WIN-SA
WATER INFORMATION NETWORK
- SOUTH AFRICA -

"Making knowledge work for us"

LESSON SERIES
November 2010

Institutionalising Infrastructure Asset Management (IAM)

The Northern Cape O&M Project

NOORD-KAAP PROVINSIE • NORTHERN CAPE PROVINCE • IPHONDO LOMTLA KOLONI • PROFENSI YA KAPA BOKONE

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1 Background to and purpose of the Lesson

The very first Water Information Network-South Africa (WIN-SA) Lesson covered the Northern Cape Operations and Maintenance (O&M) Project. It gave information on the Project objectives, partners and structure. It highlighted the "learning through doing" Project methodology, outputs and activities, and highlighted some early emerging lessons.

This WIN-SA Lesson builds on and contributes to the O&M learning journey for the Northern Cape. It seeks to understand O&M in the context of infrastructure asset management (IAM), looks at O&M Project deliverables in some detail and approximately four years later, comments on Project benefits, and draws lessons for strengthening and re-framing the O&M Project within a stronger IAM context.

A workshop was help in the Northern Cape on 8 April 2010 to obtain comment from Northern Cape stakeholders in order to strengthen the text of this Lesson. At the workshop it was clear that stakeholders have achieved a common vision and understanding of what both O&M and IAM are, and how they relate to each other. Stakeholders are now ready to take the Project to a more strategic level within the broader IAM focus and approach. As one stakeholder put it, "IAM is a philosophy more than an action".

The purpose of this WIN-SA Lesson, therefore, is to build on and challenge traditional O&M thinking by providing an IAM framework within which to understand O&M and related issues. It is believed that by progressing towards an IAM approach – which includes O&M – municipalities would ensure a much more holistic approach to service delivery.

This Lesson is written for **local government councillors, officials and senior management** who are in the business of continuously seeking to **raise the bar on service delivery** for their communities. It is hoped that key insights can be used by other municipalities wishing to undertake similar work.

This Lesson is written for **local government councillors, officials and senior management.** It was written in partnership with the Northern Cape O&M Project.

"So this is not just about wastewater, water or roads, it's about having the information available that allows authorities to make good decisions and create effective and sustainable management practices leading to service improvement for its communities not just for today but for the future."

"Simply put, it's about legacy!"

(Based on USEPA Case Studies [2005])

[1] Lesson Series Issue One: The Northern Cape Operation and Maintenance Project" (undated).

2 What is IAM?

"IAM is a philosophy. It is an art, not a science. And it requires a mind set change."

(Hendry Christians, COGHSTA, Northern Cape: O&M / IAM Workshop, 8 April 2010).

IAM is a fairly new approach to the running of utilities and the provision of services to communities. It is known by many names like SAM (strategic asset management), AM (asset management), SIAM (sustainable infrastructure asset management) and WIAM (water infrastructure asset management). It may be considered the "art of balancing service delivery, cost and risk through the support of excellent management, appropriate engineering and available information". IAM cannot be seen as an exact science and thus, requires indigenous know-how (common sense) and innovation.

Very often managers sit with the responsibility of delivering services without the necessary resources (people, money, information and equipment). IAM is most useful in enabling managers to motivate the recognition of the current situation and the emerging consequences. Current management style in South Africa is largely reactive, limited and constrained. It tends to have a functional (short-term) perspective rather than looking at long-term performance.

Instituting IAM approaches can help extend perspectives in order to change mindsets and behaviours of management, and enable managers to become more proactive through effective planning.

Each organisation, utility or individual should approach IAM within its own context.

"Infrastructures are systems and not a set of independent assets." (Alegre and Schulting, LESAM 2007)

The National Water Services Infrastructure Asset Management Strategy (Draft 4.4, 30 June 2008) provides the following definition for IAM:

> *Infrastructure asset management (IAM) is an integrated process of decision-making, planning and control over the acquisition, use, safeguarding and disposal of assets to maximise their service delivery potential and benefits, and to minimise their related risks and costs over their entire life (DWA, 2010 and Bhagwan, 2009).*
>
> *Thus IAM includes operation of infrastructure assets, and also planned maintenance and repair, refurbishment and renewal, and provision for replacement of the infrastructure.*

Global case studies show that there are several models for IAM implementation. For industrialised countries, IAM started "bottom up" where the initial focus was on optimising daily O&M. This led to a step-by-step growth towards strategic IAM. Developing countries often implement IAM with a "top-down" approach to support the reorganisation of activities within an overall strategic framework (Alegre and Schulting, 2007). For South Africa it is likely to be a combination of both approaches especially when linking IAM with the three spheres of government.

3 What is O&M, and how does it relate to IAM?

Operations are generally understood to mean the use of personnel and consumables (such as energy, chemicals and materials) required for an asset to operate to its required performance. Maintenance is generally understood to mean the actions required for an asset to achieve its expected useful life. Maintenance can be planned or unplanned. Planned maintenance includes measures to prevent known failure and can be time or condition-based. Repairs are a form of unplanned maintenance to restore an asset to its previous condition after failure or damage (Expenses on maintenance are considered operations expenditure). Allowing O&M to be incorporated within a broader and holistic IAM framework moves an organisation from unplanned maintenance (reactive) to planned and preventative maintenance (proactive).

Figure 1 below highlights the cyclical nature of IAM with a particular emphasis, visibility and inter-relationship of maintenance and additional asset management choices. O&M is a significant component of the broader IAM Cycle which includes other strategic functions such as information and decision-making around planning, budgeting and replacement or rehabilitation of an asset and finally disposal of assets. (Note – the graphic does not identify additional financial and organisational elements discussed below.)

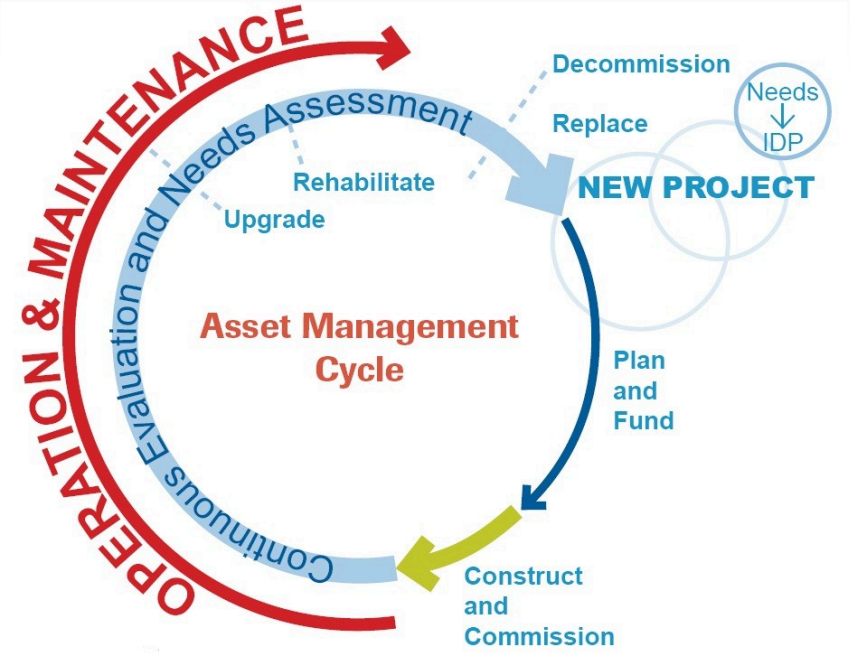


Figure 1: Asset Management Cycle in the Northern Cape O&M Project (NC O&M Report, 2008).

IAM is not a once-off or external intervention. It must become integrated into the operations of the institution owning or managing the infrastructure.

It requires experience, indigenous knowledge and systems. It presents an opportunity to break down "silos" and work more usefully together.

Good practice includes:

- Moving from reactive maintenance to proactive and predictive maintenance.
- Knowing the costs and benefits of rehabilitation versus replacement.
- Looking at lifecycle costs, especially for critical assets.
- Deploying resources based on asset conditions.
- Analysing the causes of asset failure to develop specific response plans.

An IAM programme should encompass all the elements listed below. Each element has a specific objective:

- Needs analysis – ensure the asset is needed and what it will achieve.
- Cost benefit – justification for purchasing, maintaining and sustaining the asset.
- Planning – for the acquisition, installation, operation and maintenance of the asset.
- Budgeting – plan for the funds required to purchase, operate and maintain the asset.
- Installing and activation – of the asset.
- Registration – record and account for the asset, and its changing status, value and condition over time (also referred commonly to as an Asset Register).
- Management – utilisation, operation of the asset, and repairs, as required.

- Condition assessment – periodic inspection of the asset to determine its condition with a resulting decision on whether the asset needs repair, rehabilitation, or to be renewed.
- Asset performance review – review benefits and costs related to the asset practices and make decisions on what further actions are necessary.
- Asset management improvement review – review decision processes applied to asset and its management, and make decisions on where there might be value in further actions to improve or optimise those processes. Resource constraints particularly warrant this. Solutions can also be non-asset-related or resource-intensive, for example, demand management.
- Rehabilitation and replacement – based on the condition of the asset, it may be rehabilitated to continue working or be replaced.
- Disposal – if an asset has been removed from service and cannot be refurbished and returned to service, it must be disposed of and the area rehabilitated, if necessary.

4 Background to the Northern Cape[2]

The Northern Cape is bordered by the Atlantic Ocean on the west, Namibia on the north west and Botswana on the north. The Province is also bordered by the Provinces of the Western Cape, Eastern Cape, Free State and North West.

Of the nine provinces it is the largest, covering approximately 30% of the land area of South Africa (361 830 km^2). It has the smallest population (822 727 people), and is therefore the most sparsely populated (2.27 persons per km^2). It has the third highest per capita income, but income distribution is extremely skewed, with a high percentage of the population living in extreme poverty. The Northern Cape's share of South Africa's Gross Domestic Product (GDP) (2% in 2002) is the lowest of all provinces. (Figures from Census 2001).

The municipal demarcation process of 2000 resulted in the creation of:

- Five District Municipalities – Frances Baard, Karoo (now Pixley ka Seme), Kgalagadi (now John Taolo Gaetsewe), Namakwa and Siyanda.
- Twenty-seven Local Municipalities.
- Five district management areas (DMAs).

All 27 Local Municipalities are authorised as water services authorities (WSAs). The District Municipalities are WSAs for the DMAs only. The 27 Local Municipalities have 75 towns, 215 villages and 71 settlements, with 146 water services installations.

4.2 Service delivery challenges

Most Northern Cape municipalities are small and under-resourced, and include a number of towns and sometimes villages, many of which are significant distances from one another.

A study commissioned by the Northern Cape O&M Project at start up in 2004 to assess the management and O&M of water supply and sanitation services in the Province revealed low priority for O&M, lack of skills and capacity, inappropriate design and technology choices, poor community involvement, lack of information owing to poor monitoring and evaluation (M&E) and record keeping systems, poor planning, lack of training and insufficient funding.

[2] All figures and tables in section 4 obtained from the *Northern Cape Provincial Growth and Development Strategy* (2007) unless otherwise specified.

4.3 Status of water and sanitation needs

A total of 7 049 households (2.8%) has no access to clean piped water. The percentage of households with piped water inside the house has decreased from 50% in 1996 to 39.7% in 2001. This is a result of an increase in informal dwellings which has created a demand for water services. See table 1 below for access to water by individual households.

Table 1: Access to water by individual households

	Type of water supply	No of households	% households
1	Piped water in dwelling	82 211	39.7
2	Piped water inside yard	86 820	42.0
3	Piped water on community stand less than 200 m away	15 750	7.6
4	Piped water on community stand more than 200 m away	15 011	7.3
5	Borehole	1 215	0.6
6	Spring	61	0.0
7	Rainwater tank	284	0.001
8	Dam / pool / stagnant water	691	0.003
9	River / stream	2 156	1.0
10	Water vendor	129	0.0
11	Other	2 513	1.2
	TOTAL	**206 841**	**100.0**

In the Northern Cape, 11.2% of households have no access to **sanitation**. A further 11.8% have access only to bucket latrine systems (as reflected in table 2 below). This excludes the 5 500 households to be resettled in terms of the land restitution programme. Thus, a total minimum backlog of 53 046 households exists.

Table 2: Access to sanitation by individual households

	Sanitation type	No of households	% households
1	Flush toilet (connected to sewerage system)	120 768	58.4
2	Flush toilet (with septic tank)	16 252	7.9
3	Chemical toilet	1 747	0.8
4	Pit latrine with ventilation (VIP)	10 825	5.2
5	Pit latrine without ventilation	9 704	4.7
6	Bucket latrine	24 310	11.8
7	None	23 236	11.2
	TOTAL	**206 842**	**100.0**

5 The Northern Cape O&M Project

5.1 Background

The O&M Project was conceived in the Northern Cape in 2001 when the then Department of Water Affairs and Forestry (DWAF) initiated a task team to explore joint development of services between all relevant role players. An O&M study group comprising Kobus Streuders and Gawie van Dyk (Northern Cape DWAF), with Sarel Haasbroek, Hendry Christians and Coenie Coetzee (Northern Cape Department of Housing and Local Government [DH&LG]), and Jochie Prinsloo from Africon Engineering concluded that urgent O&M interventions were required.

DH&LG had a Municipal Development Programme which included a water and sanitation component, funded in part by the Swedish International Development Cooperation Agency (Sida) – with the Swedish Association of Local Authorities (SALA) and SIPU International (Swedish Institute for Public Administration) as partners.

In 2003 Sida agreed to fund a Swedish partnership with DH&LG and DWAF for a comprehensive O&M Project. In August 2004 the first Steering Committee meeting of the Northern Cape O&M Project was held. It included representatives from DH&LG, DWAF, the Development Bank of Southern Africa (DBSA) and its Development Fund, South African Local Government Association (SALGA) Northern Cape, the Frances Baard District Municipality and SIPU International. The Municipal Training and Development Institute (MTI) supported training and materials development aspects of the Project.

5.2 Purpose

The August 2004 "Project Document for O&M in the Northern Cape Province" states that the Project sought to "strengthen the capacity of municipalities in the Province and its Department of Housing and Local Government (DH&LG) to provide good quality services in the fields of water supply, sanitation and roads, through improved systems for and management of O&M."

The August 2004 Project Document further states that the Project sought to "develop the capacities of municipalities to access resources, plan, implement, monitor and evaluate O&M and to communicate information on these matters with their communities." It was envisaged that "the improved systems and management would lead to fewer breakdowns, improved cost efficiency and prolonged economic life spans of invested infrastructure."

Although never articulated as an IAM project, the O&M Project was a reaction and structured response to emerging IAM challenges. The quotations from the August 2004 Project Document certainly articulate an IAM vision.

Through Project implementation there has been a growing recognition that IAM offers a broader strategic framework to define, distinguish and begin to impact at other spheres of IAM beyond O&M.

5.3 Time frame, Deliverables and Budget

It was envisaged that the O&M Project would run for four years between 2004 and 2008. With a current extension, this phase is envisaged to end in March 2010.

"In 2003 Sida agreed to fund a Swedish partnership with DH&LG and DWAF for a comprehensive O&M Project."

The figure below shows the eight Northern Cape O&M Project deliverables:

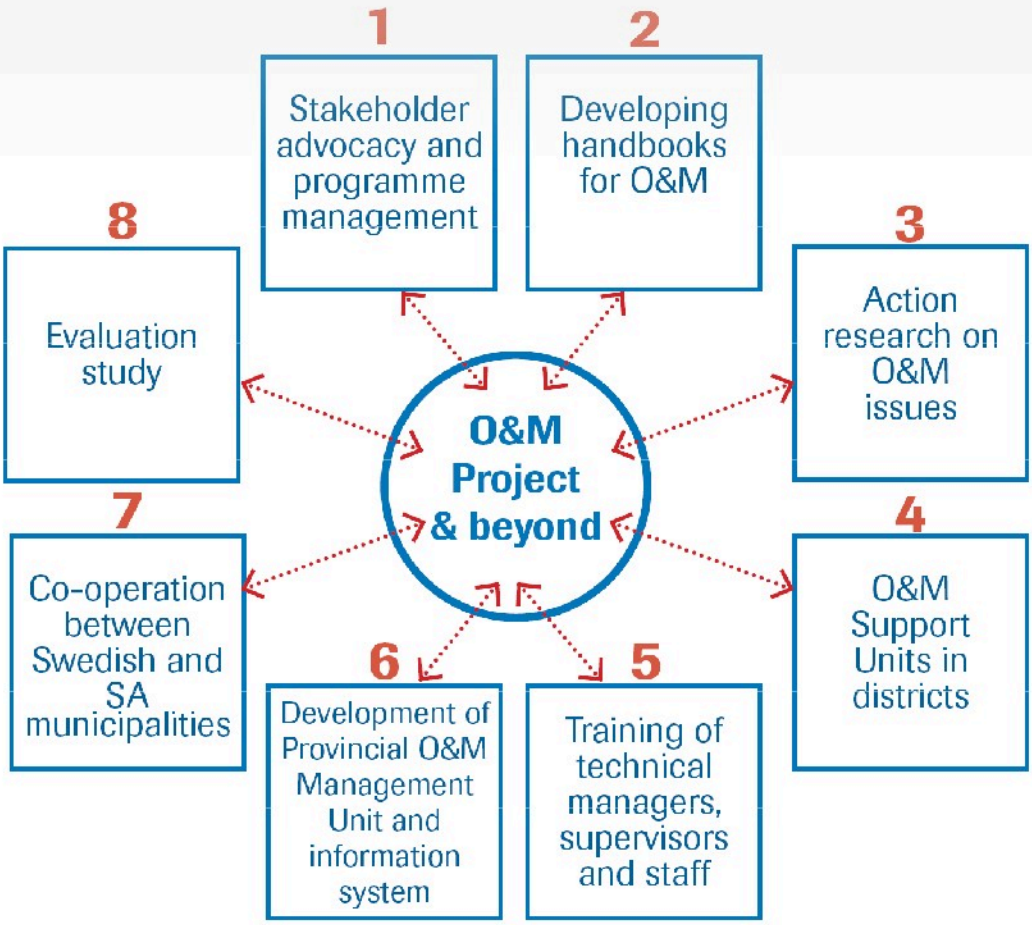


Figure 2: Eight deliverables of the Northern Cape O&M Project (Source: NC O&M Report, 2008)

The figure 3 below provides the budget breakdown per component.

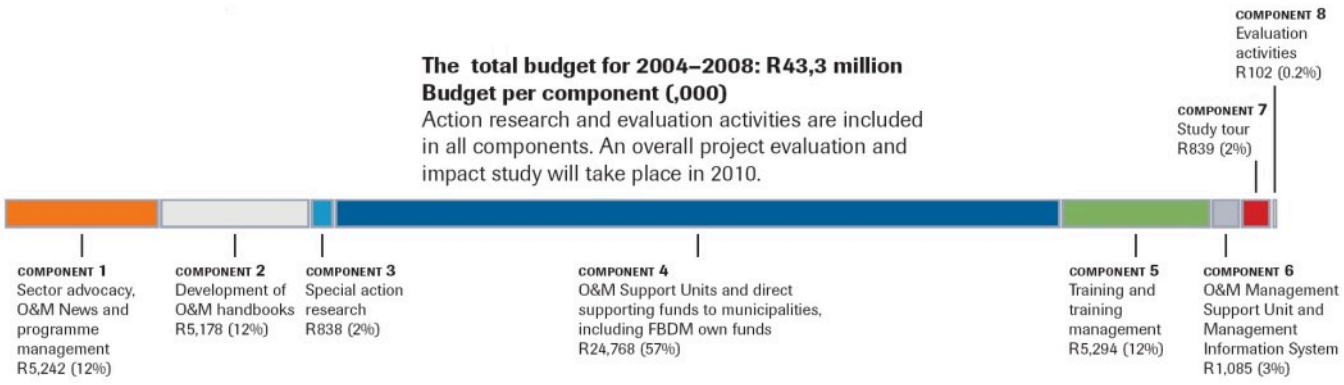


Figure 3: Budget breakdown per deliverable of the Northern Cape O&M Project (NC O&M Report, 2008).

5.4 Achievements and challenges per deliverable

The achievements and challenges are listed in some detail below. It can concluded that some deliverables were more fully achieved than others. However, some deliverables were largely not achievable given the enormous challenges (e.g. lack of resources) within which the Project was implemented. In some instances an important start has been made, and concerted effort is required to bring some deliverables to fruition over the medium to longer term. It is important to differentiate between challenges over which the Project has influence or control (e.g. project management and application of resources), and those over which the Project has limited or no influence or control (e.g. retention of skills built through the Project).

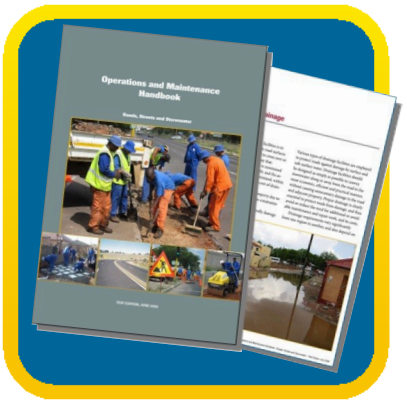
Deliverable 1: Stakeholder advocacy and programme management

Kobus Streuders from the Department of Water Affairs (DWA) believes the advocacy part of the Project was extremely successfully undertaken. It ensured buy-in from 292 mayors, councillors, municipal managers and other senior officials through "Reference Group Seminars". They participated in practical O&M activities, and developed an in-depth understanding of issues. Fifteen issues of "O&M News" were issued quarterly from 2005. Increased demand raised the print run over this period from 400 to 1 050 copies. The Project was managed by a Steering Committee comprising all stakeholders, and administered by DH&LG (now COGHSTA).

The challenges included:

- The seminars were very demanding in terms of planning and implementation.
- The benefits of greater understanding need to be more obvious in terms of concrete actions for Local Municipalities (WSAs) to take forward.
- The need to continuously build and maintain the growing understanding in a context of high mobility of politicians and officials.
- This Project has been an add on for many people i.e. they are expected to undertake the O&M work in addition to the work for which they were employed.
- Not all stakeholders financially supported the implementation of the Project.

The enthusiasm generated among councillors and managers must be sustained and broadened through similar events at district level – which will be less complex and more focused on practical issues within the district. It seems more dedicated capacity is required at all levels of the Project – particularly if CoHGSTA is to provide strong leadership in institutionalising the gains.



Deliverable 2: Developing handbooks for O&M

By late 2010, five comprehensive O&M handbooks will have been developed by the O&M Project, i.e. the

- *Sanitation, Wastewater and Solid Waste Services O&M Handbook (June 2007).*
- *Water Supply Services O&M Handbook (June 2010).*
- *Roads, Streets and Stormwater O&M Handbook (May 2009).*
- *Legal and Environmental Issues O&M Handbook (March 2009).*
- *Management of O&M Handbook (September 2010).*

The O&M Handbooks were written primarily for technical managers and staff, but certain sections are relevant for councillors and senior non-technical managers.

Each handbook is a file consisting of inter-related but stand-alone guides. Appendices contain checklists, legislative requirements and other additional information. They were developed through practical test training and fieldwork assignments that involved in-depth target group and stakeholder participation.

The challenges include:

- Many of the writers of booklets did this in addition to their normal work, and often found it difficult to meet deadlines.
- Participation in the handbook test training was often disrupted by municipal, provincial and national priorities.
- As technical departments are often inadequately staffed, insufficient people were able to attend and benefit from the participatory handbook development process.
- High staff turnover made it difficult to ensure institutionalisation of knowledge gained.
- Handbooks that are ready for print are not able to be printed owing to lack of funds from stakeholders.
- Translation into Afrikaans is required to ensure ease of use for the majority of Northern Cape inhabitants.

However, the O&M handbooks will ensure that O&M knowledge is available on a sustained basis.

Deliverable 3: Action research on O&M issues

Action research on O&M issues was undertaken largely in the fieldwork assignments of participants in the test training processes that developed the O&M handbooks (see Deliverable 2). These assignments tested and further developed texts, provided practical examples and case studies, and effected actual O&M improvements in municipalities at the same time.

Again, the challenges include:

- Many of those involved in the action research did this in addition to their normal work, and often found it difficult to meet deadlines.
- Owing to inadequate staffing, insufficient people were able to attend and benefit from the participatory action research process.

Deliverable 4: O&M Support Units in districts

The O&M Project Northern Cape Report 2004-2008 (September 2008) states that Local Municipality technical departments are the first link in the O&M support chain. It says the next link is the O&M Support Units at District Municipalities, and the next link is the Provincial O&M Management Support Unit at DH&LG (see deliverable 6 below).

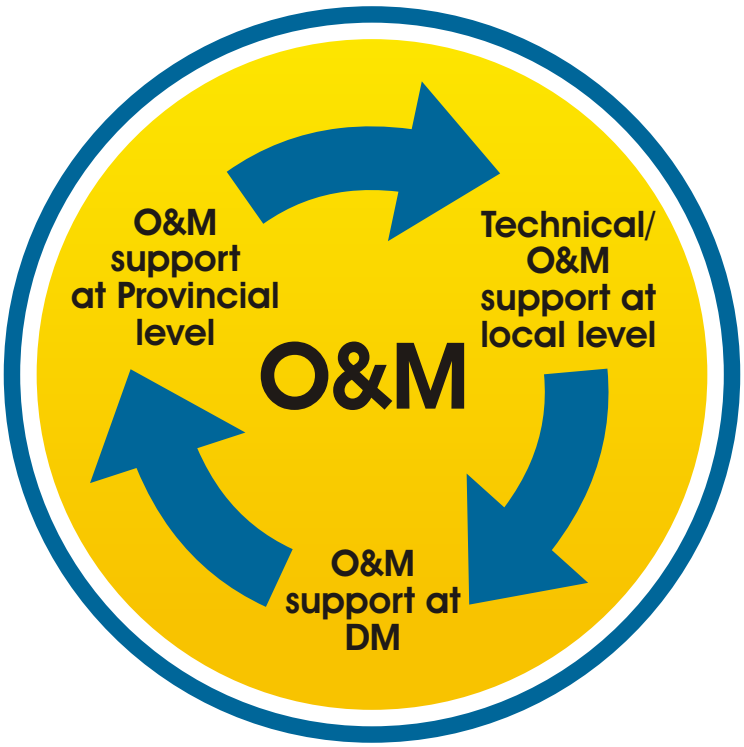


Figure 4: Envisaged O&M Support Chain

The Project to date has assisted with the establishment of four of the five envisaged O&M Support Units at district level – Frances Baard, John Taolo Gaetsewe (ex-Kgalagadi), Pixley ka Seme and Siyanda – even though they are yet to be fully staffed and functioning owing to funding and skills constraints.

Frances Baard was the first District Support Unit to be established – as a pilot. A key factor in deciding this was the strong political will and leadership that existed at the time in the form of Ms Moira Marais-Martin (then mayor of Frances Baard and Chair of SALGA Northern Cape).

It was established in 2004/5, three years ahead of the others. This O&M Support Unit initially focused on O&M, but was soon landed with responsibility for municipal infrastructure grant (MIG) capital projects, which meant less of a focus on O&M.

The support envisaged by District O&M Support Units includes

- Sharing of scarce skills and expensive equipment.
- Planning and management support.
- Hands-on practical training, technical advice and problem solving.
- Monitoring of O&M and support to O&M audits.
- Facilitation of cooperation between Local Municipalities.
- Coordination of funding for larger infrastructure rehabilitation projects.
- Support for contracting and supply chain management.

The challenges include:

- Political leadership and management capacity are needed in municipalities to ensure that good use is made of Support Unit services; that O&M standards in the handbooks are followed; and that good practice is entrenched. This will need district-based and direct monitoring by the O&M Management Unit at COGHSTA, and intervention where Local Municipalities are not performing on O&M and IAM.
- Funding for O&M (including training) is neither secure nor sufficient, and skilled staff are extremely difficult to retain. Again, the O&M Support Units at district and provincial levels will need to develop the capacity and initiatives to address this challenge.

Various ways of organising O&M training and other forms of capacity building have been tested; and the legal requirements for setting up O&M Units and their relationship with municipalities have been outlined. Workable models must now be developed and implemented.

Deliverable 5: Training of Technical Managers, Supervisors and Staff

Apart from the Reference Group Seminars (see deliverable 1 above), the following training was held in partnership with the MTI for technical managers, supervisors and staff:

Table 3: Training undertaken in the Northern Cape O&M Project

The MTI has aligned key sections of the Sanitation, Wastewater and Solid Waste Services Handbook with unit standards, and submitted the aligned materials to the Local Government Sector Education and Training Authority (LGSETA) and the Energy Sector Education and Training Authority (ESETA) for accreditation. The MTI is accredited with the LGSETA and has received skills programme approval for this skills programme from the ESETA. Furthermore, it has significantly strengthened participatory methods in accredited training it organises.

Training undertaken	People trained
Handbook text creation in five phases	76
Learning journeys	55
Unit standard aligned training	76
Accredited training	182
Non-accredited training and conferences	291

Source: NC O&M Report, 2008

In terms of challenges:

- There is often poor support provided by managers and supervisors to employees in the work place. For example, municipalities were provided with water test kits (including instruments), log books and training, yet many employees did not use them to do water quality monitoring as the supervisors did not buy-in to the importance of this activity as a requirement for the DWA Blue Drop / Green Drop Drinking Water Quality Certification Programme.
- Afrikaans is the preferred language of training; but it is difficult to find people who can train in languages other than English.
- The process of achieving accreditation is fraught with bureaucratic requirements and, as a result, many institutions offering accredited training, as well as most SETAs, are operating well below their envisaged capacity.
- Employees who have achieved their competency in a unit standard have to wait long periods for their certificates, and this can be de-motivating in terms of willingness to engage in further learning.

Workable models must now be developed and implemented.

Deliverable 6: Development of Provincial O&M Unit and Information System

The aim of the Provincial O&M Unit is to:

- Coordinate O&M strategic planning and monitoring.
- Support the District O&M Support Units.
- Facilitate learning and replication of O&M good practice.
- Ensure effective communication.
- Facilitate increased budgets for O&M.
- Institutionalise O&M good practice in municipalities.

In terms of challenges, this deliverable seems to need a great deal of attention. There is an urgent need for a coordinated approach to and standardised system for IAM and asset registration in the province. The Northern Cape Water Services Database developed by DWA provides a GIS-based asset registering and management system that could be extended to include all services.

This system can provide for on-line reporting and monitoring regarding O&M and IAM, as does DWA's Drinking Water Quality Monitoring System. This will enable provincial oversight and support for municipalities and the district-based O&M Support Units that support Local Municipalities.

Deliverable 7: Cooperation between Swedish and South African Municipalities

In 2005 representatives of the Project went on a study visit to the Swedish municipalities of Borlänge and Karlstad. Separately, but linked to the theme of learning through cooperation, there have been two "learning journeys" to visit the Project by Eastern Cape and North West representatives from District and Local Municipalities, the then Department of Provincial and Local Government (dplg), DWAF, SALGA and the Water Information Network – South Africa (WIN-SA). This aspect of the Project could be much more greatly developed in terms of inter-municipal learning and sharing – even within South Africa.

In terms of challenges:

- Focus areas and responsibilities should be more clearly identified to benefit all participating institutions.
- Funds need to be earmarked for cooperation.

Emthanjeni Local Municipality, (urban population 25 000) centred in De Aar, in the Pixley ka Seme District Municipality, has had an extended 'Twinning Agreement' with the City of Karlstad in Sweden (population 100 000).

While this was established more for environmental exchanges than for service delivery ones, it underpinned broad practical learning and application – so that IAM needs and O&M practices were able to indirectly benefit. For instance, some of the tasks undertaken explored water conservation and demand management options. These are 'soft side' (i.e. demand) alternatives to typical conventional physical O&M (supply) activities. IAM helps to consider all such options.

The Twinning Agreement included formal periodic reviews (management oversight), budgets and plans that were mutually beneficial and extended for several years. It identified, tested and developed tasks including resourcing methods and technology. It extended beyond the two parties to the degree that lessons were shared. It has been mutually successful, and efforts continue to sustain it.

The question is **why don't more municipalities seek similar direct collaboration inter-regionally, inter-provincially (within South Africa) and perhaps even internationally?** For stakeholders, what enabling actions might facilitate this kind of shared, accelerated and mutually beneficial learning within and directly between municipalities?

Deliverable 8: Evaluation Study

The envisaged evaluation study has been postponed. The proposed date is now 2010.

It is imperative that the O&M Project undertake an evaluation at its earliest opportunity (even if it is seen as a kind of "mid-term review") – given both the resources that have gone into the Project, and its significant and path-finding achievements in a neglected but critical field. An evaluation would serve to strengthen institutionalisation and further development of the Project, as well as to share the project model, lessons and outputs (particularly the handbooks) with other provinces and beyond South Africa. It could also recommend how to integrate O&M into a more inclusive IAM programme.

It is also essential that regular reviews and planning sessions involving key staff and stakeholders are held to ensure the vision to institutionalise learning and benefits is implemented.

5.5 Expected Benefits

The following benefits (articulated in the "Welcome to the Sanitation O&M Handbook") were expected:

Table 4: Expected benefits arising from O&M Project, with comment by municipal officials and MTI at the workshop

Expected benefit	Comment
1. Increased life and serviceability of infrastructure	Serviceability has increased, but there are still concerns about lifespan, and upgrading will still be required in future. In some cases the O&M Project has resulted in the augmentation of some installations.
2. Improved cost efficiency by delaying rehabilitation and replacement costs	The O&M Project has resulted in improved routine maintenance which improves serviceability and life of assets to some extent, although some reported that O&M is still taking place on an ad hoc basis only. The Project has also contributed to improved communication in some cases, although the concern of increasing O&M costs was reported by some.
3. Fewer breakdowns and better quality services	There was some reported improvement where assistance was provided by the O&M Project, although not in all cases. Breakdowns still continue due to lack of funds allocated to O&M, although some did report improvement in preventing breakdowns through improved management.
4. Municipal capacity to effectively manage O&M (i.e. to plan, implement, monitor and evaluate O&M)	All reported that shortage of technical skills, especially in LMs, is still critical. The O&M unit(s) at DM level helps, but the capacity is then still not at LM level. The particular challenge of the Northern Cape is geographical size which results in very high travel costs.
5. Municipalities that can access increased funding for O&M	In cases where the DM Unit is strong it leads to LM reliance on the DM with regard to both capacity and funding. This is compounded by the shortage of staff. Fund allocated to O&M are generally not enough
6. Communities and councils that are well informed and support O&M	Generally the O&M Project has contributed greatly to knowledge and understanding in councillors and officials, but this is often negated by turnover of staff (both councillors and officials). Communication with communities still needs to be improved. Well informed councillors have contributed to improved O&M.
7. O&M partnerships between municipalities, private and civic sectors, that create jobs and work, and promote local economic development	The O&M Project has greatly contributed to short-term jobs and appointment of contractors, but there are still challenges with the sustainability of these. Generally partnerships with the private and civic sectors has not been improved through the Project and the influence on LED has been minimal.
8. Institutionalised support for sustained improvement of O&M practice in the form of the Provincial O&M Management Unit and district based O&M	Limited support has been received, except in the Frances Baard DM Unit. Most municipalities reported that support from COGHSTA needs to be improved, both at provincial and local levels – mostly in terms of availability of funds.

Source: Summary of municipal inputs received at a workshop held to interrogate the development of the WIN Lesson (8 April 2010)

5.6 The Way Forward

According to Bengt Carlsson (SIPU International), the Project will not continue in its current form as an external intervention beyond March 2010. It must now become an institutionalised programme managed by the Provincial O&M Management Unit at COGHSTA; and should continue to be defined as a distinct partnership driven by COGHSTA and DWA as primary stakeholders.

It is envisaged that the Project will strengthen the positioning of O&M within the context of IAM.

Objectives for the next period include:

- Completing and publishing all five handbooks.
- Developing two new handbooks (Electrical Services; and Community Areas, Amenities and Housing).
- Translating five handbooks into Afrikaans.
- Developing the effective functioning of all five District O&M Support Units.
- Ensuring O&M standards are implemented through extensive training, using the handbooks.
- Alignment with Unit Standards.
- Developing the Management Information System as an integrated provincial O&M monitoring and support system.
- Developing an effective Provincial Management Unit that will take significant responsibility for institutionalising O&M knowledge at all levels in the Province.
- Securing significant funding for O&M.

6 Lessons from the Northern Cape O&M Project

The Northern Cape O&M Project offers, among others, the following lessons:

1. The relationship between O&M and IAM

Because O&M constitutes 80% of practical municipal activities in support of service delivery, good O&M must be well planned, effectively managed, and part of an integrated IAM approach.

The Project focus on O&M broadened somewhat to include IAM. The Northern Cape is ready to take the O&M Project to a more strategic IAM approach. The main constraints are still funding, technical skills and continued and focused leadership.

The Project must now ask the questions: "What further benefits might accrue to improve O&M by addressing it decisively within the larger IAM context?"; "What elements of IAM might be most revealing and powerful to underpin current constraints hindering O&M?"; and "How to deal with the main constraints of funding and technical skills?"

2. Institutional arrangements and support

The role of provincial government in taking the lead includes keeping O&M / IAM on the provincial agenda. A complex project of this nature requires a strong and visionary driver and committed resources. It is crucial for COGHSTA to provide leadership, direction and support to the Project, as well as access to increased funding.

It is equally important to build institutions (support units) alongside capacity building initiatives in order to ensure the sustainability of the intervention. The institutions (support units) must be staffed appropriately, and must be able to retain staff. The Project needs to ask the question: "How can developmental roles be better structured in the context of under-resourced and under-performing municipalities?"

As an example of provincial support, Provincial Treasury gave exemption of usual procurement procedures specifically for this Project. It illustrates how measures may be implemented to support innovation in certain instances. What is important is that such deviations from policy are justified, suitably motivated and properly approved by the relevant authority.

Although awareness and understanding has greatly increased, with the associated benefits, delivery is still hampered by turnover of staff, inability of most municipalities (particularly LMs) to retain skilled staff, and non availability of funds. Most role players believe that COGHSTA should secure funds.

3. The value of a multi-stakeholder partnership

This complex, multi-stakeholder partnership brought together government departments as clients, funders and participants. It meant buy in from across the Province and a shared vision. The partnership included initial Sida-funding to finance Swedish experts from SIPU International to manage parts of the Project set up.

The partnerships have been achieved, but not without conflict and disagreements. The challenge is how to keep the multi-stakeholder partnership going in the absence of appropriate funding.

4. The importance of innovative inter and intra- department roles

DWA has played a leading role in supporting the O&M Project and has demonstrated leadership in pioneering approaches to various challenges in the water sector (e.g. development of the Northern Cape Water Services Database and the on-line Drinking Water Quality Monitoring Programme). This is an appropriate role for DWA as water sector leader to play.

COGHSTA, as the department responsible for local government, also has a leading role. This role should be carefully defined, and monitoring mechanisms are required to ensure adherence to defined roles.

5. Funding

The Project has not benefitted sufficiently from the potential funding anticipated from the range of partners. Long-term financial commitment is critical. It is essential to increase funding and budgets for O&M to reduce resource and capacity constraints. The only possible source in the short to medium term for many municipalities is national and / or provincial grants. Innovation such as a shared Business Plan between municipalities to seek funding and / or partnerships should be explored.

External funding is required to initiate such a Project. However, part of the Project objectives must be to secure long term and continuous finances to institutionalize IAM and O&M as part of each departments and municipalities budget planning for long term sustainability.

6. Materials development and knowledge management

The importance of capturing and documenting O&M is crucial to ensuring the sustainability of this knowledge, and its use in ongoing capacity building. The outcomes of many good capacity building projects are not sustained owing to failure to adequately document knowledge generated or introduced. **Another failure is to focus on building the capacity of individuals rather than institutions.**

The participative development process (Reference Group Seminars and other testing, capacity development process, methodology development process), together with advocacy and communication mechanisms (e.g. O&M News), resulted in wide-spread understanding and support of O&M in Northern Cape municipalities. Ongoing updating and promotion of use of handbooks in formal and on-the-job training is needed to ensure uptake, and ongoing widespread use and impact.

CoGTA ([Department of] Cooperative Governance and Traditional Affairs) and DWA national (and possibly DBSA) need to ensure replication of the O&M Project and making the handbooks available to municipalities and technical training institutions outside of the Northern Cape.

Institutionalising lessons in the Northern Cape and beyond is also vital. It was suggested by Bengt Carlsson that the responsibility for this should be taken by CoGTA, DWA national and, again, possibly the DBSA. An important question to be asked is “How can more knowledge transfer and support be initiated and supported to improve O&M and help grow O&M into IAM?”

The handbooks are excellent products for various reasons, including their development by local sector practitioners. The way forward is to get these disseminated within and beyond the Northern Cape. Handbooks alone will not keep the Project sustainable, but wider dissemination of the Handbooks is an important element in sharing lessons.

7. Training

Many lessons were learnt regarding accreditation of materials, accredited training providers, trainers, assessors and learners (employees). These include:

- On-the-job, non-accredited training is important.
- Training must focus on developing practical competency.
- It is important to find local experts and train them as trainers.
- Training needs to be modular and phased to make it more accessible to employees. Modules repeated at intervals enable employees to complete required unit standards.
- Employees who are "not yet competent" can also have a second or third change to attain competence.
- Active participation in planning by trainers and assessors is essential.
- The size and selections of the participant group is important.
- Ensure that trainers can speak more than one local language.
- Use a variety of training methods, including practical and peer learning.
- Assess and monitor accredited training providers.
- Employees appreciate accredited training because a certificate has value for career development.
- Employees require support during and between training phases.

8. Awareness creation

O&M News was very effective as a strategy to promote O&M and communicate practical solutions and examples of improved practices. Any intervention of this scale can be enhanced by such a publication. It is essential that the Provincial O&M Management Unit continue to produce and publish O&M News as a participatory monitoring and lesson sharing tool, apart from its awareness generating function.

District level O&M learning, sharing and development workshops should be run at least twice a year by District O&M Support Units, with an annual workshop with the same aims for all five Support Units and key O&M champions (client / partners) from municipalities.

Awareness creation must be informed by norms, standards, measurables and indicators that might be most revealing to help motivate change and / or improvements. For example, what stories are most revealing to illustrate how O&M / IAM is being severely constrained? What municipal case studies would be most liberating if they were captured and shared?

The Local Municipalities need to receive the same level of awareness creation engagement and communication with the Project as the Districts, in particular, the Municipal Manager, who has enormous say in what is prioritised.

9. Monitoring and evaluation

O&M Project monitoring happened via the Steering Committee representing key stakeholders. While this is a good way to monitor, it can only be as effective and as regular as the strength of the steering committee and the number of times it meets. Detailed and ongoing monitoring is necessary to pick up problems and find innovative solutions as quickly as possible. This is particularly important in such a complex project.

An external evaluation is vitally important for at least three good reasons:

- It provides an opportunity to communicate the results and lessons of the project and raises awareness of the model for replication.
- It encourages testing of assumptions and finding more useful strategies to deal with ongoing challenges as the project enters its next phase.
- It ensures practical, hands-on lesson learning for immediate implementation.

10. Political will

Without a doubt, success of this and any other project is largely dependent on political will. Two critical questions that have to be asked are:

1. How does a project build political will so that politicians at provincial level and within the municipalities enable more effective IAM through smart decisions and appropriate budgets?
2. How is political support maintained so that gains are maintained and increased rather than lost over time?

In both Frances Baard District Municipality and Magareng Local Municipality the Mayors have ensured a change in attitude to O&M practices by providing appropriate leadership and political will; as well as creating an enabling environment for councillors and officials to undertake training in order to be part of the paradigm shift necessary to prioritise O&M.

Ongoing awareness creation with political leaders is necessary to build and maintain political understanding and will.

11. Skills shortages

The District O&M Units have been set up with economies of scope and scale in mind – sharing scarce skills over a larger geographical area and range of tasks. It is their responsibility to support the Local Municipalities to effect O&M.

This Project has built a range of skills and understanding of O&M and IAM. It has ensured a higher level of understanding among administrators and management; but it has not been able to retain many technical skills as people trained as part of the O&M Project often move on to new appointments.

It has been suggested that many people with some form of technical skills (e.g. plumbers) are sitting in communities without work, and that municipalities should run a campaign to identify these people, develop databases of them, and advertise internships and in-house training to augment technical skills gaps, particularly for foremen and operators (levels 0 – 5). It was also suggested that more mature people are less likely to leave the area once trained, and should therefore comprise a larger target market for training.

12. Planning

An IAM approach requires long term planning. For example, while municipalities are generally engaged in one year to five year planning cycles, IAM requires a planning cycle in excess of 10 years. (In Sweden, for example, planning is done 40 years ahead of time).

Defining a longer planning horizon, and looking for funds way ahead of time, will assist municipalities to undertake more appropriate IAM planning and implementation.

7 Scaling up to institutionalise IAM in the Northern Cape

"IAM requires a community of practice (CoP) especially where resources are limited."

(Alegre and Schulting, LESAM 2007)

The Northern Cape O&M Project seems to make at least three assumptions that need to be rigorously tested:

1. There is capacity to ensure institutionalisation of knowledge, skills and experience built during the Project.
2. The Province can retain skills built in the Project.
3. There is sufficient funding, vision and political will to address the O&M / IAM challenges.

Where the Project is able to influence challenges (and assumptions made) it will be able to plan for improved performance going forward. Where the Project is not able to influence challenges because the challenges are outside the influence or control of the Project, the Project needs to interrogate to what extent these challenges have the potential to derail the Project or keep progress slow and uneven; and what can be done to mitigate this.

And perhaps the most important questions to answer for long term sustainability are:

- Who are the champions for the provincial O&M / IAM vision?
- Where are they located?
- Do they have sufficient ability / influence / resources to ensure institutionalisation of IAM?
- If not, how to bolster?

The term Community of Practice (CoP) has become associated with knowledge management. It is seen as a way of developing social capital, nurturing new knowledge, stimulating innovation, or sharing existing tacit knowledge within an organisation or structure.

8 People interviewed

- Mr Bengt Carlsson, service provider, SIPU International
- Ms Cisca Diedericks, service provider, Aurecon
- Mr Desmond Makaleni, O&M Support Unit, Frances Baard District Municipality
- Mr John Roux, service provider, Emthunzini
- Mr Hendry Christians, O&M Project Director, COGHSTA
- Mr Jan Viljoen, DBSA Siyenza Manje deployee at DWA
- Mr Kobus Streuders, Planning and Information, DWA Northern Cape
- Ms Michelle van Zyl, MTI, Sol Plaatje Local Municipality
- Mr Peet van der Walt, Head of O&M Support Unit, Frances Baard District Municipality
- Mr Ryan Peters, Technical Manager, Magareng Local Municipality

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Photos courtesy of Northern Cape O&M.

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11 References

Alegre H and Schulting FL (2007), Global Developments of Strategic Asset Management, 2nd leading edge Conference on Strategic Asset management, Lisbon, Portugal, 17-19 October.

Bhagwan J (2009) Compendium of Best Practices in Water Infrastructure Asset Management. Global Water Research Coalition.

DH&LG and SIPU International (September 2008), O&M Project Northern Cape REPORT 2004-2008.

DH&LG and SIPU International (March 2009), Operation and Maintenance Handbook: Legal and Environmental Issues.

DH&LG and SIPU International (June 2007), Operation and Maintenance Capacity Building Project, Northern Cape, South Africa.

DH&LG and SIPU International Project Steering Committee (November 2006), Operation and Maintenance Handbook: Sanitation, Wastewater and Solid Waste Services.

DH&LG and SIPU International (11 August 2004), Project Document for O&M in the Northern Cape Province: Capacity Building for Operation & Maintenance of Water Supply & Sanitation Services and of Roads & Stormwater in the Northern Cape Province, RSA.

DWAF (30 June 2008), "National Water Services Infrastructure Asset Management Strategy", Draft 4.4.

Northern Cape Provincial Growth and Development Strategy (2007).

Statistics South Africa Census (2001).

USEPA (2005) Multisector Asset Management Case Studies, http://www.epa.gov/OWM/assetmanage/index.htm.

Water Information Network – South Africa (undated), "The Northern Cape Operation and Maintenance Project", Lesson 1.

The Project won the Premier's Service Excellence Silver Award in 2008 for best service practices based on Batho Pele Principles at various departments in the Province.

The WIN-SA Lesson series aims to capture the innovative work of people tackling real service delivery challenges. It also aims to stimulate learning and sharing around these challenges to support creative solutions. To achieve this, the lesson series is supported by ancillary opportunities facilitated by WIN-SA to strengthen people-to-people learning.

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This document hopes to encourage ongoing discussion, debate and lesson sharing. To comment, make additions or give further input, please visit www.win-sa.org.za or send an email to info@win-sa.org.za.

Our mission is to ensure the body of knowledge in the sector is well managed, readily accessible and applied, leading to improved decision-making and performance, especially of local government.

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