

INDONESIA'S SUMMARY TRANSPORT ASSESSMENT

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ABBREVIATIONS

APBN	National Budget Allocation Plan
ADB	Asian Development Bank
AEC	ASEAN Economic Community
AFD	Agence Française de Développement
APBN	National Government Budget for Income and Expenditure
ASEAN	Association of South East Asia Nations
ASI	avoid, shift, improve
ASR	Assessment, Strategy and Roadmap
ATO	automatic train operation
AT	approach time
ATCS	area traffic control system
ATP	automatic train protection
ATS	automatic train stop
BAPPENAS	National Development Planning Agency
BOT	build, operate, transfer
BRT	bus rapid transit
CDTA	capacity development technical assistance
CNG	compressed natural gas
CPS	Country Partnership Strategy
DBH	Revenue Sharing Fund
DAU	General Allocation Fund
DFAT	Australian Department of Foreign Affairs and Trade
DKI Jakarta	Special Region Capital Jakarta
ET	effective time
FY	fiscal year
GDP	gross domestic product
GHG	greenhouse gas
GIZ	German agency for technical cooperation
HR	human resources
IIA	Infrastructure Investment Agency
IIGF	Indonesia Infrastructure Guarantee Fund
ITS	intelligent transport system
JICA	Japan International Cooperation Agency
KfW	German Development Bank
LNG	liquid natural gas
LPG	liquid petroleum gas
LPI	logistics performance Index
LRT	light rail transit
MPWH	Ministry of Public Works and Housing
MOT	Ministry of Transportation
MRT	mass rapid transit
MRV	measuring, reporting, verifying
NMT	non-motorized transport

PCU	passenger car unit
PELRA	Pelayaran Rakyat / traditional community-based shipping
PPP	public private partnerships
PPTA	Project Preparatory Technical Assistance
P&R	park and ride
PSO	public service obligation
PT.KAI	Indonesian Railway Company
Rp	Indonesian Rupiah
SMI	PT Sarana Multi Infrastuktur (SOE)
SOE	state-owned enterprise
SSS	short-sea shipping
TA	technical assistance
TDM	transport demand management
TEU	twenty-foot equivalent unit
WB	World Bank
WT	waiting time

NOTE

- (i) In this report, "\$" refers to US dollars.

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I SECTOR ASSESSMENT

A. Introduction

1. This sector assessment documents ADB's current overview of the transport sector of Indonesia and the strategic investment priorities of the government. It highlights sector performance, priority development constraints, government plans and strategy, past ADB support and experience, and other development partner support.

B. Overall Sector Context

2. With the inauguration of Indonesia's new government in October 2014, transport issues and infrastructure investments have gained greater attention. The country's present National Medium-Term Development Plan 2015–2019 (RPJMN 2015–2019) highlights infrastructure development for connectivity and accessibility, enhancing the maritime sector, integration of remote and frontier regions, shifting transport from road to rail and shipping, and tackling urban mobility. RPJMN 2015–2019 focuses on improved competitiveness through greater connectivity and productivity, and addressing inequality by prioritizing development in eastern Indonesia. The foundations of this sector assessment are based on RPJMN 2015–2019;¹ the government's work plan RKP 2015; RENSTRA, the strategic plans of the Ministry of Transportation and the Ministry of Public Works and Housing; the national budget allocation plan APBN; and a "Blue Book" containing a compilation of projects focusing on international development cooperation partnerships.

C. Core Sector Issues, Causes and Effects

3. **Development constraints:** To avoid the middle-income trap, Indonesia needs to shift from a pattern of resource-driven growth, dependent on low cost labor and capital, to a knowledge-based growth process, geared towards high productivity and innovation. To achieve this it needs better connectivity across the nation, and better infrastructure through innovation and improving human resources.² Specifically, policymakers need to upgrade infrastructure, reduce red tape for business, increase research and development spending, and improve the quality and relevance of tertiary education. High economic growth in the last decade has worsened income inequality, as shown by the rising Gini coefficient³—most severe in urban areas, where growth is concentrated in the western regions of the country, whereas rural, remote, and frontier areas still lack reliable connections with cities, markets and services.

¹ RPJMN 2015–2019 consists of three volumes: (i) national development planning agenda; (ii) sector development planning agenda; and (iii) regional (territorial) development agenda, and a matrix attachment indicating individual projects, quantitative indicators, and goals for the 5-year period 2015–2019.

² The World Bank's Knowledge Economy Index—which measures country performance based on four pillars: (i) economic incentive and institutional regime; (ii) education; (iii) innovation; and (iv) information and communications technologies—ranked Indonesia 107th out of 145 countries.

³ A measure of statistical dispersion intended to represent the income distribution of a nation's residents, and the most commonly used measure of income inequality.

4. Rapid urbanization places a heavy strain on the provision of basic services, adding to urban congestion and the degrading of urban resources. A sharp rise in the number of young male job seekers from rural areas and the resulting aging of the rural population is adding to urban–rural inequality and threatening the country’s ability to meet its basic food needs. Although the government is far from reaching its declared goals to provide accessibility for all, it is clearly committed to sustainable transport paradigms and seeks integration with remote and frontier areas, tackling the urban/rural income discrepancy, and is dedicated to poverty alleviation: creating jobs; access to work and markets for the (urban) poor; and social and cultural integration in order to keep the country unified.

5. Problems in the transport sector include long-neglected policy and institutional reforms, under-utilized deployment of public transport modes in rail (i.e., limited and outdated network, rolling stock and headways, and lack of urban rail), insufficient road transport infrastructure (especially for urban public transport such as BRT, feeder-buses and walkability), and severe bottlenecks in sea transport. Urban mobility is in a severe crisis, with car and motorbike traffic dominating the larger urban centers, resulting in daily gridlock, heavy pollution, loss of public space, and a decline in the quality of urban living.

6. Both the slow pace of transport infrastructure development and its poor quality are due to the low level of investment by both the public and private sectors. The situation has deteriorated since the 1997 Asian financial crisis, with current investment in infrastructure at about 3.5% of GDP versus a 1997 pre-crisis level of approximately 8%.⁴ The urban infrastructure investment gap is also widening, as the amount of finance available cannot begin to match the ever-increasing demand for urban transport. Urban infrastructure investment as a share of GDP has remained at about 3%, whereas the accepted figure to cover required investments and capital replacement is 7% to 7.5%. Achieving national medium-term economic growth targets and the government’s overall development objective will require much higher levels of transport infrastructure investment.⁵ The 2015 budget allocation for the Ministry of Transportation (MOT) is about \$5.2 billion, an increase of about 30% above what was originally planned. The ministry is expected to receive revenue of \$230 million during 2015. The 2015 budget for the Ministry of Public Works and Housing (MPWH)—which includes the transportation directorate—is approximately \$9.6 billion.

7. **Legal and regulatory context.** Prior to 2011, Indonesia’s land acquisition laws were seen as a major obstacle in carrying out much-needed infrastructure projects. In December 2011, the House of Representatives approved a land acquisition bill,⁶ which provides a more efficient and equitable legal framework for land acquisition for the construction of transport infrastructure.

8. The planning and implementation of transportation infrastructure in Indonesia is unduly bureaucratic and cumbersome. The overall transport planning processes are guided by the National Development Planning Agency (BAPPENAS), in coordination with the detailed strategic implementation plans of MOT and MPWH. Other key institutions in priority infrastructure planning and implementation are the Ministry of Finance, the Coordinating

⁴ *Diagnosing the Indonesian Economy: Toward Inclusive and Green Growth*, edited by Hill, M.E. Khan & J. Zhuang, ADB 2012

⁵ ADB. Country Partnership Strategy for Indonesia 2012-2014, May 2012

⁶ Law No.2/2012, *Acquisition of Land for Development in the Public Interest*.

Ministry for Economic Affairs, the Ministry of Industry, the Ministry of Trade, the Ministry for Maritime Affairs, the Ministry for Energy and Mineral Resources, the Ministry for State Enterprises, and the Ministry of Agrarian and Spatial Planning.

9. The dominance of private vehicles—primarily cars and motorbikes—in the Indonesian transport modal mix has led to an enormous energy demand for fuel, with fuel having an annual consumption growth rate of about 4.5%. Inadequate infrastructure, poor market access, and inefficient spatial structure impede business growth and degrade quality of living. Nation-wide administrative and fiscal decentralization measures, introduced in 2000, substantially changed the landscape for regional and urban development from one that was formerly driven from the central government. This transition, in large part, has negatively affected continuity in urban infrastructure investment. There remains unresolved policy, financial, regulatory, and institutional capacity problems. These issues continue to impact the dynamic and on-going process of decentralization, creating an unpredictable environment for governance, an ambiguous regulatory framework, and an uncertain business climate for infrastructure development. Local governments have had difficulties with financial management, including multi-year financing, loan risk assessment, loan management, and calculating cash flows, as well as the over-riding issues of transparency and accountability.

10. **Financing gap.** The financing capacity of regional and city governments is still limited and depends on budget “transfers” (70% to 80% of total requirements) from the central government. About 62% of local government revenue originates from the General Allocation Fund (DAU), with the second largest contributor being the Revenue Sharing Fund (DBH) with 11.2%⁷ of budget allocations. Yet there remains insufficient financing for the infrastructure investment demand. Financial intermediary institutions have been established to help close the gap, including: (i) the Infrastructure Investment Agency (IIA);⁸ (ii) the Sarana Multi Infrastruktur (SMI); and (iii) the Indonesia Infrastructure Guarantee Fund (IIGF)⁹ to provide financing guarantees on revenue-generating (commercial) projects or project components.

11. **Bottleneck of private participation.** The vast majority of Indonesian transport infrastructure developments were neither designed nor operated for profitability, but are instead driven into the “subsidy trap”. Hence private sector entities are not attracted to invest in unsustainable transport projects or transport services when policies and regulations remain vague, particularly in terms of subsidies. Attempts at creating and sustaining public private partnerships are hampered by unclear and inconsistent regulations, lack of continuity, and legal uncertainty.

12. **Strategic and integrated land use planning.** City development and investment plans often lack strategic direction, urgency, or priority; and regional governments tend to satisfy their constituency by spreading resources evenly across sectors as part of the political bargaining process. There is an urgent need to integrate economic growth and environmental sustainability through more effective planning to improve livability by creating density, diversity, and well-designed urbanization.

⁷ Gunawan Wicaksono, “Pengurangan Disparitas Pembangunan Ekonomi Regional Melalui Desentralisasi Fiskal”, *Auditor, Majalah Triwulanan BPK* No.112, April-June 2008/XXV issue

⁸ Pusat Investasi Pemerintah (PIP)

⁹ PT Penjaminan Infrastruktur Indonesia (Persero)

13. **Environmental context.** Urban livability and public space, a common good, is scarce in urban areas. Much of the open space is occupied by private vehicles—parked, driven, or jammed in traffic. The use of public space by individual transport modes is regarded as an indirect subsidy, while pedestrians are not equally regarded. In recent years, the sale of private vehicles has grown rapidly (in Jakarta by about 10% per annum) as a reaction to inadequate public transport and limited pedestrian space. In Jakarta, public space is far below 10% of total land area. There are few parks and pedestrian-friendly town squares. Roads occupy just 6.2% of total land area, (compared, for example, to Singapore with 15%). The dominance of car and motorbike traffic, together with over 90% of freight being carried by trucks, has made cities highly polluted.

14. Transportation adds 70% to 80% to total outdoor air pollutants, including destructive particulate matters. Motorized transport in the country contributes 23% of greenhouse gas (GHG) emissions. The government is working on a national emissions reduction plan (RAN-GRK), with a measurable, reportable, and verifiable system (MRV) to ensure that planned action receives international recognition and necessary funding. Transport infrastructure is vulnerable to rising sea-levels, changes in the level of precipitation, landslides, floods, and droughts—all of which have consequences in the design and construction of roads, railways, and other transport infrastructure. The country's vulnerability to climate change demands climate change adaptation in transport service security.

15. **Logistics costs.** Indonesia's logistics costs are the highest in Southeast Asia, at 25% of total GDP,¹⁰ significantly jeopardizing competitiveness. In 2010, Indonesia ranked 75th in the World Bank's Logistics Performance Index,¹¹ improving to 53rd position in 2014. The logistics sector in Indonesia has been growing steadily since 2007, and is forecast to continue to grow at a rate of about 14% annually, bringing the industry's total estimated value to about \$110 billion in response to improved infrastructure.¹² Increased volumes of external trade were also expected to grow at a rate of about 17%, with similar increases in foreign direct investment into the transport and logistics sector.

16. **Maritime connectivity.** Indonesia has more than 100 commercial ports, although many of them cater only to relatively small vessels on domestic routes, and only a few have container facilities. In preparation for the ASEAN single market, Jakarta is striving to upgrade 14 of the country's largest ports to handle international traffic. The shortage of large ports capable of receiving trans-oceanic vessels has given rise to an inefficient system: Jakarta's Tanjung Priok port is overburdened, handling about two-thirds of Indonesia's imports and exports. It is still unable to accommodate very large container ships, though its long-term expansion plan will enable it to handle container vessels with a capacity of up to 18,000 TEU (twenty-foot equivalent units). Its current throughput capacity of 5 million TEU a year is small compared to some of the world's largest ports, such as neighboring Singapore's with an annual throughput more than 31 million TEU.

¹⁰ Source: Indonesia Logistics Association.

¹¹ The logistics performance Index (LPI) is the weighted average of the country scores on six key dimensions: (i) efficiency of the clearance process (i.e., speed, simplicity and predictability of formalities) by border control agencies, including customs; (ii) quality of trade and transport-related infrastructure (e.g., ports, railroads, roads, information technology); (iii) ease of arranging competitively priced shipments; (iv) competence and quality of logistics services (e.g., transport operators, customs brokers); (v) ability to track and trace consignments; and (vi) timeliness of shipments in reaching the destination within the scheduled or expected delivery time.

¹² Frost and Sullivan.

17. The 725 public ports in Indonesia are not sufficient to serve the number of islands (24 islands per port) and the vast area (2,650 km² per port) in Indonesia. The performance of ports in Indonesia is still far from optimal in supporting national logistics efficiency, as waiting time (WT), approach time (AT), and effective time (ET) are only about 77%, 75%, and 54% respectively. The high dwelling time—ranging between 2 and 14 days—causes high logistics costs. Port authorities need to be strengthened in order to optimize the investment and improve the performance of the maritime subsector. Indonesia does not have trans-shipping facilities for its growing international trade, 90% of which is by sea. Almost all of its non-bulk trade—such as containers—are trans-shipped through Singapore and increasingly through other regional ports.

18. As an archipelago nation with over 6,000 permanently inhabited islands and a rich seafaring tradition, Indonesia needs to significantly strengthen its maritime infrastructure and shipping lines by: (i) developing coastal/short-sea-shipping through secondary port developments, which in turn will enhance feeder shipping and increase support for traditional community-based and modernized boat services; (ii) developing port competitiveness within the government's strategy for a "maritime highway", focusing on the targeted 24 strategic ports and 10 feeder ports; and (iii) developing port hinterland connections through multi-modal connectivity by improving road and rail links between ports and industrial centers, cities and transport hubs.

19. **Urban mobility.** Transport infrastructure developments for public transport modes (such as MRT, BRT, transit systems, feeder buses, paratransit), transport-demand management measures (parking management, traffic calming, road pricing, and reducing—or even eliminating—subsidies, and higher taxation for private vehicles) as well as non-motorized transport (walking and biking) have not begun to keep pace with the high urbanization rate in Indonesia. Over 55% of Indonesians are living in some 300 cities, of which six urban agglomeration centers¹³ suffer the most severe transportation problems. This traffic congestion is characterized by insufficient public transport with very low modal shares; no urban rail systems (excepting some commuter train services); one sub-optimal BRT (bus rapid transit) system in Jakarta, with 16 other cities having an immature semi-BRT; and the remaining major cities left to rely on paratransit for public transport. Vast urban sprawl and the loss of public space, particularly in the six agglomeration centers, cause over-saturated occupation by private vehicles, environmental degradation (heavy air pollution), and lost productivity in traffic jams and gridlock, which negatively impacts the country's investment climate and GDP.

20. **Railway development.** The Indonesian public rail system, a legacy of the colonial period and concentrated on the two most heavily populated islands of Java and Sumatera, is operated by the Indonesian Railway Company, PT Kereta Api Indonesia (PT KAI). This system carries over 200 million passengers per year (about 7% of the non-metropolitan passenger market) and more than 20 million tons of cargo (only around 0.6% of goods transported) moving along on an under-utilized, mainly single-track network of lines. A lack of system maintenance causes delays, passenger dissatisfaction, and accidents. The most urgent need is the deployment of mass urban rail networks to shift the transport of goods and passengers away from overburdened roads. This shift will require double tracks on major trunk rail lines, the revival of dormant tracks (some 2,500 km unused, mainly on Java), and the extension of other rail lines, and should include new station developments with improved accessibility and multi-modal integration.

¹³ Jakarta, Medan, Bandung, Surabaya, Makassar and Denpasar.

21. **Land transport.** Road infrastructure dominates the mobility of people and goods, serving approximately 85% of passenger transport and 90% of freight. The total capitalization of the national road infrastructure assets is estimated to exceed \$13 billion. The 481,100 km of the national road network (as of 2012) bears the transport burden to support country's rapid economic growth. The network includes national roads (39,900 km) and provincial roads (48,122 km), comprising 8% and 10% respectively of the network, while county/city/village roads (393,078 km) comprise the remaining 82% of the network. Many of the key road links are overloaded, jammed at peak hours, and in dire need of maintenance and repairs, causing poor road safety and a slow average running speed of less than 40 km/hour.

22. **Aviation.** The rapidly expanding demand for air transport, enhanced by the upcoming ASEAN Open Skies Policy, already exceeds the capacity of many Indonesian airports, requiring extensions and new airport developments. Since airports and airline operations are typically regarded as economically and financially viable, there is little demand for external support, except for: (i) pioneer air services, aimed at integrating remote parts of the country; and (ii) in the fields of air traffic control and security.

II. GOVERNMENT TRANSPORT SECTOR PLANNING

A. Government Sector Strategy, Policy and Plans

23. Indonesia's national objective is to improve physical connectivity, which includes improving critical hard infrastructure projects crucial for increased logistics and transport efficiency. The government also places high priority on the need to improve institutional connectivity, with priority focusing on areas such as trade, investment, services, and regulatory issues, as well as people-to-people connectivity. The objective of such improved institutional connectivity would be to deepen social, economic, cultural, and educational initiatives and to improve access and mobility for people across the entire archipelago and the region (ASEAN and beyond).

24. Based on the identification of key indicators and the long-term national development targets, BAPPENAS, through RPJMN 2015–2019, has endorsed the following general objectives of transport development over the next five years:

- increasing the quality and capacity of infrastructure and facilities;
- increasing service quality and safety of transportation;
- increasing the quality of sustainable and environmentally friendly transport;
- increasing mobility and national and regional connectivity;
- increasing equity and fairness of transport services between social groups and between regions, in urban, rural, remote, and frontier areas;
- increasing accountability of transportation services through strengthening of all modes of transportation systems; and
- establishing rehabilitation/upgrading programs for transportation infrastructure for specifically targeted areas, and capacity development for human resources, integrating these transport programs with programs in other sectors.

25. In order to achieve these transport objectives, the government intends to formulate public policy on transportation development, guided towards:

- furthering detailed policy developments, institutional restructuring, and the regulation of transport;
- improving transportation infrastructure, including sustainable transport development;
- improving safety in an integrated scheme;
- improving data and information related to the development and auditing of transportation infrastructure nationwide; and
- encouraging the development of the transportation services industry for commercial purposes involving the participation of private and public sectors.

26. **Maritime strategy.** The “maritime highway” (often referred to as *tol laut*, meaning “sea toll road”) aims to create regional container shipping access to major ports able to serve large commercial ships. Among the many challenges, the most imposing are institutional, regulatory, and financial. The Ministry of Transportation’s decision No. 414/ 2014 envisages 1,240 ports, with 33 major ports, 217 collector ports, and 990 feeder ports. The Strategic Plan as adopted by RENSTRA calls for:

- increasing safety, security, and service of marine transport facilities and infrastructure according to Minimum Service Standards;
- increasing the access to services facilities and sea transport infrastructure in order to encourage the development of inter-regional connectivity;
- increasing the capacity of marine transportation infrastructure to reduce the backlog and sea transport infrastructure capacity bottlenecks;
- enhancing the role of local governments, the state, the private sector, and civil society in the provision of marine transportation sector infrastructure in an effort to improve the efficiency of marine transportation;
- improving the quality of human resources and marine transportation;
- institutional restructuring and regulatory reforms; and
- increasing sea transportation technology development for efficiency and environmental sustainability in anticipation of climate change.

27. In order to successfully accomplish this maritime strategy, the government intends to implement a relatively large number of strategic maritime-related programs. These programs are ambitious not only in number, but also in view of the many contentious and difficult issues the government intends to address. At this early stage of overall program development, what appears to be lacking are: qualitative and quantitative indicators; a realistic implementation roadmap; and assured budget allocations. This myriad of programs intends to address such varied issues as those concerned with reliability of marine transport services; maritime safety and security; infrastructure and the number of ships plying Indonesian shipping lanes; and institutional restructuring and reform of the bureaucracy.¹⁴

¹⁴ The listing of these maritime-related strategic programs includes: (i) ensuring the reliability of marine transportation services to support the acceleration and expansion of national development; (ii) decreasing the number of cruise accident events; (iii) reducing number of security problems; (iv) increasing the number of ports that meet specified performance criteria; (v) increasing the number of ships and personnel who have certificates in the field of shipping safety and security; (vi) increasing the availability and reliability of the national shipping fleet; (vii) establishing a marine transportation connectivity network with the concept of integration of inter- and multi-modality; (viii) increasing the regularity of route networks, the number of port facilities and intermodal integration services; (ix) establishing a competitive national shipping industry through increased investment, market expansion, industrial strengthening, technological applications, as well as institutional restructuring and reform of the bureaucracy; (x) increased maritime transport cooperation between the government and the private sector; (xi) increasing the quality marine transportation services through the application of technology; (xii) increasing pollution

28. **Financial and investment.** Just the port improvement component alone would require an investment of about \$50 billion, to build, upgrade, and extend the 24 designated ports (five main and 19 feeders, including supporting facilities). This would include major improvements to Cilamaya Port, West Java; Makassar New Port; Kuala Tanjung Port, North Sumatra; and Bitung Port Manado. Realizing these goals will require significantly more funds than are presently expected to be included in normal governmental budgeting, including donor assistance. To cover the financial gap, the government seeks to: (i) enhance the support for SOEs development; (ii) encourage the role of the private sector through PPP schemes; and (iii) empower innovative financing schemes and creative financing.

29. **Urban transport strategy.** The government's goal of urban development is to realize sustainable and economically competitive cities through equitable development. Government planning is to develop livable, green, smart, and climate- and disaster-resilient cities, based on physical characteristics, economic potential, and the local culture. To that end, the strategy for urban development 2015–2019 should be:

- Strengthen governance in urban development by: (i) developing new laws and regulations related to urban services standards (SPP)¹⁵ in order to establish sustainable cities; (ii) developing a system of control and facilitation management and fulfillment of SPP in order to establish sustainable cities; (iii) conducting, socialization, education, training in managing sustainable cities; (iv) enhancing institutional capacity at the urban provincial and district/city level; and (v) involving the private sector, community organizations, and professional organizations in policy formulation, planning, and development of sustainable cities.
- Strengthen regional development by: (i) developing, revitalizing, and strengthening urban and larger metropolitan areas by using forms of SPP, developing intelligent cities through information and communications technology, and developing easily accessible database information and integrated urban maps; (ii) developing small and medium urban areas through the development of transportation nodes between economic growth areas, providing public transport, using forms of SPP and building capacity of communities that are innovative, creative, and productive; and (iii) developing urban areas in districts using forms of SPP, integrating public transport between regions, cities and districts, and developing new public towns independent from other cities or urban metropolitan areas.

30. **Strategic plans and programs.** The main focus in urban transportation in the RPJMN 2015–2019 is directed towards five principal government strategies: (i) urban transport development to improve interaction between mobility and land use (cross departmental); (ii) mobility improvements for the public transport system and the transport of goods; (iii) congestion alleviation—reducing the level of congestion and optimizing Transport Demand

prevention and control activities; and, taken all in totality, (xiii) increasing the contribution of the sea transport subsector to national economic growth.

¹⁵ Urban Management, Urban Service Standard (SPP), which is typically based on pro-poor, inclusive policies that promote financially viable, high-quality urban services, focusing on local self-reliance, improving local investment climates, and leveraging market financing to scale up viable urban service approaches and technologies.

Management (TDM) measures; (iv) environment impact control, cutting the burden of air and noise pollution, including global CO2 emissions; and (v) urban safety and the improvement of all aspect of traffic safety.

31. **Primary strategic issues.** Similarly strategic issues can be divided into five areas of focus: (i) regulation: addressing weaknesses and inconsistencies in the rule of law and the coordination between infrastructure and non-infrastructure entities; (ii) institutional capacity: governance, the relationship and coordination between institutions and human resource capacities, establishing a transport authority for urban agglomerations; (iii) land acquisition for the construction of infrastructure; (iv) addressing ineffective allocation of funding or lack of funding; and (v) determination of scales of priority in infrastructure development across sectors, across regions, and between levels (national, province, district or city).

32. Government-planned improvements and investments for bus-based mass transit include the following:

Component	Information
Bus BRT (big city)	Articulated, gas-fuelled buses (capacity about 85 people)
Bus BRT (metropolitan)	Gas-fuelled buses (capacity about 40 people)
PSO - BRT	<i>Public service obligation</i> , to improve BRT performance by providing subsidies for BRT operations
Intermodal facility (big city)	BRT infrastructure facilities integrated with other modes, such as air, rail, sea and freight
Intermodal facility (metropolitan)	Infrastructure for BRT integration with other modes of transportation, together with non-motorized transport facilities
Special lanes	Development of special BRT lanes separated from general traffic, bus stop facilities, markings, and signs
NMT (non-motorized transport)	NMT for pedestrians and bicycles
Park & ride	Facilities for private vehicle users to easily switch to public transport with the provision of parking facilities
ITS / ATCS	Intelligent transport systems (ITS) and area traffic control systems (ATCS) to optimize public transport services and the road network
Road pricing	Traffic restrictions in certain areas / specific corridor-based levies to encourage the shift to public transport
Urban Traffic Management in Medium and small cities	Urban traffic engineering focused on capacity and traffic Flow management

33. Some metropolitan cities in Indonesia rely on rail transport for commuting passengers to serve a share of demand, such as Jakarta, Bandung, Yogyakarta–Solo, Surabaya, and Semarang. Strategies are aimed at achieving maximum service integration with other modes (bus, P&R, sea and air transport). The market share of rail users nationally is presently low, at around 7%. Origin–destination surveys estimate 900 million people traveling annually by rail in 2030, making improving and expanding urban rail a prime governmental strategy. Planned infrastructure improvements for rail urban transport include the following:

Component	Information
MRT	Urban mass public transport, elevated, on-grade or underground for agglomerations
Monorail	Elevated urban (mass) public transport for dedicated cities
Airport railway	Railway line that serves the airport for employees and passengers, most on grade, partly needs to be elevated in North Sumatra (extensions), Jakarta, Bandung (to new airport Kertajaya), Surabaya, Denpasar, Makassar, and others
Railway electrification	Electrification of the railway lines
Crosses arrangement	Structuring railway crossings with signaling, traffic management features
Commuter train	Mostly on existing rail tracks, on grade

34. Government planned infrastructure improvements for urban road development include the following:

Component	Information
Toll road	Urban freeway
Flyover and underpass	Means to avoid traffic congestion, overpassing railway crossings and to improve traffic safety and efficiency
National road maintenance	Maintenance of the national road network
River bridges	River bridge facilities in cities such as Palembang, Jambi, Samarinda, Pontianak, Banjarmasin, Jayapura etc. To create better connectivity between segregated parts of the city and provide accessibility, ideally with Pedestrian and bicycle priorities

35. In an optimistic scenario, the cost of financing urban transport infrastructure would be about \$11.5 billion. A more pragmatic scenario would still require about \$870 million. It is anticipated that funding would be met from a variety of sources: (i) state, provincial, and city budgets, (ii) grants and loans for donors, (iii) SOEs, (iv) public enterprises, and (v) the private sector.

36. **Road transport subsector strategy.** In accordance with RPJMN 2015–2019, the following governmental road strategies have been developed: (i) creating an obstacle-free road transport parallel to the national arterial roads, with reference to the capacity and standards of freeways; (ii) renewing and improving the national road network through an integrated road-capacity-building program, improved geometrics (alignments and widening) and repair; and (iii) optimizing efficiency and improvement of administration/implementation in the road sector in regard to cost efficiency and quality of work.

37. Investment required for road development in accordance with RPJMN 2015–2019 are summarized as follows:

Item	Investment (\$)
Rehabilitation of unserviceable roads	37 billion
Widening of national roads	3.6 billion
New inter-city expressways	4.6 billion
New urban expressways	3.1 billion
New national roads	2.1 billion
New regional roads	37 billion
Total	87.4 billion

38. Investment required for ferry and inland waterways development in accordance with RPJMN 2015–2019 is summarized as follows:

Item	Investment (\$)
Additional berths and ships	0.9 billion
Allowance for improvements to:	
Ferry productivity, safety, and increased load factor	1.4 billion
Inland waterways operations	0.7 billion
New ferry ports	0.1 billion
Provide short-sea-shipping in the northern part of Java Sea	0.3 billion
Linking southern, central and northern crossing routes across 48 channels	2.9 billion
Total	6.3 billion

B. Issues for Consideration

39. Forward-looking interventions need to be embedded in improved planning and management, with focus on poverty alleviation, inclusive growth, climate change mitigation and resilience, and supported by developments for effective financing mechanisms. Derived from these government consultations, observations, and assessments, the large and diverse fields of transportation are arranged in priority order of the following five transport subsector thrusts: (i) sustainable urban mobility; (ii) maritime highway, feeder services, and ports; (iii) rail, extended networks, and increased modal share; (iv) land, including river, lake and ferry transportation; and (v) aviation, including pioneer and frontier services.

40. Transport in Indonesia—and in most parts of the world—has been based on the paradigm of individual mobility (car and motorbike). This strong shift towards individual mobility has produced a number of negative results, such as urban congestion and pollution. A shift of the paradigm towards sustainable transport is needed, and such a shift is receiving support by a growing number of Indonesian decision-makers. Indonesia is in beginning of a transition from *car-centered* planning and developments to *people-centered* mobility, where public space is reclaimed, and cities are revived. This transition can be expected to stimulate the economy with the growth of environmentally friendly public transport modes, shipping, and rail transport.¹⁶

¹⁶ Such a transition is often regarded as a “struggle” against the beneficiaries (such as automotive industries) and is retarded by old habits and practices and the fear of the new. Once a citizen has purchased a car, the switch to public modes of transport, walking or biking vanishes, despite the frustration of traffic jams. However, the threshold of tolerance has been surpassed and a growing part of the population, especially in cities, will no longer accept the status quo of transportation.

41. Political will for a shift to sustainable mobility needs to be followed by bold and imaginative projects, which in turn will further support a full paradigm shift. Timid attempts and relatively small interventions cannot compete with the ever-growing number of private vehicles. For a project to be successful, it must reach critical mass through a systematic approach that achieves at least a minimum of integrated measures. For example, a bus service will be of successfully high demand if the network covers most destinations and feeder services as well as pedestrian access. Building a single line cannot attract passengers and compete with the advantage of private vehicles to provide door-to-door transport. Concentrating efforts on one sector and/or in one area will create visibility and attention that will set an example of good practices.

42. Good strategy integrates measures which mutually support and strengthen each element. If the efforts are isolated single measures—even with state-of-art technology—these cannot succeed unless they are combined with required supplementing components. Establishing a single BRT line will not be effective if it does not connect to feeder services, good walking access to the shelters, and an integrated fare collection valid within the whole public transport multi-modal network, which will make a trip from the first until the last mile a fast, comfortable, and safe experience.

43. Successful strategy and strategic subsector projects derive from a series of analytical steps, beginning with problem assessment, followed by the definition of needs, leading to an identification of potentials to tackle these needs. The identified demands need to be screened in regard to the interests that are to be served. This process should be designed to result in strategic subsector objectives, goals and targets, broken down into clearly defined program packages and a roadmap.

44. **Urban Transport.** The objective should be to make cities green, inclusive, and economically competitive. Although planning should follow an integrated approach, the implementation of infrastructure and related capacity building will need to follow sector implementation arrangements, working through the line ministries (MOT and MPWH), through current or new sector programs (following a one-sector, one-agency approach) and in line with lessons learned.¹⁷ Indonesia is focusing on six urban agglomeration areas—greater Jakarta, Medan, Bandung, Surabaya, Makassar and Denpasar—with a strategic focus set on the agglomerations of Jakarta, Medan and Denpasar.

45. **Greater Jakarta**¹⁸. The urbanized areas around Jakarta are under the administration of three provincial governments, making it extremely difficult to plan and implement measures covering the whole megacity of some 30 million inhabitants (population density: 4,400/km²; Jakarta itself: 14,400/km²). Setting up a transport authority which is empowered to plan, implement, and regulate all elements for sustainable urban mobility is a high priority, and a planning study for the realization of such a "Greater Jakarta Transport Authority" is under preparation. Following the successful example of Singapore could be considered. This would incorporate, creating a new institution with legal and institutional authority on land-use issues, traffic control, and the planning, regulating, and implementing of public transport in order to

¹⁷ Asian Development Bank. 2010: Indonesia: Has the Multi-sector Approach been Effective for Urban Services Assistance in Indonesia? Special Evaluation Study (SES). Manila.

¹⁸ The official/administrative name for this sprawling megacity surrounding Jakarta is *Jabodetabek*, named for the five municipalities it comprises: Jakarta (*Ja*), Bogor (*bo*), Depok (*de*), Tangerang (*ta*) and Bekasi (*bek*).

realize sustainable urban mobility measures which are designed for creating vast walkability, and a multi-modal public transport network including several hundred km of urban rail.

46. **Greater Medan.** The urbanized areas around Medan in North Sumatra—officially referred to as *Mebidang*, include the city of Medan (*Me*), Binjai (*bi*) and Deli Serdang Regency (*dang*) with its 4.15 million inhabitants and a population density of more than 1,500/km²—is of special importance as one of the few major economic trade hubs outside Java. A starting point needs to be the development of a transport master plan, comprising the four freight and passenger hubs and including plans for an elaborated BRT network, called “Trans Mebidang”, as well as non-motorized transport facilities, transport-demand management schemes, traffic calming, and walkability improvements in the city centers for Mebidang.

47. **Greater Denpasar.** This urbanized area in South Bali—consisting of metropolitan Denpasar and much of the districts of Badung, Gianyar, and Tabanan (Sarbagita)—has the lowest public transport modal share (3%) of Indonesia’s urban agglomerations. The urban transport sector in Greater Denpasar is characterized by heavy traffic jams threatening the local—mainly tourism-based—economy and creating difficult access to jobs, markets, and services, especially for the poor. There is high demand for assistance in supporting sustainable urban transport schemes: the extension of its semi-BRT system Trans Sarbagita, with feeders and school-bus services, and eventually a rail network covering the urbanized south.

48. **Maritime Transport.** RPJMN 2015–2019 includes a number of infrastructure projects in support of Indonesia’s “maritime highway”, among which is the development, extension, and improvements of 24 strategic ports and supporting measures. Attention will need to be given to the ports’ hinterland integration and accessibility through appropriate multi-modal connections. These would include optimum road access in regard to direct rail integration and trans-shipping, as well as public transport and non-motorized transport access, especially for the workforce and for those ports handling passengers.

49. Among the small and medium sized ports, ten specifically strategic ports have been identified for further studies, to include a pre-feasibility study in the context of their feeder role within the maritime highway, to examine the ports’ potentials, technical and operational constraints, market demand, and hinterland access, as well as its financial viability. Among these, the port of Probolinggo, East Java, is highlighted as one of the ten to serve as an example for the study, which should lead to the identification of further financial cooperation, where loans become feasible to strengthen infrastructure developments.

50. In the context of short-sea-shipping (SSS), Indonesia has a rich tradition of freight sailing services by *pinisi* and similar old-fashioned, diesel-engine enhanced, wooden sailing boats, still serving a high modal share, employing and providing a livelihood for thousands of people living on the rural coast. The government is mandated to develop the Pelayaran Rakyat (PELRA) program with measures including the provision of adequate ports, improved convenience, and the provision of subsidized fuel. Its vision to support and improve the livelihood of Indonesian people living in remote areas and under vulnerable conditions addresses the support of SSS freight while keeping traditions and an Indonesian identity alive. The PELRA program is concerned with three issues: (i) financing PELRA, with expected outcomes to include schemes (eventually micro-financing, revolving funds, etc.) for creating access to funding boat-building and operations for community-based short-sea-shipping; (ii) modernizing and improving the design of traditional vessels; and (iii) a database study to identify harbors and demands for their

performance to accommodate PELRA shipping operations, including data collection on existing fleets and their capacities, and specifications for new vessels.

51. **Rail Transport.** Rail network extensions and improvements, including the electrification and/or double-tracking of selected corridors, have high priority, as environmentally and climate friendly rail transport has the potential to shift freight from trucks and passengers from private vehicles. Indonesia's rail network needs to be upgraded, idle tracks revived, and additional linkages connected to complement the network and to create interconnectivity at existing and planned transport hubs, such as harbors and airports. Three fields of rail transport infrastructure are identified as strategic engagements:

- Urban Rail as an integral part of sustainable urban mobility strategies, supplementing the public transport multi-modal mix in the six agglomeration centers and metropolitan cities, of which Greater Jakarta (Jabodetabek) and Greater Medan (Mebidang) are highlighted with reference to urban transport subsector strategy.
- Transport Hubs' Intermodal Connectivity is crucial in port development, for which hinterland integration and accessibility is also important. This is therefore referred to the integrated port development strategic projects within the maritime transport subsector.
- New Rail Tracks Developments are planned in Java, Sumatra, Kalimantan, Sulawesi and Papua, out of which the projected line from Ujung Pandang (South Sulawesi) to Bitung (North Sulawesi) is under construction, with its first stretch from Ujung Pandang to Parepare. This will need further assistance for the full extension (Parepare to Bitung) at a later stage, which is why it is not included in the 2015–2019 strategy but taken into account for long term projections. The still early stage of planning for the Trans Papua Railway line, connecting the 595 km of difficult terrain from Sorong to Jayapura is considered an ambitious endeavor. After a feasibility study commencing in 2015, construction is expected to start only after 2020 with its first stretch of 390 km from Sorong to Manokwari.

Appendix: Country and Transport Sector Statistics

COUNTRY STATISTICS

1. Country classification: Lower middle income
2. GDP (current US\$): \$868.3 billion (2013)
3. Population, total: 252.8 million (2014)
4. Economic growth was declining from 6.5% in 2011 to 5.2% in the first half of 2014
5. GINI coefficient: 0.41

KEY TRANSPORT SECTOR STATISTICS

1. Contribution to GDP: 7% (Q2, 2013)
2. Existing Road Network: 497,000 km (2012)
3. National roads: 38,570 km (2013)
4. Provincial roads: 48,020 km
5. Local (kabupaten/kota) roads: 38,9747 km
6. Existing Railway Network in use: 4,800 km
7. Rail Network on Java: 3.600 km actively used (of a total of 6,234 km, of which a large part is unused, but may be feasibly revived)
8. Number of Airports: 230 (local and international)
9. Number of Commercial Sea Ports: 111
10. Pioneer Sea Lines: 80
11. Ferry Terminals: 550
12. River Terminals: 135
13. Lake, River and Ferry Services ASDP currently having more than 154 routes with total combined distance of more than 10,000 km, managing 34 ferry ports and its 128 vessels
14. Urban Agglomeration Areas: 6
15. Main government bodies: Ministry of Transport specifically Directorate General of Highways, Ministry of National Development Planning (BAPPENAS), Ministry of Public Works and Public Housing, Indonesian Toll Road Authority, Ministry of Finance, Ministry of State Owned Enterprises.

Number of Vehicles in Indonesia Based on Type*

Year	Passenger Car	Bus	Truck	Motorbike	Total
2004	4,464,281	933,199	2,315,779	23,055,834	30,769,093
2005	5,494,034	1,184,918	2,920,828	28,556,498	38,156,278
2006	6,615,104	1,511,129	3,541,800	33,413,222	45,081,255
2007	8,864,961	2,103,423	4,845,937	41,955,128	57,769,449
2008	9,859,926	2,583,170	5,146,674	47,683,681	65,273,451
2009	10,364,125	2,729,572	5,187,740	52,433,132	70,714,569

*Source: Badan Pusat Statistik (BPS) website