Inclusive Urban Sanitation Stories

Malaysia: sanitation transformation

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Figure 1 – Sewage treatment pant operations. Source: Indah Water Konsortium.

Summary

Soon after independence, Malaysia grew to become one of the most affluent countries in South-East Asia. Its Infrastructure was developed in tandem and approached world class standards. However, sanitation lagged behind. The Municipalities struggled with a multitude of functions, and sanitation was often neglected, other than in a few large cities.

In 1994, the Government took bold and decisive steps to address the shortcomings. It was felt that the fastest way to achieve uniform improvements across the board would be to transfer responsibility for sanitation and sewerage management to the Federal Government and bring in the private sector to help with innovation and best practices.

Accordingly, legislation was passed to enable this, and a Federal Sewerage Services Department was set up. A concession was awarded to a private company, Indah Water Konsortium, to plan, improve, operate, and manage sewerage infrastructure as well as provide scheduled desludging and sludge management on a national basis.

This brought quick results. However, there were some serious shortcomings, particularly in terms of cost recovery. By 1999, Indah Water was incurring losses due to an inadequate tariff and poor collection. The Government was forced to take over the company in 2000.

Nevertheless, the improvements in sewerage infrastructure and service delivery continued, and two decades later, Malaysia has excellent sewerage services in the urban areas of West Malaysia where the Federalization was carried out. One notable failure has been the inability to move towards full cost recovery, due largely to the tariff remaining stagnant. The aspect of scheduled desludging has also not been so successful.

Nevertheless, the Malaysia story is an interesting study on sanitation and sewerage improvement, and provides lessons to other countries, including on how it could have been done better.

Overview

Geographical information

Country: Malaysia
Population: 32,000,000

Problem

- Municipalities unable to progress beyond basic sanitation.
- Lack of uniformity in sanitation development.
- Scarcity of funding, capacity.
- Poor infrastructure.
- Pollution of waterways.

Solution

- Federalization & privatization.
- Strengthening legislative & institutional frameworks.
- Capacity building & private sector involvement.

Problem

In the late 1950s, just after independence from Britain, Malaysia (then Malaya) went on a drive to develop the country. Water and sanitation were also improved, with the piped water supply extended to most urban areas. On the sanitation front, local authorities managed to improve basic sanitation. Provision of toilets and a safe containment of faecal wastes were largely achieved by the 1980s. Many urban areas also had decentralized sewerage, with treatment facilities. A handful of cities had central sewerage systems.

The country progressed rapidly, with infrastructure being developed in tandem. However, the sanitation sector was comparatively deficient. Other than two or three Municipalities, it was neglected to the point of sewage discharges threatening local waterbodies and polluting sources of water. The problems were caused by inadequacies at the local authority level.

1. Septic tanks were generally well designed and built to specifications, but were desludged only on request, and there was no proper treatment of the sludge. It was often applied on land or discharged into the sea or rivers. Because accumulated sludge was not emptied regularly, septic tanks began to malfunction, and sludge overflows were a major source of pollution.
2. A substantial percentage of the population continued to use even less satisfactory systems, such as sub-standard septic tanks, pits or direct discharge, thus polluting ground and surface waters.
3. Many sewerage systems being built by property developers. Local authorities generally lacked technical personnel with adequate knowledge of these systems, and the private sector was no better. Many systems were difficult to operate and maintain or had high operational and maintenance costs. These facilities often developed serious defects soon after commissioning. Neighbourhoods suffered overflows, odours, and nuisances.
4. Serious issues of personnel, expertise and financial resources in the local authorities resulted in large scale operational shortcomings. Discharges and overflows of raw or poorly treated sewage were widespread.
5. Enforcement of regulations was weak. The Environmental Quality Act 1974 established the discharge standards for sewage effluent discharges to inland waters, but these were seldom applied.

Problems with the regulatory framework, institutional arrangements, capacity, awareness, lack of financial and other resources, and poor overall management led to serious pollution of water bodies. Water supply sources were being affected and sewage was polluting recreational and tourism areas. The problem became very visible, forcing the federal government to take notice.

Solution

The Malaysian Government viewed the situation as serious and believed that the quick and substantial improvements needed cannot be achieved effectively if left to the local authorities, who seemed to be ill-equipped to make the quantum shift that was called for. For purposes of uniformity, and to achieve quick results, the decision made was to transfer the responsibility for sewerage and sanitation to the Federal Government, through the enactment of a new law, the Sewerage Services Act, 1993. A federal Sewerage Services Department was established to manage the sector, with a concession to a private utility company. Indah Water Konsortium (IWK) comprised local and foreign partners, including North West Water, a British water and sewerage operator, who brought in expert know-how.

The concessionaire's responsibilities included:

- Operation and maintenance of public sewerage systems.
- Scheduled emptying of septic tanks.
- Safe treatment and disposal of sludge.
- Refurbishment of all sewerage infrastructure.
- Planning and construction of new sewerage infrastructure.

The initiative resulted in significant improvements in the sewerage sector, with substantial funds invested for refurbishment, upgrading and operation of the dilapidated sewage treatment plants (see Figure 4). Regulatory control was tightened. Developer guidelines were published, designs were scrutinized before approval, and construction was supervised, resulting in better-quality developer-built systems. Intensive capacity building programmes were carried out, and over the years thousands of technical and professional experts were created. Operation and maintenance of facilities was systematic and effective. See Figure 2 and 3.

Figure 2 – Sewer CCTV inspection. Source: Indah Water Konsortium.

Figure 3 – Sewer maintenance. Source: Indah Water Konsortium.

The concession agreement stipulated the targets for the eventual mix of sewered and on-site (septic tank) systems for different categories of urban areas. It required the gradual phasing out of pits and pour flush systems in urban areas, and refurbishment of all sewerage systems to meet regulatory standards.

However, the scheduled emptying of septic tanks faced problems. Scheduled desludging was something new, and there had been insufficient awareness programs to explain to the public the need for it. As such, there was widespread refusal by the public, resulting in a very low success rate.

Another shortcoming was the cost recovery from tariffs. The tariffs were insufficient to cover even operational costs. Moreover, bills often went unpaid by the customers, and the company lacked the means to enforce payment. By 2000, the business was deemed unsustainable, and the Government bought over the company. Today Indah Water remains a government-owned company. Furthermore, in an effort to integrate the water sector, a common National Regulator for water and sewerage has been created in 2008, the National Water Services Commission (SPAN).

Figure 4 – Pantai Sewage Treatment Facility, Kuala Lumpur. Source: Indah Water Konsortium.

Today, IWK provides sewerage and sludge services to almost 25 million people nationwide. Its workforce of over 3,000 operates in most urban areas of west Malaysia. It manages over 7,000 sewage treatment plants (STPs), a large number of dedicated sludge treatment facilities and almost 20,000 km of sewers. Some of the issues persist. Tariffs are still low, although a recent adjustment has been made. Scheduled Desludging is only 10% successful. However, payment of bills has improved through awareness campaigns by Indah Water.

Lessons learned

- There was a very strong champion (the federal government) and political push for the whole process.
- The effective regulatory framework, supported by institutional arrangements with clear roles for funding, asset provision, regulation, operation and management, as well as for various support roles was a key success factor.
- Focused investment, resulting in excellent infrastructure improvements, making many of them world class. Dilapidated treatment systems and sewers were rehabilitated and refurbished to good operating condition.

- Private sector participation helped develop guidelines, operating instructions and systems to bring the whole range of related activities, from planning, design, construction, operation and maintenance and overall management to levels of excellence.
- The scheduled desludging regime, in spite of its limited success, has proven its value. Sludge transport and treatment / disposal in a safe and orderly manner have been established.
- Systematic planning of sewerage and sludge management ensured that the required infrastructure was provided in stages.
- Appropriate technologies were adopted with gradual upgrading, giving time and space for learning and adaptation.
- Development of effective systems and procedures for operation and management of sewage and sludge management infrastructure.
- Pervasive awareness was created of the importance of good sanitation and sewerage management.
- Training, skills development, and capacity building has been largely successful in creating industry capability.

Useful links

https://www.iwk.com.my/

http://www.jpp.gov.my/

http://www.ketsa.gov.my/en-my/Pages/default.aspx

https://www.span.gov.my/

Further reading and references

- Narayana, D. Sanitation and Sewerage Management: The Malaysian Experience, https://www.susana.org/_resources/documents/default/3-2760-7-1503648469.pdf [accessed on 19 Jan 2023].

About the author

Dorai Narayana is a Civil Engineer with over 40 years of professional experience in the sanitation / sewerage industry. He has worked for Consultants, Government as well as Indah Water Konsortium, the Malaysian National sewerage utility company. He has also contributed in advisory capacities for various sanitation and sewerage projects in several developing countries in Asia and Africa.

He is now a freelance consultant supporting sanitation and sewerage projects in Asia and Africa, and is a consultant to the Bill and Melinda Gates Foundation.

He has many papers and publications to his name, notable of which is a book on co-treatment of faecal sludge, published by IWA.

About the IWA Inclusive Urban Sanitation Initiative

IWA's Inclusive Urban Sanitation initiative responds to a huge and growing public need - safe sanitation in combination with access to safe drinking water and hygiene underpins good health. The aim of this initiative is reshaping the global urban sanitation agenda by focusing on inclusive sanitation service goals--and the service systems required to achieve them - rather than the traditional singular focus on expanding sewer networks and treatment works. This forms part of IWA's larger agenda to promote inclusive, resilient, water-wise, and sanitation-secure cities.

About the Inclusive Urban Sanitation Stories

The Inclusive Urban Sanitation stories are documenting some of the policies, practices, and approaches that demonstrate how stakeholders especially those in urban areas (e.g., public sector, operators, academics, regulators, and other key actors) are taking part or contributing to Sustainable Development Goal 6 which require water and sanitation concepts and norms to look beyond technology and the usual focus on building infrastructure. Increased focus is on safety, inclusion, environment, public health, and multiple technology solutions tailored to different geographies and socio-economic contexts for building climate-resilient cities. The stories aim to inspire urban stakeholders to discuss ways for advancing inclusive urban sanitation, especially in low- and middle-income countries.