

# PRAKARSA

Issue 1 / January 2010

## Introducing the Indonesia Infrastructure Initiative: Supporting the Policy Framework • Bringing Water to the People • Engineering Safer Roads • Solving Wastewater Problems

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## Editor's Message

Welcome to the premier edition of *Prakarsa*, a bilingual quarterly journal produced by the AusAID-funded Indonesia Infrastructure Initiative (IndII) facility. Its purpose is to inform leaders who are working to enhance Indonesia's infrastructure – whether in the context of government, donor agencies, non-governmental organisations, or the private sector – about the challenges confronting Indonesia's infrastructure development, and how IndII is working with its partners to address them.

What will this journal be like? Each issue will have a theme, usually sector-based. The theme for our first issue is "Introducing IndII," and so our feature articles in this edition explore a variety of topics designed to give readers insight into who we are and what we do. To get a quick overview of IndII, you can check out our one-page "IndII at a Glance" on page 16. For a deeper understanding of IndII's basic premise – namely, that policy reform must underpin all efforts to create lasting improvements – readers are directed to "Supporting Indonesia's Infrastructure Policy Framework" (page 3).

Key information about the water and sanitation sector – a priority focus for IndII – is presented in "From Jerricans to Taps: Bringing Water to the People" (page 6) and "Solving the Wastewater Management Problem" (page 14). To learn about a very different but also important aspect of IndII's work, read "Engineers Learn How to Make Indonesia's Roads Safer" (page 10).

In addition to feature articles, each issue of *Prakarsa* will include several regular columns. *Indonesia by the Numbers* (page 2) offers a short selection of thought-provoking numbers to supplement our features. *The Expert View* (page 19) gives a forum for trenchant commentary by specialists who are tackling Indonesia's infrastructure issues. Finally, *Outcomes* (page 20) is an opportunity for IndII to briefly highlight one of our recent activities and the results it led to.

Your involvement in *Prakarsa* is strongly encouraged. Please send us your comments on our recent content or your suggestions for future editions – especially if you would like to discuss with us the possibility of writing an article (contact [prakarsa@indii.co.id](mailto:prakarsa@indii.co.id)). • CSW

## Infrastructure by the Numbers

### 31 %

*Proportion of Indonesia's urban households that now have a water connection, down from 39% in the 1990s.*

### 44.5 %

*The average effective working time as a proportion of turnaround time for ships at Indonesia's main ports. This suggests that ships are spending over half their time in port sitting idle at berth or waiting in queue.*

### 0.37 %

*The typical amount of surplus revenue that local governments annually invest in their water companies, according to data from a 2007 audit by the Ministry of Finance.*

### 2

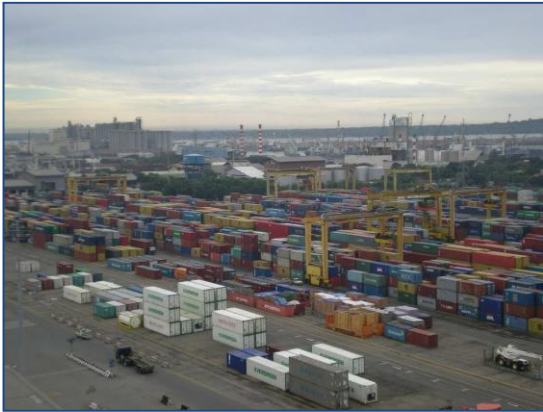
*The rank of radio communications licence fees for use of a public resource, as a source of non-tax revenue for the Government of Indonesia. The oil and gas sector is #1.*

### 65 %

*The proportion of traffic fatalities in Indonesia that are motorcyclists. Another 15% are pedestrians.*

## SUPPORTING INDONESIA'S INFRASTRUCTURE POLICY FRAMEWORK

The Indonesia Infrastructure Initiative assists the Indonesian Government to develop infrastructure at many levels, but its premise is that a sound policy and planning environment must underpin all of its diverse efforts ● By David Ray



The Port of Tanjung Perak in Surabaya. Improving port operations is essential to improving the investment environment. *Courtesy of BBC World Service*

Put in its simplest terms, the goal of the Indonesia Infrastructure Initiative (IndII) is to assist the Government of Indonesia (GoI) to enhance the nation's infrastructure. Anyone hearing this for the first time will most likely think of the tangible results that can be achieved: building and repairing roads, developing new water treatment facilities, connecting more urban dwellers to piped water, or constructing needed storage facilities at a seaport.

The efforts of IndII will indeed contribute to these final outcomes. But IndII does not exist solely to promote particular construction projects. If it did, its effect would ultimately be limited to those specific activities, and when IndII concludes, it would have little additional impact on Indonesian development.

IndII has far more significant aspirations. The focus of IndII is less on particular construction projects and more on helping the Government of Indonesia (GoI) to become expert at instituting sound infrastructure policy and regulations, designing and implementing national master plans, creating effective public-private partnerships, and facilitating infrastructure investment. In short, IndII aims to create an environment where the GoI's infrastructure development activities will be carried out in a manner that ensures maximum possible impact over the long term.

IndII's efforts are urgently needed. Years of underinvestment in key assets – such as ports, railways, roads, and water and sanitation systems – have left Indonesia with a major infrastructure deficit. The problem is particularly serious in urban areas, where inadequate water, sanitation and transport facilities are undermining living standards and constraining growth. With the urban population projected to increase by over 100 million people by mid-century, the strain on Indonesia's already overburdened urban infrastructure is likely to worsen.

GoI leaders are increasingly making it a policy priority to confront these challenges. Promisingly, infrastructure issues have featured prominently in policy statements of the new SBY administration, such as the 100-day program.

### **A Broad Range of Programming**

This is the context within which the Australian Government conceived of IndII, establishing as its goal assisting GoI to address many of the infrastructure problems that now constrain economic growth. IndII is primarily focussed on the watsan (water and sanitation) and transport sectors, as well as a number of cross-sectoral themes and priorities such public-private partnerships (PPPs), public service obligations, and infrastructure financing. Programmatically, IndII works at various levels: from policy and planning down to more 'hands-on' infrastructure project preparation, management and facilitation, and even direct investment (using government systems) in hard infrastructure through grants.

IndII supports infrastructure reforms and activities at both the national and local level, addressing such topics as access to commercial credit by local water companies, public service obligations to provide transport services on a non-commercial basis, road safety through better design, sanitation and water connections for low income households, rail and port sector master-planning, procurement and internal audit in the roads sector, medium term expenditure frameworks and performance-based budgeting, bus rapid transit planning and development, and city sanitation master-planning, amongst others.

### **Fitting Within Larger Agendas**

Throughout all of these activities, IndII never loses sight of its overarching objective to strengthen the policy and institutional framework for infrastructure reform and development. Accordingly, IndII programming has been developed within the framework of the GoI five-year development plan (RJPM) and recent Inpres policy reform packages, as well as the policy agendas supported by the World Bank and Asian Development Bank through their lending programs. IndII programming also builds upon important sectoral initiatives within the GoI policy agenda. These include recent policy initiatives to overcome debt problems in the water sector and to generate incentives for local governments to re-invest in their water utility companies, as well as other initiatives in the sanitation sectors such as carrying out a 2005 law to ban open dumping sites and to transition to sanitary landfill.

### **The Example of the Transport Sector**

One of IndII's crucial sectoral initiatives relates to recent regulatory and institutional reform in the transport sector. Over the past few decades this sector has lagged in terms of investment and overall development relative to other infrastructure sectors. Consequences of this include a congested and poorly equipped port system that generates high costs for international and inter-island shipping; an under-funded passenger railway system unable to compete with other transport modes, particularly the subsidised road system; a lack of safe, comfortable and rapid commuter transit options in large cities, resulting in growing reliance on private vehicles; and an increasingly unsafe road network causing up to 40,000 fatalities each year.

Reform and development of transport infrastructure is now a key policy priority of the GoI, and the past few years have seen important legislation passed related to sea, rail, air and road transport. These legislative changes are broad ranging and, in general, introduce best-practice reforms such as dismantling legislated state-owned monopolies, opening the door to private sector operators and better defining the role of the government to focus on regulatory matters and the provision of basic infrastructure.

Whilst this legislation provides the foundation for potential landmark sector reforms, considerable effort will be required to develop the necessary supporting regulatory and institutional framework to ensure effective implementation.

Consider the case of the sea transport law, which requires the implementation of the landlord port concept. This in turn requires further regulation and the development of new institutions, namely port authorities that will regulate terminal operations in dozens, if not hundreds, of ports. However, before these port authorities can be established, a set of policy decisions needs to be taken nationally on a range of issues including port land access and titling, the role of local governments, spatial planning and port locations, transitioning the state-owned port operator PELINDO from monopolist provider to operator, managing competition within ports, and the role of public-private partnerships, amongst others. In addition, effort must be taken to determine the likely demand for port services in coming decades and how best the national port system can respond to this demand.

These and many other issues will be dealt with as part of the National Port Master Plan (NPMP), a crucial document providing the regulatory and supervisory framework for development of the ports system over the next two decades. Under the umbrella of the NPMP there will be individual port master plans, which in turn will provide the governance framework for the port authorities to regulate operations at the port level. Before port authorities can become operational they need to map out in their master plans how they are going to regulate and price access to key resources such as land and basic port infrastructure, how competition between newcomers and incumbents and how concession agreements are going to be managed, and finally how port orderliness, security and environmental sustainability is to be maintained. This is clearly a challenging set of tasks for any developing country institutions, let alone ones that have yet to be formed and that will be staffed solely by public servants with limited background in port operations and management.

Development of the necessary regulatory and institutional framework to implement the landlord port concept (comprising the National Port Master Plan, individual port master plans and empowerment of the port authorities) will take a minimum of three to five years. Given its limited time horizon, IndII will focus its activities on assisting the Ministry of Transport (MoT) to develop the best possible national master plan that lays the foundation for a substantial upgrading and comprehensive reform of the ports system. If time permits, IndII may also work with the MoT in the follow-on activity to develop master plans for select ports, thereby more directly assisting and facilitating new opportunities for private sector investment in terminals and other port facilities.

IndII's focus on assisting Indonesia's port development by concentrating on the National Port Master Plan is a good illustration of the IndII approach. Building an institutional framework is an ambitious undertaking, but one that will pay off in enhanced economic growth for years to come. ■

About the author:

**David Ray** is the Director of the Indonesia Infrastructure Initiative. As an economist, he worked on a broad range of microeconomic policy issues in Indonesia, including investment, competition, logistics, trade, decentralisation as well as business regulation reform. Prior to IndII, he was employed on a number of USAID-funded projects, primarily in Indonesia and Vietnam.



## FROM JERRICANS TO TAPS: BRINGING WATER TO THE PEOPLE

Increasing urbanisation, government decentralisation, and historical underinvestment are among the challenges that Indonesia faces as it increases its citizens' access to piped water services ● By David Hawes

A family in Sunter North Jakarta drawing ground water from a shallow well in 2003. Ground water table depletion and saline intrusion has made wells in north Jakarta largely unusable. *Courtesy of Jim Coucouvinis*



A woman in Medan enjoys a newly installed water connection. *Courtesy of ESP Indonesia*

Today, fewer than one-third of Indonesia's urban households enjoy a piped water connection. Due to rapid population growth and sustained under-investment, that proportion has actually declined over the past decade. Consequently, most city and town dwellers still obtain their water from private wells, communal supplies, or – most expensively of all – passing street vendors.

For those fortunate enough to have connections, the quality of service is often unsatisfactory. Common problems include low pressure, limited hours of operation, and poor water quality. Only one city – Malang – is certified to supply water suitable for drinking, and that to only part of its service area. Elsewhere, households must still boil their tap water or else support Indonesia's booming bottled water industry.

Regional autonomy has shifted primary responsibility for water services to municipal and district governments. In most urban areas, the task is assigned to regional water supply companies (PDAMs). There are currently some 350 PDAMs, but many struggle to serve existing customers,

let alone expand. By 2008, over half had defaulted on debt service payments to the Ministry of Finance (MoF) and were consequently unable to access new borrowings.

The poor performance of many PDAMs can be traced to the local governments that own and regulate them. Key issues include; a reluctance to raise tariffs to the level needed to cover costs, the appointment of ill-qualified directors, and withdrawal of cash surpluses as dividends. Starved of resources, PDAMs are often able to do little more than meet daily operational costs, and are unable to fund needed maintenance work. Consequent leaks from mains and distribution networks – compounded by damaged meters and unregistered connections – result in many PDAMs being able to charge for less than half the water they actually produce.

### **Pressure to Improve**

This picture has recently started to change for the better. At the local level, the direct election of mayors and district heads combined with a very free press has focused increased attention on the quality of public services, and especially infrastructure services. Put simply, local governments now face much stronger pressure to perform. At the central level, mounting concern about slow progress towards MDG (Millennium Development Goal) targets, coupled with a strengthening fiscal outlook, led the Government of Indonesia (GoI) to announce in 2008 a target of connecting 10 million households within three to five years. To place this in perspective, less than 8 million households have connections today.

Initial moves to improve PDAM performance had commenced somewhat earlier. Perhaps most importantly, in 2006 the Minister of Home Affairs issued new tariff guidelines designed to enable full cost recovery while requiring a lifeline tariff for poor households. The lifeline tariff is designed to enable a poor family to obtain its basic water needs for 4 percent of the provincial minimum wage. In a poor province, this translates into a daily expenditure of around Rp 1,000 for 300 litres of water per day. By way of comparison, dwellers in Jakarta's kampongs now pay street vendors as much as Rp 1,000 for a 20-litre container. Perhaps unsurprisingly, implementation of the guidelines has proceeded slowly, with average tariffs charged by poorly performing PDAMs still far below the ceiling lifeline level.

More recently, the GoI's attention has turned to measures aimed at stimulating new water supply investments. In mid-2008, a voluntary debt-restructuring scheme was introduced, targeted to PDAMs that had defaulted on debt service payments to the MoF. This scheme provides for writing-off interest arrears and penalties in return for defined governance and performance commitments by the local governments and PDAMs. These include implementation of full cost recovery tariffs and use of 'fit and proper' tests for senior management appointments. Around half of the PDAMs with arrears have so far applied to join the scheme.

To complement this initiative, a central government loan guarantee and interest subsidy scheme is in the process of being created. This scheme will assist PDAMs in obtaining affordable

medium-term loans from commercial banks. The terms and conditions are rather complex, but from the lending bank's perspective 70 percent of outstanding repayment obligations are guaranteed, while from the PDAM's perspective the loan interest rate can be reduced by up to 5 percent. Participation in this scheme is open to PDAMs that have 'healthy' audit ratings or that have been approved to join the restructuring programme.

### **An Output-Based Strategy**

The third plank of the Government's evolving strategy – and the one which is likely to have the most rapid impact – is an output-based grant scheme. Under this initiative, participating local governments will receive a lump-sum payment for each new piped water connection completed. This scheme has been jointly designed by the Ministries of Public Works and Finance in close consultation with Bappenas. It has drawn on advisory assistance from the World Bank and the Indonesia Infrastructure Initiative (IndII). Implementation will be piloted in 2010, with parallel programmes being funded by Indonesia's state budget and the Government of Australia's Water and Sanitation Initiative (WSI).

The shift to an output-based approach represents an important policy change by the GoI, and has been made possible by the new grant (hibah) mechanism established by the MoF in 2008. There are some important differences between this and the existing DAK (Dana Alokasi Khusus, or special allocation funds) transfer mechanism. For example, the hibah programme requires local governments to lodge plans that link payments to defined performance milestones and conditions. These plans must be approved prior to signing agreements with the MoF.

The use of output-based approaches for extending water supply services is already being piloted in Surabaya and Jakarta. These relatively small programmes are being funded by the Global Partnership for Output-Based Aid (GPOBA) and assisted by the World Bank. The proposed WSI programme incorporates similar elements, but is significantly larger in amount and coverage. The available funds are A\$ 20 million, which is expected to support the completion of 70,000 new connections. This will serve some 420,000 people in predominantly poor districts of 25 towns and cities by June 2011.

Local governments and their PDAMs have shown strong interest in participating in the WSI programme, and the Ministry of Public Works has conducted a screening process to select which ones will be included. In line with the loan guarantee and interest subsidy scheme, the intent is to prioritise PDAMs which have a 'healthy' audit rating or have been accepted into the MoF debt restructuring scheme, and which also have a sound connections programme ready for implementation in 2010. In addition, participating local governments and/ or PDAMs must be able to pre-finance their proposed investment programmes.

### **Ensuring Sustainability**

The WSI programme aims to enable the connecting of poor households while supporting



improved PDAM sustainability. Since the Ministry of Home Affairs guideline requires low lifeline tariffs to be cross-subsidised by other customers, this requires connecting a mix of low and higher income customers. For the 2010 pilot, there must be at least one poor household connection for each non-poor household included in the grant claim. This will incentivise PDAMs to discount up-front connection charges or to offer installment payment plans.

The model grant agreement is now being finalised and will specify, for example; the amount of grant per verified new connection, the ceiling grant amount available, the procedures for verification, and pre-conditions for grant payment. The grant amount will be Rp 2 million per connection for the first 1,000 connections and Rp 3 million per connection thereafter. To obtain payment, connections must be independently verified to have supplied water for at least three months. In addition, a local government must demonstrate that it has injected equity into its PDAM at least equal to the amount of grant money claimed.

IndII has played a key role in developing the overall concept for the approximately A\$ 60 million WSI Indonesia programme, as well as in designing the Water Hibah programme and a similar sanitation hibah scheme which will support new connections to the existing sewerage systems in Banjarmasin and Surakarta. WSI, through IndII, will also finance the preparation of sanitation investment plans for four cities.

In parallel with the WSI design work, IndII has financed technical assistance to an initial batch of PDAMs. This aims to improve their performance and thereby position them to access commercial loans or future hibah programmes. IndII will also play a key role in overseeing the implementation of the WSI water and sanitation hibah programmes on behalf of AusAID. This will involve assisting the Ministry of Public Works to conduct baseline surveys for the planned water and sewerage connection programmes and, very importantly, to undertake the verification surveys that will form the basis for grant payments. All of these interrelated activities will help Indonesia to reverse the trend and increase the proportion of its citizens with access to piped water. ■

About the author:

**David Hawes** is the Infrastructure Policy Advisor for AusAID's Indonesia program. He has worked on infrastructure development issues in Indonesia since 1980, including in the energy, transport and urban infrastructure sectors. Prior to taking his current position, David was Director of AusAID's TAMF-III economic governance facility and, before that, infrastructure sector coordinator at the World Bank's Jakarta office.

# ENGINEERS LEARN HOW TO MAKE INDONESIA'S ROADS SAFER

People often assume that drivers are the root cause of all road crashes, but the physical infrastructure of the roadways plays an important role as well. Indonesia's officials are confronting this issue with the help of IndII. ● By Phillip Jordan



Participants in an IndII workshop inspect a new bypass in Bandung before it is opened to traffic.  
*Courtesy of Phillip Jordan*

Participants in an IndII workshop on road safety in Palembang came across this bus crash, where an apparent steering failure led to the bus running off the road and rolling over. One person in the bus was killed. *Courtesy of Phillip Jordan*



Road crashes are a major global health problem. They kill more than 1.3 million people worldwide each year. More than 260,000 of the dead are young children. Another 50 million people are injured, many so badly they will never work again. When the dead or injured are young breadwinners, their families may be pushed into extreme poverty and hardship. All in all, road crashes now claim more lives globally than malaria. And as with malaria, 90 percent of the deaths are in low- and middle-income countries like Indonesia.

Indonesia is experiencing a road safety crisis that ranks amongst the worst in the world. The Asian Development Bank has estimated that crashes cost Indonesia approximately 2.8 percent of GDP annually. Police records suggest that about 12,000 people die on the roads in this country each year, but hospital records and independent research suggest the real figure is over 40,000. The numbers are climbing as more and more people in this vast country are motorising. (Honda

reportedly sells 5 million new motorcycles here each year.) If nothing is done, road fatalities in Indonesia are predicted to exceed 50,000 a year within two years.

Against this backdrop, the Indonesia Infrastructure Initiative (IndII) is working closely with Indonesian engineers to improve the situation. In keeping with its infrastructure focus, IndII is directing its efforts towards engineering safer roads. Australian road safety engineer and IndII consultant Phillip Jordan and national consultant Victor Taufik are based in the Directorate General of Highways (DGH) Head Office, where they are assisting DGH to establish a road safety engineering team and raise the skill level of local engineers in road safety engineering. As the first step towards establishing a road safety engineering team, they are training DGH engineers, along with some members of the Traffic Police and the Directorate General of Land Transport (DGLT).

## MAKING BLACKSPOTS BETTER

A “blackspot” is a location on the road that has a high number of crashes. It might be an intersection, or it might be a curve on the highway. It is known for its crash frequency and usually also for its crash severity.

Engineers can effectively treat blackspots with low cost counter-measures to reduce the number and/ or the severity of these crashes. Better signage, renewed line marking, removal of a roadside hazard, and use of reflective plastic cones to delineate worksites can all help. For example, a curve on a highway that is experiencing a number of run-off-road crashes may be treated with shoulder sealing, edge lines and chevron markers around the curve. These countermeasures help to keep vehicles where they belong and studies show that they can reduce crashes by about 50 percent. The economic returns from treating blackspots are great, with overall returns on money spent of more than four to one.

### Sharing Australian Experience

In 1970, 1061 people died on Victoria’s roads. By 2008, this number had been reduced to 303, making Victoria one of the safest road networks in the world measured by its rate of fatalities per registered vehicle. Victoria and New South Wales now have fatality rates on a par with Sweden, the Netherlands, and the United Kingdom – countries that have the world’s best road safety statistics. The lessons learned through this experience can and should be used to help local experts in countries such as Indonesia to jump ahead more quickly.

### Agency Cooperation Is Key

At its most basic level, the road safety problem consists of three elements: the human, the vehicle and the road. Early attempts in most countries to improve road safety are often directed at one component only. People commonly blame the road user for all safety problems, so early efforts to address them usually focus on driver/ rider behaviour, including obeying road rules and wearing seat belts or helmets.

In Indonesia, most people blame motorcyclists for crashes. They add that public awareness of road safety issues must be improved and that police should enforce traffic laws more strictly with respect to motorcyclists. Such campaigns are essential and valuable, but only part of the

picture. The key factor in a successful national push to improve road safety is the prudent use of national resources across all government agencies. Road safety is a long-term investment in a country. The greatest results will come when agencies coordinate, communicate, and cooperate. Furthermore, Indonesian champions have to be found, nurtured, encouraged and assisted. International consultants can assist, lead, train, encourage and enthuse but eventually the solution lies with local efforts and local institutions.

Some important local efforts are already underway. A number of groups are working to raise public awareness of the safety benefits of motorcycle helmets and seat belts. A new traffic law that introduces a raft of new regulations for road users has just been unveiled. Other promising steps include a major project in 2010 to improve road crash reporting in Indonesia – an essential move because until a country knows the real extent of a problem its politicians will not approve the resources needed to address it.

But the country still awaits the start up of a National Road Safety Council, and the preparation of a National Road Safety Strategy to provide guidance and overall direction. Only with such national guidance co-ordination and co-operation will national resources be put to most effective use.

### **Safer Highways Are a Good Start**

IndII's resources are contributing to a goal that offers major benefits but which is often considered too long term and too hard: making national highways safer. IndII's Road Safety Project has brought to light many high risk roads throughout the country, each with a wide range of different road users. It is clear that Indonesia will benefit from the establishment of a new road safety engineering team that can lead the development of safer roads across the country.

To begin building such a team, IndII has assisted DGH to conduct seven major training workshops in various cities based along the eastern Sumatra Corridor and the Northern Java Corridor (the two busiest and most notoriously dangerous highways in Indonesia). The workshops have demonstrated how to investigate accident "blackspots" and how to do a road safety audit (see boxes). Indonesia has many blackspots, and treating these with low cost countermeasures is a very effective way to reduce crashes.

#### **WHAT IS A ROAD SAFETY AUDIT?**

Whenever a new road is designed, it should be checked by an independent team of road safety engineers to ensure that there are no unforeseen safety problems in the design. This process is called a road safety audit. It is a proactive process that attempts to save time and money by eliminating any possible safety concern while it is still a line on a drawing, instead of after the road is built. Road safety audits are commonly carried out in most developed countries today but are still new to Indonesia. They have real potential to assist with the production of safer roads across the country.

Each workshop has included local case studies, including inspections of several blackspots. Under IndII guidance, teams of DGH/ Police/ DGLT inspected and analysed the case study sites,

preparing reports that received feedback from IndII personnel. The workshops have also included audits of drawings for seven new road projects, highlighting the safety features and flaws of designs now in the planning stages.

Workshop presentations have stressed to engineers that they all have a role to play in reducing road crashes. Engineers must not simply blame the drivers. They have to engineer roads that are understandable to road users and that are forgiving when drivers make a mistake.



A truck traveling on the wrong side of the road at this dangerous curve near Jambi. Remedial work has since been done on this blackspot as a result of IndII's work with local officials. *Courtesy of Phillip Jordan*

A forgiving roadside is one that ensures that injuries to anyone unfortunate enough to run off the road are minimised. A forgiving roadside does not have large rigid poles or deep drains beside the road. The forgiving roadside is a new concept in Indonesia and it will take a concerted effort by many professionals to encourage its wholehearted adoption.

### **A Continuing Effort**

IndII will continue to help Indonesia to expand its road safety efforts. As the country engineers its national highway system, it will offer additional input on safety considerations. IndII will assist DGH to develop the necessary skills and knowledge to be able to cost-effectively manage this global health issue.

For a country with 230 million people, Indonesia has relatively few traffic engineers and even fewer road safety engineers. IndII is committed to helping the government face this challenge and bring the country up to world standards with specialist teams striving to ensure that the number and severity of road crashes is set on a continuously downward trend. ■

### **About the author**

Australian road safety expert **Phillip Jordan** draws on his experience in Victoria going back to the 1970s, when he began work as an engineer with the Road Safety and Traffic Authority (since amalgamated with other government agencies to become VicRoads). Having worked in more than twenty countries as varied as Albania, Azerbaijan, Britain, Eritrea, Iran, India, Australia, Singapore, Canada and Thailand, Jordan is able to see the differences and also the similarities of the road safety situation across the world.



## SOLVING THE WASTEWATER MANAGEMENT PROBLEM

After it swirls down the drain, where can wastewater go without creating health and environmental hazards? The Indonesia Infrastructure Initiative is helping Indonesian cities to find answers to that question. ● By Andrew McLernon



Untreated wastewater from urban households drains into unsightly and unhealthy canals in Indonesia's cities. *Courtesy of Andrew McLernon*

Crowded living quarters in urban areas exacerbate problems with wastewater disposal. *Courtesy of Andrew McLernon*



Have you ever wondered where your toilet wastewater goes? And what of that from the bath, laundry and kitchen sink? In the developed world we generally can be confident it is safely collected and treated. Increasingly, it is recycled to benefit the environment. But in Indonesian cities, as in much of the developing world, this dangerous material just doesn't go away. Even if it can be removed from your toilet and kitchen (and your neighbour's), it appears again nearby – untreated, smelly, and still full of the germs that make it a danger to health. It becomes a major polluter of the urban environment and generally a nuisance, whether it is fouling your bore water, oozing up through your lounge floor in the wet season, stagnating in open mosquito-infested drains or leaking into downstream environments. Poor urban sanitation conditions are a health hazard and ultimately a significant drag on the economy, with the costs falling disproportionately on the poor.

Indonesia is experiencing rapid urbanisation and industrialisation, with about 50 percent of the population (around 120 million people) now living in urban areas. As a consequence, environmental conditions in many city neighbourhoods are in the atrocious state described above. Workable solutions to urban wastewater problems are desperately needed. The Ministry of Public Works, Directorate General for Human Settlements is the agency most responsible for



assisting city governments resolve the wastewater problem. It has invited AusAID, through the Indonesia Infrastructure Initiative (IndII), to help tackle the problem. They have asked IndII to prepare master plans, feasibility studies and detailed engineering designs of wastewater investments, especially sewerage, for larger cities across the country. The first stage of work – preparing an activity design and tender documents for consulting services – began in August 2009 and is scheduled for completion in January 2010.

### **From Gravity Sewers To Septic Tanks**

In the developed world, reticulated gravity sewers (piping that slopes gradually away from the source to carry the water to a central sewage area) are the standard solution to carrying off wastewater. But they can only be part of the solution in Indonesia – sewerage systems are very expensive to build and operate, especially in crowded and still-developing cities. They require substantial institutional capacity to operate and maintain and have yet to gain acceptance in Indonesia as the best way of tackling the wastewater problem. On the other hand, although there are a variety of cheaper interventions available, such as on-site septic tanks and small reticulated communal systems, sustainable alternatives to conventional sewerage for heavily built-up areas have not yet been widely accepted or proven. Communities are generally more willing to pay for conventional sewerage services, especially in downtown and middle income residential areas.

An integrated set of prioritised sanitation interventions are required, applying different solutions to different parts of the city, and establishing management arrangements that will sustain implementation. Further, a strategy is required to ensure that limited resources are used in a complementary rather than an overlapping fashion. IndII's wastewater activity therefore aims to help a select number of cities plan sanitation and behavioural change interventions, conduct feasibility studies and complete detailed designs. These are precursors to developing infrastructure and changing community behaviour to improve environmental conditions. This in turn will improve health, reduce poverty and increase environmental amenity in and around cities.

### **Institutional Barriers**

The difficulties involved are not to be underestimated. They include overcoming complex institutional obstacles as well as technical, economic and social challenges. Sewerage systems are not entirely new to Indonesia, but there are just 11 cities with an operating system and for only small parts of each city, with Bandung still using some sewers built in 1916 during the Dutch colonial era. Overall, it is estimated that less than 2 percent of the urban population in those cities is able to dispose of wastewater offsite through the sewerage systems.

On-site treatment using septic tanks, which are generally affordable, is the most common means of disposal, typically covering about 75 percent of people in most cities (the remainder have no access at all to a safe disposal method). But septic tanks are ineffective in areas with a high

water table and are just not suitable for dense settlements, where a family living in a 36m<sup>2</sup> house would be considered 'well-off'. Poor construction of septic tanks often causes leakage of waste into groundwater.

Between the sewerage systems and on-site septic tanks extremes there are various off-site treatment options. Which one is the best, most sustainable choice depends on a number of factors. Although these intermediate options are gaining popularity in a growing number of cities, especially on densely populated Java, IndII foresees that cities need to incorporate all three types of responses – sewerage systems, on-site septic tanks, and off-site treatment options – plus complementary interventions. The choice depends not only on economic and technical criteria (affordability and efficiency), but also on social acceptance and the sustained resolve of city governments to address the wastewater problem.

This resolve is needed because urban sanitation problems cannot be separated from governance and management difficulties, which are particularly severe in urban areas. Social cohesion is low and people have higher expectations of government service provision than they do in rural areas. The capacity of any local government to commit to and sustain any strategy is hindered by the fast pace of urbanisation and constant shifts in the urban environment. Slums appear almost overnight, housing estates mushroom around the cities' outskirts, inner city areas gentrify, and city finances can barely cover the operating costs of existing infrastructure, let alone make new investments. Further, poorly trained and motivated city government employees, from the multiple agencies nominally responsible for wastewater management, struggle to engage the wide range of stakeholders who must agree to sustainable solutions. Even if agreement is achieved, it remains a daunting task to create policies, manage implementation, and develop compliance mechanisms so progress can be sustained.

### **A Multi-Faceted Response**

IndII's response to this challenging situation is to not only identify technically and economically acceptable solutions appropriate for conditions in each target city, but to address institutional and political economy constraints through strategies that include: (a) clarifying early in the activity the roles of key government actors and their goals, strategic objectives, authority and responsibilities with respect to wastewater management; (b) promoting policies of cost-recovery, contributions from all beneficiaries, and fulfillment by all government agencies of their obligation to provide public services; (c) making use of more autonomous "arms-length" service delivery organisations with a clear mandate and incentives to manage wastewater; (d) giving a greater role to the community, and especially to women wherever possible; (e) adopting a suite of interventions to ensure that a range of price-quality-service packages are available; and (f) supporting structural reform in the sector, including inter-jurisdictional and private sector cooperation as appropriate.

Historically, many good plans have been created but never fully realised. In planning its wastewater programmes, IndII is being careful to ensure that activities kick off in cities where the likelihood of successful implementation is high. This requires utilising in-depth knowledge of current policies, blueprints and arrangements within the central government; taking advantage of cities' new authority under decentralisation, and building on the emerging willingness to implement performance-based budgeting. It requires building on recent progress that has been made toward institutionalised community participation, strategic sanitation planning, the introduction of minimum service standards, and regulations allowing cities to establish more autonomous service delivery agencies. It requires that IndII assist in developing the current limited set of Indonesian standards in the sector along with the procedures and criteria necessary to coordinate sectoral development. And it requires alignment and harmonisation among the donors supporting the Government.

All in all, managing urban wastewater is a major task. For many, it may be a case of 'out of sight, out of mind', but for others it is a complex problem that desperately needs a solution. Wastewater doesn't just disappear, but hopefully the future holds an encouraging report on how AusAID and IndII are helping Indonesian cities to better manage it. ■

About the author:

**Andrew McLernon** is an urban development consultant, based in Indonesia, who has worked mainly on World Bank and the Asian Development Bank funded projects advising the Indonesian government. He is now consulting with the Indonesia Infrastructure Initiative to develop its wastewater programming. Andrew spent nearly twenty years of his professional career on the engineering design and supervision side of water supply, sanitation and urban infrastructure, but since going back to school in the mid 1990s, has been heavily involved with the policy, institutional development and capacity building side. He says "good technical solutions are a necessary but not sufficient part of the solution; we must also help our counterparts develop the institutions and management capability to resolve their developmental challenges. Without that, sustainability will always be an issue".

# THE INDONESIA INFRASTRUCTURE INITIATIVE AT A GLANCE

A quick overview of what the Indonesia Infrastructure Initiative is and what it does

The Indonesia Infrastructure Initiative (IndII) is a three-year project funded by the Australian government. Its goal is to promote economic growth by working with the Government of Indonesia to enhance infrastructure policy, planning and investment. It operates as a facility, meaning that it responds to requests generated by the Government of Indonesia. IndII's programmatic focus is predominantly in three areas: water and sanitation, transport, and infrastructure policies and investment.

All of IndII's activities emphasise building government capacity, coordinating with other donors participating in major infrastructure projects, and promoting partnerships between government and the private sector. IndII balances its work between demand responsiveness and strategic focus, between strong and weak agencies, and between national and sub-national levels of government.

## **Water and Sanitation**

IndII's work in this sector focuses on accelerating institution-managed investment in urban water and sanitation. The centerpiece of IndII's efforts is support for the Government of Indonesia's Water Hibah program, which is being supported by the Australian Government under the auspices of its Water and Sanitation Initiative (WSI). The Water Hibah program offers grants to local governments for each properly verified new water connection. The purpose of these output-based grants is to unlock existing local government reserves, which are currently rarely devoted to improving water infrastructure, by providing incentives for local governments to invest in their local water companies (known as PDAMs). IndII is operating a number of complementary water activities, such as its work to reform the financial management of select PDAMs in order to help them access commercial credit; support to the expansion of the Gol-World Bank Pamsimas program that concentrates on village development and is currently developing other water-related programs including support to low-performing PDAMs in Nusa Tenggara Timur, Nusa Tenggara Barat, and West Sulawesi and a possible community-based water services improvement. IndII is also undertaking a number of sanitation initiatives. Its most significant initiatives, both a part of WSI, are support for the Banjarmasin and Surakarta sewerage extension and a program to develop sanitation master plans and investment strategies in several secondary cities. These activities are expected to expand over time.

## **Transport**

IndII's transport activities currently focus on the sea, rail and road transport sectors. IndII is now working closely with the Directorate General of Sea Transport at the Ministry of Transport (MoT) to develop the National Ports Master Plan (NPMP), a document that will lay the regulatory and institutional foundation for port sector and network development over the next 25 years. Similarly, IndII is working with the Directorate General of Railways to develop the Railways Master Plan, and to address a range of policy and project-related issues within the context of the ongoing Railway Revitalisation initiative. In the road sector, IndII is delivering assistance to the Directorate General of Highways (DGH) within the Ministry of Public Works in three key areas: Road Safety, Procurement, and medium-term planning and performance-based budgeting. IndII transport activities will be expanding to additional areas, with the placement of fulltime IndII advisers at DGH and possibly MoT in 2010. Two activities now in design are a program to assist in the development of bus rapid transit in select cities, and the development of the national blue print for air navigation services.

## **Infrastructure Policies and Investment**

Within this area of strategic focus, IndII supports in a range of cross-sectoral/ thematic activities including implementation of improved public-private partnership (PPP) regulations, policies and institutional arrangements; promotion of select PPP-based projects; improving infrastructure financing arrangements; further development of the Public Service Obligation policy framework; and infrastructure sector policy review and regional planning. IndII is also providing continued support for successful initiatives commenced under earlier AusAID programming (such as the reform of communications licence fees), whilst monitoring opportunities to provide support in other sectors and thematic areas.

## **To Learn More About IndII**

For more information about IndII's work, visit [www.indii.co.id](http://www.indii.co.id). To be added to IndII's mailing list to receive periodic news updates by e-mail and to subscribe to IndII's quarterly journal *Prakarsa*, send a note to [enquiries@indii.co.id](mailto:enquiries@indii.co.id).

## THE EXPERT VIEW

**The Question: “What do you think should be the highest priorities of the incoming administration for infrastructure development?”**

**Ir. Taufik Widjoyono, MSc**

Director of Planning, Directorate General of Highways, Ministry of Transport

“The top priorities in future road development should include, first of all, a continuation of efforts to maintain the good condition of existing roads. A second priority should be improving road development in less developed areas, so that people have greater access to roads. Third is the need to improve road development in better developed areas to increase mobility. As a final priority, the establishment of roads should always take into account safety considerations.”

**Prof. Dr. Danang Parikesit**

Transport Expert, Center for Transport and Logistic Studies, Gajahmada University

“A difficult question indeed! Infrastructure serves as a foundation for equitable growth, and we have an urgent need not only to improve access to all types of infrastructure, but to achieve a quality comparable to our neighbouring ASEAN countries, China and India. Transport and electricity are perhaps the utmost priority for policy intervention, but clean water and sanitation have long been neglected infrastructure sectors.”

**Adriansyah**

Director for Local Finance and Capacity Development,

Directorate General for Finance Balance, Ministry of Finance

“People’s basic needs should be the top priority in the future development of infrastructure. Provision of clean water and roads are two concrete examples of people’s basic needs, especially for those who live in less developed regions. It is the government’s responsibility to meet these needs as mandated by the Constitution of 1945. Implementation of basic needs provision can be conducted directly by the government or through state-owned or local government-owned companies. Thus, technical ministries must ensure that basic needs provision is treated as the top priority in their long-term as well as short term development planning.”



## OUTCOMES:

### IMPROVED UNDERSTANDING OF PORT MANAGEMENT



In October 2009, the Indonesia Infrastructure Initiative arranged for a group of 10 members from Indonesia's National Port Master Plan Team to conduct a study tour of a variety of port facilities in Australia and Singapore and discuss strategies with key personnel. The goal was to give team members insight into the challenges of port operations and

methods for dealing with them. The outcome of the trip, based on comments by study tour participants, was an improved understanding of the factors they must consider as they draw up Indonesia's new National Port Master Plan. Ir. Chandra Irawan, Deputy Director of Port Development, made note of the integration between Australia's Dalrymple Bay Coal Terminal and the railway network that supports it, saying, "This is an example that Indonesia can follow." Ir. Erlan Abbas, Head of Port Planning, observed that "clarity in the permit and authorisation process makes it possible for businesses to be able to calculate their time and cost." Ir. Gunsairi MPM of Bappenas came away from the tour impressed with the role that public-private partnerships can play in developing and supporting port facilities, adding that, "Arrangements for cooperation between the public and private sector in Singapore are very clear."

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### IN OUR NEXT ISSUE: RAILWAY REVITALISATION

A modern and efficient railway network is an important component of economic growth. But Indonesia's railway assets are aging and poorly maintained, the result of sub-commercial tariffs, competition from subsidised road networks, and an outdated policy framework. The Government of Indonesia is committed to sweeping changes in its railway system, removing the government monopoly on services and opening the door for other public and private investment. With assistance from the Indonesia Infrastructure Initiative, the Directorate General for Railways at the Ministry of Transport is developing a world-class Railway Master Plan that provides both a broad policy vision and recommendations for specific policies and actions. In the April 2010 edition of *Prakarsa*, readers will learn more about these issues and the efforts underway to create a national railway system that offers efficient and expanded services and ensures that the rail system is an integral part of Indonesia's economic development.