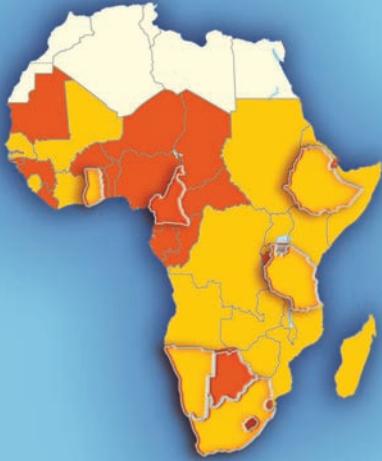




WORKING PAPER No. 92

SUB-SAHARAN AFRICA TRANSPORT POLICY PROGRAM



Progress on Commercialized Road Management in Sub-Saharan Africa

Michael Ian Pinard



Progress on Commercialized Road Management

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January 2012



Sub-Saharan Africa Transport Policy Program

The SSATP is an international partnership to facilitate policy development and related capacity building in the transport sector in Sub-Saharan Africa.

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* * * * *

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Abbreviations and Acronyms

ARMFA	African Road Maintenance Funds Association
ASANRA	Association of Southern Africa National Roads Agencies
CEO	Chief executive officer
CTB	Central tender board
FMS	financial management system
GAAP	generally accepted accounting practice
HDM	highway design and maintenance standards model
JSC	joint services committee
KPI	key performance indicator
MLP	model legislative provision
NRA	National Road Agency
OPRC	output and performance-based road contract
P	Pula (currency of Botswana)
PI	performance indicator
PPP	public-private partnership
RA	Road authority
RAMS	road asset management system
RAP	rapid adjustment program
RED	Road Economic Decision (model)
RF	Road fund
RFB	road fund board
RMF	road management and financing
RMI	Road Management Initiative
RNMP	road network management plan
SADC	Southern Africa Development Community
SANRAL	South African National Roads Agency Limited
SSA	Sub-Saharan Africa
SSATP	Sub-Saharan Africa Transport Policy Program
TANROADS	Tanzania Roads Agency

Executive summary

Some 20 Road Authorities have been established in Sub-Saharan Africa (SSA), most since 2000. These agencies were created broadly in line with the principles espoused in the Road Management Initiative (RMI), a component of the Sub-Saharan Africa Transport Policy Program (SSATP). The agencies were established with the main objective of being more consumer-oriented and market-responsive than the largely politically driven, traditional government Road Agencies. However, since the establishment of Road Authorities, no systematic review has been conducted of their performances in order to accurately quantify the improvements in road management. The need for such a review has prompted the launch of an analytical work to assess progress on commercializing road management.

Objectives

Its main objective is to identify key issues and constraints affecting the commercialized management of a selection of Road Agencies in SSA and to put forward some basic guidelines for increasing their managerial effectiveness and efficiency. The aim is to deepen the understanding of good practice by identifying the underlying principles governing successful organizational reform as a basis for a quasi-theoretical model that can provide guidance to SSATP partner countries setting up new Road Authorities or restructuring existing Road Agencies.

The study focuses on the organizational, technical, and management issues associated with the restructuring, and commercialization of Road Agencies in seven countries: Botswana, Cameroon, Ethiopia, Ghana, Namibia, Tanzania, and South Africa. The choice of these mostly Anglophone countries was influenced by their widely dispersed geographical locations in SSA, their diverse institutional arrangements, and their varied progress toward commercialization of their road management operations.

Approach and methodology

The assessment of progress on commercialized road management practices was determined primarily on the basis of the extent to which the necessary institution-

al reforms required to improve road service delivery has been achieved. The Building Blocks of reform are required in four critical areas.

- Building Block 1: Establishing clearly defined **responsibility**
- Building Block 2: Creating **ownership**
- Building Block 3: Providing stable **financing**
- Building Block 4: Promoting **commercialized** management

Without achievements of the four Building Blocks, lasting improvements in road management are unlikely. Although road financing (Building Block 3) is a major element of reform, this element has been addressed and reported upon in other SSATP publications and is not considered in detail here. In the final analysis, the true measure of commercialization success would be reflected in the end results obtained by the roads agency in terms of sustained improvements in road conditions at reasonable cost. These building blocks form the foundation of the movement to commercialized road management practices. Although road financing is also a major element of reform, this issue has been addressed and reported on in other SSATP publications and is not considered in detail here. In the final analysis, the true measure of commercialization success is the degree to which a road agency achieved sustained improvements in road conditions at a reasonable cost.

Progress in commercialized road management

The progress achieved in the commercialization of road management services by the road agencies in the seven countries surveyed is shown in table 1.

Table.1 Progress in commercialization of road management services

<i>Country</i>	<i>Rating (%)</i>	<i>Evaluation</i>	<i>Annual increase in paved network in good condition (%)</i>
Botswana	45.1	Just satisfactory	-22.0 (1996–2007)
Cameroon	43.8	Just satisfactory	-6.0 (1999–2008)
Ethiopia	66.0	Good	+25.0 (2002–06)
Ghana	68.2	Good	+8.4 (2000–2006)
Namibia	85.0	Excellent	- 10.0 (2000–2006)
Tanzania	70.8	Good	+28.0 (2004–08)
South Africa	94.5	Excellent	+2.0 (2005–08)

Source: The author.

Note: Rating scale: 0–20 = unsatisfactory; 21–40 = poor; 41–60 = satisfactory; 61–80 = good; 81–100 = excellent.

The rating is derived from a detailed assessment of the efficiency and effectiveness with which a road agency undertakes its various road management activities. These activities are grouped under 10 headings pertaining to various aspects of road service delivery. An overall rating was calculated by assigning scores to each activity, for which an agency's performance could range from unsatisfactory to excellent. This rating is a good indicator of the extent to which an agency has undertaken the reforms considered necessary, in the RMI context, to achieve commercialization of its road management services.

Progress on commercialized road management practices in the seven countries surveyed has clearly varied (see table 1). The annual increase in the paved road network in good condition has reportedly been attained in most of countries where a road agency operates in a commercialized manner, except for Namibia. By contrast, road conditions have deteriorated in countries—Botswana and Cameroon—in which the agency operates as a government department under the direction of a parent ministry. However, these figures must be interpreted carefully.

As for those countries making excellent progress in commercialization, both the Namibian and South African Road Authorities operate largely in line with the commercialized management practices envisaged in the RMI. Key features include a sound, enabling legal framework, a strong focus on commercialized management practice, reliable information management systems, and effective interaction with road users. It is significant, however, that a lack of adequate funding for road maintenance, rather than a lack of attention to commercialized management practice, has had an adverse impact on road conditions in Namibia.

The Ethiopian, Ghanaian, and Tanzanian Road Authorities have made good progress in commercialized road management, but nevertheless they suffer from factors that constrain their operations, particularly with regard to their management procedures.

As for those countries experiencing poor progress in commercialization, only two Road Agencies—in Botswana and Cameroon—are operating in a largely non-commercialized manner within a bureaucratic government environment characterized by lack of both management autonomy and business-like practices.

Progress on commercialized road management practices in the various roads agencies surveyed raises the issue of the efficacy of this concept as a necessary precondition for success in the road subsector, particularly in countries with under-

performing economies or road subsectors. Recent developments, particularly in Latin America, suggest that the use of contract reforms and public-private partnerships (PPPs) within traditional Road Agencies—that is, those without an autonomous Road Authority—can also be a driving force in increasing benefits to road users. Although the evaluation of this hypothesis was outside the scope of this work, it would nevertheless be worthy of further investigation.

Principles governing successful organizational reform

The good practice principles governing successful organizational reform exemplified in many respects by the South African and Namibian Road Authorities and considered worthy of emulation by others could be summed up under the three building blocks pertaining to road management.

Building block 1: Responsibility

Implementation of institutional change. Government acceptance of the commercialization concept and genuine commitment to a reform process are conducive to successful institutional change. Such change should be nationally driven rather than externally driven and undertaken in a holistic and integrated fashion with a clear vision of the objectives of the reform program and the strategies.

Most countries accept the principle of commercialized road management practice as fundamental to improving the efficiency and effectiveness of their road agencies, and in fact have implemented many of the regulatory essentials envisaged in the RMI concept. However, because the manner of application of some regulations has fallen short of the envisaged ideal in a number of areas, the potentially beneficial impacts have been diluted.

The limited institutional capacity at all levels of government to absorb technical reforms and to manage the transition process is a constraining factor in the reform process, which should be undertaken in an *evolutionary* rather than a *revolutionary* manner. Implementation of the reform process should focus first on external factors over which the agency has no direct control, such as obtaining political and governmental commitment to change, followed by institutional factors, including the policy and institutional frameworks, and finally technical factors, such as the introduction of various types of management systems.

Institutional framework. The establishment of a Road Authority that is expected to operate in a commercialized manner in line with the vision of the RMI principles would preferably be based on new enabling legislation in the form of a road act rather than on amendment of the existing legislation. The amending process generally retains aspects of government regulations that constrain the ability of the agency to operate in an autonomous and commercialized manner.

Institutional responsibilities. The responsibilities for various aspects of road management have to varying extents been split among more than one road agency, among various departments of government, and generally among more than one ministry responsible for roads. This assignment of responsibilities applies particularly to issues such as road traffic (e.g., overload control), in which some road agencies have a vested interest but no direct responsibility.

Where necessary, restructuring of road agencies should be undertaken to create a coherent organizational structure at both the ministerial and road subsector levels, preferably under a single ministry responsible for transport, and should be designed to overcome the core problem of lack of clearly defined responsibilities among a number of ministries and road agencies, which currently occurs in a number of countries.

Building block 2: Ownership

Oversight management. On road boards, representatives of the private sector constituency are generally in the minority, and the board chair is generally a government appointee. As a result, private sector user interests are not well represented on most boards, and the scope for advocating constituent interests and winning support for sustainable funding is not as strong as it should be.

There are concerns that board members are not always remunerated adequately for the work expected of them, and that some do not always stay abreast of international developments and the best practices in road management. As a result, they are unable to carry out their jobs effectively. In addition, there is a perception in some countries that some private sector board members may be less than unbiased in decision making in favor of their vested interests—a shortcoming that is believed to contribute to corruption in the road construction sector.

The legislation governing the establishment of the road board should ensure an independently elected rather than appointed chair and board members and majority private sector representation. Moreover, to promote good board governance, performance agreements should be executed between the board and the Road Authority executive as well as between the board and central government.

Board members should be adequately remunerated, should be required to adhere to a code of ethics, and should be knowledgeable about road management matters. Where necessary, the appropriate orientation programs should be instituted for prospective board members.

Building block 4: Management

Autonomy. Despite the stipulations of the road acts, which distinguish the role and responsibilities of the parent ministry (policy formulation) from those of the Road Authority (policy delivery), the Road Authorities in many countries still tend to suffer from a lack of genuine autonomy in making corporate decisions and in carrying out their mandated functions without ministerial involvement. Stronger public relations and lobbying by the road board and the agency may be needed to strengthen the authority's managerial autonomy.

Management structure and operating procedures. In most countries, the road agency fulfills the client function and, to varying degrees, aspects of the supplier function—an undesirable arrangement that results in a potential conflict of interest. All road agencies should endeavor to fulfill only the client function by acting exclusively as a procurer of services and ultimately outsourcing all producer functions to the private sector (the “service provider”) such as design, construction, and maintenance activities in order to increase the specificity of their operations.

Most road agencies undertake unnecessarily some non strategic, non core functions, such as road data collection, that detract from their specificity and dilute their efficiency and effectiveness. These agencies should divest themselves of all noncore activities by outsourcing them to private sector service providers.

Most road agencies have adopted the traditional multilayered, silo-type of organizational structure, which, compared with the flat matrix organizational design structure centered on a cluster system (adopted by South Africa), may not be the most conducive to attaining the efficiency and effectiveness of operations. Consideration should therefore be given to “de-layering” organizational structures where

warranted in an attempt to reduce the number of management levels, widen the spans of control, and increase the levels of responsibility down the organization.

All Road Authorities produce some form of network management plan. However, in some authorities problems invariably arise with the implementation of this plan, stemming in large part from the unclear and unspecified requirements for preparing the plan and obtaining approval of the funding application by the road fund through to payment of the contractor for the completed work. To avoid this situation and to facilitate more effective service delivery, authorities should seek legislative approval of an appropriate interagency agreement to govern the procedures involved in the implementation of the road network management plan.

In most of the countries surveyed, relatively little attention is paid to research and technology transfer, and there has generally been little uptake and dissemination of results from previous research. There is also a tendency to adopt standards and practices that have been imported from abroad and are sometimes not appropriate for local needs. Road Authorities need to more aggressively exploit opportunities for utilizing proven innovative technology, including wider use of local materials and low-cost bituminous surfacing, in a quest to reduce road provision costs.

Consultation with and reporting to road users have been achieved to varying degrees in all Road Authorities, primarily through the publication of annual reports and business plans. However, these Road Authorities need to consider a wider range of measures for raising public awareness of developments in the road sub-sector, including publicity campaigns, roadside information bill boards, and complaint hotlines.

All Road Authorities compile various types of road statistics. And yet, although informative, the statistics do not serve the important objective of performance measurement, which is a means of monitoring and reporting on how well the agency is meeting its pre-established goals. Such performance measurement should be undertaken routinely, preferably on the basis of regionally agreed-on performance indicators, to allow interregional comparisons of agency performance on a transparent, consistent basis.

Human resources. The number of staff responsible for managing 100 kilometers of roads varies by a factor of more than 20 in the countries surveyed. This substantial difference reflects in large measure the extent to which the road agencies contract out their construction and maintenance works to the private sector. To improve the efficiency of their operations, all road agencies should endeavor to commercialize their operations to the maximum extent possible by outsourcing all non

strategic activities to private sector service providers and, in doing so, reduce their staffing requirements.

Restructuring road agencies, and therefore substantially downsizing their organizations and reducing noncore staff (most of whom are involved in force account operations), has invariably been problematic from a political point of view. However, the potential stumbling block to reform caused by the need to downsize the organization could be avoided by providing the excess staff with alternative employment opportunities. For example, the force account operations could be gradually commercialized by promoting the establishment of small, medium, or microenterprises that initially would be guaranteed work for a few years.

Most Road Authorities are still not able to pay market-based wages, and staff salaries are typically 60–80 percent of market-based salaries. Not surprisingly, these organizations are therefore not able to attract and retain the best professionals, and vacancy rates tend to be highest in those organizations in which the salaries are lowest compared with those in the private sector. Road boards should therefore seek to offer performance-based packages that are in line with those offered by the private sector.

All road agencies recognize the importance of training, which typically takes the form of on-the-job training; national, regional, and international short courses; and advanced degree courses. However, mechanisms for monitoring the effectiveness and impact of the training programs tend to be indifferently applied, if at all. A greater effort should therefore be made to undertake targeted training in the appropriate skills areas and to share cross-country experiences and best practices involving regional associations such as the Association of Southern African National Roads Agencies (ASANRA).

Asset management. Most road agencies have established some type of road asset management system (RAMS) with varying levels of sophistication. However, most of them have experienced difficulty in operating the systems in a reliable, sustainable manner, in part because of problems related to the local calibration of the models. As a result, these agencies are unable to develop the appropriate strategies and programs needed to manage the road network in an optimal manner, and instead are forced to rely on more qualitative means for doing so.

Where necessary, Road Authorities should consider contracting out the data collection operation, and upkeep of the RAMS to competent local consultants, who would also be responsible for providing technical backup. With such an arrangement, the Road Authority would retain strategic responsibility for directing the

evaluation of alternative strategies and developing programs for optimal maintenance of the road network.

Financial management. All Road Authorities have established some type of financial management system and produce commercial accounts that include at least a standard income statement, a balance sheet, and, in some cases, a sources and application of funds statement. However, such accounts are not produced by the Road Agencies that operate within a government environment. All Road Agencies should aim to ultimately produce a road asset statement that accounts for the capital invested in roads, the impact of this new investment, and the shortfalls in regular road maintenance.

In most countries, financial auditing is undertaken on behalf of the road fund by the government's auditor general. However, such accounts should be audited by independent auditors just as in any autonomous private sector organization.

Funding of road maintenance. Funding for routine road maintenance (typically 60–70 percent of the total requirements) and, to a lesser extent, for periodic maintenance (typically 50–60 percent), is increasing, but is still far short of that needed to ensure the sustainability of most countries' networks. Thus acquiring additional funds for maintenance remains one of the biggest challenges. Measures will have to be developed to address this problem, including pointing out to all stakeholders the significant adverse economic consequences of inadequate funding for road maintenance and strongly lobbying to raise road user charges.

Some countries tend to spend some of that part of their road fund earmarked for routine and periodic maintenance to address pressing backlogged maintenance and rehabilitation needs. As politically expedient as this strategy may be, it is counterproductive and results in suboptimal use of the funds available for maintenance. Where necessary, the legislation governing the use of a road fund should be amended to disallow expenditures on activities other than road maintenance.

In some countries such as Tanzania, the proceeds of the road fund have been used to finance the operating costs of the Road Authority. This approach is better than relying on budget allocations, which may not materialize in time or may be insufficient to sustain the operations of the agency. However, the preferable alternative would be to levy an appropriate fee on all work contracts signed to cover the operating costs, thereby financing its operations in a more sustainable manner.

Road condition is reportedly improving in most of the countries surveyed, but is still relatively poor—the roads in good condition are generally well below 50 percent. Moreover, in some countries, despite the commercial management practices adopted, their condition is worsening maintenance funding being grossly insufficient, resulting in a backlog of roads in poor condition such as in Namibia. In countries such as Ethiopia, an upsurge in new construction/rehabilitation works has artificially inflated the percentage of roads in good condition.

Because the funds available for road maintenance are unlikely to match the requirements in the near future, road agencies may need to focus on a high-priority core network, determined using social, economic, and environmental criteria. They should also vigorously pursue asset preservation or “prevention first” strategies for this network by seeking to preserve it minimum cycle cost with the available resources, before new assets are created. This would require that regular traffic counts are carrying out to track the demand and identify the most used segments of the road network.

Contracting out, procurement and tender procedures. Most of the road agencies surveyed have moved away from force account operations and are contracting out to private consultants and contractors virtually all design and construction work as well as most maintenance work. However, although the outsourcing strategy has overall been beneficial, the actual gains in the countries where the road agencies operate within a government environment have been diminished by slow procurement and tender procedures.

Most agencies employ the traditional short-term (typically annual) quantity and unit-based maintenance contracts. However, performance-based maintenance contracts were introduced relatively recently in a few countries in which the long-term potential benefits have yet to be confirmed. Thus all road agencies should gradually move away from employing the traditional short-term (typically annual) quantity and unit-based maintenance contracts in favor of longer-term, output-based maintenance contracts.

The efficiency of the procurement and tender process has been found to be closely related to the prevailing institutional arrangements. The more autonomous Road Authorities are generally able to complete this process in a much shorter period than the more constrained Road Agencies, where time-consuming, centralized procedures have to be followed involving external parties, which inevitably prolong the process. However, in the absence of a detailed analysis of the national

procurement system, which was outside the scope of the study, it has not been possible to identify whether the obstacles to procurement efficiency that tend to exist in the Road Agencies are largely due to their weak capacity or to the cumbersome legal institutional framework.

Where necessary, national procurement systems should be reviewed and the institutional arrangements in Road Agencies changed to empower the agencies to undertake the procurement and tender processes independently, without the need to seek the approval of an external, centralized tender committee, provided that this activity is undertaken within guidelines established and overseen by the authority's oversight board.

The performance of local contractors is viewed by many road agencies as source of concern. However, there are often mitigating reasons for this, and they have been recognized in most countries in which serious efforts are being made to improve the local contracting industry. Road agencies and other stakeholders, such as national construction industry councils, should be encouraged to promote measures for improving local contracting capacity, including plant and equipment leasing or financing, use of multiyear rather than single-year contracts, and the appropriate packaging of contracts into manageable sizes.

Controlling the quality of road works. The technical and financial auditing of maintenance projects undertaken by most road funds, often on a sample basis, has proved valuable not only in controlling the quality of the road maintenance works but also in improving accountability by revealing the quality of the work done, the quantity of the work completed, and the timeliness of the work. However, most Road Authorities do not undertake similar auditing of construction, rehabilitation and upgrading projects, and where they do, it tends to focus primarily on the construction phase of the project cycle. Thus all Road Authorities should audit their construction/rehabilitation/upgrading projects during all stages of the project cycle to ensure that the government and other stakeholders are receiving value for their money.

Summary and the way forward

Based on the outcome of a survey to review progress on the commercialization of road management practices in road agencies in seven Sub-Saharan African countries, such progress may best be described as “a road partially travelled.” The seven countries surveyed are all at different stages of commercialized road management

practices, ranging from little if any progress in those agencies that still operate within a bureaucratic government environment (Botswana and Cameroon) to good progress (Ethiopia, Ghana, and Tanzania) and excellent progress (Namibia and South Africa) in most aspects of commercialized road management practices.

The survey has revealed quite clearly that in those countries in which the reforms have been implemented in a manner that adheres most closely to the principles of RMI (Namibia and South Africa), the efficiency and effectiveness of the road management services provided by the Road Agency have tended to be greatest. This finding does not, however, imply that the various RMI attributes embedded in the four building blocks, such as greater operational autonomy to make management decisions, are the only solution to more efficient road management. Indeed, the use of contract reforms and PPPs within the traditional road agencies can also be a driving force in increasing benefits to road users. However, experience does indicate that in the absence of operational autonomy, even seemingly benevolent ministerial involvement in road agency operations does generally tend to undermine the performance of the organization.

Ultimately, the main objective of reforming of road management practices in road agencies is to improve the efficiency and effectiveness of their operations in terms of improved service delivery and, for road users, in terms of improved road conditions. Evidence indicates that most of those agencies striving to operate in a commercialized manner are seeing more paved roads in good condition. Where this is not the case, such as in Namibia, lack of adequate funding is the probable cause. By contrast, the opposite result is evident in those countries in which the agencies continue to operate as a government department under the direction of a parent ministry. Thus although it may be difficult to attribute improvements in road conditions solely to a more commercialized approach, there is good reason to believe that it is at least a major contributory factor.

The key issues emerging from the study are listed here under three headings: **status quo**, **positive impacts**, and **the way forward**.

Status quo

- The progress on commercialization of road management practices varies considerably, from just satisfactory to excellent.
- There is generally a lack of genuine autonomy of Road Authorities from their parent ministries.

- Road boards are still dominated by the public sector, and road user interests are not adequately articulated.
- The good governance mechanisms of many road boards operations are generally inadequate.
- Board members are often not knowledgeable about the fundamentals of commercialized road management and financing.
- Many road agencies fulfill aspects of the supplier function and undertake varying levels of noncore activities.
- The lack of procedures agreements between some Road Authorities and road funds adversely affect the implementation of road network management plans.
- Most road agencies do not measure performance.
- Compared with commercially oriented agencies, government road agencies are significantly overstaffed in terms of the number of staff responsible for managing 100 kilometers of roads.
- Market-based salaries are still not paid by most road agencies, and so they often find it difficult to attract and retain competent staff.
- Most road agencies are unable to operate their road asset management systems so that they produce optimal network strategies and programs.
- Some Road Authorities tend to consider maintenance and rehabilitation and upgrading as separate interventions.
- Road fund allocations to Road Authorities are inadequate for the maintenance needs of the networks, with an overreliance on the fuel levy.
- Roads funds are not always used for road maintenance.
- The procurement and tender processes are very time-consuming and inefficient in government road agencies and a lot less so in commercially oriented agencies.
- The capacity of local consultants and contractors is still limited in some countries.
- Generally, maintenance projects are subject to technical auditing, but the process is often more superficial than rigorous. Development projects are seldom audited.

Positive impacts

Despite the challenges faced by Road Authorities, road sector reforms have produced some noticeable successes:

- Stakeholders are increasingly aware of the potential if not the actual benefits of commercial management practices, that many countries are striving to improve.
- Underfunding of maintenance has been reduced in some countries, but it is still far from eliminated.

- Commercialized road management practices have improved to varying degrees in a number of countries.
- The more predictable income available for maintenance that has resulted from the improved operational efficiency of Road Authorities has led to a halt in the decline in road quality in most countries.
- Road agencies are increasingly moving, at least on a pilot-scale basis, to multiyear output and performance-based road contracts (OPRCs) for maintenance.

The way forward

The positive impacts of the reforms so far, despite the challenges faced, indicate that the pursuit of reforms is justified and beneficial. However, for more agencies to realize the full benefits of commercialization, the following issues must be addressed in what could be called the second-generation road agencies:

- More institutional autonomy should be given to Road Authorities for accountability and improved efficiency by amending the existing road acts where necessary.
- Road boards should be constituted with majority private sector representation and should introduce the appropriate mechanisms for promoting good board governance, including adherence to a code of ethics.
- Board members should be adequately remunerated, and they should be required to stay abreast of commercialized road management practices and adhere to a code of ethics.
- Road Authorities should focus only on their client functions and should outsource all noncore functions.
- Interagency (Road Authority/road fund) procedures agreements should guide the implementation of road network management plans and programs.
- All Road Authorities should move to an integrated network management approach for managing their road networks, making good use of road management systems.
- The performance of all Road Authorities should be measured using the appropriate performance indicators.
- Where necessary, Road Authorities should contract appropriately experienced local consultants to take responsibility for the data collection, operation, and management of road asset management systems.
- The collection base for road funds should be widened, and mechanisms should be put in place for automatic adjustment of road user charges in relation to demand.

- Road Authorities should undertake technical auditing of both maintenance and new construction/rehabilitation/upgrading projects at all stages of the project cycle.
- Locally driven institutional reform is required in many road agencies to improve the efficiency and effectiveness of their road management operations based on implementation of the four building blocks. Emphasis should be placed on the first—creating ownership—taking into account the examples of good practice that have emerged from this work.

Terminology

The terms *Road Agency*, *Road Authority*, and *road agency* (lowercase) are often used interchangeably to denote the road management services provided by an organization operating either inside or outside of the parent ministry. In this report, these terms are differentiated (see table 1.2), while recognizing that, in practice, these terms may not be applicable in countries where the legal act may establish the entity independently of the terminology.

- *Road Agency*: Not an independent legal entity, but remains part of the parent ministry
- *Road Authority*: An independent legal entity that can sign contracts under its own name, sue, and be sued Usually established through specific enabling legislation or sometimes by ministerial decree, normally as part of an executive agencies act (or something similar)
- *road agency*: A generic terms that applies to either a Road Agency or a Road Authority

1. Introduction

Despite the enormous investments made over the last few decades in road infrastructure, the condition of roads in most of Sub-Saharan Africa (SSA) has not improved commensurately. As a result, rehabilitation and even reconstruction are needed at a cost that far outweighs that of the routine or periodic maintenance that would have made it unnecessary. All this comes at an incalculable cost to countries' economic performances.

The World Bank–managed and donor-supported Road Maintenance Initiative (RMI, later on renamed the Road Management Initiative) in Africa, and similar programs in Latin America, Asia, and Europe, have all aimed to increase awareness of the importance of road maintenance, identify the root causes of the problems besetting it, and develop structures that would improve performance. The RMI, which began in 1988, stressed the need to commercialize the management and financing of roads in order to allow them to become more self-sustaining, reduce dependence on external assistance, and protect the investment made.

The key building blocks for successful commercialization are outlined in a key RMI Technical Paper (Heggie and Vickers 1998). They typically have entailed:

- The establishment of specialized road authorities or agencies, with effective systems and procedures, operating independently of their parent ministry
- The creation of independent road funds that would secure adequate financing
- A clear need for road users to become involved in road management through representative oversight boards
- A need to reform the organizational structure, clarify which organization is responsible for which part of the road network, and introduce more efficient, commercially oriented management practices.

Over the last decade, a number of countries in Sub-Saharan Africa have embarked on road sector reforms in line with the RMI guidelines, including the establishment of independent road funds and, to a lesser extent, autonomous or semiauto-

nomous road authorities. According to a recent review of the status of road sector policy reforms in SSA (RMI Matrix, 2006), some 27 countries have active road funds in place and 20 Road Authorities are operating, most of which were created after 2000. The countries that have established road funds and Road Authorities are listed in table 1.1.

A review of the performance of second-generation road funds in SSA¹ revealed that their effectiveness was impeded by the inefficiency with which the available resources were used by Road Authorities. Thus unless a concerted effort is made to improve the efficiency and effectiveness of their road management practices, including a greater effort to truly understand and respond to customer needs, there is a danger that the reform process may lose credibility by not leading to greater efficiency in the use of scarce resources.

Table 1.1 Countries with established Road Funds and Road Authorities

<i>Countries with road funds</i>			<i>Countries with Road Authorities</i>		
1. Benin	10. Gabon	19. Namibia	1. Burkina Faso	10. Mozambique	19. Zambia
2. Burundi	11. Ghana	20. Niger	2. DRC.	11. Namibia	20. Zimbabwe
3. Cameroon	12. Guinea	21. Rwanda	3. Côte d'Ivoire	12. Rwanda	
4. Cape Verde	13. Kenya	22. CAR	4. Ethiopia	13. Senegal	
5. Chad	14. Lesotho	23. Tanzania	5. Ghana	14. Sierra Leone	
6. DRC	15. Madagascar	24. Togo	6. Kenya	15. South Africa	
7. Côte d'Ivoire	16. Malawi	25. Zambia	7. Madagascar	16. Sudan	
8. Djibouti	17. Mali	26. Zanzibar	8. Malawi	17. Tanzania	
9. Ethiopia	18. Mozambique	27. Zimbabwe	9. Mali	18. Uganda	

Source: RMF Matrix 2006.

SSA has far less experience with commercially managed Road Authorities than with road funds. In fact, there has not yet been any systematic review of the performances of these authorities to accurately quantify the improvements achieved.

¹ M. Benmaamar, *Financing of road maintenance in Sub-Saharan Africa, reforms and progress towards second generation road funds*, SSATP Discussion Paper No 6, Washington D.C. 2006.

Objectives and scope

The overall aim of this work is to deepen the understanding of good practice in order to provide SSATP partner countries with the guidance they need to set up or restructure Road Authorities in Sub-Saharan Africa. To this end, the main objectives are to (1) identify some key issues and constraints surrounding the operation and management of Road Authorities, and (2) put forward some basic guidelines for increasing the managerial effectiveness and efficiency of Road Authorities.

Although road financing issues may be a major element of reform, they are covered in detail elsewhere (Kumar 2000 or Benmaamar 2006) and so are not be addressed in any depth in this work. Instead, it focuses on the institutional, organizational, and management issues associated with reform, restructuring, and commercialization of road agencies. In so doing, its key objectives are to (1) identify the underlying principles governing successful organizational reform; (2) put forward a quasi-theoretical ground that can be followed based on the identified principles; and (3) highlight examples of the pitfalls and benefits associated with the commercialization process of Road Authorities.

The objectives are fulfilled by reviewing the performance of established, emerging or nonexistent Road Authorities in selected countries, and assessing the effectiveness of past and ongoing reforms, specifically those related to private sector participation, administrative and management autonomy, road network asset management, accountability, management structure, and delivery of business plans.

Approach and methodology

The general approach and methodology adopted in carrying out the work took the form of visits to and meetings with a broad cross-section of public and private sector stakeholders in Botswana, Cameroon, Ethiopia, Ghana, Namibia, Tanzania, and South Africa. During the visits, structured discussions were held with stakeholders based on a detailed survey questionnaire (see Appendix) that was aimed at assessing the “health” (or functionality) of the arrangements for managing and financing road infrastructure in a particular country and diagnosing what appeared to be wrong with the makeup of the road agency’s institutional, managerial and operational arrangements.

The choice of countries was influenced largely by the diversity of their institutional arrangements and progress toward commercialization. The institutional arrangements ranged from traditional Road Agencies operating within a bureaucratic government environment (Botswana) to highly commercialized, autonomous Road Authorities, operating at arm's length from the government (South Africa).

To meet the key objectives, the findings of the discussions emanating from the country visits have been analyzed and reported in the following ways:

1. Preparation of this publication, the outcome of which could ultimately be the basis for developing an advocacy tool to highlight the rationale and benefits of commercialized road management practices in road agencies.
2. Development of an evaluation framework for assessing quantitatively the extent to which road agencies have achieved commercialized road management practices in their organizations (see appendix A).
3. Development of a matrix of performance indicators that could be used as a monitoring tool to measure the effectiveness of commercializing road administrations and the performance of road agencies (see appendix B).

As far as possible, examples of both good and poor practices have been used from the countries surveyed, or elsewhere in SSA, to illustrate the implications of these practices on the efficiency and effectiveness of the Road Authorities concerned.

Structure of report

The remainder of this report is structured as follows. Chapter 2 provides an international perspective on restructuring road agencies in terms of best practice approaches. Chapter 3 highlights the fundamental principles that should be adopted for achieving sound road management practices within a Road Authority. Chapter 4 then reviews country-specific experiences pertaining to the progress made in the commercialization of the road management practices of road agencies. Finally, chapter 5 presents the main findings, conclusions, and recommendations of the study. Appendixes A and B are devoted to an evaluation framework and performance indicators, respectively.

2. International perspective on restructuring road agencies

This chapter presents an international perspective on the principles underlying the restructuring of road agencies to increase their efficiency and effectiveness, including emerging best practice institutional and management structures and functional and operational approaches. The objective is to highlight the most important features that contribute to successful road management in terms of achieving the right outputs (effectiveness) and maximizing the benefits from the resources available (efficiency). These features might be considered theoretically ideal in that the closer the actual arrangements of a Road Authority are to these ideals, the more effective and efficient will be the road management services provided. Against that framework, the actual arrangements adopted can be compared with the idealized ones as a means of explaining the performance of these organizations and in which areas of their operations improvements might be warranted.

Traditional approaches

Traditional paradigms

The paradigms under which road services have traditionally been administered are characterized by the following:

- Civil service terms and conditions of employment
- Financial resources provided in the context of the annual budget process
- Weak accounting systems and absence of cost accounts
- Centralized operating procedures and numerous third-party interventions in the day-to-day workflows
- Involvement in noncore functions
- Weak accountability and ownership of assets and processes
- Problematic disciplinary procedures

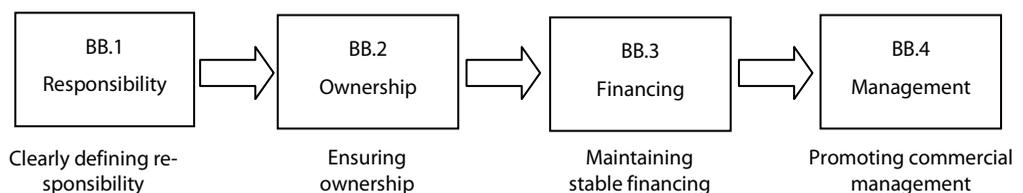
- Reliance on use of in-house plant and force account units for undertaking most road works
- Day-to-day ministerial interference and direction

Two of the firmly rooted convictions that have characterized the traditional approaches to road provision are that (1) roads are public goods that must be provided free of charge by the state because the mobility they provide is deemed a right by all citizens, and (2) the best way to provide roads is through the public administration. However, it has become abundantly clear that these convictions, which have relied on managing roads through a government department and financing them through general budget allocations, have generally not worked and that more business-like approaches may be more appropriate.

Current paradigms: The commercialization concept

The alternative paradigm offered by the RMI and that challenges the traditional approaches to road provision is based on the commercialization of the road subsector—that is, “bringing roads into the market place, charging for their use on a fee-for-service basis and managing them like any other business” (Heggie and Vickers 1998). However, because roads are a public monopoly and because most roads are likely to remain in government hands for some time to come, commercialization requires complementary reforms in four critical areas—known as the four building blocks (figure 2.1).

Figure 2.1 Four Building Blocks of Commercialization



Source: Heggie 1998.

How does *commercialization* differ from *corporatization* and *privatization*? The terms commercialization, privatization, and corporatization are often used loosely and almost interchangeably, thereby producing confusion. In the context of the road subsector, a clear distinction should therefore be made between these terms.

Commercialization means that activities are carried out in a commercial, business-like manner; decisions are based on clear assessments of options with their relative advantages and disadvantages; and costs and benefits from actions taken are determined as accurately as possible. Commercialization does not mean *privatization*. What it does mean is that managers are able to justify their decisions and account for the way in which their organization's resources have been used. Where commercialization is weak, decisions are more likely to be inappropriate because managers do not have to justify them and resources are wasted.

The nature of commercialization is best understood by looking at the traditional differences between a business and a government organization. Traditionally, businesses have had to find customers to whom they can sell products and services at prices higher than their costs of production. Meanwhile, they compete with other businesses that are trying to win the same customers. If they succeed, they survive and prosper. If they do not, they fail and go out of business.

By contrast, government organizations have traditionally had captive customers in the form of taxpayers. They are captive customers in that tax laws force them to pay at the start of the year for various services such as health, education, and transport that they will receive from different government organizations. Usually, government service providers face no competition. There are no threats of bankruptcy if their cost of services exceeds the "price" that taxpayers pay.

The process of achieving commercialization in an organization involves the same steps required to remove some of the government organization characteristics of a business organization. These steps could be one or more of the following:

- Changing the basis of finance from vote funding to transactional funding—that is, not allocating an expenditure budget to the entity at the start of the financial year, but rather arranging for the organization to be paid for services provided on a contractual basis and set unit rates
- Introducing competition in the form of alternative service providers
- Introducing management systems that measure and report on the economic and financial results of managers' actions
- Contracting out some or all of the activities and services of a government organization without transferring ownership of the organization to the private sector
- Giving the government organization an independent legal status by forming a corporate entity, usually referred to as corporatization

The rationale for adopting commercialized approaches to road management is often related to human nature in that competition, combined with the payments from satisfied clients, should introduce the critical counter play between success incentives and risk of failure. The result should be that, in general terms, productivity levels would rise, service would improve, more would get done with less, and unit costs decline. Where there are no ownership-related conditions, the view is that there are usually few performance incentives, which explains why in pure government organizations productivity and customer service levels tend to be low and costs relatively high.

Corporatization is the process of giving a government organization the status of independent legal entity, often considered to be a precondition for commercialization. However, the change in structure will not in itself ensure good performance. That will require meeting the other preconditions for commercialization: competition, accountable management of performance contracts, and the appropriate management information. Clearly, commercialization and corporatization hold opportunities as well as pitfalls.

Privatization involves the partial or total transfer of ownership of an entity from government to the private sector—that is, government ownership-related conditions are replaced by actual private ownership and the associated risk. The reward situation, as just described, takes full effect. Unfortunately, privatization sometimes causes short-term hardship in the form of disruption and initial job losses as privatized firms right-size themselves in order to become financially viable. However, experience has shown that, in the long run, employment levels and overall economic growth benefit from it.

Preconditions for commercialization

The four building blocks represent the core of the institutional reforms needed to improve the sustainability of road management and financing over the long term. The logic behind them is that the financing problem is not likely to be solved without the strong support of road users. However, they will not be willing to pay for services unless they are managed efficiently, and efficient management is not likely unless managerial accountability is enforced and road users are involved in road management.

Benefits of commercialization

Although a commercialized road administration ultimately remains within the control of government, it operates at arm's length from government. However, by adopting a commercialized road management structure, the road sector should gain the potential

efficiencies, accountability, and transparency normally attributed to private sector management.

The benefits of restructuring road administrations are derived from several factors, of which the following have been shown to be the most significant (Talvitie 1996; Stankevich et al. 2005):

- Decentralized programming: 10–15 percent
- Optimal timing and scheduling of works: 5–30 percent
- Decentralized data collection: 2–3 percent
- Contracting out of road maintenance: 5–15 percent

In addition to the quantifiable benefits of restructuring are the nonmonetary benefits, which include greater citizen, road user, and worker satisfaction stemming from a responsive government and meaningful work.

New approaches

Options available

A variety of institutional arrangements that entail different degrees of involvement by the public and private sectors can be used in restructuring road agencies in SSA. These options represent a continuum from mainly public sector to mainly private sector responsibilities for the road infrastructure functions of planning, policy making, ownership, regulation, financing, and investment. For infrastructure services, arrangements should be chosen with the aim of promoting efficiency and effectiveness and accountability to road users and other financiers.

Organizational evolution

The evolution of a traditional Road Agency to an autonomous or semi-autonomous, commercialized Road Authority has typically proceeded through five stages, which differ in detail depending on the particular sociopolitical background and existing situation in a country (Talvitie 1996). Earlier complementary work by the World Bank (Israel 1987) revealed that as the evolutionary process develops, there is a gradual increase in specificity and competition. When this “specificity-competition” concept is combined with the Talvitie evolutionary model, the characteristics of each stage of the evolution from a first-generation road administration to a modern, commercialized autonomous road administration can be summarized as shown in table 2.1.

Table 2.1 Stages in road agency reform

<i>PHASE 1 Public Roads Department</i>	<i>PHASE 2 Identification of client & supplier functions</i>	<i>PHASE 3 Separation of client & supplier functions</i>	<i>PHASE 4 Corporatization of the supplier organization</i>	<i>PHASE 5 Corporatization of client organization</i>
<ul style="list-style-type: none"> • Current form is centralized road administration (department of government under parent ministry) • Ministry of Works (or equivalent) manages budgets and projects at detailed level. • Road administration concentrates on technical issues. • Construction of new roads tends to have priority over maintenance. • Most maintenance work undertaken in-house by force account units. ➤ Little specificity and competition 	<ul style="list-style-type: none"> • Road administration identifies functions of administration and planning (client) and maintenance works (supplier). • Traffic safety and axle load control are perceived as “problem” issues. • Ministry of Transport (or equivalent) emerges as a competitor to participate in policy guidance on traffic safety and axle load control. • More emphasis is placed on efficiency in service delivery. • Contracting out of work begins. ➤ Increased specificity achieved by separating transport from other public works sectors and by separating road provision and management from transport operations 	<ul style="list-style-type: none"> • Ministry of Works (or equivalent) begins to concentrate on policy. • Road administration takes on functions not assumed by Ministry of Works. • Functional separation: Client functions remain in road administration; supplier organization reports directly to ministry or to central management of road administration. • Ministry defines only the mission of the administration and its broad goals and fixes budgets and pricing rules. • Road board is likely to be formed to represent stakeholder interests. ➤ Increased specificity achieved by separating road administration from the ownership function and by separating the contracting role from the administration and management function 	<ul style="list-style-type: none"> • Supplier organization is divested and possibly privatized. • Ministry of Works exercises periodic oversight of the road administration, normally through a board. • Road administration is small and manages using modern technology and management systems and also adopts performance standards. ➤ Subjects the service delivery and contracting functions to competition. 	<ul style="list-style-type: none"> • Road administration is corporatized and acquires delegated powers of ownership. • Road administration operates as a private company, subject to oversight from the ministry. • Road administration income source is a “road fund” financed by user charges. • Management methods treat the road network as a capital asset for which a return on investment must be provided. ➤ Subjects the client organization to competition

Decentralized arrangements

The approaches to restructuring just described have been considered essentially from a centralized administrative perspective. However, many countries are now moving toward the decentralization of road administration functions to the local government level. The rationale for such a move is that it encourages local governments to respond to the wishes of citizens more effectively with the expectation that the supply and delivery of local public services will improve by moving decisions closer to users. The five basic options for managing rural roads at the provincial level of government are listed in table 2.2.

Robinson and Stiedl (2001) carried out a comprehensive study of the decentralization of road administrations in three small to medium-size countries—Uganda, Zambia, and Mexico—employing different decentralization models. They found that such a move resulted in few of the expected advantages. Some positive outcomes did result from the reforms of the road subsector in the central government, but these changes are not yet being reflected in the decentralized bodies. Indeed, to some extent matters are being made worse. The main reasons found for this outcome are a lack of local government powers to exercise political influence, insufficient financial resources, lack of management capability, and lack of accountability mechanisms.

For those countries contemplating decentralization, Robinson and Stiedl (2001) found that the most appropriate arrangements are likely to be the “devolved and delegated” model (local government is the owner, with a parastatal or private sector administrator working under contract) or the road fund centralized model. However, when there is private sector management and contractors are used, the “devolved” model (local government is both the owner and administrator) or the “bottom-up principal agency” model (local government is the owner, with the central government as the administrator working under an agency agreement) may be appropriate, although the devolved model requires that local authorities have large enough networks to achieve economies of scale. In the final analysis, none of the models, other than the one involving the road fund, will necessarily achieve reliability of funding, which is fundamental to good management. Thus decision makers may need to adopt the road fund approach to ensure the availability of at least some funding and to trade this choice off against the possible loss of authority in how funds are spent.

Table 2.2 Options for Managing Rural Roads

Centralized model: A special-purpose rural road agency at the central government level manages the rural roads on behalf of local governments (e.g., Ghana Department of Feeder Roads, which falls under the Ministry of Roads and Highways).

Advantages

- A national cohesive framework for planning and finance of roads.
- A focal agency usually with substantial technical capacity.

Disadvantages

- Decisions are centralized under a ministry responsible for transport.
 - Consultations with local governments and attention to local priorities are usually insufficient.
-

Decentralized model-1: Local governments manage “their” roads (rural/regional roads, typically classified as secondary, tertiary, or access roads) through their own Works Department (e.g., Road Division of the Department of Local Government and Development under the Ministry of Local Government).

Advantages

- In-depth understanding of local priorities.
- A strong incentive to provide well-maintained roads.

Disadvantages

- Technically weak because of an inability to attract and retain qualified, experienced staff.
 - Inadequate source of sustainable funding.
 - Lack of technical guidance from a focal agency.
-

Decentralized model-2: Local governments contract out to consultants the planning and management of works and contracts as well as the supervision of the physical works (e.g., Zambia).

Advantages

- Improved technical capacity.
- Local governments set priorities and remain involved in the planning and management process.
- Works usually carried out relatively efficiently

Disadvantages

- System requires well-developed local consultants and contractors.
 - Effective management of consultants by local government is often not available.
 - Minimum-size contract is needed to attract competent consultants and contractors.
 - Source of sustainable funding is inadequate.
 - Technical guidance from a focal agency is lacking.
-

Decentralized model-3: Local governments plan works and delegate implementation to a contract management agency that employs consultants and contractors to execute the work (e.g., francophone countries).

Advantages

- Avoids cumbersome government procurement procedures
- Works usually efficiently and expeditiously carried out because staff paid market-based, performance-related salaries

Disadvantages

- Agency not subjected to competitive bidding (remedied system requires well-developed local consultants and contractors)

Decentralized model-4: Local governments come together and form joint services committees (JSCs) to provide road services (e.g., South Africa)

Advantages

- Offers cost-sharing arrangements, economies of scale, and efficiency gains.
- Priorities are set locally, and JSCs report to and are financed by client local governments.
- Provides local governments with flexibility in addressing issues of development and regional interest.

Disadvantages

- Need to create a specific body and changes in statutes.
- Because of lack of experience, first attempts to form JSCs can be tedious.
- Central government may frustrate attempt because of lack of understanding.

Source: Malmberg Calvo, 1998.

Factors affecting institutional performance

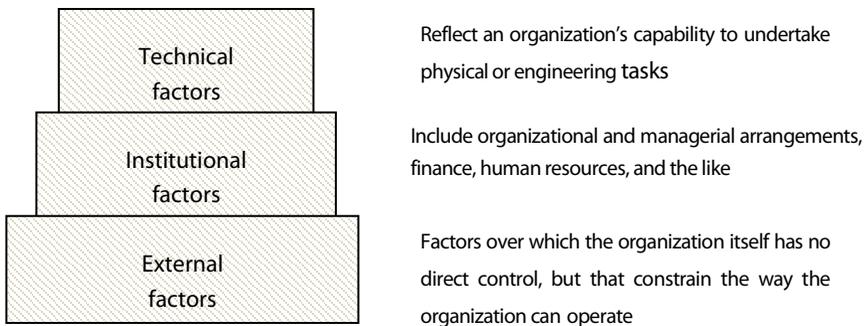
Hierarchy of management issues

A study of institutional development in several road administrations concluded that the capability of an organization to carry out its management functions depended on three fundamental, interrelated factors that could take the form of a pyramid as in figure 2.2 (Brooks, Robinson, and O’Sullivan 1989).

The important finding of the study was that past efforts to make sustainable improvements to road management practices failed because those efforts generally focused on improving the technical capability of organizations without first ensuring that the internal or institutional capability existed to support improvements and that the external context was conducive to effective and efficient management.

The Brooks pyramid indicates that institutional development should be undertaken from the bottom up. Thus for technical improvements to be successful, sufficient institutional capability must be in place. Furthermore, unless the external context is appropriate, sustainable improvements in the organization are unlikely to be achieved.

Figure 2.2 Hierarchy of Management Issues: The Brooks Pyramid



Source: Robinson, Danielson, and Snaith 1998.

Box 2.1 General order of implementing institutional change

1. Obtain a political and governmental commitment to change. Without it, real change is unlikely to be effective. Users and other stakeholders can help obtain this commitment.
2. Agree on the policy and institutional framework. Questions must be answered on issues such as who will be responsible for different parts of the road network?
3. Frame any legislation needed to support changes where it does not already exist.
4. Secure sufficient funds for the implementation of policy and ensure they are available on a regular basis.
5. Recast organizations to undertake the work, considering how best to achieve effectiveness and efficiency.
6. Consider technical issues only when the external and institutional factors have been addressed.

Source: Robinson, Danielson, and Snaith 1998.

Addressing external factors

Obtaining political commitment for reform of road administrations in line with the RMI model has proven to be a major challenge. Among the many reasons for this are the following (Pinard and Kaombwe 2001).

- Governments' reluctance to turn over their traditional powers and responsibilities to the new institutions
- Political reluctance to retrench large numbers of in-house, mostly force account staff
- A poorly developed local contracting industry
- Poor experiences with commercialization in other sectors of the economy and skepticism that the road subsector would be any different.

In principle, the overall institutional framework in which a road administration can carry out its functions in an efficient and effective manner should clearly and unambiguously differentiate the discrete roles played by key road sector stakeholders in terms of policy formulation, policy delivery, and works execution. Such a framework (figure 2.3) has been postulated by the Southern African Development Community (SADC 2003). It reflects the key principles embodied in the RMI vision for management and financing of roads (Heggie 1991).

Box 2.2 Actions to facilitate road sector reform

The following actions would facilitate reform in the road sector:

- Identify the proposed reforms, and the potential political and organizational constraints on reform, on the basis of detailed institutional analysis
- Ensure that the government considers reforms timely and relevant, and that there is a committed constituency within government willing and able to implement them
- Estimate the benefits and costs of reform
- Ensure that government has the administrative resources to implement the reform
- Include special measures aimed at overcoming political and organizational constraints
- Establish a realistic timetable

Source: Heggie, 1991.

Policy formulation. The overall legal authority for the road network is vested in a single ministry (or ministries) with responsibility for all regulatory, policy, standards, and legislative matters; long-term planning of the road network; and general instructions to the road administration, through an oversight board, to undertake work on the network in accordance with government policy.

Management. An arm's length autonomous or semiautonomous Road Authority has replaced (or commercialized) the former Road Agency in the Ministry of Works. Its key functions are strategic management and planning of the development, maintenance, and rehabilitation of the national road network, which must be carried out in a commercialized manner. The authority is overseen by a majority private sector board and managed on a day-to-day basis by a chief executive officer (CEO).

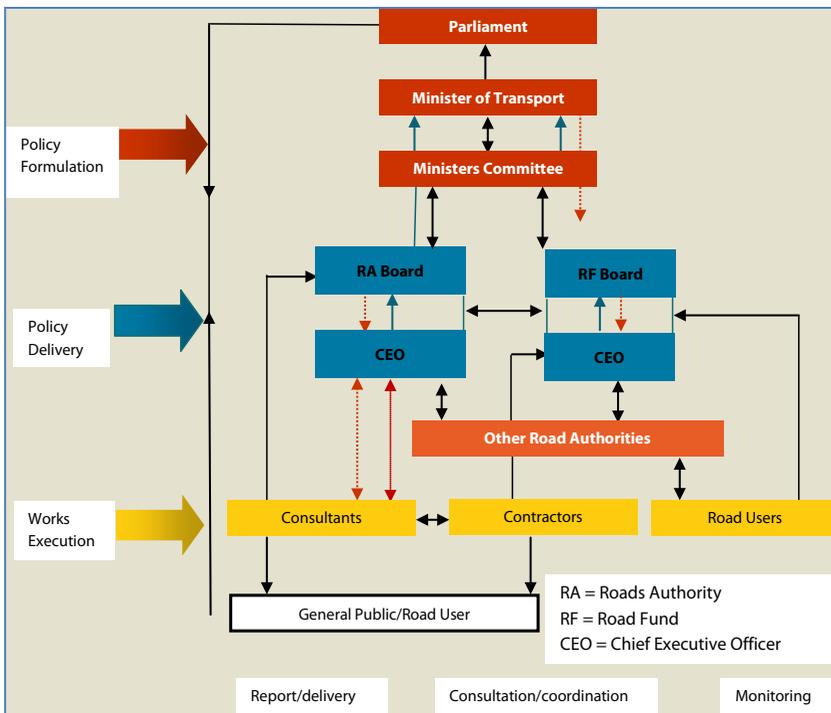
Financing. An arm's length autonomous or semi-autonomous road fund operates as a commercial agency with responsibility for road financing. It is overseen by a majority private sector board and managed on a day-to-day basis by a road fund administrator. The road fund acts as a channel for the receipt of all revenues destined for roads; disburses funds to road agencies based on simple, transparent procedures; and monitors compliance with well-defined financial auditing principles.

Sustainable funding for road maintenance is based on the "user pays" principle and is secured by levying a road user charge. Such a charge reflects the usage of roads and typically consists of a fuel levy, a vehicle license fee, including supplementary heavy vehicle license fees; fines imposed on overloaded vehicles, and any other user charges imposed from time to time by Parliament.

The funds available from road user charges should not necessarily be spent directly according to traffic level. Low-volume "social" roads will probably need to be subsidized to some extent from the revenues for high-volume "economic" roads.

Operations. All types of road construction and maintenance works are contracted to the private sector through a competitive bidding process rather than undertaken in-house by force account or direct labor operations. Procurement through performance-specified term contracts and the use of small contractors is increasingly viewed as the preferred method of contracting out maintenance works over the traditional type of contract, which typically is based on rather prescriptive input specifications and utilizes large foreign contractors.

Figure 2.3 Idealized framework for management and financing of roads



Source: SADC Guideline 2003.

Linkages and reporting

The various key stakeholder organizations in road management and financing will inevitably hold extensive consultation and coordination activities. To ensure that these activities are carried out in a proper manner, they should be governed by the appropriate performance contracts and procedures agreements among the following key stakeholder organizations:

- The minister responsible for roads and other ministers whose portfolios have an impact on the roads function within the Ministers Committee.
- The Road Authority and road fund, which separately enter into an agreement with the minister on adherence to the ministry's policy, development plans, and so forth (performance contract) and which prepare their respective road network management plans and financial plans (procedures agreement, performance contract).
- The Road Authority and other road agencies, which prepare their respective road programs (procedures agreement).

- The road fund and road authorities other than the Road Authority in promoting new funding sources, economic and financial feasibility project assessments, tender procedures, procedures agreement....

Both the Road Authority and the road fund would be expected to publish detailed annual reports and submit them to the government. They would be made available to the public and tabled in Parliament. Other mandatory reports would typically include performance statements, financial statements, and audit reports.

Essential differences between Road Agencies and Road Authorities

A number of fundamental differences have been identified between a Road Agency, which typically operates as a *non independent legal entity*, and a Road Authority which typically operates as a *non independent legal entity*, and a Road Authority, which typically operates as an *independent legal identity*. If the Road Authority generally enjoys considerably more autonomy than a Road Agency, it is also necessarily subject to much more rigorous independent external auditing. It complies with most of the fundamental principles of commercialization as discussed earlier, with much clearer allocation of responsibility (both externally and internally) and thus accountability. Decision making tends to be faster and less bureaucratic, and operations are carried out using commercial principles. The key differences between a Road Authority and a Road Agency are summarized in table 2.3. These terms may not be applicable in certain countries where the legal act may have established the entity independently of the terminology proposed here.

Table 2.3 Key differences between Road Agencies and Road Authorities

<i>Issue</i>	<i>Road Agency</i>	<i>Road Authority</i>
Legal status	Not an independent legal entity; remains a part of the parent ministry.	Independent legal entity that can sign contracts under its own name, sue, and be sued. Usually established through specific enabling legislation or, sometimes, as part of an executive agencies act (or something similar).
Relationship with the public sector	Viewed as a part of the relevant parent ministry and subject to the usual public sector accounting and reporting requirements.	Overseen by the relevant parent ministry at arm's length. Specifically defined reporting requirements.
Funding arrangements	Significant level of influence from the government's Ministry of Finance. Administrative costs likely funded by consolidated account.	Predominantly or exclusively funded by a road fund, donors, or both. Administrative costs treated as an intrinsic part of the overall cost of service delivery.
Accounting method	Same as the public sector's cash-based system and subject to the Ministry of Finance's rules and regulations. Focus on the utilization of inputs (e.g., resources used, works done).	Commercial-style accrual accounting similar to that used by private sector companies. Focus on delivery of results (i.e., outputs) such as level of service provided.
Financial & technical audit	Financial audits carried out by the Auditor General's Department. Unlikely to undergo any meaningful technical auditing.	Financial audits carried out by any competent, independent auditor. Subject to periodic independent technical audits. All reports made public.
Organizational culture	Predominantly public sector.	Predominantly private sector.
Conditions of employment	Substantially similar to those provided to other public sector employees, although may have higher salaries and better benefits.	More commercial, with fixed contract terms or performance-based pay. Can be removed easily if consistently underperforming.
Organizational structure and staffing levels	Subject to approval by the parent ministry, Public Service Commission, or both.	Up to the authority's board and chief executive to determine.
Operational autonomy	Agency's management freedoms are limited in all the above areas, usually subject to approval by the head of the parent ministry (e.g., permanent secretary) and the ministry in charge of the whole public service.	Substantially independent of outside interference.

3. Fundamental principles of sound road management

This chapter deals with the fundamental principles of sound road management. These principles, which can have a profound impact on the efficiency and effectiveness of Road Authorities, represent a range of underlying values and practices that determine the performance of road agencies and provide a useful framework for evaluating the performance of the Road Authorities in the seven countries surveyed (see chapter 4).

Institutional aspects

The aspects of policies, legislation, and human resources that affect the operations of a road administration include the following best practice principles.

- *Identify the role, function, and responsibilities of the Road Authority.* A Road Authority must have a clear vision and mission to engender awareness throughout the organization of what it is supposed to be doing as well as to facilitate its commitment to its purpose and direction. Without clarity of purpose, the road administration will be unfocused, ineffective, and inefficient.
- *Attract and retain good-quality staff.* To attract and keep good-quality staff, a road administration must offer a competitive level of remuneration. Without adequate remuneration, staff morale will fall, along with effectiveness. Reward systems should also respond to the performance of individuals in order to encourage and promote good performance and discourage poor performance.
- *Focus on core functions.* If road users are to enjoy a road network that is well managed, the Road Authority must increase its specificity—that is, focus on its “core” functions of road management—planning, financing, procuring, and implementing road provision and maintenance services—and outsource ancillary functions while making the best use of road fund money.
- *Adopt a well-considered human resources policy.* Such a policy and its supporting strategy and matching training plan are required to balance the organization’s long-term functional needs with the capacity of the personnel to meet

them. The training strategy should support key organizational functions, and should be objectively and explicitly linked to individual training needs, which are in turn linked to a staff performance evaluation system.

Operations aspects

The operational aspects of a road agency also include the following best practice principles.

- *Strive for efficiency and effectiveness.* To facilitate business-like operations by the road agency, separate the “client” functions—that is, the planning and management of road operations, including specifying the activities to be carried out, determining appropriate standards to use, commissioning works, supervising, controlling and monitoring activities—from the “supplier” functions—that is, the works execution, including the delivery of the defined product to an agreed-on quality standard and on time and within budget.
- *Maintain operational autonomy.* Managers must have the resources and authority they need to carry out their tasks of managing the resources under their control and delivering the products or services as efficiently and effectively as possible. Without such resources, they cannot be held accountable for their performance and the resulting inefficiencies.
- *Foster competition.* Competition promotes innovation and efficiency and can provide significant advantages to road administrations by providing value for money. This competition takes several forms and provides a mechanism for compelling suppliers to become efficient and accountable to their customers:
 - External *competition* is between private contractors bidding for work or consultants bidding for design or supervision activities.
 - Internal *competition* is between different internal departments of the road administration competing for the same work.
 - Mixed competition is between internal departments of the organization and private sector organizations competing, for example, for design and supervision services.

Management aspects

The organization of the day-to-day business of a Road Authority includes the following best practice principles.

- *Use management systems.* To carry out its management functions efficiently and effectively, a Road Authority must rely on a number of management systems and procedures:
 - The appropriate planning, reporting, and monitoring systems and programs for all work areas
 - The appropriate road (pavement and maintenance) management systems for strategic network planning, project-level evaluation, and establishment of maintenance priorities
 - The systematic use of quality control procedures for checking the quality of the work undertaken by and on behalf of the Road Authority.
- *Fight corruption.* Because corruption results in higher costs and inefficiencies, it should be eliminated from all areas of road management. That process should include the *institutional* factors that encourage corruption: low pay or uncompetitive remuneration, unresponsive employment conditions, lack of external or oversight accountability, poor business practices, and lack of professionalism or association with external organizations.
- *Apply key performance indicators (KPIs).* Application of the appropriate KPIs enables an administration to measure its effectiveness and to identify problems at an early stage, before they become difficult or expensive to rectify. These indicators should be as objective as possible and understood by those involved in their use. Each would have a ‘target value’ which would be reviewed at least annually (see glossary for a definition).
- *Ensure independent auditing.* Technical auditing (which measures effectiveness) and financial auditing (which measures efficiency) check whether an organization fulfils its role as efficiently and effectively as possible. They are also used to identify intentional or unintentional mistakes and where improvements are possible. For effective auditing, the auditor must be independent of the audited organization, and it in turn must act on his recommendations.

Technical aspects

Implementation of the technical aspects of a Road Authority’s operations includes the following best practice principles.

- *Prioritize maintenance.* Because the most important roads (i.e., those that generally provide the highest social and economic benefits) are constructed

first, the maintenance of these roads should generally take priority over the construction of new roads or upgrading.

- *Apply life-cycle costing.* The provision of road infrastructure has a long-term impact, and, as a result, investment decisions should be based on long-term (whole-life or life-cycle) costs and benefits rather than on short-term considerations, which may be more costly in the long term.
- *Consider total transport costs.* When evaluating the actions to take on the road network, road managers should consider minimizing the total transport costs (construction, maintenance, vehicle operating costs) to the community as a whole and not just the costs incurred by the administration or the ministry.
- *Avoid the “worst roads first” approach.* Adoption of a “worst first” approach to rehabilitation should be avoided because it does not optimize network performance, and it may result in a permanent backlog of rehabilitation works.

Funding aspects

The funding that a road administration receives to carry out its operations (management of maintenance, new construction, and upgrading, among other things) includes the following best practice principles.

- *Institute stable and timely funding.* Efficient and effective maintenance management requires the funding to be stable over time, predictable, and timely. Unpredictable funding hinders effective long-term planning; decisions have to be based on short-term considerations, which results in increases in the whole-life costs.
- *Ensure adequate funding.* Funds for maintenance should be adequate to meet the needs of the network, based on standards and policies defined for it. The level of spending should be at an “affordable” level for the wider economy.
- *Foster financial accountability.* Accountability stems from use of the appropriate accounting or financial management system, able to present its managers with as accurate a picture as possible of the true financial status of the road organization. Thus it should reflect the true cost of the resources used, the present cash position and requirements (cash flow), and the levels of commitments, liabilities, and creditors.

4. Progress on commercialization

The characteristics of the seven countries surveyed provide a spectrum of differing characteristics, not only in physical and socioeconomic terms, as indicated in table 4.1, but also in terms of the manner, pace, and extent of undertaking the commercialization reforms.

Table 4.1 Characteristics of the seven countries surveyed

<i>Aspect</i>	<i>Botswana</i>	<i>Cameroon</i>	<i>Ethiopia</i>	<i>Ghana</i>	<i>Namibia</i>	<i>S. Africa</i>	<i>Tanzania</i>
Demography & macro-economy							
Total population (millions)	1.8	18.3	75.1	21.4	2.2	48.7	38.2
Area (km ²)	582,000	475,442	1,221,900	238,537	824,292	1,221,037	945,087
GDP per capita (US\$)	6,868	1,002	177	602	3,084	5,384	335
Road network size							
Road length: total classified	23,527	34,300	46,812	67,291	42,238	606,000	85,525
% paved roads	36.9	12.5	19.1	13.0	13.8	25.4	5.9
Road asset value							
Replacement value (roads) (US\$ billions)	2.5	1.9	—	—	1.8	125.0	2.6
Road network							
Road density (km/million persons)	1.31	0.19	0.05	0.31	1.92	12,443	0.22
Road coverage (km/100 km ²)	4.0	7.2	3.0	28.2	5.1	49.6	9.0
Road users							
Vehicle fleet size (million vehicles)	300,000		250,000		200,000	8,281,000	101,498
Motorization (vehicle/1,000 ha)	166		3.3		91	170	2.7

Source: The author.

Table 4.2 is a summary of the progress made by the countries surveyed in implementing the various elements that fall under the three (of the four) building blocks of commercialization featured here: **BB.1 responsibility**, **BB.2 ownership**, and **BB.4 management**. The responses to the detailed questionnaire discussed with stakeholders from the countries surveyed gave rise to an appreciation for the extent to which

these elements have been implemented. They also provided the basis for assessing how far commercialization has progressed. Details of the questionnaire and an illustrative example of the assessment of progress on commercialization are presented in appendix A.

Table 4.2 Summary of Progress on Implementation of Building Blocks

<i>Building blocks and related elements</i>	<i>Rating</i>						
	<i>Botswana</i>	<i>Cameroon</i>	<i>Ethiopia</i>	<i>Ghana</i>	<i>Namibia</i>	<i>S. Africa</i>	<i>Tanzania</i>
BB.1 Responsibility							
- Institutional framework	5.6	0.0	100.0	83.4	100.0	100.0	61.1
- Institutional management	75.0	32.1	100.0	100.0	100.0	100.0	100.0
BB.2 Ownership							
- Ownership	0.0	0.0	51.9	44.2	73.1	67.3	54.4
BB.4 Management							
- Degree of autonomy	40.7	44.7	55.3	66.0	100.0	93.6	57.5
- Management structure and procedures	40.4	46.8	72.3	53.2	83.0	100.0	76.6
- Human resources	43.2	56.8	35.1	67.6	83.8	100.0	89.2
- Funding and financial management	42.6	55.3	70.2	85.1	89.4	100.0	83.0
- Management information systems	100.0	88.2	55.8	73.5	100.0	100.0	76.5
- Procurement and tender procedures	72.3	70.2	83.0	95.7	95.7	100.0	74.5
- Quality control	25.0	36.0	36.0	36.0	25.0	84.0	36.0
Overall rating	45.1	43.8	66.0	68.2	85.0	94.5	70.8
Evaluation	S	S	G	G	E	E	G

Source: The author.

Note: U = unsatisfactory (0–20); P = poor (21–40); S = satisfactory (41–60); G = good (61–80); E = excellent (81–100).

As indicated in table 4.2, there is a wide range of progress on implementation of the building blocks associated with the commercialization of road services in the seven countries. This range stretches from the inward-looking, fully bureaucratic approach that prevails in Botswana in which the government assumes full responsibility for providing and maintaining the road network using its own resources, to the outward-looking, commercialized approach that prevails in Namibia and South Africa in which there is a strong enabling legal framework coupled with a strong focus on commercialized management of the road network. This management is facilitated by reliable information management systems.

This section assesses the progress made on the commercialization of road services in the countries surveyed by focusing on the extent to which each of the various elements falling under each of the three building blocks has been implemented (see the summary in table 4.2).

Building block 1: Responsibility

Implementation of institutional change

Acceptance of the commercialization concept. For institutional change to take place in a sustainable manner, a government must accept as a matter of policy, and be convinced of, the need for such change as a basis for the commercialization of road services. In practice, if this commitment is not demonstrated at the very highest reaches of government, there is little hope that the motivation will trickle down through the system. There must be genuine motivation for the reforms to take place; otherwise, they are unlikely to be sustainable in the long run.

Acceptance of the concept implies adherence to the following regulatory essentials embodied in the RMI building blocks:

- A clear *demarkation* and allocation of authority and responsibility for *road funding* and *management* focuses
- Significant, preferably majority, *private sector participation*, and, in particular, transport users, in road financing and management decision-making forums
- Adoption of the appropriate financing principles and practices to secure
- Adequate and stable sources of funding through incremental expansion of road user charging
- Arrangements to allocate funds in an unbiased and transparent manner to the relevant roads agencies, thereby eliminating or minimizing bias in the allocation of funds
- Performance-based fund allocation

Key findings

In five of the countries reviewed—the exceptions are Botswana (with neither a Road Authority nor a road fund) and to a lesser extent Cameroon (with a road fund only)—there is generally majority stakeholder acceptance and support for the RMI concept of commercialization as the most effective and efficient means of attaining sustainable management and financing of roads. In Botswana, the efficacy of the commercializa-

tion concept has been questioned by a minority of stakeholders on the basis of negative experiences with parastatals in other sectors of the economy. In both Botswana and Cameroon, a widely held view is that there is insufficient hard evidence to indicate that a Road Authority will deliver outcomes superior to those of a well-resourced and supervised public sector road agency such as a government road department.

In practice, the degree to which the regulatory essentials of commercialization have been implemented varies from country to country, depending on historic, political, socioeconomic, and other influences. As indicated in table 4.3, in only three of the seven countries surveyed—Ghana, Namibia, and Tanzania—are all the regulatory essentials substantially in place. In Ethiopia, even though both a Road Authority and a road fund have been established, the attainment of sound commercial management has been severely compromised by the continued execution of most maintenance works in-house through force account units employing large numbers of staff. In South Africa, although the approach to commercial management is probably exemplary, there is no dedicated road fund. South Africa's funding is primarily two-pronged: toll roads, which are self-financed, and non toll roads, which are funded through the treasury.

Box 4.1 Undertaking Institutional Change: The Namibian Approach

One of the most comprehensive approaches to gaining support for road sector reforms, including commercialization of the road subsector, was undertaken by the Namibian Ministry of Works, Transport, and Communication through its MWTC 2000 project. The objective of this "project" was to involve all stakeholders in the restructuring of the ministry and the commercialization of some of its functions, including those carried out by the Department of Transport. The information campaign, which continued over a two-year period, included information meetings, "road shows" in all parts of the country, newsletters, press conferences, newspaper articles, and radio and television programs—all aimed at obtaining the buy-in and support of all stakeholders, including the trade unions.



The MWTC 2000 project was championed by the minister of works, transport, and communication; day-to-day responsibilities were entrusted to a dedicated chief executive officer, who reported on a monthly basis to the Project Steering Committee under the chairmanship of the ministry's permanent secretary. On this committee was representation from the Office of the Prime Minister, Ministry of Finance, Ministry of Trade and Industry, and public workers union.

After the cabinet approved the establishment of an autonomous Road Authority, the successful transformation of the Department of Transport to the new entity was overseen by a project leader appointed from within the ministry that was responsible for coordinating the work of the implementation consultants. The implementation process was conducted over a 12-month-period.

Table 4.3 Implementation of regulatory essentials in surveyed countries

	<i>Botswana</i>	<i>Cameroon</i>	<i>Ethiopia</i>	<i>Ghana</i>	<i>Namibia</i>	<i>S. Africa</i>	<i>Tanzania</i>
Autonomous Road Authority							
Established	○	○	●	●	●	●	●
Legislated (act of Parliament)	○	○	●	●	●	●	●
Separate board	○	○	●	●	●	●	●
(majority private sector)	○	○	●	●	●	●	●
Commercial principles							
Dedicated road fund							
Established	○	●	●	●	●	○	●
Legislated (act of Parliament)	○	●	●	●	●	○	●
Ring fenced	○	●	●	●	●	●	●
Direct channeling	○	●	●	●	●	○	●
Road fund board							
Established	○	●	●	●	●	○	●
Legislated (act of Parliament)	○	●	●	●	●	○	●
Separate board	○	●	●	●	● ^a	○	●
(majority private sector)							

Source: The author.

Note: ● = full compliance with attribute; ● = partial compliance with attribute; ○ = no compliance with attribute.

Nb. In Namibia, the road act requires that the board shall consist of not less than three and not more than five members. They shall be appointed by the minister from among persons who have expertise relevant to the functions of the Road Authority, of whom the majority shall be persons who are not staff members.

Manner of implementing commercialization reforms. In practice, in most countries the reform process has tended to be donor-initiated and donor-driven, and it is sometimes tied to infrastructure projects. However, acceptance of the RMI vision has been greatly facilitated by holding workshops and seminars to share knowledge, disseminate information, and consolidate achievements on the commercialization concept in a focused manner. The SADC's model legislative provisions (MLPs) on road network financing and management fully embrace the RMI principles, and have provided an impetus for road sector reform in the SADC region (SADC 1999). The one country that has embarked on such reforms of its own volition, and in a comprehensive manner worthy of emulation by other countries, is Namibia (see box 4.1).

The adoption of any new concept that fundamentally changes the status quo from a traditional, fully bureaucratic approach in which government assumes full responsibility for providing and maintaining the road network using its own resources to a commercialized, outside-of-government approach requires careful management. The key starting point is the perceived need for institutional reform. If the host country is not ready for reform, it will not happen. Although host ministries may pay lip service to the process, unless there is a genuine motivation for the reforms to take place, they will never be sustainable.

Although the manner of implementation of the institutional reforms has differed from country to country, the transformation process has typically entailed a sequence of activities in which a different echelon of government or management has been involved at each stage.

Stage 1. Government endorsement of the need for a commercialization process to initiate

- Hold discussions at the ministerial level, often with the involvement of donors.
- Agree to go forward, in principle, with the commercialization of the road subsector.
- Hire consultants to undertake a preliminary study, if required.
- Reaching an agreement to embark on institutional change to facilitate commercialization of the roads subsector.

Stage 2. Broad design of institutional and financial framework by consultants

- Undertake a detailed organizational design involving extensive consultations with all stakeholders.
- Produce an institutional study report outlining recommendations.
- Have all parties reach a general agreement on the broadly defined institutional arrangements.

Stage 3. Detailed design of institutional framework by consultants

- Hold extensive consultations with all stakeholders.
- Have all parties reach agreement on the proposed specific institutional arrangements.
- Develop the appropriate road acts in Parliament to legally establish the new entities.
- Ensure passage of new road acts by Parliament.

Stage 4. Implementation of new institutional arrangements by consultants

- Train staff during transitional change.
- Recruit staff for new entities.
- Appoint board members.
- Enact road acts and commence operations by new entities.

Stage 5. Review of performance of implementation phase (after approximately one year)

- Hold independent appraisal of new entities.
- Identify potential or actual problems.
- Make recommendations to improve performance or reorient the organization, as appropriate.

Key findings

Because of the limited institutional capacity to absorb wide-ranging technical reforms all at the same time, and probably for other reasons as well, some countries have opted for a gradualist approach in which some key components of the building blocks were not implemented at the outset. For example, initially Cameroon, Zambia, and Lesotho introduced only a road fund, and Tanzania and Malawi implemented a single board to oversee both the Road Agency and the road fund. In countries in which the institutional capacity to absorb the reforms has apparently not been a serious constraint (e.g., Namibia, Mozambique, and Tanzania), both the Road Agency and the road fund were introduced simultaneously.

Any comprehensive reform that is consultative in nature, taking all major issues on board, takes time. Thus it is essential that sufficient time be allowed for the new concepts to be introduced and accepted. Care must be taken to ensure that the pace of change imposed does not exceed the capacity of the host country to absorb such change. Experience has shown that after government approval of the effort to embark on institutional reforms to commercialize the roads subsector, the length of time required to move from the status quo to the establishment and operation of the new legal entities is typically on the order of 5–10 years.

The institutional changes required to implement the various building blocks that embody the commercialization concept can be successfully undertaken only at certain stages of the process. Until each stage is successfully negotiated, solid, sustainable progress to the next stages is unlikely to occur. Thus, sufficient time should be allowed for the new concepts to be accepted at each stage of the institutional change process in a manner in which the pace of change does not exceed the capacity of the host country to accept it. Reaching the first cornerstones such as new legislation and eventually a new institutional framework can take 8–10 years of concerted effort.

The following guidelines provide a holistic, integrated approach to achieving successful institutional change:

- Maintain a clear vision of the objectives of the reform program and the strategies for its implementation.
- Strive for a high level of political commitment.
- Achieve a requisite technical capacity to plan, coordinate, monitor, and evaluate the reform process.
- Adopt a proper management structure to guide the reform from diagnosis to the implementation stage.
- Seek consensus building and participation by those affected by the reforms.
- Ensure adequate funding for undertaking the various activities of the reform program.
- Publicize the reforms being undertaken and fight any resistance to change among stakeholders.
- Seek the proper coordination and linkages among the various reform components and programs.
- Handle human resource issues appropriately, with redeployment of excess staff.
- Devise clear monitoring and evaluation guidelines for the reforms.

Implementation of the transformational process from a Road Agency to a Road Authority should follow the Brooks pyramid approach discussed in chapter 2. Because the pyramid should be built from the bottom up, the general order of implementing change should be as follows.

External factors

1. Obtain political and governmental commitment to change. This commitment is of paramount importance because without it real change is unlikely to be effective. Road users and other stakeholders should be enlisted to help to obtain this commitment.

Institutional factors

2. Agree on the policy and institutional framework, with regard essentially to agreeing which organizations will be responsible for different parts of the road network.
3. Frame the legislation needed to support the institutional changes needed.
4. Restructure the organizations to undertake their tasks in a commercialized manner.

Technical factors

5. Establish the various systems to facilitate efficient and effective road management (road management systems, cost accounting systems, and so forth).
6. Address other technical and operational issues (procurement, technical auditing, and so forth)

Institutional framework

Legislative requirements. The institutional framework required for the commercialization of the road subsector should be legislated in a holistic manner by addressing the various regulatory essentials listed earlier in this chapter, at the outset of this section on building block 1. Two basic approaches have been adopted in the SSA region for doing this: developing new legislation and amending existing legislation.

In the majority of countries surveyed—Cameroon, Ethiopia, Ghana, Namibia, and South Africa—new legislation has been developed through the production of the appropriate road acts, which adequately capture the various regulatory essentials needed to commercialize the road subsector. In some countries such as Tanzania, the Road Authority was established initially under existing legislation, the Executive Agencies Act. During this process, some aspects of the agency’s operations remained under the prevailing government rules and regulations. As a result, the agency has been constrained from acting as independently as it should in carrying out some of its operations and making independent corporate decisions.

Key findings

A strong legislative framework is required to ensure that the necessary regulatory essentials are fully captured in the legislation. This is unlikely to be achieved easily by amending existing legislation. Rather, a new act of Parliament is required to achieve this objective in an unambiguous manner.

The guidelines for establishing an appropriate institutional framework should be based on emerging best practice, which is clearly spelled out in chapter 2. In essence, they entail the following key institutional requirements:

- Separate funding and management focuses
 - Establish a road fund and a Road Agency as separate juristic persons.
 - Clearly demarcate the objectives, roles, and functions of the established agencies.
- Oversight management
 - Establish a separate oversight management board.
- Coordinatory linkages among stakeholder organizations
 - Establish formal performance contracts and procedures agreements among the key stakeholder organizations.

Institutional management

Assignment of responsibilities. A clear and coherent assignment of responsibilities among stakeholder organizations in the road subsector is essential for achieving efficient and effective road management. These organizations include road agencies and departments at both the central and local government levels. Responsibilities to be assigned typically include:

- Management of different parts of the road network
- Traffic management (road signs and signals, traffic regulations, urban traffic)
- Axle load control
- Road safety
- Environmental impacts (identifying and mitigating adverse impacts)

Assigning responsibilities among stakeholder organizations in a clear and coherent manner will require organizing the network into logical and consistent functional classes or systems according to the character of the service they are intended to provide. The responsibility for managing these classes or groups of classes can then be assigned in an appropriate manner to road agencies at the appropriate levels of central or local government.

All countries surveyed have undertaken regular road inventories as a basis for functionally classifying their road networks. However, the number of functional classes adopted and the assignment of responsibilities of functional classes of roads to particular roads agencies have varied from country to country, depending largely on the country's administrative structure. Moreover, the road agencies have fallen under one or several of the ministries responsible for roads. In addition, the responsibilities for traffic management, axle load control, road safety, and environmental issues have invariably been split among various government organizations.

The responsibilities in the road subsector for various aspects of road management have, to varying extents, been split among more than one road agency, various departments of government, and, generally, more than one ministry responsible for roads. In Botswana the national (primary and secondary) roads fall under the central government; rural (tertiary and access) roads fall under local government; axle load control and road safety fall under the central government's Department of Road Transport and Safety; and environmental issues fall under another ministry.

Management structures. Two typical management structures have been adopted in the countries surveyed.

- **Single-tier structure.** One central government ministry holds sectoral responsibility for all matters related to the road subsector, and one or more central government road agencies take responsibility for managing different parts of the road network (e.g., in Cameroon, Ethiopia, Ghana, and Namibia).
- **Two-tier structure.** In this structure there are two distinct road management hierarchies: the first incorporates the national trunk roads, which fall under the supervision of the ministry responsible for roads, and the second incorporates the rural/district roads and urban roads, which usually fall under the Ministry of Local Government (Botswana, Cameroon, South Africa, and Tanzania).

Key findings

The single- and two-tier structures adopted in the countries surveyed have both merits and drawbacks. For example, in the single-tier structure the various parts of the network receive commensurate technical and funding attention from a single ministry, but the scarce highway engineering and management skills available tend to be spread undesirably thinly among these agencies, and there is less involvement of local decision makers in the management process. In a similar vein, in the two-tier structure rural/district roads, which require local-level, location-specific decision making for planning purposes, are decentralized to local government organizations. However, at the local level there tends to be a paucity of the appropriate technical and managerial capacity and resources to manage the rural/district network effectively.

There are also some aspects of road management, related particularly to road traffic, in which road agencies have a vested interest but no direct responsibility. For example, overloaded vehicles damage road pavements and increase maintenance costs, but often the road agency is not responsible for setting the load limits, enforcing the regulations, or issuing the penalties. Similarly, permissible vehicle dimensions affect road (geometric) standards and thus construction and maintenance costs, but often they are not set by the road agency. These examples suggest that, in principle, the main road agency should be assigned all regulatory responsibilities affecting the entire road network, even though it may delegate some of these responsibilities to other road agencies or competent bodies.

**Box 4.2 Establishing clearly defined responsibilities for provision of road services:
The Ghanaian approach**

Ghana has embarked on an extensive restructuring process aimed at improving the efficiency and effectiveness of the road subsector by establishing a coherent organizational structure at both the ministerial and road subsector levels. The proposed structure is designed to overcome the core problem of the lack of clearly defined responsibilities for the various transport ministries and road agencies in the country by assigning clearly defined responsibilities for managing different transport modes and different parts of the road network, as described here.

Existing organizational structure**Two ministries responsible for transport**

Main disadvantages:

- No ministry is clearly responsible for multimodal transport planning and integration between competing and complementary modes of transport and thus there is no ownership for such functions.
- Balance (priority) is given to each transport mode not an integral part of the strategic and multimodal planning process.
- Two separate ministries mean two bureaucracies, resulting in additional duplication and the need for effective coordination mechanisms if intermodal planning occurs.

Three agencies under a single ministry responsible for providing road services pertaining to trunk, rural, and urban roads

Main disadvantages:

- Partial duplication and overlapping of functions are evident between the agencies.
- Local authorities have limited say in determining the action taken on their own local road networks.
- Funding agencies need to have technical capability in determining the appropriate balance between different networks.

Proposed organizational structure**Single ministry responsible for all transport modes**

Main advantages:

- One ministry provides a natural home for sub-regional policy planning & coordination.

- Structure facilitates interministerial coordination for integrated, multimodal planning and its implementation.
- A balance of emphasis can be achieved between each transport mode given political constraints.
- The detailed functions of the integrated ministry can be further broken down in a clear and logical manner, retaining clearly defined areas of responsibility and accountability, following a logical hierarchy and serving specific customer groups.

Single, regionalized National Road Agency (NRA)

Main advantages:

- Acts as a single, technically strong, functionally integrated organization responsible for all roads with a core capability to maximize the use of scarce engineering resources
- Facilitates the provision of a consistent and integrated level of service to road users throughout the whole country
- Facilitates allocation of funds in a cohesive manner, achieving the balance that reflects overall policies
- Requires the need for only one plan or program to be submitted to funding agencies for consideration, thereby avoiding the need for additional coordination of different plans
- Overcomes the limited technical (and financial) capacities of local authorities
- Facilitates the desired decentralization by providing for close interaction between the NRA's regional offices, the regional coordinating councils, and the local authorities within their areas. [Note: The NRA (through its regional offices) would be expected to take ultimate responsibility for the road activities on its network; the local authorities would be expected to be closely involved in the development of the roads in their areas. However, this local involvement would exclude asset preservation (maintenance) activities on the existing roads, because the NRA would be responsible for carrying out this essential function without undue political interference, whether from national, regional, or local governments.

Building block 2: Ownership

Oversight management

Attributes of road boards. The active participation of road users in the management of roads is considered essential not only for democratizing decision making in the road subsector but also for helping to win their support for sustainable road funding

through road user charges. However, such representation on its own is often not sufficient to ensure strong oversight management of the road agencies. Other desirable attributes of road boards include:

- Majority private sector representation, with board members nominated from both the general public and specific user organizations to ensure that user interests are entrenched within the road agencies
- Board members who possess the necessary expertise in road management and second-generation road fund principles to ensure a high standard of decision making
- Board members who are above reproach in terms of potential conflicts of interest between their board duties and private interests
- Regular board meetings and the publication of board proceedings for scrutiny by road user organizations.

Characteristics of road boards. Some type of management board is in place in all the countries surveyed that have undertaken road subsector reforms and established road agencies. However, the characteristics of the boards vary widely, such as in the type and composition of the board, the appointment of board members, and other aspects of board operations.

In countries with both a Road Agency and a road fund, the trend has been to maintain two separate boards to manage the agencies. The exception is Tanzania where the same board is responsible for providing oversight management for both agencies.

There are two types of boards:

- *Advisory boards* generally advise the minister on various aspects of management and financing of roads. However, the minister is not obliged to accept such advice (e.g., the Ministerial Advisory Board at TANROADS, Tanzania).
- *Non-executive boards* are made up of part-time members, including the chair. Such boards set policy and oversee its implementation. Day-to-day management is delegated to the CEO, who is typically also a member of the board (e.g., in Ghana, Namibia, and South Africa).

The general trend has been for the president (Ghana) or the minister responsible for roads to appoint the board chair, invariably from within the government ministry responsible for roads (Ethiopia, Tanzania, and South Africa). In most countries, board members from both the public and private sectors are appointed directly by the mi-

nister (Ethiopia) or, in a minority of cases, by the organizations they represent (Tanzania) or are nominated by the private sector organizations.

The number of board members varies widely, from as few as three (Namibia) to as many as 11 (Tanzania). In all countries, public sector representatives are in the majority, and in Ethiopia there is no private sector representation.

The legislation in all countries stipulates aspects of board operations, which vary from country to country. Legislation covers issues such as tenure of members, functions of the board, frequency of board meetings, remuneration of board members, and submission of annual reports. In South Africa, all board members are required to adhere to a comprehensive code of conduct comprising 12 principles that govern members' conduct (see box 4.3).

Box 4.3 Directors' code of conduct, South African National Roads Agency Limited

The following 12 principles, grouped into the two overriding standards of **diligence** and **good faith**, govern directors' conduct:

Diligence (duties of care and skill)

- Induction and training
- Regulatory compliance
- Preparation and attendance at meetings
- Access to information and expert advice
- Disciplined, proactive and courageous participation
- Performance evaluation

Good Faith (fiduciary duties)

- Integrity
- Personal transactions
- Payments, gifts, entertainment and travel
- Disclosure of interests
- Confidentiality of information
- Protection of company assets and reputation

Where a director is in serious breach of any aspects of this Code of Conduct, he/she may be removed from office by the shareholder, as per Clause 14 of the SANRAL Act.

Source: SANRAL.

Key findings

From the characteristics of road boards described earlier, it is apparent that private sector representation is very much in the minority and thus likely to be weakly involved in policy making and planning, that the chairs of the boards are invariably government appointees from the public sector, and that most board members are appointed by the minister responsible for roads. Thus private sector user interests are not well represented on the boards, and therefore the scope for advocating constituent interests and winning support for sustainable funding is likely to be diminished. Moreover, in some countries there is also a concern that the capacity of board members to undertake their duties in a proper manner is compromised by their lack of knowledge of the principles of road management.

The following steps are recommended for improving the operations of road boards:

- Change their composition by seeking majority representation by the private sector on the boards of the road fund and Road Agency and minority representation from the key government ministries involved with roads.
- Seek nominations for membership from both the general public and specific user organizations to limit the scope for political interference.
- Prescribe the expertise required of board members to ensure a high standard of decision making.
- Provide clear terms of reference for board members, which should, among other things, require them to develop a public outreach program so that people are aware of the scope of the road program and the need for public support for its funding.
- Disqualify categories of persons who may introduce potential conflicts of interest if nominated to a board or may otherwise be inappropriate as members.
- Enhance their autonomy by prescribing the grounds on which board membership may be terminated and clearly spelling out the procedures to be followed.

Building block 4: Management

Autonomy

More autonomy is one of the cornerstones of a more commercial approach to road management and financing. Road agency managers cannot behave commercially until they are able to operate without interference in day-to-day management. Thus they

need to have the freedom not only to operate commercially and strengthen managerial accountability, but also to work within an organization that can respond to market discipline. This implies:

- A clear and unambiguous vision, corporate mission, objectives, and corporate plan
- A technical, financial, and operational autonomy in managerial decision making and actions
- A full control over human resource policies, including setting the terms and conditions of employment of staff.

Corporate vision and key objectives. A clear corporate vision coupled with an understanding of customer and stakeholder needs are essential for defining the role of the road agency. All the countries surveyed proclaim a corporate mission, including a vision, mission statement, and core values as well as various key objectives. In general, these corporate missions reflect the principal operational or statutory objectives of the organization and encourage the road agency to become more customer-oriented. Without clarity of purpose and a clear understanding of why it exists or what it is supposed to do, the Road Agency will be unfocused, ineffective, and inefficient.

To attain its objective, the corporate mission should not only be proclaimed but also be embedded in the institutional fabric of the agency (see the sample corporate mission statement in box 4.4). As a reminder to their staff and stakeholders, some countries have taken the extra step of promoting their corporate mission by displaying it prominently at the entrance to their offices as well as including it in their various reports and other promotional material.

Technical, financial, and operational autonomy. To translate customer and stakeholder needs into commercialized organizational activities, the Road Agency requires a certain amount of technical, financial, and operational autonomy in its managerial decision making and in the actions for which it will be held accountable. This autonomy should be embedded in the legislation governing the operations of the Road Agency by drawing a clear distinction between responsibility for policy formulation and for policy delivery. Explicit responsibility for policy formulation is vested in the minister responsible for roads within the framework of general policy, and the Road Agency is responsible for policy delivery. Thus, although the minister is responsible for overseeing the operations of the Road Agency (and road fund), the role is clearly delineated to avoid political interference and compromising its commercial autonomy.

Box 4.4 Corporate mission, South African National Roads Agency Limited (SANRAL)

Vision	To be recognized as a world leader in the provision of a superior primary road network in southern Africa.
Mission	We are a commercially driven organization committed to achieving its vision for the economic benefit of the southern African community through: <ul style="list-style-type: none">• A highly motivated and professional team• State-of-the-art technology• Proficient service providers• Promoting the “user pay” principle
Core values	We will always act with integrity. We are committed to service excellence. Our people are our most valued asset. We subscribe to participative management. We will be pro-active to the needs of customers and other stakeholders

Source: SANRAL.

Within the Road Agency, there should also be a further delineation of roles to establish a second layer of accountability whereby general managerial oversight is vested in the agency’s board and all major management decisions require board consideration and approval.

Key findings

The legislation in all of the countries surveyed in which a Road Authority has been established does not stipulate the role of the minister responsible for roads. Thus no clear distinction has been drawn between policy formulation and policy delivery (see box 4.5). This shortcoming facilitates a certain amount of ministerial “involvement” in the operations of some Road Authorities to the extent that, in a few cases, the Road Authority is unable to make operational decisions without authorization from other institutions. Such involvement tends to be more marked in those countries in which there is a ministerial advisory board and, in the case of non-executive boards, in which the chair is a government appointee and there is majority public sector representation. An example of probable lack of autonomy of the road board is Ethiopia—the entire board is appointed by the minister of the government’s civil service.

Box 4.5 Embedding the separation of policy formulation from policy delivery

Role of Minister

1. The Minister must develop and regularly review policy in respect of the nation's roads to ensure that the objectives of the Roads Act are realized.
2. The Minister must
 - a. publish the complete national roads policy or relevant extracts thereof in the Gazette, as well as any subsequent revisions of the policy, for public notice;
 - b. provide the Board with a completed policy statement and any subsequent revisions thereof.
3. The Minister must, assisted by the Permanent Secretary/Principal Secretary/Director General, ensure that the policy is implemented by exercising the powers and executing the functions vested in him or her in terms of this Act by
 - a. monitoring progress achieved with the implementation of road management and financing policy, the impact on other transport modes and the promotion of integrated transport;
 - b. advising on the requirements of regional cooperation and the development of the Regional/Inter-Regional Trunk Road Network;
 - c. promoting the development of harmonized regional/inter-regional technical standards and financial practices; and
 - d. recommending policy revisions to ensure that the objectives are realized.

Source: SADC 1999.

Management structure and operating procedures

Separation of “client” and “service provider” functions. Separation of the planning and management of roads (the “client” function) from the implementation of road works (the “supplier” function) has been shown to produce greater efficiency and effectiveness in an organization than virtually any other type of organizational reform (Madelin, 1994). Achieving such separation requires an appropriate institutional structure that can accommodate the client–service provider relationship.² This structure can be built in three main ways:

² A “client” is an organization (or individual) who has control of funds and the authority to decide the conditions under which these funds are spent. Activities or services are carried out

1. The road agency retains its integrated structure, but assigns the client and service provider functions to separate divisions within the same overall organizational structure.
2. The road agency is divided into separate client and service provider organizations (none of the countries surveyed has adopted this option).
3. The road agency acts as the procurer of services (client) and contracts out all producer functions to the private sector (to the service provider).

It is most undesirable for the same organization to be both the client and the service provider for any specific activity or function. If this occurs, there is a potential conflict of interest because the client is also the service provider, and thus no business transaction is occurring. When the same organization carries out some client functions and some service provision functions, there is some delineation within the organization. However, it is not an adequate separation of roles because a common senior management (and legal entity) remains for both the client functions and the service provision functions, thereby presenting the organization with a potential conflict of interest.

Key findings

In only one country, South Africa, is there a clear and distinct separation of client and service provider functions. The Road Authority, the South African National Roads Agency Limited (SANRAL), acts exclusively as the client and outsources all design, construction, and supervision of both new and upgrading projects and maintenance (both routine and periodic) to the private sector. In all the other countries surveyed, the road agency fulfills the client function as well as, to varying degrees, aspects of the supplier function. Although this arrangement provides some delineation within the organization, it is not an adequate separation of roles because a common senior management (and legal entity) is responsible for both the client functions and the service provision functions, presenting it with a potential conflict of interest.

Focus on core functions and outsourcing. To operate in a business-like manner, the Road Authority needs to increase its specificity by identifying and focusing only on its core functions, without being sidetracked by unproductive or noncore tasks. To identify its core functions, the organization must recognize who are its customers and un-

for these client organizations. A service provider is an organization or individual who is paid for providing some product or service to the client.

derstand that its principal aim is to meet its customers' requirements. The more precisely the functions can be identified, the more effectively the organization can specialize in delivery of the required services. It can then in turn set its business objectives and put in place management structures and procedures that are designed to achieve these objectives.

Functions or activities that could be outsourced need to comply with these criteria:

- They should be non strategic.
- A third party must be able to improve the efficiency of the service.
- There must be outside parties who can and want to undertake the service—that is, the service must be financially viable.

Based on these criteria, the following typical, noncore activities are candidates for outsourcing:

- Project design
- Project documentation
- Contract management
- Supervision
- Materials control
- Weighbridge management
- Traffic counting and road condition surveys
- Operation of road management systems

These noncore activities are carried out to varying extents by the Road Authorities in all the countries surveyed. However, those countries with a clear separation of client and service provider functions, such as South Africa, tend to outsource almost all of their noncore functions, whereas those countries in which the client and service provider functions are more blurred tend to outsource fewer noncore functions. In general, more and more countries are exploring ways and means of outsourcing noncore activities such as weighbridge management (see box 4.6) and traffic counting and condition surveys.

Box 4.6 Options for outsourcing the management and operations of weighbridges

In accordance with the SADC Memorandum of Understanding on Vehicle Loading, states of the Southern African Development Community (SADC) are encouraged to outsource weighbridge operations to the private sector on a management contract basis. An increasing number of countries have embarked on this approach, or are seriously considering doing so, for which a number of options have been identified.

	<i>Service contract</i>	<i>Management contract</i>	<i>Lease contract</i>	<i>Concession contract</i>	<i>Full privatization</i>
Ownership	Public sector	Public sector	Public sector	Public sector	Private sector
Financing fixed assets	Public sector	Public sector	Public sector	Public sector	Private sector
Financing working capital	Public sector	Public sector	Private sector	Private sector	Private sector
Duration	Short* (1-3)	Short* (5)	Medium* (6-10)	Long* (20-30)	Indefinite
Risk	Public sector	Public sector	Public sector	Shared	Private sector
Remuneration of private sector	O & M costs	O & M costs	O & M costs and working capital	O & M costs, working capital and financing fixed assets	O&M costs, working capital and financing fixed assets

* in years

Adopting an appropriate organizational structure. Various generic organizational structures could be considered in the restructuring of Road Agencies, each with its advantages and disadvantages. Studies carried out in New Zealand (Dunlop 2001) indicate the following:

- There is no one ideal organizational structure. The design of the organizational structure must be built around an understanding and evaluation of markets, regulatory frameworks, strategies, and competition.
- There has been a strong trend toward getting away from “silos” (divisions). This trend has involved the greater use of project management and team-based approaches over operating along strictly defined business units.
- Over the last decade, there has been a trend toward “de-layering” organizations, with the implication of reducing the number of management levels and increasing the spans of control and levels of responsibility down the organization.

With the exception of South Africa (cluster system as described in box 4.7), the organizational structure adopted in the countries surveyed has generally followed the traditional silo approach, with a CEO typically overseeing four or five divisions of the authority, each headed by a line manager responsible for functions such as development, maintenance, finance, and administration. The line managers are supported in turn by layers of subordinate staff all of whom report in a hierarchical manner to the

line managers. In some countries, regional managers with smaller hierarchical structures also report directly to either the CEO or zonal managers at headquarters.

Although the appropriateness of the prevailing organizational structures may be difficult to quantify, most tend to be traditionally structured along multilayered, divisional lines—a type of organizational design structure that may not be conducive to attaining efficiency and effectiveness in a modern Road Authority.

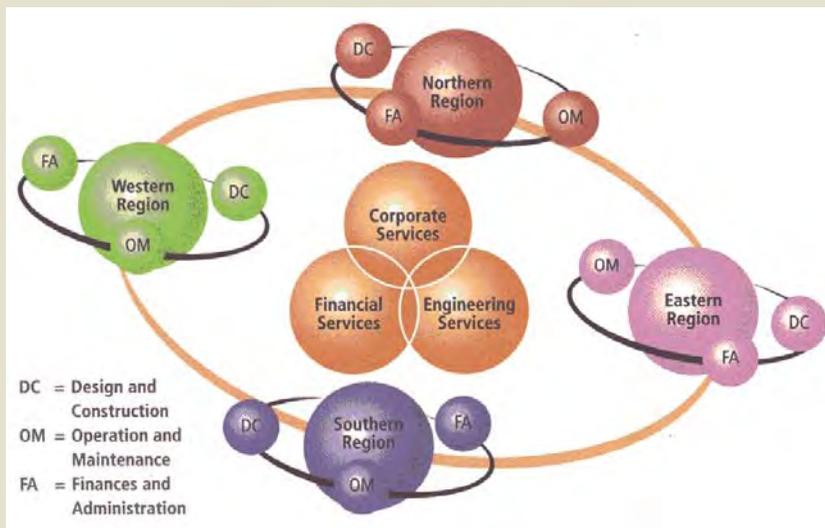
Road network planning. The move away from the traditional civil service procedures followed by a typical government Road Agency toward the more commercialized practices followed by a Road Authority requires that the authority be held accountable for its performance. To this end, the Road Authority would be expected to move away from the traditional practice of treating maintenance and rehabilitation/reconstruction as dichotomous interventions. Instead, it should operate within the boundaries of an integrated multiyear planning framework and related road network management plan approved by the road board and for funding by both the road fund and the parent ministry (depending on the nature of the works). Such a plan would typically include:

- A road development program for the ensuing financial year and subsequent years setting out
- Construction programs for new roads
- Maintenance, rehabilitation, and upgrading programs for existing roads
- Estimated funding requirements
- A procurement schedule
- Specific targets and performance indicators to meet corporate plan objectives.

Improving service delivery. In all the countries surveyed, some form of road network management plan is produced, but almost invariably problems occur in some countries in the implementation of the plan, due in large part to the perceived noncompliance of the Road Authority with aspects of the legislation or with aspects of the performance agreements between the parent ministry and the road board, the road board and the Road Authority, or the Road Authority and the road fund.

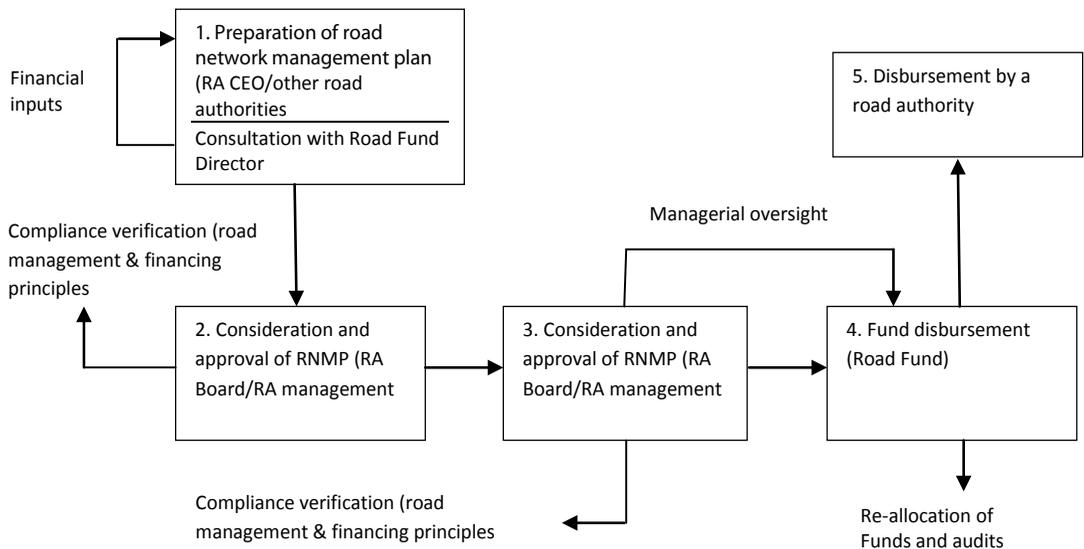
Box 4.7 Organizational structure and the cluster system: The SANRAL model

In keeping with modern trends in organizational design theory, the South African National Roads Agency Limited (SANRAL) has adopted a flat matrix organizational design centered on a cluster system. This design is aimed at emphasizing the importance of the collective judgment and maximizing the strengths of its functional bases. The non hierarchical, flat management structure approach is meant to discourage the concept of subordinates reporting to superiors and to inculcate a culture of collective mentorship, and individual responsibility and empowerment, while providing an opportunity for succession planning. Shown here is the SANRAL organizational model, which is a departure from the traditional structures used by most Road Authorities.



To improve service delivery by the Road Authority, it is essential that the correct procedures are followed, from the preparation of the road network management plan right through to payment of the contractor for the completed work. To this end, figure 4.1, based on the implied procedures and controls envisaged by SADC’s model legislative provisions on road financing and management, is presented as a basis for improving service delivery by the Road Authority.

Figure 4.1 Procedures and Controls for Facilitating Effective Service Delivery



Source: SATCC, 1999. Model Legislative Provisions.

Box 4.8 Legislating a procedure agreement: The Namibian example

The Namibian legislation is probably unique in including a requirement in the Roads Authority Act for the Road Authority to submit to the road fund a procedures agreement containing the procedures necessary to enable it to assess whether funds accruing to the authority will be efficiently utilized by it for the performance of its functions, including:

- The management and financial systems to be implemented by the authority, and measures to be introduced to ensure (1) compliance with the rules and principles contemplated in the road fund act and (2) the efficient utilization of funds allocated to it with respect of projects and programs included in the business plan referred to in the road fund act
- The principles to be applied in budgeting for administrative expenditures, including the cost of acquiring immovable property for administrative purposes

The procedures to be followed by the authority in calling for, and evaluating and awarding, tenders and in the negotiation of agreements with any person, body, or authority to provide any service for or on behalf of the authority.

Research and technology transfer. Research and technology know-how have advanced significantly in the African region in the last few decades. They not only question much of the conventional thinking on the provision of commercialized roads, but also show quite clearly the need to revise the conventional approaches (SADC 2003). Thus considerable scope exists within commercially oriented road agencies to exploit the opportunities for improving the efficiency of road provision through utilization of these new approaches. This effort generally requires carrying out a certain amount of local customization of the potentially beneficial technology through demonstration projects before it can be mainstreamed into practice.

In the commercialized Road Authorities surveyed, research and technology transfer are generally very low in their lists of priorities, apparently because of the difficulty of quantifying the benefits of research in a commercialized environment. The exception is the Road Authority in South Africa, SANRAL, which actively supports research in the field of materials and pavement design at the Council for Scientific Research and promotes related initiatives. Those initiatives include its Technology Transfer Program, which is operated as a cooperative program with the U.S. Federal Highway Administration and which aims at transferring transportation technology, training, and technical skills.

Key findings

Although the valuable research on road technology that has taken place in some SSA countries offers scope for making better use of available resources, there has, unfortunately, been little effective dissemination and uptake of the results of this research. Instead, countries have tended to import standards and practices that are often inappropriate for local needs. Thus, if today's commercialized agencies are to become more efficient in providing roads, they will have to pay more attention to undertaking well-targeted research work and to ensuring a greater uptake of the results of previous research work carried out in the SSA region.

Public consultations and reporting. Regular consultation with and reporting to the public by the Road Authority is essential for raising awareness of what is happening in the road subsector. It also serves the beneficial purpose of

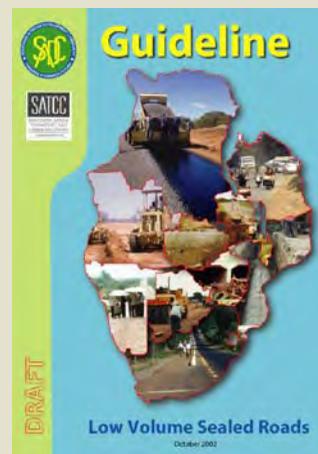
- Reinforcing the collaborative partnership and cementing the relationship between the public and private sectors (via the road boards) in the management and financing of roads
- Ensuring that the views of road users are reflected in the policies, priorities, and standards adopted by the Road Authority

- Informing road users about how well the Road Authority is performing (through the use of appropriate performance measures) and how well their financial contributions through road user charges have been used (on the basis of technical and financial audits).
- Providing road users and the general public with a measure of accountability on the part of those responsible for the provision of road services and service delivery.

Box 4.9 Developments in low-volume sealed road technology

A guideline on low-volume sealed roads was commissioned about 10 years ago by SADC with the objective of raising awareness of more appropriate and cost-effective approaches for the delivery of low-volume sealed roads and the critical issues that must be addressed to ensure sustainability. The guideline includes alternative surfacing, materials, and pavement design technologies that maximize the use of locally available materials without incurring unacceptable risks of failure.

By promoting the adoption of a more holistic approach to the provision of low-volume sealed roads and the use of innovative best practice from the southern Africa region, the guideline offers the potential for making more effective use of the available road funding.



Key findings

Consultation with road users has been achieved to varying degrees in all those countries that have road boards, especially those with majority private sector representation. By contrast, in those countries with no road boards consultation, road users is, at best, very limited. Reporting to the general public and road users has usually taken the form of annual reports and business plans. However, other initiatives should be considered by Road Authorities to help raise the public's awareness of the roads (see the summary in box 4.10).

Box 4.10 Measures for raising public awareness

The following measures will raise public awareness of roads:

- Publicity campaigns that explain the roles and responsibilities of the various institutions involved in delivering road services.
- Educational campaigns that highlight the benefits and costs of good roads and the main issues involved in road management. This appreciation should result in better decision making.
- Specific public relations measures such as a complaint hotline (telephone, mail, and e-mail contact details), strengthening the legal obligations of service providers to report to road users and the general public
- Notification of funding sources on the roadsides where works are being undertaken or were recently completed.

Performance measures and indicators. Performance measurement using the appropriate indicators is a means of monitoring and reporting the accomplishments of a road agency in relation to its pre-established goals. The performance indicators record the change from the baseline position to the prevailing situation. In doing so, the indicators provide a numerical measure of the degree to which the Road Authority's goals are being achieved.

Measuring and reporting performance through selected indicators have become increasingly important because these organizations are now held fully accountable by stakeholders for the efficiency and effectiveness of their operations. To this end, all road agencies must establish an appropriate framework of performance measures and related indicators by which their performance can be evaluated (see box 4.11).

Key findings

In only one of the countries surveyed, South Africa, is the Road Authority undertaking comprehensive performance measures and reporting related performance indicators in its annual report in the form of corporate performance information. Road Authorities in the other countries surveyed do compile various types of roads statistics, which, although informative, do not serve the important objective of performance measurement.

Box 4.11 Performance reporting by SANRAL

SANRAL abides by a number of national objectives by which the Department of Transport measures and assesses the organization based on the following performance indicators:

- Reduction of transport costs to contribute to economic growth of 6 percent
- Industry objective—overall government plans for infrastructure spending
- Operational efficiency
- Socioeconomic development
- Accelerated and shared economic growth and development to address the challenges of poverty and underdevelopment
- Capacity development
- Administration

Because most Road Authorities do not undertake any form of comprehensive performance measurement, their accomplishments cannot be properly monitored and reported. To overcome this shortcoming, a comprehensive set of performance measures and related indicators should be agreed on at the SSA regional level to allow interregional comparisons of road agency performance to be assessed on a transparent, consistent basis.

Human Resources

Staffing levels. The total number of staff required by a Road Authority operating in a commercialized manner and outsourcing most or all of its works to the private sector will be relatively small compared with that required by Road Agencies in which the converse is the case. For example, if the current Botswana Road Agency were to commercialize its operations, that would likely entail reducing its staffing from the current total establishment of 1,749 staff, of whom some 1,439 are industrial class workers, to a total staff complement of about 170 persons, comprising professional, technical, and administrative staff (DCDM, 2007). Table 4.4 shows the total number of staff—managers, engineers, technicians, and administrators—involved in planning

and managing the road networks in the countries surveyed and, for comparison, in commercialized Road Authorities in three non-African countries.

Key findings

As indicated in table 4.5, the number of staff responsible for managing 100 kilometers of roads varies by a factor of more than 20! This substantial difference reflects in large measure the extent to which the Road Agencies/Road Authorities contract out their construction and maintenance works to the private sector. At one extreme, Road Authorities in countries such as South Africa and Namibia operate at a relatively low staff to network length ratio, which represents a relatively commercialized, efficient approach to road management in which substantially all works and noncore activities are contracted out to the private sector. At the other extreme, the Road Agency in Botswana operates at a very high staff to network length ratio, which is typical of the relatively non commercialized approaches to road management.

Table 4.4 Road Agency/Road Authority Staff Involved in Road Management

<i>Road Agency/ Authority</i>	<i>Length of network managed by agency (km)</i>	<i>Total number of staff</i>	<i>Number of staff per 100 km</i>
Botswana ^a	8,741	1,749	20.0
Cameroon ^a	?	?	?
Ethiopia ^b	20,080	10,912	54.3
Ghana ^c	12,786	?	?
Tanzania ^c	28,891	791	2.7
Namibia ^c	42,238	278	0.7
South Africa ^d	16,150	149	0.9
Finland	78,000	1,500	1.9
New Zealand	10,500	189	1.8
Sweden	97,908	2,000	2.0

Source: Author.

a Road Agency with all of its construction works and most of its maintenance works contracted out to the private sector.

b Road Authority with all of its construction works contracted out to the private sector and much of its maintenance works undertaken in-house by force account units.

c Road Authority with all of its construction works and most of its maintenance works contracted out to the private sector.

d Road Authority with all of its construction & maintenance works contracted out to the private sector.

Table 4.5 suggests levels of Road Agency/Road Authority efficiency in terms of the utilization of staff for road network planning and management.

Table 4.5 Road Agency/Road Authority Staff Efficiency

<i>Number of staff per 100 km</i>	<i>Level of Road Agency/Authority efficiency</i>
< 2	Very good
> 2 – < 5	Good
> 5 – < 10	Fair
> 10	Poor

Source: Author.

Dealing with excess staff. Restructuring Road Agencies to provide road management services in a commercialized manner invariably involves downsizing the organizations. The excess staff tends to be mostly those in force account operations. Dealing with this issue often creates problems for a Road Agency because the prospect of making large numbers of staff redundant is generally politically unpalatable. The following options are typically adopted for dealing with excess staff in the countries:

- Reorganization of the force account division to promote self-employment through the establishment of small, medium, or micro enterprises (an approach adopted in Ghana and Namibia)
- Commercialization of the force account division or components thereof through adoption of a charter (an approach proposed in Ethiopia)
- Corporatization of the force account division or components thereof through incorporation of such a division or component as a state-owned company (an approach adopted in Namibia—see box 4.12).

Staff remuneration. To operate efficiently and effectively, a Road Authority needs a well-motivated, qualified, and experienced staff. To be able to attract and retain such staff, the authority must offer terms and conditions of employment that are at least comparable with the private sector in terms of level of remuneration. In addition, an appropriate reward system should encourage and recognize good performance and discourage poor performance.

Key findings

With the exception of the Road Authorities in South Africa, and to a lesser extent Namibia, in none of the other countries surveyed has the authority been able to pay market-based wages. In those countries, staff salaries were typically on the order of

60–80 percent of the equivalent private sector salaries. In Tanzania, the Road Authority staff had not received a salary increase in four years. Not surprisingly, staff vacancies tended to be highest in those countries in which the Road Authority salaries were lowest compared with those of the private sector.

Box 4.12 Dealing with excess staff

One of the bold and innovative features of the Namibian MWTC 2000 project was the way in which it dealt with the large number of in-house staff not needed by the new commercialized entity. The Rapid Adjustment Program (RAP) initiated to deal with the situation had the following objectives:

- To provide the in-house force account staff with the theoretical and practical skills they need to undertake road works in a commercialized environment through the establishment of a commercialized road contractor company.
- To provide employees, through a small and medium enterprises program, with the ambition and requisite skills they need to become small contractors in their own right.
- To build up a local contracting capacity to undertake outsourced work in an efficient and effective manner.
- The road contractor would enjoy guaranteed maintenance work from the Road Authority for the first three to five years of its existence, after which it would be expected to compete on the open market for maintenance or other works.

The specter of corruption is, unfortunately, one that cannot be ignored in situations in which low pay and uncompetitive remuneration prevail in an environment with poor business practices and a lack of external accountability for financial transactions. Unfortunately, it is a sad fact that, particularly in public sector agencies, some managers and staff are so poorly paid that they are almost forced to supplement their income in other ways, among which corruption is often an attractive option. Thus strategies should be put in place, particularly in Road Agencies but also in Road Authorities, to fight corruption, primarily through payment of competitive salaries but also by other means, such as financial and technical auditing of projects.

Staff training. The formation of a new Road Authority needs to be accompanied by adequate training. A new skills set is often required of staff, focusing more than before on management (project and contract), procurement, accounting (financial and

cost), legal issues, and public relations and less, if at all, on implementation of works. To optimize the use of resources allocated to training, it is important to ensure that such training is given to the right candidate and in the right skill area and, importantly, whether there is a return on investment. This requires that an appropriate training program be based on a training needs analysis, which should be linked to the identified training requirements and objectives.

Key findings

All countries surveyed recognize the importance of training in building and then sustaining the capacity for road subsector management. Typically, training programs consist of

- On-the-job training, including mentoring by experienced in-house staff
- Short courses, both national and regional
- Advanced master of science courses, preferably outside of Africa.

What is not certain from these training programs is how effective they are in enhancing the skills base of the organization and how appropriately these skills are rewarded as an incentive to improved performance. Generally, most countries lacked convincing evidence that mechanisms had been put in place to monitor the effectiveness and impact of the authority's overall training program in order to continuously improve it (see box 4.13).

Box 4.13 Measuring the impact of training

An advanced strategy and careful planning and implementation are required to ensure that training has an impact on institutional performance, which in turn translates into improved outcomes for the road sector. Measures that will ensure this does happen include:

- Select participants primarily on the basis of who has most to contribute to goals.
- For each participant, specify the agreed-on objectives for training, and after the training capture the results through a monitored implementation plan.
- Tie the timing of training to specific decision points or harmonize the planning and strategic cycles within the institutions to enhance the results.

Experience suggests that the impact of training can be improved by adopting a team approach to participation rather than an individual one.

Other dimensions that could enhance the impact of training, particularly with regard to the cross-country experience and the sharing of best practices, include involving regional associations, such as the Association of Southern African National Roads Agencies (ASANRA) and the African Road Maintenance Funds Association (ARMFA), that provide access to a community of practitioners representing different segments of the broad demand for capacity enhancement.

Source: Brushett, Sampson, and Waithaka 2008.

Asset management

Addressing policy issues in a rationale manner. The Road Authority's task of managing the road system in an optimal manner is a complex one that is likely to be influenced by a variety of factors—technical, economic, social, and political—all of which enter into the decision-making process at various levels of the organization. In such an environment, the Road Authority will have to routinely face important policy questions from stakeholders as well as increasing demands upon the monies allocated to it by the road fund. Typically, the pressing policy issues confronting Road Authorities to be addressed in a rationale manner include:

- What is the appropriate strategy for managing the road network? Should it be
 - Fixing the worst roads first?
 - A ranking system based on a priority index?
 - Maximizing pavement condition weighted by traffic volume?

- Minimizing the total transport costs on the network?
- For a given strategy, what is the required budget for maintaining the road network in optimal condition? What are the implications of not obtaining the required budget in terms of excess user costs to road users?
- What choices of rehabilitation and maintenance actions and budgets will most effectively bring pavement conditions toward an optimal level in the medium to long term (5–10 years)?
- What is the best five-year strategy for maintaining the road network within the given budget?

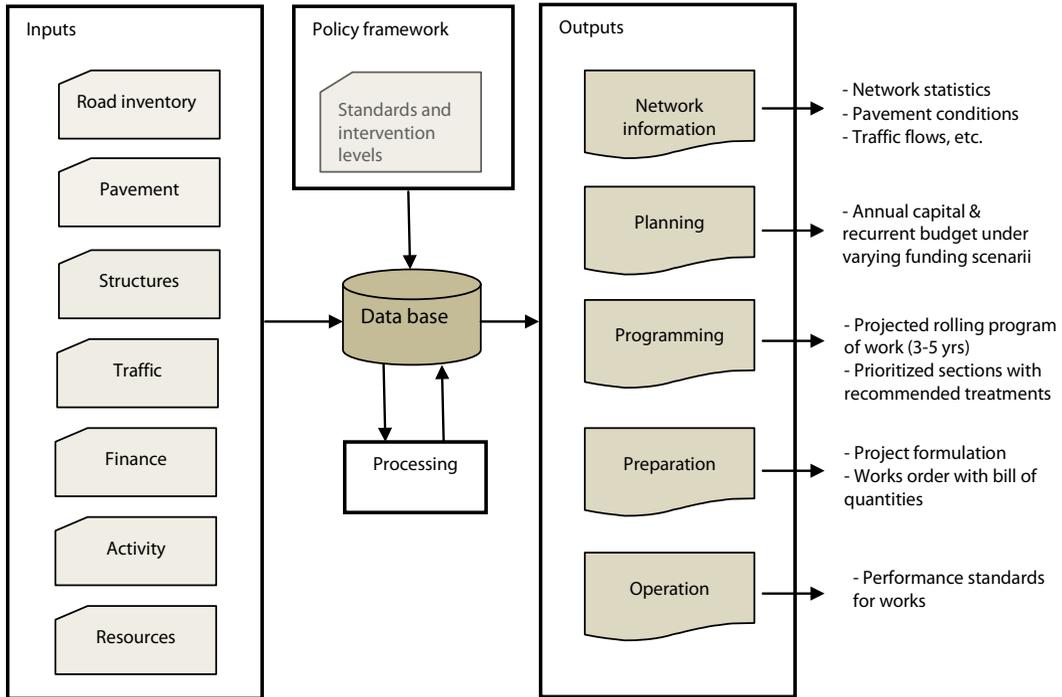
Need for an appropriate road asset management system. To address the types of issues just raised, the Road Authority would have to adopt an asset management approach using an appropriate road asset management system (RAMS). Asset management offers a systematic process for maintaining, upgrading, and operating physical assets efficiently and effectively. It combines engineering principles with sound business practices and economic theory. It also is a vital tool that can be used to crystallize both short- and long-term scenarios and to analyze their impacts on corporate objectives (Austroads, 2006).

The structure of the modern-day RAMS is characterized by a framework in which the system architecture is modular in design and integration is achieved through a common data bank. Figure 4.2 illustrates the main components of a RAMS, including typical data inputs and system outputs related to the basic management functions of strategic planning, programming, preparation, and operations. The modular, integrated approach to design of the RAMS offers the ability to satisfy all the management functions of a typical road authority within the same system framework. The result is that a variety of outputs can be obtained in a consistent and coherent manner from an integrated management framework utilizing input data from a single core database in an efficient, effective, and economic manner.

Data requirements and system calibration. To operate a RAMS, an organization must collect various types of road data, depending on the use to which they will be put at the managerial level of decision making. The collection of such data, which is usually the most expensive component of a RAMS, must be sustained on a regular basis with strict adherence to location reference points. Other considerations for data collection are whether to use in-house staff operating manual, semi-automated, or automated equipment, or to contract out this activity to external service providers. The RAMS also needs to be calibrated to local conditions in order to verify and, where necessary,

to improve the reliability of the performance predictions in terms of parameters such as crack initiation and progression, raveling initiation, and rut and roughness progression. Failure to undertake such calibration may well result in unreliable outputs and loss of confidence in using the RAMS.

Figure 4.2 Generic Structure of a Road Asset Management System



Source: Robinson, 1998.

Use of a RAMS. All road agencies surveyed have established some type of RAMS with varying levels of sophistication and capability. In most cases, these systems have been developed by consultants, often with the superficial involvement of agency staff. The development process has often entailed an initial round of data collection and a demonstration of the capabilities of the system by the consultants. However, thereafter, most countries (with the exception of a few such as South Africa, Namibia, and Botswana) have experienced difficulty in operating these systems in a reliable and sustainable manner and exploiting their full capability. The reasons given by agency staff are many and varied and include:

- Lack of dedicated in-house expertise to operate the RAMS on a sustained basis

- Lack of confidence in data accuracy because of questionable adherence to the location reference points
- Difficulty in calibrating the RAMS model (generally HDM-4) to produce realistic outputs.
- Failure to undertake data collection surveys on a regular basis and to update the database accurately and regularly³

In those countries in which the RAMS has been operated successfully, the outputs have undoubtedly proven to be very beneficial; it has demonstrated to stakeholders the implications of a shortfall of maintenance funding in terms of factors such as road conditions and road asset value. In countries where a RAMS has not been operated successfully, the Road Authorities admit that their ability to manage the road network in an efficient and effective manner has been severely compromised.

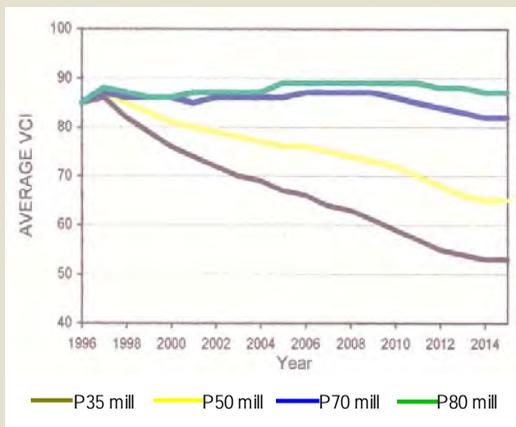
Key findings

Despite the acknowledged need for the use of a RAMS to enable Road Authorities to demonstrate sound and economical management of their road networks, very few have been able to do so in a sustainable manner. This finding suggests that a change in approach is required in the manner in which these systems are developed and operated. For example, consideration should be given to contracting out the data collection and operation of the RAMS to a competent consultant. The consultant would be responsible for collecting the data to the specified requirements and maintaining the system and ensuring backup in the event of technical difficulties. Such an approach would not eliminate the key role of the Road Authority in evaluating alternative asset management strategies and deciding which ones to adopt.

³ Maintaining the database is demanding, even in the most developed countries, as reported in a recent study in New Zealand, which has had such a system since the 1980s (Bennett 2001).

Box 4.14 Quantifying the consequences of sub-optimal funding of maintenance

The ability to quantify the consequences of suboptimal funding of maintenance in a manner that is easily understood by stakeholders facilitates the Road Authority’s challenge of making a strong case for increased funding. One of the outputs of the Botswana RAMS is illustrated in the graph. It indicates that a budget of about Pula 70–80 million (US\$10–11.5 million) is required to maintain the road network in optimal condition.



The consequences of not obtaining this level of funding will result in a significant deterioration of road conditions, as measured by the Visual Condition Index (VCI). The extent of which will depend of the shortfall in the required funding.

Financial management

Need for commercial accounts. Commercial accounts provide Road Authorities with a good record of what is happening to their “business.” In addition, they motivate the organization to make an effort to locate all their assets, value them, and record their value, thereby taking a major step toward full awareness of the overhead and administrative costs of operating and maintaining the road network. Such accounts are thus intimately related to managerial accountability —without proper accounts the Road Authority cannot be held fully accountable for its stewardship of the road network and road users cannot easily determine whether the Road Authority is providing value for the money in the use of scarce public funds.

Progression to commercial cost accounting. Standard, government-type accounts tend to focus almost exclusively on cash expenditures, which cannot provide a sound basis for making informed management decisions within a Road Authority. Instead, the authority should maintain commercial accounts through the use of an appropriate financial management system (FMS). Such a system should be able to present a clear picture of the Road Authority’s financial health and produce the financial data needed to plan expenditures, compare alternative strategies, monitor implementation, and account for the ways in which funds are used.

The progression from standard government-type accounting to commercial accounting can be pursued by a Road Authority in an incremental manner as follows:

1. Prepare an *income statement* and *statement of affairs* that matches revenues and expenditures

Income statement: the road agency's income and expenditures associated with operating and maintaining the road network.

Statement of affairs:

- fixed assets owned by road agency
- money owed to road agency (debtors)
- cash in hand
- money road agency owes to others (creditors).

2. Prepare a financial statement that accounts for the capital invested in roads and includes value of the authority's fixed assets, the erosion of capital, the current value of the road network and the overall erosion of capital as illustrated in box 4.15 (Heggie 1998).

Box 4.15 Example of prototype road asset statement

	<i>Dec 31, 1996</i>	<i>Dec 31, 1997</i>
Fixed assets		
Total book value at beginning of year	2,030.00	2,035.70
Adjustment for inflation	0.00	0.00
New works completed during year	5.70	3.90
Total book value at end of year	2,035.70	2,039.60
Erosion of capital		
Rehabilitation backlog at beginning of year	-670.00	-714.31
Rehabilitation completed during year	14.95	6.94
Shortfall in recurrent maintenance	-29.63	-25.69
Rehabilitation backlog at end of year	-714.31	-760.55
Rehabilitation backlog at end of year	-714.31	-760.55
Overall erosion of capital (percent)	35	37

The figures shown in the statement are in millions of US dollars.

Key findings

Those countries (Botswana and Cameroon) that still operate a government Road Agency do not carry out commercial cost accounting. In Ethiopia, attempts continue to commercialize the in-house force account operations using commercial accounting principles. By contrast, those countries that operate Road Authorities (Ghana, Tanzania, Namibia, and South Africa) have all introduced financial accounting systems able to produce the types of outputs indicated earlier. However, so far the outputs of the financial accounting systems have included a standard income statement, a balance sheet, and a source and application of funds statement. Thus as yet no country is producing the type of road asset statement illustrated in box 4.15.

Auditing of accounts. Once the principle of arm's length autonomous road financing and services agencies with a dedicated income source is accepted, critical issues relating to financial integrity arise. To this end, effective auditing of the authority's financial affairs becomes of paramount importance and serves the following objectives:

- To assess whether the accounting principles used by the Road Authority are appropriate, consistently applied, and adequately disclosed
- To strengthen managerial accountability and enhance transparency in the use of funds entrusted to the Road Authority
- To assess whether the funds disbursed to the Road Authority have been spent on the approved expenditure program
- To ensure that limitations in the ability of the Road Authority to absorb and spend funds are speedily revealed by ascertaining where the organization fails to perform in terms of its own network management plan.

Box 4.16 Legislating for the establishment of financial management systems

In Namibia, the procedures agreement between the Road Authority and the Road Fund Administration stipulates that the authority must operate a financial accounting system that complies with generally accepted accounting practices (GAAPs). In addition, the authority is required to operate a project costing and management system to record expenditures against outputs as well as physical progress and to compare and monitor expenditure and progress against budget and manage the administrative aspects of outputs. These systems allow the authority to track the cost of undertaking works in terms of resources used, the purpose for which they are used, and how well they serve that purpose. Such accounts provide the basic inputs needed to operate a maintenance management system (a component of a RAMS), with the former defining the amount of work required and the latter the cost of such work.

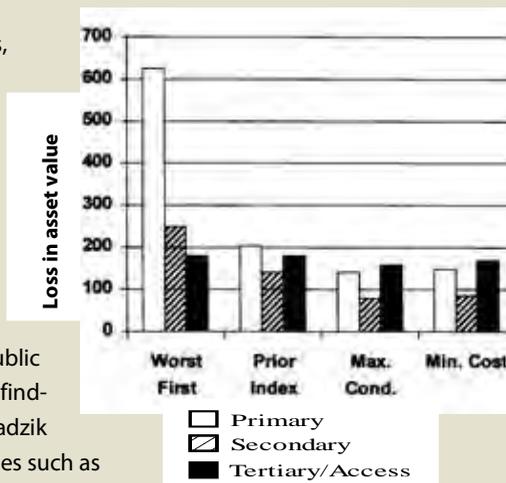
Key findings

In practice, the responsibility for initiating a financial audit is generally vested in the road fund. In most of the countries surveyed, such auditing is undertaken by the auditor general as one of the general functions of government. In a minority of countries (e.g., South Africa and Namibia), the authority's financial statements are audited by independent auditors. Such external auditing is promoted in the SADC MLPs, which vest the road fund board with the responsibility for appointing independent auditors.

Requirements versus allocations. The total funding required to maintain a core road network in optimum condition may be determined by a techno-economic model such as HDM-4. However, as indicated in chapter 3, most countries in Sub-Saharan Africa have experienced difficulty in operating these systems in a reliable and sustainable manner. As a result, the level of maintenance funding required is probably no better than an engineering guesstimate by most Road Authorities. From the countries surveyed, it is clear that maintenance is not fully funded and ranges from 60 to 70 percent for routine maintenance and 50 to 60 percent for periodic maintenance—figures that are supported by the Road Management and Financing Matrix.

Box 4.17 Implications of fixing the “worst road first”

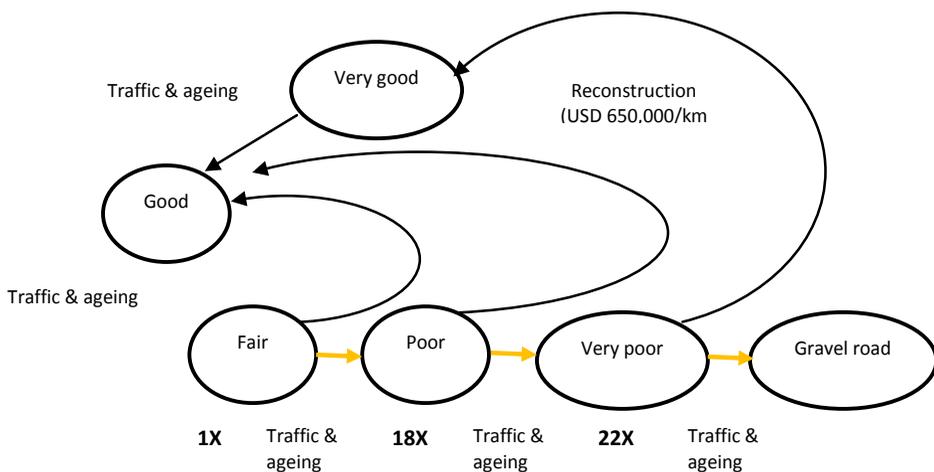
For political expedience or other reasons, some road agencies, as a matter of priority, utilize some or all of the available funds for maintaining or rehabilitating those roads in worst condition rather than those in maintainable condition. An analysis of the long-term consequences of this practice carried out by Gauteng Province in South Africa (Gautrans Department of Public Transport and Roads 1996) supports the findings of others (e.g., Rohde, Pinard, and Sadzik 1996) that, compared with other strategies such as *maximizing pavement condition weighted by traffic volume*, or *minimizing total transport costs on the network* (see chapter 3) the strategy of fixing the worst roads first results in the greatest deterioration in road conditions, the largest backlog of maintenance, and the greatest loss in asset value. The graph shows the loss in asset value for each maintenance policy.



Policy for utilization of available funds. One of the key principles of second-generation road funds is that road fund revenue is dedicated to maintaining roads that are in maintainable condition. Indeed, in some countries this principle is embedded in the legislation as well as in the performance agreement between the Road Authority and the road fund. However, it is apparent that in some countries in which government funding is simply insufficient to provide for pressing backlog maintenance and, at times for rehabilitation works, political sway sometimes dictates otherwise, and some of the road fund revenue is used either for dealing with the “worst roads first” (i.e., addressing the backlog of roads in very poor condition) or for dealing with rehabilitation (see box 4.17). As understandable as such a practice may be, in the long term it is counterproductive and results in suboptimal utilization of the funds available for maintenance.

Implications of a shortfall in maintenance funding. The implications of a shortfall in maintenance funding are obvious and catastrophic for most SSA countries—road conditions worsen, vehicle operating costs increase significantly and, as a result, road transport costs grow, all of which negatively affect economic growth. Ironically, the financial cost of the budget shortfall is amplified by a factor of about three in terms of the excess vehicle operating costs borne by road users. Moreover, as illustrated below, based on typical road costs the exponential impact on costs of maintenance neglect due to insufficient funding can be substantial—instead of incurring a cost of 1X for periodic maintenance, the cost can easily rise to 18X for rehabilitation and eventually 22X for reconstruction (SANRAL 2007).

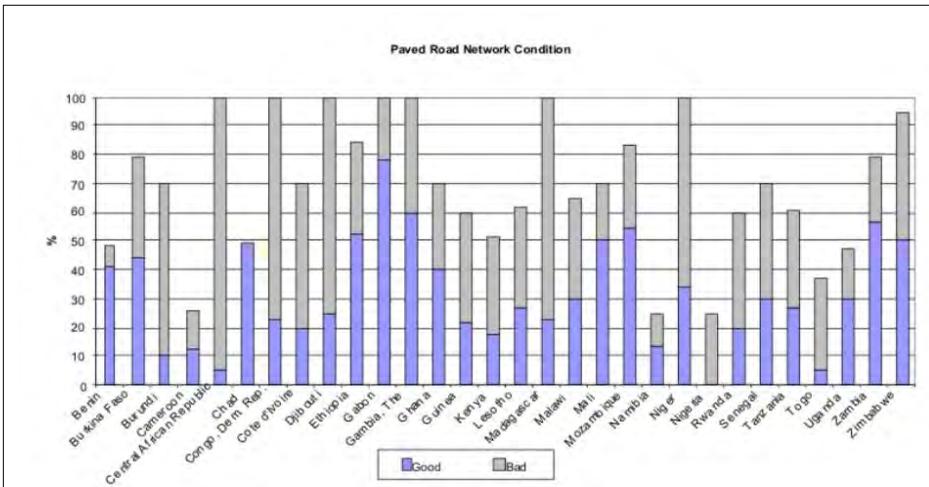
Figure 4.3 Consequences of delayed maintenance due to insufficient funding



Road conditions. Currently, no standard definitions have been adopted in SSA for reporting road conditions. Most countries use a qualitative Good/Fair/Poor or Good/Bad format (adopted by ARMFA) in which conditions are assessed subjectively. Despite the imprecise nature of such methods, an indication of road conditions in SSA may be obtained from the RMF Matrix of road conditions as shown in figure 4.4.

As indicated in figure 4.4, about half of the main network is in good condition, and a further third is in fair condition. By contrast, only about a quarter of the rural road network is in good condition, and a further quarter is in fair condition. Unfortunately, road condition is not reported in a consistent, quantitative manner, and very few countries provide such data by pavement type or classification—shortcomings that make meaningful country comparisons difficult.

Figure 4.4 Paved Road Network Condition in Selected SSA Countries

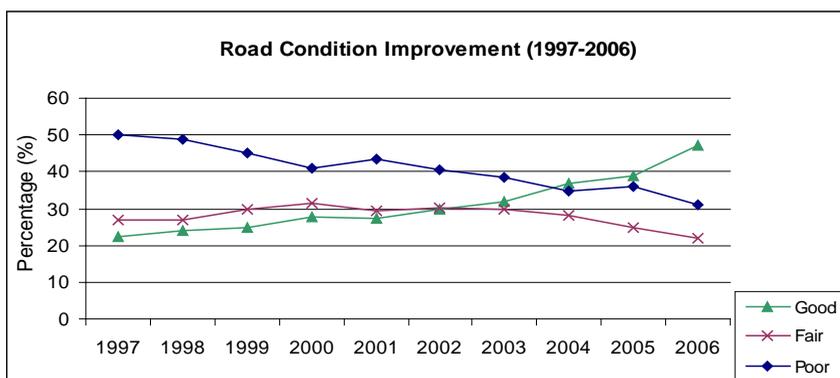


Source: RMF Matrix 2007.

Although there is a generally acknowledged shortfall in funding for road maintenance in most SSA countries, as reflected by the relatively small percentage of roads in good condition (average, 32 percent), all of the countries surveyed reported varying degrees of improvement in road conditions. Typical of such countries is Ethiopia (see figure 4.5). It reported that, based on roughness measurements, roads in good condition more than doubled between 1997 (22 percent) and 2006 (47 percent) (ERA Maintenance Action Plan Report 2007).

Closer examination of the improving road conditions reported by some of the countries surveyed reveals that during the reporting period significant reconstruction, rehabilitation, and upgrading were under way on the road network. If properly constructed, during the first five to six years of their life such roads would normally exhibit relatively low roughness levels and require some routine maintenance but very little if any periodic maintenance. Thus the reported improvement in road conditions may not stem solely from the increasing length of roads receiving maintenance attention. Instead, it may stem from the surge of recent road construction, rehabilitation, or upgrading, which, for reporting purposes, should be discounted when presenting road condition statistics.

Figure 4.5 Road conditions in Ethiopia, 1997–2006



Source: Ethiopian Roads Authority

Key findings

The following are the key findings about the funding of road maintenance in the countries surveyed:

- Funding for routine maintenance and, to a lesser extent, for periodic maintenance is increasing, but it is still far short of that required to ensure the sustainability of most countries’ networks. However, most countries, largely through their road funds, are allocating growing amounts of road user revenue to maintenance.
- Some countries are tending to spend some of that part of the road fund earmarked for routine and periodic maintenance to address the pressing backlog of maintenance and rehabilitation. In the long term, this strategy is counterproductive and not conducive to improving road network conditions. Where

necessary, the legislation governing the use of road funds should be amended to disallow expenditures on activities other than road maintenance.

- Road conditions are improving in all the countries surveyed, but this improvement may be attributable in part to significant interventions related to new construction, upgrading, and rehabilitation rather than to the increasing kilometrage of roads receiving maintenance attention. As a result, the impact of the road funds on road conditions is more difficult to assess.

Contracting out, procurement and tender procedures

Contracting out. As of the end of the 1990s, a sizable proportion of the road construction and maintenance work in the Southern African region, and probably elsewhere in SSA, was still being carried out through government force account units. However, 10 years later, in response to the demand to improve cost efficiency in the delivery of road services, most Road Authorities and some of the Road Agencies surveyed have resorted to contracting out to private consultants and contractors virtually all construction work and increasingly most maintenance work.

Notwithstanding the growing tendency to contract out road works, in some countries the economic conditions in rural areas are not conducive to private sector involvement, even in undertaking maintenance works, and until such conditions improve, the public service obligations can only be fulfilled by force account. In Ethiopia, although there are moves afoot to outsource maintenance work, a significant amount is still carried out by force account units, largely because a fledgling contracting industry is still emerging from a political past in which the role of the private sector was suppressed.

The benefits of shifting road works from force account to private contracting are generally realized only under a certain set of conditions (World Bank 2006):

- The road contracting industry must be efficient and highly competitive.
- The process of selecting contractors to carry out road construction and maintenance work must be a highly transparent one that, on the one hand, elicits competitive bids from contractors and, on the other, is deemed by the contracting industry to be “fair.”
- The government road agencies must negotiate and manage contracts in an effective manner, which is advantageous to all parties, including the general public.

Where contracting out has occurred, it is apparent that the extent to which efficiency gains have been realized by the road agencies has depended on factors that are either people-related or exogenous to the organization: the type of contract adopted, the length of the procurement and tender process, and contractor performance.

All countries surveyed recognize the shortcomings of the traditional quantity and unit-based, short-term (typically annual) maintenance contract in which the contractor maintains an existing road based on input indicators such as materials, equipment, and labor. There is little incentive in such a contract for the contractor to produce quality work because he is paid on the basis of inputs to the work rather than specified, performance-related outputs. In an attempt to improve service delivery, some Road Authorities have moved or are considering a move to alternative forms of maintenance contracting, including performance-based and area-wide maintenance contracts (see box 4.18).

4.18 Performance-based contracts versus traditional contracts

Traditional road maintenance is based on the amount of work to be done and the amount to be paid for various work items. By contrast, long-term performance-based road management and maintenance contracts define the minimum conditions of road assets that must be maintained by the contractor. They also define other services such as the collection and management of asset inventory data, emergency response and replies to public requests, complaints, and feedback.

Payment is based on how well the contractor manages to comply with the defined performance standards and not on the amount of work and number of services carried out. Performance-based contracts define the final product, and it is up to the contractor to comply; work selection design and delivery are his responsibility. The same applies to the choice of technology and pursuit of innovative materials, processes and management.

Long-term, performance-based contracts allocate higher risks to the contractor than the traditional contracting arrangements. At the same time, they open up opportunities to increase profit margins—that is, improved efficiencies and effectiveness of design, process, technology, or management can reduce the cost of attaining the specified performance standards.

In Africa, performance-based contract elements were first introduced in road concessions in South Africa in 1995. Zambia and Chad introduced them in 2001 with assistance from the World Bank. In 2008, six countries had performance contracts (Cameroon, Cape Verde, Chad, Tanzania, South Africa, and Zambia), and 10 other countries were preparing such contracts, and two others were considering doing so.

Box 4.19 Examples of performance-based contracts

South Africa. Approximately 7,200 kilometers of national roads are being maintained under hybrid-type performance contracts for paved and unpaved roads. The contracts, which were first adopted in 1998, are for five years (three years with a two-year extension) and apply to about 200 kilometers each.

Tanzania. Three out of four performance contracts for a total of 1,090 kilometers of unpaved roads have been let. The five-year contracts include initial rehabilitation and periodic and routine maintenance.

Zambia. About 6,000 kilometers or 16 percent of trunk and urban roads are maintained under routine maintenance performance contracts. The duration of the contracts is one year. In addition, 3,000 kilometers of unpaved district roads are maintained under performance contracts that include initial upgrading and improvements. Ten contracts have been let for four years since 2006 with financing from the European Union and the Zambia road fund. With the assistance of the World Bank, an additional 1,000 kilometers of unpaved district and feeder roads in various districts will be rehabilitated and improved using output and performance-based road contracts.

Key findings

Because performance contracts have been introduced only relatively recently in Africa, very little experience has been gathered. Nevertheless, based on the difficulties and successes encountered in the implementation process so far, certain trends and conclusions are apparent (Roughton International 2007):

- Because of the risk factor, the cost per kilometer of performance-based contracts may sometimes not be lower than for traditional quantity-based contracts. As a result, performance-based contracts might not result in immediate cost savings. However, the asset value of the road will steadily increase over time, which is not true for traditional contracts. Therefore, overall it is more economic to use long-term, performance-based contracts than quantity-based contracts.

- The extremely limited (or in many cases nonexistent) experience of the local contracting and consulting industry with performance contracts means that gradual implementation, combined with training and coaching programs, are required to improve the capacities of local contractors and consultants.
- A firm commitment of the ministry in charge of roads and of the road administration is a precondition to implementing performance contracts successfully.
- Pilot schemes for contracting out road maintenance based on performance indicators should be carefully planned and implemented.
- The readily available knowledge and experiences of performance contracts should be used to avoid mistakes and to accelerate the implementation process.
- For medium- and long-term performance contracts, financing should be secured on a pluriannual basis.
- When circumstances permit, performance contracts should be long enough to give the contractor an incentive to introduce new technologies.
- Proper performance monitoring and strict application of penalties for noncompliance have proven to be critical to success as well.
- Proper control of overloading of trucks is important for the implementation of long-term performance contracts.
- Because of the risk factor, the cost per kilometer may sometimes not be lower than that for the traditional quantity-based contracts, and performance-based contracts may not result in immediate cost savings. However, the asset value of the road will steadily increase over time, which is not the case for traditional contracts. Therefore, overall it is generally more economic to use long-term, performance-based contracts.
- The introduction of performance contracts is likely to take longer time in Africa than in other continents because of the more difficult environment (lack of capacity) in many African countries.

Procurement and tender procedures. This feature of road agency performance is directly related to the capacity of the agency and the prevailing external legal institutional framework. In those countries in which government Road Agencies exist (Cameroon and Botswana), long procurement and tender process were highlighted as a major source of delays in project execution. For example, in Cameroon the length of time from the letting of tenders to award of a contract is typically about 12 weeks. This lengthy period is largely due to the centralized approach to procuring goods and services through a central tender board (CTB) or equivalent within the parent ministry. In such an arrangement, the ministry or the CTB (or both) exercises controls and ap-

provals over the procurement and tender operations, which are seldom completed on a first-time basis and plagued with back and forth loops.

In those countries surveyed in which the more autonomous Road Authorities operate in a commercialized manner (Ghana, Tanzania, Namibia, South Africa, and to a lesser extent Ethiopia), the organizations are empowered to undertake the procurement and tender process independently, and there is generally no need to seek the approval of an external, centralized tender committee, provided that the process is conducted within the established guidelines and overseen by the agency's oversight board. As a result, procurement and tender procedures are generally completed in a much shorter period than in countries where centralized procedures have to be followed.

Key findings

The efficiency of the procurement and tender process is closely related to the prevailing legal institutional arrangements as well as to organizational capacity. More autonomous Road Authorities are generally able to complete the procurement process in a much shorter period than the more legally and institutionally constrained Road Agencies, where time-consuming, centralized procedures have to be followed involving external parties, which inevitably prolongs the process. However, a more rigorous analysis of procurement times based on a representative sample of projects, as well as a more detailed analysis of the national procurement system, both of which were outside the scope of the study, is warranted. Such an exercise would be able to identify more clearly whether the obstacles to procurement efficiency stem largely from the Road Agency's weak capacity or from the cumbersome legal institutional framework.

Payment of contractors. Contractually, contractors should be paid in a timely fashion, typically within 30–45 days of approval of their progress certificate. Most road funds pay contractors either directly (e.g., South Africa and Namibia) or through a revolving fund to implementing agencies, and they do not pay contractors and consultants directly for maintenance works (e.g., Ghana and Tanzania). The latter practice has tended to result in extended delays in paying contractors and has resulted in the Ghana road fund reverting to paying contractors directly. However, some Road Authority stakeholders are concerned that this practice diffuses the accountability of the Road Authority and should be discouraged.

Contractor performance. In most countries surveyed, the absorptive capacity of the local contracting industry coupled with its indifferent performance in executing works have been cited by road agencies as a constraint on the ability of a road agency to contract out its maintenance works and to obtain value for money, particularly in

local authorities. The main reasons typically attributed to local contractors for this situation invariably include:

- Inadequate skills in procurement planning and contract management
- Poor financial management
- Inadequate deployment of plant and equipment
- Poor planning and scheduling.

In response to road agency claims of indifferent performance, contractors contend that typically the following factors inhibit their performance:

- Cash flow problems because of limited access to finance and credit and the unfavorable conditions associated with them
- A reluctance to invest in plant and equipment for short-term (very often annual) contracts and uncertainty about the continuity of such work
- Complicated tender documents with unachievable conditions for contractors
- Poor design and specifications that contribute to delays on-site and cost increases
- An inadequate number of plant and equipment hire/leasing companies
- Uneconomical packaging of works that are too small and therefore are not attractive to contractors, especially in remote areas
- The low unit rates for maintenance works offered by some road agencies
- Excessive delays in the payment of invoices.

That contractor performance has been indifferent in a number of countries is not in dispute. Although the road agency's perspective is not without merit, it also appears that there are mitigating reasons for the indifferent performances of some contractors. This has been recognized in a number of countries, and serious efforts are being made to address these perennial problems.

Need for a holistic approach. Adhering to the overriding objective of providing services to their customers and the general public in the most efficient and effective manner, Road Authorities must be able to demonstrate that these stakeholders are getting value for their money. Since these Road Authorities rely on the professional services of consultants and contractors at various stages of the road project cycle, it is essential to ensure that these services are carried out in an efficient and effective manner and to the highest possible standards. Independent technical auditing of both construction/upgrading/rehabilitation projects funded by the government and maintenance

Box 4.20 Measures for improving the local contracting industry

The following measures have been proposed by both public and private sector stakeholders for improving the development of the local contracting industry. Some of these measures have been or are being implemented in individual countries:

Infrastructure policy. Developing an appropriate infrastructure policy that states in clear terms the government's commitment to supporting and facilitating the involvement of small and medium-size contractors in the construction industry—for example, through the establishment of a contracting industry trust fund.

Financing. Establishing a national construction industry council that would have a technical understanding of the industry and would work very closely with the banks in facilitating access to finance and credit for small contractors.

Plant and equipment financing. Establishing a financing scheme whereby the government sells affordable plants and equipment to small and medium-size contractors and then guarantees them a number of years of minimum contracts in order to enable them to repay the loans (adopted in Ghana).

Plant and equipment leasing. Improving the availability of plant and equipment leasing opportunities for small and medium-size contractors, initially by commercializing plant pools and ultimately by promoting the development of a private sector-driven equipment leasing industry.

Contract breakdown. Breaking down contracts to smaller manageable sizes to allow small contractors to take part, including simplification of tender and contract documentation procedures.

Appropriate contracts. Using multiyear rather than annual contracts for maintenance works to extend workload certainty and encourage contractors to invest in plants and equipment.

Training and certification. Developing the appropriate training programs and opportunities, including on-the-job training, for developing the skills of the contractors in areas such as financial management, technical know-how and accountability, responsibility, integrity, and professionalism. These programs would be followed by certification and monitoring of the contractor's performance.

projects funded by the road fund can provide an effective means of addressing this important issue.

Prevailing practice. Road agencies in the majority of the countries surveyed carry out some form of independent technical audit for maintenance projects paid for by monies from the road fund. These audits are usually initiated by the road fund, often on

a sample basis. They focus on a range of technical and financial issues aimed at ensuring that road fund monies have been used for the purpose intended and that road users are receiving value for money in terms of the quality of the road works produced by the contractors.

Road agencies in few of the countries surveyed undertake technical auditing of construction/rehabilitation/upgrading projects. Where such audits are carried out, they tend to focus on the construction stage of the project, typically with the aim of ensuring compliance with the standards and specifications stipulated in the contract documents. In the absence of such audits, it is not easy to assess the efficiency and effectiveness of a road agency's performance in undertaking such works.

Box 4.21 Fundamentals of technical auditing

Definition

A technical audit is a formal, systematic procedure for undertaking an independent, objective assessment of a project to determine the extent to which it has complied with the various prescribed procedures, standards, and specifications set down in the project documents.

Objective

The primary objective of a technical audit is to ensure that a road is planned, designed, and constructed to the prescribed specifications and that the consultants and contractors perform to an acceptable standard and are paid as per their contract's terms of reference or conditions of contract.

Scope

A technical audit may be undertaken at any or all stages of the project cycle: (1) identification; (2) planning and appraisal; (3) preparation; (4) tendering and contract award; (5) implementation; and (6) evaluation.

Technical auditing versus supervision/quality control

A clear distinction should be drawn between the terms *technical auditing* and *supervision/quality control* because they are not synonymous. The difference is both legal, in relation to the roles and responsibilities of the key parties to the contract, and technical, in terms of the roles and responsibilities of the technical audit team and the degree of detail applied when auditing the project. It is therefore critically important that the technical audit process be kept well apart from the supervision process prescribed in the conditions of contract.

Box 4.22 Auditing of maintenance projects – An example of good practice

By virtue of the act governing its operations, the Road Fund Board (RFB) in Tanzania has a mandate to ensure that money deposited in the fund is not used for any purposes other than those provided for in the Act. To this end, the RFB appoints a technical auditor at the end of every financial year to audit the performance of the Road Authority (TANROADS) for a sample of projects funded by the RFB. The main objectives of the audit are (1) to provide independent assurance to the RFB, the government, and other stakeholders that resources earmarked for road maintenance activities from the road fund are judiciously applied for the intended purposes; and (2) to verify that the use of such resources is efficient, transparent, and in accordance with current procedures, standards, and sound professional practice. To achieve these objectives, the technical auditor is required to undertake the following activities:

- Review various project-related documents to provide insight into the extent of maintenance activities and the associated expenditures for all the works executed by each implementing agency.
- Check and verify that all executed works have been carried out in accordance with the agreement and are eligible for road fund resources.
- Verify that policy issues, performance and quality targets, and the submission of reports have been adequately addressed.
- Review the status of the projects based on fourth-quarter reports and performance agreements.
- Track the trend of performance constraints and bottlenecks mentioned in the progress reports, comments on their validity, and recommended solutions for solving them.
- Determine whether the audited projects have provided value for the money.

Key findings

The following are the key findings on the auditing of road projects in the surveyed countries:

- The auditing of maintenance projects in most countries has, in most cases, proven valuable in revealing shortcomings in various aspects of the financial management and the quality of the completed works as a basis for taking corrective action, where appropriate.
- Some road funds complain that the results of the maintenance audit are only partly taken into account and that the same problems reappear in future projects.

- Most road agencies do not undertake auditing of construction, rehabilitation or upgrading projects, and those that do tend to focus primarily on the construction phase of the project cycle. More comprehensive auditing of such projects is needed as a basis for assessing the efficiency and effectiveness of road agencies and for taking corrective action where appropriate.

5. Findings, conclusions and recommendations

Chapter 4 reviewed progress on the commercialization of selected road agencies in Sub-Saharan Africa. From that review, a number of key issues, constraints, and examples of good practice were identified, allowing some basic guidelines for increasing managerial effectiveness and efficiency to be put forward here. This chapter thus summarizes the main findings and conclusions resulting from the review and makes recommendations for consolidating best practice and securing sustainable improvements in road sector performance.

Building Block 1: Responsibility

Institutional change

Main findings & conclusions

- Government acceptance of the commercialization concept and genuine commitment to a reform process are preconditions for institutional change in a sustainable manner.
- Most of the countries surveyed accept the principle of commercialization of road services as fundamental to improving the efficiency and effectiveness of road agencies. However, a minority of countries have yet to be convinced about the efficacy of such an approach and still retain the traditional public sector Road Agency operating within a government environment.
- Some of the countries surveyed have implemented all the regulatory essentials of commercialization envisaged in the RMI concept. However, the manner of implementation of some of the regulations has fallen short of the ideal—for example, the composition of the road boards.
- Most countries concede that the limited institutional capacity at all levels of government to absorb technical reforms and to manage the transition process is a constraining factor in the reform process, which should be undertaken in an evolutionary rather than revolutionary manner.

- Sustainable improvements to road management practices are more likely to be successful if the reform process focuses first on addressing external factors (political and governmental commitment to change), followed by institutional factors (policy, institutional, and legislation issues), and, only afterward, by technical issues (e.g., contracts management and asset management).

Recommendations

- Where a reform process is contemplated, it should be nationally rather than externally driven and should be undertaken in a holistic and integrated manner with a clear vision of the objectives of the reform program and the strategies for its implementation.
- To avoid overwhelming management capacity and threatening the positive impacts that reforms are intended to achieve, institutional reform should be undertaken by adopting a gradualist rather than “once-off” approach.
- Those implementing a reform process should focus first on external factors, then on institutional factors, and finally on technical issues.

Institutional framework

Main findings & conclusions

- In the majority of countries surveyed, the Road Authorities have been established by a new act of Parliament (a road act) that adequately captures the various regulatory essentials for commercializing the road subsector in the manner envisaged by the RMI.
- In the countries where the existing legislation has been amended to allow the establishment of a Road Authority, some of the regulatory essentials are not in place, thereby hampering the efficiency and effectiveness of the authority’s operations.

Recommendations

- Where necessary, stakeholders and civil society should lobby for support for reviewing the legislation under which the Road Authority and road fund have been established, seeking to have new acts of Parliament passed in which a greater degree of autonomy is vested in these agencies.

Institutional management

Main findings and conclusions

- The assignment of responsibilities for various aspects of road management has, to varying extents, been split among more than one road agency, among various departments of government, and, generally, among more than one ministry responsible for roads.
- There are also a number of aspects of road management, related particularly to road traffic, in which road agencies have a vested interest but no direct responsibility. For example, overloaded vehicles damage road pavements and increase maintenance costs, but often the road agency is not responsible for setting the load limits, enforcing the regulations, or issuing the penalties.

Recommendations

- Restructuring should aim at improving efficiency and effectiveness by establishing a coherent organizational structure at both the ministerial and road subsector levels. The organizational structure should be designed to overcome the core problems of lack of clearly defined responsibilities for transport ministries and road agencies in the country.

Building Block 2: Ownership

Oversight management

Main findings & conclusions

- In all countries surveyed, private sector representatives on the road board are in the minority, and the board chair is generally a government appointee. As a result, private sector user interests are not well represented, and the scope for advocating constituent interests and winning support for sustainable funding is limited.
- Because it is often difficult to find mandated, qualified representatives of the private sector, at times the government has imposed civil servants on the board.
- Road board members are not always knowledgeable about international developments and best practice in road management and, as a result, are unable to carry out their functions effectively.

- To protect their vested interests, private sector board members may influence board decisions in their favor. This factor has been viewed with concern in some countries and has led to suggestions that the appropriate measures be put in place to mitigate against such potential conflicts of interest.

Recommendations

- The legislation governing the appointment of the road board chair and members should ensure majority private sector representation and an independently chosen chair, and it should require that board members from both the general public and specific user organizations be nominated, rather than appointed, to the board.
- There should be clear terms of reference for board members that, among other things, require them to
 - Adhere strictly to a code of ethics
 - Develop an outreach program to make the general public aware of the contents of the road program and the need for public support for funding
 - Be guided by a performance agreement between the board and the Road Authority and the board and central government
 - Be aware of the grounds on which board membership may be terminated and the procedures that would be followed.
- The expertise required to be a board member should be prescribed, and, where necessary, board members should be required to undergo orientation courses in road management prior to their appointment.

Building Block 4: Management

Autonomy

Main findings & conclusions

- In many countries, notwithstanding the existence of a road act that delineates the responsibilities of the parent ministry from those of the Road Authority, the authority still tends to suffer from a lack of genuine autonomy in making corporate decisions and carrying out its mandated functions without ministerial involvement.

Recommendations

- Where necessary, stakeholders and civil society should lobby for support for reviewing the legislation under which the Road Authority and road fund have been established, seeking to have new acts of Parliament passed in which a greater degree of autonomy is vested in these agencies. The legislation should also include clear and effective controls to avoid deviations from the technical, financial, and operational autonomy of the organization.

Management structure and operating procedures*Main findings & conclusions*

- In only South Africa, is there a clear and distinct separation of the “client” and “service provider” functions. In all the other countries surveyed, the road agency fulfills the client function as well as, to varying extents, aspects of the supplier function. This undesirable arrangement results in a potential conflict of interest that weakens financial discipline and compromises efforts to control costs and maintain quality.
- Most countries surveyed undertake varying amounts of nonstrategic, noncore functions that could be commercialized by outsourcing to service providers.
- Most countries surveyed have adopted the traditional multilayered silo type of organizational structure, which, when compared with the flat matrix organizational design structure centered on a cluster system (adopted by South Africa), may not be the most conducive to attaining efficient and effective operations (see box 4.7).
- In all the countries surveyed, some form of road network management plan is produced, but almost invariably problems arise in most countries with the implementation of the plan, in large part because of the perceived noncompliance of the Road Authority with aspects of the legislation or with aspects of the performance agreements with other stakeholder entities (e.g., the road fund).
- Relatively little attention is paid to research and technology transfer in most of the countries surveyed. Moreover, there has generally been little uptake and dissemination in many countries of the results of previous research, and there has been a tendency to adopt standards and practices that have been imported from abroad but are sometimes inappropriate to local needs.
- Consultation with road users has been achieved to varying degrees in all those countries in which Road Boards exist, but it has been very limited where there are no such boards. However, most countries “report” to the public through the publication of annual reports and business plans.

- In only one of the countries surveyed, South Africa, are comprehensive performance measures undertaken and related performance indicators reported by the Road Authority in its annual report in the form of corporate performance information. Road Authorities in all the other countries surveyed do compile various types of road statistics, and yet, although informative, they do not serve the important objective of performance measurement.

Recommendations

- Those countries in which the client and service provider functions are not separated should endeavor to do so in order to improve their efficiency and effectiveness by addressing the cost and quality issues often associated with in-house implementation of works and lack of competition.
- Road Authorities should divest themselves of nonstrategic, noncore functions that should be commercialized by outsourcing to private sector service providers.
- Road Authorities should consider “de-layering” their organizational structure by adopting a flat matrix organizational design that could be centered on a cluster system where the regional arms of the authority operate.
- Road Authorities should put in place the appropriate procedures and controls for improving service delivery by ensuring that the implementation of their road network management plans are governed by mutually agreed-on performance agreements between the main stakeholder organizations.
- Road Authorities should consider undertaking well-targeted research work and ensuring a greater uptake of the results of previous research work carried out in the SSA region with a view toward improving the efficiency of road provision.
- Road Authorities should consider a wider range of measures for raising public awareness of developments in the road subsector, including publicity campaigns, roadside information bill boards, and complaints hotlines.
- Road Authorities should establish an appropriate framework of regionally agreed-on performance measures and indicators to allow interregional comparisons of Road Authority performance to be assessed on a transparent and consistent basis.

Human resources

Main findings & conclusions

- The number of staff responsible for managing 100 kilometers of roads varies by a factor of more than 20 in the countries surveyed—a substantial difference that re-

flects in large measure the extent to which the road agencies contract out their construction and maintenance works to the private sector. The more commercialized agencies are able to manage their networks adequately with a staff to network length ratio of less than five.

- Restructuring of the traditional Road Agencies invariably requires substantial downsizing of mostly the force account staff. From a political point of view, this downsizing is often problematic. However, various options are available for achieving it, which, if appropriately handled, can produce a successful outcome.
- Most Road Authorities are still not able to pay market-based wages, and staff salaries are typically on the order of 60–80 percent of market-based salaries. Not surprisingly, many authorities are not able to attract and retain the best professionals to work in their organizations, and vacancy rates tend to be highest in those organizations in which salaries are lowest compared with those of the private sector.
- All Road Authorities recognize the importance of training, which typically takes the form of on-the-job training; national, regional, and international short courses; and advanced degree courses. However, there is generally little evidence to indicate that mechanisms have been put in place to monitor the effectiveness and impact of the training programs in order to continuously improve them.

Recommendations

- To improve their efficiency in terms of staff to network length ratios, Road Authorities should endeavor to commercialize their operations as much as possible by outsourcing all nonstrategic activities to private sector service providers, thereby reducing their staffing requirements.
- Any measures adopted for dealing with excess staff following institutional restructuring should ensure that alternative employment opportunities are available for such staff. The options for achieving this objective include divesting themselves of the force account units as functioning entities and supporting them with guaranteed work for a certain period of time until they are able to compete in the open market for future work.
- Road boards should endeavor to offer performance-based packages to Road Authority staff that are in line with the private sector and commensurate with the nature of the functions carried out and the economic value of the asset managed, which typically is much larger than that of other transport modes.
- Staff should be trained in a targeted fashion in the appropriate skills areas on the basis of a training program developed from a training needs analysis. The analysis

should be linked to the identified training requirements and objectives. Consideration should be given to cross-country experience and the sharing of good practices, including with regional associations such as the Association of Southern African National Roads Agencies (ASANRA) that provide access to a community of practitioners representing segments of the broad demand for capacity enhancement.

Asset management

Main findings & conclusions

- Most of the road agencies surveyed have established some type of road asset management system (RAMS) with varying levels of sophistication and capability. However, for various reasons, including problems with local calibration of the models, most countries have experienced difficulty in operating these systems in a reliable and sustainable manner. As a result, the agencies are unable to develop strategies for managing the road network in an optimal manner.

Recommendations

- A change in approach is required in the manner in which a RAMS is developed and operated. Consideration should be given to contracting out the data collection and operation of the RAMS to competent local consultants, where available, or to international consultants, if necessary, who also would be responsible for providing technical backup. In such a situation, the Road Authority would retain strategic responsibility for directing the evaluation of alternative strategies and developing programs for maintaining the road network in an optimal manner.

Financial management

Main findings & conclusions

- All Road Authorities have established some type of financial management system and produce commercial accounts that include at least a standard income statement, a balance sheet, and sometimes a sources and application of funds statement. More comprehensive road asset statements are not yet produced by any authorities. In countries where Road Agencies exist within a government environment, the standard accounts focus almost exclusively on cash expenditures.

- The responsibility for initiating a financial audit is generally vested in the road fund. In most countries surveyed, such auditing is undertaken by the auditor general as one of the general functions of government. In a minority of countries, the authority's financial statements are audited by independent auditors.

Recommendations

- Road Authorities should aim to ultimately produce a road asset statement that accounts for the capital invested in roads, the impact of this new investment, and the shortfalls in regular road maintenance. Such a statement provides information on the current value of the road network and the erosion of capital as a percentage of current book values.
- Like any autonomous organization, Road Authorities should strive to have their accounts audited by an independent external auditor rather than by the government's auditor general.

Funding of road maintenance

Main findings & conclusions

- Funding for routine maintenance (typically 60–70 percent) and, to a lesser extent, for periodic maintenance (typically 50–60 percent) is increasing, but it is still far short of the requirement to ensure the sustainability of most countries' networks. Thus the sourcing of additional funds for maintenance remains one of the biggest challenges faced by all Road Authorities, and programs will have to be developed to address this challenge.
- Some countries tend to spend some of that part of the road fund earmarked for routine and periodic maintenance to address pressing backlog maintenance and rehabilitation. In the long term, this strategy is counterproductive and results in suboptimal utilization of the funds available for maintenance.
- Road conditions are reportedly improving in all the countries surveyed, but they are relatively poor; well below 50 percent of roads are in good condition. Moreover, the improvements reported may be attributable in part to the significant interventions related to new construction, upgrading, and rehabilitation rather than to the increasing kilometrage of roads receiving maintenance attention. Thus the true impact of the road funds on road conditions is difficult to access.

Recommendations

- Road Authorities should proactively highlight for all stakeholders the significant adverse economic consequences of inadequate funding for road maintenance and strongly lobby for support for increasing road user charges in order to provide a net benefit to the economy in terms of reduced transport costs. In doing so, a RAMS should be used to produce simplified but powerful graphical outputs to demonstrate the consequences of inadequate funding for maintenance.
- Where necessary, the legislation governing the use of road funds should be amended to disallow expenditures on activities other than road maintenance to avoid the counterproductive strategy of fixing the worst roads first. Moreover, mechanisms should be put in place for adjusting the road user charges in line with inflation, exchange rate depreciation, and network needs.
- Since the funds available for road maintenance are unlikely to match the requirements, road agencies should vigorously pursue asset preservation or “prevention first” strategies in seeking to preserve the existing assets before new assets are created.

Contracting out, procurement and tender procedures

Main findings & conclusions

- Most of the road agencies surveyed have moved away from force account operations and are contracting out to private consultants and contractors virtually all design and construction work and increasingly most maintenance. However, although the outsourcing strategy has overall been beneficial to most Road Authorities, this has not been the case with Road Agencies, where the actual gains have been diminished by slow procurement and tender procedures.
- Most agencies employ the traditional quantity and unit-based, short-term (typically annual) maintenance contracts. However, some performance-based maintenance contracts have been introduced relatively recently in a few countries in which the long-term potential benefits have yet to be confirmed.
- The efficiency of the procurement and tender process has been found to be closely related to the prevailing legal institutional arrangements and organizational capacity. The more autonomous Road Authorities are generally able to complete this process in a much shorter period than the more constrained Road Agencies, where

time-consuming, centralized procedures have to be followed involving external parties, which inevitably prolong the process.

- The perceived indifferent performance of local contractors is viewed by many road agencies as source of concern. However, there are often mitigating reasons for this indifference, and they have been recognized in most countries in which serious efforts are being made to improve the local contracting industry.

Recommendations

- All road agencies should divest themselves of most of their force account operations and strive to outsource all service provider functions such as design, construction, and maintenance works.
- All road agencies should gradually move away from employing the traditional quantity and unit-based, short-term (typically annual) maintenance contracts in favor of longer-term, output-based maintenance contracts.
- A more rigorous analysis of procurement times based on a representative sample of projects as well as a more detailed analysis of the national procurement system should be undertaken in order to identify more clearly whether the obstacles to procurement efficiency are stemming largely from the Road Agency's weak capacity or to the cumbersome legal institutional framework. Thereafter, where necessary, the institutional framework should be changed to empower the agency to undertake the procurement and tender processes independently within a conducive procurement framework that complies with international standards and best practice.
- Road agencies and other stakeholders such as national construction industry councils should be encouraged to promote measures for improving local contracting capacity, including plant and equipment leasing or financing, use of multiyear rather than single-year contracts, and appropriate packaging of contracts into manageable sizes.

Controlling the quality of road works

Main findings and conclusions

- Most road funds undertake technical and financial auditing of maintenance projects, often on a sample basis, and it has proved valuable in improving accountability by revealing the quality of the work done, the quantity of work completed, and the timeliness of the work. These findings provided a sound basis for taking

corrective action, where appropriate. However, similar auditing of construction/rehabilitation/upgrading projects is not undertaken by most Road Authorities, or tends to focus primarily on the construction phase of the project cycle.

Recommendations

- Technical and financial auditing of construction/rehabilitation/upgrading projects should be undertaken by all Road Authorities to ensure that government and other stakeholders, such as donors, are receiving value for the money. Such procedures should be firmly institutionalized beyond the life of donor projects to ensure their long-term effects on sustainable road subsector management reform.
- The production of a technical auditing guideline for road agencies, covering all phases of the project cycle, should be encouraged because it would provide a structured approach for undertaking this activity in a consistent manner and within a scope that is appropriate to the type and complexity of the project.

Appendix A. Evaluation framework for assessing progress in commercialized road management practices

An evaluation framework has been developed to assess progress in commercialized road management practices in road agencies in an objective, systematic, and quantitative manner. The framework contains the basic elements of the three building blocks pertaining to road service delivery: BB.1, responsibility; BB.2, ownership; and BB.4, management. As indicated in table A.1, the framework contains 10 key elements that fall under the three building blocks and cover all aspects of road service delivery normally undertaken by a road agency, each with a specific aim and related “good practice.”

Table A.1 Framework for assessing progress in key reform areas

Building block	BB.1 Responsibility
Element 1	Institutional framework
Aim	Separate management of road services from the funding aspects.
Good practice	Establishment, by an act of Parliament (road act), of an institutionally separate, arm’s length, and functionally autonomous road agency responsible for road service delivery, managed by a separate board with public and private sector participation in which the private sector is in the majority.
Element 2	Institutional road management
Aim	Create a coherent organizational structure with functional separation of roles and clearly assigned responsibilities for managing different parts of the road network.
Good practice	Separation of the client and supplier roles; formally assign responsibilities among road agencies; establish a functionally classified road inventory.
Building block	BB.2 Ownership
Element 3	Oversight Management
Aim	Have road users participate in road management to help win public support for secure and stable road funding.
Good practice	Supervision of the road agency by a public-private sector oversight board that has a majority private sector and that meets regularly under an independent chair.

Building block BB.4 Management	
Element 4 Degree of autonomy	
Aim	Strengthen managerial accountability.
Good practice	Appointment of the CEO by the board with an annual contract plan that includes clear objectives and performance targets.
Element 5 Management structure and operating procedures	
Aim	Strengthen the management of roads by the adoption of sound business practices.
Good practice	A national road agency with a CEO and line managers that generally operates along commercial lines.
Element 6 Human resources	
Aim	Recruit and retain capable staff by offering competitive salaries.
Good practice	Adoption of terms and conditions of employment for the CEO and his staff comparable to those in similar private sector organizations.
Element 7 Financial management	
Aim	Develop the ability to present a clear picture of the agency's overall financial health.
Good practice	Maintenance of commercial accounts by the national road agency and the operation of a cost accounting system that provides at least an income and asset statement.
Element 8 Management information systems	
Aim	Maintain objectivity in setting priorities and evaluating the appropriate technology for road works.
Good practice	Operation of an appropriate road management system for planning and setting priorities for investment and maintenance.
Element 9 Procurement and tender procedures	
Aim	Contract out implementation of road works to the private sector in an efficient manner.
Good practice	Contracting out most of the design, supervision, and implementation of road works and putting in place well-developed procurement procedures for doing so.
Element 10 Quality control	
Aim	Adhere to auditing procedures to ensure that the public gets value for the money from road spending.
Good practice	Regular checks of the quality of construction and maintenance works through independent technical audits.

Development of an evaluation questionnaire

Structure of questionnaire. Based on the broad framework outlined in table A.1 for assessing progress in the key reform areas, a survey questionnaire was developed comprising a checklist of questions on arrangements for managing national roads. Each question asks whether a feature of road management corresponds to an aspect of good practice promoted by the Road Management Initiative through the building blocks. Most questions offer several potential answers that move progressively from “unsatisfactory” to “excellent” in terms of prevailing practice. When a particular feature of the road sector is checked against the checklist, the answer provides two sets of information:

- How does the road sector in this country score on this feature, measured in terms of rating 1 (unsatisfactory practice) to rating 5 (excellent practice)?
- If the rating is less than 5, what progressive reforms are required to take this feature from where it is toward the good practice at rating 5?

The evaluation questionnaire, which provided the basis for discussions held with stakeholders in each country, follows. As much as the questionnaire provides a more quantitative basis than before for assessing road agency performance, it is still in its developmental stages and is subject to further discussions with stakeholders as a basis for refinement.

Evaluation survey questionnaire

BB.1 Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives:	Answers					
To establish by Act of Parliament an institutionally separate, arm’s length and functionally autonomous Roads Authority to be responsible for service delivery and managed by a separate Board.						
Element: <i>Institutional framework</i>						
Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Rating score	No	Yes			
		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.						
<i>b)</i> Has the RA been established under existing legislation?						
<i>(c)</i> Has the RA been established through an Act of Parliament?						
<i>(d)</i> Does the Roads Act provide for separate management and funding of roads?						
<i>(e)</i> Does the Roads Act provide for separate Boards to manage the roads agencies?						
Total score						

 Tick only shaded cells as applicable

Total score = T
Max possible score = 18

Rating (%) = T/18 * 100

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: Establish clearly who is responsible for what in the roads sub-sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: Institutional road management Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
	Rating score	1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3						
(b) Is the road inventory functionally classified?						
(c) Is the functionally classified road inventory updated regularly?						
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.						
(b) Are responsibilities clearly specified in a Roads Act or similar?						
(c) Are new roads systematically designated and published in the Gazette?						
(d) Are roads regularly reclassified and reassigned between different RA's?						
Total score						

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/28 * 100
Max possible score = 28

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key Objective: Empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund. Element: Oversight management Issue: Supervision of the Roads Authority						
Questions	Answers	No	Yes			
	Rating score	1	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.						
(b) Does the Board include members from road users and the business community?						
(c) Are the private sector members of the Board in the majority?						
(d) Are members nominated by the organizations they represent?						
Q.2 (a) Does the Board have Terms of Reference?						
(b) Are the Terms of Reference published in the Gazette or similar?						
(c) Are the terms of Reference written into regulations under the Roads Act?						
(d) Do the Terms of Reference include a Code of Conduct?						
Q.3 (a) Is the Board chairman appointed by the Minister without consultation?						
(b) Is the Board chairman appointed by the Minister after consulting the Board?						
(c) Is the Board chairman elected by the Board?						
Q.4 (a) Does the Board meet on an annual basis?						
(b) Does the Board meet at least every six months?						
(c) Does the Board meet at least every three months?						
(d) Does the Board meet at least every per month?						
Q.5 (a) Are the workings of the Board ever open to the public (shareholders)?						
(b) Are the minutes of the Board meetings ever made available to the public?						
(c) Are selected embers of the public ever entitled to attend Board meetings?						
Total score						

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/52 * 100
Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
<p>Key objectives: Ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.</p> <p>Element: Degree of autonomy</p> <p>Issue: Extent to which the RA can act independently from the Minister & senior civil servants</p>						
Questions	Answers	No				
	Rating score	1	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director?						
(b) Is the CEO/Director appointed outside the civil service regulations?						
(c) Is the CEO/Director appointed under a performance contract?						
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?						
Q.2 (a) Does the RA have a mission statement and strategic objectives						
(b) Does the RA have clear performance targets?						
(c) Is there a performance agreement between the RA and the Board/Ministry?						
(d) Is there a performance agreement between the RA and the Road Fund?						
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance funding revenue?						
(b) Does the RA get a fixed share of its revenue from a Road Fund?						
(c) Does the RA get a variable share from the Road Fund related to performance?						
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?						
(b) Are the terms and conditions based on civil service scales?						
(c) Are the terms and conditions based on civil service scales, with some flexibility?						
(d) Are the terms and conditions based on market comparators?						
(e) Are the terms and conditions related to a performance-based incentive scheme?						
Total score						

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/47 * 100
Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
<p>Key objectives: Ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.</p> <p>Element: Management structure and procedures</p> <p>Issue: Manner in which the RA is managed</p>						
Questions	Answers	No				
	Rating score	1	2	3	4	5
Q.5 (a) Does the RA have a CEO?						
(b) Does the RA have line managers in charge of clearly defined departments?						
(c) Do the line managers and senior staff have clear job descriptions?						
(d) Are the line managers & senior staff appointed on performance-related, term contracts?						
Q.6 (a) Does the RA have a department responsible for corporate planning?						
(b) Does the RA produce an annual business plan?						
(c) Does the annual business plan include performance targets?						
(d) Are the performance targets written into a contract with the parent ministry?						
(e) Is annual performance measured against the performance targets?						
Q.7 (a) Is the management of the RA held accountable for performance?						
(b) Does the RA's annual performance affect the salary of the CEO?						
(c) Does the RA's annual performance affect the salaries of managers and staff?						
Total score						

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/47 * 100
Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: Ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Feature: Human resources Issue: Terms and conditions of service for RA staff						
Questions	Answers	No	Yes			
	Rating score	1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs?						
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs?						
(c) Are RA salaries roughly the same as comparable private sector jobs?						
Q.9 (a) Does the RA have a formalized, structured training program? .						
(b) Do staff have any incentives to participate in training?						
(c) Is the impact of training evaluated?						
Q.10 (a) How many staff positions are vacant at managerial level	>40*	40	30	20	10	
(b) How many staff positions are vacant at technical level?	>40	40	30	20	10	
(c) How many staff positions are vacant at other level?	>40	40	30	20	10	
Q.11 How many technical, managerial and administrative staff per 100 km of road?	>20	15-20	10-15	5-10	<5	
Total score						

Tick only shaded cells as applicable

Total score = T
Max possible score = 37

Rating (%) = T/37 * 100
* %

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: Ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Financial management Issue: The type of accounting system operated by the RA						
Questions	Answers	No	Yes			
	Rating score	1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.						
(b) Can the CAS identify between expenditure on maintenance versus new works?						
(c) Can the CAS identify spending on different types of maintenance?						
(b) Can the CAS identify costs of in-house works versus contract works?						
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.						
(b) Do the accounts include revenue and expenditure statement?						
(c) Do the accounts also include income and cash flow statements?						
(d) Do the accounts also include a sources and application of funds statement?						
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.						
(b) Are the accounts audited by the Auditor General (AG)? or						
(c) Are the accounts audited by independent auditors appointed by the AG?						
(d) Are the accounts audited by independent auditors appointed by the Board?						
Q.15 (a) Is the audit report tabled before Parliament?						
(b) Is the audit report also made available to the general public?						
(c) Is the audit report also published in the press?						
Total score						

Tick only shaded cells as applicable

Total score = T
Max possible score = 47

Rating (%) = T/47 * 100
* %

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent						
Key objectives: Ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.												
Element: <i>Management information systems</i>												
Issue: Asset management												
Questions	Answers Rating score	No					Yes					
		1	2	3	4	5	1	2	3	4	5	
Q.16 (a) <i>Is the road network condition evaluated on a judgmental basis only?</i>												
(b) <i>Is the road network condition evaluated using visual inspections only?</i>												
(c) <i>Is the road network condition evaluated also using roughness measurements?</i>												
(d) <i>Is the road network condition evaluated also using strength measurements?</i>												
Q.17 (a) <i>Are the condition surveys conducted once in several years?</i>												
(b) <i>Are the condition surveys conducted annually?</i>												
(c) <i>Are the condition surveys conducted annually after the rainy/winter snow season?</i>												
Q.18 (a) <i>Are the results of the conditions surveys recorded manually?</i>												
(b) <i>Are the results of the conditions surveys recorded in a simple computerized RMS?</i>												
(c) <i>Are the results of the conditions surveys recorded in an integrated computerized RMS?</i>												
Q.19 (a) <i>Are intervention criteria specified in terms of standards used in other countries?</i>												
(b) <i>Are intervention criteria specified in terms of customized standards developed locally?</i>												
(c) <i>Are intervention criteria specified in terms of economic criteria using a RMS?</i>												
Q.20 (a) <i>Are priorities determined using engineering judgment?</i>												
(b) <i>Are priorities determined using simple ranking formula or index?</i>												
(c) <i>Are priorities determined using economic criteria determined by HDM or similar?</i>												
(d) <i>Are the outputs of the RMS sufficiently reliable for planning purposes?</i>												
Total score												

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/34 * 100

Max possible score = 34
* %

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: Ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Procurement and tender procedures</i> Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						
Questions	Answers	Yes				
	Rating score	No	Yes			
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance works?						
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision works?						
(c) Is the RA/RA Board empowered to approve & award contracts for construction works?						
Q.22 (a) Does the RA undertake design and supervision of new road works in-house?						
(c) Does the RA outsource design and supervision of new road works?						
(d) Does the RA undertake the implementation of new road works in-house?						
(e) Does the RA outsource the implementation of new road works?						
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house?						
(b) Does the RA outsource most routine, periodic & emergency maintenance works?						
Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications?						
(b) Does the RA use and measure contracts based on procedural specifications?						
(c) Does the RA use lump sum contracts based on procedural specifications?						
(d) Does the RA use lump sum contracts based on performance specifications?						
Q.25 (a) Does the RA generally encourage the use of labor-based road works?						
(b) Does the RA leave the use of labor-based road works at the discretion of contractors?						
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?						
(d) Does the RA use payment methods that are compatible with labor-based methods?						
Total score						

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/47 * 100
Max possible score = 47
* %

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Quality control for road works</i> Issue: The way in which the RA controls the quality of construction and maintenance works.						
Questions	Answers	Yes				
	Rating score	No	Yes			
		1	2	3	4	5
Q.26 (a) Does the RA undertake technical audits of designs undertaken by consultants?						
(b) Does the RA regularly undertake technical audits of maintenance works?						
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?						
(d) Does the RA provide guidelines for undertaking the road audits?						
(e) Does the RA require service suppliers to be ISO 9000 certified (if required by spec?)						
Total score T = Sum 1 - 5						

Tick only shaded cells as applicable
 Total score = T
Rating (%) = T/25 * 100
Max possible score = 25
* %

Table A.2 presents an example of an evaluation carried out by a road agency in a particular country of its progress on commercialization of road services in terms of implementation of the reforms embodied in the key building blocks related to road management: responsibility, ownership, and management.

Table A.2 Example of progress on commercialization of road services

		Institutional framework	Institutional management	Ownership	Degree of autonomy	Management structure & procedures	Human resources	Financial management	Management information systems	Procurement & tender procedures	Quality control
BB		BB.1		BB.2	BB.4						
Rating (%)		70		40	64.3						
		80	60	40	60	50	80	80	100	60	20
E	100										
	90										
G	80										
	70										
S	60										
	50										
P	40										
	30						Overall rating: 63%				
U	20						Evaluation: Good				
	10										

U = unsatisfactory (0–20); P = poor (21–40); S = satisfactory (41–60); G = good (61–80); E = excellent (81–100)

Based on the example shown in table A.2, the broad conclusions shown in table A.3 may be drawn about the progress made by the road agency on commercialization in terms of implementation of the reforms embodied in the key building blocks.

Table A.3 General Progress on Commercialization

Building block	Rating (%)	Evaluation
BB.1	70	Good
BB.2	40	Poor
BB.4	64.3	Good
BB.1 + BB.2 + BB.4	63	Good

Source: The author

Table A.4 is developed from the information in table A.2. It provides a detailed assessment of the progress made on commercialization of each element of each building block. In this way, those features that require particular attention can be isolated and addressed, as appropriate.

Table A.4 Detailed Progress on Commercialization

Progress on commercialization	Building block	Element
Unsatisfactory	BB.4	Quality control
Poor	BB.2	Ownership
Satisfactory	BB.1	Institutional management Degree of autonomy Management structure and procedures Procurement and tender procedures
Good	BB.1	Institutional framework Human resources Financial management
Excellent	BB.4	Management information systems

Source: The author

Results of Evaluation Questionnaire

The results of the evaluation questionnaire for each of the seven countries surveyed are presented in tables A.5–A.11.

Table A.5 Outcome of Evaluation Questionnaire, Botswana

BB.1 Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives:						
To establish by an Act of Parliament an institutionally separate, arm's length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board;						
Element: <i>Institutional framework</i>						
Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.		✓				
(b) Has the RA been established under existing legislation?						
(c) Has the been established through an Act of Parliament?						
(d) Does the Roads Act provide for separate management and funding of roads?						
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?						
Total score		1	0	0	0	0

Tick only shaded cells as applicable
 Total score = 1
Rating (%) = 1/18 * 100 = 5.6%
Max possible score = 18

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives:						
To clearly establish who is responsible for what in the roads sector by separating and assigning roles in a definitive manner with matching authority and performance targets.						
Element: <i>Institutional road management</i>						
Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?						✓
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.				✓		
(b) Are responsibilities clearly specified in a Roads Act or similar?					✓	
(c) Are new roads systematically designated and published in the Gazette?		✓				
(d) Are roads regularly reclassified and reassigned between different RA's? .		✓				
Total score		2	0	6	8	5

Tick only shaded cells as applicable
 Total score = 21
Rating (%) = 21/28 * 100 = 75.0%
Max possible score = 28

Progress on commercialized road management

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
<p>Key Objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund.</p> <p>Element: Oversight management</p> <p>Issue: Supervision of the Roads Authority</p>						
Questions: Rating score	Answer	No	Yes			
		1	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.		✓				
(b) Does the Board include members from road users and the business community?						
(c) Are the private sector members of the Board in the majority?						
(d) Are members nominated by the organizations they represent?						
Q.2 (a) Does the Board have Terms of Reference?						
(b) Are the Terms of Reference published in the Gazette?						
(c) Are the terms of Reference written into regulations under the Roads Act?						
(d) Do the Terms of Reference include a Code of Conduct?						
Q.3 (a) Is the Board chairman appointed by the Minister without consultation? or						
(b) Is the Board chairman appointed by the Minister after consulting the Board? or						
(c) Is the Board chairman elected by the Board? .						
Q.4 (a) Does the Board meet on an annual basis? or						
(b) Does the Board meet at least every six months? or						
(c) Does the Board meet at least every three months? or						
(d) Does the Board meet at least every per month?						
Q.5 (a) Are the workings of the Board open to the public?						
(b) Are the minutes of the Board meetings available to the public?						
(c) Are selected embers of the public entitled to attend Board meetings?						
Total score		1	0	0	0	0

Tick only shaded cells as applicable

Total score = 1

Rating (%) = $1/52 * 100 = 1.9\%$

Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
<p>Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.</p> <p>Element: Degree of autonomy</p> <p>Issue: Extent to which the RA can act independently from the Minister and civil servants</p>						
Questions: Rating score	Answer	No	Yes			
		1	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director?		✓				

(b) Is the CEO/Director appointed outside the civil service regulations?	✓				
(c) Is the CEO/Director appointed under a performance contract?	✓				
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?	✓				
Q.2 (a) Does the RA have a mission statement and strategic objectives			✓		
b) Does the RA have clear performance targets?			✓		
(c) Is there a performance agreement between the Road Agency and the Board/Ministry?	✓				
(d) Is there a performance agreement between the Road Agency and the Road Fund?	✓				
Q.3 (a) Does the RA depend on the consolidated fund for maintenance funding? or		✓			
(b) Does the RA get a fixed share of its revenue from a Road Fund?					
(c) Does the RA get a variable share from the Road Fund related to performance?					
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?	✓				
(b) Are the terms and conditions based on civil service scales? or		✓			
(c) Are the terms and conditions based on civil service scales, with some flexibility?					
(d) Are the terms and conditions based on market comparators?					
(e) Are the terms and conditions related to a performance-based incentive scheme?					
Total score	8	4	6	0	0

Tick only shaded cells as applicable

Total score = 18

Rating (%) = $18/47 * 100 = 44.7\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management structure and procedures						
Issue: Manner in which the RA is managed						
Questions	Answer	No Yes				
		1	2	3	4	5
Q.5 (a) Does the RA have a CEO?	✓					
(b) Does the RA have line managers in charge of clearly defined departments?				✓		
(c) Do the line managers and senior staff have clear job descriptions?					✓	
(d) Are the line managers & senior staff appointed on performance-related, term contracts?	✓					
Q.6 (a) Does the RA have a department responsible for corporate planning?	✓					
(b) Does the RA produce an annual business plan? .	✓					
(c) Does the annual business plan include performance targets?	✓					
(d) Are the performance targets written into a contract with the parent ministry?	✓					
(e) Is annual performance measured against the performance targets?	✓					
Q.7 (a) Is the management of the RA held accountable for performance?				✓		
(b) Does the RA's annual performance affect the salary of the CEO?	✓					
(c) Does the RA's annual performance affect the salaries of managers and staff?	✓					
Total score	9			6	4	

Tick only shaded cells as applicable

Total score = 19

Rating (%) = $19/47 * 100 = 40.4\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Feature: Human resources						
Issue: Terms and conditions of service for RA staff						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs?						
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs? or				✓		
(c) Are RA salaries roughly the same as comparable private sector jobs?						
Q.9 (a) Does the RA have a formalized, structured training program? .		✓				
(b) Do staff have any incentives to participate in training?		✓				
(c) Is the impact of training evaluated?		✓				
Q.10 (a) How many staff positions are vacant at managerial level (in %)	>40	40	30	20	10	
(b) How many staff positions are vacant at technical level?	>40	40	30	20	10	
(b) How many staff positions are vacant at other level?	>40	40	30	20	10	
Q.11 How many technical, managerial & administrative staff per 100 km of road?	>20	15-20	10-15	5-10	<5	
Total score		4	2	6	4	0

Tick only shaded cells as applicable

Total score = 21

Rating (%) = $21/37 * 100 = 43.2\%$

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Financial management						
Issue: The type of accounting system operated by the RA						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.		✓				
(b) Can the CAS identify between expenditure on maintenance versus new works?						
(c) Can the CAS identify spending on different types of maintenance?						
(b) Can the CAS identify costs of in-house works versus contract works?						
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.		✓				
(b) Do the accounts include revenue and expenditure statement?						
(c) Do the accounts also include income and cash flow statements?						
(d) Do the accounts also include a sources and application of funds statement?						
Q.14 (a) Are the RA's accounts audited? If no, go to Q.16.				✓		
(b) Are the accounts audited by the Auditor General (AG)? or				✓		
(c) Are the accounts audited by independent auditors appointed by the AG? or						
(d) Are the accounts audited by independent auditors appointed by the Board?						

Q.15 (a) Is the audit report tabled before Parliament?			✓		
<i>(b) Is the audit report also made available to the general public?</i>				✓	
<i>(c) Is the audit report also published in the press?</i>					✓
Total score	2	0	9	4	5

Tick only shaded cells as applicable
 Total score = 20
Rating (%) = 20/47 * 100 = 42.6%
Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Management information systems Issue: Asset management						
Questions Rating/Score	Answers	No Yes				
		1	2	3	4	5
Q.16 (a) Is the road network condition evaluated on a judgmental basis only?						
<i>(b) Is the road network condition evaluated using visual inspections only? or</i>						
<i>(c) Is the road network condition evaluated also using roughness measurements?</i>					✓	
<i>(d) Is the road network condition evaluated also using strength measurements?</i>						✓
Q.17 (a) Are the condition surveys conducted once in several years? or						
<i>(b) Are the condition surveys conducted annually? or</i>						
<i>(c) Are the condition surveys conducted annually after the rainy/winter season?</i>						✓
Q.18 (a) Are the results of the conditions surveys recorded manually? or						
<i>(b) Are the results of the conditions surveys recorded in a simple computerized RMS?</i>						
<i>(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?</i>						✓
Q.19 (a) Are intervention criteria specified in terms of standards used in other countries? or						
<i>(b) Are intervention criteria specified in terms of customized standards developed locally? or</i>						
<i>(c) Are intervention criteria specified in terms of economic criteria using a RMS ?</i>						✓
Q.20 (a) Are priorities determined using engineering judgment? or						
<i>(b) Are priorities determined using simple ranking formula or index? or</i>						
<i>(c) Are priorities determined with economic criteria from HDM or similar?</i>						✓
<i>(d) Are the outputs of the RMS sufficiently reliable for planning purposes?</i>						✓
Total score		0	0	0	4	30

Tick only shaded cells as applicable
 Total score = 34
Rating (%) = 34/34 * 100 = 100.0%
Max possible score = 34

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Procurement and tender procedures Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						

Progress on commercialized road management

Questions Rating/Score	Answers	No					Yes				
		1	2	3	4	5	1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance works?		✓									
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision works?		✓									
(c) Is the RA/RA Board empowered to approve & award contracts for construction works?		✓									
Q.22 (a) Does the RA undertake design and supervision of new road works in-house?											
(c) Does the RA outsource design and supervision of new road works?										✓	
(d) Does the RA undertake the implementation of new road works in-house? or											
(e) Does the RA outsource the implementation of new road works?										✓	
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house? or											
(b) Does the RA outsource most routine, periodic & emergency maintenance works?										✓	
Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications? or											
(b) Does the RA use admeasure contracts based on procedural specifications? or .											
(c) Does the RA use lump sum contracts based on procedural specifications? or									✓		
(d) Does the RA use lump sum contracts based on performance specifications?											
Q.25 (a) Does the RA generally encourage the use of labor-based road works?				✓							
(b) Does the RA leave the use of labor-based road works at the discretion of contractors?											
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?									✓		
(d) Does the RA use payment methods that are compatible with labor-based methods?										✓	
Total score		3	0	3	8	20					

Tick only shaded cells as applicable

Total score = 34

Rating (%) = $34/47 * 100 = 72.3\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Questions Rating	Answers					
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Quality control for road works						
Issue: The way in which the RA controls the quality of construction and maintenance works.						
Q.27 (a) Does the RA undertake technical audits of designs undertaken by consultants?		✓				
(b) Does the RA regularly undertake technical audits of maintenance works?		✓				
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?		✓				
(d) Does the RA provide guidelines for undertaking the road audits?		✓				
(e) Does the RA require materials suppliers to be ISO9000 certified?		✓				
Total score		5	0	0	0	0

Tick only shaded cells as applicable

Total score = 5

Rating (%) = $5/25 * 100 = 25.0\%$

Max possible score = 25

Table A.6 Outcome of Survey Questionnaire, Cameroon

BB.1 Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish by an Act of Parliament an institutionally separate, arm's length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board; Element: <i>Institutional framework</i> Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.		✓				
(b) Has the RA been established under existing legislation? or						
(c) Has the been established through an Act of Parliament?						
(d) Does the Roads Act provide for separate management and funding of roads?						
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?						
Total score		1	0	0	0	0

Tick only shaded cells as applicable

Total score = 1

Rating (%) = $1/18 * 100 = 5.6\%$

Max possible score = 18

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To clearly establish who is responsible for what in the roads sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: <i>Institutional road management</i> Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?		✓				
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.		✓				
(b) Are responsibilities clearly specified in a Roads Act or similar?						
(c) Are new roads systematically designated and published in the Gazette?						
(d) Are roads regularly reclassified and reassigned between different RA's? .						
Total score		2		3	4	

Tick only shaded cells as applicable

Total score = 9

Rating (%) = $9/28 * 100 = 32.1\%$

Max possible score = 28

Progress on commercialized road management

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key Objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund.						
Element: Oversight management						
Issue: Supervision of the Roads Authority						
Questions:	Answer	No	Yes			
		1	2	3	4	5
Q.1	(a) Does the RA have any kind of oversight Board? If no, go to next section.	✓				
	(b) Does the Board include members from road users and the business community?					
	(c) Are the private sector members of the Board in the majority?					
	(d) Are members nominated by the organizations they represent?					
Q.2	(a) Does the Board have Terms of Reference?					
	(b) Are the Terms of Reference published in the Gazette or similar?					
	(c) Are the terms of Reference written into regulations under the Roads Act?					
	(d) Do the Terms of Reference include a Code of Conduct?					
Q.3	(a) Is the Board chairman appointed by the Minister without consultation? or					
	(b) Is the Board chairman appointed by the Minister after consulting the Board? or					
	(c) Is the Board chairman elected by the Board? .					
Q.4	(a) Does the Board meet on an annual basis? or					
	(b) Does the Board meet at least every six months? or					
	(c) Does the Board meet at least every three months? or					
	(d) Does the Board meet at least every per month?					
Q.5	(a) Are the workings of the Board ever open to the public (shareholders)?					
	(b) Are the minutes of the Board meetings ever made available to the public?					
	(c) Are selected embers of the public ever entitled to attend Board meetings?					
Total score		1	0	0	0	0

Tick only shaded cells as applicable

Total score = 1

Rating (%) = $1/52 * 100 = 1.9\%$

Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Degree of autonomy						
Issue: Extent to which the RA can act independently from the Minister and senior civil servants						
Questions:	Answer	No	Yes			
		1	2	3	4	5
Q.1	(a) Does the Board appoint the CEO/Director?	✓				

(b) Is the CEO/Director appointed outside the civil service regulations?	✓				
(c) Is the CEO/Director appointed under a performance contract?	✓				
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?	✓				
Q.2 (a) Does the RA have a mission statement and strategic objectives			✓		
(b) Does the RA have clear performance targets?				✓	
(c) Is there a performance agreement between the RA and the Board/Ministry?	✓				
(d) Is there a performance agreement between the RA and the Road Fund?	✓				
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance funding revenue? or					
(b) Does the RA get a fixed share of its revenue from a Road Fund? or				✓	
(c) Does the RA get a variable share from the Road Fund related to performance?					
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?	✓				
(b) Are the terms and conditions based on civil service scales? or		✓			
(c) Are the terms and conditions based on civil service scales, with some flexibility?					
(d) Are the terms and conditions based on market comparators?					
(e) Are the terms and conditions related to a performance-based incentive scheme?	✓				
Total score	8	2	3	8	0

Tick only shaded cells as applicable

Total score = 21

Rating (%) = $21/47 * 100 = 44.7\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management structure and procedures						
Issue: Manner in which the RA is managed						
Questions	Answer	No	Yes			
		1	2	3	4	5
Rating/Score						
Q.5 (a) Does the RA have a CEO?	✓					
(b) Does the RA have line managers in charge of clearly defined departments?	✓					
(c) Do the line managers and senior staff have clear job descriptions?					✓	
(d) Are the line managers & senior staff appointed on performance, term contracts?	✓					
Q.6 (a) Does the RA have a department responsible for corporate planning?				✓		
(b) Does the RA produce an annual business plan? .				✓		
(c) Does the annual business plan include performance targets?					✓	
(d) Are the performance targets written into a contract with the parent ministry?	✓					
(e) Is annual performance measured against the performance targets?	✓					
Q.7 (a) Is the management of the RA held accountable for performance?	✓					
(b) Does the RA's annual performance affect the salary of the CEO?	✓					
(c) Does the RA's annual performance affect the salaries of managers and staff?	✓					
Total score		8	0	6	8	0

Tick only shaded cells as applicable

Total score = 22

Rating (%) = $22/47 * 100 = 46.8\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: <i>Human resources</i>						
Issue: Terms and conditions of service for RA staff						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs?			✓			
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs?						
(c) Are RA salaries roughly the same as comparable private sector jobs?						
Q.9 (a) Does the RA have a formalized, structured training program? .				✓		
(b) Do staff have any incentives to participate in training?		✓				
(c) Is the impact of training evaluated?		✓				
Q.10 (a) How many staff positions are vacant at managerial level		>40	40	30	20	10
(b) How many staff positions are vacant at technical level?		>40	40	30	20	10
(b) How many staff positions are vacant at other level?		>40	40	30	20	10
Q.11 How many technical, managerial and administrative staff per 100 km?		>20	15-20	10-15	5-10	<5
Total score						

Tick only shaded cells as applicable

Total score = 21

Rating (%) = 21/37 * 100 = 56.8%

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: <i>Financial management</i>						
Issue: The type of accounting system operated by the RA						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q.13.		✓				
(b) Can the CAS identify between expenditure on maintenance versus new works?		✓				
(c) Can the CAS identify spending on different types of maintenance?		✓				
(b) Can the CAS identify costs of in-house works versus contract works?		✓				
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.		✓				
(b) Do the accounts include revenue and expenditure statement?		✓				
(c) Do the accounts also include income and cash flow statements?		✓				
(d) Do the accounts also include a sources and application of funds statement?		✓				
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.				✓		
(b) Are the accounts audited by the Auditor General (AG)?				✓		
(c) Are the accounts audited by independent auditors appointed by the AG?						
(d) Are the accounts audited by independent auditors appointed by the Board?						

Q.15 (a) Is the audit report tabled before Parliament?			✓		
(b) Is the audit report also made available to the general public?				✓	
(c) Is the audit report also published in the press?					✓
Total score	8	0	9	4	5

Tick only shaded cells as applicable

Total score = 26

Rating (%) = 26/47 * 100 = 55.3%

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management Information systems						
Issue: Asset management						
Questions	Answers	No Yes				
		1	2	3	4	5
Rating/Score						
Q.16 (a) Is the road network condition evaluated on a judgmental basis only? or						
(b) Is the road network condition evaluated using visual inspections only? or						
(c) Is the road network condition evaluated also using roughness measurements?					✓	
(d) Is the road network condition evaluated also using strength measurements?						✓
Q.17 (a) Are the condition surveys conducted once in several years? or						
(b) Are the condition surveys conducted annually? or						
(c) Are the condition surveys conducted annually after the rainy/winter snow season?						✓
Q.18 (a) Are the results of the conditions surveys recorded manually? or						
(b) Are the results of the conditions surveys recorded in a simple computerized RMS?						
(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?						✓
Q.19 (a) Are intervention criteria specified in terms of standards used in other countries? or						
(b) Are intervention criteria specified in terms of customized standards developed locally?						
(c) Are intervention criteria specified in terms of economic criteria using a RMS ?						✓
Q.20 (a) Are priorities determined using engineering judgment? or						
(b) Are priorities determined using simple ranking formula or index? or						
(c) Are priorities determined using economic criteria determined by HDM or similar?						✓
(d) Are the outputs of the RMS sufficiently reliable for planning purposes?	✓					
Total score		1	0	0	4	25

Tick only shaded cells as applicable

Total score = 30

Rating (%) = 30/34 * 100 = 88.2%

Max possible score = 34

Progress on commercialized road management

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Procurement and tender procedures</i> Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						
Questions Rating/Score	Answers	No				
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance		✓				
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision?		✓				
(c) Is the RA/RA Board empowered to approve & award contracts for construction?		✓				
Q.22 (a) Does the RA undertake design and supervision of new road works in-house? or			✓			
(c) Does the RA outsource design and supervision of new road works?						✓
(d) Does the RA undertake the implementation of new road works in-house? or			✓			
(e) Does the RA outsource the implementation of new road works?						✓
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house? or			✓			
(b) Does the RA outsource most routine, periodic & emergency maintenance works?						✓
Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications? or			✓			
(b) Does the RA use admeasure contracts based on procedural specifications? or .						
(c) Does the RA use lump sum contracts based on procedural specifications? or						
(d) Does the RA use lump sum contracts based on performance specifications?						
Q.25 (a) Does the RA generally encourage the use of labor-based road works?				✓		
(b) Does the RA leave the use of labor-based road works at the discretion of contractors? or						
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?					✓	
(d) Does the RA use payment methods that are compatible with labor-based methods?						✓
Total score		3	0	6	4	20

Tick only shaded cells as applicable

Total score = 33

Rating (%) = 33/47 * 100 = 70.2%

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Quality control for road works</i> Issue: The way in which the RA controls the quality of construction and maintenance works.						
Questions Rating	Answers	No				
		1	2	3	4	5
Q.26 (a) Does the RA undertake technical audits of designs undertaken by consultants?		✓				
(b) Does the RA regularly undertake technical audits of maintenance works?						✓
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?		✓				
(d) Does the RA provide guidelines for undertaking the road audits?		✓				
(e) Does the RA require materials suppliers to be ISO9000 certified (if required by spec)?		✓				
Total score		4	0	0	0	5

Tick only shaded cells as applicable

Total score = 9

Rating (%) = 9/25 * 100 = 36.0%

Max possible score = 25

Table A.7 Outcome of Survey Questionnaire, Ethiopia

BB.1 – Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish by an Act of Parliament an institutionally separate, arm's length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board; Element: <i>Institutional framework</i> Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.				✓		
(b) Has the RA been established under existing legislation?						
(c) Has the RA been established through an Act of Parliament?						✓
(d) Does the Roads Act provide for separate management and funding of roads?						✓
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?						✓
Total score		0	0	3	0	15

Tick only shaded cells as applicable

Total score = 18

Rating (%) = $18/18 * 100 = 100.0\%$

Max possible score = 18

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish who is responsible for what in the sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: <i>Institutional road management</i> Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?						✓
Q.3 (a) Is it clear which roads are managed by the RA?				✓		
(b) Are responsibilities clearly specified in a Roads Act or similar?					✓	
(c) Are new roads systematically designated and published in the Gazette or similar?					✓	
(d) Are roads regularly reclassified and reassigned between different RA's? .						✓
Total score				6	12	10

Tick only shaded cells as applicable

Total score = 28

Rating (%) = $28/28 * 100 = 100.0\%$

Max possible score = 28

Progress on commercialized road management

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key Objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund. Element: Oversight management Issue: Supervision of the Roads Authority						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.				✓		
(b) Does the Board include members from road users and the business community?		✓				
(c) Are the private sector members of the Board in the majority?		✓				
(d) Are members nominated by the organizations they represent?		✓				
Q.2 (a) Does the Board have Terms of Reference?				✓		
(b) Are the Terms of Reference published in the Gazette or similar?		✓				
(c) Are the terms of Reference written into regulations under the Roads Act?		✓				
(d) Do the Terms of Reference include a Code of Conduct?		✓				
Q.3 (a) Is the Board chairman appointed by the Minister without consultation? or						
(b) Is the Board chairman appointed by the Minister after consulting the Board? or				✓		
(c) Is the Board chairman elected by the Board? .						
Q.4 (a) Does the Board meet on an annual basis? or						
(b) Does the Board meet at least every six months? or						
(c) Does the Board meet at least every three months? or						
(d) Does the Board meet at least every per month?						✓
Q.5 (a) Are the workings of the Board ever open to the public (shareholders)?		✓				
(b) Are the minutes of the Board meetings ever made available to the public?		✓				
(c) Are selected embers of the public ever entitled to attend Board meetings?		✓				
Total score		9	0	9	4	5

Tick only shaded cells as applicable

Total score = 27

Rating (%) = $27/52 * 100 = 51.9\%$

Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Degree of autonomy Issue: Extent to which the RA can act independently from the Minister or senior civil servants						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director?					✓	
(b) Is the CEO/Director appointed outside the civil service regulations?		✓				
(c) Is the CEO/Director appointed under a performance contract?		✓				

<i>(d) Can the CEO/Director, subject to Board approval, hire and fire staff?</i>	✓				
Q.2 (a) Does the RA have a mission statement and strategic objectives			✓		
<i>(b) Does the RA have clear performance targets?</i>				✓	
<i>(c) Is there a performance agreement between the RA and the Board/Ministry?</i>	✓				
<i>(d) Is there a performance agreement between the RA and the Road Fund?</i>	✓				
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance funding revenue? or					
<i>(b) Does the RA get a fixed share of its revenue from a Road Fund? or</i>				✓	
<i>(c) Does the RA get a variable share from the Road Fund related to performance?</i>					
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?			✓		
<i>(b) Are the terms and conditions based on civil service scales? or</i>		✓			
<i>(c) Are the terms and conditions based on civil service scales, with some flexibility? or</i>					
<i>(d) Are the terms and conditions based on market comparators?</i>					
<i>(e) Are the terms and conditions related to a performance-based incentive scheme?</i>	✓				
Total score	6	2	6	12	0

Tick only shaded cells as applicable

Total score = 26

Rating (%) = 55.3

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management structure and procedures						
Issue: Manner in which the RA is managed						
Questions	Answer	No Yes				
		1	2	3	4	5
Q.5 (a) Does the RA have a CEO?				✓		
<i>(b) Does the RA have line managers in charge of clearly defined departments?</i>				✓		
<i>(c) Do the line managers and senior staff have clear job descriptions?</i>					✓	
<i>(d) Are the line managers & senior staff appointed on performance, term contracts?</i>	✓					
Q.6 (a) Does the RA have a department responsible for corporate planning?				✓		
<i>(b) Does the RA produce an annual business plan?</i>				✓		
<i>(c) Does the annual business plan include performance targets?</i>					✓	
<i>(d) Are the performance targets written into a contract with the parent ministry?</i>						✓
<i>(e) Is annual performance measured against the performance targets?</i>						✓
Q.7 (a) Is the management of the RA held accountable for performance?	✓					
<i>(b) Does the RA's annual performance affect the salary of the CEO?</i>	✓					
<i>(c) Does the RA's annual performance affect the salaries of managers and staff?</i>	✓					
Total score		4	0	12	8	10

Tick only shaded cells as applicable

Total score = 34

Rating (%) = 34/47 * 100 = 72.3%

Max possible score = 47

Progress on commercialized road management

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Human resources						
Issue: Terms and conditions of service for RA staff						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs? or			✓			
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs? or						
(c) Are RA salaries roughly the same as comparable private sector jobs?						
Q.9 (a) Does the RA have a formalized, structured training program? .				✓		
(b) Do staff have any incentives to participate in training?		✓				
(c) Is the impact of training evaluated?		✓				
Q.10 (a) How many staff positions are vacant at managerial level		>40	40	30	20	10
(b) How many staff positions are vacant at technical level?		>40	40	30	20	10
(b) How many staff positions are vacant at other level?		>40	40	30	20	10
Q.11 How many technical, managerial and administrative staff per 100 km of road?		>20	15-20	10-15	5-10	<5
Total score		4	2	3	4	0

Tick only shaded cells as applicable

Total score = 13

Rating (%) = $13/37 * 100 = 35.1\%$

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Financial management						
Issue: The type of accounting system operated by the RA						
Question Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.				✓		
(b) Can the CAS identify between expenditure on maintenance versus new works?				✓		
(c) Can the CAS identify spending on different types of maintenance?					✓	
(d) Can the CAS identify costs of in-house works versus contract works?						✓
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.		✓				
(b) Do the accounts include revenue and expenditure statement?		✓				
(c) Do the accounts also include income and cash flow statements?		✓				
(d) Do the accounts also include a sources and application of funds statement?		✓				
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.				✓		
(b) Are the accounts audited by the Auditor General (AG)? or				✓		
(c) Are the accounts audited by independent auditors appointed by the AG? or						
(d) Are the accounts audited by independent auditors appointed by the Board?						
Q.15 (a) Is the audit report tabled before Parliament?				✓		
(b) Is the audit report also made available to the general public?					✓	
(c) Is the audit report also published in the press?		✓				
Total score		5	0	15	8	5

Tick only shaded cells as applicable

Total score = 33

Rating (%) = $33/47 * 100 = 70.2\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
<p>Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.</p> <p>Element: Management information systems</p> <p>Issue: Asset management</p>						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.16 (a) Is the road network condition evaluated on a judgmental basis only?						
(b) Is the road network condition evaluated using visual inspections only? or						
(c) Is the road network condition evaluated also using roughness measurements?					✓	
(d) Is the road network condition evaluated also using strength measurements?						
Q.17 (a) Are the condition surveys conducted once in several years? or				✓		
(b) Are the condition surveys conducted annually? or						
(c) Are the condition surveys conducted annually after the rainy/winter snow season?						
Q.18 (a) Are the results of the conditions surveys recorded manually? or						
(b) Are the results of the conditions surveys recorded in a simple computerized RMS?					✓	
(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?						
Q.19 (a) Are intervention criteria specified for standards used in other countries? or						
(b) Are intervention criteria specified in terms of customized standards developed locally? or					✓	
(c) Are intervention criteria specified in terms of economic criteria using a RMS ?						
Q.20 (a) Are priorities determined using engineering judgment? or				✓		
(b) Are priorities determined using simple ranking formula or index? or						
(c) Are priorities determined using economic criteria determined by HDM or similar?						
(d) Are the outputs of the RMS sufficiently reliable for planning purposes?		✓				
Total score		1	0	6	12	0

Tick only shaded cells as applicable

Total score = 19

Rating (%) = $19/34 * 100 = 55.8\%$

Max possible score = 34

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
<p>Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.</p> <p>Element: Procurement and tender procedures</p> <p>Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.</p>						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance						✓
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision						✓
(c) Is the RA/RA Board empowered to approve & award contracts for construction works?						✓
Q.22 (a) Does the RA undertake design and supervision of new road works in-house? or						
(c) Does the RA outsource design and supervision of new road works?						✓
(d) Does the RA undertake the implementation of new road works in-house? or						
(e) Does the RA outsource the implementation of new road works?						✓

Progress on commercialized road management

Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house?		✓			
(b) Does the RA outsource most routine, periodic & emergency maintenance works?					
Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications?		✓			
(b) Does the RA use admeasure contracts based on procedural specifications? or .					
(c) Does the RA use lump sum contracts based on procedural specifications? or					
(d) Does the RA use lump sum contracts based on performance specifications?					
Q.25 (a) Does the RA generally encourage the use of labor-based road works?			✓		
(b) Does the RA leave the use of labor-based road works at the discretion of contractors? or					
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?				✓	
(d) Does the RA use payment methods that are compatible with labor-based methods?					✓
Total score	0	2	3	4	30

Tick only shaded cells as applicable

Total score = 39

Rating (%) = $39/47 * 100 = 83.0\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Quality control for road works						
Issue: The way in which the RA controls the quality of construction & maintenance						
Questions Rating	Answers	No	Yes			
		1	2	3	4	5
Q.26 (a) Does the RA undertake technical audits of designs undertaken by consultants?		✓				
(b) Does the RA regularly undertake technical audits of maintenance works?						✓
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?		✓				
(d) Does the RA provide guidelines for undertaking the road audits?		✓				
(e) Does the RA require materials suppliers to be ISO9000 certified (if required by spec)?		✓				
Total score		4	0	0	0	5

Tick only shaded cells as applicable

Total score = 9

Rating (%) = $9/25 * 100 = 36.0\%$

Max possible score = 25

Table A.8 Outcome of Survey Questionnaire, Ghana

BB.1 Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish by an Act of Parliament an institutionally separate, arm's length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board; Element: <i>Institutional framework</i> Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.				✓		
(b) Has the RA been established under existing legislation?						
(c) Has the RA been established through an Act of Parliament?						✓
(d) Does the Roads Act provide for separate management and funding of roads?						✓
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?						✓
Total score		0	0	3	0	15

Tick only shaded cells as applicable

Total score = 15

Rating (%) = $15/18 * 100 = 83.4\%$

Max possible score = 18

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To clearly establish who is responsible for what in the roads sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: <i>Institutional road management</i> Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?						✓
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.				✓		
(b) Are responsibilities clearly specified in a Roads Act or similar?					✓	
(c) Are new roads systematically designated and published in the Gazette?					✓	
(d) Are roads regularly reclassified and reassigned between different RA's? .	✓					
Total score		0	0	6	12	10

Tick only shaded cells as applicable

Total score = 28

Rating (%) = $28/28 * 100 = 100.0\%$

Max possible score = 28

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BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund.						
Element: Oversight management						
Issue: Supervision of the Roads Authority						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.				✓		
(b) Does the Board include members from road users and the business community?					✓	
(c) Are the private sector members of the Board in the majority?	✓					
(d) Are members nominated by the organizations they represent?	✓					
Q.2 (a) Does the Board have Terms of Reference?				✓		
(b) Are the Terms of Reference published in the Gazette or similar?	✓					
(c) Are the terms of Reference written into regulations under the Roads Act?	✓					
(d) Do the Terms of Reference include a Code of Conduct?	✓					
Q.3 (a) Is the Board chairman appointed by the Minister without consultation? or			✓			
(b) Is the Board chairman appointed by the Minister after consulting the Board? or						
(c) Is the Board chairman elected by the Board? .						
Q.4 (a) Does the Board meet on an annual basis? or						
(b) Does the Board meet at least every six months? or						
(c) Does the Board meet at least every three months? or					✓	
(d) Does the Board meet at least every per month?						
Q.5 (a) Are the workings of the Board ever open to the public (shareholders)?	✓					
(b) Are the minutes of the Board meetings ever made available to the public?	✓					
(c) Are selected embers of the public ever entitled to attend Board meetings?	✓					
Total score		8	1	6	8	0

Tick only shaded cells as applicable

Total score = 23

Rating (%) = $23/57 * 100 = 44.2\%$

Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Degree of autonomy						
Issue: Extent to which the RA can act independently from the Minister and senior civil servants						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director?		✓				
(b) Is the CEO/Director appointed outside the civil service regulations?					✓	
(c) Is the CEO/Director appointed under a performance contract?	✓					
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?	✓					
Q.2 (a) Does the RA have a mission statement and strategic objectives				✓		
(b) Does the RA have clear performance targets?					✓	

(c) Is there a performance agreement between the RA and the Board/Ministry?	✓				
(d) Is there a performance agreement between the RA and the Road Fund?					✓
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance revenue? or					
(b) Does the RA get a fixed share of its revenue from a Road Fund? or				✓	
(c) Does the RA get a variable share from the Road Fund related to performance?					
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?			✓		
(b) Are the terms and conditions based on civil service scales? or					
(c) Are the terms and conditions based on civil service scales, with some flexibility? or			✓		
(d) Are the terms and conditions based on market comparators?					
(e) Are the terms and conditions related to a performance-based incentive scheme?	✓				
Total score	5	0	9	12	5

Tick only shaded cells as applicable

Total score = 31

Rating (%) = 31/51 * 100 = 66.0%

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management structure and procedures						
Issue: Manner in which the RA is managed						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.5 (a) Does the RA have a CEO?				✓		
(b) Does the RA have line managers in charge of clearly defined departments?				✓		
(c) Do the line managers and senior staff have clear job descriptions?					✓	
(d) Are the line managers & senior staff appointed on performance-related, term contracts?	✓					
Q.6 (a) Does the RA have a department responsible for corporate planning?				✓		
(b) Does the RA produce an annual business plan? .				✓		
(c) Does the annual business plan include performance targets?					✓	
(d) Are the performance targets written into a contract with the parent ministry?	✓					
(e) Is annual performance measured against the performance targets?	✓					
Q.7 (a) Is the management of the RA held accountable for performance?						
(b) Does the RA's annual performance affect the salary of the CEO?	✓					
(c) Does the RA's annual performance affect the salaries of managers and staff?	✓					
Total score		5	0	12	8	0

Tick only shaded cells as applicable

Total score = 25

Rating (%) = 25/47 * 100 = 53.20%

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Human resources						
Issue: Terms and conditions of service for RA staff						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs? or						

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(b) Are RA salaries lower (+/-20%) than comparable private sector jobs? or			✓		
(c) Are RA salaries roughly the same as comparable private sector jobs?					
Q.9 (a) Does the RA have a formalized, structured training program? .			✓		
(b) Do staff have any incentives to participate in training?	✓				
(c) Is the impact of training evaluated?	✓				
Q.10 (a) How many staff positions are vacant at managerial level	>40%	10%	30%	20%	0%
(b) How many staff positions are vacant at technical level?	>40%	10%	30%	20%	0%
(b) How many staff positions are vacant at other level?	>40	40	30	20	10
Q.11 How many technical, managerial and administrative staff per 100 km of road?	>20	15-20	10-15	5-10	<5
Total score	2	0	9	4	10

Tick only shaded cells as applicable

Total score = 25

Rating (%) = $25/37 * 100 = 67.6\%$

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Financial management						
Issue: The type of accounting system operated by the RA						
Questions	Answer	No	Yes			
		1	2	3	4	5
Rating/Score						
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.				✓		
(b) Can the CAS identify between expenditure on maintenance versus new works?				✓		
(c) Can the CAS identify spending on different types of maintenance?					✓	
(b) Can the CAS identify costs of in-house works versus contract works?						✓
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.				✓		
(b) Do the accounts include revenue and expenditure statement?				✓		
(c) Do the accounts also include income and cash flow statements?					✓	
(d) Do the accounts also include a sources and application of funds statement?	✓					
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.				✓		
(b) Are the accounts audited by the Auditor General (AG)? or				✓		
(c) Are the accounts audited by independent auditors appointed by the AG? or						
(d) Are the accounts audited by independent auditors appointed by the Board?						
Q.15 (a) Is the audit report tabled before Parliament?				✓		
(b) Is the audit report also made available to the general public?					✓	
(c) Is the audit report also published in the press?	✓					
Total score		2	0	21	12	5

Tick only shaded cells as applicable

Total score = 40

Rating (%) = $40/50 * 100 = 85.1\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Management information systems Issue: Asset management						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.16 (a) Is the road network condition evaluated on a judgmental basis only? or						
(b) Is the road network condition evaluated using visual inspections only? or						
(c) Is the road network condition evaluated also using roughness measurements?					✓	
(d) Is the road network condition evaluated also using strength measurements?						
Q.17 (a) Are the condition surveys conducted once in several years? or						
(b) Are the condition surveys conducted annually? or						
(c) Are the condition surveys conducted annually after the rainy/winter snow season?						✓
Q.18 (a) Are the results of the conditions surveys recorded manually? or						
(b) Are the results of the conditions surveys recorded in a simple computerized RMS? or						
(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?						✓
Q.19 (a) Are intervention criteria specified in terms of standards used in other countries? or						
(b) Are intervention criteria specified in terms of customized standards developed locally? or						
(c) Are intervention criteria specified in terms of economic criteria using a RMS?						✓
Q.20 (a) Are priorities determined using engineering judgment? or						
(b) Are priorities determined using simple ranking formula or index? or						
(c) Are priorities determined using economic criteria determined by HDM or similar?						✓
(d) Are the outputs of the RMS sufficiently reliable for planning purposes?		✓				
Total score		1	0	0	4	20

Tick only shaded cells as applicable
 Total score = 25
Rating (%) = 25/34 * 100 = 73.5%
 Max possible score = 34

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Procurement and tender procedures Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance works?						✓
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision works?						✓
(c) Is the RA/RA Board empowered to approve & award contracts for construction works?						✓
Q.22 (a) Does the RA undertake design and supervision of new road works in-house? or						
(c) Does the RA outsource design and supervision of new road works?						✓
(d) Does the RA undertake the implementation of new road works in-house? or						
(e) Does the RA outsource the implementation of new road works?						✓
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house? or						
(b) Does the RA outsource most routine, periodic & emergency maintenance works?						✓

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Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications?					
(b) Does the RA use admeasure contracts based on procedural specifications? or .			✓		
(c) Does the RA use lump sum contracts based on procedural specifications? or					
(d) Does the RA use lump sum contracts based on performance specifications?					
Q.25 (a) Does the RA generally encourage the use of labor-based road works?			✓		
(b) Does the RA leave the use of labor-based road works at the discretion of contractors? or					
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?				✓	
(d) Does the RA use payment methods that are compatible with labor-based methods?					✓
Total score	0	0	6	4	35

Tick only shaded cells as applicable

Total score = 45

Rating (%) = 45/47 * 100 = 95.7%

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Quality control for road works						
Issue: Way the RA controls the quality of construction and maintenance works.						
Questions Rating	Answers	No	Yes			
		1	2	3	4	5
Q.26 (a) Does the RA undertake technical audits of designs undertaken by consultants?		✓				
(b) Does the RA regularly undertake technical audits of maintenance works?						✓
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?		✓				
(d) Does the RA provide guidelines for undertaking the road audits?		✓				
(e) Does the RA require materials suppliers to be ISO9000 certified (if required by spec)?		✓				
Total score		4	0	0	0	5

Tick only shaded cells as applicable

Total score = 9

Rating (%) = 9/25 * 100 = 36.0%

Max possible score = 25

Table A.9 Outcome of Survey Questionnaire, Namibia

BB.1 Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish by an Act of Parliament an institutionally separate, arm's length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board; Element: <i>Institutional framework</i> Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.				✓		
(b) Has the RA been established under existing legislation?						
(c) Has the been established through an Act of Parliament?						✓
(d) Does the Roads Act provide for separate management and funding of roads?						✓
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?						✓
Total score		0	0	3	0	15

Tick only shaded cells as applicable Total score = 18 Rating (%) = $18/18 * 100 = 100\%$
 Max possible score = 18

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To clearly establish who is responsible for what in the roads sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: <i>Institutional road management</i> Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?						✓
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.				✓		
(b) Are responsibilities clearly specified in a Roads Act or similar?					✓	
(c) Are new roads systematically designated and published in the Gazette?					✓	
(d) Are roads regularly reclassified and reassigned between different RA's? .						✓
Total score		0	0	6	12	10

Tick only shaded cells as applicable Total score = 28 Rating (%) = $28/28 * 100 = 100\%$
 Max possible score = 28

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund. Element: <i>Oversight management</i> Issue: Supervision of the Roads Authority						

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Questions: Rating score	Answer	Yes				
		No	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.				✓		
(b) Does the Board include members from road users and the business community?					✓	
(c) Are the private sector members of the Board in the majority?					✓	
(d) Are members nominated by the organizations they represent?	✓					
Q.2 (a) Does the Board have Terms of Reference?			✓			
(b) Are the Terms of Reference published in the Gazette or similar?					✓	
(c) Are the terms of Reference written into regulations under the Roads Act?					✓	
(d) Do the Terms of Reference include a Code of Conduct?						✓
Q.3 (a) Is the Board chairman appointed by the Minister without consultation? or						
(b) Is the Board chairman appointed by the Minister after consulting the Board? or			✓			
(c) Is the Board chairman elected by the Board? .						
Q.4 (a) Does the Board meet on an annual basis? or						
(b) Does the Board meet at least every six months? or						
(c) Does the Board meet at least every three months? or					✓	
(d) Does the Board meet at least every per month?						
Q.5 (a) Are the workings of the Board ever open to the public (shareholders)?	✓					
(b) Are the minutes of the Board meetings ever made available to the public?	✓					
(c) Are selected embers of the public ever entitled to attend Board meetings?	✓					
Total score		4	0	9	20	5

Tick only shaded cells as applicable

Total score = 38

Rating (%) = $38/52 * 100 = 73.1\%$

Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Degree of autonomy						
Issue: Extent to which the RA can act independently from the Minister and senior civil servants						
Questions: Rating score	Answer	Yes				
		No	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director after consultation with the Ministry?					✓	
(b) Is the CEO/Director appointed outside the civil service regulations?					✓	
(c) Is the CEO/Director appointed under a performance contract?					✓	
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?						✓
Q.2 (a) Does the RA have a mission statement and strategic objectives				✓		
(b) Does the RA have clear performance targets?					✓	
(c) Is there a performance agreement between the RA and the Board/Ministry?						✓
(d) Is there a performance agreement between the RA and the Road Fund?						✓
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance funding revenue? or						

(b) Does the RA get a fixed share of its revenue from a Road Fund? or					
(c) Does the RA get a variable share from the Road Fund related to performance?					✓
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?			✓		
(b) Are the terms and conditions based on civil service scales? or					
(c) Are the terms and conditions based on civil service scales, with some flexibility? or					
(d) Are the terms and conditions based on market comparators?				✓	
(e) Are the terms and conditions related to a performance-based incentive scheme?					✓
Total score	0	0	6	20	25

Tick only shaded cells as applicable Total score = 47 Rating (%) = $51/51 * 100 = 100\%$
 Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management structure and procedures						
Issue: Manner in which the RA is managed						
Questions	Answer	No	Yes			
		1	2	3	4	5
Q.5 (a) Does the RA have a CEO?				✓		
(b) Does the RA have line managers in charge of clearly defined departments?				✓		
(c) Do the line managers and senior staff have clear job descriptions?					✓	
(d) Are the line managers & senior staff appointed on performance-related, term contracts?	✓					
Q.6 (a) Does the RA have a department responsible for corporate planning?				✓		
(b) Does the RA produce an annual business plan? .				✓		
(c) Does the annual business plan include performance targets?					✓	
(d) Are the performance targets written into a contract with the parent ministry?						✓
(e) Is annual performance measured against the performance targets?						✓
Q.7 (a) Is the management of the RA held accountable for performance?				✓		
(b) Does the RA's annual performance affect the salary of the CEO?					✓	
(c) Does the RA's annual performance affect the salaries of managers and staff?	✓					
Total score		2	0	15	12	10

Tick only shaded cells as applicable Total score = 39 Rating (%) = $39/47 * 100 = 83.0\%$
 Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Human resources						
Issue: Terms and conditions of service for RA staff						
Questions	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs? or						
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs? or						

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(c) Are RA salaries roughly the same as comparable private sector jobs?					✓
Q.9 (a) Does the RA have a formalized, structured training program? .			✓		
(b) Do staff have any incentives to participate in training?				✓	
(c) Is the impact of training evaluated?					✓
Q.10 (a) How many staff positions are vacant at managerial level	>40	40	30	20	10
(b) How many staff positions are vacant at technical level?	>40	40	30	20	10
(b) How many staff positions are vacant at other level?	>40	40	30	20	10
Q.11 How many technical, managerial and administrative staff per 100 km of road?	>20	15-20	10-15	5-10	<5
Total score	1	0	6	4	20

Tick only shaded cells as applicable

Total score = 31

Rating (%) = $31/37 * 100 = 83.8\%$

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Financial management Issue: The type of accounting system operated by the RA						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.				✓		
(b) Can the CAS identify between expenditure on maintenance versus new works?				✓		
(c) Can the CAS identify spending on different types of maintenance?					✓	
(b) Can the CAS identify costs of in-house works versus contract works?						✓
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.				✓		
(b) Do the accounts include revenue and expenditure statement?				✓		
(c) Do the accounts also include income and cash flow statements?					✓	
(d) Do the accounts also include a sources and application of funds statement?	✓					
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.				✓		
(b) Are the accounts audited by the Auditor General (AG)?						
(c) Are the accounts audited by independent auditors appointed by the AG?						
(d) Are the accounts audited by independent auditors appointed by the Board?						✓
Q.15 (a) Is the audit report tabled before Parliament?				✓		
(b) Is the audit report also made available to the general public?					✓	
(c) Is the audit report also published in the press?	✓					
Total score		2	0	18	12	10

Tick only shaded cells as applicable

Total score = 42

Rating (%) = $42/50 * 100 = 84.4\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Management information systems</i> Issue: Asset management						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.16 (a) Is the road network condition evaluated on a judgmental basis only?						
(b) Is the road network condition evaluated using visual inspections only?						
(c) Is the road network condition evaluated also using roughness measurements?					✓	
(d) Is the road network condition evaluated also using strength measurements?						✓
Q.17 (a) Are the condition surveys conducted once in several years?						
(b) Are the condition surveys conducted annually?						
(c) Are the condition surveys conducted annually after the rainy/winter snow season?						✓
Q.18 (a) Are the results of the conditions surveys recorded manually?						
(b) Are the results of the conditions surveys recorded in a simple computerized RMS?						
(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?						✓
Q.19 (a) Are intervention criteria specified for standards used in other countries?						
(b) Are intervention criteria specified in terms of customized standards developed locally?						
(c) Are intervention criteria specified in terms of economic criteria using a RMS?						✓
Q.20 (a) Are priorities determined using engineering judgment?						
(b) Are priorities determined using simple ranking formula or index?						
(c) Are priorities determined using economic criteria determined by HDM or similar?						✓
(d) Are the outputs of the RMS sufficiently reliable for planning purposes?						✓
Total score		0	0	0	4	30

Tick only shaded cells as applicable

Total score = 34

Rating (%) = 34/34 * 100 = 100%

Max possible score = 34

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Procurement and tender procedures</i> Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance works?						✓
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision						✓
(c) Is the RA/RA Board empowered to approve & award contracts for construction works?						✓
Q.22 (a) Does the RA undertake design and supervision of new road works in-house?						
(c) Does the RA outsource design and supervision of new road works?						✓
(d) Does the RA undertake the implementation of new road works in-house?						
(e) Does the RA outsource the implementation of new road works?						✓
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house?						

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(b) Does the RA outsource most routine, periodic & emergency maintenance works?					✓
Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications?					
(b) Does the RA use admeasure contracts based on procedural specifications? or .			✓		
(c) Does the RA use lump sum contracts based on procedural specifications? or					
(d) Does the RA use lump sum contracts based on performance specifications?					
Q.25 (a)) Does the RA generally encourage the use of labor-based road works?			✓		
(b) Does the RA leave the use of labor-based road works at the discretion of contractors?					
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?				✓	
(d) Does the RA use payment methods that are compatible with labor-based methods?					✓
Total score	0	0	6	4	35

Tick only shaded cells as applicable

Total score = 45

Rating (%) = $45/47 * 100 = 95.7\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.	Answers					
Element: Quality control for road works						
Issue: The way in which the RA controls the quality of construction and maintenance works.						
Questions Rating	Answers	No	Yes			
		1	2	3	4	5
Q.26 (a) Does the RA undertake technical audits of designs undertaken by consultants?		✓				
(b) Does the RA regularly undertake technical audits of maintenance works?		✓				
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?		✓				
(d) Does the RA provide guidelines for undertaking the road audits?		✓				
(e) Does the RA require materials suppliers to be ISO9000 certified (if required by spec)?		✓				
Total score						

Tick only shaded cells as applicable

Total score = 5

Rating (%) = $45/47 * 100 = 25\%$

Max possible score = 25

Table A.10 Outcome of Survey Questionnaire, South Africa

BB.1 Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish by an Act of Parliament an institutionally separate, arm’s length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board; Element: <i>Institutional framework</i> Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.				✓		
(b) Has the RA been established under existing legislation? or						
(c) Has the been established through an Act of Parliament?						✓
(d) Does the Roads Act provide for separate management and funding of roads?						✓
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?						✓
Total score		0	0	3	0	15

Tick only shaded cells as applicable Total score = 18 Rating (%) = $18/18 * 100 = 100\%$
 Max possible score = 18

BB.1 Responsibility (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To clearly establish who is responsible for what in the roads sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: <i>Institutional road management</i> Issue: Responsibility for managing different parts of the road network.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?						✓
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.				✓		
(b) Are responsibilities clearly specified in a Roads Act or similar?					✓	
(c) Are new roads systematically designated and published in the Gazette?					✓	
(d) Are roads regularly reclassified and reassigned between different RA's?						✓
Total score		0	0	6	12	10

Tick only shaded cells as applicable Total score = 28 Rating (%) = $28/28 * 100 = 100\%$
 Max possible score = 28

Progress on commercialized road management

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund. Element: Oversight management Issue: Supervision of the Roads Authority						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.				✓		
(b) Does the Board include members from road users and the business community?					✓	
(c) Are the private sector members of the Board in the majority?	✓					
(d) Are members nominated by the organizations they represent?	✓					
Q.2 (a) Does the Board have Terms of Reference?				✓		
(b) Are the Terms of Reference published in the Gazette or similar?					✓	
(c) Are the terms of Reference written into regulations under the Roads Act?					✓	
(d) Do the Terms of Reference include a Code of Conduct?						✓
Q.3 (a) Is the Board chairman appointed by the Minister without consultation? or						
(b) Is the Board chairman appointed by the Minister after consulting the Board? or				✓		
(c) Is the Board chairman elected by the Board?						
Q.4 (a) Does the Board meet on an annual basis? or						
(b) Does the Board meet at least every six months? or						
(c) Does the Board meet at least every three months? or					✓	
(d) Does the Board meet at least every per month?						
Q.5 (a) Are the workings of the Board ever open to the public (shareholders)?	✓					
(b) Are the minutes of the Board meetings ever made available to the public?	✓					
(c) Are selected embers of the public ever entitled to attend Board meetings?	✓					
Total score		5	0	9	16	5

Tick only shaded cells as applicable

Total score = 35

Rating (%) = $35/57 * 100 = 61.4\%$

Max possible score = 57

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Degree of autonomy Issue: Extent to which the RA can act independently from the Minister and senior civil servants						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director?					✓	
(b) Is the CEO/Director appointed outside the civil service regulations?					✓	
(c) Is the CEO/Director appointed under a performance contract?					✓	
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?						✓
Q.2 (a) Does the RA have a mission statement and strategic objectives				✓		

(b) Does the RA have clear performance targets?				✓	
(c) Is there a performance agreement between the RA and the Board/Ministry?					✓
(d) Is there a performance agreement between the RA and the Road Fund?	✓				
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance funding?		✓			
(b) Does the RA get a fixed share of its revenue from a Road Fund? or					
(c) Does the RA get a variable share from the Road Fund related to performance?					
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?			✓		
(b) Are the terms and conditions based on civil service scales? or					
(c) Are the terms and conditions based on civil service scales, with some flexibility? or					
(d) Are the terms and conditions based on market comparators?				✓	
(e) Are the terms and conditions related to a performance-based incentive scheme?					✓
Total score	1	2	6	20	15

Tick only shaded cells as applicable

Total score = 44

Rating (%) = $44/51 * 100 = 86.3\%$

Max possible score = 51

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Management structure and procedures						
Issue: Manner in which the RA is managed						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.5 (a) Does the RA have a CEO?				✓		
(b) Does the RA have line managers in charge of clearly defined departments?				✓		
(c) Do the line managers and senior staff have clear job descriptions?					✓	
(d) Are the line managers & senior staff appointed on performance, term contracts?						✓
Q.6 (a) Does the RA have a department responsible for corporate planning?				✓		
(b) Does the RA produce an annual business plan?				✓		
(c) Does the annual business plan include performance targets?					✓	
(d) Are the performance targets written into a contract with the parent ministry?						✓
(e) Is annual performance measured against the performance targets?						✓
Q.7 (a) Is the management of the RA held accountable for performance?				✓		
(b) Does the RA's annual performance affect the salary of the CEO?					✓	
(c) Does the RA's annual performance affect the salaries of managers and staff?						✓
Total score		0	0	15	12	20

Tick only shaded cells as applicable

Total score = 47

Rating (%) = $47/47 * 100 = 100.0\%$

Max possible score = 47

Progress on commercialized road management

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Human resources						
Issue: Terms and conditions of service for RA staff						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs?						
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs?						
(c) Are RA salaries roughly the same as comparable private sector jobs?						✓
Q.9 (a) Does the RA have a formalized, structured training program? .				✓		
(b) Do staff have any incentives to participate in training?					✓	
(c) Is the impact of training evaluated?						✓
Q.10 (a) How many staff positions are vacant at managerial level	>40	40	30	20	10	
(b) How many staff positions are vacant at technical level?	>40	40	30	20	10	
(b) How many staff positions are vacant at other level?	>40	40	30	20	10	
Q.11 How many technical, managerial and administrative staff per 100 km of road?	>20	15-20	10-15	5-10	<5	
Total score		0	0	3	4	30

Tick only shaded cells as applicable

Total score = 37

Rating (%) = 37/37 * 100 = 100%

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Financial management						
Issue: The type of accounting system operated by the RA						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.				✓		
(b) Can the CAS identify between expenditure on maintenance versus new works?				✓		
(c) Can the CAS identify spending on different types of maintenance?					✓	
(d) Can the CAS identify costs of in-house works versus contract works?						✓
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.				✓		
(b) Do the accounts include revenue and expenditure statement?				✓		
(c) Do the accounts also include income and cash flow statements?					✓	
(d) Do the accounts also include a sources and application of funds statement?						✓
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.				✓		
(b) Are the accounts audited by the Auditor General (AG)?						
(c) Are the accounts audited by independent auditors appointed by the AG?						
(d) Are the accounts audited by independent auditors appointed by the Board?						✓
Q.15 (a) Is the audit report tabled before Parliament?				✓		
(b) Is the audit report also made available to the general public?					✓	
(c) Is the audit report also published in the press?						✓
Total score		0	0	18	12	20

Tick only shaded cells as applicable

Total score = 50

Rating (%) = 50/50 * 100 = 100%

Max possible score = 50

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Management information systems Issue: Asset management						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.16 (a) Is the road network condition evaluated on a judgmental basis only?						
(b) Is the road network condition evaluated using visual inspections only?						
(c) Is the road network condition evaluated also using roughness measurements?						
(d) Is the road network condition evaluated also using strength measurements?						✓
Q.17 (a) Are the condition surveys conducted once in several years? or						
(b) Are the condition surveys conducted annually? or						
(c) Are the condition surveys conducted annually after the rainy/winter snow season?						✓
Q.18 (a) Are the results of the conditions surveys recorded manually? or						
(b) Are the results of the conditions surveys recorded in a simple computerized RMS?						
(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?						✓
Q.19 (a) Are intervention criteria specified in terms of standards used in other countries? or						
(b) Are intervention criteria specified in terms of customized standards developed locally?						
(c) Are intervention criteria specified in terms of economic criteria using a RMS?						✓
Q.20 (a) Are priorities determined using engineering judgment? or						
(b) Are priorities determined using simple ranking formula or index? or						
(c) Are priorities determined using economic criteria determined by HDM or similar?						✓
(d) Are the outputs of the RMS sufficiently reliable for planning purposes?						✓
Total score		0	0	0	0	30

Tick only shaded cells as applicable

Total score = 30

Rating (%) = $30/30 * 100 = 100\%$

Max possible score = 30

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Procurement and tender procedures Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance works?						✓
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision						✓
(c) Is the RA/RA Board empowered to approve & award contracts for construction?						✓
Q.22 (a) Does the RA undertake design and supervision of new road works in-house? or						
(c) Does the RA outsource design and supervision of new road works?						✓
(d) Does the RA undertake the implementation of new road works in-house? or						
(e) Does the RA outsource the implementation of new road works?						✓
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house?						
(b) Does the RA outsource most routine, periodic & emergency maintenance works?						✓

Progress on commercialized road management

Q.24 (a)) Does the RA use cost reimbursable contracts based on procedural specifications?					
(b)) Does the RA use admeasure contracts based on procedural specifications? or					
(c)) Does the RA use lump sum contracts based on procedural specifications? or					
(d)) Does the RA use lump sum contracts based on performance specifications?					✓
Q.25 (a)) Does the RA generally encourage the use of labor-based road works?			✓		
(b) Does the RA leave the use of labor-based road works at the discretion of contractors?					
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?				✓	
(d) Does the RA use payment methods that are compatible with labor-based methods?					✓
Total score	0	0	3	4	40

Tick only shaded cells as applicable

Total score = 47

Rating (%) = 47/47 * 100 = 100%

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.						
Element: Quality control for road works						
Issue: The way the RA controls the quality of construction and maintenance works.						
Questions Rating	Answers	No Yes				
		1	2	3	4	5
Q.26 (a)) Does the RA undertake technical audits of designs undertaken by consultants?						✓
(b) Does the RA regularly undertake technical audits of maintenance works?						✓
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?						✓
(d) Does the RA provide guidelines for undertaking the road audits?						✓
(e) Does the RA require materials suppliers to be ISO9000 certified (if required by spec)?						✓
Total score		0	0	0	0	25

Tick only shaded cells as applicable

Total score = 25

Rating (%) = 25/25 * 100 = 100%

Max possible score = 25

Table A.11 Outcome of Survey Questionnaire, Tanzania

BB.1 – Responsibility		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To establish by an Act of Parliament an institutionally separate, arm’s length and functionally autonomous Roads Authority to be responsible for service delivery and to be managed by a separate Board; Element: <i>Institutional framework</i> Issue: Establishment of a Roads Authority (RA) as a juristic person.						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Has an autonomous/semi-autonomous RA been established? If no, go to Q.2.				✓		
(b) Has the RA been established under existing legislation?			✓			
(c) Has the been established through an Act of Parliament?						✓
(d) Does the Roads Act provide for separate management and funding of roads?						✓
(e) Does the Roads Act provide for separate Boards to manage the roads agencies?		✓				
Total score		1	2	3	0	5

Tick only shaded cells as applicable

Total score = 11

Rating (%) = 11/18 * 100 = 61.1%

Max possible score = 18

BB.1 Responsibility (Cont’d)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To clearly establish who is responsible for what in the roads sector by separating and assigning roles in a definitive manner with matching authority and performance targets. Element: <i>Institutional road management</i> Issue: Responsibility for managing different parts of the road network						
Questions:	Answers	No	Yes			
Rating score		1	2	3	4	5
Q.2 (a) Is there a road inventory? If no, go to Q.3				✓		
(b) Is the road inventory functionally classified?					✓	
(c) Is the functionally classified road inventory updated regularly?						✓
Q.3 (a) Is it clear which roads are managed by the RA? If no, go to next section.				✓		
(b) Are responsibilities clearly specified in a Roads Act or similar?					✓	
(c) Are new roads systematically designated and published in the Gazette?					✓	
(d) Are roads regularly reclassified and reassigned between different RA’s?						✓
Total score		0	0	6	12	10

Tick only shaded cells as applicable

Total score = 28

Rating (%) = 28/28 * 100 = 100%

Max possible score = 28

Progress on commercialized road management

BB.2 Ownership		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objective: To empower and encourage the public to play an active role in the management of roads and, in so doing, win their support for road contributing to a Road Fund. Element: Oversight management Issue: Supervision of the Roads Authority						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the RA have any kind of oversight Board? If no, go to next section.				✓		
(b) Does the Board include members from road users and the business community?					✓	
(c) Are the private sector members of the Board in the majority?					✓	
(d) Are members nominated by the organizations they represent?						✓
Q.2 (a) Does the Board have Terms of Reference?				✓		
(b) Are the Terms of Reference published in the Gazette or similar?	✓					
(c) Are the terms of Reference written into regulations under the Roads Act?	✓					
(d) Do the Terms of Reference include a Code of Conduct?	✓					
Q.3 (a) Is the Board chairman appointed by the Minister without consultation?			✓			
(b) Is the Board chairman appointed by the Minister after consulting the Board?						
(c) Is the Board chairman elected by the Board?						
Q.4 (a) Does the Board meet on an annual basis?						
(b) Does the Board meet at least every six months?						
(c) Does the Board meet at least every three months?					✓	
(d) Does the Board meet at least every per month?						
Q.5 (a) Are the workings of the Board ever open to the public (shareholders)?	✓					
(b) Are the minutes of the Board meetings ever made available to the public?	✓					
(c) Are selected embers of the public ever entitled to attend Board meetings?	✓					
Total score		6	2	6	12	5

Tick only shaded cells as applicable

Total score = 31

Rating (%) = $31/52 * 100 = 59.6\%$

Max possible score = 52

BB.4 Management		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Degree of autonomy Issue: Extent to which the RA can act independently from the Minister & senior civil servants						
Questions:	Answer	No	Yes			
Rating score		1	2	3	4	5
Q.1 (a) Does the Board appoint the CEO/Director?	✓					
(b) Is the CEO/Director appointed outside the civil service regulations?	✓					
(c) Is the CEO/Director appointed under a performance contract?	✓					
(d) Can the CEO/Director, subject to Board approval, hire and fire staff?	✓					
Q.2 (a) Does the RA have a mission statement and strategic objectives				✓		

(b) Does the RA have clear performance targets?					
(c) Is there a performance agreement between the RA and the Board/Ministry?					✓
(d) Is there a performance agreement between the RA and the Road Fund?					✓
Q.3 (a) Does the RA depend on the consolidated fund for road maintenance funding					
(b) Does the RA get a fixed share of its revenue from a Road Fund?				✓	
(c) Does the RA get a variable share from the Road Fund related to performance?					
Q.4 (a) Does the Board set the terms and conditions of employment for RA staff?			✓		
(b) Are the terms and conditions based on civil service scales?					
(c) Are the terms and conditions based on civil service scales, with some flexibility?			✓		
(d) Are the terms and conditions based on market comparators?					
(e) Are the terms and conditions related to a performance-based incentive scheme?					
Total score	4	0	9	4	10

Tick only shaded cells as applicable
 Total score = 27
Rating (%) = 27/47 * 100 = 57.5%
Max possible score = 47

BB.4 Management (Cont'd)						
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Management structure and procedures Issue: Manner in which the RA is managed		Unsatisfactory	Poor	Satisfactory	Good	Excellent
		No	Yes			
Questions	Answer	1	2	3	4	5
Q.5 (a) Does the RA have a CEO?				✓		
(b) Does the RA have line managers in charge of clearly defined departments?				✓		
(c) Do the line managers and senior staff have clear job descriptions?					✓	
(d) Are the line managers & senior staff appointed on performance and term contracts?	✓					
Q.6 (a) Does the RA have a department responsible for corporate planning?				✓		
(b) Does the RA produce an annual business plan?				✓		
(c) Does the annual business plan include performance targets?					✓	
(d) Are the performance targets written into a contract with the parent ministry?						✓
(e) Is annual performance measured against the performance targets?						✓
Q.7 (a) Is the management of the RA held accountable for performance?				✓		
(b) Does the RA's annual performance affect the salary of the CEO?	✓					
(c) Does the RA's annual performance affect the salaries of managers and staff?	✓					
Total score		3	0	15	8	10

Tick only shaded cells as applicable
 Total score = 36
Rating (%) = 36/47 * 100 = 76.6%
Max possible score = 47

Progress on commercialized road management

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Human resources</i> Issue: Terms and conditions of service for RA staff						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.8 (a) Are RA salaries much lower (+/-50%) than comparable private sector jobs?						
(b) Are RA salaries lower (+/-20%) than comparable private sector jobs?				✓		
(c) Are RA salaries roughly the same as comparable private sector jobs?						
Q.9 (a) Does the RA have a formalized, structured training program?				✓		
(b) Do staff have any incentives to participate in training?					✓	
(c) Is the impact of training evaluated?						✓
Q.10 (a) How many staff positions are vacant at managerial level	>40	40	30	20	10	
(b) How many staff positions are vacant at technical level?	>40	40	30	20	10	
(b) How many staff positions are vacant at other level?	>40	40	30	20	10	
Q.11 How many technical, managerial and administrative staff per 100 km of road?	>20	15-20	10-15	5-10	<5	
Total score			6	12	15	

Tick only shaded cells as applicable

Total score = 33

Rating (%) = $33/37 * 100 = 89.2\%$

Max possible score = 37

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: <i>Financial management</i> Issue: The type of accounting system operated by the RA						
Questions Rating/Score	Answer	No	Yes			
		1	2	3	4	5
Q.12 (a) Does the RA have a cost accounting system (CAS)? If no, go to Q13.				✓		
(b) Can the CAS identify between expenditure on maintenance versus new works?				✓		
(c) Can the CAS identify spending on different types of maintenance?					✓	
(b) Can the CAS identify costs of in-house works versus contract works?						✓
Q.13 (a) Does the RA keep commercial accounts? If no, go to Q.15.				✓		
(b) Do the accounts include revenue and expenditure statement?				✓		
(c) Do the accounts also include income and cash flow statements?					✓	
(d) Do the accounts also include a sources and application of funds statement?						
Q.14 (a) Are the RA's accounts audited? If no, go to Q.15.				✓		
(b) Are the accounts audited by the Auditor General (AG)?				✓		
(c) Are the accounts audited by independent auditors appointed by the AG?						
(d) Are the accounts audited by independent auditors appointed by the Board?						
Q.15 (a) Is the audit report tabled before Parliament?				✓		
(b) Is the audit report also made available to the general public?					✓	
(c) Is the audit report also published in the press?	✓					
Total score		1	0	21	12	5

Tick only shaded cells as applicable

Total score = 39

Rating (%) = $39/47 * 100 = 83.0\%$

Max possible score = 47

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Management information systems Issue: Asset management						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.16 (a) Is the road network condition evaluated on a judgmental basis only?						
(b) Is the road network condition evaluated using visual inspections only?						
(c) Is the road network condition evaluated also using roughness measurements?						
(d) Is the road network condition evaluated also using strength measurements?						✓
Q.17 (a) Are the condition surveys conducted once in several years?						
(b) Are the condition surveys conducted annually?						
(c) Are the condition surveys conducted annually after the rainy/winter snow season?						✓
Q.18 (a) Are the results of the conditions surveys recorded manually?						
(b) Are the results of the conditions surveys recorded in a simple computerized RMS?						
(c) Are the results of the conditions surveys recorded in an integrated computerized RMS?						✓
Q.19 (a) Are intervention criteria specified in terms of standards used in other countries?						
(b) Are intervention criteria specified in terms of customized standards developed locally?						
(c) Are intervention criteria specified in terms of economic criteria using a RMS ?						✓
Q.20 (a) Are priorities determined using engineering judgment?						
(b) Are priorities determined using simple ranking formula or index?						
(c) Are priorities determined using economic criteria determined by HDM or similar?						✓
(d) Are the outputs of the RMS sufficiently reliable for planning purposes?		✓				
Total score						

Tick only shaded cells as applicable

Total score = 26

Rating (%) = 26/34 * 100 = 76.5%

Max possible score = 34

BB.4 Management (Cont'd)		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures. Element: Procurement and tender procedures Issue: The way in which the RA handles procurement and tender procedures as well as design, supervision and implementation of road works.						
Questions Rating/Score	Answers	No	Yes			
		1	2	3	4	5
Q.21 (a) Is the RA/RA Board empowered to approve & award tenders for maintenance works?		✓				
(b) Is the RA/RA Board empowered to approve & award contracts for design/supervision works?		✓				
(c) Is the RA/RA Board empowered to approve & award contracts for construction works?		✓				
Q.22 (a) Does the RA undertake design and supervision of new road works in-house? or						
(c) Does the RA outsource design and supervision of new road works?						✓
(d) Does the RA undertake the implementation of new road works in-house? or						
(e) Does the RA outsource the implementation of new road works?						✓
Q.23 (a) Does the RA undertake most routine, periodic & emergency maintenance works in-house?						
(b) Does the RA outsource most routine, periodic & emergency maintenance works?						✓

Progress on commercialized road management

Q.24 (a) Does the RA use cost reimbursable contracts based on procedural specifications?					
(b) Does the RA use admeasure contracts based on procedural specifications?					
(c) Does the RA use lump sum contracts based on procedural specifications?					
(d) Does the RA use lump sum contracts based on performance specifications?					✓
Q.25 (a) Does the RA generally encourage the use of labor-based road works?			✓		
(b) Does the RA leave the use of labor-based road works at the discretion of contractors?					
(c) Does the RA use designs & specs that accommodate the use of labor-based methods?				✓	
(d) Does the RA use payment methods that are compatible with labor-based methods?					✓
Total score	3	0	3	4	25

Tick only shaded cells as applicable Total score = 35 Rating (%) = $35/47 * 100 = 74.5\%$
 Max possible score = 47

BB.4 Management (Cont'd)						
Key objectives: To ensure the adoption of sound business practices and managerial accountability through effective use of systems and procedures.		Unsatisfactory	Poor	Satisfactory	Good	Excellent
Element: Quality control for road works						
Issue: The way in which the RA controls the quality of construction and maintenance works.						
Questions	Answers	No	Yes			
Rating		1	2	3	4	5
Q.26 (a) Does the RA undertake technical audits of designs undertaken by consultants?		✓				
(b) Does the RA regularly undertake technical audits of maintenance works?						✓
(c) Does the RA regularly undertake technical audits of construction/rehabilitation works?		✓				
(d) Does the RA provide guidelines for undertaking the road audits?		✓				
(e) Does the RA require materials suppliers to be ISO9000 certified (if required by spec)?		✓				
Total score		4	0	0	0	5

Tick only shaded cells as applicable Total score = 9 Rating (%) = $9/25 * 100 = 36\%$
 Max possible score = 25

Appendix B. Proposed performance measures and indicators

The appropriate performance measures and related indicators are required to gauge the progress countries are making in commercializing their road management practices. However, the current Road Management and Financing (RMF) Matrix of performance indicators focuses more on the performance of road funds than on the performance of road agencies. For this reason, a framework of performance measures and related indicators was developed in order to (1) measure the progress being made toward the commercialization of road administrations, and (2) monitor the efficiency and effectiveness with which road agencies undertake their responsibilities in the road subsector.

Approach and methodology

The approach and methodology adopted in developing the framework of performance measures and related indicators were based on a review of the literature on the subject in the road subsector in the SSA region (see Gannon and Shalizi 1995; Humplick and Paterson 1994; Transportation Research Board 2006). The outcome of this review provided the basis for proposing the appropriate performance measures to expand the existing RMF Matrix to cover road agencies as well.

Proposed matrix of performance measures and related indicators

A framework of five performance measures and 36 related indicators was developed to measure and track various aspects of the progress on commercialization of road agencies and their efficiency and effectiveness as summarized here:

1. **Performance measure:** *Progress with commercialization* (based on the three building blocks and the related 10 elements that collectively cover all aspects of road service delivery normally undertaken by a road agency (RA), each with a specific aim and related good practice—see table A.1 in appendix A.)

Purpose: To measure the extent to which the RA has progressed with the reforms required to commercialize the management of roads.

Indicators: 18, covering the following aspects: *institutional, supervision, degree of autonomy, human resources, financial management, management information systems, procurement procedures, quality control, reporting.*

2. **Performance measure:** *Institutional effectiveness*

Purpose: To measure the performance of the agency in terms of meeting institutional goals.

Indicators: 2, covering the following aspects: resource lag, research and training.

3. **Performance measure:** *Sectoral effectiveness*

Purpose: To measure how closely the condition and operation of the network match the optimal state and the performance of the agency in meeting institutional goals.

Indicators: 2, covering the following aspects: *preservation effectiveness, axle load control*.

4. **Performance measure:** *Provision efficiency*

Purpose: To measure the productivity and efficiency of the agency in providing the inputs into the road system.

Indicators: 2, covering the following aspects: *output efficiency, provision mode*.

5. **Performance measure:** *Infrastructure provision*

Purpose: To track the amount of the largely public asset, the size of the demand, and the adequacy of the road system for the demand environment.

Indicators: 5, covering the following aspects: *demography and macroeconomy, road network size, road asset value, road network availability, road users*.

The proposed RMF matrix presented in table B-1 includes the five performance measures just described and 40 related performance indicators (PIs). The performance measures can be introduced in stages, and once they are well integrated into the operations of the road administration and are seen to be providing meaningful information, they can be expanded to include others.

Data requirements

Much of the data required to generate the PIs listed in table B-2 should be readily available either from national statistics (such as those pertaining to demography and macroeconomy) or from the regular monitoring procedures normally undertaken by most road administrations and held in the database of a road or pavement management system. Some of the PIs are contained in the current RMF Matrix (road condition), whereas a few are generated by external organizations such as vehicle fleet size and motorization.

Benefits of performance measurement

Performance measurement can provide road agencies in the SSA region with potential benefits in terms of improving the efficiency and effectiveness of their operations. These benefits include:

- Serving as a self-checking measure of how far they have progressed toward commercialization of their operations
- Establishing clear links between their policy goals and objectives and decisions at all levels
- Providing connections between proposed investments and expected results
- Selecting projects linked to an understanding of program-level impacts
- Selecting projects and allocating program resource options and trade-offs that are analyzed based on their technical merits
- Taking a long-term view of asset performance
- Making decisions that are supported by good information.

Ensuring sustainability

Any performance measurement system developed needs to be effectively implemented and sustained over the long term. Measures for ensuring sustainability include putting into place effective mechanisms for data collection, collation, analysis, and dissemination through identification of a lead institution that would play a regional coordinating role in driving the process in a dynamic, sustainable, and accountable manner.

Ongoing development

The proposed matrix of performance measures and related indicators is the first step toward more comprehensive monitoring of road agency and road sector performance in SSA. The performance measures proposed here are part of an ongoing program of work and are intended to provide a basis for feedback and discussion by stakeholders for further refinement during Phase 2 of the SSATP program in support of improving the RMF policy.

Table B. 1 Framework of performance measures and indicators

PERFORMANCE MEASURE: Progress with commercialized road management practices			Description
Aspect	Indicator	Units	
Building block 1 Responsibility			
Institutional framework	<ul style="list-style-type: none"> - Road Authority (RA) established by act of Parliament as institutionally separate, arm's length, and functionally autonomous agency? - Date of creation of the RA? - RA managed by separate public/private sector board? 	<p>Y/N</p> <p>Date</p> <p>Y/N</p>	Indicates whether an RA is established along properly constituted lines, including separating the management of road services from the funding aspects.
Institutional road management	<ul style="list-style-type: none"> - Functionally classified road inventory? - Clear separation of client and supplier functions? - Formal assignment of responsibilities among road agencies? 	<p>Y/N</p> <p>Y/N</p> <p>Y/N</p>	Indicates whether there is a coherent organizational structure with clearly assigned responsibilities for managing different parts of the road network.
Building block 2 Ownership			
Oversight management	<ul style="list-style-type: none"> - RA supervised by a public/ private oversight board? - Board has a majority of private sector members? - Board chair is independently chosen? - Board meets at least quarterly 	<p>Y/N</p> <p>Y/N</p> <p>Y/N</p>	Indicates the way in which the work of the RA is supervised.

Building Block 4 Management			
Degree of autonomy	<ul style="list-style-type: none"> - Board appoints the CEO? - CEO recruited through an open, competitive process? - CEO has performance contract with clear objectives & targets? 	<p>Y/N</p> <p>Y/N</p> <p>Y/N</p>	<p>Indicates the extent to which the management of the RA can be held accountable for its actions.</p>
Management structure and operating procedures	<ul style="list-style-type: none"> - RA has line managers and senior staff appointed on performance-related term contracts? - RA produces an annual report and business plan? 	<p>Y/N</p> <p>Y/N</p>	<p>Indicates the measures taken by the RA to strengthen its operations by adopting sound business practices.</p>
Human resources	<ul style="list-style-type: none"> - Terms and conditions of employment for the CEO and his staff comparable to those in similar private sector organizations (± 25 percent)? 	<p>Y/N</p>	<p>Indicates the measures taken by the RA to recruit and retain capable staff.</p>
Financial management	<ul style="list-style-type: none"> - RA has a cost accounting system? - RA produces commercial accounts (at least an income statement and an asset statement)? - RA publishes audited accounts on an annual basis? 	<p>Y/N</p> <p>Y/N</p> <p>Y/N</p>	<p>Indicates the measures taken by the RA to present a clear picture of the agency's overall financial health.</p>
Management information system	<ul style="list-style-type: none"> - RA has an appropriate road management system for planning and setting priorities? - Road management system produces reliable outputs? 	<p>Y/N</p> <p>Y/N</p>	<p>Indicates the measures taken by the RA to ensure objectivity in setting priorities and evaluating the appropriate technology for road works.</p>
Procurement and tender procedures	<ul style="list-style-type: none"> - RA contracts out most of the design, supervision, and implementation of road works? - RA has reasonably well-developed procurement procedures for contracting out road works? 	<p>Y/N</p> <p>Y/N</p>	<p>Indicates the way in which the RA handles the design, supervision, and implementation of road works.</p>
Quality control	<ul style="list-style-type: none"> - RA regularly checks the quality of construction and maintenance works through the appropriate audits? 	<p>Y/N</p>	<p>Indicates way in which the RA controls the quality of construction and maintenance works.</p>

Glossary

agency agreement

A “framework” agreement that sets down the general principles of the relationship between a public sector client (e.g., Ministry of Roads) and a public sector supplier of services (e.g., a road department or road administration), but may leave the supplier with discretion in dealing with the detailed operational requirements.

agency costs

The costs incurred by the road agency in providing the road services to road users.

assets

The physical infrastructure being managed.

asset management

A systematic process of maintaining, upgrading, and operating assets that combines engineering principles with sound business practices and economic rationale, and provides the tools needed to facilitate a more organized and flexible approach to making the decisions necessary to achieve the public’s expectations.

asset management system

System that embraces all the processes, tools, data, and policies needed to achieve the goal of effectively managing assets.

asset value

The total value of the asset in good condition less the cost to upgrade the asset to good condition from its present state.

audit

A systematic, independent, documented process for obtaining audit evidence and evaluating it objectively to determine the extent to which audit criteria are fulfilled (ISO 9000). A physical check, usually on a sample basis, that work has been carried out, where specified, to predefined standards or procedures, and that costs and other resources have been accounted for properly.

backlog maintenance

The difference in the overall condition of a network between its current condition and that to be expected under stable conditions, according to the prevailing standards. Where inadequate standards and policies exist, the gap between the network's current condition and its economically optimal condition.

business plan

A document describing the contribution to achieving corporate objectives of each decision made within an organization and setting out the annual objectives, tasks, programs, and budgets.

client

An organization or individual who has control of funds and the authority to decide the conditions under which these funds are spent.

commercialization

Activities carried out in a commercial, businesslike manner. Decisions are based on clear assessments of options with their relative advantages and disadvantages. The costs and benefits of actions taken are determined as accurately as possible.

condition index

A parameter that combines individual defect measurements to reflect a generic indication of defectiveness.

core road network

That part of the road network, normally of a strategic nature, that will always be maintained on a priority basis, even when the available resources are extremely limited.

corporatization

The process of giving a government organization an independent legal entity. Often considered to be a necessary condition for commercialization.

corporate plan

A document describing the business of an organization and setting out its vision, mission, values, and medium-term objectives and strategies for achieving them.

cost-benefit analysis

A formal comparison of costs and benefits to determine whether an investment is worthwhile.

cost-effective

The ratio of effectiveness to cost, where effectiveness is a measure of the future value or worth resulting from a decision, and cost is the present-day cost of implementing that decision.

development works

Any activity on the road asset that results in a higher level of service to road users. This includes widening, realignment, or surfacing an originally unpaved road, and new road construction.

effectiveness

The extent to which planned activities are realized and planned results are achieved (ISO 9000).

efficiency

The relationship between the result achieved and the resources used (ISO 9000).

emergency works

Activities that are required at short notice, in response to defects caused by unforeseen events (such as bad weather or accidents), in order to make the road safe for road users or provide a minimal level of access (until a more permanent repair can be made).

force account

In-house works execution.

improvement works

Work that results in an improvement in the level of service experienced by road users compared with the asset's original, as-new condition. Examples are sealing an unpaved road, widening, or realignment. Synonymous with development in this report.

key performance indicators (KPIs)

Objective indices used to measure the performance of an organization and incorporated in any performance agreement. They can be either internal (measuring the organization's operational efficiency) or external (measuring the level of service provided to customers).

level of service

A subjective measure of user requirements.

life-cycle cost

The sum of all recurring and one-time (nonrecurring) costs over the full life span or a specified period of a good, service, structure, or system. Includes purchase price, installation cost, operating costs, maintenance and upgrade costs, and remaining (residual or salvage) value at the end of ownership or its useful life.

maintenance works

Any activity on the road asset that preserves the asset but does not result in an improvement in the level of service experienced by road users (compared with the original, as-new condition of the asset). Maintenance includes rehabilitation and reconstruction works if these return the road to its original condition.

network

A particular grouping of roads for management purposes—for example, a national road network, trunk road network, or paved road network.

optimum condition

The condition of the road asset that minimizes total road transport costs. Applicable to a specific road or roads, or the whole network.

performance agreement

A formal document between a client and a service provider that describes in detail what the service provider is going to achieve in return for the funds provided by the client.

performance-based contract

A contract based on functional specifications.

performance indicator

A numerical measure of the degree to which the objective is being achieved.

periodic maintenance

Treatments that should be applied more than once a year. The two basic types for paved roads are surface treatments—time-based treatments that are predominantly required to counter the impact of aging and do not have any fundamental impact on the pavement's strength; and structural treatments (e.g., overlays)—treatments that are required because of the impact of traffic and that result in a structurally stronger pavement. For unpaved roads, periodic maintenance includes regrading and reshaping.

planning

The activities required to identify future road management activities over a period exceeding 12 months (one road management cycle) and their associated costs. These activities are normally carried out to a level of accuracy adequate for budgeting purposes and focus on outcomes rather than inputs or specific outputs. Medium-term planning normally covers three to five years, long-term planning at least 10 years.

privatization

The partial or total transfer of ownership of the entity concerned from government to the private sector—that is, ownership-related conditions are replaced by actual private ownership and the associated risk.

programming

The activities needed to identify specific road management activities on the road asset during the current management cycle (i.e., within the next 12 months). These activities are normally developed to a high level of detail, including specific resource allocation, timing, and costs.

reconstruction

Replacement of the entire road asset item, including all current road layers to the subgrade level, culverts, and bridges.

recurrent maintenance

See routine maintenance.

rehabilitation

For paved roads, replacing the existing road's surface layer (and base layer) with new layers, thereby restoring the road to the same condition as when it was new (without improving the level of service experienced by road users compared with its original, as-new condition). For bridges, replacing the deck, parapets, or wing-walls, but not the abutments or other key structural elements of the bridge.

road agency

A generic term that can apply to either a Road Agency or a Road Authority

Road Agency

A public sector body that falls under a parent ministry and therefore is not an independent legal entity. Is responsible for administering the road network under an agency agreement.

road assets

All physical items within the road boundary that are owned or are the responsibility of the Road Agency, including the carriageway itself, hard shoulders, verges, any fencing delineating the road boundary, signs, bridges that carry the road, and other structures such as culverts associated with the road.

Road Authority

An independent legal entity authorized by legislation to manage the road network. Can sign contracts under its own name, sue, and be sued.

road board

See road fund board.

road fund

A fund dedicated to road management or to some aspects of road management such as road maintenance.

road fund board

A committee set up to advise on or administer a road fund.

road management

All the functions and activities required to provide road services to road users, including planning, programming, contract management, physical works on the road assets, supervision, inspections, and activities to support these activities (e.g., financial management, reporting, human resource management, audit, information technology support).

road user costs

Costs incurred by road users—mainly vehicle operating costs and travel time.

routine maintenance

Activities usually required at least once a year (usually more frequently) that are not generally influenced by traffic levels. Examples are patching, crack sealing, drain clearing, grass cutting, regrading, painting of bridges, signs, and white lines.

service provider

Organization or individual paid to provide a client with some product or service.

spot improvement

Activities carried out at isolated locations in order to provide a minimal level of access for road users. Examples are spot regravelling, scarification, and rehabilitation of short sections.

total road transport costs

The total cost of roads to the economy, including agency costs and road user costs, and the environmental and social costs when they can be estimated.

References

Austrroads. 2006. *Guide to Asset Management, Part 1: Introduction to Asset Management*. Sydney 2000, Australia.

Benmaamar, M. 2006. *Financing of Road Maintenance in Sub-Saharan Africa. Reforms and Progress towards Second Generation Road Funds*. SSATP Discussion Paper No. 6, World Bank, Washington, D.C.

Brooks, D. M., R. Robinson, and K. P. O'Sullivan. 1989. *Priorities in Improving Road Maintenance Overseas: A Check-list for Project Assessment*. Proceedings of the Institution of Civil Engineers, Part 1. 86 (December): 1129–41.

Brushett, S., L. Sampson, and S. Waithaka. 2008. *Building Capacity in Management and Financing in the Road Sector*. SSATP Note No. 37, World Bank, Washington, D.C.

DCDM Economic and Management Consultants, 2007. *Organization and Methods Review*. Final Report, Botswana Ministry of Works and Transport, Gaborone, October.

Dunlop, R.J., 1999. *The New Zealand Experience in Restructuring Road Administration*. Transportation, 26 (No.1), 55-56.

Gannon, G., and Z. Shalizi. 1995. *The Use of Sectoral and Project Performance Indicators in Bank-Financed Transport Operations*. Report TWU 21, Environmentally Sustainable Development, Transportation, Water, and Urban Development Department, World Bank, Washington, DC.

Heggie, I. G. 1991. *Designing Major Policy Reform: Lessons from the Transport Sector*. Discussion Paper 115, World Bank, Washington D.C.

Heggie, I. G., and P. Vickers. 1998. *Commercial Management and Financing of Roads*. Technical Paper 409, World Bank, Washington, D.C.

Humplick, F., and W. D. O. Paterson. 1994. *Framework of Performance Indicators for Managing Road Infrastructure and Pavements*. Proceedings, Third International Conference on Managing Pavements, San Antonio, Texas.

Israel, A. 1987. *Institutional Development: Incentives to Performance*. Baltimore: John Hopkins University Press (for the World Bank).

Kumar, A. 2000. *Assessment of Selected Road Funds in Africa*. SSATP Working Paper No. 51, Sub-Saharan Africa Transport Policy Program, World Bank, Washington, D.C.

Malmberg Calvo, C. 1998. *Options for Managing and Financing Rural Transport Infrastructure*. Technical Paper 411, World Bank, Washington, D.C.

Pinard, M. I., and S. Kaombwe. 2001. *Implementation and Impact of RMI. A Survey of Stakeholders in Seven Member Countries*. SSATP Working Paper No. 62, Sub-Saharan Africa Transport Policy Program, World Bank, Washington, DC.

Robinson, R., and D. Stiedl. 2001. *Decentralisation of Road Administration: Case Studies in Africa and Asia*. *Public Administration and Development* 21 (1): 53–64.

Robinson, R., U. Danielson, and M. Snaith. 1998. *Road Maintenance Management: Concepts and Systems*. Basingstoke and London: Macmillan.

Rohde, G., M. I. Pinard, and S. Sadzik. 1996. *Long-term Network Performance—A Function of Maintenance Strategy*. Proceedings, Roads 96, Combined 18th ARRB Transport Research Conference, Christ Church, New Zealand, September 2–6.

Roughton International. 2007. *Analysis of Existing Arrangements and Policy Options for Road Maintenance in Africa*. Chandlers Ford, UK: Roughton International.

SADC (Southern African Development Community). 1999. *Model Legislative Provisions: Road Network Financing and Management*. Maputo, Mozambique: SADC, May.

_____. 2003. *Guideline on Low-Volume Sealed Roads*. SADC Secretariat, Gaborone, July.

SANRAL (South African National Roads Agency, Ltd.). 2007. Annual Report 2007. Pretoria, South Africa: SANRAL.

Stankevich, N., et al. 2005. *Performance-based Contracting for Preservation and Improvement of Road Assets*. Transport Note TN-27, World Bank, Washington, D.C.

Talvitie, A. 1996. *International Experiences in Restructuring the Road Sector*. Paper presented at Transportation Research Board Annual Meeting, National Research Council, Washington, D.C.

Transportation Research Board. 2006. *Performance Measures and Targets for Transportation Asset Management*. National Cooperative Highway Research Program (NCHRP) Report 551, National Research Council, Washington, D.C.

World Bank. 2006. *Resource Guide on Performance-based Contracting for Preservation of Road Assets*. Washington, D.C.