

## Solid Waste Management

■ Sector Overview ■ New Paradigms for Government Policy ■ Institutional Strengthening  
■ A Role for the Private Sector ■ Waste Banks

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## Editor's Message

When the feature articles from any edition of *Prakarsa* are taken together, there is always at least one especially striking observation that emerges. Sometimes it's the trickiness of the jargon for a lay reader, as in the July 2013 issue on Local Roads where we turned the *Editor's Note* into a glossary. Sometimes it's the transformative power of one particular strategy, as was the case in the October 2012 edition on Output-Based Aid.

For our October 2013 issue with a theme of Solid Waste Management (SWM), the idea that stands out is the important role that *all* stakeholders – from the highest government official to a humble scavenger – have to play in meeting Indonesia's SWM challenges.

This is not the case in every infrastructure sector: while varied stakeholder participation is always worthwhile, some topics like aviation safety or internal audit function require a high level of expertise to fully understand, so technical experts and government officials tend to play roles that overshadow others.

Why is SWM different? Most likely it is because, while we aren't all SWM experts, everyone is involved in the sector in one way or another. If you quench your thirst with a plastic bottle of water, or enjoy a package of ramen noodles, you've just contributed to Indonesia's waste problems. If you compost your organic waste, avoid buying products with excessive packaging, and use recycled products, you've just contributed to Indonesia's waste solutions.

Local communities and their leaders play important roles as well, whether it is a women's group creating handicrafts out of recycled products or a neighbourhood head pursuing a vision of a cleaner, healthier environment (see "From Trash to Cash" on page 29). So do Local Governments (LGs), who must budget for and oversee collection and disposal. Regional cooperation among these LGs offers hope for addressing the need for sanitary landfills (see "Strengthening the Institutional Environment for Municipal Solid Waste Management" on page 15). At the highest levels, the national government must provide policy direction and leadership (see "Indonesia's Solid Waste Management Sector: An Overview" on page 3 and "Managing Municipal Solid Waste in Indonesia: A Government Perspective" on page 9). And let's not leave out the private sector, which can lead the way in developing new technologies (see "Paving the Way for Private Sector Involvement in Indonesia's Municipal Solid Waste Management" on page 23.)

Finally, it would be odd to leave out the role played by the donor community and their projects – like the AusAID funded Indonesia Infrastructure Initiative (IndII). The technical assistance and support that such institutions offer promotes better SWM, and the contribution that IndII makes is evident throughout these pages. • CSW

## Infrastructure by the Numbers

**80,000 Tons**

**Amount of trash produced by 230 cities  
in Indonesia in 2011.**

**2.5 Litres**

**Average amount of trash produced per person in  
Indonesia every day. This means 625 million litres  
of trash from a population of 250 million people.**

**Rp 3.1 Trillion**

**Directorate General of Human Settlement's  
budget for waste management in Indonesia in  
2013, including regulations, development,  
oversight, and implementation of solid waste and  
wastewater programs.**

**Rp 420 Billion**

**Value of the Government of Indonesia's  
annual grants (Dana Alokasi Khusus)  
earmarked for sanitation.**

**460**

**Number of final waste disposal sites  
in Indonesia in 2012. They have a  
total capacity of about 23,204 tons  
of trash per day.**

**54**

**Number of Indonesian landfills that have an  
expected life beyond 2020.**

**120**

**Number of "waste banks" located  
in the Jakarta area in 2013  
(see article on page 29).**

# INDONESIA'S SOLID WASTE MANAGEMENT SECTOR: AN OVERVIEW

Indonesia's solid waste sector is complex and varied. To improve solid waste management across the archipelago, the Government of Indonesia is taking on the role of providing technical assistance and creating standards. At the same time it is encouraging provincial and city governments, the private sector, and communities to adopt more environmentally sound strategies. • By Nigel Landon



An estimated 10–20 percent of Indonesia's waste is recycled by the community and private sector. Left, a woman from Aceh takes part in a post-tsunami recycling program established by UNDP.

*Courtesy of Nigel Landon*

Indonesia is a large, diverse archipelago of 17,500 islands with a population of 250 million living in an equally diverse range of centres from remote rural villages to the largest city in South East Asia, Jakarta, with a population of more than 10 million.

Solid waste management (SWM) in this context is equally complex and demands differing approaches to match each environment. Waste management (WM) in Indonesia can be viewed as a microcosm of the global WM sector, displaying examples of almost every one of the individual challenges faced by other countries across the world. Although SWM policy is formulated at the central government level, implementation requires the involvement of everyone from village level community groups to district, provincial, and national governments, and the private sector.

Reliable statistics are hard to come by at the national level; however, a broad sector overview of the main islands is shown in Figure 1. Because of its high population, Java sends far more cubic meters of waste to final disposal sites than does any other island.

It is estimated that just over half (56 percent) of Indonesians have access to waste collection and disposal systems. Nationally it is estimated that 38.5 million tons of waste are produced annually. This equates to just under half a kg of waste per person per day. The volume of waste and the waste composition varies depending on whether the person lives in a rural or urban centre. Generally speaking, waste volumes are higher and organic content lower in urban centres. Municipal solid waste in Indonesia has a high organic content, as can be seen from Figure 2.

## Steps in the Waste Chain

Indonesia has a long-established informal waste management system which goes back generations and is still in operation, particularly in rural areas with no access to government waste collection. This mainly consists of burning, burying or disposing of waste in rivers or the sea. The Ministry of Environment (KLH) estimated in 2012 that just 23.4 percent of waste is collected by formal systems. The remainder is disposed of as follows:

- Buried underground (4.2 percent)
- Composted (1.1 percent)
- Burnt (52.1 percent)
- Disposed of in drainage, river or sea (10.2 percent)
- Disposed of in other non-designated places (9 percent)

Previously, with low population densities and high organic content, these traditional methods of waste disposal did not generate significant environmental and health impacts. However, as Indonesia grows, particularly in urban centres, and more and more modern packaging is being used, there are increasing problems with

### Key Points:

Solid waste management (SWM) in the Indonesian context is complex. Policy is formulated at the central government level, but implementation requires the involvement of everyone from village community groups to district, provincial, and national governments, and the private sector.

Much of Indonesia's waste is informally disposed of, through burial, composting, burning, dumping in drains, rivers, or ocean, or dumping in other non-designated sites. These methods block rivers and drains, attract pests, and cause groundwater, soil and air pollution.

The waste management chain includes the community, private sector, and government players, groups that do not always work together. Household waste is collected from the door or at localised collection points by government sanitation staff or private individuals; it may end up at a transfer station or landfill or be disposed of informally.

Waste recycling is a major growth sector. An estimated 10–20 percent of all waste (including plastic, metal, paper, cardboard, fabric, glass and organics), is recycled. The national government is actively encouraging stakeholders to Reduce, Reuse and Recycle and is providing intermediate treatment facilities and sorting stations for scavengers at landfills.

Previously, formal waste management through government was managed centrally by the Ministry of Public Works (MPW). Now Local Governments are responsible, but they typically allocate very little of their budget to SWM, favouring expenditures such as roads or ports that have a more obvious link to economic growth.

The MPW is redefining its role in national SWM to focus on providing technical advice and support, and creating national standards. Regional initiatives supported by MPW are critical because they establish centres of excellence that can demonstrate good SWM practices to provincial and district authorities.

Through Law no. 18/2008 on Solid Waste Management and Government Regulation no. 81/2012 on Domestic Waste Management, the Government of Indonesia is emphasising Reduce-Reuse-recycle, cooperation between business and government, and international standard waste treatment systems and technology. Whilst the law sets ambitious goals of eliminating open dumping, there is still a long way to go before these goals are met.

Indonesia already has a well-established private sector recycling industry. Up to 20 percent of plastics, metals, glass, paper, tyres, and other materials are recovered and recycled by private sector individuals and small and medium-sized enterprises. The income generated from this is potentially very significant.

Over 60 percent of domestic waste is organic. Composting has numerous advantages including reduction in greenhouse gas production, reduction in the volume of waste going into landfills, and compost for parks and gardens. The Ministry of Environment is also promoting recycling through the construction of Waste Banks that help communities make money through their waste recycling efforts.

informal waste disposal. These problems include rivers and drains blocked with waste; growing piles of illegally dumped waste that attracts flies and rodents and causes groundwater and soil pollution; and air pollution from waste burning.

**Figure 1: National Statistics for Waste Generation and Disposal**

Region	Population Million	Total waste generation Mtons/yr	Waste gen per person kg/day	Population being served Million	Actual waste collection Mtons/yr	Non- collected waste gen Mtons/yr
Sumatera	49.3	8.7	0.48	23.4	4.13	4.57
Java	137.2	21.2	0.42	80.8	12.49	8.71
Bali & Nusa Tenggara	12.6	1.3	0.28	6	0.62	0.68
Kalimantan	12.9	2.3	0.49	6	1.07	1.23
Sulawesi & Papua	20.8	5	0.66	14.2	3.41	1.59
<b>Total</b>	<b>232.8</b>	<b>38.5</b>	<b>0.45</b>	<b>130.4</b>	<b>21.72</b>	<b>16.78</b>

*Source: Statistik Persampaan Indonesia 2008, Ministry of Environment (KLH) – From IndII SWM Scoping Study.*

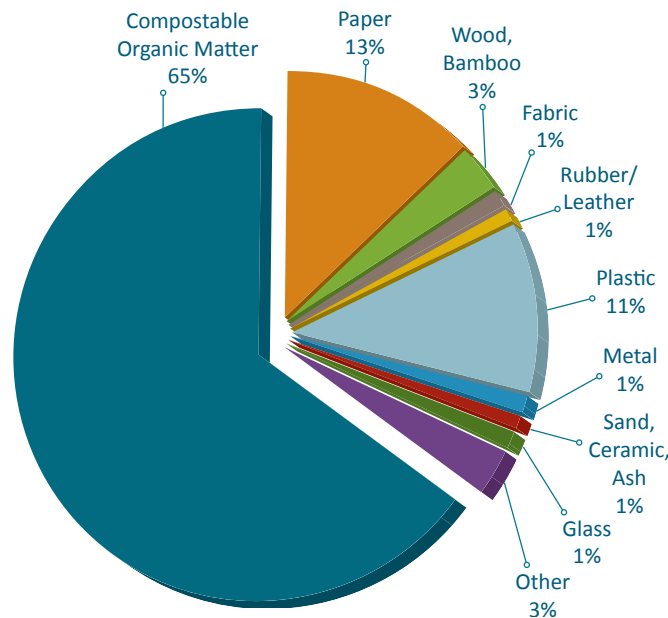
The developing waste management chain consists of a combination of community, private sector, and government players. These groups do not always work together in a coordinated or regulated manner.

Household waste is collected from the door or at localised collection points (roll-arm containers or concrete bunkers). Pick-up is done by Local Government (LG) sanitation staff with lorries, or by private individuals (*pemulung*). The *pemulung* either take only the recyclables (plastics, metals, paper, or glass), or they will collect all the household waste for a nominal fee. LG staff will remove the waste to a transfer station or landfill for sorting and final disposal. Private sector waste collectors may be less scrupulous. Driven by the need to remain cost efficient, they will transport waste the minimum possible distance from where it was collected. With luck, they will dump the waste at an intermediate collection point where government services can remove the waste. However, more often than not they will dump the waste on the outskirts of a village or urban area, or in a river or drain.

Along with localised private sector waste collection, waste recycling is a major growth sector for community and private involvement in Indonesia. An estimated 10–20 percent of all waste is recycled by the community and private sector. This waste includes plastic, metal, paper, cardboard, fabric, glass and organics for compost and animal feed. The government is actively encouraging community and private sector participation in recycling through the national 3R program and by the provision of intermediate treatment facilities and sorting stations for scavengers at landfills. (For more information, see “Paving the Way for Private Sector Involvement in Indonesia’s Municipal Solid Waste Management” on page 23 of this issue.)

Final disposal of waste occurs at landfills owned and operated by government organisations. Previously, formal waste management through government was managed centrally by the Ministry of Public Works (MPW). All planning, design and construction of landfills, transfer stations and other facilities across Indonesia was handled centrally.

However, following decentralisation in 1999, responsibility for managing solid waste moved to provinces and districts. This was formalised in Law no. 32/2004 on Regional Governance, which details the duties and responsibilities of provincial and city government across many sectors, including environmental management. This has resulted in a transitional phase as provinces, cities and districts build their knowledge and capacity to manage solid waste.

**Figure 2: Municipal Solid Waste Composition, Indonesia**

*Source: PU – Ministry of Public Works, 1989*

Currently, provincial and district budgets, on average, allocate only 2 percent towards SWM, and this is often combined with other needs such as maintenance of parks and gardens. Fifty-six percent of all Indonesians have access to waste disposal services, up just 2 percent from 2010. There is a perception amongst district and regional authorities that SWM is not a direct contributor to economic growth (unlike roads, ports, etc.) and so need not be a priority within the budget process.

This lack of emphasis on construction of new landfill infrastructure and the purchase of transport and operating equipment hampers the development of effective waste management. Institutional capacity remains weak. Landfills and SWM collection systems are only as good as their operation, maintenance and extension. District and provincial sanitation authorities are often understaffed and lack the correct technical knowledge and training. There is also a rapid turnover of staff among different departments (often with no reference to the technical background of the staff member), so institutional memory is lost along with trained staff.

MPW is now redefining its role in national SWM to focus on providing technical advice and support, and creating national standards. MPW staff are very knowledgeable on modern standards and techniques for waste collection, processing, and construction of sanitary landfills. They now need to find a way to effectively transfer this knowledge to the provinces and districts across Indonesia. National staff can still become directly involved with regional initiatives anywhere that SWM crosses provincial boundaries and combines the SWM needs for different cities and districts. Examples of where this is happening include Blang Bintang in Aceh, Yogyakarta, Bandung, Makassar, and Jakarta at Bantar Gebang and Tangerang. In these cases MPW can provide assistance on the design and construction of SWM systems and infrastructure. MPW views these sites as critical because they establish centres of excellence that can demonstrate good SWM practices to provincial and district authorities.



## Gender, Social Inclusiveness, and Solid Waste Management

Everyone in the community has a role to play in solid waste management, especially the 3Rs of reducing, reusing, and recycling. But pregnant women, children, the elderly and other vulnerable groups can be especially susceptible to trash-borne illness. Women are often closely involved with rubbish disposal in their domestic work. And in many cases, women's groups are especially well positioned to make significant contributions to raising public awareness, developing community empowerment, and practicing the 3Rs. By harnessing this capacity and promoting the involvement of both women and men, Government initiatives can increase their positive impact in the community.

## New Laws and Regulations

Along with giving more responsibility to provincial and district governments to manage solid waste, the Government of Indonesia (GoI) has passed Law no. 18/2008 on Solid Waste Management, the first comprehensive waste management law in Indonesia. This was recently followed up by Government Regulation no. 81/2012 on Domestic Waste Management. The law primarily deals with the collection, treatment, and disposal of municipal household waste in its various forms. Under the law, waste is divided into

three categories: household waste, household-like waste, and specific waste<sup>1</sup>. The law also covers business waste and hazardous (including medical) waste. Other environmental laws and regulations also cover medical, industrial and hazardous waste.

The objective of Law no. 18/2008 is to increase public health and environmental quality as well as to utilise waste as a resource. Under the law there is a focus on the government's 3R (Reduce, Reuse, Recycle) policy. In conjunction with this, the law makes it clear that waste management is the shared responsibility of all parties – the individual, community, business and government. To this end, articles 26 and 27 of the law encourage cooperation between business and government.

Article 8 of the law also gives LGs the authority to facilitate partnerships and networks among districts for waste management. (This includes mediating in dispute resolution among districts and/or municipalities.) However, at present there are only technical guidelines (*Juknis*) to help provincial authorities to set up regional landfill management systems. There is no clear guidance as to the institutional systems that would enable these ventures. Of the 18 regional landfills currently at the planning stage, there are varying approaches to the establishment of institutional management authorities. These include *Unit Pelaksana Teknis Daerah*, or Regional Technical Implementation Unit, *Badan* (agency), and *Sekber* (*Sekretariat Bersama*), or cooperative secretariat.

The Waste Management Law aims to promote international standard environmentally sound waste treatment systems and technology. It set the ambitious target of closing all open dumps or having an upgrade or closure plan within one year. Within five years all open dumps were to be either closed or upgraded to sanitary landfills. The deadline to achieve this was 2013. It is clear there is still a long way to go.

## 3Rs, Objectives and Reality

Whilst political awareness of the need to prioritise SWM needs to grow, so does public knowledge. The majority of Indonesians have grown up disposing of waste in rivers or by the side of roads, or burning waste in the streets and back gardens. The Waste Management Law puts a heavy emphasis on the 3Rs, but this can only work with buy-in from local communities. GoI has been working hard to raise public awareness of the need for SWM through its TPS (*Tempat Pengolahan Sampah Terpadu*, or Integrated Waste Management Site) 3R community-based public

awareness program, which has been operating since 2007.

The Waste Management Law also aims to promote domestic waste as a resource. In this respect Indonesia already has a well-established private sector recycling industry. Up to 20 percent of plastics, metals, glass, paper, tyres, and other materials are recovered and recycled by private sector individuals and small and medium-sized enterprises (SMEs). The income generated from this is potentially very significant. A recent UNDP waste management livelihoods project formed 220 SMEs which generated over USD 6 million in revenue within the first two years of operation.

Over 60 percent of domestic waste is organic. The government has promoted waste composting through community composting programs and through district level composting programs led by the KLH. Composting has numerous advantages including reduction in greenhouse gas production, reduction in the volume of waste going into landfills (reducing operating costs and increasing lifespan), and of course compost for parks and gardens.

KLH is also promoting recycling through the construction of Waste Banks that help communities make money through their waste recycling efforts. This is supported by Ministry Regulation no. 13/2012, which lays out guidelines for the 3Rs through Waste Banks. As of December 2012, the Ministry has supported the construction of 1,195 Waste Banks. These are distributed across 55 regions and cities in Indonesia.

The Waste Bank initiative has managed to engage more than 96,200 individuals, “waste savers” who collectively have managed to generate around Rp 15.1 billion. The total of non-organic wastes processed in the Waste Banks has reached approximately 2,262 tons per month. Two Waste Banks – one in Semper Barat, Tanjung Priok, North Jakarta and one in Tomang, West Jakarta – are profiled in “From Trash to Cash” on page 29. This is the sort of effort, along with improved public awareness, stronger LG capacity, and successful private sector investment that will enable Indonesia to better address the formidable challenge that solid waste generation presents. ■

## NOTES

1. *“Household waste” is defined as waste derived from household daily activities, excluding faeces and “specific waste”. “Household-like waste” is waste from commercial areas, industrial areas, special areas, social facilities, public facilities, and/or other facilities. “Specific waste” includes: waste containing hazardous and toxic materials; waste derived from disasters; construction and demolition waste; and waste that cannot be processed by current available technology.*

About the author:

**Nigel Landon** is the Country Director of EnviroSolutions & Consulting, Indonesia, based in Jakarta. Having worked in the water, agriculture and environmental sector since 1995, first as an irrigation engineer and later as a SWM specialist, Nigel has extensive experience of working on environment and SWM projects both in Indonesia and internationally. He has worked in the private sector, for large international agriculture, environment and development consultants, and for the donor sector with the World Bank, KfW, ADB and UNDP. Nigel has worked in Indonesia for 11 years, nine of which were spent in Aceh where he was Head of the UNDP Tsunami Recovery Waste Management Programme (TRWMP). In addition he has worked on projects in Pakistan, Libya, Eritrea, Albania and the UK.



## MANAGING MUNICIPAL SOLID WASTE IN INDONESIA: A GOVERNMENT PERSPECTIVE

Historically, the management of Indonesia's municipal solid waste has been plagued by inadequate funding and low levels of commitment at the local level. But a new paradigm that considers all steps in the generation and processing of solid waste, instead of only the final stages, is transforming solid waste management. • By Ir. Djoko Mursito, Dipl. SE., MM; Terra Prima Sari; and Sandhi Eko Bramono



MSW management is moving away from an “end-of-pipe” approach that focuses only what happens at the final sanitary landfill. In this photo from Manado, industrious scavengers take a well organised approach to sorting waste in order to recover items with economic value.

*Courtesy of Mott MacDonald*

Indonesia, like other developing countries, faces serious problems with respect to managing municipal solid waste (MSW). As Indonesia grows rapidly and standards of living improve, MSW is generated in ever higher quantities. Unfortunately, increases in MSW are not in line with proper MSW management.

With the advent of Law no. 32/2004 on Regional Governance, and Government Regulation no. 38/2007 on the Allocation of Governmental Affairs to National, Provincial and District/City Governments, the responsibility for handling MSW has shifted from the National Government to Local Governments (LGs), with the expectation that the efficiency and effectiveness of MSW management will be boosted.

However, the record shows that despite the implementation of both regulations, MSW management performance has not improved significantly. The most crucial problem is the low commitment from LGs to make sanitation a priority. This lack of commitment stems from insufficient human resources, funding allocations, and the absence of proper institutional arrangements to handle the MSW system at the city/district level. This situation is exacerbated by low levels of awareness in the community, and the absence of law enforcement to achieve proper MSW management.

## Transforming the Paradigm

Indonesia's turning point for MSW management was the landslide at the Leuwi Gajah landfill in Bandung, West Java, in 2005. Improper open-dumping processes caused a catastrophic slide of soil and solid waste, resulting in the deaths of 141 people from the surrounding area. This tragic incident served as a wake-up call, bringing community and government attention to the importance of proper MSW management.

After the landslide, the Government of Indonesia (GoI) increased its focus on regulating MSW management. In 2008, Law no. 18/2008 on Municipal Solid Waste Management was finally legalised. Important points of this law include:

- Proper MSW management should address the quantity of MSW being produced and the potential for reducing pollution, especially at the source.
- By the year 2013, MSW treatment plants and sanitary landfills must be properly operated and not use an open-dumping process.

### Key Points:

As Indonesia grows rapidly and standards of living improve, the nation generates increasing levels of municipal solid waste (MSW). Law no. 32/2004 and Government Regulation no. 38/2007 shifted the responsibility for handling MSW from the National Government to Local Governments (LGs). Despite these initiatives, MSW management performance has not improved significantly, due to a lack of LG commitment that stems from insufficient human resources, funding allocations, and the absence of proper institutional arrangements. This situation is exacerbated by low levels of awareness in the community, and the absence of law enforcement.

The landslide at the Leuwi Gajah landfill in Bandung, West Java, in 2005, which killed 141 people due to improper open dumping, served as a wake-up call, bringing community and government attention to the importance of proper MSW management. The MSW management paradigm has been transformed from an "end-of-pipe" approach to a "reduction-at-the-source" approach. Funding allocations have also increased. The Ministry of Public Works (MPW), which is primarily responsible for the regulation, technical guidance, and Monitoring & Evaluation of the MSW sector, has been striving to further improve and revitalise existing MSW infrastructures at city and regency levels. Funds from the national budget are meant to serve as a trigger for LGs to allocate higher portions of their budgets to the sanitation sector.

The Government of Indonesia also signed an international agreement on greenhouse gas abatement from the MSW sector.

As stated in Law no. 18/2008, MSW management includes both waste reduction and waste handling. The industrial sector is also required to reduce solid waste generation from the earliest stages of production.

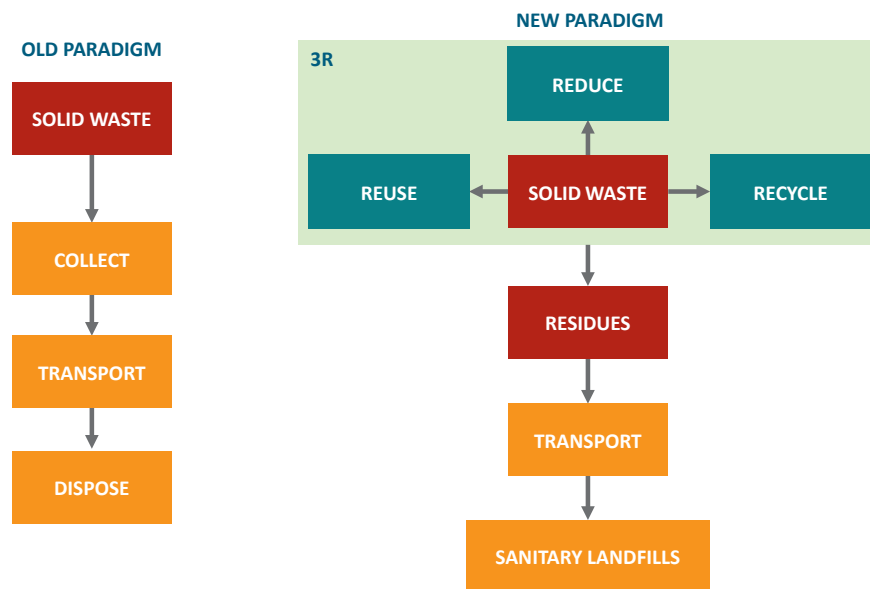
The concept of reducing waste is also integrated into every level of solid waste handling, from the source until the final disposal site, at the neighbourhood, community, city/regency, and regional levels.

The Directorate for Environmental Sanitation Development at the MPW will continue improving MSW management both by developing the capacity of human resources involved in LG MSW management, and by raising awareness in the executive and legislative branches about the importance of MSW management.

In short, the MSW management paradigm has been transformed from an “end-of-pipe” approach to a “reduction-at-the-source” approach that maximises the opportunity to reduce quantities of MSW and the pollution it causes, by examining every step of the process, instead of looking only at what happens at the final sanitary landfill (see Figure 1). The implementation of MSW regulations has also led to increased allocation of funds in this sector, including in the national budget. The Ministry of Public Works (MPW), which is primarily responsible for the regulation, technical guidance, and Monitoring & Evaluation of the MSW sector, has been striving to further improve and revitalise existing MSW infrastructures at city and regency levels. Specifically, the national budget has prioritised budget allocations for the MSW sector, including initiatives such as:

- Pilot programs for community-based 3R (Reduce, Reuse, Recycle) facilities
- Pilot programs for transfer stations (*Stasiun Peralihan Antara/SPA*)
- Pilot programs for material recovery facilities (*Tempat Pengolahan Sampah Terpadu/TPST*)
- Development and/or revitalisation of sanitary landfills

• **Figure 1: Paradigm for Solid Waste Management**

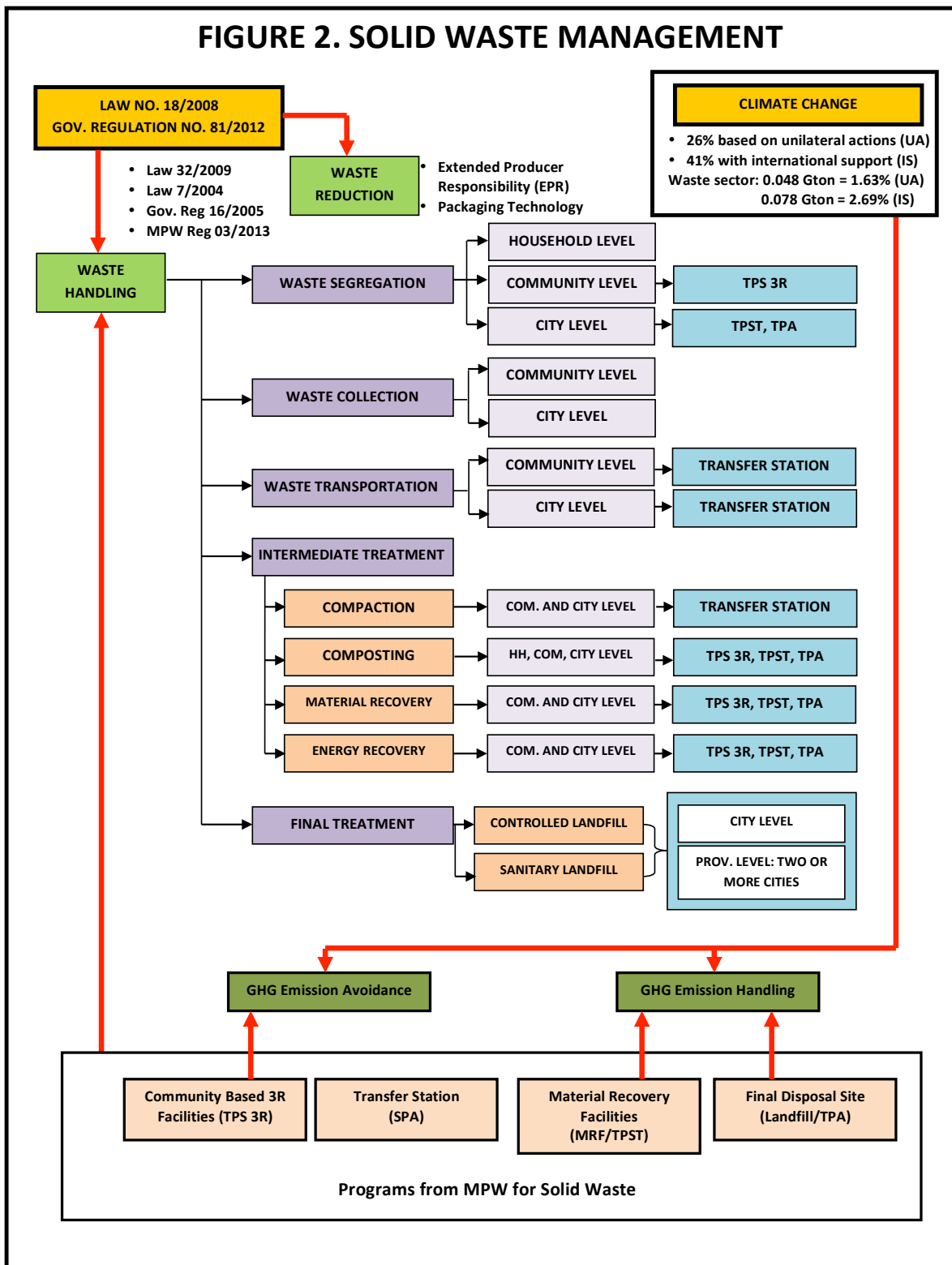


However, funding allocations from the national budget are meant to serve as a trigger for LGs to allocate higher portions of their budgets to the sanitation sector, as legally required, since MSW management has become their responsibility.

### The MSW Management Concept

Aside from passing Law no. 18/2008 and its accompanying regulation (Government Regulation no. 81/2012), which serve as the legal basis for Indonesian MSW management, GoI also signed an international agreement on greenhouse gas (GHG) abatement from the MSW sector. Presidential Decree no. 11/2011 declared that during the period 2010–2020, GoI will reduce GHG emission by up to 0.048 Gton<sub>CO2(eq)</sub> (gigatons of carbon dioxide equivalents) through unilateral actions, and 0.078 Gton<sub>CO2(eq)</sub> with international support (see Figure 2).

**FIGURE 2. SOLID WASTE MANAGEMENT**



As stated in Law no. 18/2008, MSW management includes both waste reduction and waste handling. According to the law, the industrial sector, in this case goods-producing industries, is also required to take steps to reduce solid waste generation from the earliest stages of production. This requirement could be implemented through several actions, such as Extended Producer Responsibility (a strategy that integrates environmental costs into the final purchase price of goods) and developing more environmentally friendly packaging technology.

The concept of reducing waste is also integrated into every level of solid waste handling, from the source until the final disposal site (see Figure 3).

**Figure 3: Direction of National MSW Management and Infrastructure Development**

LEVEL	PURPOSE	APPROACH	SCOPE OF WORK	PROGRAM
<b>REGIONAL</b>	<ul style="list-style-type: none"> <li>MSW management among Local Governments</li> </ul>	<ul style="list-style-type: none"> <li>Developing regional MSW management</li> </ul>	<ul style="list-style-type: none"> <li>MSW Treatment Facilities</li> <li>Regional Landfills</li> </ul>	<ul style="list-style-type: none"> <li>Integrated programs among Local Governments</li> </ul>
<b>LOCAL GOVERNMENT (CITIES/REGENCIES)</b>	<ul style="list-style-type: none"> <li>Improvement of MSW public service access and quality to reach minimum service standard to enhance the quality of public health and environmental protection</li> </ul>	<ul style="list-style-type: none"> <li>Developing service accessibility and quality of MSW management</li> </ul>	<ul style="list-style-type: none"> <li>Developing Sanitary Landfills</li> <li>Technical Assistance on improving MSW management systems</li> <li>Facilitating the improvement of MSW systems at city/regency level</li> </ul>	<ul style="list-style-type: none"> <li>Integrated City Infrastructure Development Program (P3KT)</li> <li>ADIPURA (a program that since 1986 has encouraged the cities of Indonesia to be <i>bersih dan teduh</i> (clean and shaded))</li> </ul>
<b>COMMUNITY</b>	<ul style="list-style-type: none"> <li>Reducing MSW volume at the community level to optimise transportation and prolong landfill service time</li> </ul>	<ul style="list-style-type: none"> <li>Reducing MSW volume through 3R (Reduce, Reuse, Recycle) Program</li> </ul>	<ul style="list-style-type: none"> <li>Community-based 3R Facilities</li> <li>MSW Collection and Transportation</li> </ul>	<ul style="list-style-type: none"> <li>Real Estate</li> <li>Integrated MSW Treatment Facilities</li> </ul>
<b>SOURCE/ NEIGHBOURHOOD</b>	<ul style="list-style-type: none"> <li>Improving the attempts to recover the MSW material through segregation at the source, composting, and recycling</li> </ul>	<ul style="list-style-type: none"> <li>Promoting MSW reduction from the source through community empowerment</li> <li>Early environmental education through school curricula</li> </ul>	<ul style="list-style-type: none"> <li>Campaign on MSW reduction at the source</li> <li>Encouraging the implementation of 3R programs</li> <li>Pilot projects in 3R Facilities</li> </ul>	<ul style="list-style-type: none"> <li>Green and Clean City</li> </ul>

At the **source or neighbourhood level**, the goal is to minimise the quantity of solid waste generated by households. This can be achieved by raising environmental awareness of citizens through constant campaigns on the importance of proper solid waste management and the encouragement of 3R programs.

At the **community** level, the focus of solid waste management is to use 3R programs to reduce the volume of solid waste. Reduced volume optimises transportation costs and prolongs the lifetime of landfills. GoI is developing community-based 3R facilities (TPS 3R) as one strategy to reduce waste volume.

At the **city/regency** level, the main purpose of MSW management is to improve access to solid waste services in the hope of enhancing the quality of public health and environmental protection. At this level, GoI funds, intended as a stimulant for local funding, can be allocated for:

- Developing pilot transfer stations for cities/regencies with solid waste production that exceeds 20 tons/day with landfills at a distance greater than 25km; the main purpose of transfer station development is to make solid waste transportation to landfills more efficient.
- Developing pilot facilities for material recovery, for example, intermediate treatment facilities (ITF) that utilise anaerobic and/or aerobic digestion systems; the main purpose of ITF is to minimise the volume and pollution potential of solid waste before it goes into landfills.
- Developing or rehabilitating sanitary landfills; GoI funds can be allocated to developing primary environmental protection infrastructure (such as liners, leachate and gas collection systems, leachate treatment plants, drainage systems, and road systems inside landfills) while the rest of the facilities can be financed by LGs.

The operation and maintenance of each facility that is developed using GoI funds for MSW management should become the full responsibility of LGs.

To make MSW management even more efficient and effective, two or more cities/regencies could integrate their MSW management and dispose of their MSW in one regional landfill site. At this **regional** level, understanding and good cooperation among LGs, and support from both provincial and central government are crucial factors for the success of an integrated program.

### **The Challenges Ahead**

Along with developing infrastructure in the solid waste sector, the Directorate for Environmental Sanitation Development at the MPW will continue improving MSW management both by developing the capacity of human resources involved in Local Government MSW management, and by raising awareness in the executive and legislative branches about the importance of MSW management, in order to make the sanitation sector, especially solid waste, a funding priority. Only by ensuring adequate human and capital resources will proper MSW management in every city and regency of Indonesia be ensured. ■

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## STRENGTHENING THE INSTITUTIONAL ENVIRONMENT FOR MUNICIPAL SOLID WASTE MANAGEMENT

The Government of Indonesia is committed to improving solid waste management, and is pursuing strategies including public service units, regional cooperation, institution strengthening, and capacity building. • By Joel Friedman



Much of Indonesia's waste is collected by individuals, like this hard worker in Pejaten Barat in South Jakarta.  
*Courtesy of Carol Walker*

Indonesian cities are struggling with their garbage. An estimated 80,000 tons of solid waste are generated daily, of which only 34,000 tons is collected and disposed in properly designed and managed landfills. The uncollected waste is either openly burned, thereby contributing to air pollution; or disposed of haphazardly, where it clogs drainage and sewer systems and serves as a breeding ground for disease vectors.

Solid waste challenges are only expected to increase in the coming years. Roughly 50 percent of Indonesia's population lives in urban areas, and all expectations are that this percentage will continue to increase. Existing urban landfills, many developed years ago when land was readily available, are rapidly filling up. Urbanisation has increased land prices and reduced the amount of vacant land that can be used to treat and dispose of solid waste.

Furthermore, the composition of the waste being generated is changing. While more than 60 percent of the solid waste presently generated is organic, that percentage is declining as packaging techniques in a modernising and increasingly consumption-oriented society leads to greater use of plastics and paper which are more difficult to dispose of. As in western societies, there are increasingly signs of a "not in my backyard" mentality, and conflicts have occurred between Local Governments (LGs) regarding the transportation and final sites for solid waste disposal.

## Key Points:

As urban populations grow, the amount of inorganic material in waste increases and existing landfills reach their capacity, the challenges posed by Indonesia's solid waste are increasing. Law no. 18/2008 on Solid Waste Management establishes the Government of Indonesia's (GoI) basic policies and approaches. The Law focuses on a 3R policy, sets targets for the conversion of open landfills to sanitary landfills, and prioritises the development of intermediate treatment facilities (ITFs). Many Local Governments (LGs), which have had primary responsibility for delivery of solid waste services since decentralisation in 2001, have passed supporting local bylaws.

Service delivery at the local level is hampered by fragmentation of responsibility among different work units. There are conflicting policies, gaps and overlaps in coverage, and competition for scarce funds. Because all funds collected for services must be turned over to the local treasury, there is little incentive to increase coverage and enhance revenues. Delivery of solid waste services is legally limited to the political boundaries of the locality, which can result in the inefficient and costly duplication of expensive and hard to develop landfill sites and treatment facilities.

Public Service Units (*Badan Layanan Umum Daerah* [BLUD]); regional cooperation; institutional strengthening; and capacity building are among the strategies that GoI is exploring to improve solid waste management.

**BLUDs:** BLUDs are designed to deliver public services deemed a social good but where some revenue stream can be anticipated. Although they have not been used in the solid waste sector, BLUDs represent a radical new form of public administration and offer considerable potential. They have more autonomy in the development and application of policies and programs. They can retain all revenues and apply these to future service delivery, and they have the right to hire non-civil servants.

**Regional Cooperation:** Costs associated with developing, expanding, equipping and operating final disposal sites can be prohibitive for many LGs. By working together, LGs can avoid duplication of effort and achieve economies of scale. Development of regional landfills is still new and the long-term benefits have yet to be seen, though sites in South Sulawesi and Central Java suggest the strategy is promising. Problems include securing agreement between a number of LGs, the determination of roles and responsibilities, calculation of financial contributions and continued access to budgetary funds for operations and maintenance, and difficulties in securing sufficient land.

**Institutional Coordination:** Key GoI agencies with roles in strengthening sanitation have, under the leadership of Bappenas, initiated the Acceleration of Urban Sanitation program (*Percepatan Pembangunan Sanitasi Permukiman* [PPSP]) to focus LG attention on the need to improve the delivery of sanitation services. LGs are required to develop integrated sanitation strategies and include the sector in long and short-term work plans. To address the problem of fragmentation among work units, PPSP authorises the creation of *ad hoc* working groups (*Kelompok Kerja* [Pokja]) at the provincial and local levels. These groups are intended to provide a forum where unified policies, approaches and programs can be developed. It is difficult to isolate the success that the PPSP Pokja approach has had in improving coordination in the sanitation sector. But they do provide the opportunity for inter-agency discussion and decision-making so often lacking at the local level.

**Capacity Building:** The Ministry of Home Affairs runs a range of programs to build staff expertise and manages the Institute for Public Administration (*Institut Pemerintahan Dalam Negeri*), which conducts research, develops policies and standards and supports capacity building. The Ministry of Public Works supports two research and training centres that provide specialised training in water and sanitation. In addition, several initiatives that are currently focused on wastewater (an association of cities called AKKOPSI; an ADB proposal for a training institute; and the Indonesian Association of Environmental and Sanitary Engineers) have the potential to expand their focus to include solid waste.

The Government recognises the challenges of municipal solid waste management and is striving to improve service delivery. Building on its successes in dramatically increasing access to safe drinking water, the Government is now turning its attention to sanitation, and in particular solid waste. Law no. 18/2008 on Solid Waste Management establishes basic policies, approaches, and roles and responsibilities. The Law recognises the need to limit the amount of solid waste generated and focuses on the need for consumers to Reduce, Recycle and Reuse solid waste (the 3R policy), and specifies the civic responsibilities of all citizens. It sets targets for the conversion of all open landfills to sanitary landfills, and prioritises the development of sophisticated intermediate treatment facilities (ITFs) to reduce the amount of waste ultimately transported to landfills. Many LGs have passed supporting local bylaws (*perdas*). The Government has increased overall funding for solid waste management in the national budget.

Historically, most funding for the development of landfills and related technologies has been provided by the central government through the Ministry of Public Works (MPW). LGs have been responsible for operating and maintaining the landfills as well as the collection and intermediate treatment facilities and systems. Following the start of the Government's decentralisation program in 2001, responsibility for solid waste management was shifted to LGs with the central government, primarily MPW, responsible for overall policies, standards, development of new technologies, and monitoring and evaluation. LGs, therefore, are at the forefront in the battle to manage solid waste. Most costs must be covered through their budgets and LG work units undertake management of solid waste services. LGs have the power to levy user charges for the delivery of services, including solid waste management.

### **The Institutional Environment**

The Government has shown its commitment to strengthening solid waste management through the promulgation of new policies and regulations, increasing financing, and applying new technologies. It also recognises the importance of a strong "institutional environment" within which solid waste management is undertaken. Accordingly, the Government is focusing on strengthening the local government institutions that are responsible for delivering and regulating solid waste services and rationalising the overall sector. The Government, with the assistance of AusAID funded Indonesia Infrastructure Initiative (IndII), is exploring alternative approaches in these areas, concentrating on the development and implementation of practical policies and programs, and supporting pilot efforts within selected LGs. This article will explore a number of ongoing or planned initiatives to strengthen the institutional environment. While these efforts are new and their overall impact and sustainability remains to be seen, they are a positive sign of the Government's commitment to improve the delivery of a vital service such as solid waste management.

Typically, solid waste management services are delivered by LGs through one or more of their work units (*dinas or SKPD*). Waste is initially collected from individual households or small businesses by individuals or small firms, organised by the local community head and transported to temporary storage sites. Monthly collection fees are paid to the community head and eventually contributed to the local

government's treasury. Waste, minus those reusable or recyclable items that are generally removed by scavengers, is then transported via LG-owned or contracted trucks to final disposal sites. These final disposal sites (*Tempat Pembuang Akhir*) are owned and managed by the LG.

Management of solid waste services by units of LGs, like service delivery in other sectors, has been hampered by a number of problems. While the process of collecting and disposing of solid waste is generally the responsibility of a single unit – often the Cleanliness Unit, the Parks and Cemetery Unit or the Public Works Unit – other LG units are responsible for related solid waste services such as managing market waste, issuing building permits for individual structures or housing or industrial estates, monitoring compliance with environmental standards, or dealing with hazardous waste. Coordination between a multiplicity of units is often difficult and fraught with conflicting policies, gaps or overlaps in coverage, and funding shortages. LG work units in the solid waste sector must compete with other sectors for limited local budget funds. Because all revenues must be returned to the local treasury, there is little incentive to increase coverage and enhance revenues. As with many other work units, those in the solid waste sector often suffer from poor management, a lack of a performance orientation, poor staff morale and a bloated bureaucracy. Delivery of solid waste services is legally limited to the political boundaries of the locality. In metropolitan areas consisting of numerous governments, this results in the inefficient and costly duplication of expensive and hard to develop landfill sites and treatment facilities.

In response to these institutional problems, the Government – with the support of IndII and other donors – is actively exploring alternative approaches. Many of these have been developed and applied in other service delivery sectors, but their use in the solid waste sector is relatively new. A number of these are briefly discussed below.

### **Public Service Units (BLUD)**

In 2005, the Government, recognising the need to improve service delivery and acknowledging the problems associated with the performances of government work units, passed a new regulation, Government Regulation no. 23/2005, which allowed the creation of public service units called Badan Layanan Umum (BLU). BLUs were originally intended for central government units, but with Ministry of Home Affairs (MoHA) Decree no. 61/2007, the use of the new model was extended to LGs as Badan Layanan Umum Daerah, or BLUDs. BLUDs are specifically designed to deliver public services deemed a social good but where some revenue stream can be anticipated. (See “A Promising Concept for Local Services Delivery” in the July 2010 *Prakarsa* for a detailed discussion of the rationale behind the BLUD model.)

Although they have not yet been used in solid waste services or related sectors, BLUDs represent a radical new form of public administration and offer considerable potential in enhancing the delivery of solid waste services.

BLUDs have numerous advantages over work units. They have more autonomy in the development and application of policies and programs. Importantly, they can retain all revenues and apply these to future

service delivery, unlike work units, which must return all revenues to the treasury. They have the right to hire non-civil servants. Such differences are intended to sharpen the focus on service delivery and on improving performance.

BLUDs are still part of LGs and derive their funding from the local government budget. They are seen as a transition from work units towards the creation of state-owned enterprises (*Perusahaan Daerah*) that are outside of the government structure although they also deliver public services. The provision of drinking water is generally undertaken by such enterprises. BLUDs are created through a multi-year process where they are gradually granted more autonomy from the work unit with which they are associated. Eventually they are formally created through a decree of the local mayor or regent.

Experiences with BLUDs have been essentially limited to service delivery areas where a clear link between service delivery and payment can be made. Most BLUDs are either government educational institutions or public hospitals. However, the Government is actively exploring the possibility of expanding BLUDs to other service delivery areas. Using funding from MPW, the province of Bali has recently developed a centralised wastewater collection and treatment system. The system is managed by a technical service unit within a work unit which is in the process of becoming a BLUD at the provincial level. Until recently, the Jakarta Busway system, which is receiving assistance from IndII, was also managed by a BLUD.

IndII is supporting the government and the World Bank to prepare a loan to several cities for the strengthening of solid waste management. IndII's advisors have recommended that the BLUD model be explored for each of the cities that will receive a loan. At present, feasibility studies are underway for four cities. Discussions with local officials suggest that there is interest in BLUDs.

The IndII Australia-Indonesia Infrastructure Grant for Sanitation Program (sAIIG) is supporting up to 40 LGs in the development of small, neighbourhood-based wastewater systems and in connecting such systems to larger networks. While most programs will be managed by work units, a number of larger and more sophisticated LGs have expressed their interest in exploring the use of BLUDs. IndII consultants and Government officials will provide support to these governments as they continue to explore the use of BLUDs and initiate the transition process.

### **Regional Cooperation**

Solid waste management is expensive. With increasing pressures on land due to population growth and development, land values are rising in most urban areas. As a result, the costs associated with developing or expanding final disposal sites can be extremely high. Additional costs for heavy equipment such as trucks and bulldozers, treatment facilities for leachate runoff and, in some localities, sophisticated equipment for gas flaring and methane capture mean that the overall costs for managing solid waste can be prohibitive for many LGs. Moreover, the current model of limiting solid waste management to the citizens of each LG results in considerable cost replication as central urban areas expend substantial amounts of limited budgets for landfills and equipment only to see surrounding localities duplicate their expenditures to serve their citizens.

The Government recognises the benefits that can result from LGs cooperating in the provision of public services and thereby achieving economies of scale. Government Regulation no. 50/2007 establishes the legal framework and specifies procedural requirements for intergovernmental cooperation. In an effort to minimise the costs of land acquisition and equipment procurement and avoid duplication of efforts, the Government is encouraging the creation of regional landfills that are jointly managed by a number of LGs. Law no. 18/2008 suggests that LGs cooperate in solid waste management. The MPW has prioritised regional landfills in its support program for the sector.

In support of the Government's prioritisation of regional sites, IndII provided support for the detailed engineering design of a regional waste disposal site in the Mamminasata region of South Sulawesi, comprising the city of Makassar and the districts of Maros, Gowa and Takalar. With the completion of the design work in 2011, construction of the site, funded by the Japanese Government, is now underway. In parallel, the finalisation of institutional arrangements is now occurring. While each locality will be responsible for the collection and intermediate treatment of solid waste, the landfill will be jointly funded and operated through a secretariat with representatives from each locality. While important questions remain concerning the final governance structure and the determination of funding contributions, the single waste disposal facility will reduce pressures on each locality's budget and avoid duplication of land acquisition and operations/maintenance efforts.

Since 1997, the city of Yogyakarta and the districts of Bantul and Sleman in central Java have operated a regional landfill. A joint secretariat, known by its Indonesian acronym Kartamantul, was established through a provincial decree. Membership consists of representatives from the three LGs with the chair rotating on a three-year basis. While initial funding was provided through the provincial budget, in 2001 a joint decree was signed which shifted funding responsibilities to the LGs. Each LG provides funding proportional to the amount of waste it deposits in the landfill. As in Mamminasata, each LG is independently responsible for collection and intermediate treatment of waste. The Kartamantul secretariat, which has its own staff, also provides a number of other services such as wastewater treatment and transportation management to the three localities.

Development of regional landfills is still new and the long-term benefits have yet to be seen. Institutional problems such as securing agreement between a number of LGs, the determination of roles and responsibilities, calculation of financial contributions and continued access to budgetary funds for operations and maintenance remain. Difficulties in securing sufficient land, even for regional sites, remain. However, the progress that has been made in locations such as Mamminasata and Kartamantul and plans for additional regional landfills suggests that the model is valid and should be applied in Indonesia.



### Institutional Coordination

The Government has prioritised the achievement of Millennium Development Goals, including those related to or influenced by sanitation. Key sectoral agencies with roles in strengthening sanitation have, under the leadership of Bappenas, initiated the Acceleration of Urban Sanitation program (*Percepatan Pembangunan Sanitasi Permukiman* [PPSP]) in an effort to focus the attention of LGs on the need to improve the delivery of sanitation services. LGs are required to develop integrated sanitation strategies and include the sector in long and short-term work plans.

The program recognises the importance of institutional coordination and the problems faced by LGs in implementing policies and programs through a range of work units. The sanitation sector contains three sub-sectors – solid waste, wastewater and drainage – and in many locations different work units are responsible for each sub-sector. Supportive functions – planning, budgeting, policy development, staffing, procurement, and revenue collection – are generally the responsibility of work units other than the main implementing unit. In the case of solid waste other important activities related to the sub-sector – community education, permit issuance, environmental standard development and monitoring, management of hazardous waste – are often the responsibility of yet other work units. Coordination and communications between these work units is often weak, fragmented and fraught with gaps or overlaps.

PPSP authorises the creation of *ad hoc* working groups (*Kelompok Kerja* [Pokja]) at the provincial and local levels designed, to address these problems. These groups are composed of representatives from concerned work units and are intended to provide a forum where unified policies, approaches and programs can be developed. At the local level the Pokja is headed by the Regional Secretary (*Sekretaris Daerah* [Sekda]) and consists of committees – planning, funding, technical, community empowerment and monitoring and evaluation – comprised of representatives of relevant work units. Provincial level Pokja oversee local Pokja and provide horizontal coordination support.

It is difficult to isolate the success that the PPSP Pokja approach has had in improving coordination in the sanitation sector, and in particular solid waste, and therefore in strengthening sanitation service delivery. Pokja are not units of LG and therefore are not entitled to funds from the local budget to support programs. As *ad hoc* entities they can be dissolved at will by the head of the region. Some critics have suggested that they simply add an additional bureaucratic layer to an already complex institutional environment. None the less, they do represent a recognition of the institutional problems related to solid waste management and, at least on paper, provide the opportunity for inter-agency discussion and decision-making so often lacking at the local level.

### Capacity Building

The Government recognises that the successful development and management of solid waste facilities is dependent on strong implementation agencies staffed by skilled civil servants. MoHA has a Directorate General for Education and Training, which runs a range of programs to build staff expertise. Its Organisational Bureau provides support to LG work units. MoHA also manages the Institute for Public

Administration (Institut Pemerintahan Dalam Negeri), which conducts research, develops policies and standards and supports capacity building for governmental institutions. The MPW supports two research and training centres in Bekasi, West Java and Surabaya that provide specialised training in the water and sanitation areas including solid waste.

Building on the successful efforts of the Indonesian Water Supply Association (Perpamsi), a number of local officials have created an association of cities concerned with sanitation (AKKOPSI – Aliansi Kabupaten Kota Peduli Sanitasi) and are in the process of developing a specific policy, training and research institute. Although this institute – FORKALIM (Forum Komunikasi Air Limbah) – will initially focus on wastewater it could later be expanded to include solid waste. Similarly, the ADB supported a technical assistance effort that has generated a proposal for the creation of an Indonesian Water Supply and Training Institute. The final report recommended that FORKALIM focus on wastewater. However, if successful this could also be expanded to solid waste. Finally, the Indonesian Association of Environmental and Sanitary Engineers (Ikatan Ahli Teknik Penyehatan dan Teknik Lingkungan) supports policy development, development of professional standards and a limited amount of training.

Various donors including the World Bank, ADB and a number of bilateral donors have included capacity building and institutional strengthening activities in programs that support the sanitation sector including solid waste. The IndII program has a dedicated team based at MoHA that provides support to the various IndII water and sanitation programs.

## Conclusion

This article has reviewed a number of areas where the Government is supporting efforts to strengthen the institutional environment for the delivery of solid waste services. Many are still in an exploratory phase and the final contribution they can make remains to be determined. However, the fact that they are being tried shows the Government's commitment to improving solid waste service delivery and its recognition of the importance of institutional relationships and capacities. IndII support to the solid waste sector, at present and planned, will include a key institutional capacity building component. ■

About the author:

**Joel Friedman** is IndII's Institutional Development Adviser – Water and Sanitation. He has more than 20 years of development experience in Indonesia working with a range of government institutions. His work at the central level has primarily been with the Ministry of Home Affairs but also with Bappenas, the Ministry of Finance, and the Ministry of Public Works, among others. He has also worked with a range of local governments including a period of time spent living and working in Palembang. Key sectors he has worked on include urban development, the environment, decentralisation and institutional strengthening. He has worked with a range of bi- and multi-lateral aid agencies. Prior to moving to Indonesia he worked in the Philippines and Bangladesh as well as the Department of Housing and Urban Development in the United States. He has an undergraduate degree in Government and a Master's degree in Urban Planning.

## PAVING THE WAY FOR PRIVATE SECTOR INVOLVEMENT IN INDONESIA'S MUNICIPAL SOLID WASTE MANAGEMENT

The private sector can be an important partner, along with National and Local Governments and the public, in managing municipal solid waste. Successful participation by commercial interests will require exploring solid waste's raw resource potential, creating a favourable regulatory environment, applying appropriate technology, and addressing the needs of all stakeholders. • By Ken Butler



One point of entry for the private sector is in the development of intermediate transfer facilities where processes such as composting can be carried out. The flowers in this garden, at the Talang Agung controlled landfill, are nourished with liquid compost produced from organic waste material.

*Courtesy of Rudi Santoso*

Private sector involvement in the Indonesian municipal solid waste management (MSW) sector will require a “paradigm shift” in the way that the private and public sectors view MSW. The past and current view is that MSW is a generation/disposal problem. Instead, both the private and public sectors should explore the raw resource potential of MSW.

National and Local Governments play an important role in creating opportunities for private investment, by developing supporting policies, regulations and incentives/disincentives that promote improved MSW management.

In recent years the Government of Indonesia (GoI) has clarified and enacted three key policy and planning areas that should be viewed as positive “drivers” that can support the commercial development of MSW projects. The policy drivers are: waste management law, energy policy, and commitment to climate change mitigation (see Figure 1).

These three national priorities are expected to (i) improve the operation of MSW through private sector participation; (ii) increase energy generation from new and alternative energy sources; and (iii) reduce national greenhouse gas (GHG) emissions. These are the key components for gathering national, international and private sector support for MSW projects.

## Key Points:

Private sector involvement in the Indonesian municipal solid waste management (MSW) sector requires that the private and public sectors explore the raw resource potential of MSW. National and Local Governments play important roles in creating opportunities for private investment through the development of supporting policies, regulations and incentives/disincentives.

The Government of Indonesia (GoI) has enacted three key policy and planning areas that can drive commercial activities: waste management law, energy policy, and commitment to climate change mitigation.

Sustainable commercial solutions for MSW management rely upon cooperation among the public sector, the private sector, and the community. Attention to the requirements and priorities of each group is especially important in Indonesia because private investment in MSW management is new and will require significant backing from a variety of stakeholders. This will include technology transfer from other countries, as well as recognition of the commercial risk involved in the introduction of new technology.

The private sector has concentrated investment mainly in landfill gas (LFG) projects. GoI's climate change mitigation is leading to the development of a domestic carbon scheme as well as the development of bilateral agreements for carbon trading. Greenhouse gas (GHG) abatement/avoidance will continue to provide financial support for commercial development of MSW activities. Improved MSW management in Indonesia is also gaining support from multilateral agencies.

All components of the MSW value chain present opportunities for private sector participation. It is critical for the private sector to fully understand the nature of MSW management in Indonesia, especially when proposing technical solutions to Local Governments. The composition of Indonesian MSW differs from that of developed countries, and dictates the appropriate technical approach.

GoI has taken steps to improve the commercial environment, such as increasing the price of electricity sold to the PLN grid generated from MSW sources, foreign investment and Public Private Partnerships (PPP). As these efforts continue, sustainable and commercial activities in the MSW sector will require recognition of the requirements of all stakeholders, application of appropriate technology, and risk sharing.

## Three Key Stakeholders

Sustainable commercial solutions for MSW management will rely upon the cooperation between the three key stakeholders: the public sector, the private sector, and the community (see Figure 2). Each of these stakeholders is driven by their own set of requirements and priorities which must be addressed to ensure the successful implementation of a cooperative activity and/or Public Private Partnerships (PPP).

Attention to these requirements and priorities is especially important in Indonesia because private sector investment in MSW management is new and will require significant backing from a variety of stakeholders. This will include the transfer of technology from countries where technologies are proven and are at a mature stage.

**Figure 1: Policy Drivers that Support Commercial Development of MSW Projects**



**Figure 2: Key Stakeholders for Sustainable Commercial Solutions**



It must also be recognised that private sector participation in MSW activities involves a number of commercial risks, especially due to the introduction and application of new technology in Indonesia. The private sector is most likely to be willing to participate in MSW management if the public sector provides a suitable business environment that allows for a suitable commercial return and minimises commercial risks. Governments must offer incentive mechanisms, such as tax-free or lower tax status for equipment related to MSW production; preference or facilitation in licensing; financial or technical aid. At the same time, private sector projects must provide Local Governments with realistic, appropriate and sustainable solutions for MSW management based upon commercial principles and risk sharing.

**Figure 3: The MSW Value Chain**



\*At a minimum, waste should be disposed of at a "controlled dump," which includes site selection, controlled access, and – where practical – compaction of waste.

Currently, the private sector has been concentrating its investment mainly in landfill gas (LFG) projects, utilising the Kyoto Protocol's Clean Development Mechanism (CDM) to generate their revenue streams with various degrees of success. While there is great uncertainty regarding the future of CDM, the Indonesian Government's commitment to climate change mitigation is leading to the development of a domestic carbon scheme (Skema Karbon Nusantara – SKN) as well as the development of bilateral agreements for carbon trading. GHG abatement/avoidance will continue to provide financial support for commercial development of MSW activities.

The goal of improving MSW management in Indonesia is also gaining support from multilateral agencies such as the World Bank, AusAID, GIZ, ADB and others who are developing programs that support and enhance the objectives of the 2008 Waste Management Law. While most of the programs concentrate on improving the final disposal sites (landfills), the basic principle is the development of integrated solid waste management (ISWM) across the MSW Value Chain (see Figure 3): from generation, collection/transportation to disposal/reuse.

**Figure 4: Costs of Solid Waste Management Activities**

Activity	Operating and maintenance cost per ton of waste	
	(Indonesian Rupiah)	(Approx in US Dollars)
1. Transportation	50,000.00–60,000.00	5–6
2. Sanitary Landfill	60,000.00–100,000.00	6–10
3. Open Dumping	10,000.00–20,000.00	1–2
4. Controlled Landfill	30,000.00–50,000.00	3–5
5. Composting	15,000.00–20,000.00	1.5–2

Source: Damanhuri, 2008

### A Local Level Challenge

The inability of Local Governments and society to finance improvements in MSW management is well recognised in Indonesia (see Figure 4 for a table of costs associated with MSW). Improving disposal from open dumping to sanitary landfill conditions will substantially increase the financial burden on Local Governments and society. A number of initiatives are being developed to assist Local Governments, such as:

- Allocation of additional national budget under the GoI GHG emission reduction commitments for MSW management made under Kyoto Protocol.
- The World Bank's MSW management project that will explore opportunities for cost recovery, improving the efficiency of solid waste management and the establishment of intermediate treatment facilities (ITF).



All components of the MSW value chain present opportunities for private sector participation. These opportunities include:

- Capacity building for the public and communities
- Improving and enhancing (value adding) non-organic waste recycling and reuse
- Improving the management of collection vehicle fleets, through privatising collection and/or using fleet management systems
- Developing ITF that focus on refuse derived fuel (RDF), waste-to-energy processes, composting, anaerobic digestion, etc.
- Landfill gas to energy processing to produce electricity or pipeline quality methane
- Landfill management
- Landfill mining/recovery

Before pursuing commercial opportunities, it is critical for the private sector to fully understand the nature of MSW management in Indonesia, especially when it comes to proposing technical solutions to Local Governments. Unlike in developed countries, the composition of Indonesian MSW is predominantly food waste (70–75 percent) with a high moisture content (approximately 60 percent) and low heating value. This high food waste composition is the main disposal problem that Local Governments need help to address, and it dictates the technical approach that should be undertaken.

Indonesia, with the assistance of the international community, has been embarking on new directions that will improve MSW management and the living environment, and at the same time contribute to climate change mitigation. Recognising that the private sector can make a major contribution through efficiencies, technology and investment, the GoI has taken steps to improve the commercial environment, such as increasing the price of electricity sold to the PLN grid generated from MSW sources, foreign investment and PPP. As these efforts continue, sustainable and commercial activities in the MSW sector will require recognition of the requirements of all stakeholders, application of appropriate technology, and risk sharing. ■

About the author:

**Ken Butler** is an Indonesia-based consultant with extensive experience assisting a range of both international donors and private sector clients to address technical and economic aspects of municipal waste management, renewable energy, and climate change mitigation. Highlights of his work include providing expertise to the World Bank on city and regional solid waste improvement in Indonesia and development of project documentation for Kyoto Protocol's Clean Development Mechanism (CDM) in the waste sector in Indonesia. For a joint effort between DFID and the Indonesian Ministry of Finance, he prepared a market assessment and marketing plan for Refuse Derived Fuel (RDF) in Indonesia. Most recently, Ken has served as a Carbon Accounting Expert, analysing carbon footprints and greenhouse gas emissions, for PT ENV, working with PT Vale INCO and Asia Pulp and Paper. He has also supported the Indonesian Ministry of Environment and the Ministry of Industry under the auspices of GIZ in the

development of Indonesia's Nationally Appropriate Mitigation Actions (NAMA) and Measuring, Reporting and Verification (MRV) for reducing GHG emission. He is a graduate of Monash University and the Royal Melbourne Institute of Technology.

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## FROM TRASH TO CASH: STORIES OF TWO WASTE BANKS

Two communities in Jakarta have started award-winning recycling programs that demonstrate to citizens that better waste management can lead to both a more attractive environment and to economic rewards. • By Eleonora Bergita



Nanang Suwandi shows how some of the waste collected in his neighbourhood is transformed into shoes and other saleable items.

*Courtesy of Eleonora Bergita*

Jakarta produces a staggering 6,500 tons of solid waste every day. The majority of this waste is generated by households, a fact that underscores the importance of involving community members in creating solutions to waste management challenges. One innovative and effective means of doing this is by creating “waste banks” – initiatives that reward individuals with cash incentives for their recycling efforts. It’s an approach that is catching on, thanks to efforts by the Ministry of Environment to promote the idea. Ministry Regulation no. 13/2012 lays out guidelines for the development of waste banks; so far over 1,000 have been established. **Prakarsa** talked with members of two Greater Jakarta communities that are enthusiastically pursuing the development of waste banks: Karya Peduli in North Jakarta, and Tomang Asri Sejahtera in Tomang, West Jakarta. Both communities have found that there can be obstacles to success, but the waste bank concept is well worth implementing. Their stories appear below.

### **Karya Peduli Waste Bank**

Karya Peduli Waste Bank (*karya peduli* means “caring work”) was established in early 2008 when its founder, Nanang Suwardi, a long-time resident of Semper Barat, Tanjung Priok, was elected as head of his community (RW). When he took office, his neighbours were apt to throw any and all garbage into a vacant lot at a street corner – causing an unsightly, unhealthy, smelly mess that was depressing for passersby. When people discarded their trash in the street, it clogged the gutters during rainy season, exacerbating flooding. Pak Nanang was determined to do something about this situation.

### A Lack of Awareness

As the newly elected RW, Nanang distributed 60 trash cans to citizens in his community, made from old paint cans that he personally painted, hoping that it would stop them from littering. But his effort had little effect on people's behaviour, and he realised that something more – an approach that would increase awareness and change attitudes – was needed.

With this in mind, he took a more creative approach: he established a “waste bank” headquartered in the very lot where people had been discarding the most trash. Nanang took advantage of the fact that much household waste can be turned into money. Some forms of inorganic waste such as plastic bottles can be chopped up and sold to yarn manufacturers who can use it to produce yarn. Softer plastics can be shredded and sold as filler to makers of products such as handbags, wallets, hats, sandals, shoes, and other items. Organic waste can be turned into compost, which can be returned to community members or sold for Rp 2,500/bag.

Nanang replaced the painted cans with two sacks for each household, one for organic and one for inorganic waste, and informed people about the new Waste Bank program through the heads of neighbourhoods (RT) and monthly neighbourhood meetings. The bank procedures are explained through these channels, and people are encouraged to stop littering.

Community members who bring their waste to the bank receive Rp 2,000 per kilo. Alternatively, officers of the waste bank (young people who were formerly jobless) can collect materials from people's homes, paying them Rp 1,500 per kilo. The officers are paid Rp 500 for every kilo they collect. Customers each have their own bank book to record transactions. Bank officers have little difficulty collecting waste, because every customer's house is clearly marked with a sticker on which the customer's name is written.

Community members do more than just sell their waste; they have become actively involved in the recycling process. Members of Pembinaan Kesejahteraan Keluarga – a local government sponsored organisation for women that promotes family welfare – are making crafts out of the recyclable material. The Dasa Wisma (an informal group of 10 homes in the neighbourhood) works together to process their organic waste and use the compost they make in their gardens.

The Karya Peduli Waste Bank has grown enormously since it was first begun. Initially there were 78 customers – today, there are over one thousand.

The bank offers some of the same services that a traditional bank does, but in a way that low income citizens can access. Karya Peduli allows customers to apply for loans without collateral or interest. They simply pay back their loans with their waste materials.

This has been a boon to people in the community who struggle to obtain or pay back regular loans. For people operating tiny businesses selling food or sundries, it can be impossible to earn enough cash to pay interest.

One satisfied bank customer is Arif Thamrin, an RT head who borrowed Rp 300,000 from the bank to open a food stall selling coffee, tea, and light food such as noodles. His stall is conveniently located in a lot where

large trailer trucks are parked, so he has been able to attract many customers. He can pay back his Karya Peduli Waste Bank loan using the instant noodle and coffee packaging that his business generates.

The bank can make a significant difference in the lives of Semper Barat's poorest citizens. In some cases, families are unable to pay education fees and thus children cannot receive their school diplomas. Sometimes, sick people do not seek medical treatment because they have no funds to pay for doctors' fees. Loans from the waste bank (which are available to customers only for education, health, and business purposes) can make all the difference.

As the number of customers has grown, Karya Peduli Waste Bank has expanded to include new services, such as a payment service for monthly electric bills. The waste bank will collect electricity bills from at least 10 customers who have a balance in their Karya Peduli account sufficient to cover their bills, and go to the PLN (electric company) office to pay the customers' bills. As chairman of the Karya Peduli Waste Bank, Nanang is proud of these innovations and is always thinking of new ways the bank can serve the community, empower citizens and keep the environment clean.

### **Awards and Recognition**

The Karya Peduli Waste Bank has received substantial recognition for its success. In 2010, Semper Barat received both provincial and national level awards for instituting the bank. In June 2013, Nanang received the Kalpataru Award from DKI Jakarta for his work as the founder and developer of the waste bank. He was recently re-appointed by the people in Semper Barat as the Head of RW for a second term.

Karya Peduli Waste Bank has become a model for recycling ventures in Indonesia. Nanang is often invited to speak at environmental seminars and share his experiences in forming the waste bank. The bank has also been visited by representatives from 30 provincial governments around Indonesia.

The positive feedback has encouraged the people managing the waste bank management to work even harder to provide services and innovations. As Nanang admits, expansion is bringing new challenges. Students from nearby Kelapa Gading have been able to participate in collection and delivery activities, but interest in the bank is growing beyond the geographic area that the bank can comfortably serve. A church in Kayu Putih, East Jakarta has asked if they can participate, and Nanang sees potential in working with food vendors in the Plumpang area as well. Unfortunately, the waste bank does not have any vehicles to transport waste from other locations. Bank managers would like to open office branches in other locations but they have found it difficult to find free space to build an office and storage, and they have been denied a permit from the Local Government to use vacant land. These setbacks have not discouraged the bank operators, who know that the bank is making an ongoing contribution to the community.

### **Biogas in Tomang**

The RW in Tomang, Jakarta Barat, has also been a driving force behind a successful waste bank initiative, but while inorganic waste has been the main focus in Semper Barat, Tomang has emphasised the organic side. Drs. Asep Kusmayadi, M.Si was inspired by a simple biodigester used by villagers in Tanjung Sari. The biodigester, developed by a lecturer at Padjajaran University, Dr. Hatta, can process organic waste into biogas and liquid compost. Asep built a similar biodigester in his neighbourhood using Rp 6 million in government

funds available for development in his district. He hoped that with the new tool, the residents of Tomang would learn to sort their waste and use it for something positive.

Asep consulted the RT in his jurisdiction about cooperatively undertaking environmental endeavours. He shared two receptacles for each participating household – one for inorganic waste, and one for organic waste to be put into the biodigester.

The program has proved successful. To produce methane gas, organic waste is put into a two cubic metre biodigester. Sugar is added to speed the process of decay. It takes about three days to produce biogas, which can be piped directly as fuel, and liquid compost, which can be drained for application to gardens and horticulture. The biogas is used to fire a gas stove that is often used for cooking at public events, such as the feast of Idul Adha, the celebration of Independence Day, and other events such as open theatre for residents. Unfortunately, the biogas cannot be distributed to residents' homes, both because of the limited production, and the distance between the houses and the biodigester, which is quite far. The neighbourhood area is a sprawling one, and this is a challenge they will need to address.

As residents have become more environmentally aware, their interest in pursuing recycling activities has grown. Asep has been joined by one of the RTs, Eko Waluyo, and Oetoyo, a senior citizen with technical expertise. Asep, Eko, and Oetoyo built another portable biodigester or TEPsor (*Tempat Permentasi Sampah Organik*, a receptacle for organic waste fermentation) with a capacity of 300 litres at a cost of Rp 12.5 million. The TEPsor has been placed at the front gate of the neighbourhood to encourage its use. Residents who like to sit and have a chat at the street corner can use the energy it generates to prepare hot water for coffee or noodles. The TEPsor's compost can be sold as pironik (*pupuk cair organik*, or liquid organic compost).

Residents use the pironik to fertilise their plants, and now their environment looks greener. For a while, low income people in the neighbourhood used the compost to grow vegetables such as Chinese cabbage, white eggplants, and chili peppers on the banks of the nearby river. Unfortunately the river waters rose and washed away the plantings – but until then the riverbanks were transformed into a lush garden with health and economic benefits for citizens, demonstrating the potential of the biodigester.

### Reducing Inorganic Waste

As an outgrowth of its biodigester activities, Asep's neighbourhood also started Tomang Waste Bank. Currently four RT are actively managing the bank. The Tomang bank system allows the customer to hand over inorganic waste for weighing. The value is recorded in a savings book, or the customer can choose to get cash on the spot. The prices paid are based on the value of each type of waste and they fluctuate according to the market. One day the price might be Rp 1,500 for a kilo of plastic bottles, but it might be higher or lower another time. The bank still has fewer than 100 customers but it is growing, especially with the involvement of 15 elementary and junior high school-aged children who routinely collect inorganic waste.

The children use the money they earn from their trash collection to fund the art activities they conduct every week. Eko Waluyo, who in addition to his RT responsibilities is also an artist, encourages youth to use discarded styrofoam and other waste to create decorative and utilitarian items such as picture frames, hanging gardens, and pots. Many young people are eager participants, inspired to make handicrafts and nurture the environment.



Although the growth of activities in Tomang is constrained by problems such as the limited availability of land for processing waste, both Eko and Asep express a pioneer spirit. They believe in a vision of making more residents of Tomang active participants in managing household waste and caring for the environment.

They are not the only believers. In recognition of their efforts, Tomang won second place in the “healthy cities” category at a provincial level event in 2010. Tomang was also the runner-up in the garbage bank championship event sponsored by Jakarta Green and Clean in 2011. Their biogas program was awarded the Mandiri Kotaku Prize in an environmental contest co-sponsored by Bank Mandiri and the media agency Indopos. Awards such as these not only encourage visionaries in Tomang to press forward, but lead the way for other communities to follow suit. ■

About the author:

**Eleonora Bergita** (Gite) is IndII’s Senior Program Officer and Event Manager. She is an experienced writer and event organiser with more than 10 years of experience in journalism and event management. Her previous background includes work with a German NGO, an Indonesian magazine, and a PR company. Gite graduated from the University of Indonesia, majoring in German Literature.

UPCOMING EVENTS & ACTIVITIES OF NOTE	
<i>What</i>	<i>When and Where</i>
<b>Background Study, RPJMN Transport Sector</b> Workshop	9 October 2013
<b>KSAN (National Sanitation and Water Conference)</b> Conference and Festival	29–31 October 2013 Balai Kartini, Jakarta
<b>Pilot PPP Project</b> Focus Group Discussion	29 October 2013, Jakarta
<b>3IDE (Indonesia Institute for Infrastructure Development Effectiveness)</b> Workshop	29 October 2013, Jakarta
<b>sAIIG PPH Signing Ceremony</b> Ceremony	November 2013, Jakarta (date TBD)
<b>National Road Symposium</b> Seminar	3–4 December 2013, Jakarta
<b>3IDE</b> Concluding Workshop	26 November 2013, Jakarta

\* Note that dates and places are tentative and subject to change.  
Please contact IndII at [enquiries@indii.co.id](mailto:enquiries@indii.co.id) or call us at +62 (21) 7278-0538 to confirm scheduling and venues.

## INDII AT A GLANCE: PLANNED PROGRAMMING FOR 2013–14



IndII is helping Jakarta to meet its public transportation challenges through support to Transjakarta.

*Courtesy of IndII*

Each issue of ***Prakarsa*** focuses primarily on a theme related to one specific sector addressed by the AusAID funded Indonesia Infrastructure Initiative (IndII). But the work done at IndII is far broader in scope. Together with counterparts at the national and local levels, IndII works continuously to implement a range of projects across three sectors: water and sanitation; transport; and policy and investment. As a mature program now well into its second phase (Phase 1 was implemented from 2009 to 2011), much of IndII's current efforts are designed to build on the accomplishments and lessons learned from earlier activities. Below is a snapshot of IndII programming planned for the next fiscal year.

### Water and Sanitation

#### *Water*

- Through IndII's proven successful Water Hibah program – an output-based grant program that rewards Local Governments (LGs) for investing in their water companies (PDAMs) – approximately 290,000 poor households will be connected to piped water using AusAID funds, and another 34,000 using USAID funds.
- IndII will continue to oversee a pilot activity that builds the capacity of Community-Based Organisations (CBOs) to bring piped water to citizens in rural areas not served by PDAMs. Also under consideration is the design of a grant program for CBOs that supply piped water.

#### *Sanitation*

- The Sanitation Hibah will provide output-based grants to enable 9000 household connections to established sewerage systems in four LGs.
- The Australia Indonesia Infrastructure Grants for Sanitation (sAIG) has taken lessons learned from previous Infrastructure Enhancement Grants to create a focused program of output-based grants that will support small-scale sewerage connections for up to 90,000 households across 40 LGs.
- In follow-up to the master plans that have already been completed, Detailed Engineering Designs and Environmental Impact Assessments for sewerage systems in the cities of Palembang, Cimahi, and Pekanbaru will commence this year. In addition, IndII will support the implementation of Palembang's system with an AusAID grant, while systems in the other two cities will likely be implemented through an ADB loan.
- IndII is conducting a feasibility study for the preparation of two projects (in Manado and Yogyakarta) on Regional Solid Waste Management, which will likely be implemented through a World Bank loan.

### *Water Governance*

- A previously implemented program to strengthen PDAM governance is being expanded to utilise social contracts in five additional LGs.
- IndII will roll out the innovative Water and Sanitation Service Index. This is a practical measurement of the service quality of 100 LGs that will be publicised, increasing public accountability while rewarding high-performing LGs and holding them up as a model.

### **Transport**

#### *Strategic Policy and Planning Framework*

- IndII is helping to coordinate and draft five-year transport sector strategies for Bappenas, the Ministry of Transportation (MoT) and the Ministry of Public Works (MPW) for 2014–2019.

#### *Multimodal Connectivity*

- For the North Java MP3EI Corridor, IndII is providing policy and strategy advice to improve multimodal transport and attract traffic away from congested roads.
- IndII is developing a comprehensive package of policy and planning advice on national roads. This includes support for the urgently needed transition towards a new expressway network; raising network standards and using designs that optimise costs on a whole-of-life basis; preparing corridor investment plans using new planning tools; laying the groundwork for private sector program delivery and funding through alternative delivery models; and legal and institutional reform and capacity strengthening.
- With IndII's assistance, a ports development strategy is being incorporated into MoT's five-year plan.

#### *Urban Mobility and Congestion Relief*

- Jakarta's public transport challenges are being addressed by the preparation of investment, operational and business plans, with hands-on technical assistance, for TransJakarta (the soon-to-be-corporatised busway system operator). IndII is offering policy and strategic planning advice for the remainder of the non-rail public transport system.
- Together with MoT, IndII is developing an urban mobility knowledge-sharing system and portal.

#### *Life Cycle Delivery*

- For national roads, IndII is strengthening project delivery and asset management over the project life cycle; introducing higher quality, longer life pavement designs; upgrading technical standards; developing asset management tools to optimise whole-of-life performance, and training staff in their use; introducing Performance-Based Contracting; and strengthening contract management.
- IndII is implementing a pilot program on provincial roads maintenance using central government grants and public scrutiny to incentivise better road maintenance planning, governance and delivery at the provincial level.
- As part of its port project preparation work, IndII is conducting a master plan review and pre-feasibility study as well as preparing a business case for a new Makassar port project suitable for private financing.

### *Safety*

IndII is helping to implement the National Road Safety Master Plan (RUNK). This work includes:

- Road safety blackspot treatments – assisting the Directorate General of Highways (DGH) to identify high-risk blackspots and preparing treatment designs; and strengthening DGH and consultant capacity through training.
- Road safety audits (RSA) on donor (AusAID) and Government-funded national roads; and development of RSA capability among domestic consultants.
- Design of an integrated urban road safety program targeting pedestrians and vulnerable users,

utilising central government grant incentives to improve planning, governance and effectiveness of program delivery.

- With the Victoria Police Department, helping the Indonesia National Police Traffic Corps to strengthen speed control enforcement and crash investigations.

## **Policy and Investment**

### *Infrastructure Financing*

- In the area of PDAM finance reform, IndII is continuing its program to assist PDAMs to prepare bankable business plans for expansions that will qualify for loans under Perpres no. 29/2009. This effort includes developing and distributing a Perpres no. 29 toolkit/manual for PDAMs.
- To support the development of small water Public Private Partnerships (PPPs), IndII is carrying out identification, feasibility and other preparation support.
- IndII is also working with the Directorate General of Water Resources, MPW on PPP proposals and project preparation.

### *Infrastructure Governance*

- In follow-up to its work on governance reform in internal audit function, IndII is wrapping up and communicating key program results to assist the MPW Inspectorate General on internal audit and procurement.
- For DKI Jakarta, IndII is scoping out and designing a program on internal audit and asset management.

### *Knowledge Sector*

- A research grant program to link Indonesian and international researchers in the production of high quality research output, known as the Australian-Indonesia Infrastructure Research Awards (AIIRA), is being rolled out.
- IndII is undertaking the scoping out and design of the Indonesia Institute for Infrastructure Development Effectiveness (IIIDE) to explore new modalities and opportunities for private sector investment.

### *Other Infrastructure Programming*

- IndII is providing support to Bappenas' development of a Gas Master Plan, including policy notes, computer modelling and training.

— David Ray, IndII Facility Director

## EXPERT VIEW

*QUESTION: How do you see the efforts of your organisation contributing to the achievement of overall solid waste management objectives?*

► **Ir. R. Laisa Wahanudin, M.Med.Sc (PH)**

*Head of Sub Directorate of Solid Waste and Drainage, Bappenas*

“Bappenas’ contribution to the development of solid waste management is strategically based on Law no. 18/2008 on Solid Waste Management. Bappenas is taking part in determining the focus of solid waste management policies. Priorities include: supporting the regionalisation of solid waste management at the Local Government (LG) level; focusing on metropolitan and large cities; developing strategic policies on solid waste management; setting out targets to be included in the Long-Term Development Strategic Plan (Rencana Pembangunan Jangka Panjang/RPJP) and National Mid-Term Development Strategic Plan (Rencana Pembangunan Jangka Menengah Nasional); establishing a roadmap of solid waste management, based on the results of mapping activities; and proposing alternative sources of funding. Based on these priorities, technical ministries can build their respective strategic and action plans on solid waste management.

Bappenas also facilitates, coordinates, monitors and evaluates information management on stakeholders through the water and environment working groups. One of the breakthroughs that we’ve made is to encourage LGs to create a good planning document, by having their own sanitation strategy included in the acceleration program for housing sanitation development”.

► **Capt. H. Josrizal Zain, SE, MM**

*Executive Director, AKKOPSI*

“AKKOPSI (*Aliansi Kabupaten Kota Peduli Sanitasi*, the Alliance of Local Governments [LGs] for Sanitation), is a coordinating institution that enables Heads of LGs to support each other in strengthening and maintaining their commitments to sanitation development. AKKOPSI is also a forum for LGs to share experiences and lessons learned. AKKOPSI’s main role is as mediator in the dialogues between LGs and central government and also donor institutions, to increase synergy and cooperation between stakeholders.

With regard to solid waste management, AKKOPSI’s contribution covers facilitating information exchange on various approaches to solid waste management. This is done through AKKOPSI’s routine forums such as the Annual City Sanitation Summit and horizontal learning forum between heads of LGs. For the Heads of LGs forum, AKKOPSI contributes to direct advocacy, policy promotion and new approaches for solid waste management”.

► **Joseph Hwang, M.Sc.**

*Production Director, PT Gikoko Kogyo Indonesia*

“Gikoko’s investments in medium-sized city landfills brought attention to the importance of instituting management and operational standards for discarded waste in a final disposal facility. Experts from the development banks and consultants were initially more worried about concentrating on the amount of waste that the city collects, but Gikoko realised that appropriate budgetary resources from the host city government are indispensable to safe depositing of solid waste in a landfill. Waste must be compacted and rendered stable to mitigate the risk of landslides.

By writing a Standard Operational Manual with the World Bank, Gikoko demonstrated that waste which was initially an environmental liability can be turned to advantage, becoming the basis for competitive natural gas production and electricity generation. This paves the way for replication of similar projects where private sector technology providers work in partnership with government to contribute to the goal of achieving sanitary landfills that also serve as financially feasible recycling facilities”.



## Outcomes:

# CREATING GUIDELINES FOR SOCIALLY INCLUSIVE SANITATION ACTIVITIES

Central and Local Government stakeholders acknowledge that they need a tool to assist them to integrate gender, poverty, and other social issues into institutionally based sanitation activities. Standards are needed to help officials formally identify and address needs, legalise commitments, establish appropriate indicators, collect data and monitor performance. To



develop such tools, the Environmental Sanitation Development Directorate, Directorate General of Human Settlements (DGHS) sought assistance from the AusAID funded Indonesia Infrastructure Initiative (IndII). IndII gender consultants then worked with DGHS to create a manual that offers guidance on gender issues and program monitoring within the institutional framework. In consultation with the Directorate and national and local government personnel, the consultants drafted a manual that lays out systematic mechanisms to ensure that gender, poverty and other social issues are addressed throughout the entire process of sewerage management. As part of the efforts to finalise the manual, a workshop was held in July 2013 to obtain inputs from the national and local government stakeholders who will be the primary users of the manual. These inputs are being used to enrich the content and make the manual a better tool for stakeholders who hope to provide better quality sanitation that meets everyone's needs.

To read more about this and other IndII activities, view the Activity Updates on our website at: [http://www.indii.co.id/publications.php?id\\_cat=57](http://www.indii.co.id/publications.php?id_cat=57)

## IN OUR NEXT ISSUE: DEVELOPMENT PLANNING, 2015–2019

The Government of Indonesia is now hard at work on its Rencana Pembangunan Jangka Menengah (RPJM, or Medium Term Development Plan) for the period 2015–2019. This is the third five-year plan that is part of a larger, 20 year planning effort first undertaken in 2005. The 20-year planning effort sees the Indonesia of 2025 as a competitive country with integrated, reliable transport networks and adequate water and sanitation infrastructure for all citizens. Much work remains to be done to achieve this vision, and the next RPJM will serve as a key policy framework for the next national government. The AusAID funded Indonesia Infrastructure Initiative is working with counterparts at Bappenas and various line agencies on their strategic plans for the 2015–19 period. The January 2014 edition of *Prakarsa* will provide a timely discussion of key themes to be considered as part of the preparation of the RPJM document. This will include a number of sectoral and cross-sectoral themes such as improved network planning, outcome-based targets for connectivity, better life-cycle asset management, use of performance based systems in delivery, decentralisation and new modalities for private sector participation.