

Transforming Indonesia's Roads

Road Advisory Notes

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Poor road safety costs Indonesia as much as 3 percent of GDP every year. Implementing the Road Safety Master Plan that Indonesia has already developed would reduce the number and severity of accidents, but it would take sustained commitment, coordination and funding to achieve results. Involving communities more could put pressure on agencies to do this better...**p.15**

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Editor's Message

If you look at a map of Indonesia, roads will probably not be the first type of transport that springs to mind. The nation's many islands, flung across millions of square kilometers of ocean, will most likely evoke thoughts of ports and shipping, both central to Indonesia's continued economic growth.

But it would be simplistic to think that the maritime sector is the only or even the most important component of Indonesia's transport system. Goods manufactured on an industrial estate for export will ultimately be shipped abroad – but how do they get to the port in the first place? Similarly, businesspeople and political leaders fly to other nations to conduct activities that will help Indonesia prosper, but how do they get to the airport? On a more quotidian level, how do people get to work, go to school, or do their shopping every day?

By road, of course. Without a doubt, Indonesia's trade competitiveness and future growth prospects depend on proper connectivity among economic centres and adequate mobility on road networks.

The six Road Advisory Notes (RAN) that comprise this edition take a comprehensive look at the strategies needed to ensure that Indonesia's road networks support the country's economic and social development. They were prepared as part of IndII's efforts to offer assistance to our Indonesian counterparts as they think strategically about infrastructure policy and planning. In turning this *Prakarsa* over to the RAN, we've made a slight departure from our usual formula, but our decision to do so reflects the urgency of the messages the RAN contain and their relevance to all audiences who are striving toward a connected future for Indonesia. • CSW

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Infrastructure by the Numbers

2017

Year that Waskita Bumi Legundi (a joint venture between State-run construction firm Waskita Karya and Energi Bumi Mining) expects to complete the 30-km long Legundi-Bunder expressway, connecting the Krian subdistrict to Lamong Bay in Tanjung Perak, Surabaya.

<50%

Portion of the needed land that has been acquired by the Indonesian government in order to build the second segment of the Manado-Bitung toll road in North Sulawesi, which is considered crucial to connect Manado with the Bitung special economic zone.

40.5 km

Length of PT Astra International's toll road concession, the longest road concession in the Trans Java program.

35%

Increase in road length in Indonesia over the last 10 years. A significant portion of this is due to reclassification of sub-national roads.

300%

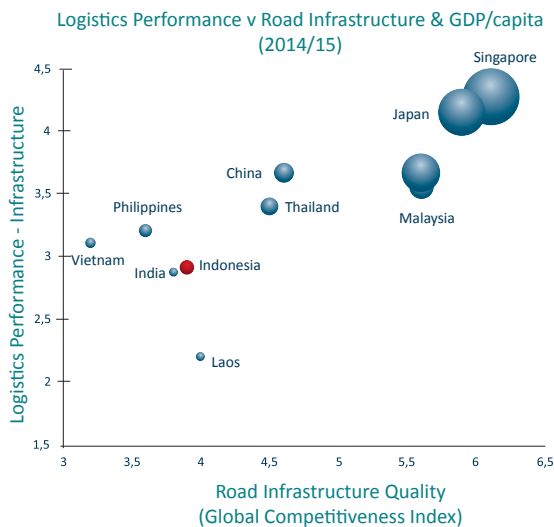
Increase in the number of vehicles in Indonesia over the last 10 years.

72

Indonesia's rank, out of 144 countries, in the World Economic Forum's Global Competitiveness Report 2014–2015 for quality of roads.

Road Advisory Note 01:

INDONESIA'S ROAD INFRASTRUCTURE CRISIS



Indonesia's roads urgently need modernising. They carry 70 percent of freight and 80 percent of non-urban passenger movements but, despite over Rp 30 trillion spent each year, two thirds of the 38,570 km of national roads are at or near capacity. Infrastructure quality and logistics performance – key to economic competitiveness – are lower than in most ASEAN countries. Connectivity is poor; average journey times are double those of competing economies. This limits economic potential and slows regional growth. Without improvement, Indonesia's roads will not support a G20 economy that aspires to a per capita GDP of USD 14,500 by 2025.

Indonesia's roads need modernising if they are to support a G20 economy with per capita GDP of USD 14,500 by 2025.

CAPACITY NEEDED

Traffic will grow four-fold in the next 15–20 years. Gridlock will be extensive unless at least 80 percent more capacity is provided by 2030:

- Nearly 7,300 km of expressways, a backbone network linking regional centres and transport nodes, halving travel times and carrying 40 percent of traffic
- 15,000–17,000 km of works to upgrade other arterial roads to higher capacity, safe, long-lasting standards.

To reduce travel times and avoid chronic congestion, road capacity needs to be increased by 80 percent over 15 years.

THE DELIVERY TASK

In the last 20 years, few new toll roads were built; national road capacity grew at only 1–2 percent p.a. To meet demand by 2030, annual production of expressways needs to rise to 500 km and national road capacity by over 5 percent p.a. This requires critical constraints to be addressed: planning, land, budget management, delivery capacity, institutional oversight, affordability and private sector participation. An early start on the huge task of land acquisition is crucial.

A quantum increase in output and quality is needed to deliver a modern network in this time.

PLANNING AND POLICY

Quick, reliable and safe connectivity needs a fully joined-up national expressway network. The previous view of toll roads as a local higher quality alternative to existing roads needs to be replaced by the concept of a contiguous, high-performance, long-life network which becomes the essential backbone for trade logistics. The Directorate General of Highways (DGH) should upgrade its planning capability to produce a long-term master plan that is fit for this new purpose.

An expressway network would form the backbone for efficient transport logistics.

LAND ISSUES

Land requirements are significant – 50,000 ha for expressways and 20,000 ha for realigning and expanding the arterial network – and are the highest risk to timely delivery. Land should be acquired well before construction. The land planning and consultation process should aim to meet needs for the next 50 years. Just securing land takes three to five years, half the time needed to deliver new roads.

An early start is needed to secure the necessary corridors.

BUDGET EFFICIENCY AND MANAGEMENT

Premature road/bridge failures inflate the budget needed for asset preservation by 30 percent. The policy of maximising opportunities for small-scale contractors has resulted in poor quality work. Urgent reforms are needed to improve asset management, extend asset life, improve project selection and quality, and employ better qualified firms through larger contract packages. Better risk-sharing with the private sector could be achieved through multi-year performance-based contracts, reducing life-cycle costs and budget needs.

Urgent reforms are needed to achieve budget efficiency and stronger performance.

DELIVERY CAPACITY

Indonesia's consulting and contracting capacity faces huge challenges with a program of this size. The expressway program will require 5–10 packages of USD 300–500 million p.a., and the renewal program about 20 packages of USD 30–50 million p.a. With few national firms capable of managing such large packages and the industry heavily dominated by state-owned contractors, the market needs to be opened to international players. The start of the ASEAN open market in 2015 provides such an opportunity. All major procurement should be by open international tender, for which credibility and transparency will be crucial. Partnering will help raise the capacity and competitiveness of domestic firms.

Foreign help would strengthen, not weaken, domestic players, but it needs best-practice procurement standards.

INSTITUTIONAL CHALLENGES

Government institutions also need to change. The toll road agency BPJT has not been able to deliver over the past 10 years, and the SOE (State-Owned Enterprise) assignment model planned for Sumatra may send adverse signals to the market. A new independent agency with high level authority may be needed, held accountable for delivering the expressway program. As a traditional government bureaucracy DGH has a structure and incentives that do not reward good performance or attract well qualified staff. In time it needs transforming into a semi-autonomous agency performing as an asset manager under a transparent and commercial business model, following overseas practice.

A radical institutional solution may be needed.

FINANCING

By 2030, the total expressway investment needed will amount to Rp 640 trillion in today's prices, in addition to over 300 trillion for arterial road upgrading (for further details, see *Road Advisory Note 02*). About Rp 500 trillion could be leveraged from the private sector if effective financing models were available. The current range of models (tolling, Viability Gap Funding, SOE assignment) needs to be broadened to avoid the impasse of the past 15 years and ensure effective private sector engagement. Models such as the Performance-Based Annuity Scheme (PBAS), in which the private sector finances design, construction, operation and maintenance in return for regular Government payments after project opening, are attractive to the private sector and have performed well elsewhere; they will need regulatory changes to be applied here. They also defer costs into the future and may be partially offset by tolls when appropriate.

There are better delivery options than the toll road model.

AFFORDABILITY

If the full scope for private investment is achieved, the remaining requirement for public spending over the next three

The program is affordable if private funding is used more effectively.

Renstra (*Rencana Strategis*, or Strategic Plan) is about Rp 60 trillion p.a., evenly split between road development and asset management. Annual public budget requirements for road development include Rp 5 trillion for expressway corridor preparation and Rp 20 trillion for capacity expansion and new roads; for asset management they include Rp 18 trillion for maintenance and Rp 7 trillion for services and administration. That Rp 50 trillion p.a. is not hugely more than during 2010–2014 and is less than a quarter of the annual fuel subsidy. Indonesia cannot afford not to have an efficient road network. It may have to shift more of the burden of paying for roads from taxpayers to users.

PRIORITIES FOR THE NEW GOVERNMENT

What should Indonesia's new Government do first? The most critical actions are to:

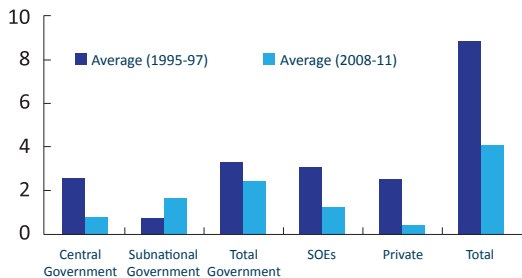
The new Government should start urgently preparing the project pipeline.

- Recognise the scale and urgency of the problem, and finalise the expressway and arterial renewal plan and its staging
- Prepare a financing plan, with State Budget (APBN) and private funding, and the necessary fiscal space
- Establish the institutional capacity and authority for delivery of the expressway network
- Update key regulations needed to facilitate delivery
- Announce other market confidence-building measures, including a project pipeline and a commitment to demonstration projects to showcase Indonesia's new approach.

Road Advisory Note 02:

FUNDING INDONESIA'S NATIONAL ROAD DEVELOPMENT

Indonesian Infrastructure Spending as Percentage of GDP



Source: World Bank, 2014

Rp 1,400 trillion is needed over the next 15 years to deliver a national road network that will meet the Indonesian economy's

needs for growth and competitiveness. Existing funding levels struggle to provide the required capacity, let alone meet a projected four-fold increase in traffic. The traditional toll road model has not served well: less than 200 km have been delivered in the last 20 years, and organisational, legal, financing and land problems have hindered delivery (see *Road Advisory Note 03*). A new approach to financing and delivering the program is needed.

Existing levels of funding and methods of delivering projects will not meet an expected four-fold increase in demand.

FALLING INVESTMENT

Government's infrastructure investment has fallen from over 7 percent of GDP to 3–4 percent since the Asian financial crisis. The comparable figure for China is 10 percent. While Indonesia invests a third of GDP in fixed assets, only 3.2 percent (a declining figure) goes to infrastructure like roads, rail and power.

FUNDING REQUIREMENTS

To meet demand, Indonesia needs to build nearly 7,300 km of expressways and 15,000–17,000 km of arterial renewal projects (including sections on new alignments) by 2030 (see *Road Advisory Notes 01, 02 and 03*). This will cost an estimated Rp 1,400 trillion (2014 prices). With the Government's funding capacity constrained by heavy outlays on fuel subsidies and a 3 percent cap on the budget deficit as a percentage of GDP, private financing needs to be tapped. Most renewal projects will be funded from the state budget (APBN). Most, though not necessarily all, expressway projects will be financed initially by the private sector, with costs recovered from tolls and government payments. For the whole period, these two programs will require about Rp 900 trillion of APBN funding and Rp 500 trillion of private finance.

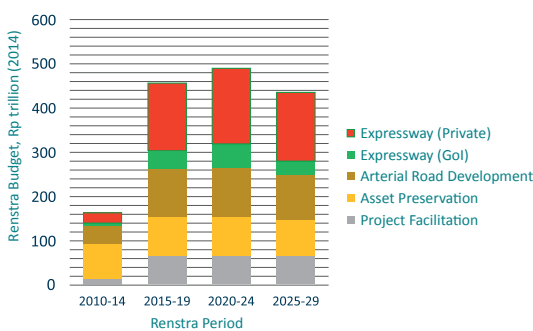
Infrastructure investment levels have fallen; they need to rise dramatically, with Rp 500 trillion of road investment coming from the private sector.

ADVANTAGES OF PRIVATE FINANCE

Private sector financing is not just a source of funds. International experience shows that when they are competitively tendered with the right performance incentives and allocation of risks, privately financed projects are delivered more quickly, more economically and with better quality than conventional public sector procurement. The life-cycle economies of bundling design, construction, operation and maintenance usually outweigh the extra costs of private finance.

Privately financed road projects can offer better value-for-money than conventional procurement.

Funding Allocations for Road Activities in Five-Year Plans



CONDITIONS FOR PRIVATE FINANCE

Globally only 0.8 percent of the USD 50 trillion in managed institutional funds is invested in infrastructure. Indonesia should target these sources. It ought to be possible: Indonesia has a large backlog of projects, its GDP growth is around 6 percent p.a., and it already attracts high levels of foreign direct investment. Over the longer term, Indonesia will no doubt broaden its sources of infrastructure financing by developing a domestic bond market, tapping growing domestic savings, participating in regional stock listings, and establishing a secondary market for project refinancing.

Barriers need to be overcome in order to attract private finance.

But it needs to rebuild

A firm project pipeline, best-practice governance and procurement arrangements, and a transparent regulatory environment are needed.

market confidence in the short term first. Shorter term constraints include the high cost of domestic credit, an immature bond market, exchange-rate risk when costs are in US dollars but revenues in Rupiah, short tenors and high margins for Rupiah debt, and – most importantly – the lack of a well prepared project pipeline and an uncertain legal and regulatory environment.

REBUILDING MARKET CONFIDENCE

Private sector confidence can be improved through better project preparation and structuring projects to manage these risks. Improving the flow of transactions is critical. Institutional capacity needs improving to prepare projects efficiently and manage the procurement process transparently. This may require a dedicated Expressway Authority capable of demonstrating a break from business-as-usual. Land should be acquired prior to tender – an urgent preparation task for the expressway and renewal programs. A level playing field is needed between state-owned and private contractors. Regulations should be changed to encourage transparent, open procurement and governance arrangements and best-value project delivery models.

BETTER RISK ALLOCATION

Regulations should be updated to facilitate life-cycle, performance-based delivery models like Performance-Based Annuity Schemes (PBAS) as an alternative to commercial toll roads and conventional procurement. International financiers are no longer willing to carry toll revenue risk. Tolls could be charged independently instead, and used to make payments under PBAS arrangements. This is done in many other countries. It makes projects more attractive to the private sector and cheaper for government. PBAS deals more effectively with exchange-rate risk too. And the Government can always sell a PBAS concession once reliable toll revenues have been established, recycling the sale proceeds into new road projects.

Performance-based delivery models like PBAS offer risk allocation that is more attractive to the private sector.

Implementing PBAS will require changes to procurement regulations, government accounting and budget rules. Best-practice governance and transaction management are critically important, as is close market engagement. PBAS should draw on established, bankable agreements and avoid hybrid delivery models that increase perceived risk.

A break from business-as-usual can take the form of demonstration projects.

Demonstration projects would show the Government's new approach. PBAS candidates have been identified and can be prepared and delivered in Renstra (*Rencana Strategis* or Strategic Plan) 2015–2019. These would illustrate the effectiveness of the approach and allow a value-for-money comparison with alternative delivery methods.

PRIORITIES FOR THE NEW GOVERNMENT

What should Indonesia's new Government do first? The most critical actions are to:

- Prepare a long-term pipeline of projects with realistic implementation timelines
- Adopt best-practice, bankable commercial terms and contracts, including measures to protect investors from currency risk, and introduce independent arbitration for handling disputes
- Amend existing regulations to facilitate PBAS and other longer-term, performance-based methods of delivery
- Use demonstration projects as confidence-building measures for the private sector, starting with PBAS to demonstrate a break from business-as-usual
- Strengthen government's institutional capacity to prepare and deliver the program

And, in the longer term:

- Expand long-term Rupiah financing capacity, bond financing, and alignment with ASEAN capital markets, and foster the participation of institutional investors, such as pension and sovereign wealth funds
- Plan to use savings from the fuel subsidy to increase APBN allocations to road infrastructure.

Road Advisory Note 03:

EXPRESSWAYS

With two thirds of the national road network already congested and traffic expected to grow three- to five-fold over the next 20 years, Indonesia needs a new backbone of expressways (see *Road Advisory Note 01*). The view of toll roads as local alternatives to arterial roads needs to be replaced by the concept of a contiguous high-performance road network: an essential backbone for land transport logistics. The main drivers are: 50 percent reduction in travel times in key corridors through more direct routing and lower congestion, reduced logistics costs, regional productivity and income redistribution. These expressways (*jalan bebas hambatan*) would function like the interstate highways in the USA, the National Trunk Highway System of China and the *sistem lebuhraya* of Malaysia, and would form part of the trans-ASEAN transport network.

Indonesia needs a world-class expressway network to support economic and social development.

THE EXPRESSWAY NETWORK

Expressways would link strategic centres – economic, population, inter-modal (e.g. ports) and administrative – and would eventually cover Sumatera, Java, Bali, Sulawesi and Kalimantan. They would provide a high level of service, with most built as multi-lane dual carriageways. Phasing can be used to reduce the initial investment burden, but land would need to be acquired and intersections designed with a view to the ultimate capacity. Some would be tolled as commercial toll roads; others might be tolled independently as Performance-Based Annuity Scheme (PBAS) projects (see *Road Advisory Note 02*).

The 7,000 km expressway network would be a new backbone linking centres across Sumatera, Java, Bali, Sulawesi and Kalimantan.

Costing about Rp 640 trillion (2014 prices), the program would deliver almost 7,300 km over the three Renstra (*Rencana Strategis*, or Strategic Plan) periods to 2029: 5,500 km of new alignments, and nearly 1,700 km of toll road concessions already planned.

THE FIRST PRIORITY: SECURING CORRIDORS

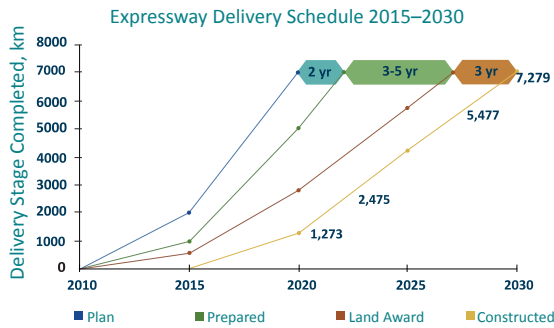
With a lead time of five to seven years, work must start now on project preparation and land acquisition. Corridors should be secured to meet needs for 50 years. In 2015–2019, about 2,500 km of corridors will need to be prepared (route optimisation, preliminary design and impact assessments) and some 15,000 ha of land acquired.

With a lead time of five to seven years, work on securing expressway corridors must start now.

DELIVERY CAPACITY

Few new toll roads have been built in the last 20 years. 875 km of concessions, some dating back to 2006, have not started construction. Only 160 km of contracts are out to tender. Institutional, legal, financing and land issues have hindered delivery, including limited capacity in the toll road agency (BPJT) and among concessionaires. The sector is dominated by PT Jasa Marga, now a dedicated state-owned concessionaire. Few of its partners are specialist road contractors. There is only one foreign contractor. Consultant skills are limited. Few consortia have the skills to optimise design, construction and operational costs over the concession period. Lack of transparency in procurement has resulted in low market confidence, and deters new players.

Delivering the program will require assistance from experienced international companies to partner with local firms.



International financiers, contractors and consultants will be key participants if the required standards of quality and value-for-money are to be achieved (see *Road Advisory Note 02*). Private sector involvement is essential to deliver the huge expansion in output needed: in addition to the 7,300 km of new expressways, 15,000–17,000 km of improvements to the rest of the national network are needed. The delivery rate needs to increase to 600 km/year, five times higher than present.

CONTRACTING AGENCY

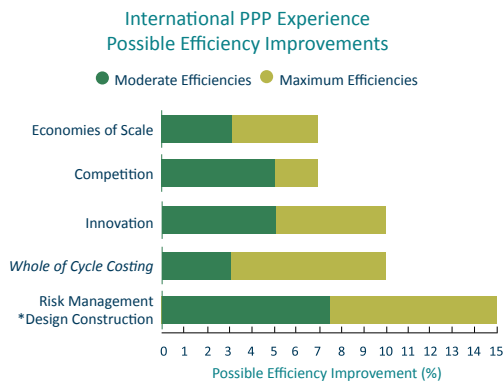
To rebuild market confidence, an autonomous and accountable Expressway Authority (EA) should be created and should follow best international procurement practice. Compared with BPJT, the EA would have stronger governance (Board direction, performance agreement with the Minister), increased management flexibility (procurement and employment rules) and possibly even the ability to manage toll collections, so that surplus toll revenue could be used for other expressway projects, reducing the need for State budget (ABPN) support. An EA could reasonably be established in three years. In the meantime BPJT will need organisational change and legal strengthening, measures that are within the authority of the Minister to make.

A dedicated Expressway Authority would rebuild market confidence.

SUPPORTING EXPRESSWAY DELIVERY

Changes within BPJT will not immediately create the required skills, capability and experience. Help will be needed initially from specialist international advisory firms held responsible for

Specialist assistance will be needed for corridor planning and project procurement.



transferring skills to the Directorate General of Highways (DGH) and BPJT/EA. They should support two tasks: the preparation phase (from preliminary design to secured corridor) and the procurement phase (business case preparation, delivery model selection, procurement and supervision). A new Expressway Directorate in DGH is seen as being responsible for the first of these, and BPJT (ultimately the EA) for the second.

Alternative delivery models need to be promoted, including a PBAS demonstration project.

BETTER FINANCING AND DELIVERY MODELS

Expressways have usually been procured through Build-Operate-Transfer (toll roads) and conventional procurement. Recently the viability gap funding mechanism has been introduced to reduce up-front costs and risks and make the project more affordable.

Other countries use an alternative approach – PBAS – to deliver major road projects where innovation and life-cycle economies are a priority (see *Road Advisory Note 02*). Well accepted by the market, PBAS has not yet been used in Indonesia. There is a strong case for implementing a demonstration PBAS project. Work has already started to identify potential projects from the pipeline of expressways.

*Road Advisory Note 04:***NON-EXPRESSWAY ARTERIALS**

Apart from expressways (see *Road Advisory Note 03*), the remaining arterial road network, currently 38,570 km, will need renewal – improving to higher capacity, safety, alignment and bridge/pavement standards – and better maintenance if Indonesia’s growth, connectivity and safety objectives are to be met. These arterial roads will still carry over 60 percent of all inter-urban traffic. Their renewal is needed:

- To overcome slow travel speeds and high safety risks, especially where heavy vehicles are common
- To avoid chronic congestion by increasing capacity to meet a projected fold-fold growth in traffic in the next 15 years
- To provide better value-for-money by reducing the need for frequent rehabilitation and widening

ARTERIAL ROAD RENEWAL AND MANAGEMENT TASKS

New planning tools introduced with IndII assistance show that the arterial road network requires some 6,000 km of major renewal projects on new and existing alignments by

This requires a major program of road renewal (6,000 km of major projects by 2029) and better maintenance.

2029, even with the planned expressway program. These would bring the network to modern standards of design speed, alignment, capacity (both two- and four-lane) and safety. Some 2,600 km of new/missing links, strategic roads and bypasses will also be needed. In addition, 3,670 km of reconstruction will be needed to strengthen pavements to carry expected truck loads, avoid rapid deterioration and reduce life-cycle costs.

Together with improved maintenance, these arterial road programs will amount to nearly Rp 700 trillion (2014 prices), in addition to the Rp 640 trillion needed for the expressway program.

DELIVERY QUALITY AND CAPACITY

For this investment to be effective, design and construction standards must improve. Currently, government spending achieves poor value-for-money because of numerous small, fragmented contracts (most for less than 5 km, which avoids requirements for design and construction quality management), poor designs, work quality and supervision, weak pavement structures and avoidable water damage. Procurement and project management lack quality incentives and controls. As a result, the local consulting and contracting industries lack the necessary expertise, quality and capacity. The focus needs to be on:

A host of changes are needed to raise the quality of design and delivery to the levels necessary, focusing on the consulting and construction industries.

- Strengthening contract management procedures and penalties, with larger contracts to allow better-quality contractors to participate and, for more complex projects, the possible use of the Performance-Based Annuity Scheme approach (see *Road Advisory Notes 01, 02 and 03*)
- Extending the use of independent technical audits, pioneered by the Australian Government-funded Eastern Indonesia National Roads Improvement Project, to verify output performance, including safety
- Strengthening the quality of consultant and contract management staff on an industry-wide basis through training, mentoring and professional certification
- Improving bridge and pavement design standards to accommodate realistic truck mass and axle loads (already underway), and strengthening enforcement of truck overloading restrictions
- Improving flood mitigation and drainage (with account taken of climate change), both as a key design element and as a priority for maintenance

- Reorganising and strengthening the Directorate General of Highways (DGH) to provide better technical focus for planning, project delivery and asset management tasks, including a special unit for preparing major expressway and renewal projects.

THE URGENT TASK OF LAND ACQUISITION

Like expressways, the pace of arterial road renewal depends critically on land acquisition. From 2016, at least 4,652 ha will be needed over a 10–12 year period at a cost of Rp 6.9 trillion (2014 prices). Law no. 02/2012 specifies the process. Dedicated DGH teams will be needed, working in close cooperation with local governments and the Board of Land Affairs (BPN). DGH Renstra (*Rencana Strategis*, or Strategic Plan) targets for 2015–2019 will not be met if this urgent task is not begun soon, starting with corridor definition and preliminary design.

4,652 ha of land acquisition is needed; if this is not done soon the program will stall.

ASSET MANAGEMENT

Better arterial roads won't last long unless they are maintained properly. Little preventive maintenance is done; the current approach uses frequent rehabilitation to achieve *mantap* (stable) condition targets and justify budget allocations. This creates an expensive cycle of deterioration and repair, leading to unnecessary and excessive life-cycle costs.

The life-cycle asset management task should be delegated to the Balai, where new planning tools are being introduced that will maximise value-for-money.

Asset management is best done at a regional level where information on road conditions is available. To maximise value-for-money, it should be on a network basis, using tools that optimise the life-cycle use of funds to prioritise treatments, with account taken of the timing of capital works for the expressway and road renewal programs. With IndII assistance, these tools are being introduced progressively in two DGH Balai on Java; they should be rolled out progressively throughout the country. At the same time, the Balai should receive delegated authority and accountability to manage their regional networks, as well as training and mentoring in the use of these new techniques.

PRIORITIES FOR THE NEW GOVERNMENT

What should Indonesia's new Government do first? The most critical actions are to:

- Reorganise and strengthen DGH to provide better focus for planning, delivery and asset management tasks
- Establish dedicated teams in DGH to begin the urgent tasks of route selection, preliminary design and land acquisition for renewal projects identified by DGH's new network planning tools
- Ensure high quality design standards for the renewal program, including long-life pavements and bridges, and incorporating strong safety features
- Strengthen contract management and independent verification procedures and provide associated training, mentoring and professional recognition to design and construction management staff
- With associated training and mentoring, expand the use of the new asset management system to all Balai, and use this as the basis for maintenance works scheduling
- Strengthen the formal role and accountability of the Balai for asset management
- Give greater attention to rectifying the design and maintenance factors that cause deterioration, notably drainage, flood/river protection, bridge repair, shoulder protection and safety.

The new Government should start urgently preparing the road renewal project pipeline, acquiring the land, strengthening the private sector capacity to deliver with improved quality, and putting in place the institutional capacity to manage assets at the Balai level.

*Road Advisory Note 05:***USING INCENTIVES TO IMPROVE LOCAL ROADS****THE PROBLEM**

Local roads connect villages to markets, link people with essential services, and are crucial for trade, investment, growth, security and welfare. Of the countrywide network of 502,724 km, the vast majority are subnational: 46,164 km of provincial roads and 376,102 km of district and urban roads. While 93 percent of national roads were in stable (*mantap*) condition in 2013, for provincial roads this proportion was only 68 percent, and district roads were worse, at less than 50 percent. Connectivity with the national network is often poor.

Local roads are important, but are not in good condition.

THE CAUSE

Budgets (often inadequate) go to visible projects but maintenance is neglected, hastening deterioration. A short-term emphasis on rehabilitation or reconstruction detracts from a long-term view of the network. Supervision is poor and construction quality low. Local Government (LG) agencies have limited capacity.

The focus needs to shift from capital works to better maintenance.

There are few incentives to do better. Agencies are not held accountable for the functioning or condition of their networks. Nor are they 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 is there sanction if they don't. Road conditions are not reliably monitored. Users' costs are higher than they need be, undermining social and economic development efforts.

Local road agencies are not held accountable for the functioning or condition of their networks.

ADDRESSING THE PROBLEM

Before Law no. 38/2004, the Directorate General of Highways (DGH), in what is now the Ministry of Public Works, was in charge of all roads, with the Ministry of Home Affairs managing roads at the *kabupaten* level and below. This centralised approach to local road management has obvious merits, but it is not consistent with the objectives of Law no. 22/1999 on regional autonomy and its subsequent amendments.

The national network is better managed; a similar approach could be applied to local roads using conditional grants.

DGH uses network planning and asset management tools to prioritise spending on the national network. With additional resources, it could do the same for subnational roads, helping to support better projects, higher standards and better value-for-money, even in the context of regional autonomy. A possible key lies in using conditional grants.

PRIM

The conditional grant approach is what IndII's Provincial Road Improvement and Maintenance (PRIM) program is trialling in Nusa Tenggara Barat. PRIM uses conditional grants to reimburse a proportion of road maintenance costs if the works follow agreed procedures and meet agreed standards for prioritisation, budgeting, design, procurement, supervision and execution. Output performance is independently verified by DGH; if standards are not

PRIM demonstrates how conditional grants can improve road maintenance.

met, the grant is reduced. Bappenas and the Ministry of Finance (MoF) are understood to be interested in applying the conditional grant model more widely.

DAK

Special grants, *Dana Alokasi Khusus* (DAK), already finance LG expenditures on infrastructure projects that align with national priorities. DAK accounts for 7 percent of inter-government transfers. (*Dana Alokasi Umum*, or DAU, is much larger at 63 percent, but it mainly pays for salaries.) For roads, DAK is used for rehabilitation and upgrading (it is limited to capital works); Rp 30 trillion was allocated in 2010–2014. Guidelines are issued by DGH, but output verification is weak. The World Bank has been helping strengthen the link between disbursement and output, with sample verification by the Indonesia Investment Coordinating Board and the State Finance and Development Supervisory Board, but PRIM-like technical verification is still missing.

DAK also has the potential to incentivise better network development through capital projects, complementing the PRIM approach.

INCENTIVES FOR NETWORK DEVELOPMENT

Making transfers for capital projects conditional on verified output could offer a way to strengthen the technical planning, delivery and value-for-money of LG road projects that are in line with national connectivity priorities (e.g., on links connecting with the national network). This would involve DGH in the technical verification process – with implications for institutional reorganisation and strengthening – and would have the following conditions for disbursement:

Conditions could be attached to DAK disbursements, with output verified by DGH.

- LGs requesting support should maintain and share with DGH a database on traffic and road conditions, updated by independent surveys.
- LG road projects proposed for financing should be screened by DGH's network planning tools for national priority, functionality, appropriate standards and benefits.
- Plans, designs, contract documents, procurement and supervision procedures should be in accordance with DGH guidelines and standards.
- Technical outputs, and the application of guidelines and standards, should be independently verified by DGH prior to approval of disbursement.

Reimbursements would be based on a reference set of unit prices prepared by DGH and would cover the costs of surveys, designs, supervision and implementation.

INCENTIVES FOR MAINTENANCE

Similar arrangements modelled on PRIM might help strengthen (non-capital) maintenance of local roads. These would also involve central government grants that are conditional on verified performance in carrying out physical works and meeting DGH standards for needs assessment, planning (using prescribed asset management tools), budgeting, procurement, supervision and implementation, just as for PRIM. The conditional grants might either be a subset of DAK (but for non-capital works), or might use the system of road preservation funds envisaged by Law no. 22/2009 on road traffic and transport. In either case, development should build on the experience of PRIM.

PRIM's approach using conditional grants could be mainstreamed to incentivise better local road maintenance with performance verification by DGH.

ACTION PLAN

Local roads could be better delivered and maintained by using the incentive of conditional grants from central government. The key steps to make this work are for:

DGH will need a special unit to handle the subnational roads task.

- DGH to review the subnational road links in the light of economic and traffic forecasts, and to transfer to the national network those more appropriately classified as national in function
- DGH to work with MoF to showcase and mainstream the use of conditional, performance-based grants
- MoF to either (i) amend the regulations governing DAK under Law no. 33/2004 to allow for conditional output-based disbursement and provide for additional non-capital maintenance items; or (ii) channel grants to LGs for maintenance through road preservation funds established under Law 22/2009
- DGH to develop technical standards, procedures, output specifications and reference unit costs governing both capital and non-capital works, including arrangements for independent verification of performance
- DGH to establish an Echelon II unit responsible for subnational roads with the capacity to carry out (with the assistance of consultants) performance verification and provide technical support for both capital and maintenance grant components.

*Road Advisory Note 06:***ROAD SAFETY IN INDONESIA**

In middle income countries, rapid motorisation commonly results in alarming increases in road fatalities. In Indonesia over 30,000 road deaths are recorded annually, the third leading cause of death after coronary disease and tuberculosis. Health scares like SARS and Ebola receive wide attention, but not so the daily toll of road deaths. The public appears largely to ignore the problem.

Over 30,000 Indonesians are killed on the roads each year.

Poor road safety is also a serious economic issue. Young working-age males represent a disproportionate percentage of victims. Families are driven into poverty by the cost of prolonged medical care, the loss of a breadwinner, or the cost of caring for people with disability. Studies show that the economic cost of road crashes in Indonesia is as much as 3 percent of GDP.

Road fatalities are the third leading cause of death in Indonesia.

Reliable information is only now becoming available through a new system – the Indonesia Road Safety Management System – (IRSMS) in the Indonesian Police Traffic Corps (Korlantas). It includes crash data by severity, type and location, allowing targeted road safety interventions to be planned and monitored. It shows that most fatalities are vulnerable road users: pedestrians, cyclists and motorcycle riders. The 15–25 age group, arguably inexperienced and lacking awareness of danger, comprises a quarter of all fatalities. The data also show that many motorcycle riders have no driving license, and underage riding is commonplace.

The economic impact of road carnage is equivalent to 3 percent of GDP. 15 to 25 year olds comprise 25 percent of all road fatalities.

In the past there appeared to be an acceptance of the inevitability of death on the roads, but it needn't be so.

A systematic long-term approach to road safety can reduce road deaths by up to 90 percent.

In countries where a systematic approach has been implemented, the number and severity of accidents has been reduced by up to 10-fold over a 30-year period. The same can be done in Indonesia.

ACHIEVEMENTS

Since 2011, the Government has participated in the UN Decade of Action for Road Safety 2011–2020. A National Road Safety Master Plan (RUNK 2011–2035) was completed in May 2011, with an understanding that road safety is a shared responsibility that can only be addressed through multi-agency cooperation. RUNK aligns with the UN's Five Pillars for Road Safety: Road Safety Management (to encourage stakeholder coordination and partnerships), Safer Roads, Safer Vehicles, Safer Road Users, and Post-Crash Response.

Indonesia has developed a comprehensive Road Safety Master Plan with ambitious targets for death and injury reduction.

The Plan aims for an 80 percent reduction in crash rates by 2035:

Crash fatality rate	2010 (baseline)	2020 (50% reduction)	2035 (80% reduction)
Per 10,000 vehicles	3.93	1.96	0.79
Per 100,000 population	12.86	6.57	2.63

Several road safety programs are underway on the National Road network, but recent analysis shows that nearly three quarters of road deaths occur on subnational roads, where awareness and capacity are low. This will need attention if the targets are to be met.

WHAT NEEDS TO BE DONE?

RUNK 2011–2035 commitments show that stakeholders are beginning to appreciate the seriousness of the problem and the urgent need for action. But road safety programs take time to show results. Indonesia should follow the experience of other countries that have shown that sustained road safety efforts eventually achieve results. The Master Plan will come to nothing unless planned actions are implemented effectively, with all key ministries and stakeholders committed to measurable goals. Monitoring of effectiveness will also be essential, with strategies adjusted accordingly. Improving the quality of accident data will allow more effective targeting of actions and better assessment of performance. With most road fatalities occurring on provincial and local roads, it is essential that local solutions are developed, with direct community involvement. NGOs and community groups can play a role in influencing how local government budgets are allocated to ensure effective and sustainable safety initiatives.

Targeted road safety programs for the key ministries need to be funded.

PRIORITIES FOR THE NEW GOVERNMENT

Saving lives on Indonesia's roads requires adequate funding, strong coordination, improved technical capacity and greater public awareness. Priority actions include:

- Strengthening the role of Bappenas in coordinating road safety at the national level, between key agencies and levels of government *Strong management oversight by Bappenas and a significant increase in funding are needed to keep the Road Safety Master Plan on track.*
- Establishing a dedicated road safety management function in Bappenas, supported by a Secretariat and Working Groups for each RUNK Pillar *NGOs and community groups have a key role in ensuring that road safety issues are addressed and initiatives implemented at the local level.*
- Ensuring that there is a full public disclosure of crash data, road safety initiatives and budget allocations *International support would help build the needed capacity.*
- Using local Road Traffic and Transport Forums (RTTFs) as a way of involving NGOs and community groups in identifying needs and prioritising initiatives
- Increasing the level of funding by all levels of government to the equivalent of 0.11 percent of GDP (based on country comparisons), to include (i) increased State Budget (ABPN) allocation to road safety capacity building and investment; (ii) new performance-based, conditional grant funding to

incentivise road safety outputs by subnational governments; (iii) increased spending by PT Jasa Raharja on road safety initiatives; (iv) a new road safety fund financed from user-pay charges and increased fines; and (v) increased support from international funding agencies and corporate sponsors

- Seeking continuing donor support for (i) capacity-building within the Directorate General of Highways, Directorate General of Land Transport and the Police, and (ii) a hibah-like conditional grant program through the Ministry of Transport to improve signage, line-marking, signals, road furniture and crash response by national, provincial and local governments
- Building capacity among road safety professionals through training, mentoring, professional certification and support for professional associations.

THE EXPERT VIEW

Question: What do you think is the most urgent obstacle to address so that Indonesia's national road network can be developed? What actions should be taken to address this obstacle?

► **Ir. Harris H. Batubara, M.Eng.Sc**

Director of Programs
Directorate General of Highways
Ministry of Public Works

“Among other things, obstacles to the provision of the national road network include the facts that more than 80 percent of freight traffic and more than 82 percent of passenger transportation traffic use the road modality. Further problems are overloading, uncontrolled land use, and low fulfillment of readiness criteria – particularly land procurement – in expressway construction. In addition, packaging projects in relatively small pieces does not sufficiently stimulate quality improvement in packages/contracts/*Pejabat Pembuat Komitmen* [commitment/area manager]. Performance-based contracting has not been fully implemented yet, and the national budget for the road sector is limited.

Alternative solutions to the above-mentioned problems are, among other things: sharing the demands made on road transport with other modes of transportation, particularly with railway and sea transport; modernising the existing national road network and constructing expressways; applying the right technologies and designs; giving support to public transportation through the provision of national road network for BRT (Bus Rapid Transit) in urban areas; the fulfilment of readiness criteria (feasibility studies, detailed engineering designs, environment impact assessments, land acquisition etc.), the application of Performance-Based Maintenance Contracts and Performance-Based Annuity Schemes; and increasing the effectiveness and efficiency of national budget utilisation, balanced with innovative and creative financing models (loans/grants, Islamic bonds, etc.).”

► **Bambang Prihartono, MSCE**

Director of Transportation, Bappenas

“The current national road network constitutes only about 8 percent of the total road network in Indonesia, which is 479,079 km. This situation is not adequate to support building connectivity and the national logistics system, especially in terms of growing and developing new economic centres throughout the national economic corridors. The national road network needs to be developed, in particular to support accessibility and connectivity between local growth centres. In key corridors like Pantura Java and across East Sumatera, overloading issues still cannot be resolved. Coordination between the national and Local Governments has not been functioning well. Certain relevant stakeholders along with weak law enforcement contribute to the difficulties in handling overloading problems. Contracts for road works that use Performance Based Contracting can be one of the alternatives for midterm road handling.

In rural and border areas, issues related to protected forest land often lead to delay in the development of road construction. Coordination at the ministerial level is required, as well as improving regulatory aspects related to the use of protected forest for the public interest. On the other hand, Indonesia's geographic conditions, which include a significant amount of disaster prone areas and unstable soil structures, require extra reserves to fund emergency disasters in order to maintain services to the community.

To maintain the level of services, road quality must be maintained in accordance with the planned technical life for each road. The necessary funds must be provided in order to preserve the quality of the existing roads. In addition, community involvement in monitoring and maintaining roads in self-managed ways can be an alternative in order to overcome potential road damage through reviving the existence of *mandor jalan* or "road foremen", whose job it is to anticipate minor damage so that the damage can be fixed before it becomes too severe.

In the draft technocratic paper of the National Midterm Development Plan (RPJMN) 2015–2019, the government has set goals that include a toll road construction target of 1,195 km; maintaining and increasing the 43,770 km existing road capacity; and constructing 5,200 km of new road to meet the accessibility needs of disadvantaged areas, urban mobility and inter-regional connectivity, inter-island transport, and transport between cities and centres of national activity, both regional and local.

To achieve this target, the biggest challenge is land provision, in addition to strengthening capacity building of the Directorate General of Highways' human resources, as well as reinforcing the capacity of Indonesia's construction industry. The government needs to provide special allocation funds for land acquisition for national roads and highways. In addition, other forms of contracts with performance based incentives, through the Performance Based Annuity Scheme (PBAS) implementation, need to be supported and continuously accompanied by improvements in road regulations.

The role of local road in building regional connectivity is also very important. The length of the local road (provincial and kabupaten/kota) network is up to 92 percent of the total existing road network. Both quantity and quality need to be increased. In this regards, synchronising the planning and implementation of national and local road development, including investment planning, through RP12JM (Rencana Terpadu Pengembangan Investasi Jangka Menengah, or the National Mid Term Integrated Development Investment Plan) could be one of the alternatives in order to synergise the development of infrastructure among kabupaten, provincial and national levels. Apart from that, grant schemes for local roads could be one of the alternatives that can be developed into a form of funding deriving purely from Rupiah."

Outcomes:

ENCOURAGING INFRASTRUCTURE RESEARCH

The Australian Government-funded Australia-Indonesia Infrastructure Research Awards (AIIRA) program offers research grants to Indonesian academic and civil society organisations that are involved in infrastructure policy, planning and delivery. To be eligible, local institutions must partner with international research bodies. The grant program is designed to enhance the skills and experience of Indonesian institutions so that they will then be able to provide higher quality research when commissioned by Government of Indonesia agencies. AIIRA is now in its second round of grant applications and has generated interest in a range of infrastructure-related themes. Peer reviews have been completed, a short-listed set of applications have been approved by an Expert Panel, and grants have been awarded. Successful Round 2 research topics include how to improve irrigation infrastructure in order to increase food and water security in Eastern Indonesia; planning future sanitation infrastructure; strengthening governance arrangements for small city and town sanitation; measuring the social return on investment for water and sanitation projects in a Local Government in East Java; investigating Shariah-compliant financing; and alternative transport infrastructure investment scenarios to support the Government of Indonesia's Economic Transformation Master Plan (MP3EI).



In our Next Issue:

VOICES FROM THE PRIVATE SECTOR

Understanding infrastructure policy and planning requires knowledge, insight, and vision. During discussion and debate about the best way forward, we tend to hear mostly from the public sector – the leaders who shape policies, write laws, and implement regulations. But leaders from the private sector are deeply concerned the dynamics of infrastructure development as well. They are the people who are waiting for the right risk settings before committing to investing in Indonesia's infrastructure. The January 2015 Prakarsa offers a platform for key private sector players to provide their perspectives on what actions the new government must pursue to improve the landscape for new investment in Indonesia. Their viewpoints can enrich the debate over the best directions for future Indonesian infrastructure policy.