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Prepared by
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Reviewed by
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ICR Review Coordinator
Christopher David Nelson
Group
IEGSD (Unit 4)

2. Project Objectives and Components

a. Objectives
The Project's Development Objectives (PDO) were the following:

PDO 1: To improve air quality in Dhaka (Financing Agreement p. 4; PAD p. 12)
PDO 2: To Improve safe mobility in Dhaka (Financing Agreement p. 4; PAD p. 12)
b. Were the project objectives/key associated outcome targets revised during implementation?  
Yes

Did the Board approve the revised objectives/key associated outcome targets?  
Yes

Date of Board Approval  
20-Mar-2019

c. Will a split evaluation be undertaken?  
No

d. Components  

Component 1: Environment  
Original Cost at Approval: US$16.23 million; Additional Financing: US$17 million; Total Financing: US$33.23 million; Total Costs at Closing: US$25,854 million (ICR Annex 3 p. 49). This component was implemented by the Department of Environment (DOE) to address air quality aspects and included the following sub-components:

a. Capacity building for air quality management: support for the Air Quality Cell (AQC) at the Department of Environment (DOE) to implement all air pollution abatement activities in Bangladesh and consolidate activities, including air quality monitoring, data analysis and reporting as well as standards, enforcement and controls for emissions reduction (PAD p. 14);

b. Brick kilns emissions management: provide technical support to the newly established Brick Advisory Committee; adoption of cleaner technologies and promotion of practices among the brick enterprises through demonstration projects;

c. Communication campaigns and analytical studies: promotion of public awareness and plan communications campaigns for the success and sustainability of the initiatives after project closure;

d. Project management: manage consultants, travel, office equipment, meeting costs, audits and other operating costs necessary for project implementation and reporting.

Component 2: Transport  
The transport component was split into two subcomponents, each implemented by a separate unit; the Dhaka City Corporation (DCC) was responsible for the implementation of physical improvement of traffic flow and pedestrian mobility, institutional strengthening and regulatory review, while the Dhaka Transport Coordination Board (DTCB) was responsible for the preparation of the bus route network rationalization and franchising, institutional strengthening and regulatory review.

Transport 2A Dhaka City Corporation (DCC): Original Cost at Approval: US$39.30 million; AF: US$18 million; Total Financing: US$57.30 million; Total Costs: US$54.95 million. The Transport 2A component included the following sub-components:

a) Physical improvement of traffic flow and pedestrian mobility: investments in traffic engineering and management aimed at improved traffic flow and pedestrian movement, to include foot-over-bridges (FOB),
traffic signals, one-way streets, separation of motorized and non-motorized traffic, and construction of sidewalks to accommodate people-with-disability (PWD);

b) Institutional strengthening and regulatory review: review of DCC's Traffic Engineering Division (TED) to update and upgrade its role in the context of the Strategic Transport Plan; technical assistance for (i) design of traffic engineering; (ii) traffic signal systems operation and maintenance in coordination with DMP; (iii) mainstreaming environmental management in urban transport and (iv) traffic management in coordination with DMP; and

c) Project management.


a) Preparation of the bus route network rationalization and franchising: (i) a feasibility study for a bus rapid transit (BRT) system in Greater Dhaka; (ii) the Bus Rapid Transit detailed design and (iii) a public transport network study for Greater Dhaka;

b) Institutional strengthening and regulatory review: (i) providing a pivotal role to DTCB in planning and coordination of urban transport including BRT; (ii) enabling bus sector reform with a focus on route rationalization and franchising; and (iii) facilitating the implementation of the action plan developed in the context of the Strategic Transportation Plan (STP) and Air Quality Management Project (AQMP) to reduce air pollution from diesel vehicles; and

c) Project management.

e. Comments on Project Cost, Financing, Borrower Contribution, and Dates

Project Cost: The total costs approved for the project were US$97.2 million, which included Additional Financing (AF) of US$35 million during the second restructuring in 2017. Total actual disbursed funds were US$87.27 million. The remaining financing balance was cancelled (ICR p.3).

Financing: The project financing was provided by IDA and there were no other co-financiers apart from the borrower’s contribution.

Borrower Contribution: The Government of Bangladesh’ (GOB) contribution was set to US$9 million at appraisal, while the total actual disbursed at project closure was US$2.8 million.

Dates and Restructuring:
The project was approved on May 12, 2009 and became effective on August 19, 2009. The original closing date was December 31, 2014 and the actual closing date was March 31, 2019, i.e. a 4 years and 3 months’ extension. The project underwent the following four restructurings:

July 4, 2013: First Restructuring
A Level 2 restructuring was undertaken to enhance development impact through changes in both project components. This involved changes in the Results Framework (RF) to serve as a management tool and the
dropping of several activities for both environment and transport warranting a reallocation between disbursement categories. The project closure date was extended from to December 31, 2014 to December 15, 2016.

January 13, 2017: Second Restructuring
A Level 1 restructuring involved Additional financing (AF) of US$35.0 million to augment both environmental and transport activities. The Results Framework was revised to reflect the higher results expected on account of the AF and extended the project closing date from December 15, 2016, to December 15, 2018.

December 6, 2018: Third Restructuring
A Level 2 restructuring canceled unused funds, specifically US$3.5 million (SDR 2.513 million) in due to currency fluctuations; it also extended the project by an additional 3.5 months to March 31, 2019.

March 19, 2019: Fourth Restructuring
A Level 2 restructuring involved reallocation between disbursement categories as well as the cancellation of unused funds.

3. Relevance of Objectives

Rationale

The City of Dhaka has experienced rapid urbanization and an eight-fold increase in population since the 1970s, and currently had approximately 12 million inhabitants at appraisal with projections of 20 million by 2020. Such growth had been coupled with increased vehicular traffic and associated air pollution and carbon emission further exacerbated by emissions generated from industry (brickmaking among others). The increasing air pollution, significantly higher than WHO standards, was putting economic, health and human capital pressures on the city, with potential loses in human lives totally 1,200 to 3,500 lives per annum and health care costs and productivity annual losses totally approximately US$170 to 500 million (PAD p.9), alludes to development problems across sectors.

The project’s Development Objectives “To improve air quality and safe mobility in Dhaka” were timely and well aligned to national goals and policies as well as to World Bank strategies and objectives. Urban air pollution in Dhaka was largely attributable to vehicles (43.0% at the time of appraisal) followed by small brick kiln industries (37.5% at the time of appraisal). With expected growth of these polluting sectors and their impact on the growth of air pollutants and greenhouse gas (GHG) emissions, the project was well targeted to mitigate key sources of air pollution through regulatory reform and the demonstration of innovative approaches. The following document references serve as evidence of its rationale:

The Strategic Transportation Plan for Dhaka (STP), prepared under the Bank financed Dhaka Urban Transport Project (DUTP), to promote investment in the transportation sector in the metropolitan area of Dhaka as well as traffic management actions (Project Appraisal Document (PAD) p. 9).

The National Strategy for Sustainable Brick Manufacturing in Bangladesh (2017) aimed to identify emissions from social and environmental impacts of brick kilns, as well as address policy, institutional, technological, aspects for cleaner brick production. Similarly, the Government of Bangladesh (GOB) Brick Kiln Policy of 2008, aimed to control environmental pollution and improvement of the environment and in
support of 2006 studies that showed the brick kilns were the greatest contributor to carbonaceous content of airborne particulate matter in Dhaka, followed by vehicles (GOB Department of Environment (DOE) (2012).

The World Bank’s Country Partnership Framework (CPF[VD1] ) (FY16-20)) developed for the GOB highlights improving transportation services and reducing environmental externalities (e.g. air pollution) in the highly urbanized Dhaka as a key priority. It also sets out to improve the use of clean technology in the brick-making sector in the context of poverty reduction and economic development, (CPF p. 11, 41, 86). In addition, it focuses on upgrading and maintaining key transport corridors for safe and efficient movement of people and goods (para 52).

While the objective remained relevant throughout the project cycle and was a necessary response to an environmental development challenge in Dhaka, there is a lack of clarity around what outcomes would be achieved through improving the air quality and mobility (ie. in what ways this was expected to improve peoples’ lives). Focusing on “improved air quality” and “improved mobility” does not help in understanding what development results were expected as a consequence of the project. The expected results are clearly described in the PAD, but are not reflected in the PDO formulation. These may be longer term targets but tracking them and identifying them is an important aspect of a successful development operation. Moreover, as this project builds on the experiences and lessons of two past Bank-supported projects in Bangladesh, namely the Air Quality Management Project (AQMP) and the Dhaka Urban Transport Project, (PAD p. 11) and involves demonstration/pilot investments in the brick kiln industry, a more appropriate PDO formulation and related indicators would have been expected.

Rating
Substantial

4. Achievement of Objectives (Efficacy)

OBJECTIVE 1
Objective
Objective 1: To improve air quality in Dhaka

Rationale
Theory of Change

The project’s outputs were expected to be cities with updated emission profiles, air quality monitoring stations, strengthened legal framework and communication campaigns. These outputs were expected to lead to the outcome of a certain number of brick kilns adopting cleaner technology and decreasing (i) particulate emissions by 20% and (ii) GHG emission by 20% by end of project period. This in turn was to lead to the project development objective of improved air quality in Dhaka. The long-term objective this was expected to contribute to was improved economy, health benefits and improved quality of life. The logical chain is not very
clear and convincing for several reasons: i) it is not clear how the outputs of updated emission profiles, air quality monitoring stations, improved legal framework and communication campaigns were to lead to brick kilns adopting cleaner technology; ii) it is clear that brick kilns adopting cleaner technology may lead to improved air quality; however, in this case, the air quality was not measured and reported, and attribution issues were not referred to; i.e. the possibility that there are other elements influencing the air quality (positively and negatively) is not addressed.

The project underwent four restructurings over the course of 10 years, with no changes to the PDO, but the results indicators were merged and revised for clarity in terms of greenhouse gas emissions (GHG) and Particulate Matter (PM) reductions (both to 20%) (ICR Table 2, p.11 and Table 3, ICR p.14). The 2017 additional financing (AF) of US$17 million for the environment component increased the number of brick kilns to be modernized with new technologies from 10 to 12 kilns to strengthen the PDO. The modifications did not affect the original ToC but rather enhanced the ability of the brick-kiln industry to support the reduction of air pollution in Dhaka.

The ICR Table 2, p.11 and Table 3, ICR p.14, illustrate the changes in the indicator targets. The revisions provided clearer language and more specific metrics. For example: The original PDO target (Results Indicator 1) separated greenhouse gas emissions (GHG) and PM, whereas the revised indicator combined the two indicators to read: ‘number of brick kilns adopting cleaner technology and decreasing (a) particulate emissions by 20% and (b) GHG emission by 20% by end of project period’. An original target of 10 kilns was adjusted to 12.

The project’s expansion of scope and revision of indicators do not warrant a split rating and the ICR has been assessed only on the basis of the revised performance targets over the entire project period.

Outputs:

Project outputs included the following:

- Emissions profiles were updated for four cities— Dhaka, Chittagong, Rajshahi, and Khulna, which exceeded the original target of two cities;
- A Clean Air Act (CAA) as planned, target met;
- 16 Continuous air monitoring stations providing air quality data in Bangladesh was established, as targeted;
- A revision of the Brick Burning Act to become the new ‘Brick Manufacturing and Kiln Construction Control Act of 2013 (Act 59 of 2013), adopted by the parliament on November 20, 2013, as planned; and
- A communications campaign was implemented, as planned.

While the communications campaign was implemented as planned, no evidence is provided in the ICR that this led to increased public awareness of air pollution sources and mitigating solutions for improved air quality (as the ICR claims), as this was not measured and reported on.

In addition to the indicators and output targets listed in the Results Framework, the ICR described the following project outputs (without target information):

- Establishment of a Brick Technology Information Centre (BTIC);
- Completion of a Long-Term Policy Framework for Greening the Brick Industry;
- Development of comprehensive inventory and mapping of brick kilns in Dhaka; and
- Increased capacity through the upgraded AQC to the Air Quality Wing with an approved staff of 23 and expanded abilities to monitor air quality, analyze data, and publish monthly reports during the project execution period.

Outcomes:

There is only one outcome indicator relevant for PDO 1 in the Results Framework, which is related to the number of modernized brick kilns. 12 brick kilns adopted cleaner technology and decreased (i) particulate emissions by 20% and (ii) GHG emission by 20% by end of project period, exceeding the target of 10.

In addition, the ICR reports that new zigzag technologies recorded by the Bangladesh Council of Scientific and Industrial Research (BCSIR) in 2018 achieved an average reduction of 1,405 (tons/year/kiln CO2) emission compared to zero from traditional fixed chimney kilns (FCK).

According to the ICR, did the brick kiln pilots contribute to a significant reduction of SO2 emissions by 80%, increased energy efficiency by 30% and decreased air pollution by 70% within the respective kilns as assessed by the Bangladesh Council of Scientific and Industrial Research, which was an additional contribution to PDO1 (ICR para 32) that was not recorded in the Results Framework as no related indicators had been identified.

The ICR (para 55) suggests the project outputs and outcome contributed to indirect benefits on poverty and public health on poor and vulnerable persons who work at and/or live close to brick kiln sites and sources of exposure, estimated at 800K-900K people across the country. However, at the rate of 1.8% per year (ICR p.50) for kiln modernization the potential impact is limited in the near term.

The ability to better measure air quality does not necessarily equate to improved air quality. Over the course of the project’s ten year duration, some baseline data and air quality trends could have been recorded and included in the ICR but were not; and therefore, in this respect the project falls short of demonstrating its full impact and meeting its full objective.

In addition, the establishment of an operational structure for a countrywide air quality monitoring network with 16 Continuous Air Monitoring Stations (CAMs) in 13 major cities and the support of 15 mobile monitoring systems, including an air quality lab at Department of Environment (DoE) was a valuable project output that contributed to the achievement of the PDO. With this network, five air pollutants (PM, SO2, NOx, O3, and CO) were monitored and the air quality index calculated for each city and published online daily. As a result, the public had the ability to check the status of the air quality in their respective city (ICR para 33).

However, the project’s Results Framework does not include any indicators that measures improved air quality, which is a major weakness in the Results Framework. The project indicators only estimate reduced emissions from the brick kilns adopting cleaner technology. While it is plausible that this might lead to improved air quality, without this being measured and reported on in the project, there is insufficient evidence to draw that conclusion.
Furthermore, since there is no reflection on or information about attribution in the ICR, there is insufficient information to assess whether the improved air quality in Dhaka is the direct result of the modernization of these 12 brick kilns only, or other measures in Dhaka could have contributed to the results.

**Rating**
Modest

### OBJECTIVE 2

**Objective**
Objective 2: To improve safe mobility in Dhaka

**Rationale**

**Theory of Change**

The project’s outputs were expected to be the completion of traffic-related studies and an improved legal framework coupled with physical constructions such as improved intersections, sidewalks, bridges and traffic corridors. These outputs were expected to lead to outcomes such as an increase in vehicular traffic and pedestrians using bridges and sidewalks. These outcomes were in turn expected to contribute to the overall PDO of improved safe mobility in Dhaka. This was in turn expected to contribute to long term objectives such as improved economy, health benefits and improved quality of life. The Theory of Change is clear and convincing with no underlying assumptions.

**Outputs:**

- The Vehicular Emission Standards updated, as planned.
- 23 Foot-Over-Bridges were constructed, reaching the target of 23 bridges.
- 88 kilometers of new sidewalks with surface drainage constructed, meeting the target of 88 kilometers.
- Three traffic safety campaigns were conducted as planned. The campaigns used a variety of communication tools and encouraged pedestrians to use the FOBs, underpasses and sidewalks for their own safety.
- 2 corridors of separation of Motorized Vehicle (MV) and Non-Motorized Vehicle (NMV) traffic constructed, achieving the target of 2.
- 39 sections physically improved, achieving the revised target of 29 (original target was 40).
- A study for better mobility of disabled people in one selected area in Dhaka was complete and key recommendations implemented, as planned.
- The Dhaka Transport Coordination Board (DTCB) Act was revised was presented to the Cabinet for approval, as planned.
- The Motorized Vehicle act for reduction in emissions was revised and submitted to the Cabinet for approval, as planned.
- Studies for (i) rationalization of the bus route network; and (ii) Bus Rapid Transit on a pilot corridor completed, as planned. This was part of the planning for a larger urban transport project to introduce better quality bus operations on the bus routes as well as to assess the feasibility of implementing a BRT corridor in Dhaka.
In addition to the indicators and output targets listed in the Results Framework, the ICR described the following project outputs (without target information):

- A Traffic Engineering Cell with a staff strength of 39 personnel was approved (met target, ICR para 39).
- Technical assistance (TA) and capacity building was provided to the Dhaka City Corporation (DCC) (eventually divided into two entities; the Dhaka North City Corporation (DNCC) and Dhaka South City Corporation (DSCC)), Dhaka Metropolitan Police (DMP), and DTCA staff. Although the fragmented mandate between the DCC and DMP regarding traffic signals and traffic management was problematic throughout the project, by project end, the DMP was designated by the GoB as the lead agency for traffic management, including all operations and maintenance functions (ICR para 29);
- Two workshops with government agencies and civil society organisations were organized to study improvement of accessibility and mobility for persons with disabilities. These activities resulted in the preparation of the draft vision for the City of Dhaka, creation of a video clip posted on the World Bank’s website as part of an awareness raising campaign. In addition, advice to enhance the designs of sidewalks and bus stops that were constructed as pilots under the project with standards for disabled people was also provided (met target).

Outcomes:

- An increase of vehicular traffic in location of interventions reached 293,197 vehicles, exceeding the target of 239,500 due to less congestion and vehicular idling.
- The percentage of vehicular traffic increased with 9.5% at selected intersections with operational traffic signals, exceeding the target of 8%.
- 85% of pedestrians are using the Foot Over Bridges in locations of interventions, exceeding the target of 75%.
- 79% of pedestrians are using sidewalks in locations of intervention, exceeding the target of 75%.
- 91 intersections with operational signals (including newly installed and existing fixed), achieving the target of 91.

The traffic count surveys were carried out for the ten road intersections that benefited from infrastructure improvements. A traffic survey was carried before the work commenced as well as upon completion, each for a period of 8 hours.

Pedestrian behavior was measured by the Design Supervision and Monitoring consultant who counted the number of pedestrians crossing the road at the FOB location before and after the intervention. Despite the availability of the FOBs, people continued to cross roads not using the FOBs because they don’t want to go up and down the stairs (there is only one FOB that the project installed escalators) and/or it is much faster to cross at grade. Later in the project guard rails were installed at the curb and in the median to physically prevent people from crossing the roads at grade. However, the numbers captured in the indicator do not reflect the current status after the installation of guardrails as the post-implementation surveys were usually carried out soon after the opening of the FOBs.

An original indicator measuring the number of traffic accidents was dropped due to difficulties in measuring.
OVERALL EFFICACY

Rationale
The project reached and exceeded most of its output targets and could also provide sufficient evidence for achievement of Objective 2 Improved safe mobility in Dhaka. As Objective 1 Improved air quality in Dhaka lacked a direct indicator to measure and report on the air quality in Dhaka, there is insufficient evidence to assess this achievement. Furthermore, attribution issues were not adequately addressed, and the rating of the first objective is thus Modest. The overall Efficacy Rating is Substantial given the positive and documented achievements under Objective 2.

Overall Efficacy Rating
Substantial

5. Efficiency
The economic analysis was conducted on two project sub-components to align, in part, with the economic analysis undertaken at appraisal: i.e. 1) the brick-making sub-component within the environment component; and 2) the traffic signaling sub-component within the transport component. At appraisal, the activities of technical assistance and capacity-building were found to be unamenable to economic analysis, and therefore the efficiency analysis is based upon the two sub-components only (ICR para 45).

Overall project efficiency is illustrated in Table 4.5 of the ICR p. 56, and reflects an economic NPV in 2019, to be BDT 75,420.80 million (US$892.55 million with US$1 = 84.5 BDT). The benefits-costs ratio of the project is 11.03, with an IRR of 33.14 percent. Comparisons cannot be made to the PAD as an IRR was not calculated for the overall project at that time.

The ICR outlines the brick-making efficiency level, evidenced by the average emission levels from the new kilns, to be at approximately 88.5 percent, with a fuel use reduction of about 47 percent (ICR Annex 4, p.50). Also, health cost saving was recorded at BDT 7.7 million per kiln per year on account of the technological upgrades, based upon measurements from the previous 2011 World-Bank project: Introducing Energy-efficient Clean Technologies in the Brick Sector of Bangladesh. The cost-benefit analysis demonstrated a high level of efficiency (55%) of the newly designed zigzag kilns compared to the baseline data for the Fixed Chimney Kilns (FCKs) with one of the most significant benefits being the reduction in CO2 emissions, on average a reduction of 1,405 tons/year/kiln. The payback period for the new kilns was 1.5 years (ICR Table 4.1, p. 50). And yet, projected uptake of the modernization of the brick-kiln industry is only 1.8% per year or 3,036 kilns (approx. 38%) of the country’s industry by 2040 (ICR p. 55).

Transport efficiency was evidenced in both of its sub-components. Component 2A focused on facilitating safe transport and demonstrated a benefit of BDT 585.6 million (or US$6.93 million) on account of a reduction in fatal
accidents and serious injuries considering an economic life up to 2040 (ICR, p.54). However, due to the lack of baseline data on traffic accidents which warranted such an indicator to be dropped, it is not possible to take these estimates at face value.

The economic benefit of time saved in transport recorded a saving of approximately BDT 97,000 per day per passenger. A benefit of 3.9 BDT Million from GHG emissions reduction due to lower idling fuel vehicles was recorded in 2019, with projected benefits of 6.5 BDT Million in 2040 (ICR p. 54, Table 4.3).

Overall, the project provided 11.03 times the economic benefits with an economic NPV of US$892.55 million (ICR p. 56). This was the case despite the analysis not including the benefits from capacity-building, improved pedestrian health, disability-related initiatives in urban transport nor of future policy actions, in order to avoid double counting and due to the lack of full information and incorporation into the project design.

Administrative Efficiency
The project overall suffered from administrative inefficiency. Delays were experienced from the onset with challenges confronting PDO2 due to institutional and procedural contracting issues. The PDO2 investments in transport infrastructure were subject to initial delays with process approvals and procurement only awarded in 2013. Also, the lack of adequate baseline data for the selection of target indicators (ICR, para 36) warranted revision, slowed the process and limited the capacity of the project to fully measure its impact. The need to revise the RF, indicators, funding allocations and project timeframes, that warranted four project restructurings, a 16-months’ approval and revision process within the GoB (ICR para 67), and a total of 4 years and 3 months’ extension, were indicative of administrative inefficiencies.

Efficiency Rating
Substantial

a. If available, enter the Economic Rate of Return (ERR) and/or Financial Rate of Return (FRR) at appraisal and the re-estimated value at evaluation:

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* Refers to percent of total project cost for which ERR/FRR was calculated.

6. Outcome

Relevance was rated Substantial with noted shortcomings on the outcome focus of the PDO. The overall Efficacy rating was Substantial, though the rating of the first objective is Modest due to a lack of evidence on air quality. Efficiency was rated Substantial, though there were significant administrative inefficiencies. Given the
Modest rating for the first objective and shortcomings in both the efficiency and relevance ratings, the project has an overall outcome rating of Moderately Satisfactory.

a. Outcome Rating
   Moderately Satisfactory

7. Risk to Development Outcome

The following risks to the project’s development outcome were identified:

Institutional risk: With the relatively complex institutional arrangements of the project, there is a risk that collaboration and coordination between them might not be upheld after project closure, jeopardizing development outcomes.

Financial risk: The brick kiln industry’s modernization is projected at 1.8% per year and could be impacted by the uncertainty of the financial viability of factories dependent upon many factors including leadership, policy incentives, and costs.

Environmental risk: The vulnerability of Bangladesh to climatic changes and natural disasters could potentially compromise the infrastructure investments made in the transport sector.

8. Assessment of Bank Performance

a. Quality-at-Entry

The project adopted an integrated approach to improving air quality by addressing both environmental and transportation conditions which affected the quality of life in Dhaka due to rapid urban and industrialization growth. The focus on co-benefits provided broader understanding of the linkages between infrastructure and technological investments and the social and environmental gains possible both in the transportation and brick manufacturing sectors, including reduced energy consumption, lower greenhouse gas and improved health and safety.

However, although the PAD highlighted the value of co-benefits, the project fell short in being able to quantify benefits from capacity-building initiatives, pedestrian health, and disability-related initiatives in urban transport. This was a shortcoming in the design that failed to collect the necessary data and impacted the ability to comprehensively assess the project’s economic efficiency (ICR para 45, 46). Similarly, the project fell short in assessing the appropriate outcome indicators from onset and the appropriate data for development of baselines. Also the project underestimated its ability to deliver an accurate assessment of the institutional capacities, which resulted in the need for multiple restructurings and a protracted implementation period. Overall, complex institutional arrangements led to implementation delays, a weak M&E system, and a Results Framework which was lacking some relevant
indicators to measure achievement of the objectives, which led to insufficient documentation of potential project achievements.

Quality-at-Entry Rating
Moderately Satisfactory

b. Quality of supervision
Between April 2010 to March 2019, the World Bank conducted 17 supervision missions to the country, one of which included the midterm review in 2013. The periodic implementation support missions were critical for early identification of issues and potential delays as well as to understand the resource needs to sustain and increase the activities of the project components throughout the AF. In this respect, the Bank’s early awareness led to four restructurings in part to improve the RF, however, the correct indicators were not identified for the PDO1/environment component and therefore failed to provide an accurate reading of the project’s performance.

Despite some turnovers of the TTLs, the transport co-TTL joined the team in 2011 and remained until project closure. The task team proactively mobilized Trust Funds to provide additional implementation resources for BRT trainings, knowledge exchange and data collection support.

Quality of Supervision Rating
Satisfactory

Overall Bank Performance Rating
Moderately Satisfactory

9. M&E Design, Implementation, & Utilization

a. M&E Design

The project underwent four restructurings and changes to the Results Framework the M&E design was not sufficiently rigorous to capture important project achievements due to lack of important baseline information and relevant indicators. The inadequacy of the original M&E design is clear from the many revisions to the Results Framework and indicators.

Some PDO indicators and some intermediate indicators were changed. The original PDO1 indicators for the brick kilns were merged into one combined indicator. However, this revised indicator was only for emission levels of the pilot brick kilns and not a measurement of the air quality in the City of Dhaka which is the development objective (PDO1), to improve air quality in Dhaka. This is the significant shortcoming.
The PDO2 indicators were revised for simplicity to collect and record data. One indicator was revised to measure traffic flows from a total percentage to the actual number of vehicles at specific intersections. A new indicator was added towards the end of the project to measure the vehicular traffic increased at selected intersections with operational traffic signals. The original indicator on the number of traffic accidents was dropped due lack of data and replaced with two new indicators on the movement of pedestrians using foot bridges and sidewalks as indicative of infrastructure investments for improving safety (PDO2) measured on the basis of survey data. The Design, Supervision and Monitoring consultant hired by the client carried out surveys of pedestrian counts at selected locations of interventions, i.e., at seven Foot-Over-Bridges and eight roads sections with sidewalks. Surveys were carried out before and after the interventions to count pedestrians before the construction, and pedestrians using and not using the FOB or sidewalks after the construction.

To reconcile for the dropped indicator pertaining to the number of traffic accidents (R13) in the economic evaluation, the Bank team made an assumption of the project interventions preventing two fatal and three serious injury accidents by 2040, estimating about one fatal accident in 10 years will be prevented, and for each fatal accident, there will be 1.5 accidents with serious injuries. Since it was difficult to estimate the actual impact as the locations of interventions are scattered around the city, the team took a conservative assumption so as not to overestimate.

Of the original fifteen intermediate indicators, nine were revised and one dropped during the 2013 restructuring, while during the 2016 restructuring, six were revised and four new indicators were introduced. The latter four indicators involved BRT designs and feasibility studies indirectly related to the PDO2 focus on transport safety.

The indicator target for the indicator ‘Intersections with new traffic signals installed and operational’ was revised downward from 40 to 29 locations due in part to institutional constraints. Most other indicators were revised upwards and all indicators met their targets or exceeded them.

b. M&E Implementation

Responsibility for tracking the project’s progress was spread across the three implementing agencies—the DOE, DCC, and DTCB—through their PIUs. These agencies delivered reports on project process and indicators on a six-monthly basis.

Baseline data was not collected at the start of the project and this resulted in the need for multiple restructurings to allow for a more accurate assessment of the development objectives (ICR para 107). The air quality data generated by the Continuous Air Monitoring Stations (CAMS) funded by the project were monitored by a separate, specialized unit; the Air Quality Wing (AQW)/AQS in the Department of Environment yet this was not recorded by the project.

c. M&E Utilization

Information from the M&E reports were used in identifying the need for the four project restructurings, including closing date extensions, reallocation of funds, and the request for Additional Financing (AF) to
achieve the PDOs. The M&E data served as guidance for the PIUs and the sector agencies to improve performance and take corrective measures and it informed the development of action plans. The data was published on the government’s website for public transparency.

M&E reports were valuable in assessing the need of a disability stakeholder group for greater accessibility at specific traffic crossings and led to the project’s investment in appropriate infrastructure (ICR para 81). The M&E reports were used to strategize and troubleshoot issues, such as the need to redesign the pedestrian bridges (FOB) for the disabled community. Similarly, the information from the reports, in the case of the air quality monitoring stations (CAMS), were shared with stakeholders and supported the development of communications and awareness raising campaigns.

Air quality reports from the CAMS were shared with stakeholders and supported the development of communications campaigns.

**M&E Quality Rating**

Modest

### 10. Other Issues

#### a. Safeguards

The project was classified as Category ‘B’ and two safeguard policies were triggered: Environmental Assessment (OP/BP 4.01) and Involuntary Resettlement (OP/BP 4.12). The GoB prepared an Environmental and Social Management Framework (ESMF) in June 18, 2008, and it was reinforced by an Environmental Assessment for the air monitoring stations, road improvement works and warehouse constructions, among others.

Due to the nature of the work undertaken, several social safeguards issues were triggered. Some project interventions were temporary in duration and involved the displacement of vendors from sidewalks and other public spaces for a limited period of time. However, others were more significant and affected social and economic aspects, including housing, livelihoods and quality of life, like e.g. a planned infrastructure project to widen a road which involved the dismantling of the front sections of 22 homes belonging to a minority community.

An Abbreviated Resettlement Plan (cleared by the World Bank) was prepared and implemented based on the ESMF stipulations. The 22 households were compensated for the rebuilding of the dismantled facades and related income loss. Social safeguard compliance was rated Satisfactory throughout the project implementation.

#### b. Fiduciary Compliance
Financial management

The project was rated Moderately Satisfactory for Fiduciary Compliance throughout the project term. The project’s capacity building component benefited local staff through the delivery of financial management and procurement training that facilitated the project execution. The PIU teams adhered to Bank requirements on procurement documents, financial reports, and external audits.

Procurement

The project’s complex institutional design, comprising of three implementing agencies (DCC, DCTB, and DOE) and participation of the secretaries of the environment (MOEFCC), local government, and transport resulted in procurement delays and a protracted implementation period.

c. Unintended impacts (Positive or Negative)
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d. Other
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11. Ratings

<table>
<thead>
<tr>
<th>Ratings</th>
<th>ICR</th>
<th>IEG</th>
<th>Reason for Disagreements/Comment</th>
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<tbody>
<tr>
<td>Outcome</td>
<td>Satisfactory</td>
<td>Moderately Satisfactory</td>
<td>There are shortcomings on the first objective under Efficacy.</td>
</tr>
<tr>
<td>Bank Performance</td>
<td>Satisfactory</td>
<td>Moderately Satisfactory</td>
<td>There were shortcomings at the project’s Quality at Entry due to inadequate indicators.</td>
</tr>
<tr>
<td>Quality of M&amp;E</td>
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<td>Modest</td>
<td></td>
</tr>
<tr>
<td>Quality of ICR</td>
<td>---</td>
<td>Substantial</td>
<td></td>
</tr>
</tbody>
</table>

12. Lessons

The following lessons are taken from the ICR with some modification of language:

**Air quality management operations require an integrated cross-sectoral approach.** The project design focused on two major air polluting sources (brick kilns and transport sector) and institutional coordination between environment and transport departments and local municipal corporation. While this approach did encounter some challenges during implementation, the overall performance and results of the project indicate that such an integrated cross sectoral approach is critical for sustainable air quality management interventions.
A combination of policy, institutional and demonstration investments are critical for building capacity and awareness on Air Quality Management. Lack of technical capacity, weak regulatory framework and limited or unreliable data are the most common challenges faced in the development and implementation of air quality management plans across developing countries. The project tried to address these challenges by combining analytical work such as source apportionment studies, capacity building activities, improving the regulatory framework and demonstrating investments for air quality improvement.

Long-term project sustainability depends on proper project design. The operational capacity of stakeholders, partners and governmental authorities responsible for the project deliverables and/or those assuming ownership and enforcement must be assessed with the view to ensure long term impact, functionality and maintenance.

Well-developed M&E systems and appropriate level of data collection are essential for efficient project implementation. The borrower’s M&E system for projects must be developed in the early stages of the project life cycle, such as at appraisal or preparation. Adequate resources are necessary for productive M&E function and capacity for collection of these adequate baseline data is collected at the start of the project. Such preparation facilitates the development of appropriate results indicators and sufficient data to ensure the results framework can capture the co-benefits of the project for a more complete understanding of resource efficiency and programmatic impact.

13. Assessment Recommended?

No

14. Comments on Quality of ICR

The ICR was detailed and provided a good chronological cataloging and financial accounting of the four project restructurings, though the reasons for their necessity could have been better elaborated. The quality of the analysis undertaken was well developed with projections carried into the future until 2040, in some cases (ICR, p.52). Yet, the quality of the evidence was in some cases relatively weak as it was unclear how the data had been collected and results measured. Also, the discussion of co-benefits, a fundamental premise of the project (PAD p.10), was limited. The ICR also contains some discrepancies in the total number of kilns in the country (p.22, 50). Lastly, the ICR was quite lengthy, more than the double of the length stipulated in the guidelines. However, overall the report is rated Substantial.

a. Quality of ICR Rating

Substantial