34th WEDC International Conference, Addis Ababa, Ethiopia, 2009

WATER, SANITATION AND HYGIENE:
SUSTAINABLE DEVELOPMENT AND MULTISECTORAL APPROACHES

A National Infrastructure Maintenance Strategy for South Africa

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Whereas in a country such as South Africa some public sector authorities are able to practise more or less competent management of their infrastructure assets, government intervention and assistance is needed in respect of many other authorities -- especially in respect of those at local government level.

The National Infrastructure Maintenance Strategy sets overarching national policy for sector-based initiatives, and describes the framework for a coordinated programme of actions. Simultaneous infrastructure investment and maintenance that will result from this strategy will not only improve infrastructure performance and underpin services sustainability, but will also contribute significantly towards national and local economic growth and will add long term jobs.

Countries that do not enjoy the comprehensive information set upon which the Strategy was founded, should nonetheless make the start with such a strategy where they can, and set themselves on a path of steadily improving information and practice.

Introduction

Infrastructure, in the form of public buildings, roads, water and sewerage systems, electricity and other services, supports quality of life and is the foundation of a healthy economy. This paper describes South Africa's *National Infrastructure Maintenance Strategy* ("NIMS") (Department of Public Works et al 2006), its background, and progress with its implementation. Approved by Cabinet in August 2006, this is a co-ordinated programme of actions that is an essential part of government's vision of delivering infrastructure services to all. NIMS was launched by the Minister of Public Works in May 2008.

NIMS was prepared by a team from Department of Public Works (DPW), Construction Industry Development Board (CIDB) and the Council for Scientific and Industrial Research (CSIR), led by the then Acting Director General of Public Works.

Contextualisation of issues

All three spheres of government (national, provincial, local), together with the state owned enterprises (SOEs), manage major portfolios of immovable infrastructure assets. (For the purposes of this paper, "public sector" includes SOEs such as the national electricity generating authority Eskom, the national rail authority Transnet, and Telkom.) While there is much political emphasis on "delivery" of infrastructure, delivery does not in fact end with the commissioning of the infrastructure asset. "Delivery" needs to be universally understood as embracing not just constructing the infrastructure, but the appropriate operation and maintenance thereafter, for the whole design life of the asset.

In 1994 the newly elected government evaluated the imbalance in infrastructure that characterised the nation, and embarked on an ambitious plan to put matters right by addressing the backlog. For example, the government has invested significantly in providing potable water to 17 million people. Other infrastructure provided at the same time, such as sanitation and road infrastructure, has further improved the quality of life of the people of South Africa. Government is committed to increasing levels of infrastructure investment as a foundation for service delivery, economic growth and social development.

Government should not change its focus on new infrastructure to address backlogs from the past. The challenge is to supplement this by, at the same time, also maintaining both new and old infrastructure. Clearly, the impact of increased infrastructure investment would be negated should that infrastructure fail to deliver services, and therefore government recognises the need to simultaneously address backlogs for investment in maintenance and in new infrastructure.

Review and analysis

A sector by sector review of the state of infrastructure and facilities, the state of their management, and current initiatives to enhance maintenance was undertaken for the purposes of formulation of NIMS (Note 1). This revealed that maintenance of the stock of infrastructure that is owned by government and its agencies varies greatly from sector to sector, and often also from institution to institution within a sector. Specific sectors have their own unique challenges.

The review indicated that all public sector institutions could, in respect of the state of their infrastructure and facilities maintenance, be placed in one or the other of two broad categories described below and set out in Table 1:

- Category A: They have sound asset management plans for their strategic infrastructure (if not for all of their infrastructure), maintenance budgets are adequate (even if they could always do with more funding), capacities and skills are adequate, and their leadership has a strong maintenance ethic. OR: They are largely missing one or more of the elements listed above -- for example they might have the plans and the skills, but maintenance budgets, although substantial, are not adequate. However they recognise this, improvement is taking place, and further improvement is programmed.
- Category B: These are not as strong in each of the elements as the institutions of Category A are. Furthermore, this situation is not improving, and might even be deteriorating. OR: They do not have asset management plans, maintenance budgets are not adequate, they lack capacity, and their leadership does not consider maintenance to be very important.

Category	Brief description	Institutions
A	Adequate and/or improving maintenance	SA National Roads Agency, national government public buildings, national Department of Water Affairs and Forestry (DWAF), Airports Company SA, Eskom, Telkom, Transnet, some provincial roads, some provincial health and education, some municipalities, some water boards
B	Inadequate maintenance and/or deteriorating	Some provincial roads, some provincial health and education, most municipalities, some water boards

The main differences between Category A and B institutions are:

- Although all institutions have in recent years acquired significant amounts of newly constructed infrastructure, the Category B institutions have become responsible proportionately for much more than they had before; and

- Within the Category B institutions, the maintenance budgets and the numbers and skill of their staff have not increased in step with the increase in responsibility for infrastructure. In some cases, the numbers of skilled staff have reduced, whereas, in the Category A institutions, budgets and staff are more closely keeping up with the increase in infrastructure.

It is important to identify which Category B infrastructure and facilities sectors constitute the greatest problem in terms of issues such as:
- severity of problem and how frequently it is experienced;
- effects on human health and economic growth;
- lack of effective countermeasures in the event of failure of the service; and
- the risk generally to government's growth objectives.

Wastewater treatment works are often problematic, as are water treatment works, water and sewer reticulation, on-site sanitation, some provincial and municipal roads and some provincial health and education facilities. These sectors must be the main focus of efforts to assist the Category B institutions. If not, very substantial resources to address repairs and unplanned replacements (as opposed to planned, preventative measures) will ultimately have to be found, which would severely limit the programme for addressing backlogs and expanding service delivery.

Action plan

It is evident that a holistic national infrastructure maintenance strategy is needed. Whereas Category A public sector institutions are on the path to sustained infrastructure service delivery through maintenance improvement, **it does not seem that Category B institutions will (with a few exceptions) be able to improve their maintenance policies and practices without strong direction and assistance from national government.**

NIMS is aimed at promoting sound maintenance of infrastructure and facilities across the whole of the public sector. While it will assist and set parameters for all public sector institutions, its primary target is the institutions in Category B.

The four thrusts of NIMS, implementation of which will lead to the achievement of this vision, comprise:
i. Strengthening the regulatory framework governing planning and budgeting for infrastructure maintenance.
ii. Assisting institutions with non-financial resources.
iii. Developing the maintenance industry.
iv. Strengthening monitoring, evaluation and reporting, and feeding this into a process of continuous improvement.

These thrusts are described very briefly below:

I. Strengthening the regulatory framework governing planning and budgeting for infrastructure maintenance

As noted earlier, planning and budgeting for maintenance varies greatly across the public sector. The most effective way to address the needs of those institutions that have not adopted sound infrastructure maintenance policies and practices is to strengthen the performance requirements within the regulatory framework and National Treasury guidelines governing the management of immovable assets, the compilation of strategic plans and the annual budgetary process. This will result in improved motivations for additional funding for maintenance, a prerequisite for receiving increased funding.

In terms of the Government Immovable Asset Management Act ("GIAMA") (South Africa 2007), passed into law early in 2008, it is now obligatory for national and provincial (but not – yet – local) government institutions to draw up sound multi-year infrastructure asset management plans.

II. Assisting institutions with non-financial resources

Improving human resources capacity and providing better practice guidelines are measures that will assist institutions to improve maintenance. Supportive interventions being introduced include:
- developing norms and standards for maintenance of different types of infrastructure; and
- putting in place appropriate capacity-building, mentoring and direct support programmes.

III. Developing the maintenance industry

Appropriate infrastructure maintenance creates jobs. Maintenance needs to be done year after year, and personnel to do this maintenance will therefore always be needed – not just for the limited period of construction, but also for the whole of the designed life of the infrastructure.

IV. Strengthening monitoring, evaluation and reporting, and feeding this into a process of continuous improvement

Monitoring and evaluation processes must be strengthened and implemented -- with mechanisms for the feedback to result in the necessary improvements. This will enable performance change to be measured, but, as important, it will draw the attention of the institutions concerned to non-performance. The annual reporting requirements and the forthcoming GIAMA regulations provide the framework for this to take place.

Progress

The NIMS is only one (admittedly, one of the most significant, if not the most significant) of a number of national infrastructure asset management (IAM) initiatives, planned to complement one another. They are all part of the process of promoting sound maintenance of infrastructure and facilities across the whole of the public sector, and setting parameters for the performance of public sector institutions.

NIMS is not an isolated initiative. It needs to synergise with, and in turn, to varying degrees, be supported by, many current initiatives. To emphasise -- it is not a separate programme, but implementation is to be across all spheres of government, and within departments. Thus all public sector owners of infrastructure, at all levels, are being called upon to implement their respective provisions. A very important aspect of this is that each of a number of key national government departments is, under the "umbrella" of NIMS, preparing a "sector strategy" on infrastructure maintenance that that it must both apply to the infrastructure it directly owns and cascade down to the infrastructure in that sector that is owned by others. For example, national Department of Water Affairs and Forestry (DWAF) is well advanced with a national water services sector infrastructure asset management strategy, and is actively promoting this to municipal water services authorities -- and moving in support of those municipal water services authorities identified as "Category B".

Thus, in terms of NIMS, national Government’s integrated approach to macro planning and implementation is "work in progress" in respect of the following initiatives, among others:

- Define an adequate IAM strategy and policy for government, which will strengthen government’s role to oversee and enforce compliance.
- Information sharing within or across sectors that will help avoid duplication of efforts.
- Promote IAM, as a tool to help meet regulatory requirements
- National support initiatives to promote IAM throughout the public sector.

Learning points

The key lessons learnt from the development and implementation thus far of the strategy are:

- Whereas in a country such as South Africa some public sector authorities are able to practise more or less competent management of their infrastructure assets, government intervention and assistance is needed in respect of many other authorities -- especially those at local government level.

- Intervention and assistance needs to be part of a strategy that is bought into by all government departments. It has to be comprehensive -- i.e. incorporate a broad range of measures, including: regulatory framework; restructuring of budgets; issues to do with skills; strengthening monitoring and evaluation, and feeding results into an improvement process.

- Strategy has to be driven by national government, either directly or through a nominee.

- Whereas formulation of a national infrastructure maintenance strategy is ideally based on comprehensive information on the state of infrastructure and the state of its management, countries with less of an information base than that which South Africa enjoyed should nonetheless make the attempt to draw up a strategy as best they can. An incremental approach is commended -- that is, a virtuous cycle of steadily improving learning and raising standards of maintenance practice.

References

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Keywords

Infrastructure asset management, maintenance, national strategy, South Africa.

Note 1:

This review was undertaken in conjunction with the compilation by the South African Institution of Civil Engineering (SAICE) of a "report card" of the state of infrastructure in South Africa. The latter covered a wide range of civil and electrical engineering infrastructure, including airport infrastructure, rail and harbour infrastructure, roads and water services at national and local level, sanitation, hospitals and clinics, electricity generation and bulk transmission, electricity reticulation, and solid waste management. A desktop review -- the most comprehensive in South Africa to date -- was undertaken of a very large number of documents on the state of infrastructure and the state of its management in respect of each of these areas. Also, members of the built environment professions were consulted for their views on the state of infrastructure in their respective areas of concern, and for their knowledge on current initiatives to enhance maintenance.

Over and beyond the work that SAICE had undertaken, the compilers of the National Infrastructure Maintenance Strategy undertook a number of independent desktop reviews (e.g. CIDB 2007) and consulted further with specific national government departments.

For the SAICE report card, see: *The SAICE infrastructure report card for South Africa: 2006*. SAICE, Midrand, November 2006. Available at: http://www.civils.org.za

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