

**Validation Report**  
November 2020

# Nepal: Kathmandu Sustainable Urban Transport Project

Reference Number: PVR-726  
Project Number: 44058-013  
Loan Number: 2656  
Grants Numbers: 0212 and 0239



*Raising development impact through evaluation*

## ABBREVIATIONS

ADB	– Asian Development Bank
CO <sub>2</sub>	– carbon dioxide
DMF	– design and monitoring framework
DOTM	– Department of Transport Management
EIRR	– economic internal rate of return
EMP	– environmental management plan
FIRR	– financial internal rate of return
GEF	– Global Environment Facility
IED	– Independent Evaluation Department
km	– kilometer
O&M	– operation and maintenance
PCR	– project completion report
PMCO	– project management and coordination office
PWD	– person with disability
RRP	– report and recommendation of the President
SDR	– special drawing right
TA	– technical assistance
VOC	– vehicle operating cost

## NOTE

In this report, “\$” refers to United States dollars.

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## PROJECT BASIC DATA

<b>Project number</b>	44058-013	<b>PCR circulation Date</b>	30 June 2020	
<b>Loan and grant numbers</b>	2656, 0212, and 0239	<b>PCR validation Date</b>	Nov 2020	
<b>Project name</b>	<b>Kathmandu Sustainable Urban Transport Project</b>			
<b>Sector and subsector</b>	Transport	Transport policies and institutional development Urban public transport Urban roads and traffic management		
<b>Strategic agenda</b>	Environmentally sustainable growth Inclusive economic growth			
<b>Safeguard categories</b>	Environment	B		
	Involuntary resettlement	B		
	Indigenous peoples	C		
<b>Country</b>	Nepal	<b>Approved</b> (\$ million)	<b>Actual</b> (\$ million)	
<b>ADB financing</b> (\$ million)	<b>ADF: 10.00</b>	<b>Total project costs</b>	30.42	12.38
	<b>OCR: 10.00</b>	<b>Loan/Grant</b>		
		L2656	10.00	3.82
		G0212	10.00	5.03
		<b>Borrower</b>	7.90	2.51
<b>Cofinancier</b>	GEF	<b>Total cofinancing</b> G0239	2.52	1.02
<b>Approval dates</b>		<b>Effectiveness date</b>		
	L2656	22 Jul 2010	L2656	24 Jan 2011
	G0212	22 Jul 2010	G0212	24 Jan 2011
	G0239	30 Nov 2010	G0239	20 Oct 2011
<b>Signing dates</b>		<b>Loan closing dates</b>		
	L2656	26 Oct 2010	L2656	30 Jun 2015
	G0212	26 Oct 2010	G0212	30 Jun 2015
	G0239	22 Jul 2011	G0239	30 Jun 2015
		<b>Financial closing date</b>		11 Dec 2019
<b>Project Officers</b>		<b>Location</b>	<b>From</b>	<b>To</b>
	D. C. Margonsztern	ADB HQ	Oct 2010	May 2013
	A. Kaneko	ADB HQ	Dec 2012	Jul 2013
	A. Heriawan	ADB HQ	Oct 2013	Jan 2016
	L. Sharma	ADB HQ	Jan 2016	Apr 2018
	L. Subedi	NRM	Apr 2018	Aug 2018
	N. Pradhan	NRM	Aug 2018	Dec 2019
<b>IED review</b>				
<b>Director</b>	N. Subramaniam, IESP			
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ADB = Asian Development Bank, ADF = Asian Development Fund, GEF = Global Environment Facility, HQ = headquarters, IED = Independent Evaluation Department, IESP = Sector and Project Division, NRM = Nepal Resident Mission, OCR = ordinary capital resources, PCR = project completion report.

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## I. PROJECT DESCRIPTION

### A. Rationale

1. Population growth, urban sprawl, and increasing motorization rates had severely constrained the urban infrastructure in the Kathmandu valley, according to the report and recommendation of the President (RRP).<sup>1</sup> Traffic in the city was frequently at a standstill and heavily congested with cross-city journeys taking hours; roads were saturated; and any incident at a junction affected the entire road network. In Kathmandu, there were 95 fatalities and 156 injuries due to road accidents from October 2009 to March 2010. The average road density in Kathmandu was at 54 kilometers (km) per 100 square kilometers, with main roads often narrow and clogged with parked cars and buses waiting for passengers. Kathmandu valley registered 2,765 road accidents during 2008–2009.

2. Selective road improvements could remove bottlenecks, but continuous expansion of the urban road network was neither sustainable nor equitable. Road space was increasingly saturated by private vehicles, benefiting only a small portion of the population (17% of Kathmandu valley households). Given the increase in vehicle ownership, the capacity of roads was expected to be exceeded. With the termination of government-operated services in 2008, public transport was exclusively provided by the private sector through individual operators using various vehicles. Bus routes were often poorly planned, and buses were overcrowded.

3. Increasing dependence on private modes of transport had adverse impacts on air quality, resulting in rapid increases in greenhouse gas emissions. The transport sector was the biggest producer of carbon dioxide (CO<sub>2</sub>) emissions with 386,000 metric tons of CO<sub>2</sub> released in Kathmandu valley in 2009. This was expected to rise dramatically with the increase in vehicles. Particulate matter and total suspended particulates had also become a serious public health concern (footnote 1).

### B. Expected Impacts, Outcomes, and Outputs

4. The envisaged impact of the project, as stated in the RRP's design and monitoring framework (DMF), was a sustainable and efficient urban transport system for Kathmandu valley, favoring local economic growth, and addressing climate change and air pollution mitigation. The expected outcome was improved public transport services and walkability in Kathmandu, favoring a modal shift from private vehicles, and improving traffic conditions. The four planned outputs were improved and upgraded public transport and strengthened capacity of the Department of Transport Management [DOTM] (output 1), improved traffic management (output 2), improved walkability in the city center (output 3), and enhanced air quality monitoring (output 4).

### C. Provision of Inputs

5. According to the project completion report (PCR), loan 2656 and grant 0212 were approved by the Board in July 2010 and grant 0239 in November 2010.<sup>2</sup> Loan 2656 and grant 0212 became effective in January 2011 and grant 0239 in November 2011. The project's original

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<sup>1</sup> Asian Development Bank (ADB). 2010. *Report and Recommendation of the President to the Board of Directors: Proposed Loan, Grant, and Administration of Grant for the Nepal Kathmandu Sustainable Urban Transport Project*. Manila.

<sup>2</sup> ADB. 2020. *Completion Report: Kathmandu Sustainable Urban Transport Project in Nepal*. Manila.

closing date was in December 2014. For the two grants, given three approved extensions by the Asian Development Bank (ADB), actual closing date occurred in June 2018. For the loan, with the two approved extensions, closing date was also delayed until December 2017. However, the project was not completed by that time, and subsequently the Government of Nepal agreed to complete the remaining unfinished works with its own funding. Grants were extended until June 2018 to complete the mass transit options study, which was submitted by the consultant in December 2018. The project was financially closed in December 2019 after the pending ineligible claims were finally settled.<sup>3</sup>

6. The project was estimated to cost \$30.42 million at appraisal. ADB was to finance 66% composed of 50% grant and 50% loan; the Global Environment Facility (GEF) was to provide 8% as a grant; and the remaining 26% was financed by the government. The government requested a loan in various currencies equivalent to SDR6.89 million and a grant not exceeding \$10 million from ADB's Special Funds resources to help finance the project. ADB funds were intended to finance part of the civil works, equipment, consulting services, implementation of pilot bus routes, recurrent costs, training and capacity building, awareness-raising campaigns, and interest charges during implementation. GEF funds were to finance part of the public transport component related to climate change, specifically air pollution mitigation measures such as purchase of electric or low-emission vehicles to replace diesel microbuses operating on the pilot routes and a feasibility study for the reintroduction of trolleybuses.<sup>4</sup> Government financing was to be used for land acquisition and resettlement, taxes and duties, part of project management, and part of the civil works.

7. At completion, the actual total cost was \$12.38 million (40% of the appraisal estimate). ADB funded 72%, the GEF 8%, and the government 20%. The low fund utilization was primarily due to the poor performance of one of the major contractors. Given the slow progress, ADB cancelled \$8.43 million at the request of the government. In May 2015, ADB approved the government's request to reallocate the cancelled amount to support relief and reconstruction activities in the aftermath of the 2015 earthquakes (footnote 2). Subsequent partial cancellations were done, as the undisbursed balance had not been utilized.

8. At appraisal, 466 person-months of consulting services for a total of \$4.4 million were to be engaged. At completion, the project engaged 91 person-months of international consulting and 266 person-months of national consulting for project management and capacity building, and 294 person-months of national consulting for design and supervision. The original implementation period for project management and capacity building was 36 months, which was extended four times before it closed. The project also engaged three design and supervision consultants to work with the Department of Roads, the Kathmandu Metropolitan City, and the project itself. The project appointed another consultant to complete the mass transit options and the prefeasibility study, which was finished in December 2018.

9. The project was classified as category B for its environment impact and involuntary resettlement, and category C for Indigenous Peoples. The initial environmental examination found that the planned subprojects, such as junction improvements along the Bishnumati Link Road, would only have small and localized adverse impacts on the environment that could be mitigated. Land acquisition and involuntary resettlement impacts were confined to junction improvements along the Bishnumati Link Road and were minimized through the design process. A resettlement

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<sup>3</sup> The statement of expenditure review of advance account utilization by ADB showed ineligible expenditure of \$1,711. Refunding this required significant follow-up resulting to an 18-month delay in financial closing.

<sup>4</sup> Trolleybuses ceased operations in 2008.

plan was prepared for this subcomponent to ensure compliance with the government and ADB policy requirements. A resettlement framework was also prepared in the unlikely case that land acquisition was needed during implementation. The project was not expected to trigger indigenous peoples' safeguards.

#### **D. Implementation Arrangements**

10. The government established a permanent high-level policy coordination committee chaired by a member of the National Planning Commission, and an implementation committee headed by the Ministry of Physical Infrastructure and Transport secretary to provide policy directions and interagency coordination for urban transport in the Kathmandu Valley. The implementation committee also functioned as the project steering committee (footnote 2). The Ministry of Physical Infrastructure and Transport was the executing agency, responsible for overall project execution and coordination. A project management and coordination office (PMCO) was to be established in the Ministry and headed by a full-time project director, responsible for managing all PMCO activities.<sup>5</sup> However, the lack of guidance from the high-level policy coordination committee and the project steering committee, coupled with the high turnover of senior staff during implementation, demonstrated weak ownership of the executing agency.

11. Project implementation units were established in the five implementing agencies to be responsible for implementing project outputs under their authority: DOTM for public transport; Department of Roads for traffic management; Metropolitan Traffic Police Division for traffic control and enforcement; Kathmandu Metropolitan City for parking, facilitation of pedestrian improvements, and public-private partnership initiatives; and Department of Environment for air quality monitoring. Only one bus route (S5) operated since the project could not convince the private bus operators and the Federation of Nepalese National Transport Entrepreneurs to operate through a formal institutionalized mechanism.

12. The loan and grant agreements contained 23 conditions and covenants. The project complied with 14, partly complied with 5, failed to comply with 2, and 2 were not relevant. None of the conditions or covenants were modified, suspended, or waived. The poor performance of the contractor and non-achievement of substantial outputs resulted in noncompliance with two covenants. The reasons for the partial compliance were the significant delay in obtaining approval from the High Powered Committee for Integrated Development of the Bagmati Civilization for improvement of some junctions; no baseline or end line survey data were collected for project performance monitoring; pending compensation cases; and the lack of endorsement of institutional reforms by the DOTM. Compliance with two covenants were delayed due to a protracted approval process for the service and financial agreements between the operator of the S5 bus route and the Town Development Fund; and a significant lag in establishing a funds flow mechanism. Two covenants were not relevant since there was no need for the resettlement of the families, and the alternative for GEF cofinancing was not needed.

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<sup>5</sup> PMCO was to be responsible for (i) preparing the overall project implementation plan and detailed work program, (ii) reviewing and approving designs of subprojects and equipment specifications submitted by implementing agencies, (iii) providing overall guidance and assistance to implementing agencies on procurement and engaging consultants, (iv) carrying out procurement of large equipment on behalf of and under the technical supervision of the implementing agencies, (v) recruiting project management and capacity building consultants, (vi) preparing and consolidating project progress and completion reports, and (vii) ensuring compliance with ADB's 2009 Safeguard Policy Statement and financing agreement covenants.

## II. EVALUATION OF PERFORMANCE AND RATINGS

### A. Relevance of Design and Formulation

13. The PCR rated the project less than relevant. It indicated that the project was consistent with ADB's 2010–2012 country partnership strategy for Nepal, which considered transport a priority sector, and with the 2013–2017 strategy.<sup>6</sup> The PCR noted that the project was aligned with ADB's Sustainable Transport Initiative Operational Plan and ADB's Strategy 2020.<sup>7</sup> The project was also consistent with the government's development strategy at the time, emphasizing rehabilitating and reconstructing physical infrastructure as well as National Urban Policy to improve quality of life for urban dwellers by creating a clean, safe, and developed urban environment.<sup>8</sup>

14. In the PCR's view, the project design became less relevant during implementation. It could have benefited from a more thorough assessment of the institutional capacity of the implementing agencies during project preparation. All the agencies lacked institutional capacity, and the project's efforts to strengthen capacity and coordination efforts were inadequate. The project was not ready for financing, as the underlying institutional challenges were not addressed. The PCR viewed the project financing modality inappropriate and suggested a phased approach. In the first phase, a technical assistance (TA) project could have focused on policy changes for the public transport components and on the readiness aspects of the investment project such as detailed design, baseline surveys, and preparation of implementation arrangements. In phase two, an investment project to support physical infrastructure, technical equipment, and capacity development and awareness raising could have followed. Kathmandu was the first of seven pilot cities studied under two ADB regional TA projects to produce an operational project for sustainable urban transport and set the basis for future transport sector policy.<sup>9</sup>

15. During project preparation, due diligence was insufficient, resulting in unrealistic indicators, and the design had other shortcomings. The PCR noted that the implementation period was too short for such a complex project and that cost estimates for some of the project's components were unrealistically low. Also, the Ministry of Physical Infrastructure and Transport as well as other implementing agencies lacked ownership of the project. A viability analysis for the deployment of electric buses was not conducted and the procurement and contract management capacity of the implementing agencies did not match the complexity of the project. The project missed an opportunity to adjust the scope by revising the targets and indicators and simplifying implementation arrangements, given that the project was not progressing well. The PCR also noted that the project design could have identified contractor performance as one of the significant factors in the timely completion of civil works. Although the project was to be a part of a coordinated effort among development partners—ADB, World Bank, Japan International Cooperation Agency, and the public–private partnership team of the United Nations—there was inadequate coordination among them. Project coordination among the government agencies and local communities also proved to be complex as the implementing agencies were affiliated with

<sup>6</sup> ADB. 2009. *Country Partnership Strategy: Nepal, 2010–2012*. Manila and ADB. 2013. *Country Partnership Strategy: Nepal, 2013–2017*. Manila.

<sup>7</sup> ADB. 2010. *Sustainable Transport Initiative Operational Plan*. Manila and ADB. 2008. *Strategy 2020: The Long-Term Strategic Framework of the Asian Development Bank, 2008–2020*. Manila.

<sup>8</sup> Government of Nepal. 2007. *Three Year Interim Plan and 2007/08 – 2009/ 2010* Kathmandu and Government of Nepal 2007. National Urban Policy. Kathmandu.

<sup>9</sup> ADB. 2007. *Technical Assistance for Sustainable Urban Transport*. Manila and ADB. 2009. *Preparing the Implementation of Asian City Transport—Promoting Sustainable Urban Transport in Asia Project*. Manila.

different ministries outside the jurisdiction of the executing agency, the Ministry of Physical Infrastructure and Transport.

16. This validation assesses the project less than relevant given the limited institutional capacity, insufficient project preparation, and shortcomings in the design including the lack of a viability analysis for the deployment of electric buses as well as other serious design issues.

## **B. Effectiveness in Achieving Project Outcomes and Outputs**

17. The PCR rated the project ineffective in delivering outcomes and outputs. The DMF suggested six targets to measure project outcome. At completion, the PCR stated that one target was exceeded, one was achieved, two were partly achieved, and two were not achieved. The target exceeded pertained to Kathmandu being rated as one of the 30 most walkable cities in Asia in 2018 against targeted 50 such cities in Asia by 2015. On the one pilot route established out of the required two, ridership increased by 36% in 2018–2019 based on 10 months of operation, against a target of 20% increase. However, the baseline ridership was not an actual figure, thus the 36% increase cannot be verified, and this validation views the indicator as not achieved. Service satisfaction in the project route was 70% in 2019, which was a marginal increase of 4.5% from 67% reported in the 2012.<sup>10</sup> The target was 50%; therefore, the outcome was likely achieved. Traffic congestion based on speed and travel time was targeted to be reduced, but this was not achieved as average peak speed decreased from 21 km per hour in 2012 to 15 km per hour in 2019. The integration of technical design standards for public spaces and public transport facilities to be user-friendly to the elderly, persons with disabilities (PWDs), children, and women was partly achieved, with sidewalks at several road corridors having tactile, curve stone, interlocking block, railing, PWD-friendly kerb ramps, and traffic separators. Also, the 17 buses on the S5 route were PWD-friendly with provisions for wheelchairs and priority seats. However, the project could not construct 600 meters of Bishumati link road and the signage at the Dallu Pedestrian Bridge for public awareness was not completed. A 20% reduction in traffic accidents was not achieved as the number of road blackspots in Kathmandu increased from 23 in 2012 to 36 in 2019, and the number of accidents substantially increased from 1,732 in 2012 to 8,511 in 2019.

18. Majority of the output performance indicator targets were not achieved or partially achieved for all four outputs. For output 1 with eight performance indicators, one was achieved, one achieved with delay, three were partially achieved, and three were not achieved. The two performance indicators achieved on output 1 were training for executing and implementing agency staff on pro-poor and gender aspects in urban transport and establishing funds to finance electric vehicles managed by the Town Development Fund. The three partially achieved indicators were restructuring of the DOTM, implementing two pilot routes, and forming and franchising cooperatives to operate the pilot routes. The three indicators which were not achieved included the rationalization of public transport and addressing the needs of public transport users in the selection of routing, fares, and service hours; purchase of 155 electric buses through the fund and operation on the pilot routes; and completion of a preliminary design on the reintroduction of trolleybus services.

19. Under output 2, achievements were measured against four performance indicators of which one was indicated as achieved, two were partially achieved, and one was not achieved. It achieved developing an awareness campaign to improve safe driving and road safety.

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<sup>10</sup> The project did not conduct a perception survey but conducted interviews with a small group of passengers riding the S5 route.

One partially achieved target was the preparation of a capacity development plan and the conduct of training for the Metropolitan Traffic Police Division. The other target partially achieved with delay and did not comply with the agreed contract design was the improvement of 14 junctions, including two new bridges along the Bishnumati Link Road and city center. The indicator that was not achieved was the procurement and installation of 21 CCTVs with a control center, 8 traffic lights, and 21 police handsets.

20. Output 3 had five performance indicators of which one was achieved, three partially achieved, and one not achieved. The achieved target was the improvement of 16.1 km of safe sidewalks. The partially achieved targets were the construction of 8 km of heritage pedestrian routes which were replaced by 3 km pedestrian works in a different area; upgrading of 2 pedestrian bridges and building of 2 new bridges; and providing support for Kathmandu Metropolitan City with public-private partnerships for parking projects and redevelopment of the old bus park. The target that was not achieved was the participatory consultation with urban poor regarding site selection for urban infrastructure.

21. For output 4, there were four performance indicators of which one was achieved, one partially achieved, and two not achieved. The indicator achieved was the provision of two sets of emission testing equipment. The partially achieved targets were provision of six existing air quality monitoring stations with solar-powered backup systems and procurement of two new mobile stations. The two performance indicators not achieved were the revision of emission standards for vehicles and the air quality awareness campaign, including associated impacts on social, gender, and health issues.

22. The project was categorized as effective gender mainstreaming. To facilitate the access of women and the PWDs to the urban transport system and ensure gender responsiveness and social inclusiveness, the project prepared a gender equality and social inclusion action plan. The lack of road space, the 2015 earthquakes, lack of support by private transport operators, cancellation of the bid for an intelligent traffic system, and emergence of social safeguard issues resulted in much of the project not being completed. Only 62% of 13 gender equality and social inclusion action plan activities were completed, and 50% of 6 quantitative targets achieved. Hence, the project was unsuccessful in achieving the intended gender results.

23. The project was correctly classified as category B for environment. All construction contracts contained provisions for compliance with the environmental management plan's (EMP) requirements. However, the contractors' compliance was weak during implementation. They did not fully comply with the EMP's required measures to protect the environment; limit air and water pollution, noise and vibration; and ensure workers' health and safety. The project was correctly classified as category B for involuntary resettlement and C for indigenous peoples. ADB prepared a resettlement framework and resettlement plan. However, implementation of mitigation measures was not fully complied with. The resettlement plan was subsequently updated to reflect changes in project scope, yet its implementation of the updated plan was not satisfactory.<sup>11</sup> The government had no provision to compensate for structures erected on government land; proposed allowances and other assistance were uncompensated; and the executing agency failed to comply with involuntary resettlement requirements. A grievance redress committee was formed where nine people lodged grievances on compensation, and only two were resolved.

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<sup>11</sup> The revised scope reduced the impact of involuntary resettlement and the number of affected households declined from 29 to 18, the number of affected persons decreased from 195 to 79, the number of affected structures decreased from 22 to 15, and affected private land area decreased from 572 square meters to 133 square meters.

24. In this validation's view, two outcome targets were achieved, one was partly achieved and three were not achieved. Most of the output targets were not achieved or were partially achieved. Out of the 21 targets, the project achieved 4 (19%), partially achieved 10 (48%), and did not achieve 7 (33%). Its implementation of environmental and social safeguards was not satisfactory, and the implementation of the gender equality and social inclusion action plan was rated unsuccessful. This validation assesses the project ineffective.

### **C. Efficiency of Resource Use**

25. The PCR rated the project inefficient in achieving outcomes and outputs. An economic internal rate of return (EIRR) was computed only for public transport using low-carbon-emission buses on the S5 pilot route, which was 2.5%, and this value was significantly lower than the 20.6% envisaged at appraisal. The appraised EIRR was for the entire project. Also, the PCR did not clearly discuss the capital cost. For the pilot project, capital cost would have been 17 mid-sized buses for on S5 route that replaced 26 microbuses operating from the New Bus Park, Gongabu to CBD section and 35 Safa tempos operating from CBD to Sinamangal section.<sup>12</sup> The life span of these buses was 10 years, which should have been the period of analysis. The PCR did not discuss whether the replaced microbuses and Safa tempos were scrapped or relocated to other regions. Both options had an economic benefit as scrap value for the former and consumers' surplus for the latter. In Table 3 of Appendix 9, maintenance costs were assumed in the "with project" scenario, but vehicle operating costs already included maintenance costs.

26. The PCR was not clear on what year the prices were based and how costs and benefits were shadow priced. Since the PCR was prepared in 2020, all prices regarding costs and benefits should have been 2020 prices. The EIRR recalculation assumed a standard conversion factor of 0.9, implying world price was the numeraire. Therefore, only non-traded costs and benefits should have been adjusted by the standard conversion factor. The PCR stated that the standard conversion factor 0.9 value was adopted from past use, but there should have been a firmer basis for this, rather than an estimate that was likely not based on economic data. Given these shortcomings and the very low EIRR, this validation assesses the project inefficient.

### **D. Preliminary Assessment of Sustainability**

27. The PCR rated the project unlikely sustainable.<sup>13</sup> The financial internal rate of return (FIRR) of the S5 bus route's operation was estimated at 10.1%, higher than 8.7% at appraisal.<sup>14</sup> The PCR noted that the project could become sustainable by increasing the number of viable routes, increasing ridership, reducing revenue leakages,<sup>15</sup> and extending operational hours. An increase in bus fares may also have been warranted. The PCR suggested that bus operators allocate sufficient resources for operation and maintenance (O&M) to ensure regular and efficient operation. However, the current allocation for O&M was inadequate to account for breakdowns

<sup>12</sup> Paragraph 5, Appendix 9 of the PCR.

<sup>13</sup> This validation changed the PCR's unsustainable rating to unlikely sustainable following the ratings standards used in self-evaluations by regional departments and independent evaluations by the Independent Evaluation Department (IED). IED. 2014. *Guidelines for the Validation of Project/Program Completion Reports of the Independent Evaluation Department*. Manila: ADB.

<sup>14</sup> The calculation of the FIRR in the PCR did not follow ADB guidelines on financial analysis. The FIRR was calculated in nominal terms; therefore, it cannot be compared with the weighted average cost of capital, which was calculated in real terms. Bus operations are private sector activities and are subject to an income tax on profits. The provision for income taxes should have been included in the FIRR calculation. The PCR excluded leakage costs from the FIRR calculation because of a lack of evidence. Owners of the buses should know the extent of leakages, whether they have evidence or not, and this cost should have been included in the FIRR calculation.

<sup>15</sup> The PCR noted anecdotal evidence that bus operations on the S5 encountered 25%–30% leakages in revenues.

or major repairs. Some project outputs, like PWD-friendly sidewalks, emission testing equipment, and the O&M of air quality testing stations were not revenue generating and would require government assistance. The low-emission buses could have generated environmental benefits but must be scaled up, and efforts are needed to replace polluting minibuses. At present, environmental benefits are limited as only one route (the S5 route) is serviced by low-emission buses. Institutional reform of the DOTM, revision of vehicle emission standards, and monitoring of air quality standards are overdue.

28. The weighted average cost of capital assumed a cost of equity at 12%, which is low given the type of business and risks. The cost of equity should have been based on a capital asset pricing model with parameters associated with Nepal, rather than local lending rates. The weighted average cost of capital also reduced the cost of equity by the income tax rate, which is incorrect. There is a deduction for interest paid in the income tax calculation, but there is none for profit or dividends. Therefore, the nominal cost of equity should not have been adjusted. Given these shortcomings, this validation assesses the project unlikely sustainable.

### **III. OTHER PERFORMANCE ASSESSMENTS**

#### **A. Preliminary Assessment of Development Impact**

29. The PCR rated the development impact of the project at completion less than satisfactory. Of the two impact indicators in the DMF, it was not possible to determine if the first target of increased per capita income of the Kathmandu Valley by 10% was achieved because there was no baseline value provided at appraisal. Nepal's per capita income increased from \$592 in 2010 to \$793 in 2015 and \$1,026 in 2018, an annual increase of 7.1%. Since Province 3 to which, the Kathmandu Valley belongs to accounted for 40% of the country's gross domestic product, the impact indicator of 10% was likely achieved. The second indicator of decreasing CO<sub>2</sub> emissions and other air pollutants in Kathmandu Valley by 20% was not achieved. Nepal's CO<sub>2</sub> emissions increased from 5.1 kilotons in 2010 to 8 kilotons in 2014. Likewise, there was no baseline established for CO<sub>2</sub> emissions. The public perception was that air quality in most cities of Nepal worsened over the past 10 years, particularly in Kathmandu.

30. Although per capita income of Kathmandu residents increased over the project period, there was no evidence that it was attributable to the project. Residents along the S5 route experienced less pollution as minibuses no longer serviced the route. Low-emission buses were user-friendly to physically challenged and visually impaired passengers and women and children. However, the scale of operation was limited to only one route. Walkability in some city core areas improved to a limited extent. The project has had little influence on private sector and capacity development of executing and implementing agencies due to underqualified contractors and high turnover of managerial staff. It contributed to ADB's results framework by constructing 16.1 km of sidewalks, 3 km of pedestrian sidewalks along heritage routes, and one pedestrian bridge. This validation assesses the project's development impact less than satisfactory.

#### **B. Performance of the Borrower and Executing Agency**

31. The PCR rated the performance of the borrower and the executing agency less than satisfactory. The borrower provided counterpart funds on time and submitted audited financial statements to ADB. The project's overall financial management remained sound and no financial irregularities were reported. However, the executing and implementing agencies had different priorities, and PMCO did not have adequate authority to strengthen coordination with other agencies and private sector operators. On the whole, the ownership of the project was inadequate

in all agencies involved. The project steering committee was not effective in guiding the project management team and met only once. The executing agency did not act on the recommendation to reform the DOTM. The implementing agencies had high turnover of staff, which complicated communication among the agencies, follow-up with compliance with social and environmental safeguards, and contract management. Also, the borrower prepared a project completion report, the quality of which was less than satisfactory. This validation assesses the performance of the borrower and the executing agency less than satisfactory.

**C. Performance of the Asian Development Bank and Cofinanciers**

32. The PCR rated the performance of ADB less than satisfactory. ADB fielded 10 missions, including 5 special missions and 2 midterm review missions. ADB demonstrated flexibility and accommodated requests from the borrower and executing agency and granted three extensions to the project completion date. It guided the executing and implementing agencies in the procurement process, safeguards compliance, document approval, disbursement requests, and financial management. However, ADB could have, using proper channels, revised the DMF targets and implementation arrangements due to its slow progress up to the midterm review and in the aftermath of the 2015 earthquakes. The project design was too complicated to address its multiple dimensions, and it involved various implementing agencies that had no proven experience working together. Given its complexity and limited capacity of executing and implementing agencies, the project could have benefited from early delegation of project administration to the Nepal Resident Mission for closer monitoring and support. The GEF was expected to enhance the capacity of the Department of Environment to monitor air quality regularly and disseminate air quality information to the public through mass media. The GEF’s contribution complemented ADB efforts and other development partners to help the government address air pollution. This validation assesses that ADB performance was less than satisfactory, mainly because of the issues related to the DMF targets and implementation arrangements of the project.

**IV. OVERALL ASSESSMENT, LESSONS, AND RECOMMENDATIONS**

**A. Overall Assessment and Ratings**

33. The PCR rated the project unsuccessful. It was assessed less than relevant because of poor design, despite partly addressing issues of traffic congestion, poor air quality, and inefficient traffic management. The project was ineffective since it achieved few of the intended outcomes and outputs and was inefficient because of the low EIRR. It was unlikely sustainable because of a lack of ownership, perceived revenue leakages in bus operations, and resistance to reform the DOTM. The table below compares the PCR and validation ratings.

**Overall Ratings**

<b>Validation Criteria</b>	<b>PCR</b>	<b>IED Review</b>	<b>Reason for Disagreement and/or Comments</b>
Relevance	Less than relevant	Less than relevant	
Effectiveness	Ineffective	Ineffective	
Efficiency	Inefficient	Inefficient	
Sustainability	Unsustainable	Unlikely sustainable	Rating mislabeled in the PCR (footnote 13).
<b>Overall Assessment</b>	Unsuccessful	Unsuccessful	

Validation Criteria	PCR	IED Review	Reason for Disagreement and/or Comments
Preliminary Assessment of Impact	Less than satisfactory	Less than satisfactory	
Borrower and executing agency	Less than satisfactory	Less than satisfactory	
Performance of ADB	Less than satisfactory	Less than satisfactory	
Quality of PCR		Satisfactory	See para. 38.

ADB = Asian Development Bank, IED = Independent Evaluation Department, PCR = project completion report.  
Source: ADB (IED).

## B. Lessons

34. The PCR identified six project-level lessons. ADB can start with a TA project to strengthen policies and develop implementation and coordination mechanisms prior to supporting projects with multiple components and implementing partners in countries without prior experience with such projects. The implementation arrangements need to match the capacity of the individual agencies and the joint agencies' ability to coordinate. The assessment of these arrangements to be included in the midterm review. Local contractors need to be vetted thoroughly to ensure timely delivery, work quality, and safeguard compliance supported by robust due diligence during the consultant and contractor selection process. Urban transport planning needs to include realistic and flexible transport demand projections that has to be updated regularly considering that for this project, the demand for mobility was grossly underestimated and was not adjusted during implementation, leading to unrealistic targets. The DMF needs to include appropriate baseline data, which will allow the project to be systematically assessed. Contracts need to clearly list requirements for safeguard compliance; protocols for corrective action; and remedies for work stoppages, penalties, blacklisting, and legal action for endangering workers' health and safety be strictly enforced. Government policy on compensation for structures built on government land needs to be clearly understood by affected communities in advance. A performance review of environmental and social safeguards has to be a priority for ADB and the executing agency. Lastly, a comprehensive strategy to address traffic congestion, air pollution from vehicles, and walkability in the Kathmandu Valley is needed.

35. This validation finds these lessons appropriate and offers two more. A well-established project performance management system, covering the initial phase of project implementation up to post completion, allows a more systematic collection of baseline, implementation, and post-completion data and information that facilitates a more robust analyses of a project's outcome and impacts. Also, greater familiarization with ADB's guidelines on the conduct of project-level economic and financial analyses helps facilitate assessments of a project's economic viability and financial profitability.

## C. Recommendations for Follow-Up

36. The PCR suggested that ADB encourage the government to monitor the viability of S5 bus route operations and disseminate the information on air quality to the public. ADB should also follow up on progress made in completing unfinished civil works; provisioning of budget for infrastructure maintenance; institutional reforms in the DOTM; submission of the final audited project financial statement; and clarify compensation rules for affected persons that use public lands. This validation has no other recommendations to offer.

## **V. OTHER CONSIDERATIONS AND FOLLOW-UP**

### **A. Monitoring and Reporting**

37. Financial management practices adopted by the executing and implementing agencies were satisfactory, according to the PCR. The borrower submitted loan and grant reimbursement applications on time. The borrower submitted all but the final audited financial statements on time, which are currently being prepared.

### **B. Comments on Project Completion Report Quality**

38. The PCR was succinct and assessed all the evaluation criteria. The few shortcomings of the report were methodological issues in the recalculation of the EIRR, FIRR, and weighted average cost of capital. Nonetheless, this validation assesses the quality of the PCR satisfactory.

### **C. Data Sources for Validation**

39. Sources include the RRP, PCR, mission reports, and national development strategies.

### **D. Recommendation for Independent Evaluation Department Follow-Up**

40. This validation supports the PCR's recommendation that a project performance evaluation report is not required owing to insufficient outcomes and outputs to evaluate.