



How a Road Agency Can Transform Force Account Road Maintenance to Contracting

Adam Andreski, Subhash Seth and Wendy Walker



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THE WORLD BANK
Washington, D.C.



**TRANSPORT
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1818 H Street NW
Washington, DC 20433
Telephone 202-473-1000
Internet [www/worldbank.org](http://www.worldbank.org)
Published June 2006

The findings, interpretations, and conclusions expressed here are those of the author and do not necessarily reflect the views of the Board of Executive Directors of the World Bank or the governments they represent.

This paper has been produced with the financial assistance of a grant from TRISP, a partnership between the UK Department for International Development and the World Bank, for learning and sharing of knowledge in the fields of transport and rural infrastructure services.

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ACKNOWLEDGEMENTS

Thanks are given to Fred Addo Abedi and Joseph Lwiza of Tanroads in Tanzania, Maxwell Kachiwala and Adrian Mthini of National Roads Authority in Malawi, Raphael Mabenga and Emmanuel Kaunda of National Road Fund Agency in Zambia, Carlos Fragoso and James Markland in Mozambique and Mrs. Pama in Lesotho for providing valuable information in the answers to the questionnaire and logistical support for interviews and meetings. Thanks to National Road Authority in Mozambique for giving the opportunity to share the findings in their annual seminar held in February 2006.

We would also like to thank the following Bank peer reviewers: Henry Kerali, John Hine, Olav Ellevset, Justin Runji and John Riverson for advice and guidance. Thanks to Cesar Queiroz, and Peter Roberts for giving the opportunity to discuss the paper during the Transport Forum Learning Week held at the World Bank in April 2006. Thanks also to Paul Amos, Dieter Schelling, Tawia Ado Ashong, Ben Gericke, Gylfi Palsson, Davies Makasa, and Solomon Waithaka for providing useful comments and suggestions.

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EXECUTIVE SUMMARY

Roads make a crucial contribution to economic development and growth, and bring important social benefits. Poorly maintained roads constrain mobility, significantly raise vehicle operating costs, increase road traffic injuries and their associated human and property costs, and aggravate isolation, poverty, poor health, and illiteracy in rural communities. The provision and maintenance of road infrastructure is a major global business and the replacement value of road assets in sub-Saharan Africa is estimated to be \$150 billion (Heggie 1995). Consequently, it is essential that road maintenance services are provided in the most cost effective manner.

Recent international trends in the reform of road management, point to the need to transform road maintenance service. There are several reasons for such a policy change. With Force Account, funding tends to be erratic; management of equipment and its support facilities inadequate, planning, supervision and execution require high standards of staffing, quality control may be poor; and reporting systems weak. Contracted out works have the advantages that payment of work is done to specification, rates are known making budgeting and planning easier, risk is transferred from the Public Sector to the Private Sector, and the profit motive tends to promote efficiency and reduce unnecessary waste. Talvitie (1996) found contracting out gave 5-15 percent in efficiency gains, and an ILO study in Cambodia found that contracted road maintenance is 24 percent cheaper than force account (Munters 2003).

This Paper is important because it shares knowledge on how to systematically phase out force account procedures, phase in contracting and prepare government for a changed role. It provides guidance to government policy-makers at central and local level, World Bank staff and professionals involved in de-linking road maintenance from direct public service provision. The Paper was prepared by reviewing existing reports, developing a questionnaire, visiting case study countries, and holding interviews and workshops with stakeholders including Road Agencies, Construction Councils, Contractors and Consultants. The reference section offers sources providing more detailed information.

Many countries have already gone through this process and their experiences are presented as case studies. Lesotho was chosen since it has successfully completed the process for unpaved roads and is now expanding to paved roads. Malawi and Zambia have made good progress in the transformation of force account. Mozambique started by creating public owned contracting companies and then introduced contractors. Tanzania is a pioneer and an example of best practice in the Region.

It is important to note that when these countries first went through the process, it was new, with a sharp learning curve resulting in social and logistical problems. The lessons from these countries should be used when transforming the road sectors in order to avoid similar problems faced by the pioneering countries. Every country has different experience and this paper brings a systematic approach with a focus on situation analysis, identification of options, developing transformation strategy, addressing social issues, management options, and monitoring efficiency and effectiveness of the program as illustrated in Figure 1 below.

Figure 1. Steps to Transform Force Account to Contracting.



How a Road Agency Can Transform Force Account Road Maintenance to Contracting

1 INTRODUCTION

The objective of this paper is dissemination of best practice and knowledge sharing on how a Government road agency can prepare for phasing out force account procedures in the public sector and creating an enabling environment for contracting out road maintenance. In the past many countries have gone through the process in a rapid and perhaps unsystematic manner. A more measured approach is recommended here with a focus on situation analysis, identification of options, developing transformation strategy, addressing social issues, management options, and monitoring efficiency and effectiveness. This would enable road ministries or agencies considering introducing or increasing private sector participation to avoid the pitfalls of the past, and ensure pre-requisites are adequately addressed.

2 SITUATION ANALYSIS

The first task is to prepare some basic statistics on the sector to set the context, scope and scale of the transformation. This will include an inventory of the road network and workload in terms of maintenance funds required for road lengths of various classes, at national and local levels. It should take into account road condition, maintenance backlog, strategic development plans, traffic levels and vehicle fleet in country and compare this with current funding arrangements. These figures provide the basis for assessing the demand for road services and an example of how requirements can be estimated nationally is given in Annex 1.

Also required is data on current capacity in terms of staff numbers and skills, equipment holdings, for both private and public sectors. This will include reviewing administrative structure of the sector in terms of Ministries, local councils, road agencies/authorities, construction councils, road fund agencies, equipment hire centers, banking facilities, degree of decentralization etc. Such information would allow the true costs of force account to be identified to assist in the justification of transforming to a contracting environment. An overall evaluation of the situation in the country should be prepared and illustrated as shown in Figure 2.

Government legal instruments such as a Road Transport Act may need to be updated in terms of road classification, institutional set-up taking into account, where appropriate, autonomous road funds, agencies and local authorities. Strategies and policies in regard to management and financing of roads, network development, removal of backlog and maintenance should be evaluated. It is important that maintenance is given high priority. Policy statements may not be in just one document such as the Transport Policy. Other relevant policies may include those for the Construction Industry, Civil Service Reform, Rural Development, and Decentralization. Relevant legislation may include Transport, Highways, Labor, Construction Industry, Financing, Autonomous Agencies' Acts of Parliament and Regulations. Particular Ministries or Agencies may also have strategic plans for the relevant sectors.

Figure 2. Indicative Road Sector Evaluation Grid.

Public Road Sector		Private Road Sector	
Legal Framework	G	Construction Industry Policy	E
Transport Policy	M	Contractor Registration system	G
Road Maintenance Strategy	E	Contractor Training Program	M
Institutional Structure	P	Contractors Associations	G
National Construction Council	G	Credit Availability	P
Leadership	E	Bonding & Contractual Environment	P
Central Capacity – skills/numbers	G	Capacity of Large Contractors	G
Local Capacity – skills/numbers	P	Capacity of Medium Contractors	M
Adequacy of Funding for Roads	P	Capacity of Small Contractors	P
Financial Control	M	Quality of Work	M
Governance & Transparency	M	Volume of Work	G
Personnel Management	P	Regularity of Work/Payments	P
Road Management Systems	M	Availability of Equipment	M
Autonomy of Road Agencies	P		
E = Excellent	G = Good	M = Mediocre	P = Poor

An analysis should then be carried out to determine whether these strategies, policies and legislation are adequate, and to what degree they are being implemented or enforced. The following questions should be asked when evaluating the policy:

- What is the quality of the National Transport Policy?
 - Does it involve all main stakeholders?
 - Is it consistent with international agreements such as the achievement of Millennium Development Goals?
 - Are cross-cutting issues such as social and environmental issues integrated into the policy?
- Are the policies or strategies feasible financially?
- Is there appropriate decentralized management?
- Is the policy or strategy sustainable? (For example, maintenance, right level of intervention.)

Assessments can then be given in terms of the adequacy of the leadership and institutional structures to deliver these policies and what capacity is available in the public organizations to manage works at central and local levels. The quality of financial control, personnel and management systems and the degree of Government transparency and accountability are important considerations. An assessment will be required of the adequacy of financing of the maintenance of the network.

This work may require a study or series of studies to establish the scale, scope, context and constraints in the sector at Later the starting point of the transformation. on this information would be used as baseline data for monitoring progress of the transformation and the sector as a whole.

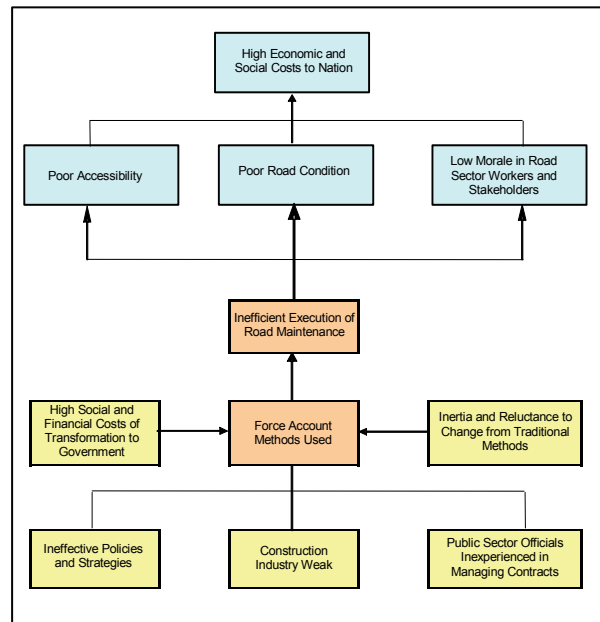
3 ANALYZE CONSTRAINTS

Having established the demand for road maintenance services and capacity for delivering them, a gap will often emerge. This may be in terms of a need to upgrade Government policies and legislation, a shortfall in the ability of Government to administer the services and a shortfall in capacity of the private sector to deliver the services. Once these gaps and constraints are identified options can then be considered to remove them. A good way to illustrate these constraints is in the form of a problem tree. This process normally has the following steps:

- Step 1: Brainstorm road maintenance problems with stakeholders;
- Step 2: Select an individual core problem, for example, efficiency;
- Step 3: Look for related problems to the core problem;
- Step 4: Establish a hierarchy of cause and effects connected with arrows showing links;
- Step 5: Review the diagram and verify its validity and completeness.

A possible example is given in Figure 3 but in practice each country will have its own complexities. The central premise behind these guidelines is that force account methods lead to inefficient road maintenance execution as shown in the box in the problem tree. For the transformation to be worthwhile, it must be established that this is in fact the case. In some countries such as Tanzania as discussed in Text Box 3, it was evident by inspection that the force account system had broken down. In other countries further studies may be required including a full financial analysis of maintenance operations. This may include full identification of administrative overheads, capital costs, and depreciation. In some countries only direct operating costs are taken into account such as labor or fuel.

Figure 3. Possible Problem Tree.



4 IDENTIFY OPTIONS

Force account units are highly dependant on good management. In some countries force

account operations may have almost collapsed and so a fast track process would be necessary.

It is important to involve all key stakeholders in this process such as Government, central and local, parastatals, regulators, standards bodies (for example, ISO), non-state actors, unions, consultants and contractors.

A decision should be taken early regarding the degree of force account to be phased out and whether this should be on a pilot basis first in one province then replicated to others. In some cases there will be benefits in continuing with a small force account capability for training purposes of agency staff, or in sparsely populated remote areas where contractors are reluctant to mobilize. Emergency works will have to be catered for, and framework contracts may be more expensive to operate than to have a certain amount of equipment and labor on standby or being put to other tasks.

There are three complementary parts to the transformation process: first preparation of government to undertake planning and management of contracts, second phasing out direct public sector execution of works and third, phasing in the private sector.

4.1 Preparation

Following the situation and constraint analysis described above and setting up a transformation team, government has options on how far it desires the transformation to go. A functional analysis should be undertaken addressing the following questions:

- What existing functions are undertaken?
- What functions will need to be retained and developed within the public sector?
- What new functions will need to be added to public sector?
- What new functions will need to be implemented by the private sector?
- What existing functions will be switched to the private sector?

Functions to consider can be grouped as follows: planning and defining standards, programming work, preparing and letting contracts and contract management, supervision, monitoring road condition, materials testing, undertaking physical work (including management of labor and plant) and various types of

training. Other functions are common to all types of work including the general administrative functions of personnel management, finance, legal, and public relations.

Options chosen will need to take into account Government's strategy on how far it wishes to proceed with private sector participation. Options include standard unit cost, framework, area based, performance based, medium/long term and management contracts. Concessions are also an option that can include private finance, such as: Design, Build, Finance and Operate (or maintain); or Build, Operate and Transfer.

Depending on options chosen, the district and/or regional engineers will need training and motivating on how to perform their new role as "network managers". They will need to think differently about what needs to be done and how to do it. They may need additional training on how to specify work for a contract and how to let and run particular types of contract.

Major changes in organizational finances will be required. Initially there is a very strong possibility that an increase in observed maintenance expenditure will be required as the organization moves towards full cost recovery. This is because many force account operations do not adopt full cost recovery principles in their budgeting. Often the costs of running capital equipment are ignored within internal government budgetary procedures. (Capital equipment is often financed via donor grants or via ad hoc payments).

4.2 Phasing Out: Public Sector

The decision to transform force account has profound implications on the public sector organizations managing the sector. Since much of the work will now be out-sourced, the required staffing levels will be reduced for operational/execution functions and those that remain will need a different set of skills. Hence one of the first strategic decisions to be made would be what sort of institutional structure should administer the Road Sector. Options in this regard would include:

- **Provide autonomy to road agencies.** Different arrangements will be required for different classes of road. A very small country may be able to manage everything centrally. A very large country may need separate agencies at state, provincial and district levels.

- **Strengthen existing government structures at the various levels for contract management.** This may include Ministry Headquarters, Provincial and District offices as described in the "preparation" section above.
- **Combinations of the above** such as setting up an agency managing national roads and use existing local council structures to manage local roads.
- Establish **contract management units** such as the AGETIPS (WB Technical Note 411) used in francophone Africa.
- **Public Private Partnerships or Concessions** (see Amos, TP-1). This approach may be viable for highly trafficked main roads

Autonomous road agencies can greatly improve the efficiency of management of national roads, and Tanzania's road agency TANROADS and Road Fund are good examples. (Reference can be made to Heggie and Vickers, 1998 on how to do this). However, at the local level the ILO (Edmonds & Johannessen, 2003) recommend, where possible, building up the capacity of existing institutions Care needs to be taken to ensure that any new structure does not duplicate and compete with existing government structures. Having established the institutional structure, plans should be put in place to handle the personnel implications. A number of options need to be considered, taking into account both financial and social factors which may include:

- **Recruit Chief Executive using transparent criteria** for autonomous agency who then recruits own staff.
- **Transfer staff to autonomous agencies or local councils** or encourage that agency to recruit from government. (Generally it is best to recruit staff from any source but this would reduce redundancy costs.)
- **Transfer staff to a government formed road contractor or contractors.** These may then be given guaranteed work for a period of time and then fully privatized.
- **Second government staff to contractors or consultants** (This has worked in a pilot project in South Africa).
- **Transfer staff from central government to local government** (This requires good cooperation between

Government Ministries as was not the case in Malawi – see Text Box 1).

- **Privatize or commercialize particular elements of the organization** such as Training Schools or Materials Laboratories.

Having considered the options for staff transfers, some may then become redundant, and funded plans need to be put in place. Options here include:

- **Voluntary redundancy.** (Best staff may leave).
- **Retrenchment.** (Decisions here may not be made on the basis of merit unless done with transparent criteria.)
- **Natural wastage** – or not replace retired or resigned staff. (Staffing profile may become overly aged.)
- **Temporarily reduced retirement age** – (If sufficiently good conditions are offered this will reduce the number of aged staff and may improve staffing profile.)
- **Training support** - in particular for unskilled staff, may enable some staff to get other jobs.
- **Attrition or do nothing** – although not usually an intended strategy, this often results in working conditions becoming so poor that staff eventually leave anyway.

Clearly, there are advantages and disadvantages of various methods, and combinations of the above may be best depending on circumstances. The worst option, but a very common one since it avoids making hard decisions, is the do nothing one. This largely happened in the case studies for Malawi and Zambia discussed in the boxes 1 and 2 below.

The most important consideration is staffing, but it is also important to avoid wasting other resources such as plant and equipment. Good working road construction and maintenance equipment is often scarce in developing countries thus driving up the cost of works. A number of options on how to handle Government owned plant include:

- **Transfer equipment to state owned company** (See references for Namibia, British Columbia and Text Box 4)
- **Transfer equipment to Government owned plant hire/leasing centre** with the option of privatizing or closing it down

later once equipment has reached the end of its useful life.

- **Sell equipment** (This can be done as one big auction or a series of them, or as hire purchase). One big auction may depress the price received but low prices may be desirable to kick start local contractors businesses.
- **Include equipment as assets that contractors bid for as part of road works tenders.** This is similar to selling the equipment but ensures that it is used on road projects and also offsets agency expenditure.
- **Attrition or do nothing** (Let equipment get cannibalized and devalue over time as discussed in Box 2)

There are pros and cons of the various options and the best combination will generally depend on country specifics. Generally, many Government established contractors or plant hire companies have long term sustainability problems, but they can provide a useful transition role while the private sector builds up its experience and capability. Unfortunately, the last (do nothing) option is very common as mentioned in the case studies and is likely to be the worst economically, but again avoids the need for any hard decisions.

4.3 Phasing In Contracting Options

Let private sector respond on its own. If there is a market for contracting services with payments available on a regular and timely basis, entrepreneurs will emerge to fill the demand. These may be transporters, shopkeepers or former employees of road administrations. However, there are a number of ways of accelerating this process discussed below:

Packaging contracts is one of the best ways of providing a range work for the spectrum of the local construction industry and avoids the total value of the contract becoming too large for small and medium sized companies. This can be done vertically or horizontally. **Vertical packaging** is where projects are divided into several contracts each covering a short length of road. **Horizontal packaging** is where works are awarded within the same stretch of road according to particular activities, for example culvert contracts, drainage contracts, shoulder repairs or haulage. This method is particularly useful in that it enables some activities such as drainage to be low cost labor

based and others such as providing compacted gravel would require high cost plant. It should be noted that road agency administration or supervision consultancy costs may increase but these could be offset by local firms providing lower rates.

Set up National Construction Council (NCC) to develop contractors. Such councils have been established in a number of countries. Tanzania created one in 1979, and Malawi and Zambia in mid 1990s. (Brushett & Seth, 2005) identify four main roles for these councils namely: regulatory, contractor development, advisory to Government, and information dissemination.

Tanzania separated out the regulatory function in 1998 through the creation the Contractors Registration Board although both this Board and the NCC are involved in contractor development. Having been released of the regulatory function, the NCC is now looking further afield and promoting a number of initiatives such as the Construction Industry Development Fund. Unfortunately it is struggling financially, not having revenues from contractor registrations, but Government remains supportive. This initiative could well be pivotal since many countries have made little progress on addressing the financial constraints that prevent small contractors growing into medium ones.

A number of NCCs have taken up the functions of the old Public Works Departments' Roads Training Centers. The NCC in Zambia has inherited the labor based training school for contractors, that was supported by NORAD and ILO. The Malawi NCC is actively training contractors but perhaps at the expense of the contractor registration function which is still rather weak.

Regulate contractors through registration system. Many countries have set up a national system that classifies contractors according to financial and technical capability. Zambia and Malawi register contractors through their construction councils. Care needs to be taken that such systems do not become rent-seeking exercises where contractors just pay for the classification they want, so inspection and verification of contractors' resources is essential. Registration systems may be more effective at provincial level where the logistics of verification are much easier. Andreski & Byabato (1997) describe such a scheme for the Iringa Region, Tanzania where contractors were upgraded or downgraded depending on performance.

Facilitate creation and operation of contractors associations. These associations enable contractors to promote and defend their interests as a group and this has much more weight than individuals. They can agree contract conditions, payment procedures and regulations with Government or other major clients. They can provide advice, training, financial support and improved access to banking, insurance, materials and equipment to their members. Larcher and Miles (2000) identify four issues that must be addressed when planning a contractors association: 1) It must be accepted by Government as representing their group, 2) Funding must be available through membership fees or grants, 3) There must be a good number of members, and 4) Like any other organization, it must have a good leadership and management.

Provide subsidised plant and equipment to contractors. Availability of equipment is often a major constraint to domestic contractors in developing countries. One option is to provide equipment at subsidized rates. However, this option will be difficult to sustain and is probably only viable as a kick starter.

Train contractors. An emergent industry is likely to lack technical and business skills and training is a means of enabling new contractors to develop quickly. There is also likely to be a high turnover of both contracting companies and the staff within them so the training process needs to be continuous over a long period of time rather than a one-off exercise. Several types of training are available and these include, classroom training, "greenhouse contracts," technical competitive tendering after training seminars and mentoring on site.

Classroom training can take many forms. Typical technical aspects of labor and machine based road construction include: basic road engineering, identifying objectives, project planning using critical path analysis to develop bar charts and optimal use of resources, balancing plant and equipment, quality control, site supervision, work measurement and estimating, progress charts, contract monitoring and reporting. Business skills training may include cash flow management, contract conditions, tendering regulations and techniques, bonding and contract law. This training may last from one day to one month depending on the seniority of the staff concerned but should not be too long since contractors are very busy people needing to earn money to run the business.

"Greenhouse" contracts are those set up for newly established contractors where much of the risk is removed. Consultants could be on call to provide advice. Easy contract terms may be available such as cost-plus or many of the equipment and materials provided by the client. Indicative rates may be provided or the total budget made known in advance. Another option may be to provide a bill of quantities with rates and invite each contractor to bid a certain percentage above or below. The type of "greenhouse" should depend on the level of development of the local construction industry. Airtight greenhouse (windows closed) contracts with rates fully fixed could be provided at early stages and then gradually opened up to full financial competition once the industry approaches maturity.

Technical competitive tendering similar to that used to procure consultants is another option. Andreski & Byabato (1997) present a method developed in the Iringa Region, Tanzania in the early 1990s. Here all contractors or entrepreneurs interested in moving into the business in the region were requested to express interest in the Regional Engineers road maintenance program. Compulsory training was provided on how to carry out the works and prepare tenders. Short lists were then drawn up and contractors invited to submit technical proposals based on a priced bill of quantities. The technical proposals were then marked according to pre-published criteria and the technically best chosen. This had the advantage of ensuring contractors paid full attention to the training and prevented them from submitting unrealistically low bids.

Similar to the "greenhouse" concept is to allow **"high risk tendering"** and management of contracts. This may include reduced or no bonding, large advances with easy repayment terms, fast track payments, short listing of contractors thus reducing competition, price controlled or internet tendering. These types of contracts throw a lot of the risk on the client and even the individuals managing such tenders. Hence the client project managers will need the full support of their superiors and such techniques should be included in policy documents. For a well developed industry this may be expensive, but for an emerging industry it would accelerate its development and hence avoid many costly failed contracts.

Capital is a major constraint for newly emerging contractors. Banks in developing

countries are notoriously risk averse and particularly reluctant to provide credit to what they perceive as high risk industries such as construction. **Enhanced credit availability** is one way around this problem. It may be necessary for the client or development partners to provide guarantees to local banks, thus removing or sharing the risk. They could also subsidize interest rates thus reducing them to levels affordable by contractors. Often collateral at high percentage rates is demanded and this could also be reduced if third parties are prepared to take some of the risk. If good cooperative local banks are difficult to find, other vehicles can be found such as Tanzania's Construction Industry Development Fund, discussed further below.

Appropriate standard specifications should be included in the contract to suit the emerging local industry. They may include specifications allowing for local products. Specifications may also be simplified for the smaller contracts thus easing complexities for smaller firms and those that imply use of sophisticated imported equipment should be avoided.

Local entrepreneurs often produce **innovative local products**. These may include items such as wood stave culverts, bamboo reinforced concrete pavement or locally manufactured rollers and trailers. Local councils are frequently very conservative in regard to such innovations and prefer what they perceive as the "tried and tested" but more expensive foreign technology like Armco pipes. It is important that Government policies promote the local industry and also that these policies are fully disseminated at all levels.

Some countries remove **subsidies to foreign firms or create advantages for local contractors**. Often Development Partners insist that local taxes such as import duties are not applied to their credits or grants. This means that large foreign companies can import new equipment without paying duty whereas the smaller local companies are offering to provide their services having already purchased duty paid equipment. This creates a big advantage to foreign companies particularly for the larger contracts. It would be better if the playing field was leveled by all parties paying the same level of tax. Alternatively, barriers can be placed on foreign firms. This could include high registrations fees or extra taxes on imported equipment. A domestic preference of around 5 to 15 percent can also be included in tender documents.

Another advantage may be to require foreign contractors to subcontract a percentage of their contract to local firms.

The Development Team Model. In this model, the aspects of the work are packaged into the four basic functional components: construction management, materials management, materials supply, and the works. The work is contracted out to a small-scale contractor, materials management and supply is contracted out on a fee-basis to a materials manager, and construction management is contracted out on a fee-basis to a construction manager. The materials manager and construction manager may be either consulting firms or established contractors. They make up the development team and provide the necessary support to emerging contractors. The uniqueness of the model is that it combines contract packaging (unbundling); on the job hand holding; and provision of support in resource mobilization for the emerging contractors.

Construction industry trust funds can be set up to support the local construction industry as per the example in the following box.

Construction Industry Development Fund, Tanzania. The CIDF was set up in 2003 by the NCC with the aim of:

- Providing funds to firms on easier terms than traditional banks;
- Acting as a guarantor for loans;
- Providing loans for equipment and tools;
- Providing training in business development;
- Fostering alliances among local firms and with foreign;
- Managing a construction warranty scheme.

Management and board of directors come from contractors, consultants and suppliers. Sources of funds include membership fees, equity contributions from members, donations, grants, loans, and commissions on loans and guarantees.

A **Contractors Assistance Fund** was also set up by the Contractors Registration Board purely to guarantee advances and bonds for small scale contractors. Out of 400 companies assisted since 2002 only one has defaulted to date.

Malawi is also investigating the possibility of establishing such schemes.

5 DEVELOP TRANSFORMATION STRATEGY & ACTION PLAN

Based on the options chosen, a transformation strategy and action plan should be drafted. This should be time bound (3-10 years) with costs and identified responsibility for implementation. A means of monitoring progress against key indicators will be required. A **Transformation Project Team** should be set up to manage the process in the Ministry or Agency responsible for roads. It should be led by a senior roads administrator and have advice available from consultants, contractors and academia. Technical assistance may also be provided to strengthen this team. The Team Leader would need to have direct access to top decision makers responsible for roads.

The strategy should have a **Vision** of where the transformation should be in say 10 years. Base on the road network size, an example may be 95 percent of road maintenance works contracted out, and for example 400 small, 50 medium and 20 large local capable contractors available to carry out rehabilitation and maintenance of roads, and corresponding professional autonomous roads administrations to manage them with competent support from consultants.

Strategic Objectives should then be set. This would include type of national and local road administrations to manage that network, and size and structure of road contracting industry to maintain and develop the network. Such a plan must be realistic and achievable taking into account the economy of the country and anticipated demand for road transport services. A broad financial envelope should be established using asset management principles.

An indicative example broadly based on the Tanzania road sector with three strategic options is given below. In each case road maintenance requirement is estimated at 3 percent of asset value, the cost of deferred maintenance or backlog is taken as two times that of normal maintenance and annual increase in overall expenditure of 1 percent. For Strategy 1, construction is given priority. For Strategy 3, maintenance and rehabilitation is given priority. Strategy 2 is a compromise taking into account social, strategic and political considerations. Strategy 2 is chosen as a realistic option and resource needs are estimated on that basis.

Figure 4. Financial Strategies.

Strategy 1 - High Priority Construction, loss of asset (\$m)

Year	0	5	10
Asset Value	2,600	2,414	2,105
Maintenance backlog	1,400	1,683	2,010
Maintenance requirement	78	72	63
Annual loss of asset due to backlog	105	126	151
Capital expenditure	130	137	144
Rehabilitation expenditure	65	68	72
Maintenance expenditure	65	68	72

Strategy 2 - High Priority Rehab, static asset value

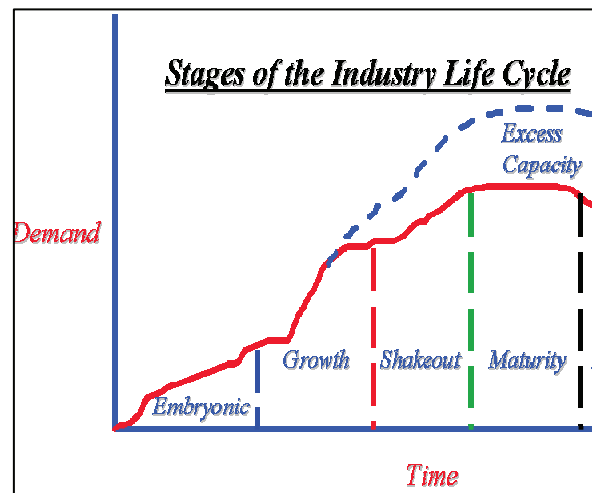
Asset Value	2,600	2,517	2,608
Maintenance backlog	1,400	1,302	1,098
Maintenance requirement	78	75	78
Cost of backlog	105	98	82
new roads	65	68	72
Rehabilitation expenditure	130	137	144
Maintenance expenditure	65	68	72

Strategy 3 - Maintenance Works, gain in asset value

Asset Value	2,600	2,620	3,112
Maintenance backlog	1,400	920	185
Maintenance requirement	78	79	93
Cost of backlog	105	69	14
Capital expenditure	-	-	-
Rehabilitation expenditure	180	189	199
Maintenance expenditure	80	84	88

From these figures the workload can be estimated and hence resource requirements for contracting, consulting and administration estimated. An indicative example is given in Annex 1.

Figure 5. Industry Life Cycle.



In estimating the private sector resource requirements, the stages of the industry life cycle should also be taken into account. As illustrated in Figure 5 above, excess capacity is

likely to occur at initial stages before shakeout leads to maturity for both contractors and consultants and so an extra margin should be provided for planning purposes.

Changes to the organization structure to administer the road network will be necessary. The current Ministry may possess three times as many engineers as required in the estimate for contract management. However, other engineers will be required for planning, evaluation and specialist activities. Professional expertise will be necessary in the areas of economics, accounting, law, construction materials, personnel and office administration in addition to support staff. Unfortunately, it is

likely that many supervisors, artisans and unskilled laborers will become redundant, but efforts should be made to transfer or prepare them for a role in the private sector via training or secondment.

Having established the vision, objectives, scope and scale of the transformation, a strategic action plan is required to manage it. This should be the first task of the Transformation Project Team. The plan should be time bound identifying resource and those responsible for implementation. An example of a possible outline 5-year plan is given in Figure 6 below, but would vary according to country specifics and options chosen.

Figure 6. Indicative Strategic Action Plan.

Year	1	2	3	4	5	Budget \$m
Preparation Phase						
Appoint Transformation Steering Committee	█					
Appoint Transformation Team	█					
Develop Mission and Objectives Statement	█					0.1
Identify constraints & options	█					0.1
Analyse road maintenance functions & costs	█					0.4
Prepare Cabinet Paper	█					0.1
Draft legislation or regulations		█				0.1
Prepare Private Sector Participation Strategy		█				0.2
Procure & Manage Transformation Consultancy(ies)		█	█			0.5
Phasing Out Force Account						
Design new public sector organisation(s)		█				0.1
Prepare Personnel Transfer/Retrenchment Scheme		█				0.1
Establish new institutional framework			█	█		1.0
Train Staff for new role			█	█	█	0.5
Transfer/retrench staff			█	█		3.0
Prepare privatization scheme for Materials Lab		█				1.2
Transfer/Sell Plant & Equipment		█				-3.0
Phasing in Contracting						
Set up (or strengthen) National Construction Council	█					1.0
Establish contractors registration scheme		█				0.3
Package contracts horizontally & vertically		█	█	█		0.1
Create/support Contractors associations		█	█			0.2
Train & develop contractors		█	█	█	█	3.0
Encourage joint ventures with foreign companies		█	█			0.1
Review bonding and other contract conditions			█			0.2
Review contract specifications			█			0.3
Establish Industry Development Fund				█		2.0
Total						11.6

6 ENSURE SOCIAL ISSUES ARE IDENTIFIED AND ADDRESSED

The transformation from force account to private contracting can have negative impacts on workers because of the need for redundancy or retrenchment, but these impacts should be anticipated and can be mitigated. However such a transformation also provides numerous opportunities for poverty alleviation through labor based techniques and gender mainstreaming, the use of social and environmental clauses in contracts, and attention to HIV/AIDS outreach and awareness among workers and communities adjacent to civil works.

One important key to the success of force account transformation is proper attention to and planning for mitigation of the impacts on affected personnel. First and foremost is adequate expertise on the steering committee to deal with issues of redundancy and retrenchment. Appropriate identification of the impacts, skills assessments and training programs need to be devised and workers given a chance to participate in decisions regarding timing, compensation packages, re-training opportunities, etc. In some cases, training for opportunities beyond the transport sector should be considered. Support to new institutions such as small contractor associations can help to further create and sustain a safety net of resources, facilitate information exchange, provide additional training, and also serve as an important forum for dispute resolution.

Lessons learned in Lesotho point to the importance of addressing the gender and age dimensions of contractor training and national policies. Although some women have participated in the contractor training program in Lesotho, married women are still unable to open bank accounts on their own. This restricts their autonomy and has been viewed as an important blockage to their growth. Attention to gender and age criteria in tender evaluations can help to address some of these concerns.

In some cases under force account, many workers receive social working benefits as a part of the Ministry policy. These items cover diverse issues such as: location of camp sites and sanitation measures, worker safety, labor recruitment and payment format (with attention to gender and other relevant social dimensions), relations with local communities and authorities, etc. Inclusion of these clauses

helps to ensure that the benefits of creating both assets and employment are equitably shared. It is important that contractor training programs cover social issues and mitigation measures, and that these clauses are used within contracts and regularly monitored.

Many donor funded large contracts in Africa include HIV/AIDS clauses. These clauses ensure that workers are given adequate HIV/AIDS training and access to resources (i.e., condom distribution, access to health workers, etc.) and that communities living adjacent to civil works are included in information and education campaigns (IEC). These actions help to mitigate the spread of HIV/AIDS and potentially save lives. Large contractors often subcontract the HIV/AIDS activities out to qualified NGO's for the duration of the works. Small contractors are at a disadvantage for using this system and efforts need to be made to ensure that the clauses, activities and awareness continue, even if they are offered by or done in collaboration with the Ministry and that the activities are monitored as a part of the contract.

7 IMPLEMENTATION

The key to implementation is consultation. Ideally a **Steering Committee** comprising major figures in Government from the Roads, Finance, Civil Service, and Local Government ministries will be members. A strong representation from the private sector is also important in areas such as Chambers of Commerce, Roads Associations, NCC, Institution of Engineers, Academia, Transport Operators, Agriculture, Tourism, Contractors and Consultants. This Committee should meet every two months. Regular communication with stakeholders is essential and a communications matrix should be prepared indicating who, frequency, what information and medium of transfer.

Implementation of the reform will be the responsibility of the department undergoing the transformation. The key unit will be the **Implementation Team** that must have a Team Leader with good access to top decision makers when necessary. One of the first jobs of the Team is to write its own Terms of Reference and get these approved by the Steering Committee. This will basically cover the steps mentioned in this guidance note but tailored to country specifics. After Steps 1 to 3 shown in Figure 1 which is essentially the inception stage, the Team will need to prepare a project proposal i.e., Step 4 – Transformation Strategy and Action Plan, and

get this approved by the Steering Committee and any other bodies involved in financing the project.

This Team will need a range of skills and roles, and individuals would be assigned to cover planning, engineering, legal, economic, personnel, administration, financial and accounting issues. The Team is likely to employ consultants to carry out institutional studies but it is important that these studies are fully interactive with the client. The Team must meet once or twice a week and have at least one or two full time members. There will need to be at around every quarter, a **wider conference** including the Steering Committee and other stakeholders, particularly those in the Government Departments most affected by the changes.

The Team will need a **budget** to organize meetings, seminars, conferences and consultancies. Sums of money will need to be set aside to cover transfer and redundancy costs and this should involve the personnel departments of the organizations concerned. Some of these costs can be offset by plant, equipment and buildings being sold off or off-hired.

Should new autonomous agencies be created such as Road Funds or Road Authorities to enhance the process, enabling legislation maybe required and early preparations are necessary to allow for the legal and Parliamentary process to take place. Even without legislation, Cabinet approval is likely to be necessary and an appropriate **Cabinet Paper** should be prepared at an early stage. Finally, once the transformation has started, the monitoring systems mentioned below should be put in place including proposals on how training of contractors and public administrators can be continued.

8 MONITORING AND CONTROL

The purpose of monitoring is to exert control, learn lessons and improve the system over time. There will be two types of monitoring. The first will monitor key milestones in the transformation process treating it as a project using bar charts such as shown in Figure 6 and critical path methods and other standard project management techniques. The second type will monitor the results or impact of the transformation once it is complete over a longer period using **logical framework methods** (see EU Project Cycle Management

Guidelines). The baseline study proposed in Step 1 will set the status of the sector at day zero in this regard.

Ideally, the impact monitoring should be part of an overall monitoring system of the sector as a whole, and much of the information may already be available from a Road Maintenance Management System. The purpose of this transformation is to improve efficiency of delivery of maintenance services and will not necessarily improve the effectiveness of maintenance [i.e. are the right roads being maintained to appropriate standards]. Key relevant indicators may include:

- Road Asset [A standard method of calculating this is given by Road Liaison Group, 2005 and a simplified method by Andreski, 2005]
- Unit maintenance costs for selected key activities
- Overall value and numbers of contracts performed grouped by contractor class and contract value
- Timeliness of contract procurements and payments
- Volume of force account works being carried out in terms of expenditure and coverage of network
- The number of bidders for contracts

An assessment of the status should be made every year, preferably by an independent agency. Full monitoring every year of each indicator over the entire network is likely to be impractical and statistical sampling techniques will be required. In remote and lightly trafficked areas a rolling 3 or 5 year survey program may be more appropriate.

9 LESSONS LEARNED

The key lesson is that a systematic approach is required that not only develops an enabling environment for developing small and medium scale contractors and consultants, but fully caters for the government employees that remain or need to be retrenched or re-deployed. In other words gradually phase out force account and phase in contracting with finance to cover the social costs. In the past too little attention has been paid to the phasing out part. The costly attritional or "do nothing" option regarding government staff and equipment must be avoided.

Part of the phasing out process is to carefully define the roles of the Ministry and any new agencies set up to manage the sector. There is a need to avoid duplication of function and a lack of clarity of roles and responsibilities.

There are many options for phasing in the contracting process. These include support from institutions such as construction councils and credit brokers, and appropriate training and packaging of contracts for small and medium contractors.

In some cases the transformation has resulted in the creation of agencies that centralize management of the sector and this can be counter to poverty reduction policies where the poor are mostly in rural areas. Contractors tend to be mainly available in the major towns so schemes need to be set up to develop them in the provinces and districts. Local administrations tend to lack capacity and in many cases there are opportunities to absorb redundant staff from central government.

The lack of relevant domestic commercial and management skills may result in an influx of foreign firms so care needs to be taken that the local industry does not get swamped. Donor financed projects may result in administrations becoming overly dependant in foreign advisors so procedures that use appropriate professionals within road administrations need to be followed.

Plans should be put in place for support functions in the industry. Too often training or materials testing functions have been neglected for long periods while the transformation process takes place.

New contractors are unlikely to be successful if they are staffed solely by former public sector employees. Strong commercial skills need to be developed and hence staff with experience of the private sector should be employed to work along side transferred staff.

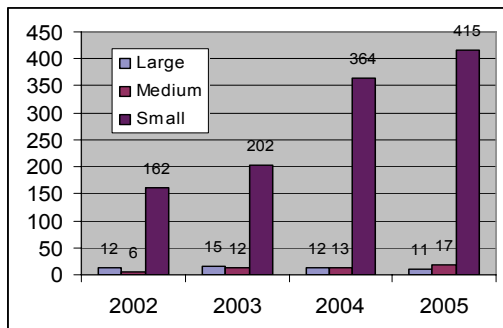
Box 1. Malawi Case Study

Malawi has a road network of around 15,400km and spends about \$15 million a year on road maintenance. Most road maintenance is now contracted out. The policy to privatize force account road works started in earnest in 1995 when most of the Ministry of Works (MOW) casual labor force were laid off. This supported the National Transport Policy 2004 that included an overall objective to “promote private sector investment and operations, wherever possible, and to promote a more business-minded approach by public sector bodies”. The Transport Policy had the general objectives, “to create a climate that nurtures, encourages, and sustains the participation of the private sector in the financing, the construction, the maintenance and the management of roads”. It also stated the intention to increase the use of private sector firms in routine maintenance of roads from 30 per cent in 1996 to 95 per cent by the year 2000 and this objective has largely been achieved. However, although structures such as the National Roads Authority (NRA) and National Construction Industry Council (NCIC) were created, a step-by-step strategic plan to manage the transition necessitated by these policies was never put in place.

In 1995 when most of the MOW casual staff were laid off, the structures to reabsorb them were not in place. The local contracting and the consulting industries had only just started at that time and are still weak today. In 1997 there were various studies carried out under the Road Management Initiative (RMI) that helped in the creation of the NRA, but the consultation process appears to have been incomplete and did not involve local consultants. The role of the Director of Roads, MOW and his staff was not clearly defined in the Act of 1997 that created the NRA. This has led, for example, to many skilled road sector staff languishing under-utilized in the MOW Regional Offices. There have been plans to transfer sixty eight of these employees (technicians and foremen) to local government but the process has not started. Initially there was a lack of communication between ministries. The MOW did not transfer these staff since it believed civil service approval of the structures in the local councils was not in place to receive them., but, the Ministry of Local Government felt that was not the case, and that MOW was stalling. However, MOW having received an early version of this paper is putting in place plans for these transfers.

Privatization of a number of organizations has been slow and some are left behind with an unclear mandate such as the Government Materials Laboratory. This remains under the control of the MOW and, although they can charge for testing services, all their revenue goes to central Government coffers. There is also currently a force account unit called the Bitumen Training Unit employing around 80 staff controlled by MOW. This unit only just survives, largely by winning commercial contracts. There has been a number of proposals to privatize the Government Plant and Vehicle Hire Company (PVHO) but this has yet to happen and recently they received thirty 3-year old graders transferred from the NCIC.

The reform process resulted in a dip of road sector technical training in the later 1990s and early 2000s. The Government Roads Training Centers closed down, and although the Bitumen Production Training Unit provided some training the previous comprehensive training system has only recently started being re-established by the NCIC. The NCIC also managed for three years the thirty graders mentioned before it became apparent that they were not the best institution for such a task. Another concern to stakeholders is that the transformation has resulted in less ownership by Malawians. Force account works units and Ministry design departments that were managed by locals have been replaced by foreign contracting and consulting firms. Many NRA projects are strongly influenced by donor financed TA, whereas in the past Malawian engineers in the Ministry made the key decisions. Nevertheless, the NRA has been quite good at contracting main road works and in 2005 only 6% of the 3,770km long paved road network was in poor condition. Unfortunately, many local roads remain untouched with 48% of the unpaved roads in poor condition at that time. The numbers of contractors have also grown over recent years as seen in the chart.



This situation has resulted in mixed views on the success of the process of transforming force account road maintenance. Currently, the Government is considering a plan to set up a labor based road building program to be run by the Ministry of Works along force account lines paying workers K200 (considerably more than the minimum daily wage). This is very laudable since labor based public road works is an excellent means of reducing poverty, particularly as it does not crowd out local entrepreneurs. However, most donors, such as EU are refusing to support the project since it appears to be moving back on the contracting out policy. Maybe the slow pace of the reforms regarding the separation of the Road Fund from Operations is a symptom of the lack of government confidence in the process. Should these guidelines have been available in 1995, transformation of force account road maintenance could well have been a better planned and orderly process.

Box 2: Zambia Case Study.

Zambia has a road network of around 67,000km (37,000 gazetted) valued at US\$1.5 billion. The main road network condition improved from 20% good in 1995 to 57% good in 2002 although feeder roads are still generally poor with only 7% good in 2002. Prior to 1993 Force Account road maintenance was the norm. In 1985 the Roads Department had four gravelling and three resealing force account units working nationwide. Various Donors such as World Bank, JICA, and NORAD had donated equipment around this time. FINNIDA equipped districts in 1993 but this did not work since Districts could not pay staff and the National Roads Board had to pay contractors direct.

Government funding diminished sharply in 1988/9 and by 1989 the equipment started to break down and diminish rapidly due to poor management and pilfering of spares. In 1990 Government as a whole was restructured and many staff including those in the road sector were retrenched. Equipment was also effectively abandoned at that time with little will to sell it and consequently decayed. By 1993 when the Road Board was created, the roads were in very bad shape. At that time the process of transforming force account started following the policy of increased privatization by the new Government led by President Chiluba. Force account works almost entirely ceased rather abruptly in 1993 with some social problems. Redundancy payments were often late and little training was given to these staff to cope with their new circumstances. On the other hand, from 1994 to 2005, small scale contractors and supervising engineers increasing from 4 and 6 to over 450 and 60 respectively. For a while cartels formed but S. African and Zimbabwean contractors were brought into the country to break them. There have been some reversals to the general strategy, and recently, Government bought \$30m of equipment for force account and this went to National Service organization who can also bid as a contractor. There have also been occasions where contract payments have ceased or been late.

The National Road Board became a statutory body under the name of National Road Fund Agency, and the Public Roads Act 2002 created the Roads Development Agency (RDA) to be responsible for the 67,000km network. Recently, the Department of Roads managed the main roads (~36,000km) and the Department for Infrastructure Support Services (DISS) the local roads. The RDA is now absorbing the DISS and this appears to centralize sector management, but under the Act the RDA may declare local councils as Road Authorities who would then manage their local networks. The criteria for this declaration have yet to be established.

Zambia's Transport Policy 2002 arrived a little late, and undertakes to: "to develop the domestic consulting and contracting industry". It then puts forward the Strategy to:

- Facilitate leasing and credit financing to small and medium scale road contractors;
- Introduce commercial management practices;
- Develop capacities of locals by encouraging joint ventures between local and foreign companies and give weightage in favor of the locals in evaluation of tenders;
- Ensure that packaging of contracts encourages local contractors."

The 1995 National Construction Industry Policy led in 1998 to the creation of the National Construction Council (NCC). It acts as a registrar, regulator, arbitrator and disciplinary body for the industry and trains contractors having recently absorbed the Roads Department Training School. This School has been instrumental in developing labor based contractors who were given "greenhouse" contracts between 1996 and 2001 in the Eastern Province. There has also been little development of medium scale contractors in the country. All of these contractors have had problems surviving due to limited capitalization, inability to afford tender and bid bonds, and high interest rates.

Although the World Bank coordinated ROADSIP elaborated strategies and interventions in support of these policies many elements remain to be implemented or financed. A meeting of local consultants in October 2005 suggested a strategic plan should have been prepared that had the following steps:

1. Conduct Baseline study and use for monitoring
2. Salvage Government plant and equipment by putting in plant pool or selling off
3. Set up contractor development scheme through: a) Greenhouse contracts supervised closely by NCC with mentoring, training and easy terms built in, b) avoiding onerous contractual obligations for bid, advance and performance bonds and liquidated damages c) avoiding contracting when finance is not secure, d) rolling out E. Province training program nationally for small contractors but targeted at road sector people, e) providing \$1m soft loans to medium scale contractors against collateral, and f) training Government staff in managing contracts and if made redundant, how to set up their own businesses.

Box 3: Tanzania Case Study

Tanzania has a road network 80,000km long classified into 10,000km trunk, 20,000km regional, 2,000km urban and 48,000km district and feeder, in total valued at \$2.6 billion. Around 62% of the 4,600km of paved roads and 24% of unpaved roads are in good condition resulting in an estimated backlog in road maintenance of \$1.4 billion. As part of the Roads Maintenance Initiative, the process of transforming force account started with the Integrated Roads Project in 1990, and an early result in August 1991 was a Road Fund established by Parliamentary Resolution. Tanzania was also one of the first countries in the region to set up a National Construction Council (1979).

In 1992 Andreski & Lusenge found that force account methods had broken down in Iringa Region and that only a few gangs of about 5 workers were observed over the 2,000km road network with no discernable output. There were no road maintenance contractors in the Region at that time, so a system was set up to convert local shopkeepers, transporters and builders into contractors. [This was consistent with the Government's new policy of moving towards a market economy.] This proved to be highly successful and since 1994 nearly all road maintenance is done by contract. Over 3 years road contractors increased in the region from 1 to over 40 (Andreski & Byabato, 1997). Other Regions in the country developed their own initiatives or adopted this approach and today contracting is the normal mode of execution at the Regional Offices throughout the country. In 1994, the Ministry of Works established a unit called the Management Action Group reporting to the Director of Roads. This unit facilitated the reform process in the sector and was instrumental in preparing: road inventory, road maps, Road Toll Amendment leading to 2nd generation Road Fund, Draft Road Act, Executive Agencies Order for Tanroads, selection of Road Fund Board, and creation of Tanzania Civil Engineering Contractors Association. By 2000 an Executive Agency called Tanroads was in place that absorbed the regional offices and contracts out the vast bulk of its work.

The contracting industry in Tanzania has expanded dramatically over the last 20 years. In 1986 there were 43 contractors in the country of which 23 were civil contract and only 10 of these were local firms. By 1996 there were 600 road contractors and today these number well over 1,000.

Equipment was a major constraint to the contracting industry throughout this period. Fortunately, a number of plant pools were set up such as PEHCOL, the parastatal Plant and Equipment Hire Company in 1992 and smaller hire centres in Mbeya and Tanga. PEHCOL been difficult sustain due to little new equipment or investment. At one time 29 Philippine mechanics were employed for two year contracts at the PEHCOL but the tools and spare parts ordered for their use arrived after their contracts had expired. Nevertheless these organizations provided a useful temporary facility while the industry equipped itself, and the units in Mbeya and Tanga are working well under TANROADS.

During this period Government had several drives towards reducing the public sector and many public workers were retrenched with acceptable "golden handshakes". Many ex-government employees are now working for consultants and contractors.

In 2005 the road condition is much improved but still a major constraint. The extent of the network is still insufficient with a number of key strategic corridors incomplete and this causes strong political pressure for capital works at the expense of maintenance.

Tanzania is still at the forefront in developing initiatives to support the road construction industry. In January 2006 the two Ministries of Works and Transport were merged into the single Ministry of Infrastructure and Development. This consolidates the public sectors' role as a regulator rather than executor of works. Trust funds are being set up to support contractors. A serious problem for many years was the ability of small emerging companies to secure guarantees and bonds. The National Construction Council and Contractors Registration Board have each established trust funds providing guarantees to contractors. The CRB's Contractors' Assistance Fund has provided guarantees to over 400 contractors and only one has defaulted since 2002. Although the NCC's Construction Industry Development Fund has yet to fully take off due to shortage of capital the World Bank are now considering including support to it in the new Private Sector Competitiveness Project.

Box 4: Mozambique Case Study

Mozambique has a paved road network of 5,814km, and an unpaved one of 23,535km. 25%, 17% and 58% of the network is in good, fair and poor condition respectively. Today there is no force account maintenance and about \$19m of road maintenance work is carried out annually through around 250 contracts.

Prior to 1983 works were done by force account. At that time there were around 10,000 workers under the road maintenance budget (although perhaps less than half actually worked on roads) and 2,500 units of equipment, most of which were not working. Over a four year period, starting in Maputo, 10 Government owned companies were created called ECMEPs, one in each province that inherited these staff and equipment. The provincial governments directly awarded works to these companies at negotiated rates. Up to the end of the civil war in 1992, private contractors were unable to operate in rural areas due to the poor security situation so these Government owned companies were the only means possible. In 1995 training of contractors started in three provinces and building contractors and other entrepreneurs were converted into road contractors. By 1999, there were 60 or 70 contractors in the provinces and financial competition commenced with the phasing out of fixed prices. The ECMEPs were then consolidated into 3 regional companies with a view to privatization but this has yet to occur. Today these ECPMEPs have severe financial problems. Since 20002 they have to tender like any other firm, yet they have many workers who they cannot afford to pay off and equipment is old and unreliable. The companies are no longer attractive to private investors who would not want to inherit the staffing liabilities. One regional manager stated that they have a monthly wage bill of \$40,000 and an income of \$10,000!

However, there is an example of a successful privatization of a state owned company in the country called CETA. The state company was formed from 7 private firms that were abandoned when the majority of the Portuguese left the country in 1976. At that time it had a turnover of \$20m. Government then used CETA to build many of the main roads in the country. The company was privatized in 1999 although the process started in 1992. 49% was sold to a venture capital firm with 51% going to staff and workers of the firm. Recently, employees have started to buy out the venture capital firm. This company is the largest Mozambican contractor in the country and in 2005 had a turnover of \$18m. Currently it has an order book of \$35m and bids for work like any other private company. It makes a small profit of around 3% but has a major constraint with finance. Government take up to 4 months to pay whereas suppliers have to be paid 2 months in advance. Nevertheless, CETA's good track record enables it to form a good relationship with banks. Another problem faced by CETA is a lack of technically trained staff coming through the country's education system. Perhaps the success of this company stems from its private sector roots, and the period as a Government firm was not long enough to remove its commercial culture.

The supervision function was also transformed from government to the private sector. The previous supervision department has now transferred its staff to 7 or 8 existing private consultants. Fortunately, in this case the Road Fund paid all the staffing liabilities since these staff were all directly on their payroll anyway as Government employees. This transfer of staff has been a success for the majority of the consultants.

The Federation of Contractors believes it is time now to concentrate on small to medium contractors. Current procurement rules reserve contracts of less than \$200,000 for local firms, but this is considered too low. Capital is a major constraint for the smaller firms. Interest rates are 22% and borrowing in foreign currency has recently been prohibited by the Central Bank. Bid bonds tie up finance while tenders are being evaluated.

Although the implementation of the various study recommendations has been slow, the implementation of the Construction Industry Strategy has moved at a more rapid pace. Important decisions are now required particularly in regard to the ECMEPs. It is perhaps time for a National Construction Council to be created in the country supporting key actors in the industry such as engineers, suppliers, contractors and consultants. Consideration also needs to be given to improving the contractors registration process and in the long term the federation of contractors may be the best body for this function if it gains full recognition from all parts of the country,. Further development of contractors is necessary and the concept of "greenhouse contracts" where contractors are protected during their infancy could help new start ups. Longer term maintenance contracts may also be beneficial (3-5 years). Assistance in getting bonds and guarantees would help and a special Fund for this purpose should be considered.

Box 5: Lesotho Case Study

Lesotho is a small landlocked mountainous country surrounded by South Africa and a population of 2 million. It has 1,350km of paved road of which 60%, 30% and 10% are in good, fair and poor condition respectively. The unpaved network of 6,050km has 43%, 42% and 15% in good, fair and poor condition. Most of the US\$7.7m annual maintenance works are contracted out for unpaved roads but US\$2m per year is still spent on force account works for the maintenance of paved roads. Until 1993, maintenance of unpaved roads in Lesotho was carried out using force account procedures and the culture of contracting out road maintenance did not exist.

In 1993, the Government decided to involve the private sector in creating employment opportunities for migrant workers returning from the mines in South Africa. The local construction industry at that time had capacity only to carry out building works, and no local contractors were available to execute road maintenance. In 1994, the Department of Rural Roads (DRR) embarked upon a Contractor Training Program (CTP) with internal and external support. The immediate objectives were to: (a) establish a cadre of new entrepreneurs trained in labor-based works methods; (b) strengthen the institutional capacity of the DRR to manage CTP effectively and efficiently; (c) strengthen the capacity of contractors through training of their staff; and (d) review procurement and financial procedures to allow new contractors to compete for and execute road maintenance works. The CTP has made road maintenance not only efficient and cost effective, but has had a positive impact on poverty reduction by generating temporary employment for more than 4,000 workers. The CTP in Lesotho is a good example of the promotion of small-scale construction industry in the region, and contractors from other countries are already participating in this program. Today there are 105 contractors of varying quality and size in the country.

There are two types of training programs: (a) a nine-month program for road maintenance and rehabilitation (ROMAR); and (b) a one-year program for road construction and upgrading (ROCAU). ROCAU, an advanced stage of ROMAR, is only offered when one is successful in ROMAR. After successful completion of the ROMAR training, the newly trained contractors are allowed to execute one, no-bid, routine maintenance (RM) contract valued at less than US\$10,000. Based on capacity and performance, contractors can be gradually upgraded to be eligible for carrying out more than one contract for RM works, subsequently for periodic maintenance works, and finally for rehabilitation works valued at less than US\$100,000. Contractors who have been found successful in the implementation of rehabilitation contracts are considered for training in ROCAU. The program is financially sustainable and the salaries of local staff as well as operational expenses including maintenance of facilities are financed from the Government budget. To achieve financial sustainability the government is considering a proposal to run the training center on a break-even basis. In accordance with a South African Development Community (SADC) protocol agreed among several states, Lesotho Government policy supports participation of foreign candidates to share the knowledge that DRR has gained in labor-based methods, and is not using the initiative for revenue generation purposes.

Lessons learned from the contractor training's experience are as follows: (a) CTP do need long term expensive Technical Assistance personnel, but once the program is set up, adequate attention is needed for the selection and mentoring of local staff (b) a program can make a significant impact on generating employment but to ensure work quality, it is important to use appropriate technology such as soundly specified labor-based work methods; (c) it is possible to launch and implement CTP for carrying out maintenance of paved and unpaved roads, and to phase out force account procedures completely in a short span of time. (d) packaging work appropriately helps both the road agencies in the management of contracts and the contractors to develop their implementation capacity; (e) special attention is needed to address social issues such as gender equity and incorporation of HIV/AIDS mitigation measures through sound policies and appropriate implementation; and (f) to create market incentives, greater cooperation between the private and public sector is needed through providing a regular flow of works, simplified competitive bidding procedures, and a well designed financial management system.

Box 6: Analysis of Questionnaire

Highly Recommended	Recommended	No Opinion	Not Recommended	Absolutely Not Recommended
2	1	0	-1	-2

Public Sector Options	Les	Mal	Moz	Tan	Zam	Aver
i) Let staff wither away over time with minimal resources	-1	-1	-1	-1	-1	-1
ii) Retrenchment	-1	1	1	-1	1	0.2
iii) Voluntary Redundancy	1	2	2	1	-2	0.8
iv) Transfer workforce to a private company	1	2	1	1	-1	0.8
v) Transfer key staff to a semi-autonomous agency or authority	-1	2	-1	2	1	0.6
vi) Fully commercialise main roads and other strategies for local	1	1	-1	-1	0	0
vii) Let equipment wither away over time with minimal resources	-2	-1	-2	-2	-1	-1.6
viii) Sell plant and equipment	1	2	1	-1	1	0.8
ix) Transfer plant and equipment to government (autonomous) plant	1	2	-1	1	0	0.6
x) Train remaining government & agency staff in new methods	1	2	1	1	1	1.2

Public Sector Findings

- All countries do not recommend letting equipment and staff wither away over time. [However this happened in many countries]
- Most countries recommend disposal of equipment [yet this did not occur]
- Most countries recommend voluntary redundancy although not Zambia
- Training considered necessary
- Transferring staff is preferred to retrenchment

Private Sector Options	Les	Mal	Moz	Tan	Zam	Aver
i) Let private sector respond on its own having created market	1	1	2	1	1	1.2
ii) Set up National Construction Council to develop contractors	2	2	1	1	1	1.4
iii) Regulate contractors through registration system (national, local)	2	2	1	1	2	1.6
iv) Facilitate creation and operation of contractors associations	2	2	1	1	1	1.4
v) Provide subsidised plant and equipment to contractors	-1	1	-1	1	1	0.2
vi) Train contractors - classroom, "greenhouse contracts", mentoring	1	2	1	1	1	1.2
vii) Allow "high" risk tendering (reduced bonds, large advances)	-1	1	2	-1	-1	-
viii) Enhance credit availability for contractors	2	2	2	2	1	1.8
ix) Promote innovative local products	2	1	1	1	1	1.2
x) Create barriers or remove subsidies to foreign contractors	2	-1	-1	1	1	0.4
xi) Allow appropriate standard specifications	2	1	2	2	2	1.8
xii) Construction trust funds	-1	2	1	2	1	1.0

Private Sector Findings

- Construction councils, registration and contractors associations well recommended
- Enhanced credit and appropriate specifications highly recommended
- Ambivalent views on high risk tendering and barriers/removal of subsidies to foreign contractors, and subsidies to purchase plant and equipment
- Training needs not well known for construction industry
- Work still to be done on policy environment in Tanzania
- The transformation is best done in medium to long term (4-12years)

Strategic Options	Les	Mal	Moz	Tan	Zam	Aver
Adequate Transport Policy?	1	1	0	-1	1	0.4
Adequate Redundancy Policy?	1		1	-1	0	0.3
Over what period should transformation best be achieved?	Long	Med	Long	Long	Med	

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ANNEX 1: FINANCIAL STRATEGIES

The transformation of force account to contracting requires an estimation of the financial resources invested in the sector. The type of investment determines the scale and characteristics of the road construction industry. If the policy is one of major development of new roads then more large construction contractors will be required. If the policy gives priority to maintenance then small maintenance contractors will be required. The strategy adopted also influences the rate of growth of the value of the network. Since maintenance gives higher returns than new construction it is to be expected that a policy giving high priority to maintenance will eventually develop the network faster. There is no point building a new road if the one leading up to it is falling apart.

A simple projection is presented below with Tanzania and Malawi as examples. It is stated in many documents that deferring maintenance costs

2 to 3 times as much later. These costs will not necessarily occur in the year immediately afterwards, but nevertheless it is generally more expensive to maintain poor roads than those in good condition. An annual deferred cost factor of 2 is assumed here for illustrative purposes although for accurate projections this factor should be calibrated using actual expenditure on poor roads (emergency works and rehabilitation).

It is logical that the larger the network and the more valuable it is, the more it will cost to maintain. After all, a big house requires more maintenance than a small one. Metschies estimates that maintenance costs are about 1.5 percent of asset value for paved roads, 3 percent for gravel and 5 percent for earth. Consequently, an average of 3 percent is taken for this illustration. A nominal 1 percent annual increase in expenditure is also assumed.

Tanzanian Example

Deferred maintenance cost factor	2.0	Entered data
Maintenance cost as % of asset	3.0	New asset value=old asset value+capital exp.-backlog cost+reduction in backlog
% annual Increase in budget	1.0	New backlog=old backlog-rehab exp+annual cost of backlog+req maint-maint exp

Strategy 1 \$millions

Year	0	1	2	3	4	5	6	7	8	9	10
Asset Value	2,600	2,614	2,626	2,637	2,646	2,653	2,658	2,661	2,663	2,662	2,660
Maintenance backlog	1,400	1,432	1,465	1,499	1,534	1,570	1,608	1,646	1,685	1,725	1,766
Maintenance requirement	78	78	79	79	79	80	80	80	80	80	80
Annual loss of asset due to backlog	84	86	88	90	92	94	96	99	101	104	106
Capital expenditure	130	131	133	134	135	137	138	139	141	142	144
Rehabilitation expenditure	65	66	66	67	68	68	69	70	70	71	72
Maintenance expenditure	65	66	66	67	68	68	69	70	70	71	72

Strategy 2

Asset Value	2,600	2,614	2,634	2,661	2,694	2,734	2,781	2,836	2,898	2,969	3,047
Maintenance backlog	1,400	1,367	1,330	1,290	1,247	1,199	1,149	1,094	1,036	973	908
Maintenance requirement	78	78	79	80	81	82	83	85	87	89	91
Annual loss of asset due to backlog	84	82	80	77	75	72	69	66	62	58	54
new roads	65	66	66	67	68	68	69	70	70	71	72
Rehabilitation expenditure	130	131	133	134	135	137	138	139	141	142	144
Maintenance expenditure	65	66	66	67	68	68	69	70	70	71	72

Strategy 3

Asset Value	2,600	2,614	2,642	2,684	2,742	2,815	2,905	3,011	3,134	3,275	3,435
Maintenance backlog	1,400	1,302	1,196	1,082	959	829	689	542	386	222	49
Maintenance requirement	78	78	79	81	82	84	87	90	94	98	103
Annual loss of asset due to backlog	84	78	72	65	58	50	41	33	23	13	3
Capital expenditure	-	-	-	-	-	-	-	-	-	-	-
Rehabilitation expenditure	180	182	184	185	187	189	191	193	195	197	199
Maintenance expenditure	80	81	82	82	83	84	85	86	87	87	88

In the table above based on approximate levels of expenditure in the Tanzanian road sector three strategies are chosen. The estimation of asset value of the network and the current backlog has been based on previous studies by the author. Strategy 1 assumes that new construction is given top priority with an annual expenditure of around \$130m on new roads. Rehabilitation and maintenance expenditure is around \$65m per annum. With this strategy, the growth of asset value over 10 years is negligible. Strategy 1 approximates what is happening in Tanzania at the moment.

Theoretically, the best strategy, number 3 would yield the best returns where no new roads are built and there is an intensive programme removing the backlog with maintenance expenditure kept at required levels. With this strategy the value of the network is predicted to grow to \$3.4 billion and the backlog is totally removed.

However, this financial theoretical approach does not take into account social, strategic and political

consideration. Consequently, a compromise strategy such as No. 2 may be the best option.

It should also be noted that this model does not take into account savings on vehicle operating costs. Consequently, there will be considerable economic benefits accruing if the backlog of poor roads is removed. The estimation of benefits such as these will require more sophisticated analysis, possibly using HDM4.

If for example strategy 2 is chosen then the resource inputs required in terms of numbers of large medium and small contractors can be estimated assuming the percentage distributions and average contract values as shown. Once these figures have been estimated, then depending on the number of contracts won per year per contractor gives the number of contractors required again in terms of large, medium and small. Once this is known the numbers of consultants and agency contract managers (total 60) required can also be estimated. This calculation is shown in the spreadsheet below.

		% spent on contracts		
		Large	Medium	Small
Capital expenditure	\$ millions 65	80	10	10
Rehabilitation expenditure	130	50	30	20
Maintenance expenditure	65	20	40	40

		Large	Medium	Small
Average Contract value \$m		5	1	0.07

		Contracts		
		Large	Medium	Small
Capital expenditure		10	7	93
Rehabilitation expenditure		13	39	371
Maintenance expenditure		3	26	371
Total contracts per year		26	72	836

		Contracts			
		Large	Medium	Small	
Av Contracts per year per contractor		1	1.5	2	
No. of contractors		26	48	418	
No. consultants per works contract		1	0.25	0.1	
No. of consultancy contracts		26	18	84	
Agency Cont. Managers per consultancy		1	0.5	0.3	
Contract Managers Required		26	9	25	60

A similar financial illustration is given for Malawi as shown in the table below. Unfortunately, the assumed levels of funding are not high enough to maintain the value of the network if either

strategies 1 or 2. Only strategy 3 preserves the network at current levels. Consequently, higher total levels of funding will be required if the network is to be expanded.

Malawian Example

Deferred maintenance cost factor	2.0
Maintenance cost as % of asset	2.0
% annual Increase in budget	3.5

Strategy 1

Year	\$m										
	0	1	2	3	4	5	6	7	8	9	10
Asset Value	1,530	1,514	1,498	1,483	1,469	1,456	1,443	1,432	1,422	1,413	1,405
Maintenance backlog	570	593	616	639	661	682	703	723	742	761	779
Maintenance requirement	31	30	30	30	29	29	29	29	28	28	28
Annual cost of backlog	23	24	25	26	26	27	28	29	30	30	31
Capital expenditure	30	31	32	33	34	36	37	38	40	41	42
Rehabilitation expenditure	10	10	11	11	11	12	12	13	13	14	14
Maintenance expenditure	20	21	21	22	23	24	25	25	26	27	28

Strategy 2

Asset Value	1,530	1,514	1,499	1,487	1,476	1,468	1,462	1,459	1,459	1,462	1,468
Maintenance backlog	570	578	585	590	594	596	595	593	589	582	573
Maintenance requirement	31	30	30	30	30	29	29	29	29	29	29
Cost of backlog	23	23	23	24	24	24	24	24	24	23	23
new roads	15	16	16	17	17	18	18	19	20	20	21
Rehabilitation expenditure	15	16	16	17	17	18	18	19	20	20	21
Maintenance expenditure	30	31	32	33	34	36	37	38	40	41	42

Strategy 3

Asset Value	1,530	1,514	1,501	1,490	1,484	1,481	1,482	1,487	1,496	1,511	1,530
Maintenance backlog	570	563	554	542	527	509	488	463	435	403	368
Maintenance requirement	31	30	30	30	30	30	30	30	30	30	31
Cost of backlog	23	23	22	22	21	20	20	19	17	16	15
Capital expenditure	-	-	-	-	-	-	-	-	-	-	-
Rehabilitation expenditure	30	31	32	33	34	36	37	38	40	41	42
Maintenance expenditure	30	31	32	33	34	36	37	38	40	41	42

ANNEX 2: SURVEY QUESTIONNAIRE

Brief Guidance Note on How a Government Department Should Commercialize Force Account Road Maintenance

Please answer all questions using the choices provided. Mark your selection with an "X" or quantity as appropriate. Additional comments may be added in the space provided at the end of the questionnaire.

On replying to question 19, you may use as much space as you wish.

All personal information will be treated confidentially.

Name: _____ Date: _____

Agency: _____ Position: _____

A. POLICY

1. How well do official Government policies and legislation on Transport and Construction Industry, cover the issue of "How a Government Department Should Commercialize Force Account Road Maintenance"?
 - _____ a. Very well
 - _____ b. Well
 - _____ c. Adequately
 - _____ d. Poorly
 - _____ e. Not at all.

2. Does your organization have an adequate policy for handling redundancy of government workers when execution of works is transferred to private sector?
 - _____ a. Yes
 - _____ b. Maybe
 - _____ c. Probably not
 - _____ d. Definitely not
 - _____ e. I don't know

3. If you have already transformed some force account works to contractors please give details of when, to what degree.

Year %
 Year %
 Year %

B. STRATEGIC OPTIONS

4. How would you recommend the following options or strategies for managing public road sector staff should they be affected by commercialization?

Option	Highly Recommended	Recommended	No Opinion	Not Recommended	Absolutely Not Recommended
i) Let staff wither away over time with minimal resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Retrenchment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Voluntary Redundancy	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Transfer workforce to a private company that is put in a "Green house" for a few years	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v) Transfer key staff to a semi-autonomous agency or authority	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi) Fully commercialise main roads and other strategies for local and unclassified	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vii) Let equipment wither away over time with minimal resources	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
viii) Sell plant and equipment (hire/purchase, concessions, stage payment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ix) Transfer plant and equipment to government (autonomous) plant pool	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
x) Train remaining government & agency staff in new methods (courses, technical assistance, secondment)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

5. How would you recommend developing the private sector in the light of commercialization?

Option	Highly Recommended	Recommended	No Opinion	Not Recommended	Absolutely Not Recommended
i) Let private sector respond on its own having created market for their services	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ii) Set up National Construction Council to develop contractors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iii) Regulate contractors through registration system (national, local)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
iv) Facilitate creation and operation of contractors associations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
v) Provide subsidised plant and equipment to contractors	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vi) Train contractors (classroom, "greenhouse contracts", mentoring on site, technical competitive tendering based on training programme, artisans, management)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
vii) Allow "high" risk tendering/management (reduced bonds, large advances, fast track payments, shortlisting, price controlled, internet tendering)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
viii) Enhance credit availability for contractors (guarantees, risk sharing, subsidised low interest, reduced collateral)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
ix) Promote innovative local products (e.g. woodstave culverts, locally manufactured rollers/trailers etc)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
x) Create barriers or remove subsidies to foreign contractors (tax, price advantage, partnership)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
xi) Allow appropriate standard specifications	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
xii) Construction trust funds	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

6. Over what period do you think commercialization would best be achieved?

- _____ a. Short (1 year)
- _____ b. Medium (4 years)
- _____ c. Long (12 years)

C. WORKLOAD

7. What is your organizations network road length?

- a. Paved _____ km
- b. Unpaved _____ km

8. What is your organizations road network condition?

- a. Paved _____ % Good _____ % Fair _____ % Poor
- b. Unpaved _____ % Good _____ % Fair _____ % Poor

9. What is your organizations annual road maintenance force account workload in terms of?

- a. Paved _____ km _____ US\$ _____ No. of projects
- b. Unpaved _____ km _____ US\$ _____ No. of projects

10. What is your organizations annual road maintenance contracted workload in terms of?

- a. Paved _____ km _____ US\$ _____ No. of contracts
- b. Unpaved _____ km _____ US\$ _____ No. of contracts

D. CAPACITY

11. What is your organizations permanent staffing?

Professional Technician/Artisan Support Skilled Unskilled

12. What is your organizations temporary staffing?

Professional Technician/Artisan Support Skilled Unskilled

13. Does your organization have any surplus staff that it could transfer to another Government Department and please list in following categories (e.g. from central Ministry to Local Authorities)? If so please indicate in the notes in question 19 to which departments.

Professional Technician/Artisan Support Skilled Unskilled

14. If some of your staff are made redundant due to transformation, what do you believe the average total redundancy package should be per person in US\$ for each of the following classes?

Professional Technician/Artisan Support Skilled Unskilled

15. What is the total vehicle fleet in your country?

Heavy Medium Light Cars

16. How many contractors are there in your country classed according to size and quality?

Quality/Size	Large (>\$1m)	Medium (\$0.1m-\$1m)	Small (<\$100,000)
Good			
Fair			
Poor			

17. In the light of commercialization having taken place/about to take place, please indicate the quantities of your staff that possess or require training in the following skills:

	Well Trained	Partially Trained	Require Full Training
i) Business skills			
ii) Road Maintenance and Construction			
iii) Labour based methods			
iv) Equipment management			
v) Procurement of goods, works and services			
vi) Management of Road contracts			
vii) Standards and specifications			

18. In the light of commercialization having taken place/about to take place please estimate the quantities of personnel in the contracting industry that possess or require training in the following skills:

	Well Trained	Partially Trained	Require Full Training
i) Business skills			
ii) Road Maintenance and Construction			
iii) Labour based methods			
iv) Equipment management			
v) Procurement of goods, works and services			
vi) Management of Road contracts			
vii) Standards and specifications			

19. Additional comments (if referring to a specific item above, please refer to it by number):

20. Additional comments (if referring to a specific item above, please refer to it by number):