage than at any time in Tanzania's history. The result of this neglect is that the condition of most rural roads in Tanzania is poor and transport to villages is both difficult and costly. In many areas transport can be largely restricted to the dry season. Similarly, the trunk road network has deteriorated to such an extent that only about 40 per cent is in good condition, severely increasing the cost of transport and curtailing the movement of goods.

THE TRANSPORT SECTOR RECOVERY PROGRAMME

The essence of the proposals in the TSRP is to try to halt the long decline in the quality of the trunk and rural road networks by increased GOT and donor allocations for road rehabilitation and maintenance. The financial allocations to implement the Core Programme for rural roads are scheduled to total USD 16 million over the next five years. This will require an increase in the annual public investment budget of the Ministry of Local Government and Co-operatives (MLGC) and the Prime Minister's Office (PMO) by 12 per cent, or a 1.3 per cent increase in the total public sector investment programme.

To protect these roads from deterioration, it is estimated that the annual budget allocation for maintenance of essential Core Programme roads will need to be increased to USD 175 per km in real terms (or about USD 1-1.8 million per annum). In addition, annual budget allocations to provide minimum maintenance of the remaining 40,000 - 44,000 km of rural roads will need to be increased from USD 66 per km to USD 88 per km in real terms (or about USD 4.5 million per annum). The level of recurrent budget required to sustain this level of maintenance is about USD 5.5 - 6.3 million per annum over the next five years; requiring a 7 per cent increase in the MLGC and PMO recurrent budgets, or a less than 0.7 per cent increase in the total Government recurrent budget.

PRESENT ECONOMIC CONSTRAINTS

The GOT has given an undertaking to consider these proposals sympathetically,[1] but it is not clear whether it will be able to respond as proposed. Since the late 1970's the GOT has had virtually no freedom to increase expenditure in the road transport sector due to a steadily worsening trade gap which reached its highest value ever in the last year, 1986, for which statistics are available[2].

The Gross Domestic Product did increase in 1985 and currently is estimated to be growing at between 3.0 and 4.0 per cent. However, Tanzania is not expected to be able to reduce its trade gap significantly until well into the 1990's[3]. Thus, funds for road improvement and maintenance are only likely to be increased, in real terms, if it proves possible to cut allocations to other sectors of the economy. The GOT may well be able to do this in the short-term, so as to satisfy the requirements of the Core Programme, but in considering likely future levels of road maintenance expenditure, two further factors need to be borne in mind:

i) it is not clear if the deterioration of Tanzania's trunk road network has yet peaked. If it has not then allocations to rural roads are likely to be adversely affected;

ii) even at the new (increased) levels proposed in the Core Programme expenditures for maintenance and improvement are relatively modest by internationally comparable standards[4], and may well imply a continuing deterioration of the network.

On balance it does not seem prudent to plan on the basis of any significant increase in the real value of resources to the rural roads sector.

VEHICLE SERVICES

Without maintenance roads deteriorate. As they do the cost of operating

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1 Speech by Mr. Gilman Rutihinda, Principal Secretary for Finance, Economic Affairs and Planning, to the Transport Donor's Conference on "State of the Economy" Arusha, December 14, 1987.

2 The gap was - 937 mill TAS in 1976 and then rose to an average of about - 5300 mill TAS between 1978-83. In 1984 it rose to - 7,200 and then accelerated to - 12,130 in 1985 and - 19,476 mill TAS in 1986. Exports in 1986/87 were, as in 1985/86, just a third of the value of imports

3 IBRD Consultative Group Meeting for Tanzania. Paris, July 1987.

4 SCHELLING, D. Project Co-ordinator KURRP. Some Comments on Rural Roads. Report for Transport Sector Donor's Conference. Arusha, 1987.

vehicles rises and eventually services start to withdraw. If the vehicle fleet is simultaneously contracting then a "sellers market" is created in which only the more favourable (urban) areas and (main) routes receive any services at all.

The decline in the quality of the road network has been mirrored by a reduction in vehicle services largely because of an inability to replace an ageing fleet or to keep vehicles on the road due to shortages of fuel, tyres and spare parts. The World Bank estimates that from 1975 - 1985 freight movement by road declined by 2 per cent per annum, roughly a 22 percent drop overall.

Rural areas appear to have suffered the most from the overall decline in the road transport sector. Available road maintenance resources have naturally been concentrated on the major routes, and most of the village and even district class roads have received little or no maintenance at all.

The reduction in transport services, both in general and in rural areas in particular, has been exacerbated by GOT policies which have:

i) allocated disproportionate amount of spare parts and tyres to the relatively inefficient government and parastatal trucking sectors, at the expense of the more numerous and efficient private sector[1] ;

ii) regulated transport service tariffs in a way which offers no incentive for vehicle operators to accept the rougher operating conditions on regional and district roads compared to those on the trunk routes and in urban areas.

It is only in the last year or so that moves to reverse these GOT policies have been initiated

2.3 ROLE OF THE ROAD TRANSPORT SECTOR

The AFRS argues that transport though a bottleneck, is not the sole cause, nor the primary cause, behind the current problems of agricultural marketing in Tanzania. In some instances, the problems of storage, inefficient agro-processing, financial management, pan-territorial and pan-seasonal pricing etc. overshadow the problems caused by costly or inadequate transport.

This statement is important because it may help to restore a sense of perspective. There is a near global tendency - widely expressed in Tanzania too - to assume that roads by themselves will provide the 'catalyst' around which development takes place. Available evidence shows this not to be so. In some cases they may be strategic, in many others they are not. Belief in the catalytic effect of roads very often leads to an over-emphasis on construction, at the expense of mainten-

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1 World Bank, Efficiency of the Road Transport Industry, Eastern and Southern Africa Regional Office, Transport Division. December 1985

ance.

Given that the road sector in Tanzania can expect little significant increase in real resources for the foreseeable future it is even more imperative than normal that those available be used to the best effect. This requires that all investment decisions, whether for maintenance or rehabilitation, be made only on the basis of a rigorous analysis of real economic costs and expected benefits[1]. This is not in general the case at present. In many programmes, including the RRM project, priorities are selected on an essentially subjective basis. This is unnecessary, since analytical tools[2] exist to enable optimum maintenance strategies for a network to be worked out even under conditions of severe budgetary restraints.

2.4 THE ROAD SECTOR IN MBEYA AND TANGA REGIONS

Against the foregoing background how has the road transport sector in Mbeya and Tanga regions fared? So far as road maintenance and rehabilitation is concerned probably substantially better than any other region in the country. Table 2.1 shows the allocation of funds through the Prime Ministers Office to the regions for road improvement and maintenance from 1981/82 to 1987/88. It shows that, per km of road, Mbeya and Tanga received substantially more than the national average each year, and were particularly fortunate with funds for development expenditure. Expenditure per km was between 44 and 118 per cent above the national figure with an average over all years of 84 per cent above. Only in Morogoro[3] in 1981/82, 1985/86 and 1986/87, and in Rukwa in 1985/86 did any region receive more per km than either Mbeya or Tanga. The statistics also show that the national average expenditure on development programmes was 44 per cent of the total. In Mbeya and Tanga it was 58 and 56 per cent respectively.

It is important, however, to keep even the Mbeya and Tanga figures in perspective. A recent World Bank report estimates that effective routine and periodic maintenance for gravel roads can be carried out for USD 1200-3500 per year, and USD 100-1000 per year for routine maintenance on earth roads. Taking the RRM network proportions of 20 per cent with a gravel and 80 per cent with an earth surface and the lowest limit of these costs this equates to a 'required' average cost of TAS 25,600 per km.

In 1987/88 all the regions of Tanzania received an average of TAS 11,590 per km or 45 per cent of requirements. However, both Mbeya and Tanga received close to the recommended figure. More realistically assuming the mid-point of the World Bank cost ranges the required average cost per km would be TAS 72,800 per km, so the 1987/88 allocation was only 16 per cent of requirements.

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1 All roads selected for the 'Core Programme' were subject to a detailed cost-benefit analysis.

2 Such as the World Bank's Highway Design Model

3 This is in receipt of foreign assistance for road improvement and maintenance from the Swiss and Irish Governments.

In addition, only a limited part of each region's network is presently in a condition which could be called maintainable; much requires rehabilitation at any average cost of perhaps 300-400,000 TAS per km. Lastly there is evidence that the financial condition of most District Councils is so dire that much of the funds allocated for road maintenance are actually spent for other purposes such as paying staff salaries.

Based upon available statistics, it would also seem that the procedures for allocating funds to regions do not have any obvious rational basis. There seems, for example, no evident justification for the fact that in 1983/84 Tanga was allocated four times as much per km as Arusha or that the spread about the mean of TAS 4,046/km was as great as the average itself.

So far as vehicle services are concerned Mbeya and Tanga's positions, relative to other regions, are more difficult to judge because of inherent problems with available data[1]. According to estimates truck capacity per capita was the second highest in Tanga and the eighth highest in Mbeya out of all regions excluding DSM[2]. This suggests that given the superior condition of their rural roads, both regions had among the best transport services in Tanzania.

2.5 CONCLUSIONS

Figures indicate that both regions have been in receipt of funds for road improvement and maintenance at a level which the GOT has not been able to sustain for all regions. The implication is clearly that this was a direct result of the RRM project which was, and is, easily the largest foreign funded assistance to the regional and district road networks.

There are likely to be significant changes in the way rural roads are administrated within the next two years. These changes will probably have a major effect on RRM's operations and the role it is expected to play in the rural roads sector. Present uncertainties make it particularly difficult to evaluate RRM's recent and present trends, and the proposals it has made for the future.

A more efficient rural roads sector is obviously an important component of Tanzania's Economic Recovery Programme (ERP). Financial limitations dictate that road rehabilitation and major maintenance operations be limited to those agricultural areas that can be expected to contribute to the ERP. The firmly economic basis to the rural roads element of the TSRP indicates that the RRM project should not continue to base its investment decisions on subjective engineering grounds, but on a comparison of expected costs and benefits.

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1 The only available data are vehicle licencing statistics. The fact that a vehicle is licenced in a particular region is of course no guarantee that it is only used there, but it is the best indication available.

2 World Bank, Efficiency of the Road Transport Industry,

Table 2.1 Expenditure on Regional and District Road Maintenance 1981/82 - 1987/88

Year	TANZANIA			MBEYA REGION			TANGA REGION		
	Total Expenditure (1000 TAS)	of which Development Expenditure (per cent)	Expenditure per km (1000 TAS/km)	Total Expenditure (1000 TAS)	of which Development Expenditure (per cent)	Expenditure per km (1000 TAS/km)	Total[1] Expenditure (1000 TAS)	of which Development Expenditure (per cent)	Expenditure per km (1000 TAS/km)
1981/82[a]	240,493	41	3,345	25,035	56	6,983	17,762[1]	67	5,263
1982/83[a]	280,607	39	3,805	35,309	71	9,849	24,892[1]	60	7,375
1983/84[b]	292,401	38	4,066	26,054	54	7,268	29,834[1]	57	8,840
1984/85	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a	n.a
1985/86	441,084	41	6,092	34,956	54	9,751	34,786[1]	46	10,307
1986/87[2]	567,854	63	11,482	123,183	81	34,360	55,839[1]	55	16,545
1987/88	828,649	45	11,590	83,025	48	23,159	85,567	50	25,353

a = Actual
b = Budgetted

Source: ILO and PMO

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[1] RRM sources suggest figures of 17,329; 18,495; 27,371; 21,032; and 72,835 respectively based on vote book expenditures.
[2] Incomplete; data for 14 regions only

CHAPTER 3

PROJECT BACKGROUND

3.1 TAN 010 THE ROAD BETTERMENT UNIT

Norwegian involvement in the road sector in Tanzania started in 1972 with financial and technical assistance to the construction of rural roads in Rungwe district (Mbeya) and Lushoto district (Tanga). The initiative was part of a larger programme designed to strengthen the local economy through the development of agricultural production, particularly of tea. In the period 1972-1978, 182 km of gravel roads were constructed in Mbeya, and 338 km in Tanga. The main justification for the project was the impact on export production, since both districts were among the main tea producers in the country. Total expenditures were NOK 42 mill. (current prices) and the technical assistance component was 9 man-years per year.

During the construction period, completed roads were maintained by the project. It was felt, however, that the existing organization responsible for maintenance might not have the capacity to take over the large number of roads that had been constructed. A study was therefore done in 1977 of the existing maintenance system for rural roads in Tanzania.

3.2 TAN 036 THE RURAL ROADS MAINTENANCE PROJECT (RRM)

As a result of the study and discussions with Tanzanian authorities the RRM for Mbeya and Tanga regions was designed. It was initiated 1979 and has been guided by the following agreements:

1. Agreement, 1979, NOK 27.8 mill.
2. Agreement, 1982, NOK 27,3 mill.
3. Agreement, 1983, NOK 21,5 mill.
4. Agreement, 1984, NOK 30 mill.
5. Agreement, 1985, NOK 7,95 mill.
6. Agreement, 1986, NOK 120 mill.

Agreement 1 and 2 covered procurement of equipment, machinery and operational expenditures for the maintenance of the road network. Agreement 3 included the construction of a road station with a workshop in Mbeya. Agreement 4 included operational expenses for 1984 and 1985. Agreement 5 included operational costs, technical assistance and consultancy services for the period 1986-1989.

In the first four agreements, the expenditures related to technical assistance were covered outside the agreements. The fifth agreement

covers technical assistance for 1985-86. From 1986, onwards, these costs were included in the budget, totaling NOK 32,5 mill. for the period 1986-89. In the period 1979-85 the technical assistance component was 70 man-years.

Tanzania's contribution to the project is represented by the normal budgets for rehabilitation and maintenance of the rural road network. It has been of the same order of magnitude as NORAD/MDC's in the period 1979-83. However, there has been a sharp increase in the external, as compared with local, inputs since 1985, partly as a result of the devaluation of the Tanzanian currency.

3.3 OBJECTIVES OF THE RRM PROJECT

The initial objectives proposed for the project in 1977, were:

> "Establish an organization for improvement and maintenance of roads, with its manpower, equipment and various facilities. This organization should be capable of handling the tasks of the near future (next five years), and at the same time be a sound basis for future expansion".

The following guidelines were suggested:

i) Identify which roads or sections of roads are in a condition which is maintainable.
ii) Establish routine maintenance of all roads identified as maintainable in order to stop further deterioration. Attention should especially be paid to control of water erosion.
iii) Improve roads already deteriorated beyond maintainable standard.
iv) Establish routine maintenance on roads which have been improved
v) Improvement/reconstruction of roads should only be carried out if there are available resources to maintain them.

In the first bilateral agreement the guidelines were adopted as above, and the main objective was expressed as follows:

> "The main objective of the Programme is to strengthen the Regional and District Administrations in Tanga and Mbeya as to the implementation, planning and budgeting of maintenance and upgrading of rural roads.
>
> The Programme puts emphasis on maintenance. It is a main objective to obtain balance between upgrading and maintenance inputs. Maintenance of roads of adequate standards and newly improved roads will be given priority. Upgrading and constructions of new roads shall be limited to the capacity to maintain them".

In the subsequent three agreements, the first Paragraph above was retained as the main objective.

In the sixth bilateral agreement of December 1986, the primary objective was changed, and expressed thus:

"The primary objective of the Programme is to develop a new functional institution at the regional level responsible for and capable of carrying out maintenance and reconstruction of the regional road network."

It was stressed that particular attention should be paid to training at all levels, the introduction of more labour-based methods, and physical road maintenance.

An aim of the project was to reduce the dependency on foreign inputs, generate job opportunities and gradually transfer the responsibility to the Tanzanian staff. Important sub-targets quoted in the project agreement are:

- "to provide the regional roads administration with well-qualified personnel at all levels through formal training and on-the-job experience.

- establishment of routines and introduction of methods for maintenance of regional roads that will lead up to an optimal balance between use of equipment and manual work

- implementation of road maintenance activities suitable for the regional road network, which is to be defined by Tanzania in consultation with Norway. The lengths of the regional road network shall reflect the economic and practical capability of the regions to carry out maintenance by themselves in the future."

The purpose of the project has therefore, from its start in 1979, been dual:

to establish sustainable institutions that can function without assistance from outside.

to conserve the road capital in the regions.

3.4 ORGANISATIONAL LEVEL

When the RRM project was initiated it was organized as a regional project, but with a focus on building up maintenance capacity in the districts. However, it was found that the districts were not capable of operating heavy machinery effectively, and in 1984 all equipment they had been supplied with by the RRM project was transferred to the regional workshops.

The project at present focuses on building up a road administration at regional level. The main activities have been:

- the establishment and operation of units for periodic maintenance, including rehabilitation of roads and bridges.

- a training programme for mechanics. Other categories of personnel have been trained partly "on the job" and partly in existing

institutions in Tanzania.

- establishment of administrative routines for budgeting, accounting and reporting.

- establishment of a new workshop in Mbeya.

Previously, there has been extensive use of machinery in the project. Under the present agreement a shift from machine based to labour based maintenance is being emphasized. Close links with ILO have been established in order to promote this.

At present there are 8 NORAD recruited experts in each region, and a project coordinator working under the Prime Minister's Office in Dar es Salaam. His job is to follow up project activities, coordinate between the two regions, and establish links with the central administration.

The project has been subject to 6 project reviews by NORAD/MDC in the period 1980-87, which is commendable. However, these review missions have been put together with very low participation of Tanzanians and of women. Fig. 3.1., below, refers. The professional bias of the review missions and their failure to address problems related to national policy and development issues may be further explained by the fact that no less than 90 per cent of the Norwegian team members of the review missions were engineers. Further reference is made to chapter 16, below.

Fig. 3.1 Participants in feasibility study and project review teams

Mission	Team members	of which were Engineers	Tanzanians	Women
Study 1977	4	3	1	0
Review 1980	6	3	2	1*
Review 1982	4	3	0	1
Review 1983	6	4	1	0
Review 1984	4	4	0	0
Review 1985	4	3	1	0
Review 1987	4	4	0	0
Total	32	24	5	2

* Responsible for "logistics and catering" Ref. project review report.

CHAPTER 4
IMPLEMENTATION AND PROGRESS

4.1 PROGRESS AND OUTPUTS

Assessment of the progress of RRM is based on the activities specified in the agreements and the outputs achieved in practice. The first four agreements, covering the period 1979 to 1985, give emphasis to the following activities:

- Upgrading and maintaining the rural roads in the two regions;
- Training, through practical work (i.e. on the job training).

The above activities should lead to the following results or outputs:

- Strengthened regional and district administrations in Tanga and Mbeya with regard to implementation, planning and budgeting of maintenance and upgrading of rural roads;
- Rural roads network which was upgraded and maintained to an appropriate standard;
- Tanzanian personnel of increased capability.

The sixth bilateral agreement (1986) gave a more specific list of activities and expected outputs. The activities were:

- Training (formal and on-the-job) at all levels
- Introduction of more labour-based methods
- Establishment of routines/methods for optimal balance between the use of equipment and manual work
- Maintenance of a regional road network (whose extent was) to be defined by Tanzania/Norway.

The planned outputs were:

- A functional institution at the regional level responsible for and capable of carrying out maintenance and reconstruction of the regional road network.
- A maintained regional road network of appropriate standard.
- Reduced dependance on foreign inputs
- More job opportunities
- Gradual transfer of responsibility at all levels from expatriate staff to qualified Tanzanian personnel

Since the first four agreements were based on identical objectives, activities and outputs, and the sixth agreement was based on slightly different activities and outputs it is logical to analyze progress and outputs in two distinct periods:

Period 1: 1980/81 - 1985/86 (i.e. first four agreements) and
Period 2: 1986/87 - 1987/88.(i.e. first part of sixth agreement)

It is accepted that the second period is too short to provide much indication of progress with the fifth agreement.

The broader aims of both periods - institutional development, increasing Tanzanisation of the project, greater use of labour and thus less of equipment and foreign exchange - will be discussed in Sections 2 and 3 of the report. We concentrate here on the more physical indications of progress: training and actual road improvement and maintenance.

4.2 TRAINING AND STAFF DEVELOPMENT

Up to September 1987 training activity has been as follows:

Table 4.1 Training activities Mbeya 1979-87 (Man-months)

Categories trained	RRM	Other Inst.	Totals
Mechanics, welders and other workshop skills	311	357	668
Plant operators and drivers	10	21	31
Administrative staff		77	77
Road inspectors, foremen	5	225	230
Other		12	12
Total	326	692	1018

Table 4.2 Training activities Tanga 1979-87 (Man-months)

Categories trained	RRM	Other Inst.	Totals
Mechanics, welders and other workshop skills *	621	145	766
Plant operators and drivers			
Administrative staff		12	12
Road Inspectors, foremen **			
Total	621	157	778

* No systematic training
** Training just started

As shown in table 4.1 and 4.2 nearly 80% of the training activity has been devoted to mechanics and other workshop skills, and so far has not resulted in the replacement of any of the positions held by expatriates. The lack of priority given to staff development has been pointed out in several project reviews.

In 1985 it was decided to rectify this situation. A separate training division, with sole responsibility for staff development, was established. The principles adopted in the staff development strategy can be summarized as follows:

- To adhere to the formal requirements specified in the GOT Schemes of Service
- To use relevant training institutions in Tanzania to give the required qualifications for the candidates
- To use the RRM training facilities to give the candidates improved capability in executing their duties

4.3 ROAD IMPROVEMENT AND MAINTENANCE

Throughout the RRM project emphasis has been put on maintenance of existing roads. Up to 1985/86 it was stated that 'appropriate' improvements should be made but these were not defined other than by the requirement that they, including the construction of new roads, should be limited to Tanzania's capacity to maintain the roads.

Reported road improvement and maintenance outputs have been as follows:

Table 4.3 Physical output Mbeya

Task	Period 1		Period 2	
	80/81 - 85/86 total output	average per yr.	86/87	87/88 Estimate
Improvement/constr.(km)	216	36	32	25
Regravelling (km)	401	67	102	40
Grading, light (km)	1301	216	472	700
heavy (km)	10088	1681	1190	1450
Bridges, constructed	17**	6	2	6
repaired	95**	32	57	16
Culverts installed	305*	75	143	120

* applies to 4 years only
** applies to 3 years only

Table 4.4 Physical output Tanga

Task	Period 1		Period 2	
	80/81 - 85/86 total	per yr.	86/87	87/88 Estimate
Improvement/constr.(km)	288	48	117	82
Regravelling (km)	554	92	91	40
Grading (km)	9278	1546	1346	1630
Culverts installed (nos)	129	22	143	100

Since 1985/86 the improvement activity has been rather moderate in Mbeya in comparison with that in Tanga region. The difference in total output for the two regions can be attributed to:

- less plant in working condition in Mbeya at present;
- difficulties in finding gravel sources in Mbeya (resulting in long transport distances);
- more resources have been allocated to emergency tasks and bridge repairs in Mbeya than Tanga. This is however partly caused by the poor structural quality of sections of the road network.

As far as other maintenance activities (gravelling, grading, etc.) are concerned, the outputs are comparable in the two regions.

The previous activities can obviously be expected to have affected the condition of the road networks in the two regions in a positive way. At the same time the same network has been subjected to deterioration caused by traffic and climatic factors. The crucial question is whether the condition of the roads in the region has changed for the better or the worse during the project period, i.e.:

- Has the structural quality of the rural roads network been improved, i.e. has the length of engineered gravel roads increased, drainage been improved, etc.?
- Has the surface quality, which has a major influence on vehicle operating costs, been improved.

One available indicator of the development in structural quality is the extent of the gravel road network in the two regions:

Table 4.5 Structure of the rural road network (km)

Type of Road	Tanga Region 1979	Tanga Region 1986	Mbeya Region 1979	Mbeya Region 1986
Gravel Roads	670	556	330	536
Earth Roads	1395	1557	1956	1416
Total	2065	2113	2286	1962

The source of the 1979 figures are project review documents. The origin of these is unclear. The 1986 figures are based on the road inventory carried out in the two regions. The figures make very little sense. We find it hard to believe that there has been a net deterioration of 114 km of gravel roads in Tanga in spite of more than 300 km of improvement to gravel standard in the same period. Some deterioration is known to have been taken place in the Handeni district but this does not explain the above figures. The figures for Mbeya make more sense.

RRM also make general, subjective, assessments of the condition of their networks which can be taken to reflect surface quality. The assessments - good, fair, poor, - are explained in detail in Appendix 6. Tables 3 and 4 of Appendix 6 show that there has been a steady improvement in the proportion of both networks in the good and fair categories, with a corresponding reduction in the length considered to be in poor condition

4.4 CONCLUSIONS

Available data does not provide a very satisfactory record of physical project outputs particularly for the earlier years. The various output categories have in some cases changed over time. Some are not clearly defined or the information is too aggregated. This makes it difficult to relate project outputs to inputs, and in general manage the project efficiently.

Training outputs clearly reflect the bias towards equipment-intensive methods in the earlier years of the RRM project and the neglect of senior staff development and hence progress towards Tanzanisation. The stated goal of training at "all levels" has yet to be fulfilled.

The information on various categories of maintenance outputs are somewhat contradictory. The available statistics indicate that:

i) The outputs of the project since 1979 are comparable in the two regions;

ii) The output of most maintenance tasks has increased since the

project was reorganised in 1986. Tanga has had the most significant increase.

During the whole period since 1979, the emphasis has been on road improvement, rehabilitation and periodic maintenance, and much less on establishing systems for routine maintenance as envisaged in the project agreements.

CHAPTER 5

MAINTENANCE ORGANISATION

5.1 CHANGES IN THE ORGANISATION OF THE ROADS SECTOR

Since independence in 1961, the organisation of the road sector in Tanzania has been subject to a number of changes and from the 1980's has not been consistent throughout the country. The many changes stem primarily from the GOT decision to move away from a centralized policy of administration, which was predominant in the 60's, to a more decentralized policy in the 70's and 80's. Over the years, also, donors and lending agencies have contributed to the changes and inconsistencies. The evolution of the present lines of responsibility is shown in Table 5.1

Table 5.1: Changes in formal responsibilities in the roads sector in Tanzania.

Period	Trunk roads	Regional roads	Regional workshops	District roads
1961-69	MCW	MCW	MCW	DA
1969-72	MCW	MCW	MCW	MCW/DA
1972-79	RA/MCW	RA	RA	RA/DA
1979-82	MCW	RA	RA	RA/DA
1982-86	MCW	RA	RA	DA
1986-	MCW	RA	MCW	DA
Proposed	MCW	RA/MCW	MCW	DA/MCW

Source: Agricultural Feeder Roads Study, 1987

Legend: MCW = Ministry of Communications and Work
(before 1984: Ministry of Works)
RA = Regional Authorities
DA = District Authorities

In the first 10 years after independence, trunk and regional roads were under the MCW, and district and feeder roads under the District Authorities. Following the Decentralisation Act of 1972, the regional

administrations took over financial responsibility for virtually all road activities. In 1979 MCW regained full responsibility for trunk roads. The last major change followed the Local Government Act of 1982 which extended the decentralization process to the district level. The purpose of the act was to give more power to the districts in planning and implementing activities. New organisational changes are again being considered as described in chapter 2 and Appendix 5.

Currently three Ministries are involved in the roads sector at Central Government level. They are the:

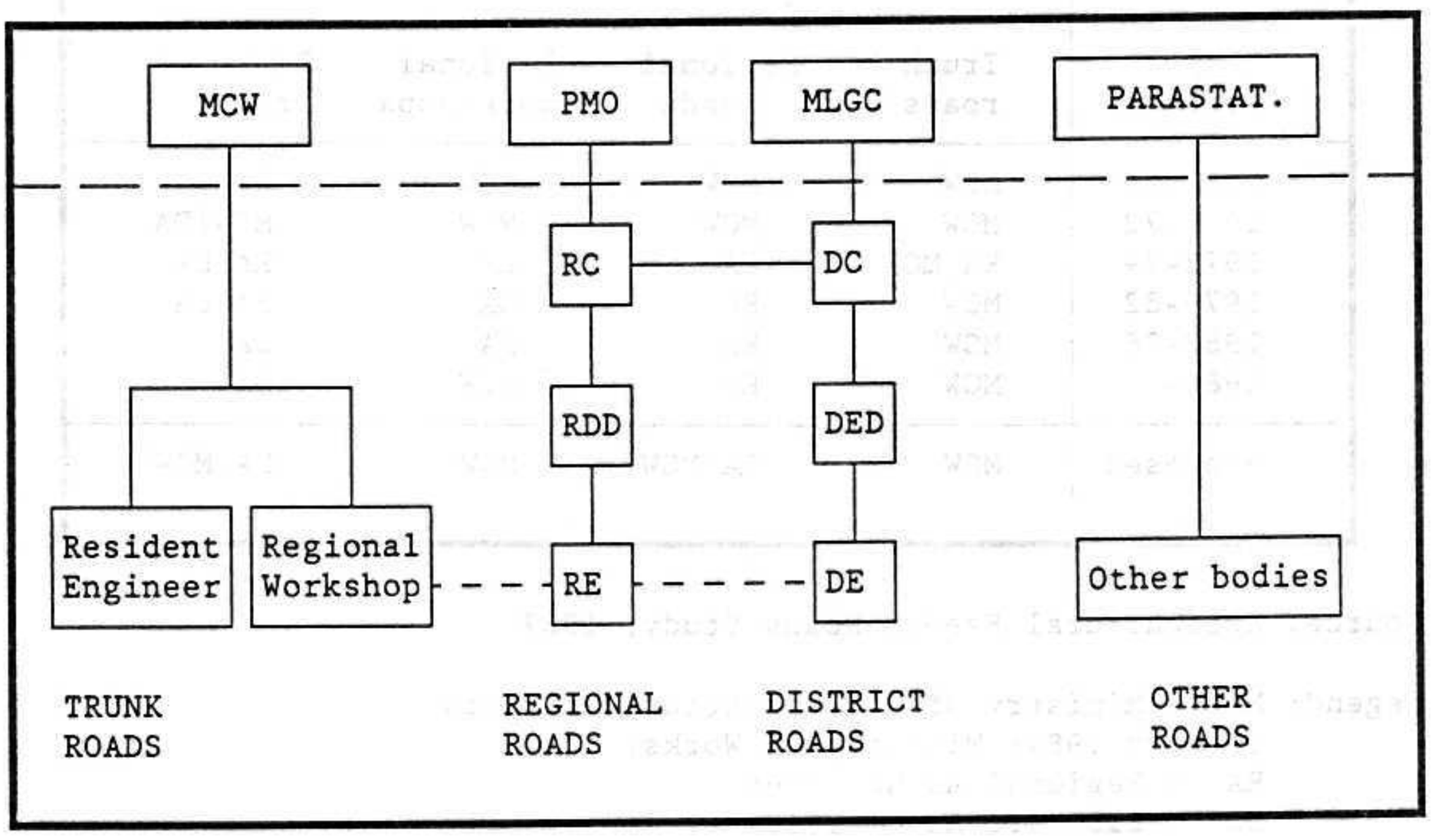
- Ministry of Communication and Works (MCW) which is responsible for the trunk road network, i.e. roughly 10000 km of main roads.

- Prime Ministers Office (PMO) whose role is mainly in the area of coordination and planning. The implementation of road maintenance activities on the regional network is delegated to the regional administration.

- Ministry of Local Government and Cooperatives (MLGC) which is responsible for activities at district level. Funds now come to the districts directly through the MLGC. In addition, District Councils can generate their own income through levying local taxes.

At the regional and district level road activities are organised as indicated in Figure 5.1.

Figure 5.1: Road organisation at the Regional and District Level. (Simplified)



RC = Regional Commissioner
RDD = Regional Development Director
RE = Regional Engineer
DC = District Council
DED = District Executive Director
DE = District Engineer

The MCW is represented in each region through a Resident Engineer who is in charge of the trunk roads.

The regional organisation is headed by a Regional Commissioner who is politically appointed. The chief executive officer is the Regional Development Director (RDD) who is in charge of all functional officers including the Regional Engineer (RE). The RE is responsible for roads, buildings, and mechanical and electrical services.

At the district level, the District Council is the most important body. It is empowered to raise funds and formulate development policies. The District Executive Director is a District Council employee and is the accounting officer. The duties of the District Engineer (DE) are comparable to those of the RE, i.e. responsible for roads, buildings and mechanical and electrical services.

Finally, roads are also constructed and maintained by other bodies in the region such as the parastatals responsible for marketing of agricultural products. These bodies, which include the Tanzania Tea Authority, Tanzania Coffee Marketing Board and the Pyrethreum Board, operate independently and outside the administrative systems described above.

5.2 EVOLUTION OF THE ORGANISATIONAL MODEL.

THE FIRST PERIOD 1979 - 84

When the RRM project started in 1979, the DE was the key person in constructing and maintaining all rural (i.e. regional and district) roads. The line of command was:

Regional Development Director
|
District Development Director
|
District Engineer

The RE only had an advisory function for road works. Through discussions with district and regional authorities it was agreed that the organisational setup was a constraint on the efficient execution of road maintenance. A direct line of command from the Regional Engineer to the District Engineer was established and the responsibilities were shared as follows:

- Routine maintenance,such as grading and minor repairs were carried out from the district level.
- Periodic maintenance,such as regravelling, major repairs and rehabilitation of existing roads were carried out directly from the regional level.

To enable the districts to carry out their responsibilities, each was equipped by the RRM project with a grader, two tippers and various hand-tools. The regional road administration was equipped with heavy plant for the following:

- road improvement unit;
- regravelling unit; and
- bridge and culverts unit.

The experience in the RRM project of splitting responsibilities between the districts and the regions was viewed differently by the different parties. The district officials were satisfied with the arrangement. They were directly involved in the project and felt that the regional authorities benefited from their presence since they carried out routine maintenance and assisted in the supervision of activities on the regional network. During the period 1979-85 there were, in principle, regular quarterly meetings between regional and district authorities to discuss plans, budgets and progress.

The management of RRM felt that routine maintenance was neglected by the districts and that many resources were in fact misused. A major reason why the districts failed to fulfill their obligations was caused by the lack of logistical capability and poor communications. The districts were not able to convey problems such as lack of diesel, breakdowns, etc. This led to low productivity and accelerated deterioration of the roads.

THE SECOND PERIOD 1985 - DATE

Following the Local Government Act of 1982, the districts became independent entities under the MLGC. Funds were no longer provided by the regional administration and the line of command between the Regional Engineer and the District Engineer was broken. These institutional changes, coupled with disappointing maintenance outputs by the districts, prompted NORAD to suggest the following organisational changes from 1985:

1. Full responsibility for the maintenance of regional and important district roads to be placed with the regional administration.

2. The regional roads sector to be separated from the Regional Engineers office and established as a new functional unit at the same level as the Regional Engineer and Regional Water Engineer.

NORAD's reasons for proposing the above changes were:

i) to create clear lines of responsibilities by dividing the rural roads network into:
   - regional roads where the Regional Administration would be solely responsible for improvements and maintenance;
   - district roads where the District Authorities would be solely responsible for improvements and maintenance.

ii) because of the dominance of the roads sector in the two regions, in terms of resources used, compared to the other technical sectors and consequently the need for strong professional leadership

The model which was proposed by NORAD was well known by the regional roads administration in Norway. It was argued that such a model would facilitate a more efficient execution of maintenance responsibilities. It was also felt that the organisational model, if successful, could be replicated in all the regions of Tanzania. It was however agreed with GOT that the organisational changes would be subjected to a test period of four years. It is not really clear whether this will end in 1989 as originally agreed or 1990 since implementation of the agreement was delayed from 1985 to 1986.

Some senior GOT officials have stated that the institutional changes made by NORAD were not appreciated. It was felt that the changes were aimed at satisfying the needs of NORAD and not the needs of GOT. The same officials stated that when NORAD's support is terminated, GOT will revert to the organisation model of other regions. This controversy is most unfortunate, however, NORAD have not been alone in their dissatisfaction with the previous system.

5.3 APPROACHES OF OTHER DONOR AGENCIES

The many organisational changes and the lack of a national policy for rural roads improvement and maintenance have led to the present situation where donor agencies and local authorities tend to develop different approaches to the organisation of programme execution. A summary of two of these approaches is given in Table 5.2. The situation has also led the World Bank to propose, and GOT to accept, the need for further changes as proposed at the Arusha Donors Conference. As indicated in Section 2 of this report the precise form of any new organisation is not yet decided, but the proposals are similar to the present RRM model in that they incorporate the concept of a Regional Roads Engineer, but who is answerable directly to the MCW.

If the above proposed changes should be implemented, it would lead to organisational changes in RRM. The unit would have to be integrated into the present regional organisation of the MCW. Furthermore, the servicing of all equipment would be centralised under the regional workshops of MCW.

5.4 CURRENT ORGANISATION OF RRM

In both region, RRM is headed by a Regional Roads Engineer (RRE). Each regional unit consists of five sections, each with separate plans and budgets. These are:

- Labour-based Maintenance section responsible for labour based road works including bridges;

- Machine based section responsible for routine and periodic maintenance and rehabilitation activities that are based on a substantial machine input;

- Administrative section responsible for accounting, procurement, wages and all administrative routines including budgeting;

Table 5.2 Summary of Swiss and Irish Experience in the Organisation of Rural Roads Projects

Kilombero and Ulanga Rural Roads Project

Region: Morogoro - Project is limited to Kilombero and Ulanga districts
Donor: Swiss Cooperation for Development

Objectives: 1. Rehabilitation of the rural road network
2. Strengthening of maintenance capacity

Justification: Agricultural potential

Organisational Aspects: The road rehabilitation part of the project has operated independently, but in close cooperation with the District Authorities. The maintenance part of the programme is partly integrated into the District Administration. A Tanzanian maintenance engineer is however engaged by the Swiss to supervise the programme in the two districts (salary: approx. 5 times GOT salary).

Technical standard: The original concept of rehabilitation through spot improvements proved not to be technically feasible. The cost of rehabilitation is estimated at 0.2 - 1 mill TAS for feeder, 1-3 mill TAS for district and 2-5 mill TAS for regional roads, exclusive of bridges, at present (November 1987) price levels.

Training: On the job

Kilosa District Rural Development Programme

Region: Morogoro - Project is limited to Kilosa District
Donor: Irish Development Programme

Objectives: 1. Rural development through roads rehabilitation and maintenance.

Justification: Support of integrated rural development project

Organisational Aspects: The programme has been administered as part of the local administration. The Irish road engineer works as an advisor to the District Engineer. The payment of workers has been stimulated by bonuses for tasks that are particularly strenuous.

Technical standard: The concept of rehabilitation through spot improvements has been followed. Some of the improvements have however proved to be inadequate and sections have had to be redone to a higher standard.

Training: On the job

- Workshop section responsible for plant and vehicle repairs for the other sections; and

- Training section responsible for defining training needs throughout the organisation, for developing manpower development programmes and for carrying out internal training programmes

MANPOWER AND PLANT RESOURCES

In October 1987 the staffing situation was as described in Table 5.3, and 5.4:

Table 5.3 Tanzanian Staff employed by the RRM project.

Category	Mbeya	Tanga	Total
Inspectors/foremen	35	17	52
Plant operators/drivers	39	44	83
Other skilled workers	51	123	174
Unskilled/casual labour	217	647 *	864
Project coordinator			1
Total	342	831	1163

* includes labour employed part time

The great difference in the number of people employed by the two regions can partly be attributed to their different wage levels for casual labour.

Table 5.4 Expatriate Staff employed in the RRM project

Category	Mbeya	Tanga	Total
Rural Roads Engineer	1	1	2
Administrative Cons.	1	1	2
Training Officers	3 *	2	5
Senior Roads Insp.	2	2	4
Senior Mechanic Insp.	1	1	2
Mech. Insp.	1		1
Total	9	7	16

* includes 2 ILO experts

The status of equipment at the time of the evaluation is summarized in Table 5.5

Table 5.5 Plant and Vehicle Fleet in the RRM project.

Category	Mbeya		Tanga	
	Total	% of time in working condition	Total	% of time in working condition
Light Vehicles	14	70	17	65
Tippers	18	65	14	70
Wheel Loaders	2	90	3	35
Graders	5	95	6	75
Dozers (D6)	2	25	3	65
Tractors	9	75	7	85
Traxcavators	0		2	50
Wheel Loaders	0		3	35
Heavy Trucks	1	95	0	
Trailers (tractor)	2	100		
Compactors	2	50	4	75
Drillwagon	0		1	100
Compressors	0		2	50
Crushers	1		2	60
Excavator (JCB)	0		1	60
Crane Wagon	1		1	80
Box Lorry	1		1	80
Low Loader	1		1	70
Tank Wagons (fuel)	1		2	100
Water Bowser	4	50	4	50

A calculation based on RRM's hire charges and the percentage of time plant is said to be in working condition leads to the conclusion that Tanga has a capacity which exceeds that of Mbeya by roughly 20%. In addition Tanga uses plant belonging to district administrations and state farms.

5.5 PRESENT BALANCE OF ACTIVITIES

The balance between road maintenance and institutional development work, including training, can be expressed by the following indicators:

FUNDS ALLOCATED

The allocation of funds in Table 5.6 is based on the budget for Tanga region in 1987/88. As shown, training comprises only 4 per cent of total project funds. The figures do not include the cost of expatriate staff.

Table 5.6 Distribution of expenditures 1987/88 Tanga region

Routine maintenance, spot improvements and bridge repair	21%
Periodic maintenance, improvements and heavy grading	36%
Administration	7%
Workshop	39%
Training	4%

TIME SPENT BY EXPATRIATE STAFF

Table 5.7 Distribution of time spent on various activities 1987. Expatriate staff

Description	% of time spent Mbeya	Tanga
NORAD matters (i.e. all matters related to NORAD as a donor agency) budgets, reporting	12	6
Contacts with central, regional and district auth. regarding planning, reporting, etc.	7	9
Institutional development and training (also on the job)	28*	33
Workshop and plant/vehicle matters, incl. procurement	19	15
Time spent on the roads incl. preparations for inspection, making programmes, etc.	14	21
Cost control, payments	12	10
Other matters	9	7

* Includes experts from ILO

The percentages in the Table 5.7 are based on estimates given by each of the expatriates for their usage of time in 1987. They are subjective and can therefore only be taken to indicate orders of magnitude. Roughly 30% of the total time is spent on some form of institutional development.

The figures indicate in Tanga, more time is given to contacts with regional authorities, institutional development and work on the roads than in Mbeya.

5.6 DIVISION OF RESPONSIBILITIES BETWEEN TANZANIAN AND NORWEGIAN AUTHORITIES.

According to the agreement between Norway and Tanzania it is the obligation of Tanzania to plan, administer and implement the programme in accordance with the schedule attached to the agreement. To enable Tanzania to carry out this task it is the obligation of Norway to provide funds and personnel as specified. In addition it is the obligation of Norway to assist Tanzania with various types of procurement abroad. To implement this agreement there are a number of organisations involved. Their responsibilities are summarized below.

RESPONSIBILITIES OF NORWEGIAN AUTHORITIES

NORAD Oslo

- defines objectives, long and short term policies and the necessary resource inputs to the project in consultation with Tanzania;
- defines routines for information and decision making;
- undertakes disbursement of funds; and
- undertakes the general administration and backstopping of the project, including budgeting, cost control, project reviews, participation in CC meetings, etc.

Norwegian Road Administration

- undertakes overseas procurement on behalf of NORAD;
- advises to NORAD on professional matters; and
- participates in project reviews.

NORAD Dar es Salaam

- liaises with NORAD/MDC Oslo and Tanzanian Authorities;
- follows up programme implementation.

RESPONSIBILITIES OF TANZANIAN AUTHORITIES

The Prime Ministers Office

Coordinates the programme through a Project Coordinator whose responsibilities include:

- secretary to the Coordinating Committee
- planning and reporting
- coordinating the procurement of goods from overseas
- monitoring the introduction of labour intensive working methods
- coordinating the setting of technical standards, traffic surveys, materials investigations in the two regions

The Regional Development Director implements the programme with the assistance of the Regional Roads Engineer and the RRM organisation.

The Coordinating Committee

The role of the Coordinating Committee is to coordinate the activities of NORAD, PMO, MCW and the regional authorities, and to monitor the implementation of the programme. In particular the Committee

- advises on budgets, work, staff development and equipment renewal plans;
- advises on reporting from the regions including financial and cost control and reporting related to the monitoring system; and
- requests necessary consulting services.

The Committee comprises representatives from

- Prime Ministers Office;
- Ministry of Communications and Works;
- Mbeya and Tanga Regional Administrations; and
- NORAD.

The Project Coordinator

The Project Coordinator (PC) is attached to the office of the Prime Minister and First Vice President. His responsibilities are to:

- assist the regions in coordinating activities between them;
- assist the RRE's in procurement of goods and services abroad; and
- act as the Coordinating Committee's Secretary.

5.7 CONCLUSIONS

Like other externally funded projects in rural road maintenance the RRM organisation does not conform to GOT practice. Whilst regrettable, and clearly counterproductive to efforts at institutional development, this situation has arisen partly as a result of frequent changes in organisational responsibilities for the road sector by GOT and partly due to the lack of a clear national policy for the roads sector. The intended actions resulting from the Arusha Donors Conference are designed to resolve current difficulties, but their present status is that of proposals and for RRM the organisational situation remains confused.

In the present situation, resources for rehabilitation and maintenance of rural roads are scattered among several institutions in the regions with limited expertise and resources. In order to secure better use of these resources, there is a great need for cooperation between these institutions.

A number of bodies are involved in planning, coordination and control of the RRM project at different levels. Interviews with individuals clearly indicate that there is a need to strengthen the communication and clarify the responsiblities between these in the future.

Questions related to policy and planning have been dominated by the Norwegian side. In a project which emphasizes organisational and technological change, and increased participation of women, it is particularly important that the Tanzanian side is fully involved and in

agreement with the policy.

The role and composition of the Coordinating Committee is important in this context, and needs to be reconsidered, since at present neither District Authorities, nor the Ministry of Local Government or the Ministry of Manpower is represented. The delegation of operational responsibilities should be clarified, and the role of the Project Coordinator and the Coordinating Committee largely limited to policy and overall planning.

CHAPTER 6
ROAD SELECTION CRITERIA

A basic problem in assessing 'the adequacy of criteria and procedures for selection of roads for maintenance or upgrading' has been the definition of the network to which such criteria and procedures ought legitimately to be applied.

In the 1977 pre-feasibility study no mention was made of which roads should be included in the project. Roads to be maintained and improved were to be selected from the following:

Table 6.1 Total network of rural roads assumed in the 1977 pre-feasibility study (km)

	MBEYA	TANGA
- Local main roads	853	1052
- District roads	1370	1122
- Unclassified feeder roads, tracks and access roads	*	*
	2223	2174

* Supposed to be at least equal in length to the district road network

The agreement in 1979 also did not mention which roads should be included. However, prior to RRM's involvement in 1979 responsibility for the maintenance of rural roads was charged to the regional administration aided by the District Engineer, but they had the option as to just which roads received regular maintenance grants. In practice it was largely limited to local main and district class roads. It was essentially the latter network that RRM inherited.

In the sixth and current agreement, in 1986, emphasis was on the regional network which was to be defined by Tanzania in consultation with Norway. Efforts to do this are underway, as described subsequently, but much confusion remains. It is still unclear whether the network should include district roads as before, or whether it should be confined to regional roads only. It is also unclear whether regional

capacity means the capacity at regional level, or if it means the capacity of the region, including the districts. The proposed, World Bank supported, 'Core Rural Roads Rehabilitation and Maintenance Programme', adds a further layer of confusion, especially as it is supposed to be "additional to ongoing donor-supported rural roads programmes"[1].

The present confusion makes it virtually impossible to rationalize the funding, planning and execution of work and RRM's relationship with regional and district authorities. It also complicates the organisation of work and selection of equipment, since (as discussed in chapter 4.3) the two different classes of road require different levels of technology.

There are observable differences between the two regions, which will be indicated where they are significant, however the present situation may be summarized as follows:

1. RRM regards itself as being the custodian of the road network it has 'historically' been responsible for ie. some 1995 km in Mbeya and 2113 km in Tanga regions. At present it rehabilitates and maintains a mixture of regional and district class roads.

2. Since about 1984/85 attempts have been made to 'rationalize' the network by establishing priorities for maintenance and improvement leading, it was intended, to a reduction in the total length of roads under RRM.

3. The two regions have pursued different approaches to the definition of priorities. Both have attempted to define 'high', 'medium' and 'low' priority networks.

4. In Tanga the process of deciding priorities has essentially been by negotiation with regional and district authorities. Neither traffic flows, agricultural production, nor any other quantitative data has been used. Thus, all regional class roads - those connecting districts - have been, by definition, classified as high priority. The result is that several long routes in the more sparsely populated districts, such as Handeni, are accorded high priority, when they carry only light traffic flows (probably under ten vehicles a day) the benefits to which would be unlikely to economically justify periodic re-gravelling yet alone more expensive rehabilitation.

5. In Mbeya the selection of priorities has also been based on negotiations with regional and district authorities, but an attempt is currently being made to modify the nominal lists on the basis of an analysis of each road's role in the

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1 The official minutes of the Transport Donors Conference (27 January 1988) give a different version. They state that: "It is expected that ongoing programmes supported by donors will be included in the Core Programme".

movement of agricultural produce, and its function as a means of connection to administrative, service or other resources centres eg. government, hospital, or industrial activities.

6. In practice the differences between the selection procedures of the two regions are more apparent than real. Any reduction in the RRM networks has been resisted by the regions, more forcefully so in Tanga than Mbeya. The reality is that there has always been an unacknowledged conflict between the broad objectives of institution building and local sustainability expressed in national level agreements, and regional and district level concern to maximise the length of road actually under maintenance and improvement. At the regional and district level there is no interest in RRM doing less, the pressure is for it to do more. Thus, in both regions the process of reducing the network has made slow, if any, progress.

6.1 ADEQUACY OF SELECTION CRITERIA

Irrespective of progress in practice the question remains as to how adequate are the selection criteria being proposed.

Current selection criteria preserve the principle of local participation, come close to being based on a functional classification of the RRM network, and - in the case of Mbeya region - sensibly incorporate estimates of the present agricultural output associated with each road as well as an indication of potential. The main weaknesses are that:

i) there is no formal inclusion of the level of traffic which is the single most important indication of the economic benefits associated with each road;

ii) it does not use estimates of costs and benefits to indicate priorities, although the process generates most of the data to enable this to be done;

iii) it tries to incorporate both regional, district and essentially feeder roads into a single selection process;

iv) it is not based on any nationally accepted procedure, since such procedures do not as yet exist.

Prior to the evaluation no systematic traffic observations or attempts to forecast future traffic have been made for the RRM road networks. It is difficult to understand why NORAD/MDC has not insisted on this. Norconsult attempted to quantify the benefits of the RRM project in 1983 and were frustrated from doing so to an acceptable level of accuracy by lack of data. They did, however, advocate that benefits ought to be quantified "before improvement and maintenance expenditure levels are determined"[2]. Some of RRM's upgrading/rehabilitation works are, in effect, new constructions. Quantitative estimates of costs and

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2 Rural Roads Maintenance Programme. Project Evaluation, December 1983 Appendix III page 10.

benefits for such works have been in common international use for more than two decades, in the case of regional and main district roads, and at least a decade for feeder roads[3].

Their absence in the RRM project leaves the process of investment selection wide open to political pressure. It is also extremely unlikely that a purely subjective process of selection will result in the most efficient programme of investment. For example, the traffic counts carried out for the evaluation (Appendix 6 Tables 4 and 5) reveal several anomalies. Benefits resulting from road maintenance and improvement are approximately proportional to the level of traffic. The counts indicate several roads in the highest priority category with traffic flows lower than roads in the lowest priority category. This is clearly illogical.

International experience is that it is difficult to find a single selection procedure that can be applied to a mixed network of regional, district and genuine feeder roads. The roads have different functions and therefore require different selection criteria.

Feeder roads are normally defined as those routes serving a small group of communities and which 'feed' their traffic into secondary or primary roads that connect with other groups of communities or parts of the country, ie. they do not carry through traffic. The socio-economic benefits associated with feeder roads are thus essentially 'local', whereas those resulting from the improvement or maintenance of secondary or primary (eg. regional or main district) routes derive from long distance movements between groups of communities and areas of the country. Since the two groups of benefits are different in character, they cannot easily be assessed by the same criteria. Feeder roads are normally fairly short. For example, in the Kenyan and Bolivian rural access roads programmes maximum lengths of 10 and 20 kms, respectively, were specified.

As far as is known until recently there have not been any nationally defined procedures for deciding road maintenance and improvement priorities in Tanzania. The AFRS (September 1987) proposes a Selection and Ranking Procedure to be used for the economic appraisal of district feeder road investments. It is based on a detailed assessment of a road's costs and benefits largely as a result of the likely increase in agricultural production.

The procedure has not yet been accepted by the GOT. Also the method is complex and probably beyond the technical capabilities of many districts. Moreover, it is only suitable for feeder roads and could not be applied to many regional class roads carrying substantial volumes of through traffic. Nonetheless it is more rationally based than the present RRM method. It overcomes weaknesses (ii) and (iii) above, and could, if accepted by GOT, overcome (iv).

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3 J.D.G.F. Howe and P. Richards (eds.), Rural Roads and Poverty Alleviation. (London, I.T. Publications, 1984.

6.2 CONCLUSIONS

RRM does not have adequate criteria and procedures for the selection of roads for maintenance or upgrading. The procedures are ad hoc, open to political pressure, and there is no means of comparing the costs and benefits of investment. RRM ought to initiate the use of more quantitative methods of identifying investment priorities. This will require the systematic measurement of traffic flows and road condition data, and the collection of agricultural production statistics. Such changes are essential if the project is to be put on a rational, and economically justifiable, footing, and to enable RRM to resist political pressures for necessary but less than optimal investments.

The initiation of a simple quantified system for collecting road and traffic data would enable all investment decisions to be assessed. These could include, for example, decisions to upgrade and the standard of upgrading; selection of maintenance standards; the frequency of maintenance operations such as grading; and decisions on the inclusion or exclusion of specific routes in the RRM project.

Fundamental to the development of more rational selection criteria is the resolution of the present confusion over just what is RRM's role.

The crucial questions to be resolved are:-

- "what class(es) of roads is RRM responsible for"?;
- "what is the scale of the responsibility (ie. km of road)"?;
- "how do RRM's responsibilities relate to the proposed 'Core Programme' for rural roads"?

CHAPTER 7

TECHNOLOGY

7.1 PRESENT SITUATION

The number of heavy plant items has been reduced in recent years- relative to the stock at the beginning of the programme - due to natural wastage and lack of replacements pending a switch to more labour-based operations. However, at the time of the evaluation RRM remains essentially an organisation equipped for equipment-intensive road rehabilitation and maintenance as is reflected in its plant stock (Table 5.5). There are significant numbers of heavy plant requiring the use of a low-loader to move them efficiently from site-to-site, and both regions require relatively sophisticated workshop facilities and expatriate plant engineers. There is as yet no evidence that the regional administration could conceivably run such an organisation. As already noted early attempts to decentralize some, relatively simple, items of heavy plant to the districts were not a success (see chapter 5.2).

This situation ought to lend considerable urgency to efforts to develop more labour and less equipment based road rehabilitation and maintenance technologies. However, given the uncertainty about the nature and scale of RRM's future responsibilities it is difficult to be very specific in assessing proposed changes in technology. The assessment which follows is therefore based on RRM's declared strategy[1]. This necessarily conditions the choice of technology and the extent to which operations can become more labour-based. The declared strategy also conditions RRM's proposed equipment purchases.

The change from an equipment-intensive to a more labour-based programme was initiated in December 1986. At present the situation is reported to be as follows:

> Routine Maintenance: There is no properly organised and widespread routine maintenance system. Attempts are being made to re-vitalize the previous system of road attendants, and there are currently 80-100 attendants along some of the RRM roads.
>
> Recurrent Maintenance: Annual grading is carried out on some 80 per cent of the network, and bi-annual grading on selected priority roads. In each region the heavy grading unit has a capacity of about 1700 km per year. In Mbeya the light (towed) grading unit is reported to have an additional capacity of 1700 km per year. This figure is based on (old) salvaged equipment and seems optimistic: new plant, which is expected to have a superior

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1 Rural Roads Maintenance: Mbeya and Tanga. Tentative Programme For The Implementation of Labour-Intensive Road Improvement and Maintenance Methods. November, 1987.

performance, is shortly to be tested.

Periodic: There is one gravelling unit in each region with a stated capacity of 120 km per year. (This seems optimistic: in the three years 1984/85 to 1986/87 the Tanga region unit averaged 74 km).

Emergency/Reconstruction Unit: This is used to clear landslides and other trouble spots. Its estimated capacity is 30 km per year per region.

Drainage Structures: Each region maintains a bridge and a culvert/ drift construction unit.

7.2 DECLARED STRATEGY

The declared strategy is that future road maintenance is to be largely labour-intensive supported low-technology equipment. It will be developed in 3 phases:

1. Inception: 18 months duration (1988 to mid-1989) to accomplish:

- setting up basic organisational structure and routines;
- establish work methods;
- set up and initiate training programmes;
- commence the rehabilitation programme in two districts;
- establish maintenance strategies and commence routine maintenance in two districts;
- recruit Tanzanian personnel for the various key positions and phase out the expatriate mechanical Training Officer.

2. Implementation: 42 months duration (mid-1989 to end 1992) to accomplish:

- finalise the organisational structure with Tanzanians acting in all positions;
- continue the formal and practical training;
- finalise the rehabilitation programme for both roads and structures;
- implement the new maintenance strategy including routine, recurrent, periodic and emergency maintenance on the entire road network under the regional administration;
- reduce, towards the end of the period, the number of plant and equipment items to that considered appropriate.

3. Operational: 36 months (1993 to 1995) to accomplish:

- full operation under Tanzanian management with expatriates as advisers only and reduce from 5 to zero over the period;
- expatriate participation is to cease after that period;
- Norwegian financial assistance to cease with the departure of the last expatriates.

This strategy was drawn-up prior to the Donors Conference at Arusha, and in anticipation that the GOT would have published its National

Transport Policy. The RRM strategy explicitly assumes "that the road network currently assigned to RRM will be reduced to what can be termed as regional roads or some 1000 to 1200 km per region only". These figures imply a somewhat generous definition of regional roads. At present Tanga claims 680 km of regional class road and the MCW have proposed to gazette 760 km in Mbeya. (RRM (Mbeya) do not use the term 'regional road', but classify some 648 km as having 'first priority'). Whatever is meant by the term 'regional roads' in the RRM strategy document the clear implication is a reduction of present responsibilities and a concentration on the more strategic and thus busier and longer main roads. For example, 87 per cent of Tanga's 680 km of regional class roads are more than 30 km long.

7.3 PROMOTION OF LABOUR-BASED METHODS

The case for promoting labour-based methods, in countries such as Tanzania, has been based on the claim that they represent the most economic use of local resources. To implement a labour-based policy for road improvement and maintenance therefore requires a clear understanding of the economic as well as technical consequences of using different proportions of labour and equipment. Currently this is difficult in Tanzania, since so little evidence is actually available, and few decisions are based on economic as distinct from financial criteria. At present the economic framework simply does not exist to enable confident choices to be made by RRM about the appropriate uses of labour and equipment. Some plant is certainly necessary, but its true economic operating costs have yet to be determined, and compared with alternative labour-based methods of doing the same operations.

Experiments by the RRM project with labour-based methods are in their infancy. Some results are promising, but currently there are a number of major obstacles to the development of successful labour-based techniques. Among the more obvious are the difficulties RRM is experiencing in experimenting with wage rates, systems of paying wages promptly, and the development of suitable quality tools and equipment.

At present RRM Mbeya is able only to pay casual labourers TAS 40.8 per day. This has had a disastrous effect on morale with the labour force on the Usangu plains pilot project declining from about 90 persons per day after six weeks to less than 30 at the time of the evaluation team's visit after twenty weeks of operation. The regional authorities in Mbeya have not been prepared to allow the payment of higher wages on the basis that the present figure represents the GOT agreed 'minimum wage'. (This figure is being interpreted, in effect, as a maximum wage. The whole concept of a 'minimum wage' was formulated to prevent workers from being exploited not to inhibit the wages they receive). In fact higher wages are being paid in Tanga (TAS 48), by the Tanzanian Pyrethrum Board in Mbeya (TAS 48-52.65), and by the ILO on its 'Mto wa Mbu' irrigation scheme in Arusha (TAS 80). The ILO justifies its figure on the basis that this is the market rate in a prosperous farming area where seasonal demand for labour pushes rates for land preparation- which is similarly demanding - to TAS 200 per day.

Inspection of the tools and equipment in use on the labour-based sites in Mbeya and Tanga regions shows them to be of a very poor quality. Tool handles are weak, badly finished and poorly matched to the shape

of the tool heads. Similarly many of the metal tool components are not of the quality recognised as being necessary for labour.intensive operations[1]. These characteristics are bound to have an adverse effect on both labour productivity and motivation.

International experience suggests that unless agreement is quickly reached with the GOT for freedom to experiment with wage levels and wage payment systems in the context of pilot projects, then the future of labour-based operations in Tanzania will be severely jeopardised.

Despite the present lack of experience with labour-based methods in Tanzania certain norms concerning the relative attractiveness of labour and equipment are well established internationally. Labour-based methods are not a panacea. They have seldom been successfully applied other than to the rehabilitation of relatively short (15-25 km) length feeder or access roads. The standards required of long strategic routes, such as the regional road network, are difficult to achieve. It would be very unwise to start labour-based rehabilitation operations by attempting to meet these standards. The prospects for using labour-based methods for the maintenance of regional roads are, however, much better than for their rehabilitation.

Discussions with a large number of people suggests that RRM is not winning the publicity battle in promoting the switch to more labour-based methods of road improvement and maintenance, especially among government officials at regional and district level. Its own efforts are not yet well founded on a sound technical and economic framework of analysis, which makes it difficult to determine, and advocate with confidence, just what is the optimal mix of labour and equipment for different circumstances.

Despite the inputs from the ILO, RRM is still lacking sufficient staff with first-hand experience in the planning and implementation of labour-based programmes. The result has been a number of elementary mistakes which could have been prevented. For example, heavy equipment has been introduced onto the pilot labour-based site in Pangani. Whilst there was an expedient reason for doing so it creates a very bad precedent. e.g. "even RRM uses machines when labour cannot cope".

Consideration ought to be given to the expansion of inputs from the ILO and applying them in a functional rather than executive capacity. This could take the form of a labour-based technology advisor, under the PC, rather than working to the RRE's. This proved to be a significant feature of the successful Kenya Rural Access Roads Programme.

RRM needs to be much clearer on how it should set about promoting labour-based methods. The real focus is logically at district and not regional class road level. Such roads tend to be relatively short, to

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1 Guide to Tools and Equipment for Labour-Based Road construction. 1981, International Labour Organisation.

serve the more densely populated areas, and are built to less demanding standards than regional roads. Moreover, it is demonstrably the case that most districts do not have the technical resources to operate an equipment-based road rehabilitation and maintenance organisation. Labour-based units offer the only practicable way of improving district level road operations.

7.4 EQUIPMENT PURCHASES

RRM's proposed or implied equipment purchases are as stated in its declared strategy document, which assumes the maintenance of 1000-1200 km of regional class roads. It is simply not sensible to comment in detail on these proposals until answers have been obtained to the questions posed at the end of chapter 6. However, the following general observations are relevant.

1. So long as RRM continues to contain a mixture of regional and district roads, so it will require a mixture of technologies. Some operations are indeed virtually impossible to achieve on any significant scale with labour-based methods e.g. compaction, levelling, haulage over distances greater than about 10 km. In the latter context to make confident decisions about pending equipment purchases it is imperative that a thorough survey is made of sources of gravel in both regions so that average haulage distances can be established.
2. Given the enormous logistic problems the terrain, roads and bridges impose on the movement of heavy plant, a strong case exists for experimenting with lighter, cheaper and more easily maintained equipment than has been used in the past. e.g. heavy towed graders for graders; tractors equipped with buckets, hoes and grader blades, for wheel-loaders/bull-dozers; and tractor-trailers for (some) tippers.

7.5 CONCLUSIONS

A thorough assessment of the changes that RRM proposes to make in the technology it applies to road rehabilitation and maintenance can only be made once its role in the rural roads sector in Tanzania has been clarified. Crucially is it to concentrate on regional, district or feeder class roads, or a mixture of them all as at present; and is its main focus of activity to be at the regional or district (road) engineer level?

Notwithstanding the answer to these questions there is a clear case for RRM moving away from its present emphasis on heavy plant to equipment technologies that are simpler to operate and maintain, cheaper to purchase, and more manoeuvreable. There seems little prospect of most regional and district authorities developing the institutional capability to operate heavy plant based units efficiently, and the foreign exchange requirements make them unsuited to Tanzania's foreseeable economic prospects.

The transition of RRM to more labour-based methods has got off to an uncertain start. It appears to require more experienced guidance and a clear commitment from the GOT to the institutional changes necessary to allow labour-based methods to succeed.

SECTION 2

EFFECTIVENESS AND EFFICIENCY

CHAPTER 8

BENEFITS FROM INSTITUTIONAL DEVELOPMENT

8.1 PURPOSE OF INSTITUTIONAL DEVELOPMENT

The purpose of institutional development has been defined as an improvement of the:

- legal, financial and administrative capability;
- managerial capability;
- technical capability;

of an institution which is fully integrated within the Government system.

Road maintenance assistance programmes generally require a significant proportion of resources to achieve satisfactory levels of institutional development. In that regard road maintenance programmes are often very different to road construction programmes as shown below:

Criteria	Construction	Maintenance
Duration:	Short term	Long term
Local capability:	Relatively independent*	Very dependent
Organisation:	Designed for rapid completion	Integrated with, and dependent on, local institutions
Donor administration:	Simple	Complex

* Less so with labour-based projects

International experience suggests that a failure to recognize these differences both by donor agencies and recipient governments has resulted in many programmes failing to achieve the improvements envisaged.

8.2 PROGRESS WITH INSTITUTION DEVELOPMENT UNDER THE RRM

Institutional development has been an objective of every RRM project agreement. Yet it is apparent from reading the annual Project Reviews that progress has in general been considered unsatisfactory. Only in the most recent (February 1987) review is there a note of optimism:

> ... In relation to institution building ... there are now clear signs that the programme has started to move in the right direc-

tion. There is a better integration of the programme in the regional administration ...

PRESENT STATUS OF INSTITUTIONAL DEVELOPMENT

The present status of institutional development as defined by the criteria mentioned initially in this chapter is summarized below:

COMMENTS ON THE IMPROVEMENT OF VARIOUS CAPABILITIES	COMMENTS ON RESPONSIBILITY/ DEPENDENCE
A. LEGAL, FINANCIAL AND ADMINISTRATIVE CAPABILITY:	
Legal aspects: The network for which RRM is responsible has not been clearly defined. It is also not clearly understood what maintenance responsibility implies.	GOT must decide on network and state implications of maintenance responsibilities
Budget, financial control and audit: A budget is defined and well integrated into GOT system. Financial control systems are in accordance with GOT standards	Procedures established. Implementation partly dependant on expatriates
Size of budget about twice level of other regions	Depends on NORAD assistance
Access to foreign exchange: The program has a direct access to foreign exchange outside the GOT bureaucracy	Depends on NORAD assistance
Administration: Routines are now in accordance with GOT standards	Implementation headed by expatriate.
Salary level of GOT employees: Low in relation to private sector and held to be primarily responsible for poor motivation.	Conform to GOT regulations
Accountability: Poor and not helped by low wages	GOT mainly responsible for this aspect.
B. MANAGERIAL CAPABILITY	
Road inventory and classification: Qualitative inventory has been carried out. Road standards not yet approved by MCW	Upkeep of inventory depends on expatriates.
Planning procedures: The internal planning procedures are influenced by level of experience of expatriate project staff. Reporting system leaves much to be desired in terms of coordination between the regions.	Planning is totally dependant on expatriates. Reporting system must be amended.

Human resources: Training at mid and lower level. No Tanzanians have so far filled a position held by an expatriate.	Activity has not been given priority.
C. TECHNICAL CAPABILITY	
Plant and equipment: Although there is a difference between the two regions, there is in total sufficient plant, equipment and spare- parts.	Supply depends on NORAD assistance.
Workshops: The workshops and stores are well equipped and staffed.	Partly dependant on 4 expatriates.
Technology level: Present technology level is based on heavy equipment and working procedures. More labour-based techniques are being introduced.	Present technology very donor dependant New technology less donor dependent.
Materials resources: Suitable gravel resources are difficult to locate, particularly in Mbeya.	Consultant to be engaged.

The previous analysis suggests only modest progress is being made with institutional development. Because of data limitations it is not clear, as is explained in Chapter 13, whether progress with institutional development is only being achieved at the cost of increased real financial dependence on NORAD. This seems likely, however, as it appears from the figures below to have required increased expatriate assistance.

Table 8.1 Number of Expatriate Personnel Assigned to the RRM

Year	Expatriate Staff
1979/80	6
1980/81	9
1981/82	10
1982/83	14
1983/84	14
1984/85	13
1985/86	14
1986/87	15*
1987/88	16

* Includes 2 ILO labour-based technology experts.

8.3 APPROPRIATENESS OF THE INSTITUTION

The analysis above was made on the assumption that the right institution was being developed. The crucial question is however: is the present institution going to be permanent or a basis for a permanent institution? This can only be answered indirectly.

First of all, very much will depend on the outcome of the GOT decision on how the roads sector shall be organised in the future. There are two possible scenarios:

a) The RRM model survives as a separate implementing agency
b) The RRM is integrated into an existing organisation in the region.

In the first case investments in institution building will be contained in the institution itself. Even if people who have been trained by the project disappear and get better paid jobs elsewhere, it will be of benefit to Tanzania.

In the second case some of the investments will be lost, but far from all. The routines, procedures and facilities might be used effectively by others, and the personnel might be used by other institutions. Much will also depend on the future resources to be allocated to the roads sector. As stated in other sections of this report Mbeya and Tanga benefit from a total allocation which is roughly twice the national average. Since the evaluation team see no realistic hope for a significant increase in the national average allocation in the foreseeable future, it is concluded that activity in the regions ought to be reduced if a sustainable institution is to result. From this it follows that the size of the institution being developed is too big. Trimming the size of the institution is likely to affect procedures, routines, etc.

8.4 EFFECT ON OTHER INSTITUTIONS

Due to its present size and efficiency and the deficiencies of similar institutions in Tanzania, it is appropriate to question whether the RRM institution is in "harmony" with others in the region, especially the districts.

Compared with other institutions, like those under the Regional Engineer and the District Engineer, RRM is a very privileged institution in terms of funds, access to foreign exchange, and equipment, while institutions at the district level have virtually been crippled by lack of resources.

An efficient organisation in the midst of inefficient ones has both positive and negative effects. The positive effects are obvious in an environment where there is an almost unlimited need to get things done. Politicians and regional officials have a place to go when something is urgent.

Negative effects are more difficult to identify, but on the basis of information given by district and regional officials it is evident that

the district road maintenance organisations have suffered from recent reorganisations and from a consistent decrease in funds over the years. At the moment the implementing capacity of the district engineers is virtually non-existent. Although RRM cannot be blamed for poor road maintenance performance at district level, there are signs indicating that it may have had a paralysing effect on the weaker districts within the areas under its influence.

In the future it would be a great benefit if RRM was used to stimulate other comparable institutions in the region. There is today a considerable potential for districts to carry out various maintenance tasks which is obstructed by lack of basic resources. It is felt that this potential could be translated into a significant contribution to maintenance output if the districts were given the basic resources and support needed.

8.5 ANALYSIS OF DONOR EFFORTS AT PROMOTING INSTITUTIONAL DEVELOPMENT

RRM is committed to becoming a more labour-based organisation and one better integrated into the regional administration. This implies a different approach to institutional development from that used in the past. If the new approach is to be any more successful than the previous attempts then it is important to be clear as to why past progress has been so disappointing.

Certainly it would be naive for NORAD to continue to try to build local institutional capacity to effect road maintenance efficiently without understanding the lessons of other donor's failure to do this in Tanzania, over a period of two or more decades, and without having a clear strategy for dealing with these lessons. Such an approach would only be to guarantee failure in the future.

It is accepted that some of these lessons are of a sensitive nature. Nonetheless they must be aired and faced if progress is to be made in building institutional capacity.

GTZ: HANDENI DISTRICT

Over the period 1974 to 1980 the Tanga Integrated Rural Development Programme, financed by GTZ, rehabilitated 844 km of district roads at a cost of TAS 13.5 m ($ 2000/km) by using equipment intensive methods. Institutional development of the district road maintenance organisation was a major objective of the project[1]. This was to be achieved by:

- introduction of appropriate methods of maintaining the rural roads in collaboration between the MCW (district road organisation) and the adjacent villages;
- on-the-job training of district staff in the overall organisation and implementation of similar projects;

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1 Rehabilitation of Rural Roads in Handeni District (Tanzania) - Project Description and Assessment of Experiences. K. Hubert /F. Sander. GTZ, Eschborn, 1978.

- establishment and demonstration of an efficient maintenance and servicing system for the machinery and equipment used for the works on the roads;

- training of mechanics in the district workshop.

Even as early as 1979 it was clear that the overall objective would not be achieved[1]. (RRM engineers in Tanga report little evidence of the original project, and it is significant that they have had to re-build most of the roads.) The main factors responsible for non-achievement were listed in order of importance as:

- Low staff performance resulting from lack of motivation and commitment towards the job. The main reasons for this were thought to be the lack of financial incentives for improved performance and poor salary levels.

- Poor organisation, management and leadership. The main reasons were (again) lack of rewards for improved performance and involvement of the District Engineer in an array of non-professional activities resulting in frequent absence from his place of work.

- Inadequate road standards in the face of a lack of regular maintenance especially to drainage.

Overall it was concluded that the project had created a number of 'favourable' conditions which could not be sustained once implementation was completed.

THE WORLD BANK

The World Bank has made prolonged efforts, over a period of more than 20 years, to strengthen the institutions responsible for highway planning, construction and maintenance in Tanzania including feeder road components[2]. It has provided over 100 man/years of technical assistance over a series of six projects to support local institutions and to provide on-the-job training of counterparts. It has attempted to streamline the organizational structure and management systems for road maintenance, and more recently, it has provided assistance for the formal training of professional and technical staff both within Tanzania and overseas. Both the Bank and GOT[3] agree that none of the important institutional development objectives have yet been achieved, and the TRP proposals represent yet another attempt to re-organise

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1 Tanga Integrated Rural Development Programme. Final Report on Follow-up Assistance to Handeni Road Improvement Project. November, 1979.

2 World Bank. Policy Review of Institutional Development in Tanzania, 1983.

3 BAROZI, F. Road Maintenance in Tanzania. Indian Institutions of Highway Engineers Conference, 1983.

rural road administration. The Bank identifies the following main reasons for its lack of success:

- The general environment including the critical shortage of qualified, experienced personnel for much of the period.

- Steady deterioration in Tanzania's economy reflected in a severe shortage of foreign exchange and pressure on budgets. This has directly hindered institutional development by, for example, reducing the resources available to support technical assistance activities.

- Continuing attempts at administrative reform by GOT and decentralisation of responsibilities to the regions and districts. Most of these were administratively, technically and financially weak, and the institutional implications of the allocation of responsibility for road works did not appear to have been fully appreciated.

OTHER DONORS

A number of other donors have worked or are still working in the rural roads sector in Tanzania. Their institutional development experiences are not well documented, although an account is to be found in the ILO reports on the Joint Government of Tanzania/Donor Agency Meeting on Rural Road Improvement and Maintenance, Arusha, April 1985. The evaluation team also discussed these issues with representatives of the Swiss and Irish governments who are supporting rural road rehabilitation and maintenance projects in Tanzania. It is clear from these various sources that other donors have been no more successful than RRM at improving institutional capacity and the problem is considered to be almost intractable.

8.6 FUTURE INSTITUTIONAL DEVELOPMENT STRATEGY

The main emphasis of past efforts at institutional development by all donors have centred on training - on-the-job or counterpart - and reorganisation of the institution itself. There appear to have been few if any attempts to analyse the component parts of institutional capacity and then to define a comprehensive strategy aimed at its improvement.

Institutional capacity has many groups of elements as described in 8.1 and 8.2. One is a pool of skills, a second is the size of the labour-force that can be applied to the activity. Another is the soundness of the maintenance strategy - type, level, and timing of interventions- and the managerial and operational efficiency in executing the strategy. These three aspects depend, in turn, on such factors as government commitment, institutional structure, managerial ability, staff quality, accountability and incentives. It is instructive to list these groups of elements as follows:

i) skills;
ii) size of the labour force;
iii) maintenance strategy;

iv) managerial and operational efficiency; comprising

a) GOT commitment;
b) institutional structure;
c) managerial ability;
d) staff quality;
e) accountability;
f) incentives;

If a sustainable institution is to result then only some of these elements can be influenced by a donor acting alone, most notably i); some by a donor and government acting together iii), iv) b) and c); and others only by the government, particularly e) and f). They are clearly an inter-linked series of measures and attention to only some elements rather than all is unlikely to result in enhanced institutional capacity.

8.7 CONCLUSIONS

In general, past efforts at institutional development in the rural roads sector in Tanzania, including those by RRM, have made only modest progress and been conspicuous in attacking only the more technical aspects of institutional capacity.

No attempts appear to have been made to analyse the component parts of institutional capacity and define a comprehensivce strategy aimed at its improvement. This 'partial' approach is the most likely explanation for the relative lack of success.

A recent study by the U.K. Transport and Road Research Laboratory[1] supports this conclusion. It argues that the whole approach to maintenance assistance by donors should be based on a comprehensive review of the recipient organisation's capability. Unless RRM's future efforts at institutional development are founded on a similar principle there seems little prospect that they will be any more successful than in the past.

The RRM is an institution which functions well in maintaining and improving the rural roads network. However, it is still very much dependant on NORAD funding and on expatriates filling key positions.

Training is so far limited. It will take a long time to fill key positions with capable and qualified personnel. The time needed can only be reduced through an increased emphasis on manpower development and training at all levels.

The most notable omission in current institutional development efforts is any clear plan of cooperation with the districts. Tanga region is working effectively with its districts, but this seems to have resulted

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[1] United Nations Economic Commission for Africa. Fourth African Highway Maintenance Conference. Road Maintenance: reassessing objectives. (Transport and Road Research Laboratory), December, 1987.

from the personal initiative of the RRE rather than any pre-conceived plan by RRM.

It is not conducive to institutional development for any region to have a strong regional road maintenance organisation and weak ones in the district. RRM ought to formulate a specific strategy for developing the institutional capacity of the districts.

The current size of both RRM institutions is clearly out of scale with anything that could be supported by Tanzania in the foreseeable future. In re-structuring its institutional development plans RRM ought also to reduce the size of the organisation in proportion to the likely scaling down of its network responsibilites.

CHAPTER 9

SAVINGS AND GAINS FOR USERS

9.1 SAVINGS IN VEHICLE OPERATING COSTS

The main gains to the users of the road systems in Mbeya and Tanga, as a result of the RRM project are savings in vehicle operating costs as a result of maintenance. The roughness of the road surface is essentially what differentiates a good from a bad road, and it effects nearly all components of vehicle operating costs. The effect of maintenance is primarily to reduce the roughness of the road's surface. Modern research[1] allows reasonably accurate forecasts to be made of the rate at which earth and gravel roads will deteriorate if they are not maintained, the degree of roughness that will result, and the effect this will have on the cost of vehicle operation.

For Mbeya and Tanga regions an approach based on traffic estimates is in some respects unsatisfactory since there are no local estimates of flow increases and it was necessary to use national figures. It might be expected that the exceptionally good condition of the roads in both regions would have resulted in an above average traffic response, but there is no evidence with which to test such an assumption. Vehicle operating costs savings do however probably underestimate some agricultural benefits, especially those due to the prevention of crop losses.

9.2 OTHER BENEFITS

In the case of an existing, as opposed to a new (feeder) road, agricultural benefits are considered to be captured in estimates of any increase in traffic flows over the maintenance period and do not need to be separately assessed. Conventionally it is argued that the benefits to agriculture - from programmes such as RRM - in terms of increased crop production, must be less than that to generated traffic otherwise the land would already be in use.

There is a further benefit which the lack of data does not permit to be estimated. This is the improved frequency and reliability of passenger services resulting from well maintained roads. The existence of this

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1 Bhandari, Anil, et al. Road Deterioration in Developing Countries: Technical Options for Road Maintenance and Economic Consequences (Paper presented at the TRB Annual Meeting, Washington, D.C., January 1987)

phenomenon is well documented[1] and has been observed, but not measured, in both regions. Typically a bus or rural taxi service is restored or introduced once a deteriorated road has been rehabilitated and put under maintenance.

9.3 ESTIMATION OF ROAD USER BENEFITS

To estimate road user benefits on the RRM networks it was necessary to:

i) establish average traffic flow levels and how this might have changed since 1979;

ii) determine the present condition of the road network, in terms of its surface roughness characteristics, and how these might have changed since 1979;

iii) derive suitable economic vehicle operating costs so that estimates could be made of likely savings as a result of the RRM project.

These analyses are described in detail in Appendix 6.

Table 9.1 Average Traffic Flows on the RRM Road Networks

Region	Length of Road by Priority Class		Average Daily Traffic (vehicles)
	Priority class	Length (km)	
Mbeya	1	831	62
	2	446	34
	3	678	20
Tanga	1	922	63
	2	719	16
	3	472	14

Table 9.1 indicates that on the first priority routes traffic flow levels in both regions are the same. However, on the second and third

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[1] S. Carapetis, H.L. Beenhakker and J.D.G.F. Howe. The Supply and Quality of Rural Transport Services: A Comparative Review. World Bank Staff Working Papers No. 654, Washington, D.C., 1984.

priority routes flow levels in Tanga are on average over 40 per cent below those in Mbeya region. Appendix 6 shows that in Tanga region trucks and buses comprise over two-thirds of the traffic stream whereas in Mbeya the proportion is 40 per cent, but unlike Tanga it contains a significant proportion (8 per cent of total traffic) of very heavy vehicles with three or more axles. Road traffic (nationally) is estimated to have declined at 2 per cent per annum from the late 1970's to 1985, and to have increased by 4.5 per cent per annum since then.

Mbeya and Tanga both have roughly a third of their road networks classified as being in good condition. At 38 per cent the proportion of roads in Mbeya classified as in fair condition is more than double the corresponding class in Tanga region. Correspondingly half the roads in Tanga are classified as being in poor condition compared to 35 per cent in Mbeya region. However, since the system of classification is subjective these proportions can only be regarded as indicative.

The expected vehicle operating costs, in economic prices, are as given in Table 9.2. From this it is apparent that a light vehicle (car, pick-up) operating on a road in 'good' condition enjoys a saving of 17 TAS/km compared with operating on a 'poor' road. Similarly a heavy vehicle (truck, bus) would enjoy a saving of 20 TAS/km.

Table 9.2 Expected Vehicle Operating costs for Different Road Conditions (TAS/km: economic prices)

Vehicle Type	Road Condition or Maintenance Category		
	POOR	FAIR	GOOD
Cars, Pick-ups	48	34	31
Trucks, Buses	88	72	68

These savings may seem high, but it is important to recognize present inflated price levels in Tanzania. Private sector truckers are currently charging the equivalent of between 123 and 193 TAS per km for a 7-ton truck. At these rates it is only necessary to realise a 10 to 20 per cent reduction in vehicle operating costs, due to improved road conditions, to achieve the order of savings suggested by the previous economic analysis.

9.4 CONCLUSIONS

The main user benefits resulting from the RRM project is the saving in vehicle operating costs that result from having road surfaces in a comparatively good condition compared to that which would result without any maintenance. Estimates suggest that the benefits are of the order of 17-20 TAS per vehicle km.

In addition to direct user benefits, rural communities and agriculture benefit from the fact that vehicle services are able to continue. Experience shows that without the inputs provided under RRM many roads would simply deteriorate to the point where transport services withdraw and even privately owned vehicles are reluctant or unable to travel.

CHAPTER 10

BENEFITS TO ROAD WORKERS

10.1 RRM AS A SOURCE OF EMPLOYMENT

Labour demands for agriculture in Tanzania are high during peak agricultural periods. However, at other times in the year unemployment and underemployment in the rural areas can be as much as 40 per cent. While agriculture gives a livelihood to about 80 per cent of the population, it does not provide all the needed cash income for the household. In Mbeya, the DANIDA Water Master Plan Team found that 40 per cent of household income was derived from sources other than agriculture or livestock.

An evident benefit to road workers is therefore the opportunity to earn cash and improve living conditions. According to RRM employment figures given to the Evaluation Team, the Project employed about 1500 people in October 1987. About two thirds of these were temporary unskilled workers. Permanent workers fall into three categories: technical, administrative and skilled; the unskilled labourers are road attendants doing routine maintenance or casual labour working for short periods on specific construction/repair tasks.

The total wage-bill for the half year, January to June 1987, was TAS 7.7 million or about TAS 15 million for the entire financial year. This sum is about 3 per cent of the total wage bill of the two regions and constitutes an important regional cash input.

10.2 SHORT TERM AND LONG TERM BENEFITS FROM WAGES EARNED

The impact of employment on the workers themselves is difficult to assess without a socio-economic survey. Cash is necessary for survival and reproduction both in the urban and rural areas and can have a significant impact on such aspects as nutrition, access to education and better technology, and improved living conditions. Such positive effects are more likely to be felt by the permanent worker, most of whom are employed at RRM headquarters in the two regions. Much of this impact, however, will depend on the size of the earnings and the length of the period worked.

Socio-economic surveys of benefits in cash earnings have usually concentrated on those who work as unskilled/casual workers. Such studies argue that:-

- project workers tend to come from poorer households. This means that the incomes distributed from the Project accrue to those who need it most.

- average wages earned by such workers contribute up to 35 per cent of the total cash income of the households.

- next to agriculture, it is the second most important source of income of the household of the workers.

- income is used mainly to support basic needs, but a small proportion is utilised to improve agricultural production.

Discussions with workers, both male and female, during field visits generally confirm these findings with the exception that the male workers tended to spend much more on agriculture than is indicated in the above studies. This expenditure was utilised mostly for assistance in difficult agricultural tasks such as clearing of land and weeding. Whether this resulted in larger household fields or greater yields could not be determined.

The long term effects on improving agriculture of wages earned through casual employment depend on the extent to which such earnings are used for purchasing tools, expanding acreages and increasing inputs such as fertilizers, improved seed, etc. A study from the Marketing Development Bureau, Dar es Salaam, shows that the total cost per hectare of maize using such inputs can be as high as TAS 2334. Without fertilizers, seed, etc., costs are TAS 464, but returns to labour vary accordingly. With agricultural inputs labour returns are TAS 75.49 per day; without inputs they can be as low as TAS 9.07.

An expenditure of over TAS 2000/- would be prohibitive for casual workers who work at the most for 3 months at a wage of TAS 1240 per month. Most workers spend more than half of this wage on food and other basic needs. However, the purchase of simple tools (hoe, spade, shovel, pick-axe, slasher, etc.) might be feasible. The total cost of such tools in Tanga was TAS 472 at official prices and TAS 1330 at the parallel market price. This level of investment makes it difficult to introduce even elementary middle level technology such as the wheel-barrow, which costs TAS 4500 at the official price and TAS 6000 at the parallel market price.

Two assertions can nevertheless be made. The RRM does widen employment opportunities and increase the circulation of cash. The latter aspect can have significant spin-off effects such as increased availability of commodities, improvements to or expansion of housing, better services such as transport, or the availability of a maize-mill, etc. In the rural areas, one of the commonest spin-off effects of increased earnings by male workers is greater opportunity for women to earn cash through beer brewing or selling of food. To what extent RRM wages contribute to such spin-off effects is difficult to pin-point. However, it seems likely that an input of TAS 15 million shillings out of a regional wage bill of TAS 637 million per annum will have a significant impact on the local economies of Tanga and Mbeya.

It is because of the potential direct and indirect benefits that it is

a matter of concern that wages currently represent only 10 per cent of the total expenditure of the Project. This is very low compared to road projects using labour intensive operations. In Tanzania 46 per cent of the funds spent on the ILO Labour Intensive Work Programmes was utilised on wages. In Botswana more than 60 per cent of the total costs were paid directly to the workers.

10.3 ACQUISITION OF NEW SKILLS

RRM has brought lasting benefits, as a result of its roadworks, in terms of new skills taught to the local people. These include technical skills such as those used in the construction of roads, culverts, bridges and operation of heavy equipment, as well as administrative and supervisory skills. The workers who have acquired these skills will form the core of local road maintenance teams which require technicians, administrators, operators and semi-skilled workers if they are to be sustainable. Technical skills acquired so far have concentrated on those needed to operate and maintain machinery.

The Project has the potential to introduce equipment that can incorporate local components and thus encourage the development of local innovations and industries. Experience in Botswana illustrates what can be done.

In Botswana donkeys and donkey-carts are used for haulage. Both the carts and harnesses are manufactured locally. A description of the technology states:

> "The donkey-cart system is an indispensable and vital part of the entire programme. The carts are manufactured in Botswana, are cheap to purchase, simple to operate, durable and have few breakdowns. The donkeys are hired from the people, are reliable, and self-fuelling."

The use of donkeys and donkey-carts is just one form of technology that incorporates local components. There are many other opportunities. One of the constraints that the Evaluation Team noted in Mbeya was that the handles of the tools used by the road workers were of such poor quality that it affected their efficiency. It should be possible to manufacture adequate handles locally with some technical assistance from RRM.

Once established cart and related technology could be used in other sectors and thereby benefit road workers. For instance donkey-carts could be utilised to carry produce from fields, collect fuel-wood for sale, and reduce the drudgery associated with the collection and distribution of water. Road workers could use their earnings to pay for such services and hence increase employment in rural areas.

10.4 BENEFITS PERCEIVED BY WORKERS THEMSELVES

The skilled workers and supervisors like to work for RRM because of the opportunity to learn new skills and utilise their knowledge. RRM foremen and inspectors consider themselves lucky compared to their colleagues in RE's and DE's organisations. The latter are frustrated because of lack of resources and opportunities to repair/maintain roads. The RRM foremen and inspectors also appreciate the work incentives that

they obtain in the form of transport - such as motor cycles for inspectors, bicycles for foremen -as well as work clothing such as raincoats, hard hats, etc. Other workers such as mechanics, operators and drivers are aware that they have skills that are marketable anywhere in Tanzania.

The casual workers see RRM as benefitting them directly through employment. Their perception of the long term benefits does not go beyond the construction of the road itself. They see the road as providing them with more motorised transport. Women are especially appreciative of a year round bus service which facilitates visits to dispensaries and maize-mills. Men saw improved transport as providing greater access to markets for agricultural produce and easier means of travel to neighbouring villages/urban centres etc.

Greater access to dispensaries, maize-mills and markets saves time and/or labour inputs that can be utilised for productive activities. It also contributes to improving the quality of life. For the women, access to a maize-mill reduces the time and energy spent in pounding grain at home. The opportunity for greater communication between villages created by well maintained roads also helps the spread of ideas. However, it is significant that the casual labourers do not see working on road-sites as having long term benefits for themselves. The money earned is seen as beneficial only for short-term needs.

10.5 CONCLUSIONS

The most valued benefit of the RRM project is the opportunity it provides for the workers to earn cash. In October 1987 some 1500 people were employed and their wages comprised about 3 per cent of the total wage earnings in the two regions.

Earnings of workers clearly have a multiplier effect due to the circulation of the cash in the local economy. Because of these benefits it is of concern that wages currently comprise only some 10 per cent of project expenditure. This is low in comparison with more established labour-based programmes. A programme is normally only regarded as being labour-intensive if expenditure on wages exceeds 50 per cent of total costs.

There is scope for RRM to increase the local distribution of economic benefits by promoting the use of simple equipment and tool components that can be manufactured locally. Examples are carts. wheel-barrows and tool handles.

RRM has resulted in a considerable enhancement of worker skills. The benefits are appreciated by the workers, and will be greatly expanded by the switch to more labour-based methods and the staff development plan that is to be implemented.

CHAPTER 11
FEMALE PARTICIPATION

11.1 GENERAL POLICY

The basic methodology of any evaluation is to compare achievements with the objectives of the project. In the case of the RRM project female participation has not been explicitly stated as a goal in any of the bi-lateral agreements between Tanzania and Norway.

Nevertheless both governments have made women's participation in the development process a major policy issue. In Tanzania Julius Nyerere has repeatedly stated that neither equality nor development can be achieved without women's participation. At the Arusha Conference on Women and Development in 1984, he reiterated that:

> "The attack on poverty has to be waged in a manner which is liberating to the whole population. But that will only happen if women are involved in both the decision making about development and the implementation of those decisions..."

The achievements have not been outstanding, women are still under-represented in most sectors of the national economy, particularly at the policy and decision making level. However, measures have been taken to increase women's access to formal education, improve their legal status and increase their participation in the political and government decision making process. There are women ministers, in the government, doctors, engineers, technicians, senior administrative staff, managers in banks and corporations, directors of institutes, etc. The media, especially the radio, also have regular features on women's role in development. The government has requested all employers to submit employment data annually to the Bureau of Statistics. Breakdown by gender is compulsory.

The least progress has been at the household level in the rural areas where cultural norms about gender-related division of labour and lack of appropriate technology to reduce work loads and drudgery restrict women's activities to the fields and the house. However, the re-establishment of the Ministry of Community Development (MAENDELEO) with a special section for women and children illustrates that issues about women and development has not been totally ignored. MAENDELEO staff work closely with village women to assist them to organise women's groups, and run projects.

11.2 NORWEGIAN ROAD SECTOR POLICY

Placing women in the mainstream of development is also a major objective of Norwegian aid policy for developing countries. The opening paragraph of "Norway's Strategy for Assistance to Women in Development" published in 1985, states this unambiguously. The document also sets

out clear guidelines for incorporating women into all development projects supported by NORAD.

For the road sector, it includes among others:

> i "employing an increasing proportion of women in road-work starting with at least 20 percent at the beginning of the project. If this goal cannot be reached it should be documented what measures have been taken to recruit and train women for the work and why the goal could not be reached.
>
> ii arranging seminars for Norwegian road consultants and relevant authorities in order to create greater understanding for the necessity for making local socio-economic surveys ... for increasing participation of local people, women included
>
> iii making greater efforts to attract women as consultants/technical advisers in road construction."

The commonality of policy was reflected in the 1986 country programme between Norway and Tanzania when the delegations agreed that:

> "... concerted efforts should be made to increase women's involvement in development activities and that projects should be adjusted in order to secure a larger share of benefits to women."

From the policy statements referred to, it is clear that adequate female participation should be an important objective of the RRM. Furthermore, its variety of categories of employment, its in-service training programmes and its semi-autonomous status gives it considerable scope to achieve this objective.

11.3 FEMALE EMPLOYMENT IN THE RRM PROJECT

The Project Reviews 1984, 1985 and 1987 have pointed out that female participation has been very low. The 1984 Review recommended that firm goals on women's employment should be set and incorporated in the monitoring and evaluation procedures. It recommended that the minimum for employment of women should be 5 per cent by mid-1985 and then increase by 5 per cent per annum so as to reach 20 per cent by 1988.

In the Project Review 1985 it was noted that not much progress had been made in attaining these goals but attributed the shortcomings to delays in the implementation of the reorganisation plan. The February 1987 Review found that there were 5-6 per cent women employed on the project. It suggested that special emphasis be placed on information about job opportunities and the training of women as supervisors and "foremen" from the beginning of the pilot project for labour based operations.

Data provided to the Evaluation Team indicates that some progress has been made since these reviews, as Table 11.1 illustrates. The figures should be seen only as indicative of magnitudes rather than of absolutes, since breakdown by gender had to be pieced together from different sets of employment data which themselves were not reconcilable.

In brief, it was difficult to see how the official reports derived aggregate figures for female participation. A bald figure for total women employees - in tables which detail various categories of employees by sections but avoid a breakdown by gender - is not satisfactory. Future monitoring of women's participation should show breakdown by gender of all categories of workers in project reports.

Table 11.1 Female participation in RRM (per cent)

Profession	Mbeya	Tanga
Casual labourers	9.8	22.0
Road attendants	n.a	22.0
Road inspectors	-	-
Forewomen (trainees)	-	17.0
Trainers	-	-
Mechanics including trainees	-	10.0
Accountants/store personnel	39.0	33.0
Watchmen	-	-
Drivers/operators	-	-
Carpenters/masons	6.2	-
Senior administrative Staff	-	33.0
Typists	67.0	100.0
Overall female participation	8.4	21.5

Notwithstanding its weaknesses Table 11.1 illustrates significant achievements and gaps.

Achievements:

- in both regions there has been a significant increase in overall female participation since early 1987 when both the Project Review and a field study found participation rates of 5.6 per cent and 4.6 per cent for Tanga and Mbeya respectively.

- the 1984 Project Review recommended a target of 20 per cent by 1988. This figure has been achieved in Tanga.

Gaps:

- The overall rate of participation is still low in Mbeya. It does not seem likely that the region will achieve the 1988 target of 20 per cent. What is more, the rate of employment of women is low even by Tanzanian standards which for 1981 (the latest year for which official statistics are available)

was 16 per cent for females in Mbeya Region.

- There are still very many categories where women are not represented at all. What is also disturbing is that there does not appear to be any formal plan to incorporate women in these categories. In Mbeya, an opportunity to include women as trainee forewomen was not utilised. Trainee foremen/forewomen are selected from headmen/head women supervising road gangs on construction sites. The training section claims that they were not aware that there were head women on their construction sites.

- The plan for staff development and for training does not have any specific provision for women. Participation by women is generally taken to mean women participating in casual labour.

- There has been a steady decline in participation rates in labour based operation. In Mbeya the number of women workers had dropped from 39 to less than 5 between the end of October and the 21st November. In Tanga, the trend was less drastic.

11.4 DIFFERENCES BETWEEN MBEYA AND TANGA

One of the biggest causes of inter-regional differences in female participation rates on the RRM Project could be the variations in the socio-economic conditions prevailing in the two regions. Population density in Tanga is twice that of Mbeya (38.9 p/sqkm compared to 17.9 p/sqkm). In addition large areas in Tanga Region are affected by ecological constraints. Also more recently, the closure of many sisal estates has resulted in considerable surplus labour. All these factors contribute to unemployment and underemployment. On the other hand, in Mbeya, agriculture can give good returns to casual labourers. Even men are reluctant to work on construction sites in Mbeya because the wage rates offered by roadworks are not competitive with agriculture.

Another major reason is the positive attitude of the RRE in Tanga to the issue of women's participation. In both regions, work related to the subject have been delegated to wives of the expatriate staff as if it was an unimportant social matter, and outside the "proper" work of the Project. This is clearly unacceptable. Normal recruitment procedures should be used for such assignments, and due consideration given to professional qualifications and experience.

11.5 OTHER WOMEN RELATED ACTIVITIES

The Norwegian Strategy referred to above suggests socio-economic surveys and seminars as other measures to increase women's participation in road projects. NORAD, Dar es Salaam, commissioned a study on female participation in the RRM Project in both Mbeya and Tanga. The study concentrated mainly on women as road workers. The final report has been completed and distributed. The main findings indicate that women are willing to work on the RRM road-works as casual labourers but required consideration of their special needs particularly with respect to child-care and domestic work.

On the basis of the study a seminar was held in Tanga and heads of

various sections of RRM participated. The RRE claims that the seminar was instrumental in increasing the number of women in the Project. A similar seminar has yet to be held in Mbeya, although it is being planned.

11.6 CAUSES OF LOW PARTICIPATION

In addition to inter-regional differences, low participation of women in the RRM Project appears to be affected by the following[1]:

- **lack of surplus labour:** in Tanzania women have the main responsibility for child-care and domestic work in addition to a large proportion of the agricultural work. This "double burden" can consume about 14 hours a day on average with heavier loads during peak periods such as planting, weeding and harvesting. The heavy workload is especially hard on married women with several young children. As a result most of the participants in public works tend to be young women. In Ruvuma, the majority were between the age of 17 and 23. In ILO's Mto wa Mbu project, the average was 31 with more than 60 per cent being less than 30 years. In the current evaluation, a field study in Tanga found that the average age was 28 with 65 per cent being less than 30 years of age.

- **lack of economic and social infrastructure:** time/labour inputs depend upon the accessibility of social and economic services such as a maize mill (which saves hours of pounding grain) a reliable water supply and child-care services. Data from the field discussions showed that in one instance women walked almost 20 km to get to a maize mill (Masaika to Muheza) an equal distance to the market, approximately 6 km per day on water collection and spent almost a whole day (sunday) on collecting fuel wood. Such inputs can only be combined with short periods of road-works. Time spent on road-works can be increased if there is help within the household in the form of older children or adult relatives.

- **lack of decision making power at the household level:** in many cases married women have to obtain the permission of their husbands to work in public places such as road-works. In the field study in Tanga, nearly 75 per cent of participating women were single, living with parents or married heads of households. This means that they did not have to seek their husbands' permission to work on the roads.

- **wages:** both in Mbeya and Tanga participation dropped drastically from the initial response. In both regions women complained about the low wages. This was especially predominant in Mbeya which is paying less than Tanga. In Mbeya, the low wages were compounded by long delays (almost two weeks) in payment.

Obviously the RRM project has to comply with government regula-

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1 Most of these findings are based on discussions with women road workers on construction sites in Tanga and Mbeya, as well as on documented data from other road- works.

tions about wages. However, construction work on labour based operations is very hard particularly on women whose work does not end with the road-work. Additional recompense can be given in kind if not in cash. In the tea estates of Iringa, for instance, workers are given plots of land and assisted with services such as ploughing, supply of seeds, etc. Workers are also given housing if they are migrants. RRM should investigate what other organisations are doing to motivate their workers and devise a system of support in kind.

- **conditions of work:** in Tanga women also complained about abusive language from younger foremen, and bureaucratic rigidity about payment for partially completed tasks. For instance, if women fell sick after working two to three hours (out of an eight and a half hour work task) they were not eligible for any payment even if the sickness was due to accidental injuries. The Evaluation Team does not believe that this is the policy of RRM but it does want to point out that foremen/women may be rigid to the point of being inhuman, thus affecting continued participation.

- **lack of transport:** at the Boza road construction site in Tanga, for instance, most of the workers come from Pangani town, a distance of 6 km. Women usually are late for work because of having to prepare meals for the children left behind before coming to work. The long walk to work is an additional strain. The RRE, Tanga rightly points out that the whole rational for not providing transport is based on the premise that the workers come from villages. This is obviously not true and the rational has therefore to be questioned. Provision of transport would increase participation by enabling those women who are willing to work but cannot afford to spend time on travelling long distances because of other obligations.

- **lack of mobilization:** foremen in Tanga and Mbeya, and in particular the Kenyan instructors, argue that part of the problem is the fact that there has not been enough effort put into mobilising the villagers in labour based operations. The Kenyans also point out that the now successful Rural Access Roads Project in Kenya had similar initial problems which were resolved through several discussions with the villagers including the role that women could play in development.

11.7 POSITIVE ASPECTS OF PARTICIPATION

The greater participation of women in Tanga underscores the fact that there are some forces that assist participation. More than 60 per cent of the women interviewed had worked between 3 and 4 months.

One of the most important pull factors is that road-works provide women with a means of earning cash. Cash is needed for a variety of reasons but especially by those who do not harvest enough food. More than half the women interviewed in Tanga cultivated less than a hectare. A hectare is considered to be the minimum area needed to meet household food needs.

Expenditure patterns indicate that three quarters of the women spent

half the earnings from RRM work on food. The next most important need was purchase of clothes. The average expenditure on this item was higher than for food. Less than 5 per cent spent any of their earnings on agriculture, but a quarter spent a proportion of their earnings on improving their houses. Nearly half of the women reported expenditure on items like fees, medicines, bus fares, etc. Obviously women do benefit from working on the road-works.

There are also spin-off benefits which help other villagers. Some of the women used their earnings not only to buy food but also fuel-wood, in the process stimulating the circulation of cash in the village economy. However, road construction is extremely hard work, made even harder by socio-cultural factors and the lack of adequate infrastructure in the villages. Women's participation is therefore likely to be low and to fluctuate unless definite measures are taken to address the various constraints.

11.8 CONCLUSIONS

It is of general importance that externally funded development projects introduce changes in traditional socio-cultural patterns by recruiting and training women in positions traditionally occupied by men. The RRM project has been able to employ 20 per cent women in Tanga, which was the target for 1988 suggested by the 1984 project review. In Mbeya the percentage is less than half the target.

Most women have been employed as casual labours or in activities traditionally performed by women. Only in Tanga have attempt been made to the contrary. It is important that this trend is strengthened in the future, by establishing detailed targets for female participation in staff development plans and training programmes.

Participation in labour-intensive road work appears to be attractive to many women in the rural areas. The majority of these are young women with children who face many constraints to participation, e.g. transport, child-care, etc. It is important that the RRM project is responsive to their needs and makes efforts to find solutions to these problems. Also it is important that women are recruited and trained as forewomen.

Construction work with its fixed hours of work might still be difficult for the majority of married women. RRM should therefore aim to increase the number of women employed as road attendants for routine maintenance which has considerable flexibility in working hours both on daily and annual basis. A target of between 30 to 50 per cent is recommended.

CHAPTER 12

ENVIRONMENTAL CONSEQUENCES

Environmental impact is generally understood to mean 'the degree of impairment of other land uses caused by one particular use of an environment'. A road rehabilitation and maintenance programme on existing roads, such as the RRM project, can be expected to have relatively modest environmental consequences compared with those resulting from the construction of new roads.

12.1 ENVIRONMENTAL BENEFITS

The main impacts of the RRM programme are likely to have been positive in terms of land use, since they will have had the effect of intensifying agricultural activities. This is because produce is more likely to be collected rather than as a result of the lowering of costs, since Government regulation of the transport sector means that the latter are not passed on to farmers. There are indications that agricultural output in both regions is increasing, but it would be very difficult to estimate what proportion of this might be attributed to the work done by RRM per se, and whether this is greater than in regions without such a project.

A further environmental benefit from the RRM project is reduction in the erosion of road surfaces and drainage works due to the control of water flow as the result of maintenance operations; also by the rehabilitation of badly eroded road surfaces.

The effect of maintaining an earth and gravel road system is to prevent its destruction by natural elements and traffic. Thus RRM can be said to have preserved the capital asset represented by the road system they inherited. This can be valued at its replacement (rehabilitation) cost. If we conservatively assume that perhaps a third of the network in each region would no longer be trafficable but for the RRM project, and rehabilitation costs average TAS 460,000 per km, then the current value of erosion benefits can be assessed at some 310 mill TAS per region, which compare with a total project cost since the inception in 1979 of some 500 mill TAS (constant 1987 value).

12.2 ENVIRONMENTAL DAMAGE

Exploitation of forest reserves, because they are accessible by vehicles able to move significant quantities of firewood, charcoal and timber, is a problem associated with some new road programmes. Deforestation has in fact been mentioned by the RRM team as a problem in one particular area of each region. However, it has not proved possible to

quantify the scale of the problem, although inspection of both areas suggests that it has not yet reached a significant scale. moreover, it is not obviously connected with the RRM project. Population pressure seems a more likely cause. however, lack of trained manpower has prevented the wider use of concrete bridge construction. RRM has had to resort to simpler timber bridges, which need frequent replacement and do consume scarce local resources. To minimise adverse environment consequences it is important that this problem is overcome as soon as possible.

12.3 CONCLUSION

Overall the RRM project seems unlikely to have caused any adverse effect on the environment. Marginal improvements to the environment would occur through better drainage of the gravel roads. The rehabilitation and maintenance of roads will also have benefitted the environment through less fuel consumption resulting in improved air quality.

CHAPTER 13

BUDGETED VERSUS ACTUAL EXPENDITURES

13.1 BUDGETED COSTS

Cost estimates for the Norwegian inputs to the project have been based upon semi-annual progress reports issues by the two regions. These have been adjusted by the Project Coordinator at central level, in consultation with PMO and NORAD/MDC. The final budget has been approved during bi-lateral negotiations, as set out in the five project agreements 1979 - 1986.

The Tanzanian inputs to the project consist of annual Central Government grants to the Regions for recurrent and development expenditures in the roads sector. After the Local Government Act came into effect in 1985, some funds have also been made available from some of the Districts. The budget allocations are given below. (Mill. TAS)

Table 13.1 Total budget allocations to the RRM project (mill. TAS current value):

	NORWEGIAN COMPONENT			TANZANIAN COMPONENT		
	MBEYA	TANGA	TOTAL	MBEYA	TANGA	TOTAL
1979/80	3,0	3,0	6,0	9,3	8,2	17,5
1980/81	6,8	6,8	13,6	14,4	10,3	24,7
1981/82	8,6	10,5	19,1	5,6	10,0	15,6
1982/83	8,2	10,9	19,1	8,5	11,7	20,2
1983/84	8,5	15,6	24,1	12,3	14,6	26,9
1984/85	12,5	5,7	18,2	9,4	9,9	19,3
1985/86	8,5	11,1	19,6	18,9	26,9	45,8
1986/87	27,8	45,9	73,7	16,1	5,1	21,2
1987/88*	42,4	61,7	104,1	22,0	31,1	53,1
TOTAL	126,3	171,2	297,5	116,5	127,8	244,3

*) tentatively.

13.2 EXPENDITURES

Actual expenditures have been accounted for at various levels. At regional level, with RDD as warrant holder, the use of Government grants and the proportion of the Norwegian grant that is channelled through the Treasury, the so-called "C-funds" or operational funds, is registered against the government votes according to government regulations.

At project level, the RRE, and previously the RE, as sub-warrant holders, will account for the proportion of these that represent direct operational expenses incurred by the project, plus any procurement made abroad, in their own cost control systems in the two regions. Expenditures are reported in the semi-annual progress reports. These do not, however, include some of the salaries of local staff, i.e. people employed directly by the project.

On the Norwegian side, expenditures from the foreign grant have been accounted for by NORAD/MDC. These include procurement abroad, plus C-funds, which are accounted for also by the project and the regional authorities, respectively. Other expenditures, as e.g. consultancy fees, construction costs of project houses, travel costs and scholarships are accounted for only by NORAD/MDC. The same applies for technical assistance, which has been included directly in the project budget only since 1986.

Procurement and some consultancy services are currently administered via the Norwegian Roads Administration, who report to NORAD/MDC directly.

The cost control system is therefore both complex and fragmented. The involved parties control only parts of the total.

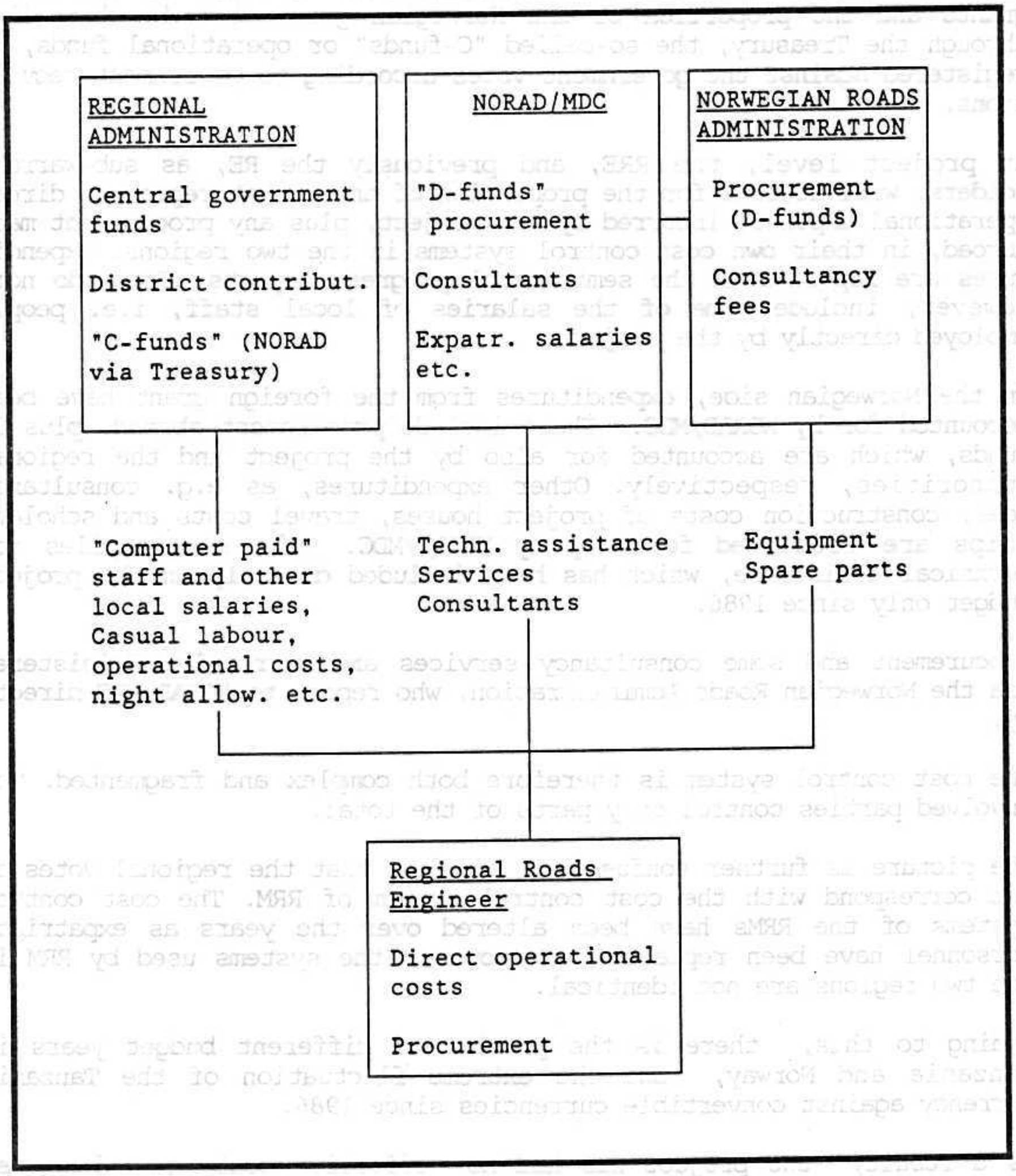
The picture is further confused by the fact that the regional votes do not correspond with the cost control system of RRM. The cost control systems of the RRMs have been altered over the years as expatriate personnel have been replaced. Moreover, the systems used by RRM in the two regions are not identical.

Adding to this, there is the problem of different budget years in Tanzania and Norway, and the extreme fluctuation of the Tanzania currency against convertible currencies since 1986.

As a result, the project has had no effective cost control system which guarantees an acceptable degree of accountability of total expenditures. The expenditure accounts presented to the evaluation team, have shown large inconsistencies. Figures quoted in different reports may deviate by as much as 200 per cent.

The fact that cost control has been fragmented, coupled with insufficient reporting between headquarters and the field, has caused problems in developing an effective and detailed forward budgeting system in the regions, which would enable them to plan and control expenditures to correspond with actual budgets.

Fig. 13.1: Cost control in the RRM Project



13.3 FOREIGN EXPENDITURES

NORAD's present budgeting and cost control system, which was introduced in 1985, does not contain any register of annual expenditures for the period 1979-84, only the accumulated total broken down on collective votes.

The foreign component as recorded from the project agreements and the corresponding expenditures registered in NORAD's data base is as follows (Mill. NOK):

Table 13.2 Budget and expenditures, foreign component (mill NOK)

BUDGET YEAR	BUDGET	CUMULATIVE BUDGET	CUMULATIVE EXPENDITURE
1979-81	27.8	27.8	NA
1982	27.3	55.1	NA
1983	21.5	76.6	NA
1984	10.8	87.4	87.4
1985	19.2	106.6	107.3
1986	33.0	139.6	132.1
1987	31.0	170.6	160.5

In addition, a technical assistance component of approximately 35 mill. NOK for the period 1979-85 should be added, since this was covered by NORAD/MDC directly, outside the project budget which is specified in the bilateral agreements.

Project budgets have been specified in very generalized terms in the agreements. The sixth agreement 1986-89 for instance, has a breakdown of the budget only in operational costs, technical assistance, and consultancy services. Also the costing elements are different from those applied in actual cost control.

Based on the limited information available in NORAD's data base, the total foreign expenditures of the project for the period 1979-86 were as shown in Table 13.3 (Mill. NOK): Because of the limited information available, it is not possible to identify what proportion of the funds have been used for procurement of machines.

Table 13.4 Breakdown of foreign expenditures (mill NOK)

	1979-84	1985	1986	TOTAL	PER CENT
UNSPECIFIED	-	-	0.1	0.1	0
CONSULTANTS	-	0.5	0.9	1.4	1
WORKSHOP	7.9	5.5	2.8	16.2	10
HOUSING	2.5	1.0	0.5	4.0	3
OPERATIONS	77.0	5.4	11.1	93.5	58
TECHN. ASST.	27.6	7.4	9.3	44.3	28
TOTAL	115.0	19.8	24.7	159.5	100

13.4 CONCLUSIONS

Because of the unsatisfactory cost control system of the project, and the lack of information on expenditures in NORAD/MDC for the period 1979-84, the data available does not provide the basis for establishing actual expenditures for the project. Hence, a comparison between the expenditures and budget figures is not possible.

This is clearly unsatisfactory from an audit and policy point of view. It also has serious repercussions for the development of a satisfactory basis for the costing of individual road rehabilitation and maintenance activities. This is needed if all investment decisions are to be made only on the basis of a rigorous analysis of real costs and expected benefits as discussed in chapter 2.

CHAPTER 14

COST COMPARED WITH OTHER PROGRAMMES

14.1 GENERAL

The comparison of road maintenance and improvement costs in Tanzania is made very difficult by the lack of a common basis for comparisons. Typical problems with available estimates are that they are:

i) Based on different engineering standards which cannot be adjusted for due to the absence of detailed bills of quantities. Thus, estimates are rarely explicit as to what has been included in, or excluded from, the costs. Also there are different interpretations of what operations comprise commonly used terms such as routine or recurrent maintenance, regravelling, and (especially) upgrading/rehabilitation.

ii) In financial rather than economic costs. The overall figures can also mask considerable differences in the way plant, overhead and costs are calculated, and thus the true proportion of foreign to local costs.

iii) In different currencies whose reference date may not be explicit. Given Tanzania's recent history of rapid change in the value of its currency it is clearly vital to standardize all cost comparisons to a common date.

As an illustration of some of these problems it is useful to describe RRM's cost estimation system.

14.2 RRM MAINTENANCE AND REHABILITATION COSTING

RRM estimates of road maintenance and rehabilitation costs are not based on detailed bills of quantities resulting from engineering surveys. They are essentially based on judgement and experience, although this will change with the introduction of more labour-based methods which are necessarily based on measured tasks for individuals or groups of individuals.

For major rehabilitation works notional quantities are assumed based on a standard cross-section, right-of-way, etc., and an assumed or estimated number of minor drainage structures (e.g. culverts). The costs of major drainage structures (e.g. bridges) are estimated separately. Standard unit rates for labour, materials and overheads are then applied to the notional quantities to arrive at the overall estimate. The resulting figures are contract or financial costs.

PLANT HIRE COSTS

A crucial element in these costs is the unit cost of using equipment. The RRM uses a hire charge system for calculating these unit costs. As

a means of budget control and management this may be satisfactory, but in its present form it does not conform to internationally accepted accounting practices such as those recommended by the World Bank and ILO.

The main weakness of the present system is that it is not based on records of levels of plant utilisation actually realised under field conditions, but estimates of those levels. For example, RRM's Plant Analysis is based on an assumed 1000 hrs/yr use for a grader, dozer and wheel loader (i.e. 50 per cent of the optimum standard of 2000 hrs). Experience in Tanzania is that actual utilisation of such plant is at best 35 per cent of optimum and probably lower. (Mbeya figure for 1984, when plant was reasonably new, was given as 35 per cent. ILO reports general figures for Tanzania of 30 per cent for heavy plant - graders, dozers, tractors - and 44 per cent for light plant - trucks and land rovers -). In general, therefore, RRM's assumed levels of utilisation are too high, which has the effect of **under-estimating** the real cost of using equipment.

The hire charge system used by RRM is also based on financial rather than economic costs. This further underestimates the real cost of using equipment in Tanzania and is especially misleading if comparisons are made with alternative, labour-based methods of working.

The combined effect of the previous factors is that actual or real equipment hire rates should be as much as 100 per cent above their nominal values.

As an illustration of the distortions the RRM system can give rise to, a comparison is made in Table 14.1 of its equipment-charges and those derived for the AFRS. This is not straight forward since RRM uses a 'daily' charge whereas the AFRS figures are given per hour. Since it is not clear how many hours an RRM "day" comprises the AFRS figures have been compiled for a 6 and 8 hour working day.

Table 14.1 Comparison of RRM and AFRS Plant-Hire Rates (TAS)

Equipment	RRM (daily charge)	Agricultural Feeder Road Study (AFRS) 6-hour day		8-hour day	
		Financial	Economic	Financial	Economic
1. Grader	8840	9110	12220	12150	16290
2. Bulldozer D.6	6370	9780	13090	13040	17460
3. Wheel Loader	6370	6500	8700	8670	11600
4. Tipper	3170	3790	4960	5050	6610
5. Light Vehicle	2020	2230	2940	2970	3920
6. Tractor	1010	1280	1670	1700	2220
7. Trailer	390	200	270	270	360
8. Motorcycle	270	370	490	500	660

With the exception of trailers AFRS's financial rates are systematically higher than those of RRM, in some cases being more than double for an 8-hour day. As expected, the use of economic costs further increases the difference between AFRS and RRM figures.

14.3 COMPARISON WITH OTHER PROGRAMMES

Despite the previous difficulties an attempt was made to compare RRM costs with those estimated for other programmes. Table 14.2 gives estimates of rehabilitation costs which seem to be slightly less ambiguously defined than those of maintenance.

Table 14.2 Comparison of Road Rehabilitation Costs Estimated For Various Programmes in Tanzania (TAS/km)

Programme	Costs 1000 TAS	
	Mean	Range
RRM		
Labour-Based		
- Usangu Plains Pilot Project	-	200-220
- Mbalizi	190	-
- Madibira Rice Scheme	180	-
Equipment-Based		
- General	-	450-575
AFRS		
- Mbozi/Kyela District estimates only.	500	300-890
TRANSPORT RECOVERY PROGRAMME*	460	
KURRP**	2280	200-5000

* Derived from AFRS figures
** Kilombero and Ulanga Rural Roads Project (Morogoro Region)

RRM figures, especially those resulting from the pilot labour-based activities in Mbeya, compare favourably with other programmes. However, the Mbeya figures incorporate equipment-hire charges which it has been

shown underestimate true costs[1]. The costs on the KURRP Project are notably higher than those from any other source. The reasons for this are not apparent. However, the Coordinator of KURRP has been very critical of road maintenance and rehabilitation funding in Tanzania, especially that assumed for the Transport Recovery Programme, which is considered to seriously underestimate required costs[2].

14.4 CONCLUSIONS

No satisfactory basis exists for comparing road maintenance and rehabilitation costs under the RRM project with those of other programmes. RRM's cost estimation procedures are based on notional rather than real quantities and its equipment cost procedures do not conform to internationally accepted conventions. The switch to labour-based methods of working is producing a more quantitative approach to costing. This change is vital to the future of RRM since these methods of estimation can be taught. Judgement and experience take years to acquire and are precisely the skills new Tanzanian staff are unlikely to have.

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1 On the Usangu Plains site equipment-charges comprise about 20 per cent of nominal costs.

2 Report For Transport Sector Donors Conference. Some Comments on Rural Roads. D. Schelling, Project Coordinator KURRP. December 1987.

CHAPTER 15

COSTS AND BENEFITS OF THE RRM PROJECT

15.1 THE APPROACH TO THE ANALYSIS

Given the uncertainties of both cost and benefit data it was decided to first estimate the economic outcome of the RRM project on the basis of the "worst possible scenario". That is to examine the relative position of estimated costs and benefits from the most pessimistic of assumptions. Then to use the results of this analysis and sensitivity tests to infer the most likely costs and benefits of the RRM project.

Such an approach focuses only on the largest and most readily quantified benefits, vehicle operating cost savings resulting from improved road maintenance, as discussed in Chapter 9. It ignores environmental benefits, as discussed in Chapter 12, which are almost certainly positive, and any possible savings due to the prevention of crop losses. These are again likely to be positive, but cannot be readily quantified. Secondary benefits due to improved transport services, skill enhancement as a result of training, or the wider distribution of employment among poor groups and women, also cannot be quantified and are therefore excluded from the calculations.

15.2 RESULTS

The detailed results are given in Table 4 of Appendix 7. If expatriate costs are excluded then the benefits of the project in both regions exceed their costs. Returns in Tanga region are less than those in Mbeya because of the generally lower levels of traffic. However, in both regions the overall economic Internal Rate of Return (IRR) is estimated to be greater than the opportunity cost of capital which is taken to be 12 per cent in Tanzania.

If full expatriate costs are included then net benefits in Mbeya region are still positive and above the opportunity cost of capital. In Tanga region the inclusion of full expatriate costs results in negative net benefits i.e. costs exceed benefits. However, this result is considered to be based on an unrealistically pessimistic assumption with regard to project costs, namely the assignment of full RRM costs to the year in which funds were spent. For plant and equipment this is not correct since normal practice is to depreciate such capital costs over the working life of the machinery: usually 8-10 years. By allowing for this effect net benefits in Tanga region, even with the inclusion of full expatriate costs, are similar to those in Mbeya region.Thus, the realistic internal rate of return (IRR) in both regions is of the order of 46-48 per cent.

These high rates of return are typical of highway maintenance projects, and reflect the low costs incurred to sustain the productive capacity

of the initial investment. Highway construction projects typically generate lower returns, in the range of 10-30 per cent. However, for rehabilitation and maintenance projects the range is normally much wider since they incur much lower costs than new constructions, but often give rise to the same order of benefits.

15.3 DISTRIBUTION OF BENEFITS

The benefits of any road rehabilitation and maintenance programme are approximately proportional to the expected traffic flow that results. Thus it should be apparent from Appendix 6 that the benefits of the RRM project are disproportionately generated by those roads in the "good" or highest priority class, with the highest traffic flow levels.

The relationship between traffic flow and benefits can be used as a simple means of screening all future investments in the RRM project. For example, the majority of roads in Tanga region carry less than 20 vehicles per day. At this flow level annual benefits per km are approximately 117,000 TAS per year on a road in fair condition, or 146,000 TAS for a road in good condition. Unless the combined annual cost[1] of rehabilitation and maintenance is less than these figures then such investments cannot be justified economically.

15.4 CONCLUSIONS

Notwithstanding its high expatriate costs the RRM project is justified economically in that the net benefits are positive and provide a return on the funds invested which is greater than the opportunity cost of capital in Tanzania. Such a result is not unexpected on the basis of international experience with road maintenance projects in developing countries.

The most direct benefits of road maintenance and rehabilitation projects, savings in vehicle operating costs, are relatively easy to quantify, and directly proportional to the expected level of road traffic after such improvements. These relationships could provide RRM with a simple means of screening all future investment decisions.

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1 Cost of rehabilitation divided by the number of years for which the rehabilitated condition is expected to last at prevailing maintenance levels.

SECTION 3

POLICY AND STRATEGY

CHAPTER 16

RELEVANCE OF THE PROJECT

16.1 RELEVANCE

The **relevance** of a project is defined as the degree to which the rationale and objectives are, or remain, pertinent, significant and worthwhile in relation to the identified priority needs and concerns of the recipient. Under this definition, a project may be both effective and efficient, yet not be relevant if it makes little or no contribution to meeting development objectives and priority needs.

The term **development objective** characterises a programming level beyond the immediate objective; it provides the **reason** for the project and describes the desired end towards which the project is being directed.

It follows that an assessment of relevance is therefore a comparison between the development objectives of the project (as specified in the project document) with the current policy and priorities of the country (which might have changed since the project started).

In the case of the RRM project, it is important to note that neither development objectives nor immediate objectives have been specified in any of the 6 project agreements that represent the basis for the project since its start in 1979. What have been specified as objectives in the agreements, are in reality what are usually referred to as the expected outputs of the project.

Because of this, it is as difficult to make an assessment of the project relevance today, as it has been during previous project reviews. Since no development objectives have been spelled out explicitly, the project has not been subjected to analysis in a wider development perspective, which is remarkable - and unfortunate.

In order to be able to assess the relevance of the project, reference will be made to the overall objectives of Norwegian aid and Tanzanian road sector development.

16.2 OBJECTIVES OF THE RRM PROJECT

In the present bilateral agreement of December 1986, what is called the primary objective of the project is expressed thus:

> "... to develop a new functional institution at the regional level responsible for and capable of carrying out maintenance and reconstruction of the regional road network.
>
> To achieve this objective particular attention will be paid to:
>
> - training at all levels,

- introduction of more labour-based methods,
- physical road maintenance,

with the aim of obtaining:

- a reduction in dependency on foreign input,
- more job opportunities
- a gradual transfer of responsibility to the Tanzanian staff.

Important sub-targets are:

- to provide the regional road administration with well-qualified personnel at all levels through formal training and on-the-job experience

- establishment of routines and introduction of methods for maintenance of regional roads that will lead up to an optimal balance between use of equipment and manual work

- implementation of road maintenance activities suitable for the regional road network, which is to be defined by Tanzania in consultation with Norway. The lengths of the regional road networks shall reflect the economic and practical capacity of the regions to carry out maintenance by themselves in the future."

The dual main priorities of the project have been consistent since its start in 1979, i.e.: (i) institution building, and (ii) maintenance of roads.

The latest agreement however represents major shifts in the direction of the project:

- Previously, the project aimed at supporting existing regional and district authorities responsible for road maintenance. The present agreement is directed towards the establishment of a new maintenance organisation outside existing institutions, at regional level.

- Previously, there has been no mention of what type of technology should be used. The present agreement prescribes a shift from machine-based to labour-based technology.

- Earlier agreements have not specified which parts of the road network should be covered. The present agreement limits the activities to parts of the (yet to be defined) regional roads network.

16.3 NORWEGIAN ODA POLICY

The overall objectives for Norwegian ODA (St.m. nr. 34, 1986-87) reads as follows:

> "..... the paramount goal of development assistance shall continue to be to contribute to lasting improvements in the economic, social and political conditions of the population in developing

countries. Development aid must be used so as to achieve the greatest possible development effect for the poorer sectors of the population. It should preferably go to the poorest developing countries, and be designed to create as little dependence as possible on future aid. The resources allocated to development assistance must be used as efficiently as possible in order to achieve this goal."

A separate strategy for women in development has been adopted by MDC/NORAD in 1985, where also women's involvement in the road sector is mentioned.

16.4 TANZANIAN POLICY FOR THE ROAD SECTOR

As a result of adverse economic development in Tanzania in the 1970's and 1980's, there was a narrowing of development priorities as was evidenced in the Structural Adjustment Programme (1982) and then in the Economic Recovery Programme (1986). Although long-term development objectives as expressed in earlier Five Year Development Plans were retained, the Economic Recovery Programme prescribes a concentration of resources on certain development objectives for immediate implementation, according to their potential contribution to the shorter term requirements of national economic recovery.

SHORT-TERM OBJECTIVES

Of relevance for the roads sector is the current emphasis on investments that will stimulate the growth of export crops and increase the production of those food crops which are in short supply in the domestic market. According to current policy, expenditures in the rural roads sector should be concentrated to ensure all-year access from key food and cash crop producing areas to the main road system, for the purposes of crops evacuation and distribution of seeds and other inputs to farmers. The short-term objective adopted in the Economic Recovery Programme also implies that the scarce resources available in the road sector should be directed towards regions and areas of high agricultural potential.

The current economic strategy implies that such objectives as access to welfare amenities and improved mobility will have to be of second priority during the economic recovery period.

LONGER-TERM OBJECTIVES

The longer-term objectives to which the road sector is expected to contribute is improved economic, social and political development. An expanded and well maintained road network will help to ensure productive interaction between crop producers and commodity manufacturers which will provide farmers with incentives to expand production. In the longer term it will be necessary to open up high-potential but under-exploited areas for cultivation.

In other areas, rural roads are needed to improve the standard of living, and to integrate the rural population in the national economy. In the long term, when economic development gains momentum, renewed emphasis can be given to rural roads as a means of providing access to

public facilities such as health centers, schools, organised markets, government extension services, and the establishment of links to encourage social interaction and mobilisation as well as broader community development. The long-term objective of strengthened public participation in decision making and political activities is also important in this context.

16.5 THE ROADS SECTOR DEVELOPMENT POLICY

The distinction between short and long term objectives for rural roads development has been translated into a two-stage approach. The Agricultural Feeder Road Study, 1987, proposals, refer:

First stage:

- **selectivity** in resource allocation to high potential agricultural areas;

- full priority to the **maintenance** of rural roads, though combined with a selective rehabilitation programme for **segments** of the most important agricultural roads;

- emphasis on the **district level** for labour-based operations and on the regional level for equipment-based operations;

- concentration of technical resources within one line organisation;

- concentration of Central Government's road grants on the establishment of an effective maintenance organisation;

- reliance on District Councils and interested donor agencies for the raising of funds for rehabilitation and construction of new rural roads;

- gradual implementation of the new rural roads maintenance organisation in individual districts and regions.

Second stage:

- allocation of resources for all categories of rural roads in all parts of the country;

- diversification of the economic, social and political objectives of rural roads development to fit the situation in different parts of the country;

- development of road engineering and other technical capabilities at district level as resources become available and the maintainable rural roads network expands;

- gradual transfer of full technical and financial responsibility to the District Councils for rural roads development and maintenance.

Stage 1 refers directly to the current Economic Recovery Programme, and is likely to continue through the 1990s in most parts of the country. Full achievement of stage 2 is unlikely to be achieved before well into

the next century, though some districts will develop much sooner than others.

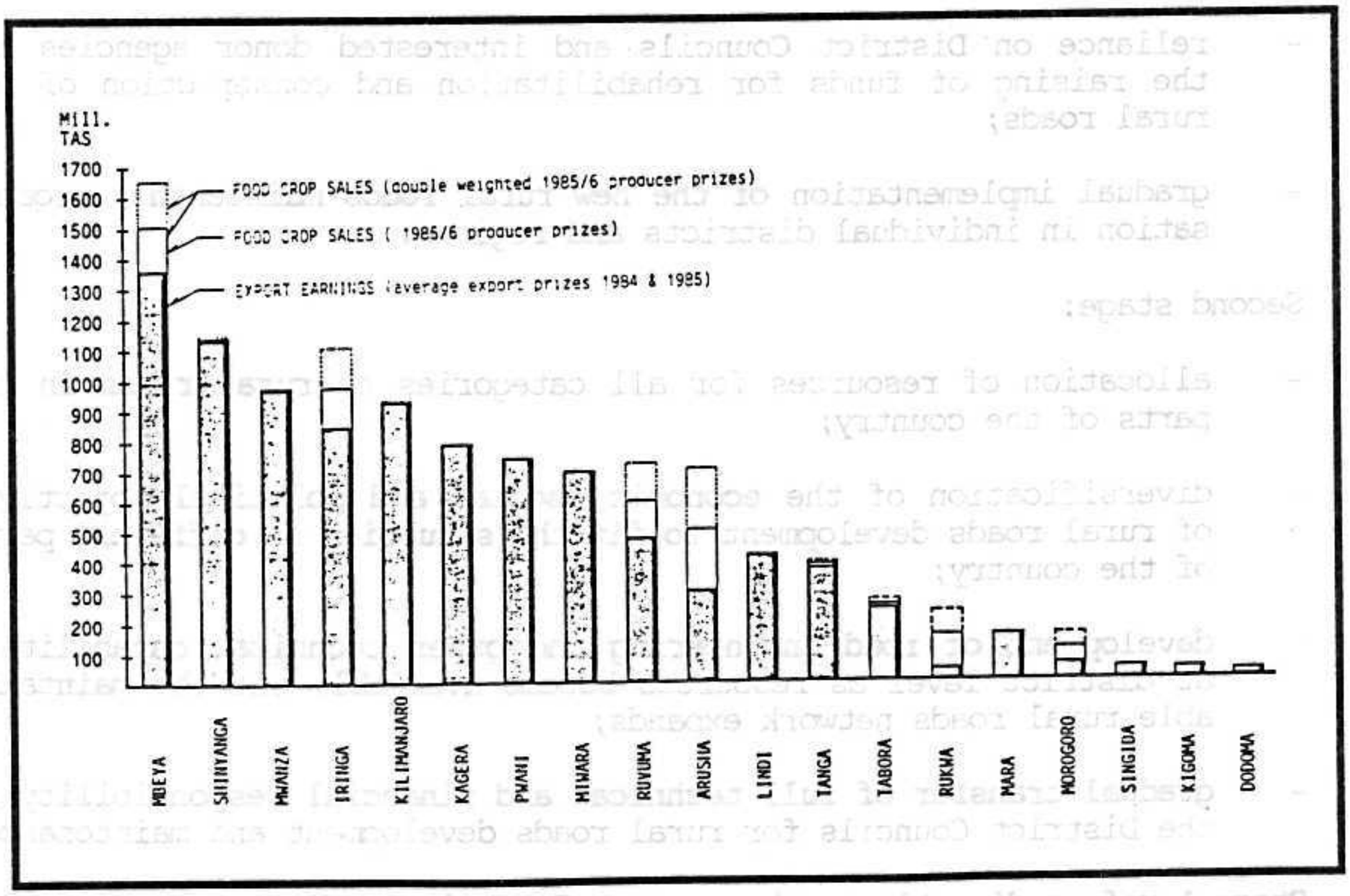
During the Transport Sector Donor's Conference in Arusha, December 1987, it was evidenced that the GOT has endorsed in principle the main recommendations of the AFRS, and the document therefore forms an important basis for the assessment of the relevance of the RRM project in the future. The consensus of the conference was that genuine on-going donor rehabilitation or upgrading of rural roads should be completed, but no new ones started except on identified essential roads, or roads with an outstanding, specific justification. Other roads - outside the "essential" category - will receive only "minimum" maintenance to provide reasonable access". Appendix 5, para 5-6, refers.

16.6 ASSESSMENT OF RELEVANCE

SELECTIVITY

According to the AFRS study, Mbeya and Tanga regions were number 1 and 12, respectively, in terms of volume of export earnings and food crops sales (1985/86) Mbeya was 160 per cent above and Tanga 20 per cent below the country average. Ref. Figure 16.1. In both regions, the existing road network extends into both high and low productivity areas, with a concentration of roads in high productivity areas, (which usually have the highest population density).

Figure 16.1 Ranking of Regions by Export Earnings and Food Crop Sales



Source: Agricultural Feeder Road Study, 1987, Vol. D

The original objectives for the RRM project suggests that priority should be given to maintenance of roads of adequate standard and newly improved roads. Further that upgrading and construction of new roads shall be limited to the capacity to maintain them. The original agreement therefore includes a mechanism to limit the scope of the project (in accordance with the resources available at the Tanzanian side). In reality, however, the project has developed a higher "ambition level", i.e. an upgrading of rural roads to a so called maintainable standard to the extent that all major rural roads are maintained in the two regions. Since the length of the network in both regions is about the same size, Norwegian funds have been distributed equally between the regions throughout the project period.

The present bilateral agreement suggests a reduction of the network to be serviced by RRM, and specifies that these should be regional roads only, although it acknowledges that precisely what are to be defined as "regional roads" is to be agreed between the GOT and NORAD/MDC.

On the basis of current national priorities, (which reflect the acute need to manage scarce resources, rather than support an overall development strategy), one would assume that the length of roads to be maintained, justified on economic grounds, would be larger in Mbeya than in Tanga, and that external funds should be distributed accordingly.

Also, in terms of resources allocated to the maintenance of rural roads, there is a preference in current policy to maintain selected parts of the whole network from regional roads down to feeder roads in the high potential cash crop producing areas - not to limit maintenance to the regional network of main roads.

Norwegian aid policy, on the other hand, is designed to support marginal groups in society in periods of severe economic problems. On this basis, an extension of the project into marginal areas could be justified, at the expence of the main objective that is stated in the current bilateral agreement, namely the creation of a sustainable maintenance organisation which could operate without external support.

Available statistics from the two regions indicate that the volume of export crops (in tonnes) is only in the range of 2-6 per cent of total production of crops. Table 16.1.

The volume of agricultural produce that needs to be transported is more a function of what proportion of food crops are being purchased in the regions, than the volume of export crops produced. This volume has remained relatively constant over the period 1980-87. However, there are indications that the volume is increasing[1].

Assessed against Norwegian priorities, one could question why the RRM project is located in Mbeya and Tanga, both rich agricultural areas,

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1 For the crop year 1986/87, cotton production increased in the country as a whole by 60 per cent over the previous four years average, coffee production by 27 per cent, maize production by 20 per cent and tobacco production by 17 per cent. This was in response to increased producer prizes under the ERP.

instead of in those with the lowest agricultural production, i.e. Rukwa, Kigoma, Dodoma and Singida. It should be remembered that initially the selection of Mbeya and Tanga was justified because of their agricultural importance, based upon the assumption that investments in these regions would maximise benefits which will eventually induce economic activities in other regions. There is no doubt, however, that the support of the two regions is in accordance with current Tanzanian priorities.

Table 16.2 Agricultural Production in Mbeya and Tanga 1980-87 (Tonnes)

	Mbeya			Tanga		
	Food crops	Export crops	Total	Food crops	Export crops	Total
1980/81	801	23	824	838	59	897
1982/83	954	20	974	697	60	757
1983/84	1033	18	1041	749	48	797
1984/85	771	25	796	623	40	663
1985/86	837	23	860	791	33	824
1986/87	1088	27	1115	577	38	615

Source: Statistics provided by Regional Authorities

ROAD STANDARD

Current national policy gives full priority to maintenance of rural roads, combined with selective rehabilitation of segments of the most important agricultural roads. The aim is to ensure all-year accessability (or at least during planting and harvesting) from high-potential areas to the main roads.

The RRM project, on the other hand has adopted an approach where roads are being rehabilitated up to a certain standard, according to a road classification system based largely on engineering criteria. Under this approach, one attempts to maintain a uniform standard over the entire length of a road once it has been classified and included in the RRM project.

This approach tends to be in conflict with the current policy of managing scarce resources in Tanzania. If the project is to conform with national policy, the road standard to be adopted will have to be reflected in future project agreements.

ADMINISTRATIVE LEVEL

Current policy suggests a division of responsibility between districts and regions as regards labour-based and machine-based maintenance, respectively.

The primary objective of the RRM project as stated in the bilateral agreement for the period 1986-89 "is to develop a new functional institution at the **regional** level responsible for and capable of carrying out maintenance and reconstruction of the regional road network". Most operations are machine-based today, but pilot projects for labour-based maintenance have been initiated in both regions.

Clearly pilot projects in labour-based roads reconstruction and maintenance can be justified at regional level in order to gain experience. But large scale labour-based operations organised at regional level is both in conflict with current policy, and cannot be justified for logistical reasons. Moreover, for technical reasons it is unlikely that many real regional class roads could be rehabilitated and maintained entirely by labour-based methods. Most of the successful, large-scale, labour-based road programmes in Africa and elsewhere have focussed on the improvement and maintenance of relatively short (15-25 km) feeder roads.

The implications of such considerations for the RRM project would be that either the labour-based component of the project should be abandoned, or the operations should be oriented directly towards the district level.

ORGANISATIONAL STRUCTURE

Current policy suggests a concentration of Central Government funds for road development on the establishment of an effective maintenance organisation. Under the present policy, MCW has the technical and financial responsibility for national roads, while the responsibility for district roads is with MLGC. Regional roads are the responsibility of Regional authorities.

A main concern of the Tanzanian Government is to increase its efficiency at all level, e.g. by avoiding duplication of responsibilities in existing institutions.

At present, several institutions are involved in the road sector in the regions: Trunk Road Maintenance (TRM), the Regional Engineer (RE), the Coffee, Tea and Pyrethreum Boards, District authorities, the town council, the Cooperative Union and private contractors. The RRM project, which operates directly under the control of RDD, has been established as a separate institution parallel to the RE, which is responsible for maintenance of regional roads in other regions. The establishment of RRM does not simplify the picture. It can be justified in the context of national policy only if RRM is taking over the responsibility of all roads from the RE. Since RRM is limiting its responsibility to parts of the rural road network, the division of responsibilities between RRM and RE is not entirely clear.

This relatively confused situation is partly a result of the lack of a clear Tanzanian policy for the road sector, paragraph 4.1, above, refers. However, conclusions from the Transport Sector Donor's Conference in Arusha December 1987 indicate that the GOT has decided on certain major policy issues, i.e.: That planning and budgeting for rural roads will remain the responsibility of the regional administrations and MLGC, while MCW will be responsible for the execution of

development, rehabilitation and maintenance of all rural roads. Appendix 5, paragraph 1, refers.

If this is the situation in the future, the existing objective of establishing a separate maintenance organisation under RDD will no longer be relevant. A major build up of technical personnel outside the Resident Engineer (TRM under MCW) is justified only if such personnel are transferred to institutions which will be sub-contracted by MCW for upgrading and maintenance of roads in the future.

REHABILITATION AND CONSTRUCTION OF NEW ROADS

The current policy for the road sector suggests that rehabilitation of new roads should be limited by the ability of District Councils and external donors to provide funds for such projects, unless they cover the essential "core" road network or there is an outstanding specific justification for them.

The present RRM project utilizes a substantial proportion of its resources for rehabilitation, and have previously been using a smaller part for the construction of new roads. A main problem with this is that new roads are added to a network that the country in its present situation is not able to maintain. In some cases, there might have been a particularly strong justification for such initiatives, but much of these activities have been in conflict with current policy.

In order to conform with national policy, therefore, the amount of resources that could be used for such activities should be clearly defined, with the maximation of benefits from scarce resources as a main objective.

16.7 CONCLUSIONS

There are several areas where the RRM project does not conform entirely with Tanzanian policy and priorities. In most cases these irregularities can probably be adjusted.

Another area of concern is that current Tanzanian road policy, as dictated by the short-term perspective of the Economic Recovery Programme, might be in conflict with basic principles in Norwegian policy for development aid. A main conflict is whether scarce resources should be used to service people in areas that are marginal in terms of production of cash crops, and therefore are relatively poor.

Major questions to be asked is what negative impact the neglect of rural roads in these areas would have for the people. Does it imply that they are temporarily cut off from the development process because of lack of agricultural inputs, incentives, access to public services such as education and health? What would be the effect on food production?

We do not have the answers to these questions. The main implication of these questions for the project, however, seems to be that if the negative impact is not likely to be dramatic, the scope of the project should be reduced to conform with Tanzanian ambitions. If the effects

are dramatic, Norwegian assistance at the present level, or even above the present level, can be justified if the increase is used to redress some of the negative effects.

For future planning, monitoring and evaluation of the project, a systematic approach like the "logical framework" should be adopted[1]. This would ensure that basic factors in the project like objectives, assumptions, outputs and activities are clearly and logically defined and addressed in order not only to assess the impact of the project at appropriate staffes, but also its relevance.

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1 The "Logical Framework" is an analytical tool which is used by a number of multilateral and bilateral donor agencies in project planning, monitoring and evaluation of development projects.

CHAPTER 17

INTEGRATION OF THE RRM PROJECT IN THE TANZANIAN ADMINISTRATION

From the start of the project in 1979 one of the primary goals has been the development of an organisation capable of undertaking rural roads maintenance in Tanzania. The intention was that the institution should be (a) sustainable, and (b) replicable. The 1987 Project Review expanded sustainability to mean full integration into the Tanzanian administration.

Full integration implies:

(i) An institution which reflects GOT policies and fits into its organisational structure. In practice this means being under a designated official at central, regional or district level, depending on where the institution is based.

(ii) Tanzanisation of key positions, as well as supportive staff.

(iii) Administrative routines and schemes of service for personnel in accordance with GOT regulations.

(iv) Observation of Tanzanian planning and monitoring procedures, as well as an appropriate technical standard of work performed.

(v) The long term cost level of the activity to be performed must be within the means of Tanzania.

17.1 RRM IN RELATION TO OTHER GOVERNMENT INSTITUTIONS

RRM IN THE TANZANIAN ADMINISTRATION

When the RRM Project was started in 1979, it took over the organisation of the Roads Betterment Units in Lushoto and Rungwe districts. The Project was initially integrated into the existing administrative set up, coordinated by the RE at the regional level and implemented by the DE at the district level. The DE was the key person for rehabilitating and maintaining the rural roads, specially district and feeder roads. By 1984 this arrangement was found to be unsatisfactory mainly by the funding agency, namely NORAD. It was therefore decided in 1985 to put the project under the control of the RRE who would be directly responsible to the RDD.

The RRE is part of the regional administration but by being independent of the RE, the post is unique in Tanzania. In other regions the

responsibility for regional roads lies with the RE while the rest of the roads are the responsibility of districts. In both Mbeya and Tanga regions there are thus in principle, parallel organisations for construction/maintenance of regional and district roads, namely, RRM and RE/DE.

RRM IN RELATION TO THE REGIONAL ENGINEER AND THE DISTRICT ENGINEER

RRM's work in the regions is much appreciated but it overshadows and ignores both the RE and DE in its work programme and implementation. This may be good in the short run but have serious negative consequences in the long run because it might render both RE/DEs superfluous. It would be particularly detrimental for the districts who will have to take over responsibility for more roads if RRM pulls back and concentrates only on regional roads.

Since a main goal of RRM is institution building and integration, it should also support other road institutions particularly in the districts. It is not in the interest of any region to have a strong regional roads maintenance organisation and weak ones in the districts.

Cooperation between the RRM and the districts differs between Tanga and Mbeya. In Tanga, the RRE carries out road works for the districts on a contract basis on non-RRM roads and thus helps the DE to utilise his funds effectively. Conversely, the DE's staff are contracted to do specific tasks such as building retaining walls, culverts, etc.. The Tanga RRE has agreed to assist the GTZ funded VDP to organise village based labour intensive road rehabilitation/maintenance programmes. Such initiatives in cooperation with other organisations operating in the road sector are likely to have positive effects on these organisations.

17.2 TRAINING FOR TANZANISATION

The objective of the project is split into two major parts, namely that of implementation of various maintenance tasks and that of institution building and training. Early in the project priority was given to the immediate maintenance needs at the expense of institutional development and training.

The Project Review in 1984 decided that a redirection of the project was essential in order to emphasize training as originally envisaged. As a follow up it was decided to establish a separate training section to be headed by a training officer in each region. To determine the total training needs, a Staff Development Plan was carried out in 1985. This plan specified the requirements for the various key positions. The plan also identified possible Tanzanian candidates (if any) for key positions and specific training needs.

The training sections became operational in early 1987. Training is carried out both within the project itself and by the use of recognised training institutions in Tanzania or abroad if needed. For certain positions within the Government structure specific formal qualifications are required depending on the position to be filled. These formal

qualifications can only be met by using the right external training institutions. The internal training programme is therefore only supplementary to external training. The major aim of the internal training is to build up capability in carrying out certain tasks, i.e. making the Tanzanians more fit for a certain job.

The training section has up to now concentrated on:

- a training programme for foremen and inspectors tailored to fit the needs of a labour-based technology;
- continued training of mechanics;
- revising the Staff Development Plan.

The training programme for foremen and inspectors includes basic courses in mathematics, geometry, etc.; more general courses in the various sections of the Government regulations; and finally specific courses in road rehabilitation, gravelling and structures. The training programme will take about a year for each group of students. The groups consists of between 10 and 20 students in each region.

The courses leading up to a trade tests for mechanics will be phased out at the end of 1988. A programme of short courses for mechanics, plant operators and drivers is, however, planned to be conducted in the future.

The Staff Development Plan of 1985 was to a large extent based on enhancing the qualifications and the capabilities of the candidates already within the project. Subsequent findings have however pointed out that there are serious deficiencies among the existing personnel with regard to formal qualifications. Furthermore, the number of staff and total manpower base will have to be increased when shifting towards more labour based technology. These factors have led to a change in policy in the staff development programme, from using the programme as a manpower base to that of using the country as a base. Recent advertising has shown that there are a number of qualified candidates available that are willing to join the project. A number of them have already been recruited.

Although the recent emphasis on staff development in the project will contribute to reducing the dependency on the expatriate staff in the long term, the fact remains that key personnel have so far not been identified and developed to ensure a future takeover by Tanzania.

The staff development plan envisages a very large increase in project personnel within the two regions, and emphasizes that these positions should be included in the government system. At present the government policy is to "tighten the belt". It is unfortunate in the present economic situation to inflate government employment and correspondingly public expenditures. More so, because a national road sector policy is still to be decided and the future of the RRM organisation is not clear.

17.3 ADMINISTRATIVE ROUTINES

Budgeting is now fully integrated into the Tanzanian budget system. NORAD's contribution is shown together with the expected Tanzanian contribution. This is done both for funds which are transferred through the Treasury (C-funds) and for funds that are disbursed directly by NORAD as payments to foreign suppliers (D-funds).

Procurement are partially integrated as specified in the current agreement. All Tanzanian purchases are made in accordance to GOT regulations. Purchases made through NORAD follow Norwegian government procedures.

The stores are well organised and controlled. A Cardex system is used in the management of the stores. This system has now been accepted by the Tanzanian auditors as it gives proper control and is an internationally accepted system.

Many of the present staff have been employed without due consideration to Government regulations and hold positions for which they are not formally qualified. As a result several capable persons may be surpassed by new employees with satisfactory formal qualifications.

Some employees have been paid in excess of formal salary scales. The level of their payment was recently queried by the auditors and this is now corrected. Therefore as a result of the integration into the Government structure, a number of the Tanzanians have experienced a salary decrease. This has caused considerable frustration among the staff, and a feeling of not being sufficiently appreciated.

In an effort to correct past mistakes and to introduce procedures that are fully in accordance with the Government regulations, RRM Tanga has now appointed the previous regional auditor, who has retired from Government service, on a part time basis. This arrangement has proved very beneficial to RRM.

17.4 PLANNING AND MONITORING

PLANNING; EXTERNAL CONSIDERATIONS

In both regions there is close cooperation with the regional and district authorities in the selection of the roads to be included in the project for maintenance, and in the determination of the roads to be upgraded, etc. In conjunction with the yearly budget preparations, the implementation plans are approved both by the regional administration and appropriate political bodies.

A draft long term plan, giving a 10 years horizon for the project, has recently been worked out. In the opinion of the evaluation team, the plan is too ambitious in its physical programme and places too little attention on manpower development. Moreover, long-term plans presume clearly defined development objectives and immediate objectives. This is not the case in the present plan, especially in respect to just what role RRM is expected to play in the future.

When it comes to progress reporting there have been substantial changes over time within each region and there are differences between the regions. This made it impossible to obtain reliable and comparable figures on output, expenditures, road condition, etc. throughout the project period. Priority must be given to the coordination of the reporting of the two regions. There is no alternative to using the same format, the same tables and the same definitions, if there is to be any substance to RRM's claim to be developing a 'model' organisation.

PLANNING; INTERNAL CONSIDERATIONS

A major problem in externally funded development projects is the prevailing lack of work experience from developing countries among expatriate staff. These difficulties are often aggravated by the fact that there is no time overlap between expatriates to allow for briefing and a proper handing over procedure. Furthermore there is no formalized procedure for handing over reports, problem catalogues, etc.

As a result, new expatriates tend to introduce their own procedures and routines as they arrive, and different ways of conducting the work and solving problems.

In order to avoid such problems, existing GOT regulations and procedures generally adopted in Tanzania should be used. Deviation from this can at best create some short term benefits, but will cause confusion at all levels, and is in conflict with the goal of creating a sustainable institution. NORAD should also institute a formal overlap for senior (RRE) staff and induction courses for all staff.

The level of technical planning is to a major extent based on a combination of observations and experience. For rehabilitation works, as well as routine and periodic maintenance, there are no systematic surveys done and no estimates of quantities involved. The resources to be used (machines and people) is determined on the basis of past experience and on what is available. This may well be cost effective. However, as more Tanzanians in key positions are identified and involved in daily decision routines, more systematic procedures must be introduced in technical planning and decision making.

MONITORING

A proposal for a monitoring system was worked out in 1986. The basis for the monitoring system is the project objective as described in the introduction to this chapter. Relevant sub-targets have been identified to reflect the degree of fulfillment of the objective. The various sub-targets are:

Staff Development
Technology
Productivity
Level of Service
Women Participation
Foreign Exchange Consumption
Development of Facilities

In the RRM in Tanga attempts are being made to measure indicators for

the various sub-targets. With time, this information will be extremely useful, particulary for policy decisions.

To make sure that the intended information is really collected it is essential to make precise definitions of the various indicators and decide whether present practice is satisfactory or not. In our opinion the calculated indicators for foreign exchange do not reflect real consumption but rather what is purchased abroad and what is purchased in Tanzania (diesel is for example purchased in Tanzania and does not contribute to the percentage given in the monitoring records). Similarly, the calculated indicators for the appropriateness of the technology are likely to be calculated inconsistently unless there is a tight definition of maintenance cost (i.e. does the term exclude rehabilitation, expatriate costs, training costs, etc.).

The monitoring system should also be expanded to include indicators reflecting the overall development objective of the project, i.e. increased agricultural production. It is well known that there is a strong correlation between economic activity and traffic volumes. It would therefore be reasonable to include representative traffic figures, expressed as transport work (i.e. vehicle kilometer), in the monitoring system.

17.5 CONCLUSIONS

Full integration into the Tanzanian organisational structure will depend on the establishment of a new national roads policy and road maintenance organisation, and the acceptance of the staff development plan.

Administratively the RRM is well integrated, i.e.:

- The budgeting process is now fully integrated into the Tanzanian budget system.

- Procurement are partially integrated as specified in the current agreement.

- The stores are well organised and an effective control system is in use.

- Up to now a number of the Tanzanians have been paid in excess of formal salary scales. This situation is now in the process of being corrected.

Planning for external needs such as the determination of yearly work programmes and budgets is carried out according to the procedures laid down by the Government and to the satisfaction of the Regional authorities.

RRM's current long-term plan is considered to be too ambitious in its physical programme and still places too little attention on manpower development especially at the more senior levels. However, it is not sensible to revise the plan until RRM's future role is clarified and its development and immediate objectives clearly defined.

The current systems for detailed work planning and monitoring are unsatisfactory not least because of the evident differences in the approach adopted by the two regions. This situation must be put right if there is to be any substance to RRM's claim to be developing a "model" organisation.

Much more could be done to ensure a smoother hand-over between NORAD staff leaving the project and those arriving. At the most senior level (RRE) there is often no overlapping period which is clearly inefficient. All less senior staff should be subject to a formal short introduction course on RRM's background and procedures, the GOT administrative and technical system, and the general principles of rural road construction and maintenance in environments such as Tanzania's.

CHAPTER 18
MODEL VALUE AND SUSTAINABILITY

18.1 THE BACKGROUND FOR THE MODEL

During the implementation period, the RRM project has been subjected to three major changes as far as its organizational model is concerned.

The pre-feasibility study in 1977 suggested a dual organizational approach to road rehabilitation and maintenance, i.e. the establishment of:

- a routine maintenance organization, based in the **district,** to protect maintainable roads from further deterioration and to be responsible for the up-keep of newly constructed/reconstructed roads

- a **regional** upgrading organization to rehabilitate/upgrade deteriorated and low standard roads to an all weather gravel road standard.

The proposal was to establish the post as a Regional Roads Engineer under the Regional Engineer, which would be sub-warranted the funds allocated for rural roads from the regional level. It was suggested that a direct order-line be established from the RE to the DE in all matters concerning implementation of road works. This model was adopted in the first bilateral agreement 1979.

At regional level, upgrading and re-graveling units were established, and initiatives were made to develop existing systems of road attendants for routine maintenance in the districts. Also, grading units were established under the DE, who was supplied with one grader and two tippers from the project.

It was realized in 1982 that the districts, which traditionally had been using more labour-based methods in road maintenance, were not able to operate the heavy machinery effectively. The equipment was reclaimed in 1983, and the project largely centralized at regional level.

A main problem in the initial period of the project seems to be the introduction of inappropriate technology at district level which caused severe disruption in the DE's organization. After the experiment had failed, the DEs were left with little support from the regional level, especially for their attempt to develop a system of road attendants for routine maintenance.

The project was then operated as a section under the Regional Engineer in the period 1979-85. However, dissatisfaction with effectiveness resulted in the establishment of the present model where the RRM operates outside the RE, answerable directly to the RDD. This has had

a negative effect on the RE who has effectively no responsibility for roads at all and greatly reduced resources.

With the reorganization of the project in 1985 it was decided to gradually shift the technological emphasis from largely machine-based, to extensive use of labour-based methods. In realizing that this will have to be done in a decentralized way, plans are now in hand to establish RRM departments in the districts, outside the organization of the DEs. If this is done, parallel institutions will have been created, as a result of the project, both at regional and district level.

18.2 MODEL VALUE AND SUSTAINABILITY

In this context, the model value of an organization is defined as the extent to which the organization will be able to operate more effectively than traditional organizations, with the limited resources that are available when external support has been terminated.

A severe problem with the RRM project is that it duplicates the responsibilities of other institutions. The model value of this project - which was designed to support institution building in the area of roads rehabilitation and maintenance - must therefore be assessed against its negative impact on existing institutions. With the aim to improve efficiency, the project has developed towards a semi-autonomous implementation unit at regional level, leaving existing institutions idle, and without resources.

The strength of the RRM project in its present form is that it has been able to raise productivity, and maintain a large road network to a relatively high technical standard in each region. However, this has been achieved at the cost of disengaging with existing institutions instead of supporting them.

The weaknesses of the present concept are:

- It is not sustainable within the foreseeable future, because of the scope of activities, the maintenance standard applied, the complexity of the organizational setup, and the dependency upon expatriate staff and foreign exchange.

- It does not conform with the intentions in the Local Government Act, since it is being developed as a regional project with extensions in the districts, overlapping the areas of responsibilities of district authorities.

- Since it represents a duplication of existing institutions, it will cause unnecessary expansion of government staff and public expenditures if it is to become permanently integrated in the government system.

In order for the RRM institution to succeed in becoming a model for other regions, it would be necessary to:

- Reduce the scope of activities to a level which can be sustained with the few resources which are made available by the govern-

ment.

- Undertake training and development of Tanzanian staff at all levels, which would eventually enable them to operate the institution without external assistance.

- Adopt an approach for decentralized operations that is conducive with existing decentralization policy.

The situation is further complicated by the fact that a unified Government policy for road maintenance is being developed at present.

During the Transport Sector Donors Conference in Arusha, December 1987, it appeared that the government has endorsed a policy, whereby the planning and budgeting for rural roads will remain with MLGC and regional administrations but where the work will be contracted to MCW for execution. Physical execution will then be managed by MCW's Rural Roads Engineer in the region, who will be answerable to a Rural Roads Division in MCW at central level. Appendix 5, para 1 (i) and (ii) refers.

If this policy is implemented in the future, the implication for the RRM project would be that it should be integrated under the Resident Engineer, and the resources transferred to MCW.

18.3 CONCLUSIONS

The RRM model, in its present form, is a concept that has been developed with insufficient cooperation with the Tanzanian side, and which has been imposed upon the recipients during bilateral negotiations.

The RRM has succeeded in rehabilitating and maintaining a large part of the rural roads network in the two regions to a good standard. After the reorganization of RRM in 1986, effectivness has improved further.

The main reason for its success, however, is not its organizational model, but its access to resources, especially foreign funds, that leaves RRM in a unique situation compared with the Regional Engineers in other regions.

In its present form, the RRM concept has limited value as a model that could be replicated in other regions, because: it is not sustainable, represents a duplication of existing institutions, and does not conform with the intentions in the Local Government Act.

The present trend to introduce labour-intensive methods instead of machine intensive maintenance will most likely require a different model of decentralization than what is presently being used.

CHAPTER 19

FUTURE STRATEGY AND NEEDS

The future strategy of the RRM project must be founded upon the current development policy of the Tanzanian Government and the basic principles guiding Norwegian development assistance. These have been discussed in chapter 16.1 above.

Some factors are of fundamental importance for establishing the scope of future activities and what proportion of the total Norwegian funds allocated for development assistance in Tanzania should be channelled into the RRM project;

- The present policy, guided by the Economic Recovery Programme (ERP), implies that the scarce resources available in the road sector should be concentrated on investments and activities that support economic activities directly, mainly in the area of cash crop production. The idea is that since resources are not available to maintain the entire road network, the emphasis should be to keep those parts of the network open that are of strategic economic importance.

- The project has achieved a great deal already in terms of rehabilitation and maintenance in the two regions, especially in recent years. In line with the ERP policy, the Programme for Transport Sector Recovery suggests that resources should be concentrated on a core rural roads rehabilitation and maintenance programme. Under the core programme, Mbeya and Tanga's essential rural road networks will be reduced considerably, and other rural roads outside the "essential" category will receive only minimum maintenance to provide reasonable access.

As mentioned in chapter 2, above, the logical implication of this is that no further roads should be rehabilitated in Mbeya or Tanga unless they form part of the core programme, or the economic benefits of doing so can be shown to exceed the costs by more than opportunity cost of capital, currently 12 per cent.

National priorities and the need to establish a sustainable system for road maintenance strongly suggests that the overall level of expenditure in the RRM project should be reduced, and that the emphasis should switch from development to maintenance - in particular to support initiatives towards sustainability. It is realized that this decision will be very unpopular in the regions and districts concerned, since they want RRM to do more, not less.

The achievements of the project in terms of maintenance and rehabilitation of roads have been possible predominantly through large inputs

of external funds. The establishment of a semi-independent organisation under the RRE has also facilitated project outputs.

At its present operational level this organisation cannot be sustained by Tanzania in the foreseeable future. Both RRM's recurrent and particularly its development expenditure levels are well above those the GOT is able to provide to other regions.

The present lack of national policy for the road sector suggests that the whole question of creating a model organisation that could be replicated in other regions is premature at present. The establishment of RRM in its present form was done for a trial period 1986-89, after which the experience with the model should be appraised. Only national policy will determine whether the organisational model is viable in the future.

On the basis of recent policy documents, and the conclusions from the Transport Sector Donors Conference in Arusha, December 1987, the policy that has been endorsed in principle by GOT implies that the responsibility for development, rehabilitation and maintenance of rural roads will be vested in MCW under a new Rural Roads Division. Physical execution will be managed by the ministry's regional representatives, i.e. its Rural Roads Engineers. Planning and budgeting for rural roads will remain with the regional administrations and MLGC. The GOT has set a target date of July 1988 for the completion of the necessary studies which will make it possible to establish a new policy for the road sector.

During the reminder of the trial period of the present organisational model it is the opinion of the Evaluation Team that the RRM project should make a deliberate change of emphasis from a semi-autonomous implementing agency towards a catalyst and facilitator serving existing institutions in the road sector.

Even with the current political initiatives it will still take time before Tanzania has resolved whether regional roads should be the responsibility of the MCW - or under RDD/RE, RDD/RRE, or MCW/RRE - or which rural roads should be maintained by regional and which by district authorities. It appears that the logical position of RRM in the interim period should be to support existing institutions in the sector, while at the same time keeping up a reasonable level of operating capacity, in order to prepare for an eventual integration into existing institutions - or a continuation and consolidation of present activities - whichever national policy dictates.

Further, the project should:

(a) Train personnel at various levels and from different institutions through in-service training, courses, and scholarships, which will enable them to perform within their own institutions. Beneficiaries would be the RE, DE, Marketing Boards, Cooperative Union, TRM, etc. Training would cover machine-based and labour-based operations as appropriate. Expenditures would come out of the existing grants.

(b) Develop and introduce a labour-based, tractor-supported technology in the districts - through pilot projects and systematic training and supervision. RRM should provide the districts with the necessary and appropriate tools and equipment initially. Funds for equipment should come out of the project. RRM should then initiate a process whereby the districts are encouraged to extend their activities gradually to maintenance of parts of the RRM network on a limited contract basis.

(c) Support districts in repair and construction work that require engineering skills and heavy equipment. Such work should predominantly be done on a contract basis, using funds from the districts. This has been successfully done in Tanga.

(d) Offer maintenance services for equipment, logistic support and technical advice for TRM and others in the region on a commercial basis, and train/assist TRM with mechanics.

(e) Upgrade an agreed, limited network of essential roads to a maintainable standard. The length of the network should be different in the two regions, since more roads have been rehabilitated in Tanga than in Mbeya.

(f) Maintain a network of rural roads which would eventually be reduced as the districts builds up their capacity for road maintenance.

(g) Reduce the technological level for the maintenance of regional roads, by the introduction of simpler, low-cost equipment.

Supporting women in development is one of the main aims in Norwegian development policy. If this aim is to have any meaning, it is of fundamental importance that external development projects are used to introduce changes in traditional socio-cultural patterns, e.g. by recruiting and training women in positions traditionally dominated by men. The issue of women's participation is taken too lightly both by RRM and other Tanzanian institutions. The Coordinating Committee also appears to have ignored this question.

RRM should address the issue on several fronts: Through monitoring and follow up action/strategy; in its training and staff development programmes ensuring that a proportion of trainees and employees be women; through mobilisation at Regional and District levels. The Coordinating Committee should follow a similar line at national and overall project level by making it an item on the agenda at every meeting.

(h) A Women's Coordinator should be recruited in both regions, assistant to the RREs, and responsible for the monitoring, action plans and mobilisation required to increase women's participation in road works. The

activities of the Women's Coordinator should have it's own budget.

RRM should improve its management procedures by:

- introduction of quantitative planning procedures;
- improved monitoring of inputs, especially costs and expenditures, and outputs at all operational levels;
- definition of a strategy for the promotion of greater participation by women;
- improving the handing-over procedures between expatriate staff joining and those leaving the project;
- the unifying the procedures and standards used in the two regions.

The Tanzanian government on its part should be requested to show greater commitment to the road sector by:

(a) defining a clear national road policy;

(b) detailing specific measures to tackle those institution building aspects that can only be effected by government, e.g. accountability, incentives, procedural flexibility, etc.

(c) allowing RRM the flexibility to experiment - in the context of pilot projects and pending review of the results before wider implementation - with casual labour wage rates, wage employment systems, and procedures to improve tools and equipment.

APPENDIXES

APPENDIX 1

TERMS OF REFERENCE
FOR EVALUATION OF
THE RURAL ROAD MAINTENANCE PROGRAMME
IN MBEYA AND TANGA REGIONS, TANZANIA

A. BACKGROUND AND OBJECTIVE OF THE EVALUATION

The Rural Roads Maintenance Programme started in 1979, with the aim of strengthening road maintenance in Mbeya and Tanga regions. The long term objective of the programme is to establish a sustainable maintenance administration at regional level. The Norwegian support has been used for institution building, purchase of machinery, extensions of workshops and supplementing operational costs. About 15 Norwegian- recruited technical assistance personnel have been assigned to the Programme.

The total Norwegian disbursement/commitment in the period 1979-89 is estimated at NOK 227 million.

A general reorientation of the Programme towards the use of labour-intensive methods was agreed in 1985. The Programme is expected to result in reduced dependence on foreign inputs, create more job opportunities and bring about a gradual transfer of responsibility to Tanzanian staff.

Since 1983, four Programme reviews have been carried out. During the latest consultations between Tanzania and Norway on March 17-20., 1987, it was agreed that an independent evaluation would be carried out in 1987.

B. MODE OF WORK

The field work will take place from 16th November to 11th December. It will be carried out by an independent team comprising the following persons:

Mr. J.D.G.F. Howe (Team leader)
Mr. K.F. Samset (Coordinator)
Ms. O.C. Mascarenhas
Mr. K. Solberg

The evaluation team will liase with the Norwegian Ministry of Development Cooperation (MDC), and Office of the Prime Minister and First Vice President. Discussions will also be held with other relevant ministries and institutions at national and regional levels.

The work will also be based upon existing relevant documentation, including the preliminary findings of the recent Nordic evaluation of the effectiveness of technical assistance personell. It will also entail field visits to project sites.

C. SCOPE OF WORK

The evaluation team shall assess Programme strategies, organisational and administrative aspects and Programme performance. The evaluation will cover the period 1979-87, but will to a large extent focus on the changes in the programme design introduced in 1985. The team shall take into consideration international efforts and experience over the past decade in the promotion of efficient road maintenance and improvement in Sub-Saharan Africa in general, and Tanzania in particular. The team shall carry out the following tasks:

1. STRATEGY

1.1 Role

Discuss the role of the road sector, hereunder road maintenance, for furthering economic development in Tanzania.

1.2 Relevance

Discuss whether the Programme's present objectives, strategies and activities are relevant and viable in view of the national policies and priorities as well as national road maintenance organization, Tanzanian road budgets as well as the general economic situation in Tanzania. Assess size and cost of the Programme in relation to maintenance programmes of other regions.

1.3 Sustainability

Determine the degree of sustainability in the Programme and make recommendation on for how long external assistance should continue in order to attain that objective. Indicate future measures or changes necessary to secure sustainability.

1.4 Integration into the Tanzanian administration

Discuss how the final goal of full integration of a sustainable Programme into the Tanzanian administration can be attained. Discuss the short term implications of this goal for activities like planning, monitoring, development of administrative systems and technical standard, procurement of supplies and recruitment of personnel, as well as cost level.

2. ORGANIZATIONAL AND TECHNOLOGICAL ASPECTS

2.1 Adequacy of the maintenance organization

Assess the adequacy and effectiveness of the planned institutional and administrative arrangements for the Programme in Mbeya and Tanga in relation to the Programme's objectives; hereunder assess the:

- present sharing of responsibilities between the ministries responsible for maintenance of national, regional and district roads, as well as efficiency of road maintenance institutions.

- categories and number of staff and equipment in Mbeya and Tanga

- balance between road maintenance tasks and institutional development work, including training.

- participation of local institutions and communities during programme planning and implementation.

- administrative procedures and division of responsibilities between Tanzanian and Norwegian authorities.

2.2 Technology

Assess whether the present and planned technology level is consistent with the Programme's long term objectives and Tanzanias economic situation.

Discuss choice of machinery, equipment and materials in relations to maintenance requirements, training needs, foreign exchange costs as well as efficiency.

Determine the implications of using more labour intensive methods of work for economic efficiency, the organizational arrangements as well as technical standards. Discuss the effect of labour wage rates including government rates for efficiency of different work methods.

2.3 Road selection

Assess the adequacy of criteria and procedures for selection of roads for maintenance or upgrading.

3. PERFORMANCE

3.1 Effect

Assess as far as available data allows the realized or likely impact of the Programme, i.a.

- benefits related to institution building and training,

- savings and gains for different types of road users (cars, other traffic, men, women etc.)

- benefits for road workers,
- environmental consequences.

3.2 Efficiency

Review the correspondence between budgetted and real Programme costs. Assess whether Programme implementation concur with Programme plans. Assess constraints and successes in Programme implementation.

Assess the costs of the proposed maintenance Programme in comparison with similar road maintenance projects both in Tanzania and in other countries.

Discuss as far as possible the proposed expenditure level on road maintenance in relation to likely benefits and preferably advice on the maximum expenditure level which is feasible on roads with different traffic levels.

3.3 Female participation

Discuss the possibility of increasing the female participation in road work.

4. MODEL VALUE

Assess the potential value of the Programme as an efficient road maintenance organization in the two provinces as well as in other parts of Tanzania.

5. OTHER MATTERS

Evaluate any other matter to which the team attaches great importance.

6. FUTURE OBJECTIVE AND STRATEGY

In view of Tanzanian policies and Norwegian guidelines for development assistance the team shall make recommendations concerning the future assistance to the Programme. The recommendations shall cover points 1 - 5.

D. REPORTING

The final draft report comprising all the above points shall be presented to Norwegian and Tanzanian authorities. It shall be submitted to MDC/NORAD not later than January 22. 1988.

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APPENDIX 3

ITINERARY FOR THE EVALUATION MISSION

SUN 15 ARRIVAL DAR ES SALAAM
MON 16 MEETING WITH NORAD DSM, PMO, MCW
TUE 17 MEETING SWISS AID, MARKETING DEVELOPMENT BOARD, THE WORLD BANK, MLGC
WED 18 MEETING COWICONSULT, PROJECT COORDINATOR
THU 19 DEPARTURE DSM AIRPORT TO MBEYA
MEETING RDD, RPLO, RRE
FRI 20 MEETING RRM STAFF, RRE
SAT 21 FIELD VISITS/ROAD INSPECTIONS LABOUR-BASED PROJECTS IN KITULO AND USANGU

MON 23 FIELD VISITS/ROAD INSPECTIONS. MEETINGS WITH DISTRICT AUTHORITIES IN KYELA, ILEJE AND RUNGWE DISTRICTS
ROADS INSPECTED: 201,202,301,303,402,404,406,601,617
TUE 24 MEETING RDD, INDIVIDUAL MEETINGS RRM STAFF
WED 25 MEETINGS RPLO, RADO, RCDO, RE, MBECO, COFFEE MARKETING BOARD, PRIVATE TRANSPORTER, DPLO MBEYA,
THU 26 MEETING TRM
SUMMING-UP MEETING RRM
FRI 27 MEETING SECTION HEADS RRM, DEPARTURE FOR TANGA BY AIR
SAT 28 MEETING RRE

MON 30 MEETING RRM STAFF, RC, RPLO
TUE 1 MEETING TIRDEP, ASST. RADO, RRM
WED 2 FIELD VISIT TO LUSHOTO, MEETINGS WITH DISTRICT AUTHORITIES HANDENI AND PANGANI DISTRICTS
THU 3 MEETING RRM STAFF AND DISTRICT AUTHORITIES LUSHOTO
ROADS INSPECTED: 101,102,110,112,201,202,203,301,304, 402,403, 404,409,411,501,503,505
FRI 4 SUMMING-UP MEETING RRM, MEETING RE
SAT 5 MEETING RDD, DEPATURE FOR DAR ES SALAAM

MON 7 MEETING NORAD, PMO, MCW
TUE 8 MEETING EEC, SWISS AID. REPORT WRITING
WED 9 PUBLIC HOLIDAY, INTERNAL DISCUSSIONS
THU 10 REPORT WRITING, INTERNAL DISCUSSIONS
FRI 11 PRESENTATION OF FINDINGS, INTERNAL DISCUSSIONS

SAT 12 DEPARTURE SAMSET AND SOLBERG

MON 14-WED 16 PARTICIPATION IN WORLD BANK DONOR MEETING IN ARUSHA (HOWE)

PERSONS MET

DAR ES SALAAM

Mr. O. Myklebust,	Resident Representative
Mr. P. Prestgard,	Acting Resident Representative, NORAD
Mr. H. Skumsvoll,	Project Officer
Mr. I.N. Kimambo,	Commissioner of Roads, MCW
Mr. Mtema,	Chief Maitenance Engineer, MCW
Mr. Marumo,	Senior Maintenance Engineer, MCW
Mr. O. Bendix,	Project leader, Transport & Communications Planning Project, MCW
Mr. I.S.F. Murora,	Personal Asst. to Commissioner of Roads, MCW
Mr. B.G. Moses,	Deputy Principal Secretary, PMO
Mr. B. Illi,	Project Coordinator RRMP, PMO
Mr. H.S. Makundi,	Principal Planning and Control Officer, PMO
Mr. M. Mtui,	Planning and Control Officer, PMO
Mr. L.A. Kifuma,	Project Engineer, LIWP, PMO
Mr. L.C. Keenja,	Principal Secretary, MLGC
Mr. Affa,	Senior Planning Officer, MLGC
Mr. D.P. Qawoga,	MLGC
Mr. M. Honegger,	Attache, Swiss aid
Mr. M.A.C. Musikiro,	Labour Based Operations, UNDP
Mr. E.J. Rueda-Sabater,	Project Officer, The World Bank
Mr. G. Amsbro,	First secretary, Irish Embassy
Mr. A.M. Kaimu,	Senior Statistician, Bureau of Statistics

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Mr. I. Wulff,	Regional Roads Engineer, RRM
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Mr. E. Mkapa,	Mechanical Foreman, RRM
Mr. M. Mohamed,	Mechanical foreman, RRM
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Mr. W. Illi,	Training Consultant, ILO
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Mr. K. Watkins,	Training Consultant, ILO
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Mr. Mwashamba,	Mbeya Industries Manager
Mr. H.B. Kinguyu,	Regional sectretary, CUT
Mr. J.A. Mdee,	Regional Engineer
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Mr. S.J. Mpayo,	Asst. General Manager MCU
Mr. Mwenesongole,	Administrative manager, MCU
Mr. M. Mwashambwa,	Chief Accountant, MCU
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Mr. V. Mpigansi,	Distribution Manager, MCU
Mr. N.A. Mbye,	Chief Internal Auditer, MCU
Mr. Mwasa,	Procurement Manager, MCU
Mr. P.M. Mapunda,	Regional Horticulturalist
Ms. Kondo,	Asst. General Manager, Coffee Marketing Board
Mr. Mwalima,	Roads Inspector, TRM
Mr. S.M. Kipande,	Resident Engineer, Tanganyika Pyrethrum Board

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Mr. P.T. Mhongole,	District Commissioner
Mr. Mwanyula,	Acting District Executive Director
Mr. H.S. Shilonde,	District Engineer
Mr. Mdehwa,	District Planning Officer

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Mr. T.M.M. Kisuguijla,	District Council Chairman
Mr. L.A. Kasyupa,	M.P.
Mr. S.J. Mwakalinea,	Acting, District Executive Director
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Mr. B.M. Kitungi,	District Planning and Control Officer
Mr. M. Mbanga,	District Engineer

MBEYA DISTRICT

Mr. E.N. Mashobe,	District Planning Officer
Mr. J. Lomo,	District Community Development Officer

ILEJE DISTRICT

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Mr. Kibona,	District Executive Director
Mr. Kyando,	District Engineer

TANGA REGION

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Mr. K.S. Nkwera,	District Planning and Control Officer
Mr. H.H. Lukuta,	DCDO
Mrs. R. Abdalla,	Head of UWT
Miss D. Komba,	CDA
Mr. S. Andrea,	CDA, Bushiri Ward
Miss H. Abel,	CDA, Hwera Ward

LUSHOTO DISTRICT

Mr. J.M. Kilivata,	District Commissioner
Mr. Gondwe,	District Executive Director
Mr. J.Y. Mhonda,	District Engineer

HANDENI DISTRICT

Hon. C.M. Dyamwale (MP),	Deputy Minister for Lands, Natural Resources & Tourism.
Mr. V. Magingi,	District Commissioner
Mr. Z.B. Mchome,	District Planning and Control Officer

APPENDIX 5

AIDE MEMOIRE:
TRANSPORT SECTOR DONOR'S CONFERENCE, ARUSHA, DECEMBER 1987

1. The most important conclusion to emerge from the conference is that the GOT has endorsed, in principle, the main recommendations of the Agricultural Feeder Road Study, 1987 for major institutional changes governing the administration of rural roads:

   i) responsibility for the execution of rural roads development, rehabilitation and maintenance will be rested in MCW's Rural Roads Division (RRD). Physical execution will be managed by MCW's Rural Roads Engineer,

   ii) planning and budgeting for rural roads will remain with the Ministry of Local Government and Cooperatives and the Regional Administrations. The budgeted programmes will be contracted to MCW for execution;

   iii) use of contractors will be expanded to carry out most periodic maintenance and rehabilitation works;

   iv) streamlining planning and budgeting process at both the local and central Government level and develop an institutional structure to ensure proper execution of programmed works;

   v) consolidating servicing of all road maintenance equipment currently in possession of various road authorities under the Zonal Workshops of MCW;

   vi) allocating adequate budget levels for annual maintenance of rural roads;

   vii) promoting a more coordinated practice of labour-based construction and maintenance methods; and

   viii) developing a systematic strategy for manpower development and training. MCW will be responsible for planning and execution of the strategy.

2. The present situation, however, is that details of how these recommendations are to be put into practice will only emerge from further consultancy studies, that have yet to be commissioned, and negotiations between the concerned ministries. The GOT has set a target date (June 1988) for the completion of the necessary studies and is in the process of forming a Steering Committee to oversee the proposed action programme for the roads sector.

3. The agreed issues that the studies will focus on are:

creation of a Rural Roads Division (RRD) in MCW. Including:

- MLGC and Regional Administration to contract the management of all maintenance and rehabilitation works to MCW.

- delegation of technical responsibility to RRD to execute rural roads programmes.

- MCW regional office to be responsible for physical execution.

- RRD, through MCW regional office, to contract out most periodic maintenance and rehabilitation works.

The studies will have to determine the methods of working of the RRD and MCW regional offices and coordination with Regional Administration and Local Governments.

4. The NORAD delegation pressed GOT for a quick decision on the resolution of the foregoing issues.

5. The Programme for Transport Sector Recovery states specifically that the proposed Core Rural Roads Rehabilitation and Maintenance Programme will be <u>additional to</u> ongoing Donor-supported rural roads programmes. However, the consensus of the conference was that both the GOT and donors should accept the concept of a "core programme". There are two implications of this:

i) genuine on-going donor rehabilitation or upgrading projects should obviously be completed, but no new ones started unless they conformed to the core programme or there was an outstanding, specific justification for them;

ii) all proposals for rehabilitation and maintenance should be subjected to the same socio-economic process of analysis.

6. Under the "core programme":

i) No roads have been selected for rehabilitation in Tanga region.

ii) Some 194 km of road in Mbozi (164) and Kyela (30) districts of Mbeya region are to be rehabilitated.

iii) Mbeya and Tanga's essential rural road networks will be reduced to 383 and 348 km respectively.

iv) Other rural roads - outside of the "essential" category- will receive only "minimum maintenance to provide reasonable access". (This last phrase has not been defined and is probably not capable of precise definition).

7. It is not entirely clear how these proposals should be interpreted

by NORAD in terms of the future of the RRM programme. There is some confusion in the Agricultural Feeder Road Study, 1987 since it focussed on "feeder" roads, however the core programme includes some but not all regional roads.

8. The following interpretation seems to be consistent with both the "core" and RRM programmes:

   i) No further roads should be rehabilitated in Mbeya or Tanga unless they form part of the core programme, or the economic benefits of doing so can be shown to exceed the costs by more than the opportunity cost of capital, currently 12 per cent;

   ii) RRM should give greater emphasis to the maintenance of its existing network and develop a quantitative basis (traffic based) for the determination of maintenance priorities.

DECEMBER 1987

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APPENDIX 6

ESTIMATES OF ROAD USER SAVINGS ON THE RRM ROAD NETWORKS

It has not previously proved possible to make satisfactory estimates of the benefits of the RRM project, and compare these with its costs, due to the complete absence of traffic, vehicle operating costs and other necessary data. Norconsult attempted to do this in 1983, but had to resort to guesstimates.

As part of the preparations for the evaluation, agreement was reached with the RRM teams on the conduct of traffic surveys on the networks of both regions and the compilation of historical cost and road condition data.

TRAFFIC SURVEYS

The two regions did not follow the same traffic survey procedures, with the exception that an attempt was made to allocate most of the site locations at random over the road networks so that statistically valid estimates resulted. Counts in Mbeya were for 7 consecutive days from 6.00 am to 10.00 pm at each of twenty six sites. Full vehicle classifications, but not axle configuration were recorded. In Tanga region counts on the high priority roads were for three full days. At the other sites only a single 24-hour count was made. No differentiation between different types of trucks and buses was made. Tables 1 and 2 give the basic traffic data.

Based on the randomly allocated traffic count sites, the average flow levels on the first priority routes in both regions are the same, although there are substantially more of these in Tanga (922 km) than in Mbeya (648 km). However, over the rest of the Tanga network, flows only average some 15 vehicles per day. In Mbeya the second priority routes, which are about the same length as in Tanga, (696 and 719 km respectively) carry more than twice as much traffic.

Mbeya region has a significant proportion (21 per cent of all trucks and buses) of more than 2 axled trucks which give rise to larger absolute vehicle operating cost savings, as a result of road maintenance, than smaller vehicles. Observations by the evaluation team over a two day period in Tanga region did not yield a single such vehicle. However, agricultural tractors and trailers are mush more important in Tanga (46 per cent of all trucks and buses) than Mbeya (15 per cent) as a means of short-distance transport. This is undoubtedly related to the significant number of large (sisal) estates and ranches.

To construct a profile of the traffic flow levels from 1979-87 it is assumed, following the World Bank,[1] that traffic declined by 2 per cent per annum from 1979-85, and has since increased by 4.5 per cent per annum. Because of the low overall flow levels the figures in fact remain sensibly constant over the entire period.

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1 World Bank. Staff Appraisal Report, The United Republic of Tanzania Sixth Highway (Rehabilitation) Project. April, 1986.

ROAD CONDITION PROFILES

Subjective assessments of road conditions have been a regular feature of both RRM projects. Definitions are based on visual assessments in the field and a check with previous road inventories in cases of doubt. Consideration is given to passability during dry and wet seasons which is dependent on:

- shape and level of formation
- drainage
- soil condition
- terrain, vegetation, rainfall etc.

Table 1 Traffic Survey Results: Mbeya Region

Site Number	Estimated ADT (vehicles)	% Trucks and Buses	Priority	Surface Type
1	1	-	3	Earth
2	13	58	2	Earth
3	25	52	1	Earth/Gravel
4	40	38	3	Earth
5	113	40	1	Earth
6	114	30	1	Earth
7	45	49	3	Earth
8	3	-	3	Earth
9	7	33	3	Earth
10	26	54	2	Earth
11	44	52	1	Earth
12	14	46	1	Earth
13	21	63	3	Gravel
14	77	56	2	Gravel
15	22	25	2	Earth
16	96	12	1	Earth
17	69	46	1	Gravel
18	78	50	1	Earth
19	97	39	1	Earth
20	50	52	2	Gravel
21	64	17	2	Earth
22	104	64	1	Gravel
23	56	65	1	Earth
24	94	46	1	Gravel
25	61	43	1	Gravel
26	27	64	2	Earth/Gravel

Notes: 1. Two sets of estimates can be derived from these figures. Sites 1-15 were strictly allocated at random. From these the following can be derived:

Priority	Mean ADT	
1	62	Mean percentage of
2	34	trucks and buses 40
3	20	

2. Sites 16-26 were selected purposively to represent the more important priority 1 and 2 routes. Pooling these results with the other sites gives the following:

Priority	Mean ADT	
1	74	Mean percentage of
2	40	trucks and buses 42
3	20	

3. Overall earth and gravel road flow levels are very similar.

4. The truck and bus fleet can be further broken down as follows:

- trucks with 2 axles 58%
- trucks with 3 or more axles 18%
- trucks with trailer 3%
- agricultural tractor with or without trailer 15%
- buses 6%

Table 2 Traffic Survey Results: Tanga Region

Site Number	Estimated ADT (vehicles)	% Trucks and Buses	Priority	Surface Type
1	12	75	1	Regional
2	-	-	3	District
3	4	50	2	District
4	83	65	1	Regional
5	29	86	2	District
6	54	52	1	Regional
7	64	58	1	Regional
8	24	62	2	District
9	21	67	3	District
10	23	78	1	Regional
11	25	100[1]	3	District
12	15	100[1]	2	District
13	68	57	1	Regional
14	8	75	2	District
15	140	64	1	Regional
16	11	82	3	District
17	13	69	3	District

[1] All tractors with and without trailers

Notes: 1. From these the following can be derived:

Priority	Mean ADT	
1	63	Mean percentage of
2	16	trucks and buses 67.
3	14	

2. Regional class roads are all priority 1 with a mean ADT of 63, and District class roads have a mean ADT between priority classes 2 and 3 ie. 15 vehicles per day.

3. The truck and bus fleet can be further broken down as follows:

- trucks with 2 axles 39%
- agricultural tractor with or without trailer 46%
- buses 15%

Three road condition categories are defined:

GOOD[1] - Level and shape of formation and drainage satisfactory; road requires only routine maintenance (by hand or grader) and occasional spot improvement.

FAIR[1] - Formation satisfactory but level might not allow satisfactory drainage. The road may require reshaping, regravelling or strengthening.

POOR - Track or road requiring rehabilitation and major improvement of drainage. Some roads are graded, but not every year. Only emergency repairs are carried out.

With the assistance of RRM staff estimates were prepared of the length of road in each condition category for 1982-87 (Mbeya) and 1981-87 (Tanga). The periods chosen correspond with the availability of investment cost information. The results are shown in Tables 3 and 4.

The road priority rankings and the road condition categories used by RRM in the two regions are not the same. This is unfortunate since traffic flow estimates are only available for roads of different priority ranking. however, as the figures in Table 5 shows there is a reasonable agreement in Mbeya region for the km of road in the priority ranking and road condition categories although the agreement is less good in the case of Tanga. For the purposes of estimation we assume that the traffic flow levels recorded on the first and second priority ranking roads are the same as those on the good and fair condition

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1 Both roads might have either a gravel or earth surface. Grading is carried out at least once a year, with some spot repair. The main difference in the two categories lies in their initial condition prior to the introduction of regular maintenance.

category networks[1]. The effect of this assumption is to underestimate subsequent vehicle operating cost savings since the length of first and second priority ranking roads is greater than the good and fair category totals.

Table 3 Classification of Mbeya Region Network by Road Conditions (km)

Road Condition	Year					
	1982	1983	1984	1985	1986	1987
GOOD	315	357	399	440	482	524
FAIR	340	423	506	588	671	754
POOR	1300	1175	1050	927	802	677

Table 4 Classification of Tanga Region Network by Road Condition (km)

Road Condition	Year						
	1981	1982	1983	1984	1985	1986	1987
GOOD	465	504	542	581	619	658	696
FAIR	353	354	356	357	358	360	361
POOR	1292	1255	1215	1175	1135	1095	1056

1 RRM staff agree that this is a reasonable assumption.

Table 5 Length of Regional Networks by Road Condition and Priority (km)

	GOOD	1st Priority	FAIR	2nd Priority	POOR	3rd Priority
Mbeya	524	648	754	696	677	610
Tanga	696	922	361	719	1055	472

VEHICLE OPERATING COSTS

Comprehensive vehicle operating cost tables were recently calculated for Tanzania conditions in connection with a proposed investment in the Songea-Mtwara road.[1] (They were based on research by the UK Transport and Road Research Laboratory[2]). The tables list economic operating costs (inputs shadow priced as appropriate and all taxes, duties and other transfer payments removed) for different types of vehicle, road surface - earth, gravel and bitumen - and surface condition. International experience suggests that without maintenance an earth or gravel road will have a roughness in excess of 8000 mm/km. With maintenance of the type effected under the RRM, the roughness value of the network can conservatively be estimated at about 5000 mm/km if the road is in fair condition or perhaps 4000 mm/km if it is in good condition. The roughness values translate into the economic vehicle operating costs given in Table 6.

VEHICLE OPERATING COST SAVINGS DUE TO RRM

These were not estimated from the start of the project in 1979, but from the first year for which reliable investment cost data was available for each region: 1981/82, Tanga and 1982/83 Mbeya. To estimate the vehicle operating cost savings it was assumed that but for the introduction of RRM the roads in good and fair condition would have deteriorated, progressively, such that the whole of the network in both regions would have been in poor condition by 1987. The realism of this assumption is borne out both by general experience in developing countries[3] and specific examples from Tanzania[4]. For roads in a good

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1 Ministry of Communications and Works. Rehabilitation Mtwara Port and Mtwara - Songea Road: Pre-Investment Study. November 1987 (COWIconsult)

2 Transport and Road Research Laboratory. Vehicle Operating Cost Tables. Information Note. 1987.

3 WORLD BANK. Road deterioration in developing countries. September, 1987.

condition it might seem more logical to assume a progressive deterioration to fair and then poor condition. However, such refinement does not appear warranted given the generally poor quality of the estimation data and the small differences in vehicle operation costs for the two road conditions (see Table 6). Poor condition roads are assumed conservatively to equate to 'nil maintenance' conditions and are therefore not accorded any saving, but are used instead as the base for calculations.

Table 6 Vehicle operating costs for Different Vehicles and Road Conditions (TAS/km)

Vehicle Type	Maintenance Category or Road Condition		
	POOR	FAIR	GOOD
Car	34.4	26.0	24.4
Pick-up	45.8	32.4	29.8
4 Wheel Drive	58.4	40.3	36.6
Minibus	37.6	29.5	27.3
10 Ton Truck	87.8	71.7	68.2
30 Ton Truck and Trailer	150.4	123.5	117.4
65 Seater Bus	65.7	52.4	47.8
Composite light vehicle *	48.2	34.1	31.4
Composite heavy vehicle:Mbeya **	88.4	72.1	68.4
Composite heavy vehicle:Tanga	84.5	68.8	65.1

* Weighting by composition proportions of cars, pick-ups, 4 wheel drive and minibuses.

** Weighting by composition proportions of 10 ton trucks, trucks with trailers and buses.

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4 Most of the feeder roads improved under the World Bank's Third Highway Project (July 1971-December 1978) were reported to have reverted to their original condition by 1983 (see World Bank Report No. 5085:"Institutional Development in Africa: A Review of World Bank Project Experience", Volume II: Selected Case Studies (Tanzania and Sudan Highway Projects), May 1984.

Although the foregoing assumption implicitly gives a slightly faster rate of deterioration in Mbeya than Tanga region (ie. over a one year shorter period) this is not unreasonable in view of the generally higher flows on both the good and fair road networks, and the wetter conditions.

Tables 7 and 8 indicate the assumed road conditions in Mbeya and Tanga regions under the nil maintenance condition.

Table 7 Classification of Mbeya Region Network by Road Condition: NIL Maintenance Condition (km)

Road Condition	Year					
	1982	1983	1984	1985	1986	1987
GOOD	315	252	189	126	63	0
FAIR	340	272	204	136	68	0
POOR	1300	1431	1562	1693	1824	1955

Table 8 Classification of Tanga Region Network by Road Condition: NIL Maintenance Condition (km)

Road Condition	Year						
	1981	1982	1983	1984	1985	1986	1987
GOOD	465	388	310	232	155	78	0
FAIR	353	294	235	176	118	59	0
POOR	1292	1428	1564	1701	1837	1974	2110

Thus, for a given region, road condition (i.e. good or fair) and year the annual vehicle operating cost saving for light vehicles is given by:

$$S = A \times 365 \times \left[(L_1 \times Vg + L_2 \times Vp) - (Lg \times Vg) \right]$$

Where:

S = Savings in a given year for light vehicles and for the part of the network which is in good condition in the reference year (1986 or 87)

A = Average daily traffic of light vehicles

L_1 = Part of network which is in good condition in the given year assuming no RRM involvement

L_2 = Part of network which has deteriorated from good to poor condition in the given year assuming no RRM involvement

Vg = Unit VOC for light vehicles on roads in good condition

Vp = Unit VOC for light vehicles on roads in poor condition

A similar calculation is done for heavy vehicles and the two figures added to give the total saving for all vehicles for the given region, road condition and year.
In interpreting this formula it must be remembered that the length of road, for example, in a good condition in Mbeya region is assumed to vary according to the figures in Table 3 and 7: similarly for fair condition roads. In Tanga region the corresponding tables are 4 and 8.

The results of the vehicle operating cost saving calculations are shown in Tables 9 and 10. It is apparent that maintenance benefits in the form of vehicle operating cost savings are dis-proportionately concentrated on the 'good' road condition network. In Mbeya region this has averaged about 22 per cent of the total network, yet it generates 61 per cent of the savings. The 'good' road condition network in Tanga region has averaged some 28 per cent of the network, but generates over 90 per cent of the vehicle operating costs savings. In Tanga the 'good' network dominates precisely because traffic flows are so low on roads in a 'fair' condition.

Whilst providing roads in a 'good' condition generates the maximum benefits it also requires a greater (ie. more costly) maintenance input.

Table 9 Annual Economic Vehicle Operating Cost Savings For Different Road Conditions: Mbeya Region (1986/87 prices)

YEAR	VOC (TAS. mill)		
	Good Road Conditions	Fair Road Conditions	Total
1983	41	26	67
1984	81	52	133
1985	119	76	195
1986	164	104	268
1987	216	138	354
	621	396	1017

Table 10 Annual Economic Vehicle Operating Cost Savings For Different Road Conditions:Tanga Region (1986/87 prices)

YEAR	VOC (TAS. mill)		
	Good Road Conditions	Fair Road Conditions	Total
1982	49	5	54
1983	96	10	106
1984	143	15	158
1985	187	20	207
1986	241	25	266
1987	304	32	336
	1020	107	1127

APPENDIX 7

COST-BENEFIT ANALYSIS OF THE RRM PROJECT

INVESTMENT COST PROFILE

To compare the costs and benefits of the RRM project it was necessary to put together an investment cost profile in economic prices. For the reasons discussed in Chapter 13 it was difficult to compile a consistent record of actual expenditures by each region for each year, or to be certain that all cost elements had been included. A further complication was that the data available in Mbeya region was less complete than that in Tanga and compiled on a different basis.

For consistency it was decided to try to base the calculations on the actual expenditures recorded in the vote books of each region and then to add to these estimates of expatriate costs. Consultancy and other short-term technical assistance costs are necessarily excluded. This would appear to be conceptually correct since some at least can be regarded as an aid policy expense rather than a direct project cost.

Expenditures recorded in the RRM vote books had first to be broken down into local and foreign elements and all taxes and duties removed. All purchases were separated into those made in Norway, or other countries where payment would have to be made in foreign currency, and those made locally. Duties and taxes were removed and then local purchases were further separated into their real foreign and local currency elements. Table 1 gives an example of the calculations for 1986/87 for Tanga region. It was only possible to make such an estimate for one other year, (1985/86), also in Tanga region.

For the two years 1985/86 and 1986/87 an average of 10 per cent local duties and taxes was paid on all RRM expenditures exclusive of expatriate costs. Of the balance an average of 77 per cent was spent in foreign currency and the remaining 23.8 per cent in local currency. These factors were used to estimate the investment cost profile, in economic prices for each region and year for which complete information was available. The results for Tanga region are shown in Table 2 and for Mbeya region in Table 3. The two tables are not directly comparable, since detailed expenditure information for Mbeya region was not available. Instead Mbeya region cost data was obtained from the Plant Analysis[1] which lists expenditures, in January 1987 NOK, simply as local or NORAD funds. The latter were treated as 100 per cent foreign exchange, which is almost certainly not the case since some is spent locally, so real costs are over-estimated by this assumption. Local funds were adjusted for duties and taxes, and divided into real local and foreign expenditures using the factors generated from the Tanga data.

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1 UNITED REPUBLIC OF TANZANIA. Rural Roads Maintenance Mbeya and Tanga: Plant Analysis (circa February 1987)

COMPARISON OF COSTS AND BENEFITS

The cost streams given in Tables 2 and 4 were compared with the annual vehicle operating cost savings given in Tables 9 and 10 of Appendix 6 using conventional Net Present Value (NPV), Benefit-Cost (B/C) ratios and Internal Rates of Return (IRR). First it was necessary to convert the vehicle operating cost savings to the same (mid-year) basis as the cost estimates. This was done as a simple average and by assuming that in the first year that costs were incurred - actually the first year for which cost information was available - the vehicle operating cost saving would be zero. This is again a conservative assumption, since some savings would be likely. Economic values, ratios and rates of return were conventionally calculated for the first year in which costs were incurred. For both regions comparisons were made including and excluding full expatriate costs since it is debateable whether all the expatriate costs of such a project should be offset against the benefits of road maintenance. Some of the expatriate costs are incurred in the pursuit of longer-term benefits such as institutional development. The results are shown in Table 4.

Excluding expatriate costs both projects generate positive net benefits whatever measure of return is considered. If expatriate costs are included then net benefits in Mbeya region remain positive, but this is not the case in Tanga where total costs slightly exceed total benefits giving a negative net present value, B/C ratio of just 1.0 and internal rate of return of -4 per cent which is clearly less than the opportunity cost of capital. Tanga's situation results from the low traffic flows over most of the fair road network.

SENSITIVITY TEST

It has to be emphasized that these estimates have been made under very pessimistic assumptions. The most conservative of these is the assignment of full RRM costs to the year in which funds were spent. For plant and equipment this is not correct since normal practice is to depreciate such capital costs over the working life of the machinery: usually 8-10 years. As plant and equipment costs comprise the major proportion of non-expatriate foreign expenditures (Table 1) a sensitivity test was performed on the Tanga data by reducing these overseas costs by 50 per cent each year to reflect normal depreciation conventions. Inclusive of full expatriate costs the result was a net present value of 179 mill. TAS, B/C ratio of 1.4, and internal rate of return of 48 per cent. It is considered that these results represent the more likely level of net benefits of the RRM project in Tanga region.

Table 1: Geographical Distribution of Expenditure: Tanga Region 1986/87 (Tsh current values)

	Expenditures in External Countries[1]				Expenditures in Tanzania		
Expenditure Category	Total	Foreign Exchange %	Foreign Exchange	Local	Total	Foreign Exchange	Local
Spare parts	16,326,326	99	16,163,063	163,263	3,093,895[2]	2,268,856	22,918
Workshop equipment	3,682,003	99	3,645,183	36,820	201,472[2]	147,747	1,492
Unit equipment	2,728,743	99	2,701,456	27,287	-	-	-
Building materials	774,313	95	735,597	38,716	9,985,669[2]	7,026,952	369,840
Training equipment	287,178	99	284,306	2,872	-	-	-
Office equipment	514,877	99	509,728	5,149	79,554[2]	58,340	589
Oil/fuel	208,779	95	198,340	10,439	9,084,770[3]	6,904,425	363,391
Plants/vehicles	11,527,058	99	11,411,788	115,270	1,370,864[2]	1,005,300	10,154
Wages/travelling		-	-	-	11,879,853[4]	-	10,799,866
Outside services		50	-	-	701,970[5]	292,488	292,488
Office expenses		50	-	-	350,663[5]	146,110	146,110
Miscellaneous		50	-	-	937,173[5]	390,489	390,489
Total	36,049,277		35,649,461	399,816	36,785,883	18,240,706	12,397,337

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1 Duty free: harbour and warfage fees payable
2 Local duty and sales tax 35 per cent
3 Local duty and sales tax 25 per cent
4 Local duty and sales tax 10 per cent
5 Local duty and sales tax 20 per cent

Table 2: Tanga Region Investment Cost Profile in Economic Prices (Tsh mill.)

Year	Expatriate Costs[1] (historic values)	Expatriate Costs[1] (constant values)	Vote Book Expenditures (historic values)	Vote Book Expenditures (constant values)[2] Local	Vote Book Expenditures (constant values)[2] Foreign	Total Foreign (constant values)	Total Expenditures[3] (constant values
86/87	32.2	32.2	72.8	15.2	51.0	83.2	148.3
85/86	10.2	32.3	21.0	6.4	46.6	78.9	132.6
84/85	9.3	30.0	17.0	6.0	38.6	68.8	115.8
83/84	7.7	32.2	27.4	12.9	79.6	111.8	191.8
82/83	6.9	32.2	18.5	11.6	66.3	98.5	169.2
81/82	4.6	23.6	13.7	10.9	49.1	72.7	127.2

1 Expatriate costs treated as 100 per cent foreign and valued at 645,000 N.kr. per person per year.
Rates of exchange and multipliers to give constant (1986/87) shilling values as follows:

Year	1. NKr = Tsh	Constant Value Multiplier: Foreign Exchange	Constant Value Multiplier: Local Currency[4]
86/87	6.65	-	-
85/86	2.10	3.17	1.47
84/85	2.05	3.24	1.68
83/84	1.60	4.15	2.26
82/83	1.30	5.12	2.99
81/82	1.30	5.12	3.81

2 Less duty and tax at 10 per cent; foreign costs 77 per cent

3 Local cost + 1.6 (Total Foreign Costs). The current shadow price of foreign exchange is believed by the World Bank to be in the range 100-125 Tsh per US$ compared to a market value of 76-77 per US$

4 Based on National Consumer Price Index.

Table 3: Mbeya Region Investment Cost Profile in Economic Prices (Tsh mill.)

Year	Expatriate Costs[1] (historic values)	Expatriate Costs[1] (constant values)	Expenditures (constant values)[2] Local	Expenditures (constant values)[2] Foreign	Total Foreign (constant values)	Total Expenditures[3] (constant values
86/87	32.2	32.2	4.6	15.4	47.6	80.8
85/86	10.2	32.3	4.1	14.0	46.3	78.2
84/85	9.3	30.0	9.3	31.2	61.2	107.2
83/84	7.7	32.2	8.2	27.5	59.7	103.7
82/83	6.9	32.2	10.1	34.0	66.2	116.0

1 Estimated on the same basis as Table 2
2 As Table 2
3 As Table 2

Table 4: Comparison of the NPV, B/C Rations and IRR for the Mbeya and Tanga Region Programmes.

	REGION	NPV (Tsh mill.)	B/C	IRR (per cent)
MBEYA	Excluding Expatriate Costs	429	3.3	197
	With Expatriate Costs	223	1.6	46
TANGA	Excluding Expatriate Costs	193	1.4	34
	With Expatriate Costs	- 28	1.0	-4

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