Water, sanitation and hygiene are vital components of sustainable development and the alleviation of poverty. Across Africa, political leaders and sector specialists are generating new momentum in these important areas. This Field Note, together with the others in the same series, constitutes a timely contribution to that work. It is intended principally to help politicians, leaders and professionals in their activities. As the Water Ambassador for Africa, invited by the African Development Bank and endorsed by the African Water Task Force and the African Ministerial Conference on Water (AMCOW), I commend it to your attention.

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Summary

Between 1985 and 1998 the national sanitation programme in Mozambique produced more than 230,000 latrine slabs, benefiting more than 1.3 million people in a country that was emerging from decades of destructive civil war. This work gained international recognition for two main reasons. First, it was a pioneering programme in peri-urban sanitation at a large scale, and reached a significant proportion of the peri-urban population of the country. Secondly, the domed latrine slab and its derivative ‘sanplat’ (sanitary platform) were technically innovative and have since been copied widely around the world.

However, the long-term sustainability of the approach (especially its high externally funded subsidies) was questioned, and the national sanitation policies were changed completely during the late 1990s. The new policies did not immediately produce workable arrangements, and the national sanitation programme declined rapidly.

The factors underlying both the success and decline of the programme provide valuable lessons. The experiences of Mozambique could help other countries to design programmes of a similar scale but with more emphasis on promotion and less dependence on externally funded subsidies.
Background

Mozambique is one of the world’s least developed nations, with over 50% of the population living in severe poverty. Its situation has worsened over the last three decades largely due to the immensely destructive civil war, which lasted from independence in 1975 until 1992. The war destroyed much of the social and economic infrastructure of the country. Many thousands of people died, 1.5 million became refugees and 3.5 million were displaced internally, mainly to insanitary and poverty-stricken peri-urban areas. Drought and economic factors have also contributed to Mozambique’s problems.

Even during the war, however, the government perceived sanitation as a priority and encouraged people to build their own latrines. This caused a rapid increase in coverage but, in the absence of technical support, most people built traditional latrines that were insanitary and liable to collapse. In response the government, with external support, instituted a research project in 1979 to design a latrine that was technically sound, could be used widely in the country and was affordable to most peri-urban households. The research revealed that most households could dig a pit, typically 1.1 metres in diameter, and most were satisfied with an unroofed fence for privacy – the biggest problem was covering the pit. So the research project staff designed a domed latrine slab, described in more detail below, and piloted it successfully in one peri-urban area of Maputo. This research project was the forerunner of the national sanitation programme.

Development of the national sanitation programme

Institutional arrangements

In 1982 the Maputo City Council adopted the research project’s approach and began replicating it in other parts of the city. Then, in 1985, this programme in Maputo was transformed into the national low-cost sanitation programme – in Portuguese, Programa Nacional Saneamento Baixo Custo (PNSBC).

At the time PNSBC started, there was an acute shortage of qualified professionals in Mozambique. They were concentrated in Maputo, so PNSBC’s main management and decision-making office was located there. However, Mozambique is a very large country with poor transport infrastructure, so it was necessary to establish other units in cities and towns across the country. By 1987 PNSBC had established 38 production units around the country and was active in all the provincial capitals and many large district towns. This helped to bring the programme closer to its target beneficiaries. Production rose to 25,000 slabs per year and a rural programme was also established, although the focus remained predominantly on peri-urban areas.

The PNSBC was initially hosted by the National Institute for Physical Planning, and later moved to the Institute for Rural Development. It also maintained close links with two other agencies: the Department of Environmental Hygiene in the Ministry of Health, which provided some health education related to latrine construction, and the Department of Water and Sanitation, which was responsible at national level for water supply and sanitation in urban centres.
At provincial level, PNSBC was represented by Provincial Physical Planning Units under the Institute for Rural Development. These supervised the production units and provided links to provincial funding sources.

The PNSBC was supported by several external agencies, principally the United Nations Development Programme (UNDP). The sanitation work was funded from three sources: external support agencies (mostly support for personnel, equipment, slab production costs and some recurrent costs); householders (purchase and transport of slabs, construction work); and the national government (part funding of the subsidy for slabs, staff and other costs). In the latter stages of the programme’s development, their relative contributions amounted to: external support agencies 57%; householders 33%; government 10%.

By the mid-1990s it became clear that institutional re-organisation was needed. In the absence of a clear water sector policy, the roles and responsibilities of the various government agencies were not clearly defined and inter-agency co-ordination was poor, especially in linking peri-urban sanitation to other services such as water supply and housing. PNSBC itself was dominated by technical personnel, with insufficient attention given to broader project management issues or health and hygiene. All of these factors affected the co-ordination of latrine construction with hygiene promotion and the assessment of eligibility for free latrines.

The autonomous and externally funded nature of the programme also threatened its long-term future. PNSBC itself had well-qualified and stable staff, but the prospect of its absorption into established government institutions seemed unlikely. After protracted delays, PNSBC was eventually relocated in 1996 to a low-cost sanitation office within the National Directorate of Water (DNA).

In the late 1990s, the external support agencies became increasingly concerned about the sustainability of the programme. UNDP, the main support agency, began planning its withdrawal from PNSBC. At the same time, these agencies facilitated the development of a Low-Cost Rural and Peri-Urban Sanitation Strategy, 1999-2003, with three principal objectives:  
• To decentralise operations to a series of partners  
• To change the role of government from implementation to that of creating an enabling environment  
• To involve the private sector and NGOs in implementation

These objectives, however laudable in themselves, resulted in the rapid decline of the PNSBC’s national programme, for reasons that will be explained later.

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**The domed slab and its variants**

The slab is an unreinforced concrete dome, 1.5 m diameter and 50 mm thick with a rise to the centre of 85 mm. It has a concrete lid that fits tightly into the squatting hole to control the entry and exit of insects and reduce odour problems. Only three-quarters of a bag of cement is needed for the slab.

Initially, three latrine options were offered to suit various ground conditions:

- **S1**: Simple 1.5 m diameter slab
- **S2**: Slab plus blocks to line the pit in cases of unstable soil
- **S3**: Slab and blocks for a raised pit in cases of high ground-water levels

Options S2 and S3 require a further 2½ bags of cement for the concrete blocks, which are intended to be laid unmortared except for the top few rows so that liquids can percolate into the soil while solids decompose in the pit.

As the programme progressed, the range of technical options was increased to include a 1.2 m diameter slab, a pour-flush option, and a 0.6 m x 0.6 m square slab, known as the sanitary platform (sanplat), which could fit onto an existing unimproved latrine. Meanwhile options S2 and S3 were rarely used.
Technical development

The findings of the original research project led to the development of an unreinforced domed concrete slab, 1.5 metres in diameter, which could be used to make a simple, unventilated pit latrine. A slab production system was also developed, suitable for small local workshops. Trained workers produced the slabs in open-air yards using simple construction procedures. The yards sold the slabs directly to the householders, who were responsible for transporting the slabs home and building the superstructures. Most of them used natural materials such as weeds, wood and adobe.

When a latrine pit is full, the slab can be removed and transferred to a new pit. The old pit is covered over with soil, in which people frequently plant trees; there is no established practice for pit emptying, as the PNSBC concentrated on helping people to build latrines, giving little consideration to emptying the pits when full. Some poor peri-urban households have enough space on-plot for another pit once the first one has filled, but the problem of what to do when the second pit fills has not been properly addressed.

The programme also devised criteria for assessing which users from certain vulnerable groups would receive free slabs. These included the elderly, the disabled, malnourished pregnant women, mothers with malnourished infants and single parent female-headed households with children. In practice, however, this free slab system did not function: either people paid for slabs or they did not receive one.

PNSBC also supported the establishment of public sanitation and bathing blocks in a number of Maputo market places, by providing 40% seed capital. These operated on a pay-and-use basis and provided a financial return of 17-24% per year. Users were charged between US$0.09 and US$0.17 depending on the service used.

Cost recovery

The graph plots the rise and fall in latrine sales over the life of the programme, and reveals a clear correlation between subsidies and the level of sales.

When the programme started in Maputo, the domed latrine slabs were sold to householders at the production cost of US$22. The programme offered no micro-credit facility or opportunities for payment by instalments; slabs had to be paid for in cash at the time of collection.

The first significant increase in slab sales occurred in 1984 following the opening of the first regional centre in Beira, formalisation of the PNSBC within government and the attraction of large-scale external support. From 1988, however, sales dropped markedly due to increases in the price of basic goods such as cement. The government responded by waiving sales tax on the slabs and introducing a subsidy that reduced the slab’s selling price by 80% to US$4.50. The government did not introduce these subsidies because it assessed people’s demand and willingness to pay; it simply assumed that people did not have the capacity to pay in full for services. The householders still had to make their own superstructures, so that in total a typical household paid about one-third of the total latrine cost. The introduction of subsidies generated a gradual increase in sales, which accelerated from 1992 following an increase in the subsidy and the establishment of further regional centres.

As time passed, the external support agencies and the government began to view the merits of subsidies differently, the former moving towards a more market-based approach in which users would pay the full cost.
A 1997 report on affordability indicated that many of the peri-urban population were destitute and needed a high subsidy to purchase an improved latrine. Among the better-off population, most people could afford the subsidised price, and a significant proportion could even afford the full price but were not willing to pay (probably due to lack of promotional work).

These findings, and the clear correlation between sales volume and subsidy level, fuelled concerns among programme staff that many people would not pay for slabs under the proposed strategy of increased private-sector participation and minimal subsidies. The slab subsidy was, however, cut in 1997, and this increased the cost to users more than fourfold. Over the following two years, sales of the standard 1.5-metre slabs fell by about 80%.

Promotion of hygiene and sanitation

This was not one of the programme’s strong areas. Until 1994, people learnt about the sanitation programme by word of mouth or by noticing a local production unit. In 1994, the programme introduced a promotional element using community animators who were trained specifically for the role. Eventually more than 80 animators were employed, which is a small number in such a big country. Their job was to promote the programme in general, and to promote hygienic behaviour within target communities, although their precise terms of reference were unclear. Their messages covered four main issues: hand washing; water collection and treatment; garbage disposal; and use, operation and maintenance of latrines. The promotional programme was intended to be customised to each peri-urban area in response to a participatory needs assessment, and to involve a wide range of activities and media. In practice, however, generic posters were distributed throughout the country, the messages largely came from Maputo, and the other communication media were little used.

The promotional programme used both Portuguese and local languages and recognised that the target audience were largely illiterate. Work focused on communities where there was low demand for the improved latrine and/or where production units had recently been established.

An evaluation in 1997 found that the work of the animators had led to increased demand for slabs in a number of cities. When a rural sanitation programme began in 1996, to consolidate the efforts of an earlier programme, the role of the animators was expanded. The intention was to give them full responsibility for management of the project, including the casting of latrine components. The design of the programme also reflected the more homogenous nature of rural communities. In practice, however, this plan overstretched the capabilities of the animators, and the rural programme did not proceed as planned.

Community participation

Community participation did not play a major role in the national sanitation programme. There were few community-based organisations or user groups involved because the peri-urban areas were ethnically very diverse and a history of civil war and emergencies had not fostered an environment in which people could demand services. Where participation occurred it took the form of users transporting slabs (sometimes communally), digging their own pits and building superstructures. Women also worked as animators, administrators and to some extent production workers.

Reasons for the achievements of the programme

The national sanitation programme’s achievements were impressive. This success can be attributed to several factors.

Cost extrapolations

How much would it cost to extend the sanitation programme across the whole of Mozambique on the same basis? While it is difficult to extrapolate urban costs across sparsely populated rural areas (the rural component of the national programme itself, as the text notes, did not flourish), some approximate figures can be calculated as follows.

The total cost per latrine was of the order of US$50 (including US$22 for the slab itself). In the year 2000, according to the Global Water and Sanitation Assessment, there were about two million families in Mozambique that still lacked sanitation. Hence total coverage would cost in the order of US$100 million, of which about US$40 million would be provided by the householders themselves if they paid the full price for their slabs, and the remaining US$60 million would come from the government and/or external support. The latter figure would rise to more than US$90 million if a high subsidy were to be provided.
The programme developed the domed slab, which proved appropriate and popular for huge numbers of people in peri-urban areas. Indeed, it has become one of the most recognised and copied latrine slab designs in the world. The smaller, square sanplat that was derived from the original domed slab has also been widely copied and used around the world. Householders can fit these components to old or new latrines however they want. This concept of standardising the latrine components rather than the entire latrine is also used by many other sanitation programmes. The programme’s policy to adopt and promote just one type of slab also simplified the task of teaching technicians, making it easier to establish production units and hence expand coverage. In recent years it has become more common for sanitation programmes to offer people a choice of different latrine types, in order to maximise the number of people who can benefit according to their own preferences. The Mozambique programme staff considered this option but felt that the programme could be taken to national scale more effectively using one standard design – the same principle that Henry Ford followed in inventing the mass-produced automobile.

Financial resources

Strong external support was central to the achievements of the PNSBC. The programme had the resources to appoint, train and retain good staff, which resulted in a well-motivated and stable workforce. Also, the programme was able to sell slabs at a highly subsidised rate, and even to offer them free to designated vulnerable groups. Though controversial and challenged by external support agencies, the use of subsidies was undoubtedly central to the high level of sales.

Constraints and decline of the programme

Having made a considerable impact on urban latrine coverage nationally from 1985 to the late 1990s, the programme has experienced major change in the last few years and activity has declined considerably. A number of factors have contributed to its decline.
Policy and institutional changes

In the earlier years of the programme, the external support agencies supported the government’s emphasis on numerical targets; difficult institutional issues affecting long-term sustainability were not adequately addressed. In the late 1990s, however, a new national water and sanitation policy was developed. This policy puts more emphasis on the sustainability of institutional arrangements without dependence on external support agencies, instead making increasing use of the private sector. It is ironic that this policy was largely developed and promoted by the external support agencies, while the government staff were less convinced of the need for change, and many view the new policy as being externally imposed.

The policy has been formally adopted and is being implemented, albeit on a modest scale: a number of private operators have started slab production units around Maputo with support from PNSBC in the form of equipment and training. However, the government’s own institutional arrangements have not yet been amended to reflect the new priorities and the PNSBC staff are only being absorbed slowly and with difficulty into the National Directorate of Water. Co-ordination remains poor and the established government agencies do not feel a strong sense of ownership of the programme. At provincial level, the decline of the centralised system has left the sanitation sector uncertain about how to move forward with the former national programme.

Decentralisation of management, an institutional option now in favour around the world, has been less effective in Mozambique than anticipated. The reason is that there are simply too few competent and experienced managers at provincial and municipal levels to take responsibility for the tasks that have been decentralised to them. In Maputo, on the other hand, the central unit had been able to draw on the best available staff in the country.

Dependency on subsidies and external support

The funding from external support agencies has been reduced considerably and this has had a major impact on programme activity nationwide. The main impact has been on the numbers of latrine slabs sold, as shown on the graph. But this reduction in support has also affected the institutional arrangements of the programme. There was no Mozambican organisation that championed the programme’s work or planned a workable transition from the strong external support to a new arrangement. Responsibility for the slab production facilities fell to Provincial Departments of Water and Sanitation (DAS). Many production staff have left as they were not regularly paid, and slab sales are now negligible.

In accordance with the new policy, private-sector producers have to promote their slabs as best they can individually, but this is not their strength. Without the strong external support, the government itself has not continued a systematic promotional programme.

Operational problems

The programme sold slabs to families who lived near the production centres but families further away faced considerable difficulties – transport was a problem in many places, and a concrete slab 1.5 metres in diameter is not easy to handle.

In concentrating exclusively on selling slabs, the programme did not monitor or evaluate the actual use of the latrine slabs. So the usage within families, and the health benefits, have not been quantified. There were particular problems in swampy areas such as Niassa, for example, where many slabs were simply put over pit latrines that either contaminated the groundwater or flooded house yards. The absence of a good monitoring system meant that the programme did not resolve these problems satisfactorily; for example, it is not clear whether the technical option S3 was successfully used.

Lessons

A supply-led approach may still be appropriate in particular circumstances

In recent years the water and sanitation sector internationally has moved away from supply-led approaches and embraced demand-driven philosophies that emphasise the importance of community management, user choice and cost recovery. Centralised programmes implemented by government are now out of favour among development thinkers and planners.

In Mozambique in the mid-1980s, however, the civil war and its destructive aftermath of displacement and poverty meant that it was simply not feasible to adopt a demand-driven sanitation programme. There were very few professional staff outside the capital, Maputo. There were virtually no systems either for hygiene promotion or for supporting communities. The priority was to help as many people as possible to improve their sanitation as quickly as possible, especially in the large peri-urban settlements to which very large numbers of poor people had moved. For that purpose a programme of centralised and subsidised latrine production, managed by a strong core unit in the capital city, was appropriate. There are many other places in Africa in which this approach may still apply, even in 2002.
Hygiene promotion and availability of latrine components are both vital

With hindsight, it is clear that the Mozambique national sanitation programme was weak in hygiene promotion compared to its technical and logistic aspects. The rapid decline of the programme when subsidies were removed indicates that the people were motivated mainly by the cheap prices, not by a deeper understanding of the hygiene issues. Experience in many other countries suggests that it is vital to educate people about hygiene, in order that they themselves should want to improve their health through improved sanitation. That knowledge, combined with other factors such as privacy and convenience, generates the demand for latrines.

However, generating the demand is only a means to an end. To meet that demand, the latrine components must be available for sale to the people. In this aspect, the Mozambique programme worked well, with a small number of standard latrine components (the domed slab and later also the sanplat) available for purchase. Several other large sanitation programmes have found that shortage of latrine components is a factor limiting the take-up of latrines. In Mozambique this constraint was largely avoided by the centrally managed and standardised production system.

Funding policies should be sensitive to individual country circumstances

In the early years of the national sanitation programme, both the Mozambique Government and the external support agencies recognised that the people were extremely poor and needed urgent help on sanitation. So they both favoured a subsidised, supply-led approach, with the money for the subsidies coming from the external agencies. Later those external agencies changed their views and spearheaded changes in the national water and sanitation policy, ultimately withdrawing their support because the programme did not match the new policies. That withdrawal of finance caused both the programme’s institutional structure and its physical output to collapse.

It appears that, throughout this process, the external agencies were more powerful decision makers than the Mozambique Government itself – an unsatisfactory relationship from the points of view of both parties. The government was initially weak due to the years of civil war. However, the long-term sustainability of the programme could have been improved both by working through existing government organisations and by providing any subsidies through regular government budgets. Then those organisations could have been helped to evolve as time passed, while the subsidies could have been phased out carefully and slowly over many years rather than suddenly. To change a policy on paper is easy – to explain that change to the mass of the people and help them to cope with it is much more difficult.

References


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