

Local Roads

■ The Poor Condition of Local Roads ■ The Causes of Road Deterioration ■ The Need for Better Planning and Budgeting ■ Challenges to Reform ■ A New Governance-Based Approach

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Editor's Message

Many of the terms used by experts in the field of road planning and management are seemingly familiar ones. You don't have to be an engineer to know what "maintenance" means, for example. But when specialists use terms like these, they often have precise definitions in mind. To help lay readers better understand the features in this edition of *Prakarsa*, we have turned the *Editor's Message* over to a brief glossary that gives definitions of some of the terms that appear throughout the articles.

Betterment – Road betterment activities are designed to bring a road up to higher standards than were met in the original construction. (Contrast with "rehabilitation.")

Fair – The condition of roads is assessed every six months using equipment that measures the roughness of the road. Roads are classified as being in good, fair, poor, or bad condition – the rougher the surface, the worse the condition.

Good – see "fair."

Economic life – The economic life of a road is the number of years it can be maintained and continue to serve users without the need for major rehabilitation or replacement.

Maintenance – There are two types of maintenance, routine and periodic. **Routine maintenance** usually consists of small-scale activities conducted weekly or monthly, such as grass cutting, cleaning culverts, and pothole repair. **Periodic maintenance** is larger scale, and is undertaken at relatively long intervals to preserve structural integrity. Re-paving is an example of periodic maintenance.

Preservation – This term is used in the context of undertaking pro-active maintenance measures and applying treatments that extend the useful life of a road asset at minimal cost. Preservation strategies include a suite of treatments to maintain the surface, road shoulders, drains and other features that if left unattended would lead to a considerable shortening in asset life.

Primary network – The primary (or main) road network connects the main centres of activity, such as provincial capitals, and carries most of the traffic. Secondary networks act in support of the primary network and usually carry less traffic.

Rehabilitation – Road rehabilitation is designed to bring a road back to the standards that were met in the original construction. (Contrast with "betterment.")

Renewal – Renewal is the restoration (or substantial rebuilding) of an asset to restore it to an operating condition. This occurs at significant cost following neglect, often as a consequence of low funding or poorly selected priorities.

Stable – A road is considered stable if it is in "good" or "fair" condition.

Subnational road network – All the roads that are managed by provincial, district, city or municipal governments. ■

Infrastructure by the Numbers

43%

Percentage increase in the budget for national road maintenance by the Ministry of Public Works (MPW) from 2012–2013.

90

The rank of Indonesia's road quality among 144 countries, according to the Global Competitiveness Index, 2012–2013.

Rp 3.6 trillion

The budget allocation for maintenance by the MPW for 3600 km of national roads in the regions of East Java, Central Java and Yogyakarta in 2013.

213,505 km

Length of unpaved roads in Indonesia in 2011.

0.4 km/km²

The road density (ratio of the km of road to the km² of area) in NTB in 2010, which is higher than the density of national roads in NTB of .25 km/km².

Rp 3.7 trillion

Amount of special allocation funds (DAK) earmarked for kabupaten/kota road infrastructure throughout Indonesia in the 2013 budget.

86.07%

Percent of villages that can be driven through by motorised vehicles of 4 or more wheels in 2011.

INDONESIA'S DECAYING LOCAL ROADS NETWORK: CHALLENGES AND OPPORTUNITIES

The reasons for Indonesia's deteriorating local roads include delayed maintenance, lack of funding, inefficient allocation of expenditures, and problems with implementation. New modalities such as Performance-Based Contracting offer hope that these difficulties can be overcome. • By David Ray



Well maintained roads provide greater access to economic and social opportunities for rural residents – like these girls and boys who can attend school.

Courtesy of John Lee

Provincial and district (kabupaten) roads, which account for 91 percent of the primary road network, have deteriorated significantly over the past decade. This is due to a combination of inadequate funding for maintenance and poor implementation of the maintenance works that do get funded. The consequences are low value-for-money (i.e. inefficient) road expenditures, accelerated road asset deterioration, and high costs for road users. Together these consequences undermine the Government of Indonesia's efforts to promote more rapid, sustainable and inclusive development, particularly in non-urban areas.

The problems that underlie this situation are well understood, but attempts to address them over the past 25 years have been largely ineffective. Other countries have faced similar problems, and several are now tackling them with some success using performance-based approaches. During Phase 1, the AusAID funded Indonesia Infrastructure Initiative (IndII) conducted exploratory studies in a number of regions, including Nusa Tenggara Barat (NTB), where the Public Works office expressed keen interest in working with IndII to design and implement new approaches to road maintenance. Building upon the results of these studies, coupled with findings from existing performance-based programs abroad, IndII is now developing a performance-based provincial roads maintenance program (PRIM) to be piloted in NTB, and if successful, to be rolled out to other jurisdictions. (See "A Primer on PRIM" on page 28 of this edition.)

Key Points:

Provincial and district (kabupaten) roads, which account for 91 percent of Indonesia's primary road network, have deteriorated significantly over the past decade due to inadequate investment and poor implementation of maintenance works. The consequences are inefficient expenditures, rapid deterioration, and high costs to road users. This undermines economic growth.

Road maintenance tends to be underfunded, delayed and poorly implemented, leading to rapid deterioration that locks Local Governments into a vicious cycle of build-deteriorate-rehabilitate. Pavements often start failing within two to three years, instead of the 10 or more that is typical when roads are better managed. Underinvestment in maintenance makes eventual reconstruction three to five times more expensive, and creates even higher costs for road users.

There are a number of reasons behind the lack of timely maintenance of local roads, including insufficient allocation of funds for roads at the local level, the inefficient manner in which current spending is allocated, and implementation issues. Existing delivery arrangements for local roads maintenance are based on traditional "input-based" modalities through the use of force account (swakelola) units for routine maintenance, and contracted-out works for spot improvements and periodic maintenance. Management is poor, swakelola managers and labourers lack performance incentives, funding for equipment is inefficiently allocated, supervision is inadequate, and the contract process is fragmented.

Before decentralisation, objective criteria were used to identify and meet needs for planning and executing road maintenance. But now road agencies are not held accountable for their performance in maintaining their networks and the role of the central government is not fully worked out. Civil society has the potential to play an important role in oversight and guidance.

The Directorate General of Highways within the Ministry of Public Works lists improved facilitation and support for more effective management of local roads as one of five key objectives for its 2010–14 planning period. International experience suggests that useful strategies for meeting this objective include moving away from swakelola in favour of contracted works and using Performance-Based Contracting (PBC). When properly implemented, PBC offers cost savings, greater certainty in expenditure planning, reduced need for an in-house workforce, and improved conditions on contracted road assets. Important considerations include monitoring the complexity of the PBC, ensuring that roads meet minimal baseline quality standards, training contractors and supervisors, establishing and monitoring performance standards, and addressing the politically difficult issue of downsizing the public sector.

Neglected Maintenance

Since decentralisation, Indonesia's subnational roads network has deteriorated. In 2010, only around 59 percent of the provincial network was stable (rated as "good" or "fair")¹ compared to approximately 72 percent in 2004. This continuing deterioration is undermining efforts to promote broad-based social and economic development, because local roads provide communities with vital links to services and employment, access to markets and the means to transport goods. (See Figure 3 on page 14 for a graphic representation of this.)

Road maintenance, particularly routine tasks such as cleaning drains, cutting grass and repairing potholes, tends to be underfunded and poorly implemented. Lack of maintenance leads to the rapid depreciation of road assets, and many Local Governments (LGs) find themselves locked into a vicious and continuing cycle of build-deteriorate-rehabilitate. This focus on the "worst first" whilst neglecting the stability of the broader network is generating poor value-for-money outcomes for taxpayers, because expensive and important assets are being allowed to deteriorate unnecessarily.

Moreover, analysis by IndII has shown that underinvestment in maintenance makes eventual reconstruction three to five times more expensive. Spending on new construction and rehabilitation is often wasted, as lack of effective maintenance on roads (in addition to poor initial construction work) shortens their economic lives. Pavements often start failing within two to three years, instead of the 10 or more that is typical when roads are better managed.

Even when maintenance works are conducted, they tend to be delayed. Roads overdue for maintenance generate much higher costs for road users through increased vehicle operating costs and longer travel times. IndII analysis has shown that if the delay in making needed repairs goes from 2 months to 12 months, the additional cost to road users is approximately 10 times the additional cost to the road agency making the repairs.

Why Maintenance Is Delayed

There are a number of reasons behind the lack of timely maintenance of local roads in Indonesia. These problems are not new; they have been well understood for some period of time. Nor are they unique to Indonesia.

The first reason relates to the insufficient allocation of funds for roads at the local level. For national roads, the investment per kilometre of road length tends to be much higher than it is for subnational roads. In Nusa Tenggara Timur (NTT) and NTB, for example, the annual per-kilometre expenditure on the national network within those provincial boundaries is approximately 10 times higher than the amount the provincial governments spend on their own networks. This lack of expenditure on local roads in turn leads to displacement of traffic from local to national roads, thereby putting more pressure on the national highway system.

That LGs are not investing enough in their local roads networks is reflected in the accumulated backlog of works required to get the entire network up to an acceptable level of stability. An earlier IndII study on local roads found that overall funding needs for essential maintenance and removal of the backlog of major renewal works are between three to five times current funding levels. Needs vary by agency type and location, with the needs of kabupaten agencies being higher and needs in eastern Indonesia being the greatest.

The second reason concerns the inefficient manner in which current spending is allocated. Since decentralisation, LGs have increased their expenditure on services, but there is little evidence of a commensurate increase in the quality of services delivered. Expenditure on administration still dominates subnational spending, and current inter-governmental funding arrangements favour recurrent expenses over capital expenditures (i.e. salaries over investment in infrastructure).

Within the LG road sector, there is evidence that resources are not optimally allocated among new construction and road betterment¹ as opposed to periodic maintenance (PM) and routine maintenance (RM)¹. IndII analysis shows that in the more developed western provinces of West and Central Java, the expenditure commitments to maintenance are reasonably close to

international norms. However, in the eastern provinces of NTB, Sulawesi and elsewhere, the commitments to both periodic and routine maintenance are well below levels needed to adequately maintain networks. This has led to accumulated backlogs equal to roughly 40–50 percent of asset value. Across all provinces sampled, the average need is some 50 percent higher than current PM and RM expenditures. Note that significant revenues flow into subnational coffers from road users, from vehicle taxes (PKB), fuel taxes (PBBKB) and taxes on vehicle ownership transfers (BBNKB). But very little of these revenues from road users flows back through spending on road maintenance.

A third and related reason for the neglect of road maintenance involves implementation issues. Existing delivery arrangements for local roads maintenance are based on traditional “input-based” modalities through the use of force account (*swakelola*) units for routine maintenance, and contracted-out works for spot improvements and periodic maintenance. The extent of works implemented in this manner varies markedly from year to year due to changes in available funding, which comes from multiple sources, each of which needs to be accounted for separately.

Key findings from an IndII assessment of the delivery mechanism for local roads maintenance highlight a number of implementation problems including the overall lack of performance and productivity incentives for *swakelola* managers and their labourers. Other key problems include inefficient equipment funding and management procedures, inadequate works and contract monitoring by supervising consultants, fragmentation in the contract process (involving a large number of small contracts of limited duration) and the limited capacity and size of contractors. These problems have been further compounded by the low motivation levels and high levels of risk aversion among road agency staff.

A fourth and final reason is that current governance arrangements do not hold road agencies accountable for their performance in maintaining their networks. Outputs tend to be judged in terms of the visibility of discrete projects, rather than the overall stability and quality of the broader network (which would require less visible maintenance activities such as cleaning drains and cutting grass).

Post decentralisation, local roads planning and budgeting are subject to few objective criteria, but considerable political pressure and manipulation. Local agencies lack not only the guiding framework, but also the ability to objectively identify road maintenance needs, plan and then program the necessary works. The central government is aware of these problems, but has not yet determined how it can play an appropriate role to ensure effective local budgeting and planning. In the absence of central oversight and guidance, civil society could potentially play an important role. However, LGs have been slow to engage road users, non-governmental organisations, industry, community groups, academics and media, despite recent legislation requiring the formation of road transport and traffic forums.

Incorporating Gender Considerations Into the Provincial Road Improvement and Maintenance Program

All Indll activities, including the Provincial Road Improvement and Maintenance (PRIM) program, consider gender equality in their design. Gender analysis was integrated into PRIM to provide program implementers with the tools they need to ensure that PRIM offers equitable benefits to everyone, including women.

The analysis considers how women and men use local roads in the same or different ways. For both genders, road quality is important for community mobility and activities, and has a significant impact on family life. When damaged roads result in a crash, this affects the economic well-being of entire families. The quality of roads influences community well-being both directly and indirectly, making it harder or easier to access employment, education, and health care.

The ways that people interact with roads can also vary by gender. For example, men and boys use roads more frequently than women and girls, increasing their risk of involvement in a crash. On the other hand, the risk of a crash increases for women and girls if they have less experience driving on damaged roads.

Understanding the similarities and differences in the way people use roads is an important dimension of analysing the impacts and benefits of PRIM, especially in the wider context of safety, access to opportunities, and increased welfare. From a technical standpoint, there are a number of opportunities to build gender concerns into program implementation, such as:

1. **Equal opportunity for employment:** Job opportunities related to improving and maintaining roads should be made equally available to both genders.
2. **Proportional representation as stakeholders:** When seeking stakeholder input, PRIM should encourage women to express their views and serve as official community representatives.
3. **Proportional representation from participating institutions:** A range of institutions including local government, traffic police, and Indll itself are involved in PRIM implementation. Women working within these institutions should be proportionately represented in carrying out PRIM activities.
4. **Proportional participation in capacity building:** Opportunities to participate in training, workshops and other capacity-building activities should be provided to women as well as to men. This is key to increasing the quality, not just the quantity, of women's participation.
5. **Equal access to information:** Sharing information with the community through all phases of PRIM is essential so that people understand the benefits and are able to anticipate possible negative impacts. This information should be shared using means that are effective at reaching both women and men.

PRIM is still in its early stages, so the opportunities for integrating gender into program activities are wide open. As PRIM moves forward, it will focus not only on ensuring that women can participate, but also on measuring how the program benefits women and men in the same or different ways. — *Eko Setyo Utomo*

Current and Past Efforts

Prior to regional autonomy, the central government imposed a high degree of structure and discipline upon LG budgeting and planning for roads, including commitments to road maintenance. As part of their annual budget approval process, local agencies were required to adhere to standards and procedures established by the Ministry of Public Works (MPW) for design, data collection/analysis, and planning/programming related to kabupaten roads. These procedures and standards, as outlined in the – SK77 decree (issued by the

Ministry of Home Affairs in 1993), were designed “to enable local staff to carry out their own surveys, analyses and project evaluations according to systematic procedures; to assist in the timely preparation of annual works programs to a consistent standard; to ensure that the allocation of resources between road works categories (e.g. construction, rehabilitation, maintenance) is determined in a rational manner; to ensure that the selection of priorities for major works is based on simple but rational economic criteria; and to document and build up a database of information about the local road network for monitoring and future planning purposes”.

The SK77 procedures provided a comprehensive approach to overseeing and strengthening local roads governance. During the SK77 process, there was considerable networking and peer review and discussion of LG budgets and planning. However, with the advent of regional autonomy, subnational roads are now fully the responsibility of subnational governments, and the role and authority of the central government has been substantially reduced. Compliance with SK77 procedures no longer happens and the central database of kabupaten roads is only maintained in a limited or piecemeal manner. The central government now lacks not only the information but also the authority to ensure better road maintenance outcomes at the local level.

The Directorate General of Highways (DGH) within MPW is keen to elevate its engagements on subnational roads. The current DGH *Renstra* (strategic plan) lists improved facilitation and support for more effective management of local roads as one of five key objectives for the 2010–14 planning period. Further, it articulates plans for the development of a road preservation unit and fund, to provide the financial incentives for LGs to pursue effective and sustainable road maintenance practices. Whilst the unit and fund are yet to be established, their inclusion within the *Renstra*, along with recent legislation, reflects the growing commitment by DGH to address local maintenance issues.

Lessons From International Experience

Recent international trends in the reform of road management point to two important transformational changes in road maintenance service.

The first is the move away from force account (or at least towards diversification) in favour of contracted works. The advantage of using contractors is that work is paid for when specifications are met; rates are known, which makes budgeting and planning easier; risk is transferred from the public to the private sector; and the profit motive promotes efficiency and reduces waste.

The second change is the move towards performance (or “output”) based arrangements in contracting for the maintenance and management of roads. Performance-based contracts are aimed at ensuring road conditions meet users needs over a period of several years, by expanding the contractor’s role from execution of works to managing and maintaining road assets. These contracts are typically awarded on a competitive basis, with contractors being paid a set fee per kilometre of road to be managed. In other words, they are not paid on the basis of “inputs” (the physical works executed), but rather on the basis of a final “output”, which is the achievement of

predefined levels of service quality, measured in terms of roughness levels, travel speeds, absence of potholes, drainage system siltation levels, etc.

First appearing in Canada in the late 1980s, Performance-Based Contracting (PBC) in roads is now widely used in many other OECD countries. In the developing world, South America was the pioneer in developing and adopting its own PBC model in the mid-1990s, and the trend has since spread to Africa and Asia (for example, Chad, South Africa and the Philippines). On balance, the results so far have been promising. These include costs savings for road agencies of from 10 to 40 percent; greater certainty in expenditure planning; reduced need for an in-house workforce; and improved conditions on contracted road assets, which leads to greater road user satisfaction. Road agencies also enjoy stronger and more durable political commitment to maintenance programs, as long-term payment obligations are legally binding on the government. Nevertheless, challenges have been significant and key lessons learned from the various international experiences can be drawn from the considerable literature available. These lessons include the following:

The degree of complexity of the PBC should be matched to the level of development of the road sector in each country. Countries at an early stage of development with a relatively weak contracting industry and legal/institutional framework should begin with relatively simpler forms of PBC, e.g. routine maintenance for a one-year duration.

For PBC to work effectively, roads must meet minimal baseline quality standards. Roads in extremely poor condition are generally not suitable for PBC to conduct rehabilitation and maintenance, because of the uncertainty about the nature and extent of work required to bring these roads to a maintainable standard. Moreover, there needs to be an appropriate balance between rehabilitation and maintenance works. The greater the proportion of rehabilitation costs to maintenance costs, the greater the contractor's incentive to renege on the contract after rehabilitation is completed.

Capable and qualified contractors and supervisors are critical to the success of PBCs. Various countries report good results from the implementation of complementary training and capacity-building programs to assist smaller scale contractors and those contractors with little or no experience in PBC, along with training for supervisory consultants.

Proper performance monitoring and strict application of penalties for non-compliance are critical. A recurring theme in the literature is that whenever road agencies did not properly monitor the performance of the contractor or did not apply proper penalties for non-compliance, contractor performance was deficient.

Appropriate performance specifications need to be identified and clearly defined. Considerable effort is required to establish the actual (baseline) and desired condition of road assets, in order to specify achievable and realistic performance indicators for contractors, and triggers for disbursements.

Road agencies need to effectively strategise and manage the politically difficult process of downsizing the public sector. The transition from force account and traditional contracting to PBC means the reduced need for staff as well as other changes in institutional structure. International experiences point to a range of strategies to deal with staff downsizing issues (including voluntary redundancy, retrenchment, early retirement, transfer to contractors and re-training) as well as new institutional modalities (including greater agency autonomy, strengthening existing structures to deal with contract management, use of contract management units and Public Private Partnerships).

The Way Forward

The ongoing decay of the local road network represents a major, yet largely unacknowledged, constraint to Indonesia's broad-based development. Existing arrangements are not providing value for money for taxpayers, whilst connectivity for road users is deteriorating. The articles in this edition of *Prakarsa* outline in greater detail the many problems undermining the delivery and management of local roads in Indonesia, and suggest a number of new tools for planning and implementation. These include the use of new inter-government on-granting arrangements, the delivery of road services through performance-based arrangements and greater engagement with road users through the development of community-based forums. It is now timely to consider these new modalities for the management and maintenance of the local road network. ■

NOTES

1. See the Editor's Note on page 2 for a discussion of this and other technical terms related to road management.

About the author:

As the Director of IndII, **David Ray** is responsible for overall technical and strategic leadership. He is an economist with over 10 years' experience working in the development context, mainly in Indonesia and Vietnam. Prior to joining IndII in April 2009, David was the Deputy Director of the USAID-funded SENADA project, focusing on Indonesian manufacturing sector competitiveness. Over the 2003–06 period, he worked for The Asia Foundation in Vietnam, managing a USAID economic governance program to improve the investment climate at the local level. Prior to this, he was a USAID-funded advisor at the Indonesian Ministry of Industry and Trade working mainly on trade, investment and regulatory reform issues.

David has technical skills and background covering a broad range of areas including regulatory and microeconomic reform, infrastructure policy (particularly transport and water/sanitation), international and domestic trade, decentralisation and local government service delivery, research methods and statistics, as well as project management.

David has a number of academic credentials, including a PhD focusing on Indonesia's economic and institutional development. He is the author of a number of refereed journal articles and book chapters on Indonesian development. He is a fluent reader, writer and speaker of Indonesian, and has written and published extensively in Indonesian.

THE STATE OF LOCAL ROADS

Provincial roads in areas such as eastern Indonesia are often in poor condition, resulting in high economic and social costs. Adequate funding in the future will be essential to improve these roads, but new approaches are needed as well. • By Tyrone Toole



Provincial roads are vital to support economic activity.

Courtesy of Indll

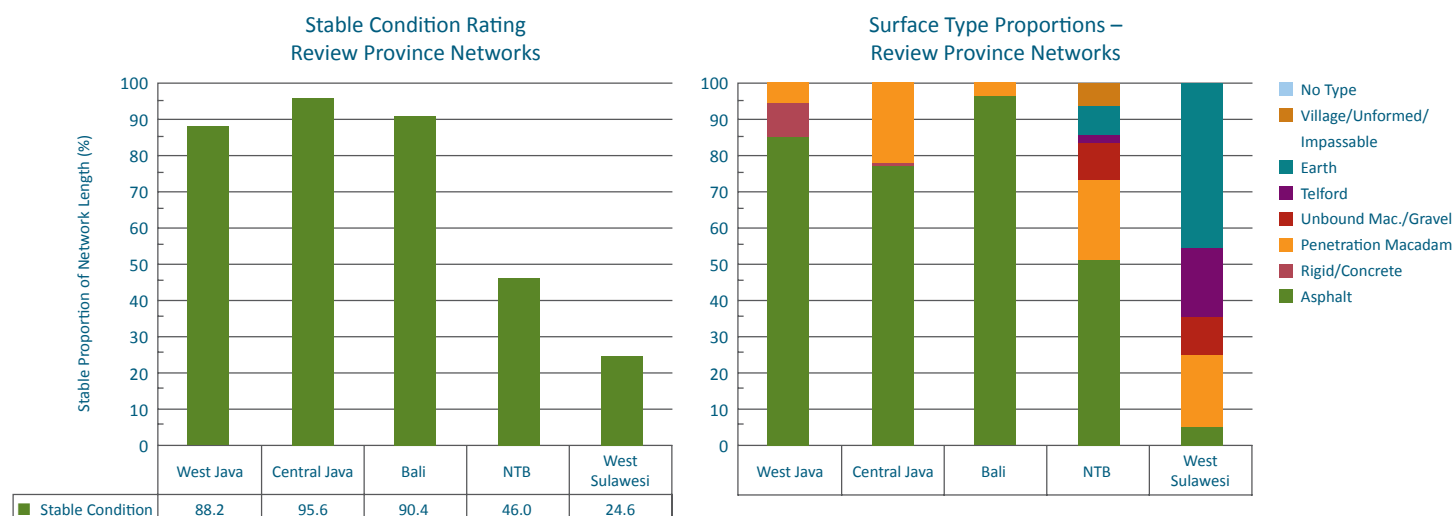
Provincial and district roads together constitute Indonesia's subnational road network. In 2010, this network amounted to about 434,000 km, 90 percent of the 477,000 km primary network¹. District (kabupaten and kota) roads are 79.9 percent of this (385,000 km) while provincial roads are 9.7 percent (49,000 km). The provincial road network carries about 19 percent of total vehicle-kilometre of traffic. It connects district capitals and other major centres of economic activity within provinces, and provides vital links between the district and national networks.

Despite increases in road funding over the last decade, the condition of provincial roads has not improved. In many provinces it has worsened. As a whole, provincial roads are in much poorer condition than the national network. About 86 percent of national roads were in good or fair ("stable") condition in 2010, but only about 63 percent of provincial roads were. There are significant differences between provinces though, with roads in less developed provinces being less stable and possessing longer lengths of unsealed earth and gravel roads. Figure 1 shows that the proportion of stable roads ranges from 24–95 percent, and the corresponding length of unsealed and non-engineered roads varies between almost none in Bali to 63 percent in Sulawesi.

In Nusa Tenggara Barat (NTB), the province where the Provincial Road Improvement and Maintenance (PRIM) program is being piloted (see "A Primer on PRIM" on page 28), the condition of the provincial network has shown a modest improvement over the last few years, following a significant increase in funding with the support of the Governor and Parliament. Should this funding trend continue, the length of road in stable condition should increase from about 51

percent in 2011 to about 80 percent by the end of the decade. Thus, even under reasonably favourable funding conditions, improving road conditions and sustaining these into the future will require long term commitment and effective implementation.

Figure 1: Distribution of Surface Condition and Surface Type of Provincial Roads in Selected Provinces



Key Points:

Provincial roads are about 10 percent of Indonesia's subnational road network, but carry about 20 percent of the traffic flow. Despite increases in road funding over the last decade, the condition of these roads has not improved and in many cases it has worsened. In Nusa Tenggara Barat (NTB), the condition of the provincial network has shown a modest improvement over the last few years, following a significant increase in funding. But even with favourable funding conditions, improving road conditions and sustaining the improvements will require long term commitment.

The surface condition of roads is adversely affected by deficiencies in the quality of the roadsides. These shorten the lives of what may often be adequate surface treatments. Localised failures are frequent, often for reasons that could be addressed with simple preventative measures.

Furthermore, all-weather access is not possible for substantial lengths of road in southern Lombok and throughout Sumbawa. This affects the operation of almost 25 percent of the roads and has an impact on access to social services, tourism and industry, as well as the potential for development.

A broader whole-of-network approach to management and improvement is needed. For roads in reasonable condition, the key lessons are that routine and periodic maintenance needs to be performed in a timely manner to minimise costs to the road agency, and for each road there exists a particular level of services (not too much, and not too little) that minimises costs to society.

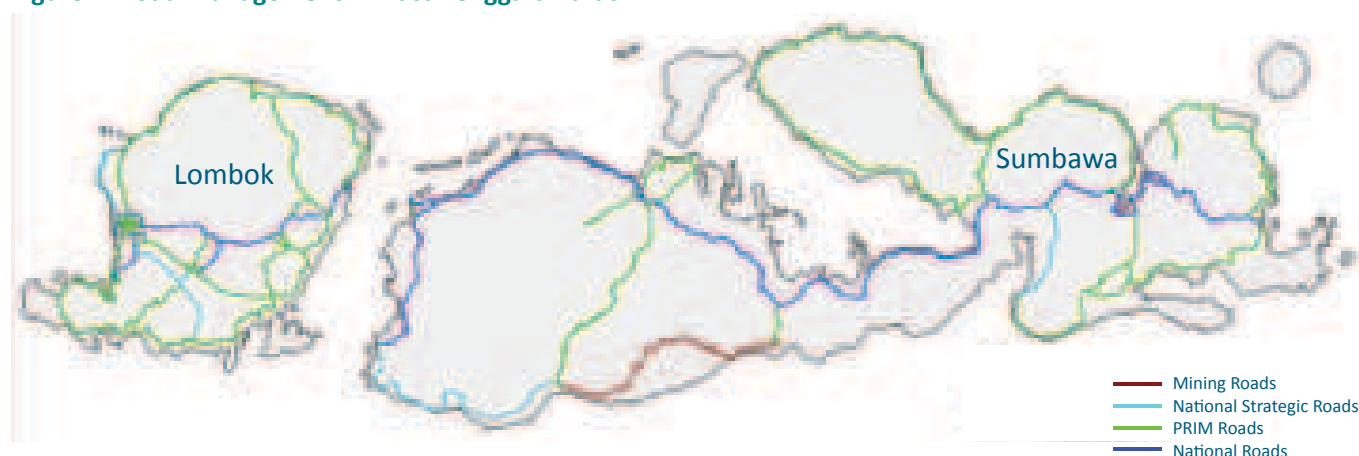
For roads that are in such poor condition that they may be impassable for extended periods, the key lesson is that it is more beneficial to reinstate a road that has fallen into disrepair than to significantly improve the condition of an already functioning road – and better still, to stop it falling into disrepair in the first place.

It is important that planning and delivery solutions aim to address such issues. Both a detailed local knowledge and a broad understanding of the network are required.

The surface condition of roads is also adversely affected by deficiencies in the quality of the roadsides, including shoulders, drains and side slopes. These shorten the lives of what may often be adequate surface treatments. Localised failures, generally at 2–3 km intervals, are frequent for a variety of reasons. The most common reasons are pavement failures and inadequate roadside features, many of which could be addressed with simple preventative measures that would improve road performance. In NTB, substandard drainage and shoulder conditions exist on approximately 75 and 57 percent respectively, of all provincial roads.

Furthermore, all-weather access is not possible for substantial lengths of road in southern Lombok and throughout Sumbawa. This affects the operation of almost 25 percent of the roads and has an impact on access to social services, tourism and industry, as well as the potential for development.

Figure 2: Road Management in Nusa Tenggara Barat



The Role of Local Roads

The provincial component of the subnational network complements the national network by collecting and distributing traffic between centres of population and production. The district component extends this by providing access to farms and markets, and to essential services such as schools and health centres.

In many parts of eastern Indonesia, the poor quality of provincial roads poses a major constraint on development. A broader whole-of-network approach to management and improvement is needed. This is illustrated in NTB by the extension of national responsibilities to include a proportion of the provincial network (termed *Jalan Strategis Nasional*), which in Lombok provides connections to major tourism centres and industry, and in Sumbawa, where certain roads are supported by the resource industry (see Figure 2).

Economic and Social Costs of Poor Maintenance

Poor roads and inadequate road maintenance impact on overall transport efficiency, the life-cycle costs of maintenance and social indicators.

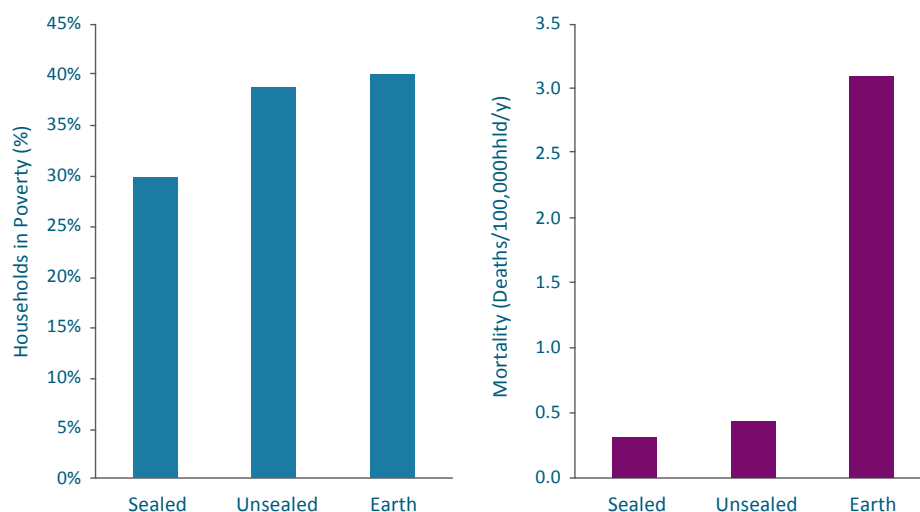
For roads which are in reasonable condition, and nearly always passable to motorised vehicles, the key lessons are:

A stitch in time saves nine: routine and periodic maintenance needs to be performed in a timely manner to minimise costs to the road agency. AusAID funded Indonesia Infrastructure Initiative (IndII) analysis has shown that if the response time (to repair a road) is delayed from 2 months to 12 months, then the overall additional cost to road users is approximately 10 times that of the additional costs to the road agency. For major treatment programs, the economic benefits of a preemptive program with a mix of preservation and renewal works were shown to be highly beneficial. Depending on the budget constraint, the benefit to society is between three and five times the additional investment cost.

The Goldilocks principle: for each road there exists a particular level of services that minimises costs to society (the sum of road-user costs and roadwork costs). The optimum treatment is one which minimises total costs by providing a level of service that is neither too low, nor too high, but “just right.”

For roads that are in such poor condition that they may be impassable for extended periods of time:

Figure 3: Association Between Road Surface Types and Social Outcomes²



A little goes a long way: it is more beneficial to reinstate a road that has fallen into disrepair than to significantly improve the condition of an already functioning road – and better still to stop it falling into disrepair in the first place. Typically rates of return on investment are very high, usually greater than 50 percent.

Roads are good for you: road quality is associated with certain beneficial social outcomes (see Figure 3). Whilst this does not prove a causal relationship, it is strongly suggestive of one. Severely deteriorated or impassable roads also require a comprehensive appraisal of their needs including consideration of their function and the population and commercial/social welfare activities they serve.

It is important that planning and delivery solutions aim to address such issues, and take account of the particular conditions of each network, its function and the level of service that needs to be delivered. For this, both detailed local knowledge and a broad understanding of the network are required. ■

NOTES

1. *For definitions of this and other technical terms related to road management, see the Editor's Note on page 2.*
2. *Data drawn from the Indonesian Family Lifestyle Survey (IFLS4) 2008. Similar findings can be drawn from the World Bank's 2012 Village Infrastructure Census (VIC) which provides village-level data on health, education and transport (roads, bridges and public transport). According to the World Bank's Indonesian Economic Quarterly (Dec 2012) the VIC finds that "there are unambiguous positive correlations between transportation indicators and those for health and education availability."*

About the author:

Tyrone Toole is the Chief Adviser, Sustainable Infrastructure Management at ARRB Group Ltd., Australia (formerly known as the Australian Road Research Board). He has more than 30 years' experience in a wide range of highway engineering and management projects, and in institutional development and training in more than 20 countries, and has specialised in the provision of research-based advice in the management and design of low- and high-volume roads in developed, developing and emerging countries. Tyrone joined ARRB in 2001 following more than 20 years with the Overseas Unit of the UK's Transport Research Laboratory, and has authored and contributed to road management guidelines and the implementation of road planning and management systems and procedures. Recent major projects include the development of road maintenance management policies and procedures for local roads in Indonesia, funding of local government in Western Australia, development of road deterioration and maintenance models for local roads, and road management systems for local roads.

THE CHALLENGES OF LOCAL LEVEL ROAD PLANNING AND BUDGETING

At subnational levels, key aspects of road planning and budget allocation need improvement. Better use of Road Management Systems and tools that help decision-makers consider all facets of costs and benefits are among the strategies that can help.

• By Efi Novara Nefiadi and M. Hatta Latief



Nearly half of Indonesia's subnational roads are in poor condition.

Courtesy of John Lee

At every level of government – national, provincial, and district/municipal – proper planning and budgeting for roads is essential. This is especially true when funds are limited and choices have to be made among alternative projects.

At the national level, the condition of the network is reasonably satisfactory: 91 percent of its length is in stable (Good/Fair)¹ condition, close to the target of 94 percent in the Directorate General of Highways' (DGH's) five-year strategic plan for 2010–2014. At the subnational level, though, just 55 percent of provincial roads and 52 percent of district/municipal roads are in stable condition. The DGH target is 60 percent by 2014. Provincial governments spend only about 5 percent of their budgets (*Anggaran Pendapatan Belanja Daerah*, APBD) on roads. They rely a lot on Special Allocation Funds (*Dana Alokasi Khusus*, DAK) from the national government. At the lower district/municipal level, government spending is mainly used for wages and operating costs.

In the past, before decentralisation, DGH used its Integrated Road Management System (IRMS) to optimise road expenditure allocations. This powerful and sophisticated tool used up-to-date road condition data and inbuilt relationships between traffic loads and road deterioration to test the impacts on network quality of alternative budget levels and allocations. Over the whole network, and for individual links, it was able to maximise the economic return from any given level of capital or maintenance expenditure. DGH still uses IRMS for its national network: that is why it is in relatively good condition.

Road Agency Accountability and Public Scrutiny

Governments interact with citizens during decision-making in three different ways¹:

Information: a one-way dialogue. Government delivers information to its citizens. A road agency tells the people what its plans are and when or whether they are implemented. There are no opportunities for the public to influence priorities or outcomes.



Consultation: a two-way dialogue in which citizens provide feedback to government. A road agency seeks public inputs to its decision-making and sets plans and priorities accordingly.



Active participation: a relation based on partnership. Citizens actively participate in the decision-making process. There is an acknowledged role for the public in proposing solutions and shaping the plan – but the responsibility for the final outcome still rests with government.



Open, transparent government is increasingly regarded – indeed, demanded – as an essential feature of democratic governance. It helps ensure stability and development, building confidence in government. People want to know what decisions are taken and why. They want to be consulted about the decisions affecting them. And, increasingly, good administrations want to be aware of their citizens' expectations so that they can meet them more effectively. If they are more open, they are more likely to get re-elected.

Open government and active participation benefit government and citizens alike. People feel their needs are taken into account. They can check whether agreed targets are achieved. For a road agency, active participation need not be adversarial: it is useful to know whether its plans meet community needs and its performance is considered satisfactory. Public scrutiny helps make programs better focused and less wasteful.

Achieving effective public participation is not easy. It requires transparent decision-making, accountability for performance, fairness in responding to needs, efficiency and effectiveness in providing the right solutions, and often a change in culture. Under IndII's PRIM program, the Road Traffic and Transport Forum (RTTF) will – with assistance – be engaged as a forum for citizens' participation in such a partnership. — John Lee

1. OECD (2001) *Citizens as Partners: Information, Consultation and Public Participation in Policy Making*, Paris: OECD, p. 23.

However, at the subnational level, IRMS has fallen out of use since decentralisation. Provinces and districts/municipalities are no longer told by DGH what their programs should be. They decide for themselves²; DGH has no role in setting priorities, other than to mandate technical standards. They do not have the resources to maintain and use a sophisticated tool like IRMS. Nor is there a requirement anymore to rank projects in order of economic return: strategic development priorities³ and political considerations (heads of subnational governments are now responsible to elected assemblies) have more influence on expenditure priorities.

Yet moves towards greater social accountability (see sidebar) of the kind encouraged by PRIM [see “A Primer on PRIM” on page 28] will inevitably require a stronger justification for the plans and spending priorities that are adopted. Subnational governments still need planning tools capable of supporting rational planning decisions. These need not be as sophisticated as IRMS. They could incorporate simplified relationships that give similar answers about the impacts of different levels of spending and allocations between projects. One such tool, developed by AusAID funded Indonesia Infrastructure Initiative (IndII) consultants, was used in preparing PRIM’s initial work program in NTB. It will be improved and made more user-friendly during the PRIM program. It will be integrated with NTB’s planning process so that there is better assurance about value-for-money in spending. The public will be made aware of its criteria and results so that they too can have confidence that money is not being wasted. Ultimately this planning tool might be rolled out over all provinces and at the district level. ■

NOTES

1. *For a definition of this and other technical terms related to road management, see the Editor’s Note on page 2.*
2. *See Government Regulation No. 38/2007 on Allocation of Governmental Affairs to National, Provincial and District/City Governments. This gives each level of government autonomy over the provision, development, regulation and monitoring of their own road networks.*
3. *These are set out in the Regional Medium-Term Development Plan (Rencana Program Jangka Menengah Daerah, RPJMD).*

About the authors:

Efi Novara Nefiadi is a Senior Transport Program Officer for IndII. He has 25 years of experience in the fields of infrastructure development, economics/finance, and project management. Prior to joining IndII, he was a PPP Transport Specialist in the Asian Development Bank’s Technical Advisory Service, working on the Infrastructure Reform Sector Development Project, implemented through Bappenas. He has also been a PPP Transport/Infrastructure Specialist, Transport Economist, Project Appraisal Manager, and Traffic Engineer for various large World Bank infrastructure projects. These include the Trans-Java Expressway and the Strategic Roads Infrastructure Projects (under the Ministry of Public Works), the Technical Assistance Project for Public and Private Provision of Infrastructure (under Bappenas), and the Private Provision of Infrastructure Technical Assistance Project (under the Coordinating Ministry for Economic Affairs and Ministry of Transportation),

among others. He has experience undertaking technical, economic, and financial project feasibility studies, developing funding strategies in the transport sector, preparing medium-term strategic planning, assisting toll road tendering, designing regional development programs, and preparing project technical proposals. He graduated from the Civil Engineering Faculty of the Bandung Institute of Technology in 1987. He received a Master's degree in Highways and Transportation from the Bandung Institute of Technology in 1990 and in Financial Management from the University of Indonesia in 2003.

M. Hatta Latief graduated from the University of New South Wales Sydney Australia in 1993, and received a Master's Degree in Geotechnical Engineering specialising in pavement engineering. Since joining the Directorate General of Highways (DGH) at the Ministry of Public Works in 1984, he has worked on road and bridge construction and on planning and programming. He was Officer in Charge for World Bank Projects within DGH from 2001 –2006. He is now serving as a Road Maintenance Specialist for IndII's Provincial Roads Improvement and Management program.

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REFORMING LOCAL ROAD MAINTENANCE DELIVERY

Despite, or in some cases as a result of, a series of reforms over the past decade, the maintenance of Indonesia's provincial and district/municipal roads is not meeting the needs of road users or the expectations of taxpayers. This can be attributed primarily to a lack of trust between stakeholders, resulting ultimately from a failure by clients to ensure that good performance is recognised and rewarded. • By Hamish Goldie-Scot



Without maintenance of the verges, the edges of this road pavement will soon break up.

Courtesy of Max Antameng

There is widespread recognition of an acute problem with the quality and timeliness of road construction and maintenance works in Indonesia, including on most subnational roads, irrespective of the delivery mechanism adopted. (See the “Road Development” edition of **Prakarsa**, published in January 2011, for background.) With the exception of the very top of the market (where professional standards can more readily be brought to bear by private sector clients) and the bottom of the market (where there can be some accountability to local stakeholders at the kabupaten level), road construction and maintenance are characterised by a lack of effective technical accountability mechanisms.

Existing delivery arrangements for the maintenance of provincial and kabupaten roads are based on using direct labour (*swakelola*) units for routine maintenance (such as off-carriageway¹ works and pothole patching), and contracting out periodic maintenance work (such as re-sealing).

Accountability, Capacity, Trust

An analytical framework called ACT (Accountability, Capacity and Trust)² has been used by the AusAID funded Indonesia Infrastructure Initiative (IndII) to achieve a better understanding of the key factors affecting the performance of all parties responsible for the maintenance of subnational roads (entities that procure services, *swakelola* routine maintenance units, contractors, and supervising consultants).

In each case the most basic requirement is **capacity**, which is required to make performance possible. But the fact that an individual or organisation is capable of doing their work properly is no guarantee that this will be achieved in practice. Technical **accountability** mechanisms are required to make it happen. However, even this work may not necessarily be delivered in an optimal manner. For the quality and volume of outputs to flourish, **trust** is required. An important component of this trust is confidence that good performance will be fairly rewarded. The interplay between these factors is illustrated in Figure 1. An enabling institutional and regulatory environment is also crucial to ensure that improved performance is encouraged, and can realistically be sustained in the long term.

Key Points:

There are acute problems with the quality and timeliness of road construction and maintenance on most of Indonesia's subnational roads. An analytical framework called ACT – Accountability, Capacity, and Trust – can be used to understand the key factors affecting the performance of all parties responsible for road maintenance.

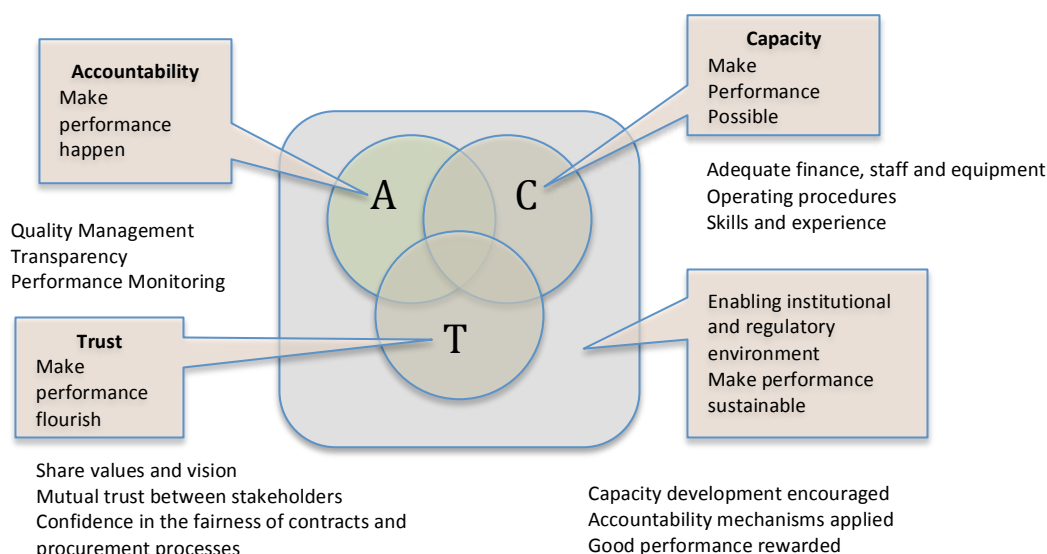
State-Owned Enterprises (SOEs) have about 40 percent of the market share by value in Indonesia's road construction industry. The rest of the market consists of about 2,000 mostly very small companies. The industry is fragmented and is not developing. With prices primarily determined by clients, no rewards/sanctions for performance, and the inclusion of SOEs as competitors, much of the industry is arguably not yet operating within an effective market.

The most acute challenge lies in the shortage of professional engineers. Also, there is no effective mechanism to define and uphold professional standards. Engineering consultancy has been badly affected by these constraints, resulting in an exceptionally low quality of site supervision. Many small businesses have little reason to develop skills or to invest in specialist staff and equipment. Most of the larger contractors are capable of producing good quality work when required. But when working on public roads, they are not generally held to account by the supervising engineers.

This situation is aggravated by client operating procedures that are not aligned with internationally recognised good practice, and the fact that clients do not monitor their own performance.

Reforms have been introduced in the past to address these problems. These measures do not appear to have been successful. At times they have had the unintended consequence of undermining performance. They are based on the mistaken premise that the private sector cannot be trusted to invest in its own capacity. In keeping with ACT, an alternative approach is to focus on creating an environment that seeks to build effective accountability mechanisms that will lead to increased trust.

In the short term, this means stripping away any process that does not directly lead to improved performance, and focusing instead on supporting strengthened site supervision. The same principle applies in the case of direct labour (*swakelola*) routine maintenance units.

Figure 1: Drivers of Performance

Any situation where accountability, capacity and/or trust are missing or weak constitutes an impediment to good performance. This kind of situation also poses a corruption risk, because corruption tends to take root in the absence of effective management systems.

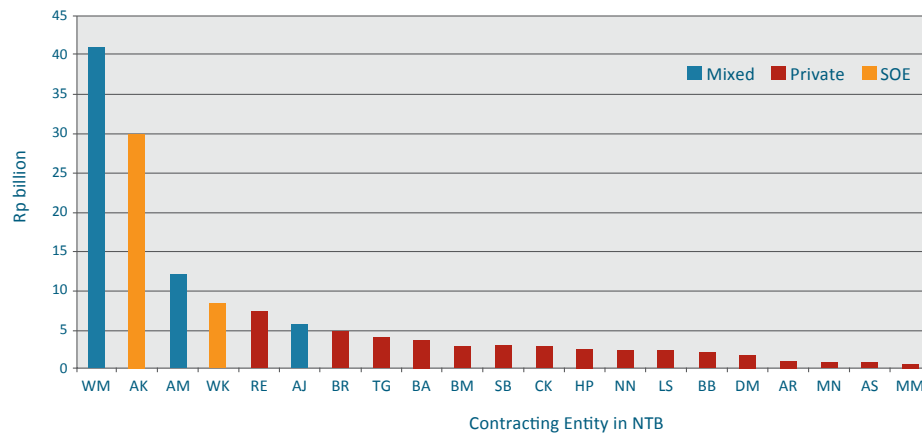
The Road Construction Industry

A 2011 analysis³ of Indonesia's road construction industry showed that State-Owned Enterprises (SOEs) have about 40 percent of the market share by value. The rest of the market is characterised by about 2,000 other companies, most of which are very small, that are typically engaged on only one road contract at any given time.

A similar but even more pronounced pattern is reflected in the case of contracts for subnational roads, which account for over 91 percent by length of Indonesia's road assets.

On average, provincial roads account for about 10 percent of subnational roads. Circumstances can vary considerably between regions, but the scenario presented in Figure 2 is typical. Data from provincial road betterment or maintenance contracts awarded in the province of Nusa Tenggara Barat during 2008–2010 shows that a total of 21 contracting entities were engaged. Each of these is represented by a vertical bar, the height of the bar signifying the average size of contract won. Only six of these active road contractors achieved an average contract value that exceeded Rp 5 billion. Of these, all but one was either an SOE or a joint operation with an SOE.

A striking feature of this data is that most of the 21 contractors won only a single road contract in the province during the three-year period under consideration. This reinforces the portrayal of a fragmented road construction industry that is not developing. Very few contractors own any road construction equipment; instead they simply associate with others, or hire in resources after they have won a contract.

Figure 2: Typical Size Distribution of Provincial Road Contracts⁴

With prices primarily determined by the client rather than the contractors, no reward for good performance or sanction for bad performance⁵, and the inclusion of SOEs as potential competitors, it could be argued that much of Indonesia's road construction industry is not yet operating within an effective market. Such a view is reinforced by the unequal relationship between clients and contractors, where the latter can have little choice but to accept demonstrably unfair contract terms.

Capacity Issues

As summarised in Figure 1 above, capacity is made up of three elements: (1) adequate **resources** in the form of finance, staff and equipment; (2) detailed **operating procedures** to define how those resources are to be deployed in practice; and (3) **skills and experience** acquired by training staff in the practical implementation of those operating procedures.

In terms of available resources, the most acute challenge lies in the shortage of professional engineers working in the sector. The engineering profession in Indonesia has not yet fully recovered from the effects of the 1997–8 Asian Economic Crisis, when a generation of engineers chose alternative careers. In addition, there is no effective mechanism in place to define and uphold professional standards. Despite efforts by several organisations, including some of the larger contractors, to develop a more professional approach, the default position remains that engineering qualifications are based primarily on years of experience, with no professional examinations, no mentoring, and no generally applied code of conduct.

Engineering consultancy has been particularly badly affected by these capacity constraints, resulting in an exceptionally low quality of site supervision. With some exceptions, many individual design and supervision engineers engaged on public road contracts lack technical confidence, have low professional status, are poorly remunerated, and in practice can readily be overruled by government clients, who remain ultimately responsible for financial disbursements.

The many small businesses that make up the road construction industry have little reason to develop relevant skills or to invest in capacity in the form of specialist staff and equipment. Most of the larger contractors are capable of producing good quality work when required to do so. But when contracted to work on public roads,

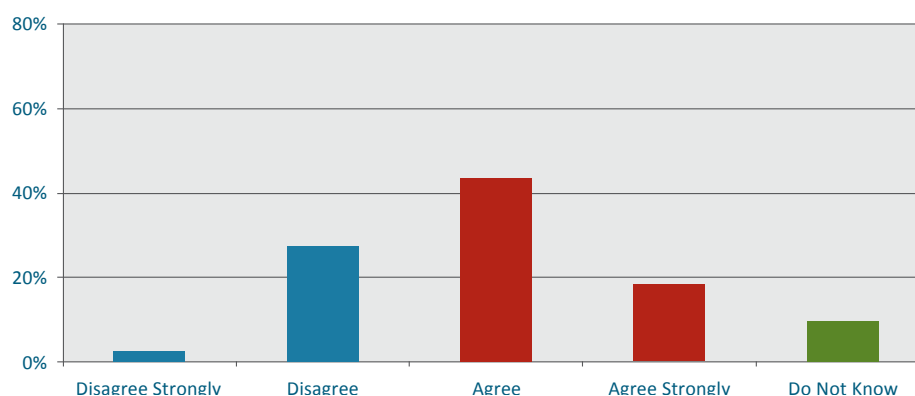
they are not generally held to account by the supervising engineers. This problem is particularly acute in the case of subnational roads, which are relatively remote and less likely to receive management support. In many cases contractors would price themselves out of the market if they were to include enough funds in their bid prices to adhere to specifications set out in the contract. As illustrated through a survey in 2011⁶ (see Figure 3), it is not uncommon for works to be approved that have not been completed, or do not meet specifications.

This situation also reflects low client capacity, aggravated by client operating procedures that are neither systematic nor complete. Most notably:

Procurement procedures are not aligned with internationally recognised good practice⁷. No attention is paid to the past performance of contractors, or their current capacity in terms of relevant internal operating procedures for quality management, health and safety, or anti-bribery mechanisms.

Clients do not monitor their own performance as perceived by contractors and consultants, or indeed by the public. Relevant performance criteria could include the time it takes for contractors to be paid after works have been certified as having been completed to specification, and the extent of public disclosure of material project information⁸.

Figure 3: Survey Responses to “Site supervision staff can easily be persuaded to approve sub-standard work”



Shortcomings of Past Reforms

These findings are not new. Reforms introduced in response to similar diagnoses over the course of the past decade have included a series of new prescriptive requirements being imposed on clients, contractors and consultants alike. Most of these have focused on addressing perceived capacity constraints. They include:

To improve capacity: Definition of minimum requirements for capacity in terms of years of experience, access to equipment, and access to finance

To increase competition: Open tendering, including a recent move towards e-procurement

To work within budgets: Rejection of bids that exceed owner's estimate based on government-defined unit rates

To ensure best value for money: Acceptance of lowest qualifying bids

To improve construction quality: Criminalisation of construction failure

Performance-Based Maintenance Contracts¹

In Indonesia, routine maintenance of roads is performed almost exclusively by force account (*swakelola*). On national roads, for example, Directorate General of Highways (DGH) Balai manage the equipment, control the funds, employ the workforce and monitor progress. In most other countries, routine maintenance is carried out under contract, as is the case for Indonesia's toll roads.

The main problems with the force account approach used in Indonesia include lack of accountability for outcomes, as well as difficulties in measuring outputs, the cost of work carried out and rates of productivity. Generally labour management is weak – there are few incentives to improve performance. Techniques which have been shown to increase productivity elsewhere are not employed.

By contrast, other countries are increasingly turning to Performance-Based Contracts (PBCs). Under a PBC, the contractor is paid for maintaining his part of the network to specified performance standards or levels of service. He suffers payment deductions if those standards are not met. The contractor has complete control over how to manage his resources to meet the required performance standards.

DGH has tried the PBC approach. The World Bank-financed Infrastructure Development Policy Loan, for example, included a pilot PBC program for national roads. But while PBCs are mainly used elsewhere for road maintenance, these and other trial implementations in Indonesia focused largely on one-off rehabilitation works. They did not allow effective measurement of performance over time against specified levels of service.

The PBC approach needs a fundamental shift in how maintenance works are carried out, how budgets are prepared, who decides what work is carried out, and how the work of contractors is assessed and remunerated. The benefits of PBC include lower costs, better quality and direct accountability for performance. For these benefits to be realised, and to allow economies of scale, PBC road sections should not be less than about 100km. The road condition needs to be maintainable (stable) with betterment works taking up a minor part of the contract value. Performance standards should be easily understood and capable of being objectively measured. Unnecessary or unmanageable risks should not be transferred to the contractor. The period of the contract should not be less than about five years. And where PBCs are being piloted, the contractor, who will be unfamiliar with the approach, should be given some initial assistance in meeting his performance standards.

The World Bank provides sample bidding documents for PBC procurement of PBC projects². The tender documents should include a baseline design for any rehabilitation works to allow the bidders to properly price the work³. Standard specifications are generally required to ensure consistency among proposals. The specification also provides a proven and consistent basis for monitoring output performance.

A well designed prequalification process is needed to ensure that only qualified bidders with the necessary breadth of technical, managerial and financial capacity participate in the bidding process. An effective contractor need not necessarily be a conventional construction firm; often a consultant or joint venture will have a better understanding of how to optimise life cycle management of the network. Usually, specialist pavement management skills are needed. The procurement process should also include pre-bid briefings and site visits to ensure that bidders understand the crucial differences between PBCs and conventional, input-based maintenance contracts, most notably in the allocation of risk between contractor and public client. — *Hamish Goldie-Scot and John Lee*

NOTES

1. IndII, Support to DGH to Review Procurement and Contracting, including Potential Use of Performance Based Contracting (PBC), Final Report, Activity 207, Road Sector Development Program (RSDP), Cardno Emerging Markets in association with ARRB, June 2011.
2. World Bank, Sample Bidding Documents for Procurement of Works and Services under Output- and Performance-based Road Contracts (OPRC), October 2006 (updated May 2011). Available at: <http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/PROCUREMENT/0,,contentMDK:20646773~menuPK:84284~pagePK:84269~piPK:60001558~theSitePK:84266~isCURL:Y,00.html>.
3. An alternative is to undertake a separate rehabilitation contract first before embarking on the PBC.

Logical as these reforms may at first appear, none appears to have succeeded, and all have at times contributed to the unintended consequence of undermining (rather than enhancing) performance. This is because they are based on the mistaken premise that the private sector cannot be trusted to invest in its own capacity. Such client attitudes give rise to further mistrust among stakeholders. As has long been recognised within the private sector, such mistrust gives rise to time delays, increased costs, low morale, and poor performance⁹.





The most extreme examples of ill-considered reforms include the criminalisation of construction failure (which discourages the identification and correction of defects) and bid evaluation criteria that do not take sufficient account of genuine current in-house capacity and past performance. This reduces or removes any incentive that a contractor may otherwise have to perform well, or to invest in improved capacity.

Building Trust

In keeping with the ACT framework, an alternative approach for provincial governments would be to focus on creating an institutional and regulatory environment that seeks primarily to build effective accountability mechanisms that will in time give rise to increased trust.

In the short term, this would mean stripping away any accountability mechanism or administrative process that cannot be shown to result in improved performance, and focusing instead on supporting strengthened site supervision. In the case of periodic maintenance this would mean recognising and supporting the crucial role paid by the supervising engineer. As illustrated in Figure 4, even in the case of an incompetent contractor, an experienced and professional supervising engineer is, if supported by the client, capable of ensuring that good quality work is produced.

Figure 4: The Importance of Effective Site Supervision

Supervising Engineer	Contractor	Outcome
Professional in Supervision	Competent in Construction	
V	V	
X	X	
X	V	
V	X	

The same principle applies in the case of swakelola routine maintenance units. By focusing on building trust through demonstrably fair and transparent systems of management, accountability and reward, marked improvements¹⁰ in performance can be achieved. Such improvements may not ultimately be able to match those that can be achieved by the private sector, which is able to offer a stronger reward structure for improved performance. But in the short term, with the current weak state of the road maintenance market and the industry that serves it, it is by no means a foregone conclusion that private contractors will be able to compete effectively with well managed and motivated swakelola units. ■

NOTES

1. A carriageway is a width of road along which there are no physical barriers or separations that restrict a vehicle from moving sideways.
2. The ACT framework was first introduced in a 2008 Briefing Paper published by the UK Institution for Civil Engineers. It was successfully applied as a tool for World Bank studies of corruption in Ethiopia and road construction industry performance in Indonesia. It was then further developed under an IndII study of subnational roads in Nusa Tenggara Barat Province. In 2013, it was adopted for use in analysing constraints on the performance of road maintenance contracts in Mongolia.
3. Source: *Road Construction Industry Assessment, Indonesia*. World Bank. 2011.
4. Source: *Provincial and Kabupaten Road Maintenance Management – Phase 2: Interim report on maintenance implementation delivery mechanisms*. AARB for IndII. 2011.
5. Other than the threat of blacklisting, which can readily be circumvented through the use of an alternative company registration.
6. Source: *Road Construction Industry Assessment, Indonesia*. World Bank. 2011.
7. The recognised international standard for construction sector procurement is ISO 10845.
8. Emerging international good practice in this regard is described under the international Construction Sector Transparency (CoST) initiative; see www.constructiontransparency.org
9. A typical online resource catering to growing private sector demand for improved levels trust is www.myspeedoftrust.com
10. The World Bank Labour Substitution studies conducted in Asia and Africa in the 1970s identified significant potential increases in quality and in labour productivity through improved management practices in public works programs. Such improvements typically included the provision and maintenance of good quality tools, cash wages, clearly defined daily tasks (after which the worker or team would be free to go home), and good working conditions. Informal comparative studies undertaken by the author on labour-based road construction projects in Africa in the 1980s found multiple cases where such enhanced management more than doubled overall daily costs, but resulted in consistently high quality and order of magnitude increases in productivity.

About the author:

Hamish Goldie-Scot has been an international consultant for 33 years, following two years working as a teacher in Africa. He has particularly strong experience in the development and review of participatory good governance initiatives, in the labour-based construction and maintenance of roads, and more generally in enhancing the pro-poor developmental impact of both public and private sector investments in infrastructure. Hamish has worked as a Civil Engineer, Pro-Poor Planner, Environmental Engineer, Trainer, and Monitoring & Evaluation/Governance expert in 26 developing countries on a variety of assignments. These range from village-level rural access initiatives to the facilitation of ministerial-level international discussions about infrastructure investments and related corruption risks. The broad-based nature of both his qualifications and experience enables him to apply his skills across a wide range of disciplines and sectors. He is a Fellow of the UK Institution of Civil Engineers.

A PRIMER ON PRIM: THE PROVINCIAL ROAD IMPROVEMENT AND MAINTENANCE PROGRAM

A new approach to local road maintenance draws on lessons learned from past programs and stresses governance, accountability, and public scrutiny to ensure that funds are spent efficiently. • By John Lee



Officials in Nusa Tenggara Barat have shown a strong interest in participating in the PRIM pilot program. *Courtesy of Max Antameng*

The AusAID funded Indonesia Infrastructure Initiative (IndII) is piloting a new approach to local road maintenance that shows promise for improving accountability and transparency, making more efficient use of funding, and resulting in better maintained roads. The Provincial Road Improvement and Maintenance (PRIM) program will be piloted in Nusa Tenggara Barat (NTB) starting in 2013. It will use Australia Indonesia Infrastructure Grant (AIIG) contributions to incentivise improved maintenance and associated good governance of provincial roads. Working through existing government procedures, PRIM will improve the way provincial governments manage and maintain their networks and encourage public scrutiny of the effectiveness of maintenance planning and delivery. AIIG grants will be provided if maintenance works are verified as having been planned and carried out using agreed procedures and to agreed standards. The province will pre-finance its works program, and will receive AIIG grant contributions after successful compliance with program conditions has been verified.

PRIM's design draws lessons from previous donor-assisted programs, most of which have focused on road reconstruction¹, rehabilitation and periodic maintenance. PRIM is unique in targeting routine maintenance, often neglected but most critical. Most programs have involved special implementation mechanisms and have helped improve institutional capacity through technical assistance (TA), planning tools and training; PRIM will carry more assurance of

sustainability by giving incentives for better performance to existing institutions and improved procedures. PRIM also stresses transparency and will strengthen the role of public forums in holding the road agency accountable for its performance in achieving defined outcomes.

Key Points

IndII is piloting a new approach to local road maintenance that shows promise for improving accountability and transparency, making more efficient use of funding, and resulting in better maintained roads. The Provincial Road Improvement and Maintenance (PRIM) program will be piloted in Nusa Tenggara Barat (NTB) in 2013. It will use Australia Indonesia Infrastructure Grant (AIIG) contributions to incentivise improved maintenance and associated good governance of provincial roads. Working through existing government procedures, PRIM will improve the way provincial governments manage and maintain their networks and encourage public scrutiny of the effectiveness of maintenance planning and delivery. AIIG grants will be provided if maintenance works are verified as having been planned and carried out using agreed procedures and to agreed standards. The province will pre-finance its works program, and will receive AIIG grant contributions after successful compliance with program conditions has been verified.

PRIM is unique in targeting routine maintenance, which is often neglected. Stage 1, from 2013 to June 2015, will concentrate on improving institutional capacity and governance and introducing effective maintenance; Stage 2, from July 2015 to 2018, will continue and expand the maintenance and rehabilitation works.

The total estimated cost of the program in NTB is \$A 130 million, of which AIIG grants will provide up to \$ 52 million. This grant funding will be supplemented by IndII-supported TA and further funds made available as an incentive to strengthen planning, programming and budgeting (PPB) procedures and to engage with the public through a Road Traffic and Transport Forum (RTTF).

The state of provincial roads is the result of poor quality construction and lack of maintenance. Projects are not always chosen using rational, needs-based criteria, work is often poorly specified and supervised, and corruption is not uncommon. These problems stem from a lack of incentive for effective governance. Road agencies are not held accountable and not subject to public scrutiny.

PRIM incorporates lessons from earlier experience: Short term inputs of TA and other resources will have little lasting impact unless their influence can be made part of the agency's everyday activities. This means institutionalising the use of rational planning tools for budget allocation, improving accountability, incentivising performance, and sanctioning poor performance.

PRIM outputs will be independently verified by a DGH technical team, and will be the basis for approving grant disbursements. Verification will cover three areas: maintenance works programming, physical works implementation, and improved institutional performance.

The results-based, grant-incentivised approach is the most important innovation in PRIM's design. Also important are anticorruption measures and the RTTF, which will improve governance and transparency by addressing matters of public concern and putting pressure on the road agency to plan and deliver an effective maintenance program.

PRIM Components

The program in NTB will be completed in two stages: Stage 1, from 2013–June 2015 (covering the current stages of IndII and AIIG funding), will concentrate on improving institutional capacity and governance and introducing effective maintenance; Stage 2, from July 2015–2018, will continue and expand the maintenance and rehabilitation works.

The total estimated cost of the program in NTB is A\$130 million, of which AIIG grants will provide up to \$52 million. This grant funding will be supplemented by \$15.3 million of IndII-supported TA, including institutional strengthening, capacity building and program management support, as well as output verification and monitoring and evaluation (M&E). A further \$2.6 million will be available as an incentive to strengthen planning, programming and budgeting (PPB) procedures and to engage with the public through an existing Road Traffic and Transport Forum (RTTF). The total Australian funding will be \$69.8 million, of which \$17.2 million (AIIG grant of \$11.4 million and AusAID TA of \$5.8 million) will be for Stage 1.

The estimated economic internal rate of return (EIRR) for seven packages of initial periodic maintenance and rehabilitation works² in Stage 1 is 88 percent with all roads and packages delivering positive net present values (NPVs). For the full PRIM program, the EIRR is 98 percent, and NPV \$ 43.5 million. PRIM also delivers net road agency savings of about \$ 25.3 million.

Addressing Fundamental Causes

The state of provincial roads is the result of poor quality construction and lack of maintenance. Even with recent increases, budgets for road works as a whole are inadequate and tend to be allocated to capital projects with higher visibility, while maintenance – especially routine maintenance – is neglected. Projects are not always chosen using rational, needs-based criteria. Work is often poorly specified and supervised. Public works agencies have limited capacity; their staff are poorly trained. Corruption is not uncommon.

These problems stem fundamentally from a lack of incentive for effective governance. Road agencies are not held accountable for their performance in managing the network efficiently. They are not pressured by public scrutiny to set the right priorities and produce better outcomes. There is no check on whether they deliver value-for-money, nor sanction if they fail to do so.

As a result roads deteriorate prematurely, eventually requiring much more expensive rehabilitation or reconstruction. The Government (GoI) gets poor value from its expenditure. The costs incurred by road users are much higher than they need be, undermining the Government's social and economic development efforts.

Verifying Output-Based Performance

PRIM is designed to strengthen the performance of:

- Provincial government, in maximising value for money in funding, programming and commissioning road maintenance
- Private contractors, in carrying out road maintenance in accordance with specifications
- Private consultants in designing the works and supervising contractors effectively
- Civil society, in holding all parties accountable for the services ultimately provided

To achieve this, PRIM focuses on:

- The use of conditional grants, with disbursements triggered by satisfactory physical and institutional outputs
- The disclosure of program information and enhanced opportunity for public scrutiny

Accountability will also be strengthened through:

- More effective site supervision, facilitated by measures to improve the status and remuneration of supervising engineers
- Better application of fair procurement procedures
- Planning and monitoring procedures that present plans clearly, show progress, facilitate review and facilitate corrective action
- The involvement of a Road Traffic and Transport Forum to scrutinise plans and outputs and to channel public complaints
- The use of an independent verifier to check output compliance

The technical ministry authorised to carry out verification is the Ministry of Public Works. A Technical Team, assisted by consultants, will carry out verification of outputs as well as providing technical and financial assessments during implementation to maximise the chances of successful verification.

Verification will cover three disbursement-linked indicators:

- Maintenance works programming: This would confirm that the annual works program is based on approved planning, programming and budgeting (PPB) procedures, the proposed works are in the provincial budget, and the maintenance budget is announced on a website.
- Physical works implementation: This would confirm completion of physical output and compliance with technical specifications, procurement guidelines and environmental and social safeguards.
- Improved institutional performance: This would confirm the province's ability to: i) prepare the annual work programs by reducing external assistance, ii) adopt standard operating procedures by the RTTF, iii) hold public forums and consultations and disseminate the results to the public, iv) successfully implement the agreed training and manpower development program, and v) prepare and submit annual monitoring and evaluation (M&E) reports.

The verification process could present a rent collection opportunity. Mitigation measures under PRIM include development and application of an anticorruption action plan, hiring an independent verification consultant attached to the Technical Team, and support for the RTTF which will promote transparency and scrutiny by interested members of the community. This would deter procurement risks and poor performance by contractors and consultants.

The use of reference unit costs (RUCs) will help avoid collusion in pricing. RUCs will be used to estimate the value of verified work and the consequent disbursement from the grant. RUCs will reflect market rates in the province and will be updated annually.

Note, too, that in the event of non-performance, no grants will be payable. This is the biggest incentive driving effective delivery. Moreover, grant funds would be recovered if there is evidence of ineligible expenditure after the grant has been disbursed.

Gol Strategies

The Directorate General of Highways (DGH) at the Ministry of Public Works (MPW) has a responsibility to help ensure better quality provincial and district roads. But its attempts to improve road maintenance have focused mainly on reconstruction and rehabilitation. Other countries have successfully outsourced responsibility for network management using output- or performance-based contracts. These have been tried in Indonesia, but with mixed results.

Road Traffic and Transport Law no. 22/2009 shows how concerned Gol is with the state of road infrastructure. Initiated by the Ministry of Transportation – which has no direct responsibility for roads and their maintenance – it contains several provisions designed to improve road conditions: road agencies are to be held liable for accidents arising from a failure to maintain adequate standards; dedicated road funds are to be established to secure adequate resources for road maintenance; and Road Traffic and Transport Forums (RTTFs) are to be set up at national, provincial and city/district levels – reporting directly to the Governor in the case of provinces – to help ensure more effective planning and delivery of road infrastructure, traffic and transport services. Their membership brings together civil society, concerned government agencies and road users.

Lessons for PRIM's Design

The lesson from past experience is that short term inputs of TA and other resources to assist road maintenance, whether for planning, design, execution or institutional strengthening, will likely have little lasting impact unless their influence can be institutionalised and made part of the agency's everyday activities. This means locking rational planning tools into the process of setting expenditure priorities and budgeting, and holding the road agency accountable for its performance in managing the network and for getting value-for-money from its allocated budgets. It means incentivising the road agency, its consultants and contractors to perform – and also compelling them to do so, using both contract sanctions and the pressure of public scrutiny. And it requires, for the design of a pilot program like PRIM, a greater focus on sustainable improvements in governance than on physical output.

A New Approach

PRIM's design reflects the lessons learned from this earlier experience. Unlike efforts before, its focus is on maintenance rather than reconstruction, rehabilitation or network capacity expansion, and it will use conditions attached to AIG grant support (and hopefully other forms of central government assistance in future) to strengthen governance on a more sustainable basis.

Focusing on routine maintenance, which is almost completely neglected at present, PRIM will incentivise provincial road agencies to achieve improvements in both physical results and program governance. It will provide grant contributions of up to 40 percent of maintenance expenditures if the completed works were verified as having met agreed technical and planning,

programming and budgeting (PPB) performance indicators. It will also provide up to 5 percent of additional grant money to reward improved institutional performance. To help ensure sustainability, it will work through, and in the process strengthen, existing government procedures, using local consultants for design and supervision and local contractors for implementation. By raising the role, profile and capabilities of the provincial RTTF, it will hold the road agency openly accountable for its performance. It will introduce objective PPB procedures and reward their permanent adoption as part of the annual planning cycle. It will also include strong anticorruption incentives.

Output Verification and Disbursement

Verification of technical and governance outputs is the basis for approving grant disbursements. It will be done independently of the parties involved.

DGH will represent the technical Ministry (MPW) required to carry out verification. Its Technical Team, supported by consultants, will verify final outputs and also carry out technical and financial assessments prior to completion to reduce the probability of works failing verification. Verification will cover three disbursement-linked indicators:

Maintenance works programming: This will confirm that the annual works program is based on approved PPB procedures, the proposed works are in the provincial budget, and the maintenance budget is announced on a website. Once the program is verified, an advance payment of up to 30 percent of the grant contribution to the cost (or 12 percent of the cost of the annual work program) can be disbursed.

Physical works implementation: This will confirm completion of physical output and compliance with technical specifications, procurement guidelines and environmental and social safeguards. Works that are verified will be eligible for disbursement of up to 70 percent of the grant contribution to the cost (or up to 28 percent of the cost of the annual work program).

Improved institutional performance: This will confirm NTB's ability to: i) prepare the annual work programs by reducing external assistance, ii) adopt standard operating procedures by the RTTF, iii) hold public forums and consultations and disseminate the results to the public, iv) successfully implement the agreed training and manpower development program, and v) prepare and submit annual M&E reports.

Incentivising Performance

The results-based, grant-incentivised approach is the most important innovation in PRIM's design. No comparable programs have used this approach before. A key ingredient in changing behaviour on a sustainable basis is having the RTTF provide effective external oversight and demand greater transparency about plans and performance. PRIM will provide financial incentives to induce institutional change and training; its support for the RTTF will make their influence more effective. It will also engage an independent third party to verify that completed works meet agreed criteria,

and incorporate incentives to reduce the chances of fraud and corruption. Further, PRIM has been designed to be sustainable through its emphasis on working through and strengthening existing government systems and procedures, using local consultants and contractors, training provincial staff and increasing the pressure of accountability for performance.

Corruption

Measures under PRIM to reduce the risk of corruption include an anticorruption action plan, hiring independent verification, support for the RTTF and, of course, the threat of non-reimbursement from the AIIG facility. The RTTF, with its focus on transparency and involvement of civil society, will help deter bribery and poor work quality. The grant agreement will include a mechanism for recovering funds from NTB if there is evidence of ineligible expenditure after the grant has been disbursed.

The Role of the RTTF

The RTTF will play a key role under PRIM, improving governance and transparency by addressing matters of public concern and putting pressure on the road agency to plan and deliver an effective maintenance program. The NTB RTTF was established in 2010, tasked with resolving road traffic and transport problems, coordinating the relevant provincial agencies and reporting the results to the Governor. Chaired by the Governor himself, its membership includes the heads of provincial public works, police and land transport agencies, representatives of transport operators, a university representative, experts in transport, an NGO representative with a focus on transport and a transport observer. PRIM will strengthen its role in handling complaints from the public and improving governance and transparency by scrutinising local agency plans and programs. PRIM's support to the RTTF will include helping it to raise the public's awareness of road maintenance issues and the RTTF's role through SMS messaging, website development, and community meetings on plans and projects (e.g. on overall works priorities, as well as on local project-related issues like access to properties, continuity of drainage systems, etc.). PRIM will also help the RTTF deal with cross-cutting issues like equitable access to transport for the disabled and to report on management of community complaints. A training program for RTTF members will be developed based on a training needs study carried out under PRIM.

Why NTB Provincial Roads?

Provincial roads link national and district roads. They carry a fifth of the total demand. The provinces responsible for these roads usually have greater capacity than at the district level. Piloting the program at the provincial level has a greater chance of success.

NTB's provincial road network of 1,772 km is urgently in need of better maintenance: only 49 percent of its length is in stable condition. In 2010 and 2011, IndII helped prepare a maintenance program for NTB using improved PPB procedures and exploring the potential for incentivised, results-based delivery. The Provincial Government showed strong interest and recognised improved governance as its main focus. The Governor and Provincial Parliament (DPRD) authorised

multi-year funding and works contracts to facilitate implementation. NTB has already established an effective RTTF and increased its 2012 road maintenance budget. In February and March and again in August, September and October 2012 it urged DGH and IndII to speed up implementation of PRIM. NTB is also one of the poorest provinces in Indonesia.

If the pilot program succeeds in NTB it could be expanded to other provinces and, eventually, applied to the district road system. The National Development Planning Agency (Bappenas), Ministry of Finance (MoF) and DGH all wish to expand PRIM. ■

NOTES

1. *See the Editor's Note on page 2 for a discussion of this and other technical terms related to road management.*
2. *These works are needed to bring several sections of road up to a maintainable state.*

About the author:

John Lee is the Technical Director for Transport at the Indonesia Infrastructure Initiative (IndII). He has over 40 years' experience as a transport sector specialist, including 15 years' working in Indonesia. He has managed a wide variety of transport policy and planning projects, dealing with all modes of transport, national and regional, throughout Asia, Africa, the Middle East and the Pacific. He is familiar with the requirements of all the major international aid agencies. Prior to joining IndII, John was Advisor to the new Department of Transport in Abu Dhabi, where he helped build the Highways and Public Transport Divisions from scratch. John has expertise in institutional development, investment feasibility studies, multimodal transport planning, performance-based project delivery (including PPPs) and asset management.

UPCOMING EVENTS & ACTIVITIES OF NOTE	
<i>What</i>	<i>When and Where*</i>
Gas Development Master Plan Modules Workshop	1 and 2 July 2013, Bali
PRIM Workshop	11 September 2013, Jakarta
KSAN (Sanitation and Water National Conference) Conference, exhibition	29 – 31 October 2013, Balai Kartini, Jakarta
Pilot PPP Project Focus Group Discussion	29 October 2013, Jakarta

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

LOCAL EXPERTS, LOCAL ROADS

Prakarsa interviews two officials who have a sound understanding of the choices local policy makers must make to manage their road networks.



Ir H. Dwi Sugiyanto, MM (left) and Dr H. Rosyadi Sayuti, M.Sc (right)
Courtesy of Max Antameng

The first word that comes to mind when describing Dr H. Rosyadi Sayuti M.Sc (Head of Bappeda for Nusa Tenggara Barat [NTB]) and Ir H. Dwi Sugiyanto, MM (Head of the NTB Public Works Office) is *pendekar*. The meaning of *pendekar* is not “pendek” (short) and “kekar” (hefty), but rather a “warrior” – not just in the sense of someone who fights, but someone with a deep understanding of a subject. These two *pendekar* are not associated with the martial arts, but rather with the Provincial Road Improvement and Maintenance Program (PRIM), which is being piloted in NTB. Dr Rosyadi deals with planning and the infrastructure program in NTB, and Ir Dwi handles PRIM’s technical aspects. Both experts are thoroughly familiar with PRIM and willing to share their knowledge; in fact, when asked if they could schedule an interview with *Prakarsa* both were willing to answer questions about PRIM on the spot.

The two officials offered a number of thoughtful observations on the role of PRIM, road management decision-making processes, and expanding PRIM to other provinces. Below are highlights from ***Prakarsa’s*** conversation with these two experts. The full text of the interviews can be found on Indii’s website (www.indii.co.id) in our web column, “Interviews and Insights”.

***Prakarsa:* What benefits does PRIM offer, and what will be the impact of selecting NTB for the pilot project?**

Dr Rosyadi: PRIM came at the right time for NTB, because we had just completed the acceleration program for provincial roads in 2011–2012¹. That program involved a total length of 350 km and increased road stability² from 44 to 70 percent. The essence of PRIM and the acceleration program are the same; that is, they pertain to timely and output-based road maintenance. A lesson we learned from the acceleration program is that in the future when we propose funding for road maintenance, it must be adequate. PRIM will be starting in 2013 and the new Medium Term Regional Development Plan [*Rencana Pembangunan Jangka Menengah Daerah*] will be executed from 2014–2018; this is the second reason why the program is timely. Concerning the allocation of maintenance funds, we will inform local members of parliament that in order to participate in the PRIM program we need sufficient funding to maintain roads that have already been repaired.

In the past, allocation of funds for road maintenance was often influenced by political considerations. What are the best criteria for allocation of funding under PRIM?

We have to acknowledge that we have been allocating insufficient funding for maintenance because our focus has been more on road stabilisation. In the past, fewer than 50 percent of our provincial roads were in stable condition, and as you can imagine this was one of the province's main concerns. Therefore, if we say that decisions were "political", perhaps it refers to the fact that the local House of Representatives had more influence on decisions about budget allocation than did Bappeda.

In the future, we will try to be more realistic; maybe we cannot reduce political influence, but funding for maintenance will have to be increased, considering that the number of roads has risen by almost 70 percent as a result of acceleration, and road stability must be sustained with a regular, timely, and fully funded maintenance program, to avoid early deterioration.

How far can you anticipate quality and corruption issues in program implementation? What are the consequences for road users?

In this era of transparency, it's risky to fool around in a project where all eyes can see and all institutions can report. There is now less opportunity for corrupt practices in the workplace. Hence, in my opinion, with or without PRIM, because of the increase of people's understanding, awareness, and demand for transparency, corruption will be reduced automatically.

I hope PRIM can reduce corrupt practices, especially in constructing and maintaining roads. The ease with which corrupt practices can be carried out in the road construction and repair arena has become common knowledge.

* * *

Prakarsa: PRIM is an Australian Government program to support provincial road maintenance based on performance. What positive outcomes do you expect related to the planning, programming, budgeting and implementation of the program?

Ir H. Dwi Sugiyanto, MM: First, please let me convey my appreciation to the central government for selecting NTB province to carry out the PRIM pilot project. The length of roads in NTB is as follows: national roads comprise 632 km with 99.14 percent of those roads in stable condition as of December 2012; provincial roads comprise 1,772 km with 66.2 percent in stable condition; and there are 2,540 km of kabupaten roads of which 35 to 40 percent are in stable condition.

In connection with this, particularly with regard to provincial roads, the provincial government has made an effort to support road stability, in order to increase economic development and improve people's welfare.

With PRIM we receive a double benefit – a budget allocation for provincial roads and road management itself. Grants for PRIM are not only for additional funding allocation, but also for knowledge transfer on program management, including planning, identifying, programming, and taking strategic actions based on provincial spatial planning. The other important benefit of this grant is that it will allow us to address our backlog of road works, especially related to pavements, engineering structures and road furniture².

The creation of the Traffic Forum as a road stakeholder is also a positive thing for NTB. Standard Operating Procedures for road preservation are taking effect nationally. Through the pilot project, the provincial Traffic Forum can be optimised and then the pilot project results can be implemented nationally.

The initiative of the NTB Local Government to take part in the Australian Government's grant program is also very positive. The relationship between NTB and the Australian Government began when we received a loan from the Eastern Indonesia National Roads Improvement Project (EINRIP), and now it continues with PRIM, which has reduced our maintenance costs. The next step is knowledge transfer on how to manage roads after the completion of PRIM.

In the past, allocation of funds for road maintenance was often influenced by political considerations. What are the best criteria for allocation of funding under PRIM?

The problem of road maintenance is directly related to budgeting. Budgeting decisions should not be made based on politics but according to the need to fully serve the community. However, due to the lack of funding allocated to provinces, the amount of money requested for preservation programs cannot be fully met. Provincial government policy in budget allocation tends to focus on accessibility, mobility, and stability of road surfaces to support the flow of goods and services.

It is a fact that there is a fundamental difference between national and provincial road funding. The width of national roads is 7 meters; complete with utilities [signage, drainage, etc.] the cost of construction amounts to approximately Rp 5–6 billion/km. On the other hand, for provincial roads which are 4.5–5 m in width, we focus more on surfacing the road, at a cost of Rp 2.5 billion/km. So if we are talking about budgeting, we can't compare provincial funding with that allocated by the central government, which is based on national road standards.

Local government currently puts more priority on rehabilitation and better quality roads to support surface stability, but the impact of this is a decrease in the road's economic life². Provincial road maintenance on average only costs Rp 7–10 million/km, whereas national road maintenance costs Rp 50 million/km. PRIM needs to pay more attention to this big gap.

PRIM's priority is service. We have not considered adding more roads but we will build more flyovers to connect districts with isolated areas and areas that are strategic from the standpoint of economics or handicraft production.

Apart from routine maintenance, we also hope to improve equipment and road utility standards to improve the economic life of the roads. For routine maintenance, we expect the cost will increase by Rp 25–40 million/km. ■

– *These interviews were conducted by Max Antameng, Ph.D, PRIM financial analyst at IndII.*

NOTES

1. *The acceleration program agreed to by the NTB Governor and local House of Representatives provided funding for a three-year accelerated road improvement program and associated multi-year contracts.*
2. *This and other technical terms related to road management are defined in the Editor's Message on page 2.*

EXPERT VIEW

QUESTION: Donor programs have long focused on road rehabilitation and institutional strengthening, but maintenance has always remained a problem. The AusAID funded Indonesia Infrastructure Initiative (IndII) is trying to incentivise better maintenance performance through supporting grants. Will this work and will the benefits last?

► **Prof. Suyono Dikun**

Transport Expert, former Deputy for Infrastructure at Bappenas, and former Deputy for Infrastructure and Regional Development for the Coordinating Ministry of Economic Affairs

“The Government of Indonesia (GoI) was committed to giving grants (*Inpres Peningkatan Jalan Propinsi* and *Inpres Peningkatan Jalan Kabupaten*) for local road maintenance programs to Local Governments (LGs) during the New Order regime’s five-year development plans from 1970-1997. During that era, grants for provincial and kabupaten roads were effective in maintaining local roads in good shape. There was a reward and penalty system in which GoI, through Bappenas, had full access to and control of data and information on local roads, through periodic reports from LGs and effective regular meetings.

Following decentralisation in 2001, GoI no longer has control over the use of the general and special allocation funds (*Dana Alokasi Umum* and *Dana Alokasi Khusus*) it provides to LGs. The LGs tend to ignore their road maintenance, and local roads (especially kabupaten roads) have deteriorated steadily since then. The Directorate General of Highways only covers the maintenance of the national road network. Practically no information on local road conditions and maintenance programs is reported to central GoI. IndII’s grant program for local roads will work, and benefits last, only when there are clear performance indicators imposed and a reward and penalty system applied. IndII should also observe and closely monitor the public governance aspects of local agencies that deal with roads.”

► **Gandhi Harahap, M.Sc**

Senior Policy Advisor
Directorate General of Highways
Ministry of Public Works

“Local roads are important for improving the economic and social conditions of rural areas. Road maintenance is required to ensure that roads are always in serviceable condition. This maintenance relates to preventing damage from environmental factors such as water, making repairs to damaged areas such as potholes and taking steps to guard against further damage, and ensuring that road signs are properly visible to road users.

In order to carry out road maintenance properly, agencies and contractors need to understand the engineering aspects of the road, as well as the maintenance techniques that will lead to longer road life. These technical matters are easy to learn, and the Directorate General of Highways has produced the technical guidelines and manuals that cover this information.

But because proper maintenance requires continuous and disciplined efforts, the key to success lies with the institutional arrangements: how the road work agencies are organised; the methods they use; how they are funded; and how road conditions, as well as results of maintenance activities, are monitored and evaluated. Behind the word “disciplined” is the idea of a culture that promotes hard work and accountability.

When it comes to kabupaten roads, we need to find the best kabupaten road institution that is suitable for the conditions in Indonesia. To do this we can learn from the Australian experience in rural road maintenance – for example at the district level, where even gravel or dirt roads are well maintained! I think the assistance from Australia will be valuable as we upgrade our institutional arrangements.”



Ir Susalit Alius, CES

Head of Sub Directorate Region IIC
Directorate General of Highways
Ministry of Public Works

“To me, all road programs, whether they involve road maintenance or institutional strengthening, are good, especially IndII’s programs that are related to Road Safety and EINRIP (the Eastern Indonesia Road Improvement Program). It’s great, and we need to have more of these programs. I think PRIM, as a pilot project, will produce a good result and will benefit efforts in Nusa Tenggara Barat to conduct road maintenance.

However, if we look toward the output of this program in the future, I see lots of factors that we can’t control simply through road maintenance, such as overloaded vehicles that drive on provincial roads and the behaviour of drivers and the general public. As a technical example, our provincial roads have a substandard width of 4.5m. A truck’s width is 2.25m. When there are two trucks passing each other from opposite directions, one of them has to use the shoulder. This occurs often, and as a result shoulders of roads are frequently damaged. If this damage is not treated immediately, it will spread. Truck drivers and businesspeople who own trucks often force vehicles with a total weight in excess of 10 tonnes to take provincial roads, even though 10 tonnes is the upper limit permitted.

There are many other issues, such as trucks parked within the city areas, commercial garages that operate at the side of the road (where using equipment such as jacks can ruin the asphalt), street vendors, puddles on the street, road excavation to install new pipes or cables, and public behaviour such as driving across medians. All of these concerns should be governed by laws designed to protect the roads, but because of a lack of enforcement, maintained roads are still easily damaged.

I think we need to raise the awareness of stakeholders like the heads of kabupaten and cities, governors, local transportation agencies, police, entrepreneurs, the Chamber of Commerce (KADIN), the Local Transportation Organisation (ORGANDA), and the general public. These stakeholders should be encouraged to support road maintenance efforts by the Government, for example by abiding by the law, creating a culture of using and maintaining the roads correctly, and obeying traffic laws.”



Yayan Cahyana, ST

Technical Officer for Roads and Bridges
Inspectorate General
Ministry of Public Works

“The condition of Indonesia’s local roads – specifically, about 48,000 km of provincial roads – is a matter of great concern. The level of service provided by the roads is decreasing because of the high percentage of damaged roads. The damage is the result of a lack of routine maintenance. This lack of maintenance reduces the road’s life cycle and the economic life of the road.

In every province that lack of road maintenance is due to insufficient allocation of funds. The priority for use of available funds is usually construction of new roads rather than maintenance of existing ones. Therefore, we need a breakthrough in the way we conceive of provincial road maintenance. With a performance-based provincial road maintenance program funded by the Australian Government through AusAID, I think we can help solve our current problems so that sound routine provincial road maintenance programming can be implemented. However, to ensure the program runs smoothly and brings benefits, accurate monitoring from the planning stage to full implementation should be in place, so that a targeted road network system can be established that will support a reliable and excellent transportation system.”

Outcomes:

NEW MASTER PLAN GUIDES REVITALISATION OF INDONESIA'S PORT SYSTEM

Indonesia's 2008 Shipping Law replaced the State monopoly on ports with Port Authorities responsible for regulating commercial port operations, and provided a vision for upgrading all aspects of Indonesia's port systems, including shipping, navigation, environmental protection, sailor welfare, maritime accidents, human resource development, and community involvement. But the law alone did not provide all the necessary supporting regulatory and institutional structures. Beginning in 2009, with assistance from the AusAID funded Indonesia Infrastructure Initiative (IndII), the Directorate General of Sea Transport (DGST) undertook the development of a comprehensive National Port Master Plan (NPMP) to serve as the legislative reference document for all decisions related to port development and operation, including investment plans. IndII supported this effort through an academic paper, a technical report, and regional socialisation activities that were completed in March 2012. IndII also facilitated the NPMP Technical Team (consisting of the Ministry of Transportation [MoT], Bappenas, the Coordinating Ministry for Economic Affairs, the Ministry of Finance, and the Ministry of State Owned Enterprises) as they created a long-term port development plan, strategy, and final NPMP. The Minister of MoT issued the NPMP Decree No. KP414 on 17 April 2013 and the decree is now being legalised by the MoT Legal Bureau, so that Indonesia can implement the Master Plan and transform its port system into a modern and efficient network.



IN OUR NEXT ISSUE: SOLID WASTE MANAGEMENT

Proper treatment of solid waste is linked to better public health. But the level of solid waste services in Indonesian cities is low. An estimated 85,000 tons of solid waste are generated daily, of which less than half is collected and disposed of in landfills. The uncollected waste is either burned in the open air (which contributes to air pollution), or disposed of haphazardly, clogging drainage and sewer systems and serving as a breeding ground for disease vectors. Low levels of collection and treatment are due to several reasons. Local Governments (LGs) have been entirely responsible for solid waste management since decentralisation, but they are under severe budgetary pressures regarding funding for service delivery and generally are unable, or unwilling, to commit the necessary funds to maintain adequate collection and treatment coverage. Coordination among agencies is minimal, existing landfills are rapidly filling up, and the expansion or creation of new sites is difficult. Poor designs and management of the landfills have led to pollution and inefficient disposal. Efforts to reuse and recycle waste materials are limited.

The Government of Indonesia (GoI) has become increasingly aware of the importance of solid waste management and has strengthened the policy and regulatory framework so that challenges can be addressed. The October 2013 edition of *Prakarsa* will examine how the AusAID funded Indonesia Infrastructure Initiative is coordinating with GoI and LG counterparts to tackle these challenges and improve services.