ECONOMIC AND FINANCIAL ANALYSIS

A. Introduction

1. **Road network.** Sri Lanka's dense road network provides the country's population with basic access to its economic activity centers and forms a vital part of the transport infrastructure. The network includes over 117,012 kilometers (km) of roads. These comprise (i) national roads and highways (10.4% of the network), which are managed by the Road Development Authority (RDA); (ii) provincial roads (16.3%), which are managed by provincial councils; (iii) local roads (73.1%), which are managed by local governments; and (iv) other roads (17.1%), which are managed by other government agencies, notably the forest and irrigation departments.

2. **Economic rationale.** In 2015, about 82% of Sri Lanka's population lived in rural areas.[1] While poverty rates in rural areas have decreased significantly (from 24.7% in 2002 to 7.6% in 2013), disparities remain across provinces and districts.[2] In the Eastern, Northern, and Uva provinces, and in pockets of Western Province, about 36% percent of the population remains close to the poverty line of $0.9 per day, with 20% living below the poverty line. About 80% of the rural road network remains unpaved or in fair to very poor condition, and it does not provide people with all-weather connectivity to markets, employment, education, or health opportunities, thus hindering the socioeconomic development of rural areas.

3. **Project outputs.** The investment program will support the government in improving road connectivity between rural communities and socioeconomic centers, thereby increasing the involvement of the rural population in nationwide economic and social development. The investment program will (i) rehabilitate and maintain road conditions on about 3,400 km of rural roads and 340 km of national roads in the Eastern, Northern, Uva, and Western provinces; and (ii) enhance the capacity of road agencies to undertake road maintenance, safety, design, and construction.

4. **Economic analysis.** The economic analysis of the investment program was carried out using the Highway Development Model 4 (HDM-4), and in accordance with Asian Development Bank (ADB) guidelines.[3] HDM-4 requires input data on traffic, road geometry, pavement structure and condition, maintenance and improvement costs, and vehicle operating costs (VOC). Engineering estimates prepared by the RDA under the Integrated Road Investment Program provided the required input data.[4] Costs to the road agency and road users under the with- and without-project scenarios were assessed to estimate the program's net benefits and economic viability.

B. Project Design

5. **Road conditions.** The local roads included in the project are narrow single-lane roads with a width of 2.0 to 4.0 meters (m), and are mostly gravel or bituminous roads with short, occasional sections of concrete surfacing. The surface condition is mostly poor to very poor, and the pavements need reconstruction to provide all-weather connectivity. Many of the roads have a combination of surface types as a result of the roads being constructed over time in accordance with funding allocations. The included national and provincial roads have a bituminous surface with single- to two-lane roadways 4.0 to 7.0 m in width, and are in fair to poor condition.

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1 World Bank. 2016. *World Development Indicators.* Washington, DC.
2 Department of Census and Statistics, 2015. *Household Income and Expenditure Survey 2012/13*. Colombo.
3 Asian Development Bank. 2017. *Guidelines for the Economic Analysis of Projects*. Manila.
4 Asian Development Bank. 2014. *Report and Recommendation of the President to the Board of Directors: Proposed Multitranche Financing Facility to the Democratic Socialist Republic of Sri Lanka for the Integrated Road Investment Program*. Manila.

6. **Improvement standards.** The project roads will be rehabilitated or reconstructed with asphalt concrete surfacing. The representative international roughness index of existing roads is 4.5–9.0 m/km for unsealed roads and 3.5–8.0 m/km for sealed roads, and will be reconstructed or rehabilitated with an international roughness index design target of 2.5–3.0 m/km after improvement. Design parameters for typical cross sections by road category are summarized in Table 1. Local roads with higher traffic levels will be widened for increased road safety where such width is available. Measures to improve road safety and control speed at locations with limited visibility, such as curves and commercial areas, are included in engineering designs. Improvement works have been optimized for economy and construction efficiency in accordance with applicable design standards, and for resilience to climate change.

Table 1: Design Parameters for Project Roads

Road Category	Roadway Width (m)	Shoulder Width (m)	Roughness Index (m/km)
National roads	5.5–7.0	0.75–1.0	2.5–3.0
Provincial and urban roads	4.0–5.5	0.50–1.0	2.5–3.0
Local roads	2.0–4.0	0.50–1.0	2.5–3.0

km = kilometer, m = meter.
Source: Road Development Authority.

7. **Road selection and least-cost analysis.** A list of over 2,000 road sections, representing a combined length of 5,966 km, was provided by provincial and local authorities as potential roads to be included in the program. The RDA added 27 national road sections to the list, for a total of 344 km, based on connectivity considerations between rural and economic centers. Based on physical, technical, social, environmental, and economic considerations, a multi-criteria assessment led to the selection of 1,865 roads, with a total length of 4,426 km, for which the economic benefits were further assessed using HDM-4. Based on the available budget for the investment program, the 1,431 road sections that yield the highest economic benefits are proposed for implementation, with a total length of 3,746 km (Table 2).

Table 2: Details of Project Road Lengths
(km)

Province	District	National	Local	Provincial	Urban	Total
Eastern Province	Ampara		183.7	125.6	10.1	319.5
	Baticaloa		93.7	66.9	24.4	185.0
	Trincomalee		84.2	88.3	13.2	185.6
	National Roads	155.8				155.8
	Total	**155.8**	**361.6**	**280.8**	**47.7**	**845.8**
Northern Province	Jaffna		82.3	169.4	8.6	260.2
	Kilinochchi		65.0	116.8		181.8
	Mannar		36.9	92.1	8.7	137.7
	Mullaitivu		54.8	86.6		141.3
	Vavuniya		72.4	143.3	6.1	221.8
	National Roads	114.9				114.9
	Total	**114.9**	**311.3**	**608.2**	**23.4**	**1,057.8**
Uva Province	Badulla		299.2	191.5	3.8	494.5
	Monaragala		205.2	271.9		477.1
	National Roads	72.9				72.9
	Total	**72.9**	**504.4**	**463.4**	**3.8**	**1,044.5**
Western Province	Colombo		173.4	49.5	24.3	247.2
	Gampaha		221.8	85.6		307.4
	Kalutara		150.3	94.5	0.6	245.4
	Total		**545.4**	**229.6**	**24.9**	**800.0**
Total		**343.6**	**1,722.7**	**1,582.0**	**99.9**	**3,748.1**

km = kilometer.
Source: Asian Development Bank estimates.

C. Demand Analysis

8. **Traffic volumes.** Traffic volumes were obtained from classified traffic counts carried out on project road sections (Table 3). Motorized traffic, at aggregate level for all project road sections, consists of two-wheelers (57.4%), three-wheelers (25.4%), cars (3.5%), vans (3.0%), buses (1.5%), goods vehicles (7.1%), and tractors (2.1%).

Table 3: Annual Average Daily Traffic on Project Roads

Province	Motorized Vehicles				Non-Motorized Vehicles			
	Local	Provincial	Urban	National	Local	Provincial	Urban	National
Eastern Province	604	1,077	1,576	2,409	489	561	1,090	343
Northern Province	584	1,054	1,651	2,385	684	811	888	266
Uva Province	378	696	1,317	2,064	229	229	710	262
Western Province	646	1,329	1,477		254	278	505	
Total	**549**	**992**	**1,560**	**2,330**	**376**	**517**	**893**	**301**

Source: Asian Development Bank estimates.

9. **Traffic growth forecast.** Future traffic growth was estimated for each province on the basis of socioeconomic profiles, past traffic, and vehicle growth rates (Table 4). Linear regressions were performed to obtain the elasticity of travel demand to socioeconomic output, and highlighted that (i) demand for public transport has been historically correlated to population, (ii) private vehicle ownership increases in line with per capita income, and (iii) the growth of freight transport is correlated to the gross domestic product (GDP) growth. The GDP growth rate for Sri Lanka was assumed to be 5.0% per annum over 2017–2022, with assumptions tapered over time.[5] The traffic growth rates estimated used for the project are in Table 5.

Table 4: Vehicle Fleet and Growth of Registered Vehicles

Province	Vehicle Fleet, 2015 ('000 units)			Annual Growth Rate 2006–2015 (%)		
	Public Transport	Private Transport	Freight Transport	Public Transport	Private Transport	Freight Transport
Eastern	1.3	278.6	6.4	2.7	13.8	5.2
Northern	2.2	176.0	10.9	2.8	13.8	4.2
Uva	1.8	191.8	5.7	4.2	11.3	7.1
Western	24.4	1,473.2	97.3	5.2	11.0	2.9
Sri Lanka	52.7	4,158.3	230.9	3.0	10.0	3.8

Source: Road Development Authority. 2017. *Traffic Studies & Economic Analysis.* Colombo.

Table 5: Forecast of Annual Average Traffic Growth Rates
(%)

Province	2016–2028			2029–2038		
	Public Transport	Private Transport	Freight Transport	Public Transport	Private Transport	Freight Transport
Eastern	4.3	5.9	3.2	3.5	3.6	2.4
Northern	4.5	6.8	4.3	4.5	6.8	4.3
Uva	4.6	5.6	2.6	3.6	3.6	2.0
Western	3.0	4.3	1.8	2.4	3.0	1.5

Source: Road Development Authority. 2017. *Traffic Studies & Economic Analysis.* Colombo.

10. **Diverted and generated traffic.** Diverted traffic has been estimated for all project roads based on the respective connectivity to other network roads. Diverted traffic has been estimated at 10% of normal traffic for local or provincial roads that connect to another local or provincial

[5] International Monetary Fund. World Economic Outlook Database. https://knoema.com/IMFWEO2017Apr/imf-world-economic-outlook-weo-database-april-2017?country=1001570-sri-lanka (accessed May 2017).

road, 15% for a local or provincial road that connects to a national road, and 20% for a national road that connects to another national road. The magnitude of generated traffic depends on the estimated level of benefits that accrues to the project area through improved road conditions. Generated traffic has been assumed at 0% to 30% for private vehicles based on the extent of travel time savings, and at 10% for freight vehicles as a result of improved connectivity to markets and the potential for productivity increases in the agriculture sector.

D. Economic Analysis

11. **Key economic assumptions.** The economic analysis was carried out in accordance with ADB Guidelines (footnote 3) by comparing costs and benefits in the with- and without-project cases, using a 9% discount rate and the economic internal rate of return (EIRR) as decision criteria. The domestic price numeraire was used. Costs and benefits were valued in monetary terms as of 1 May 2017, expressed in economic prices in Sri Lankan rupees (SLRs), discounted to 1 July 2017, and converted at an exchange rate of $1 = SLRs152.66. The analysis assumed 2 years of construction (2019–2020) and 20 years of operation (2021–2040). Residual values were calculated using a straight-line depreciation method based on the economic life of the project assets. A shadow exchange rate factor of 1.061 was calculated using international trade statistics for Sri Lanka.[6] A shadow wage rate of 0.72 calculated from construction industry wages for unskilled laborers was applied to the unskilled labor costs. The benefits of generated traffic have been quantified at half the benefits of normal traffic.

12. **Capital costs.** Financial construction costs are based on the bill of quantities and unit rates in accordance with preliminary engineering designs. Economic costs of civil works vary between SLRs6.0 million and 102.7 million per km, with an average of SLRs22.3 million per km (Table 6). Project costs include the costs of civil works, physical contingencies, construction supervision, utility shifting, and environmental and social costs. Economic costs of construction were derived from financial construction cost by applying a conversion factor of 0.85 obtained by removing taxes and transfer payments, and exclude price contingencies and financing charges.

Table 6: Project Costs

Category	Length (km)	Average Unit Cost (SLRs million/km)	Project Cost (SLRs million)
Local Roads	1,722.7	20.8	34,893.2
Provincial Roads	1,582.0	24.5	38,416.0
Urban Roads	99.9	23.7	2,390.5
National Roads	343.6	39.4	14,617.9
All Roads Total	**3,748.1**	**22.3**	**90,317.6**

km = kilometer, SLRs = Sri Lanka rupees.
Source: Asian Development Bank estimates.

13. **Maintenance costs.** Maintenance costs are based on published unit rates and on recent road expenditure details.[7] Periodic maintenance needs are assumed to be met in both the without- and with-project case. The without-project scenario considers maintenance costs to prevent roads from deteriorating from their present condition. Maintenance costs comprise (i) annual routine maintenance, including patching, crack sealing, grading, edge repair, and cleaning of drainage system and structures; and (ii) periodic maintenance, with resurfacing at 5- to 10-year intervals. Routine maintenance costs are estimated to be about 1% of civil works costs, and periodic

[6] International Monetary Fund. International Finance Statistics and Global Financial Stability Report. http://www.imf.org/en/Data *(*accessed 22 May 2017).
[7] Road Development Authority. 2015. *Highway Schedule of Rates.* Colombo.

maintenance is equal to about 10% of civil works costs.

14. **Construction management.** Potential congestion costs during construction are considered marginal because the project roads are predominantly in rural areas with low traffic volumes. Project roads are in poor condition, and as the road construction progresses, the condition of road sections will increasingly improve and lead to VOC and time savings on improved sections. The analysis therefore considered the impact of construction to be neutral.

15. **Project benefits.** The benefits of the project include higher vehicle speeds and improved riding quality, resulting in savings in travel time, VOC, and carbon dioxide (CO_2) emissions. These benefits were assessed with HDM-4, which uses input data on traffic, road geometry, road condition, pavement structure, and maintenance and improvement standards to estimate the savings.

16. **Value of time.** Travel time savings are based on time savings by vehicles, converted to monetary value through estimated value of time. The value of passenger time was based on estimated income levels for public and private transport users.[8] The value of working time of car users was estimated to be 5.3 times that of two- and three-wheelers, and the value of time of two- and three-wheelers was estimated to be about 1.9 times that of bus users. The value of non-working time is taken as 20% of the working time (Table 7). The value of time of goods in transit was based on the opportunity cost of cargo, calculated as the cost of cargo delay, and was estimated at SLRs22.0 per hour for light commercial vehicles and SLRs25.9 for medium and heavy goods vehicles. The value of non-motorized traffic was estimated at SLRs10.0 for bicycles and SLRs7.5 for pedestrians.

Table 7: Values of Passenger Working and Non-Working Time

(SLRs per hour)

Item	Bus	Car	2- and 3-wheelers
Working time	59.2	598.2	113.6
Non-working time	9.9	99.7	18.9

SLRs = Sri Lanka rupees.

Source: Asian Development Bank estimates.

17. **Vehicle operating costs savings.** The program roads will result in savings to road users in the form of reduced VOC; these are calculated through the HDM-4 model, which uses surveyed market prices of vehicles, tires, and fuel; and operation and maintenance staff costs for each vehicle category to calculate unit operating costs. The economic price of fuel per liter is SLRs64.7 for gasoline and SLRs64.8 for diesel, excluding duties and taxes.

18. **Emissions savings.** The project will result in CO_2 emissions savings of about 349,500 tons over 20 years, or 17,500 tons per year. Savings were valued at $36.3 per ton in 2016 values, increasing at 2% per year in real terms.

19. **Other savings.** In addition to quantified benefits, the project will accelerate the economic growth of rural areas that otherwise suffer from poor connectivity. Once connected through the all-weather paved project roads, residents will benefit from improved access to social, health, education, and employment facilities, which will contribute to a reduction in poverty in project areas (para. 23). The project is also likely to reduce accident rates as the roads will incorporate several safety design features. However, the impact of accident cost savings has not been included in the analysis.

[8] Household Income and Expenditure Survey 2012/13 (footnote 2); Ministry of Finance and Planning. 2001. *Assessing Public Investment in the Transport Sector*. Colombo.

20. **Economic analysis.** The economic costs and benefits of all roads proposed to be rehabilitated or reconstructed under all tranches of the time-sliced investment program were evaluated. The overall EIRR of the overall project is estimated to be 17.2%, and 17.1% when excluding CO_2 emissions savings (Table 8). The economic costs and benefits streams of the project are in Table 9.

21. **Sensitivity analysis.** Sensitivity tests were conducted to assess the economic viability of the project to adverse changes in costs and benefits, as follows: (i) capital costs increased by 10%, (ii) benefits reduced by 10%, (iii) capital costs increased by 10% and benefits reduced by 10%, and (v) time savings decreased by 20%. The EIRR of the project remains above 9% in all scenarios, decreasing to a minimum of 14.2% in the case of a 10% increase in costs and 10% decrease in benefits. Sensitivity analyses therefore demonstrate the overall robustness of the project, which remains economically viable with adverse variations in costs and benefits. The project is thus recommended for implementation on the basis of its economic benefits.

Table 8: Results of the Economic Analysis

Category	Base Case		Excluding CO_2 Benefits		Capital Costs +10%		Benefits –10%		Costs +10%; Benefits –10%		Time Savings –20%	
	EIRR %	NPV SLRs	EIRR %	NPV SLRs	EIRR %	SV[a] %	EIRR %	SV[a] %	EIRR %	SV[a] %	EIRR %	SV[b] %
Eastern Province	**14.6**	**7,888**	14.5	7,738	13.3	54.8	13.1	(35.3)	11.9	21.5	13.5	(87.0)
Local Roads	13.7	3,347	13.5	3,189	12.4	45.4	12.2	(30.7)	11.0	18.3	12.7	(85.6)
Provincial Roads	14.7	3,125	14.8	3,157	13.3	54.0	13.2	(35.3)	11.9	21.4	13.4	(77.8)
Urban Roads	19.6	1,416	19.4	1,393	18.0	113.8	17.8	(53.8)	16.3	36.5	18.1	
Northern Province	**19.6**	**23,361**	19.5	23,071	18.0	114.5	17.8	(53.1)	16.3	36.3	18.2	
Local Roads	18.8	6,264	18.6	6,080	17.3	106.4	17.1	(50.9)	15.6	34.5	17.7	
Provincial Roads	19.8	16,485	19.7	16,385	18.1	117.0	18.0	(53.7)	16.5	36.8	18.3	
Urban Roads	23.7	612	23.6	606	21.6	141.3	21.5	(59.4)	19.6	41.8	21.7	
Uva Province	**14.6**	**11,146**	14.4	10,731	13.3	55.7	13.1	(35.7)	11.9	21.8	13.3	(77.5)
Local Roads	12.7	3,690	12.5	3,433	11.5	36.3	11.4	(26.6)	10.2	15.3	11.6	(60.4)
Provincial Roads	16.3	7,310	16.2	7,153	14.9	74.7	14.8	(42.8)	13.4	27.2	14.9	(89.5)
Urban Roads	25.6	146	25.4	145	23.6	194.4	23.5	(67.7)	21.6	50.2	23.5	
Western Province	**17.5**	**12,744**	17.4	12,538	16.0	84.3	15.9	(46.3)	14.4	29.9	15.8	(90.4)
Local Roads	16.2	6,717	16.0	6,525	14.7	70.0	14.6	(41.6)	13.2	26.1	14.6	(83.3)
Provincial Roads	19.0	5,063	19.0	5,055	17.4	100.0	17.2	(50.8)	15.7	33.7	17.2	(95.6)
Urban Roads	27.8	964	27.7	958	25.6	207.8	25.4	(68.5)	23.4	51.5	25.4	
National Roads	**19.7**	**14,314**	19.7	14,449	18.0	109.9	17.8	(52.3)	16.3	35.4	17.9	
Eastern Province	23.2	7,032	23.3	7,095	21.4	156.9	21.2	(60.8)	19.4	43.8	21.2	
Northern Province	18.0	5,452	18.1	5,497	16.5	89.2	16.3	(47.1)	14.8	30.8	16.4	(95.0)
Uva Province	16.6	1,829	16.7	1,856	15.1	75.1	15.0	(43.2)	13.6	27.4	15.2	(93.1)
Overall Project	**17.2**	**69,453**	**17.1**	**68,527**	**15.7**	**83.7**	**15.6**	**(45.5)**	**14.2**	**29.5**	**15.8**	

( ) = negative, CO_2 = carbon dioxide, EIRR = economic internal rate of return, NPV = net present value, SV = switching value.

[a] Switching value represents the percentage by which a parameter must change to produce an EIRR of 9%.

[b] The switching value cannot be calculated when a 100% decrease results in an EIRR above 9%.

Source: Asian Development Bank estimates.

Table 9: Economic Costs and Benefits of All Project Roads
(SLRs million)

Year	Increase in Road Agency Costs		Decrease in Road User Costs				Net Benefits
	Capital Costs	Maintenance Costs	VOC Savings	MT Time Savings	NMT Time Savings	CO_2 Savings	
2019	35,477	(80)					(35,397)
2020	54,841	(155)	370	7	202	10	(54,098)
2021		(79)	6,095	5,392	1,064	177	12,807
2022		(420)	7,208	6,040	1,098	67	14,833
2023		(103)	7,251	6,373	749	54	14,529
2024		(90)	8,673	6,791	1,048	81	16,683
2025		(120)	9,801	7,238	1,204	101	18,464
2026		(4,324)	10,811	7,696	1,306	117	24,253
2027		(387)	7,463	7,934	1,013	79	16,876
2028		(31)	7,170	8,360	658	57	16,276
2029		(129)	8,161	8,835	932	85	18,141
2030		1,023	8,653	9,151	1,024	97	17,901
2031		(135)	9,148	9,479	1,072	108	19,942
2032		13,481	9,592	9,821	1,090	116	7,138
2033		(138)	9,584	10,154	798	104	20,778
2034		(203)	10,768	10,534	1,088	140	22,734
2035		(153)	11,424	10,907	1,170	156	23,811
2036		(4,275)	12,141	11,322	1,218	175	29,130
2037		(439)	10,870	11,756	1,154	167	24,386
2038		205	10,560	12,200	813	146	23,514
2039		(138)	11,818	12,710	1,109	199	25,974
2040	(17,217)	(148)	12,531	13,219	1,182	227	44,524
						EIRR	17.2%
						NPV @	69,453.2

() = negative, CO_2 = carbon dioxide, EIRR = economic internal rate of return, MT = motorized travel, NMT = non-motorized travel, NPV = net present value, SLRs = Sri Lanka rupees, VOC = vehicle operating cost.
Source: Asian Development Bank estimates.

E. Distribution Analysis

22. **Poverty distribution.** At the national level, 6.7% of the population lives below the poverty line of $0.9/day as of 2013 (footnote 2). Disparities exist between urban and rural areas: 2.1% of the urban population lives below the poverty line, compared to 7.6% of the rural population and 10.9% in estate (plantation) areas. In addition to the population living below the poverty line, it is estimated that an equal proportion of the population in each district remains vulnerable—living close to but above the poverty line. The proportion of the population living below the poverty line is estimated at 11.0% in Eastern Province, 10.9% in Northern Province, 15.4% in Uva Province, and 2.0% in Western Province. The four poorest districts in the country are Batticaloa (Eastern Province), Mannar and Mullaitivu (Northern Province), and Moneragala (Uva Province), with poverty rates of 19.4% to 28.8%. These districts are targeted by the investment program.

23. **Poverty impact ratio.** In the absence of household interview survey data that link income classes with vehicle ownership and vehicle usage, the estimated level of benefits accruing to poor users was determined through an assessment of the likelihood of vehicle owners, vehicle users, freight vehicle owners, and laborers to be poor or vulnerable. The analysis notably assumed that (i) 0% of car owners are poor or vulnerable, (ii) motorcycle owners are 33% less likely than the general population to be poor or vulnerable, (iii) non-motorized road users are twice as likely as the general population to be poor or vulnerable, and (iv) laborers involved in the construction of

the project are three times as likely as the general population to be poor or vulnerable. By rehabilitating about 3,748 km of rural roads, the project will increase net income in the four provinces by an estimated SLRs71,794 million over the 22-year life of the project. The poverty impact ratio is estimated to be 33.8%. The project benefits accruing to the poor and vulnerable people are summarized in Table 10.

Table 10: Poverty Impact Assessment

Item	Vehicle Owners	Vehicle Passengers	Freight Vehicles	Labor	Government	Total
NPV (SLRs million)	77,059	70,299	10,282	13,735	(99,582)	71,794
Shares accruing to the poor and vulnerable (%)	7.7%	27.9%	10.1%	31.7%	6.7%	
Benefits accruing to the poor and vulnerable (SLRs million)	5,964	19,610	1,036	4,349	(6,672)	24,288
Poverty Impact Ratio						**33.8%**

( ) = negative, NPV = net present value, SLRs = Sri Lanka rupees.
Source: Asian Development Bank estimates.

F. Financial Sustainability

24. The project will not generate revenue. Financial requirements for the maintenance of road assets are expected to decrease in the first 10 years of operation after construction as a result of (i) improved pavement conditions requiring lower routine maintenance, and (ii) the inclusion of performance-based maintenance contracts (5-year term for national roads, and 3-year terms for provincial, local, and urban roads). The structure of the project therefore promotes sustainable maintenance of the project roads in the first years of operation. The maintenance of project roads will become the responsibility of the respective agencies after the performance-based maintenance contracts elapse.

25. The incremental recurrent national road costs are estimated to represent 0.7% of the RDA's maintenance budget for national roads and highways, amounting to SLRs4.3 billion in 2015. Consequently, and considering the recent improvements in RDA road maintenance capacity, it is reasonable to expect that the RDA budget for national roads and highways will be sufficient to meet the maintenance costs of the national roads under the project.

26. Incremental recurrent costs associated with (i) provincial roads in the Eastern, Northern, and Uva provinces are estimated to require a 2% to 7% increase in the maintenance budgets of provincial authorities (SLRs1.6 billion in 2015); (ii) local roads in the Eastern, Northern, and Uva provinces are estimated to require a 29% to 41% increase of the maintenance budget of local authorities (SLRs270 million in 2015); and (iii) provincial and local roads in the Western Province are estimated to decrease by about SLRs 12 million per year, or 3.0% of the maintenance budget of provincial and local authorities (SLRs402 million in 2015). Improved institutional funding arrangements are thus required to ensure the sustainability of project roads over their design life, particularly in the Eastern, Northern, and Uva provinces (primarily after the initial 10 years, when maintenance requirements are anticipated to be lower). Institutional management specialists will be recruited under the investment program to propose feasible policy improvements or alternatives to the existing road maintenance trust fund. ADB will closely monitor progress during investment program implementation.