SECTOR ASSESSMENT (SUMMARY): TRANSPORT (URBAN ROADS AND TRAFFIC MANAGEMENT)[1]

Sector Road Map

1. Sector Performance, Problems, and Opportunities

1. **Background.** Since the end of the civil war in 2009, the Sri Lankan economy has grown on average at 5.8% per year, reflecting a peace dividend and a commitment to reconstruction and growth. Sri Lanka is close to attaining upper middle-income country status.[2] The functions of the transport sector are gradually changing to provide growth-oriented infrastructure, support more diversified services, promote exports, and cater to the value-adding manufacturing industry. The smooth flow of goods and people in an area with great potential such as Colombo, including the port area, is key to developing an efficient and high-value-added economy.

2. **Transport demand in subsectors.** Road transport is the predominant mode of transport in Sri Lanka. Passenger traffic is estimated to be 80 billion passenger-kilometers, out of which road transport accounts for 93%. Road transport also has the dominant share (97%) of freight tons-kilometer (footnote 1). The road network is moderately developed in the country.[3] Urban road transport in Colombo, however, faces many challenges (paras. 5–10). The railway network consists of a heavy-rail intercity network connecting the main cities of all nine provinces in the country with Colombo, and commuter rail services in Colombo and the Western Province. The share of railways in passenger transport is about 5%, and in freight about 1%.

3. **Sea transport in Sri Lanka.** Two major ports—in Colombo and Hambantota—handle the majority of exports and imports, but almost all the container trade is handled by the Colombo port. The container handling volume in the Colombo port was about 5.7 million 20-foot equivalent units (TEUs) in 2016. The Colombo port will remain the dominant international gateway of Sri Lanka with projected container handling volume of 8.9 million TEUs in 2030.

4. **Road network overview of Colombo.** The road area ratio in the Colombo municipal council area is 10.7%, which is better than in other congested Asian cities (e.g., Bangkok 7.1%, Jakarta 7.3%). However, the road area ratio is still much lower than those of other major cities (e.g., Tokyo 16.3%, Seoul 13.6%, and Shanghai 12.3%). Traffic volume on major arterial roads is almost at capacity, which causes serious traffic congestion throughout the city. Average traffic speed is less than 10 kilometers per hour (km/h) during the peak hours at many intersections along major arterial roads, in particular those roads between the north–south Baseline Road and radial roads. Major roundabouts, located between the city center and Baseline Road, are also heavily congested. The increase in private and logistics traffic demand—coupled with issues such as insufficient public transport service, difficulty in constructing new roads, and delay in urban

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[1] This summary is based on two documents: (i) Government of Sri Lanka, Ministry of National Policies and Economic Affairs, Department of National Planning. 2017. *Public Investment Programme, 2017–2020*. Colombo; and (ii) Asian Development Bank (ADB). 2017. *Country Partnership Strategy: Sri Lanka 2018–2022—Transition to Upper Middle-Income Country Status*. Manila. Supplementary information was provided by the Road Development Authority.

[2] World Bank. 2017. World Bank Country and Lending Groups (accessed 7 June 2018). Per capita income in 2016 was $3,850. Upper middle-income economies are defined as those with a gross national income per capita in 2016 of between $3,956 and $12,235.

[3] The national road network is about 12,000 kilometers (km), with 161 km of expressways; the provincial network is 19,038 km; and the rural road network is 85,860 km.

expressway development—has led to reduced vehicle speeds on the roads of Colombo, resulting in greater congestion and pollution throughout the city.

5. **Increasing traffic demand.** The increasing population and number of vehicles on the city road network has resulted in a rapid deterioration of traffic conditions in Colombo. By the end of 2016, the total number of registered motor vehicles exceeded 6.8 million, increasing at an average annual growth rate of 8% since 2008. Total person-trips are projected to increase by 2.3 times from 2013 to 2035.[4] In addition, the expressway network expansion, particularly the remaining section of the Outer Circular Highway (OCH) and the Central Expressway joining the OCH, will create additional traffic inflow from the Colombo–Katunayake Expressway (CKE) to the Colombo metropolitan area. The additional traffic inflow from the expressways will put further pressure on the road capacity of the already congested northern part of Colombo where the CKE ends.[5] The road network needs to be further developed to accommodate the increasing traffic demand.

6. **Growing logistics traffic but limited access to Colombo port.** Colombo port is located in the northwestern edge of the city. About 1.3 million TEUs were destined for or originated from Sri Lanka in 2016, and this will double to 2.6 million TEUs in 2030 with Sri Lanka's economic growth.[6] The constrained site location will force the great majority of freight vehicles exiting and entering the port to pass only through the main gate on a four-lane ground-level port access road.[7] The existing port access road leads to an intersection with Baseline Road, which is one of the busiest trunk roads in the northern area of the city.[8] The cargo trucks (mostly through-traffic to and from areas outside Colombo city) have no choice but to use the intersection, causing serious traffic congestion.[9] In addition, the cargo inspection centers are located near the congested intersection. With a high inspection rate requirement for import and export cargos, most trucks have to travel between the port and the inspection centers. The limited access route to the port, together with the high inspection rate and the location of the inspection centers, creates an unnecessary concentration of through-traffic in the congested city.[10]

7. **Insufficient public transport services.** Currently, the lack of sufficient public transport induces people to use private vehicles, imposing an additional burden on the road network. The current railway network, which is a radial pattern from Colombo, has trains going north from Fort station and trains going south from Maradana station through Fort station. The daily sectional passenger volume for both directions, including the Kelani Valley line, is around 89,000–136,000 based on ticket sales information. The passenger modal share of railways in the Colombo metropolitan region is only 10%. However, the trains are almost full during peak hours, and the current railway tracks have reached capacity because of (i) poor track quality as a result of lack of maintenance, (ii) insufficient and aged locomotives, (iii) deteriorated diesel-run railcars or passenger carriages, and (iv) an inadequate signaling system. The average speed in Colombo is less than 30 km/h. The insufficient railway line capacity, slow operational speed, aged or

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4 Japan International Cooperation Agency. 2014. *Urban Transport Master Plan.* Tokyo.

5 The northern part of Colombo includes the Ingurukade junction, Baseline Road, and Kelani River Bridge where the cargo traffic from the port joins the urban road network.

6 ADB. 2016. *Technical Assistance to the Democratic Socialist Republic of Sri Lanka for National Port Master Plan*. Manila.

7 The number of heavy trucks using the port access road was estimated at about 4,500 per day in 2017, and it will exceed 6,500 in 2030.

8 About 300 freight vehicles per hour pass through Main Gate No. 6 (both directions) during the daytime.

9 The traffic origin–destination survey in Colombo port shows that less than 10% of the containers originate from and are destined to the Colombo municipal council.

10 Inspection requirements for import cargo are a nonphysical factor that intensifies the heavy traffic at the intersections.

inadequate infrastructure, operational inefficiencies, and poor management put the railway subsector in a weaker position than other transport modes. Bus is the principal mode of passenger transport in Sri Lanka, contributing around 52% of total passenger movements. The average speed of a bus within the Colombo metropolitan region is 8 km/h—less than half the desired speed of 20 km/h expected under an efficient transport system.[11] Buses are heavily crowded; the load factor in peak hours for all corridors is more than 100%, and some could be as high as 175% (footnote 4). But the overall railway and bus market share is decreasing because of poor service quality. Improvement of the public transportation in Colombo needs to be addressed urgently to provide better transport services and to rebalance modal shares.[12]

8. **Delay in urban expressway development.** To date, no urban expressway is available to the public. Considering the current dense development in the city area, it would not be economically or socially viable to construct new ground-level roads. Practical options for expanding road capacity are to build elevated or tunnel roads within the right of way of public land. In this regard, three urban expressway projects in Colombo are proposed in the Western Region Master Plan: (i) the New Kelani Bridge (NKB), (ii) the Port Access Elevated Highway, and (iii) the elevated highway from the NKB to the OCH. The NKB, a relatively short distance with extradosed bridge, was funded by the Japan International Cooperation Agency in 2014 and is still under implementation. It is scheduled to be completed in 2020. The government originally explored public–private partnership (PPP) for implementation of the other two projects, but attracting foreign investment to PPPs has proven difficult because of (i) an inadequate PPP regulatory framework in Sri Lanka, (ii) the lack of a solid toll rate policy accountable to investors, (iii) uncertain traffic demand and high commercial risks because of lack of actual traffic data of urban expressways, (iv) unclear government support for the low profitability of PPP road projects, and (v) close coordination with the Sri Lanka Ports Authority and other authorities required for the Port Access Elevated Highway. Therefore, despite the urgent needs in terms of traffic management in Colombo, the two projects have not been implemented under PPP.

9. **Insufficient capacity for urban expressway construction and management.** The Road Development Authority has never handled full precast concrete, high-demand, space-limited urban toll roads. This type of road requires new technologies and knowledge. Consequently, the Road Development Authority needs to rely on international resources for design, construction, and management of the complex elevated structure, toll collection system, and financing.

10. **Challenges and opportunities for road network development in Colombo.** Considering (i) the increasing traffic demand in the district with the most economic potential, (ii) further development requirements of the expressway network, and (iii) the insufficient logistics infrastructure to the port, the urban transport sector faces major challenges: (i) how to alleviate the intensifying congestion in Colombo without large-scale land acquisition, (ii) how to efficiently manage the incoming traffic through the NKB from the expressway network while minimizing the burden on the existing road network in Colombo, and (iii) how to handle the increasing freight traffic to and from the Colombo port without causing congestion in the surrounding area. An elevated highway on public land will be a practical solution to address these challenges. The urban elevated highway is new to Sri Lanka; it will require international resources for financial, technical, operational, and management aspects. The development of urban expressways in

[11] Government of Sri Lanka, Ministry of Megapolis and Western Development. 2016. *Western Region Megapolis Master Plan*. Colombo.

[12] Sharing the burden of the road network with other transport modalities (e.g., urban railway) is also being considered by ADB and other development partners (e.g., the Colombo Suburban Railway Efficiency Improvement Project funded by ADB, and the Light Rail Transit System funded by the Japan International Cooperation Agency).

Colombo will contribute to facilitation of economic growth by promoting efficient economic activities and lowering logistics costs.

2. Government's Sector Strategy

11. The Public Investment Programme 2017–2020 provides policy directions to facilitate the country's economic growth. Key strategies to achieve the policy include (i) providing efficient mobility by linking key economic centers and ports by extending the expressway network, and (ii) constructing an elevated road network to minimize traffic congestion in the Colombo metropolitan area. The government proposes to construct 12.7 km of elevated road in Colombo city and targets a 65% public transport share in overall passenger trips by 2020.

12. The Western Region Megapolis Transport Master Plan envisages the construction of road infrastructure, the improvement of public transport systems, the development of new transit systems, and the strengthening of traffic demand management (footnote 11). Expressway construction is emphasized to provide connection between the region outwards and the central business district, and to reduce the travel time significantly between key areas. The two urban expressways—the Port Access Elevated Highway and the elevated highway from the NKB to the OCH—are included in the plan. The plan also points out that the introduction of a new electronic toll collection system is a necessity to eliminate the possible traffic congestion at the entrance and exit of expressways.

3. ADB Sector Experience and Assistance Program

13. Asian Development Bank (ADB) assistance in transport has refocused on improving nationwide connectivity. In the country partnership strategy, 2018–2022 for Sri Lanka, ADB aims to address major constraints on the nation's development by strengthening the drivers of economic growth and by improving the quality of growth to promote inclusiveness.[13] For the first pillar, ADB places a high value on the provision of growth-oriented infrastructure. This includes regional cooperation boosted by providing better connectivity to the Colombo port. Lessons learned from past transport sector projects stress the importance of comprehensive and long-term capacity development and reforms as well as operation and maintenance for road asset sustainability. Thus, emphasis is also given to institutional capacity strengthening to support business management, operation and maintenance, and toll collection.

14. ADB will also address the client's need to provide better service to road users by leveraging advanced information and communications technology. Innovative solutions provided by adopting advanced technology, and an integrated approach with other transport modalities and logistics, are key to promoting higher development impacts of projects. Climate change adaptation should be appropriately considered in the design, implementation, and maintenance stages of road projects. ADB will also explore ways to support the government's efforts to develop and maintain the road network and facilities through private sector involvement, including via PPP. Developing an accountable toll rate policy and implementing new types of projects in the country will reduce commercial risks and pave the way for the future introduction of PPP projects. ADB will pursue an environmentally sustainable transport strategy as it seeks to achieve intermodal balance and public transport development, particularly in urban areas. Although road transport will still play an important role in urban transport modalities, ADB will rationalize the roles of each transport mode to reduce the burden on road transport.

[13] ADB. 2017. *Country Partnership Strategy: Sri Lanka, 2018–2022—Transition to Upper Middle-Income Country Status.* Manila.

Problem Tree Analysis: Transport (Urban Roads and Traffic Management)