



# Report and Recommendation of the President to the Board of Directors

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Project Number: 42169  
March 2012

Proposed Loans and Technical Assistance Grant,  
and Administration of Loan and Grant  
People's Republic of Bangladesh: Greater Dhaka  
Sustainable Urban Transport Project

Asian Development Bank

## CURRENCY EQUIVALENTS

(as of 20 March 2012)

Currency Unit	–	taka (Tk)
Tk1.00	=	\$0.0122
\$1.00	=	Tk81.78

## ABBREVIATIONS

ADB	–	Asian Development Bank
AFD	–	Agence Française de Développement
BBA	–	Bangladesh Bridge Authority
BRT	–	bus rapid transit
DNCC	–	Dhaka North City Corporation
DTCA	–	Dhaka Transportation Coordination Authority
EIRR	–	economic internal rate of return
EMP	–	environmental management plan
EPCM	–	engineering, procurement, and construction management
FIRR	–	financial internal rate of return
GCC	–	Gazipur City Corporation
GEF	–	Global Environment Facility
GHG	–	greenhouse gas
IEE	–	initial environmental examination
ITS	–	intelligent transport system
km	–	kilometer
LGED	–	Local Government and Engineering Division
LIBOR	–	London interbank offered rate
NMT	–	nonmotorized transport
NGO	–	nongovernment organization
O&M	–	operation and maintenance
ODBM	–	operational design and business model
PAM	–	project administration manual
PIU	–	project implementation unit
PMCCB	–	project management, coordination, and capacity building
PMU	–	project management unit
PPP	–	public–private partnership
RHD	–	Roads and Highways Department
SDR	–	special drawing rights
SPO	–	special project organization
TA	–	technical assistance
UTS	–	urban transport system
WACC	–	weighted average cost of capital

## NOTES

- (i) The fiscal year (FY) of the Government of Bangladesh and its agencies ends on 30 June. FY before a calendar year denotes the year in which the fiscal year ends, e.g., FY2012 ends on 30 June 2012.
- (ii) In this report, "\$" refers to US dollars.

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## PROJECT AT A GLANCE

<b>1. Project Name:</b> Greater Dhaka Sustainable Urban Transport Project		<b>2. Project Number:</b> 42169-013	
<b>3. Country:</b> Bangladesh		<b>4. Department/Division:</b> South Asia Department/Urban Development and Water Division	
<b>5. Sector Classification:</b>			
		<b>Sectors</b>	<b>Primary</b>
		Transport, and information and communication technology	√
			<b>Subsectors</b>
			Urban transport
			Road transport
			Transport management and policies
<b>6. Thematic Classification:</b>			
		<b>Themes</b>	<b>Primary</b>
		Economic growth	√
		Social development	
		Environmental sustainability	
		Private sector development	
			<b>Subthemes</b>
			Widening access to markets and economic opportunities
			Promoting economic efficiency and enabling business environment
			Involuntary resettlement
			Eco-efficiency
			Urban environmental improvement
			Policy reforms
			Public-private partnerships
<b>6a. Climate Change Impact</b>		<b>6b. Gender Mainstreaming</b>	
Mitigation	High	Gender equity theme (GEN)	
		Effective gender mainstreaming (EGM)	√
		Some gender benefits (SGB)	
		No gender elements (NGE)	
<b>7. Targeting Classification:</b>		<b>8. Location Impact:</b>	
	<b>Targeted Intervention</b>		
<b>General Intervention</b>	<b>Geographic dimensions of inclusive growth</b>	<b>Millennium development goals</b>	<b>Income poverty at household level</b>
	√		
		National	Low
		Rural	Low
		Urban	High
<b>9. Project Risk Categorization:</b> Complex			
<b>10. Safeguards Categorization:</b>			
		Environment	B
		Involuntary resettlement	A
		Indigenous peoples	C
<b>11. ADB Financing:</b>			
		<b>Sovereign/Nonsovereign</b>	<b>Modality</b>
		Sovereign	Project loan
		Sovereign	Project loan
		Total	
		<b>Source</b>	<b>Amount (\$ Million)</b>
		Asian Development Fund	60.0
		Ordinary capital resources	100.0
			160.0
<b>12. Cofinancing:</b>			
		<b>Financier</b>	<b>Category</b>
		Agence Francaise de Developpement	Official-Loan
		Global Environment Facility	Official-Grant
		Japan Fund for Poverty Reduction	Official-Grant
		Total	
			45.0
			4.6
			1.0
			49.6
<b>13. Counterpart Financing:</b>			
		<b>Source</b>	<b>Amount (\$ Million)</b>
		Government	45.4
		Total	45.4
<b>14. Aid Effectiveness:</b>			
		Parallel project implementation unit	No
		Program-based approach	No

## I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on (i) proposed loans, (ii) proposed administration of a loan to be provided by the Agence Française de Développement (AFD), and (iii) proposed administration of a grant to be provided by the Global Environment Facility (GEF), all to the People's Republic of Bangladesh for the Greater Dhaka Sustainable Urban Transport Project.<sup>1</sup> The report also describes proposed technical assistance (TA) for Transit-Oriented Development and Improved Traffic Management in Gazipur City Corporation (GCC), and if the Board approves the proposed loans and administration of loan and grant, I, acting under the authority delegated to me by the Board, will approve the TA.

2. The project<sup>2</sup> will contribute to developing a sustainable urban transport system (UTS)<sup>3</sup> in Dhaka North City Corporation (DNCC) and GCC areas, which form part of north Greater Dhaka, through the delivery of a 20-kilometer (km) bus rapid transit (BRT) corridor. This pilot project provides a holistic solution for integrated urban mobility, bearing a demonstration effect as no modern mass transit system exists in Bangladesh yet.

## II. THE PROJECT

### A. Rationale

3. **Current status.** Bangladesh was ranked 146th out of 187 countries in the 2011 Human Development Index, and Dhaka is consistently ranked one of the world's most unlivable cities in the Global Liveability Report.<sup>4</sup> Traffic congestion and air pollution play a major role in these poor rankings.<sup>5</sup> Greater Dhaka is one of the fastest-growing megacities and one of the most densely populated cities in the world. Since 2000, its population has more than doubled and it is projected to grow from 17 million in 2012 to 25 million in 2025. Such high density in a city with limited inhabitable land—owing to the city's topography, limited infrastructure, and low level of public services—results in tremendous congestion and constrains the UTS' ability to provide mobility for all people. Car ownership and usage are still low because of low disposable incomes, but these figures are increasing fast with a growing middle class. With an annual motorization growth of 8%, there could be up to half a million cars in 2025, increasing local air pollutants and greenhouse gas (GHG) emissions from the transport sector.

4. Without better planning and strategy, the metropolitan area will keep on sprawling north and south without order along the existing axis. The main issue for Dhaka's urban development lies in its fringes, where most of the urban sprawl and pauperization take place. Concepts like satellite cities, city clusters, and transit-oriented development have to be implemented to organize the urban growth and public spaces toward improved living conditions and climate change mitigation. To ensure a sustainable future for Dhaka, public transport focused on people's mobility needs and accessibility has to be improved and given priority over simple road projects. International experience documents well that interventions that promote nonmotorized transport (NMT), a modal shift from private vehicles to public transport, and integration of land-use and transport planning also help lower GHG emissions in the long run. Project preparation

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<sup>1</sup> The design and monitoring framework is in Appendix 1.

<sup>2</sup> The Asian Development Bank (ADB) provided project preparatory TA: ADB. 2011. *Technical Assistance to the People's Republic of Bangladesh for Preparing the Greater Dhaka Sustainable Urban Transport Project*. Manila.

<sup>3</sup> The UTS refers to specific characteristics of people transportation (transport modes, traffic management, level of organization) and the resulting major issues (level of congestion, pollution) in Greater Dhaka. A sustainable UTS is defined as in ADB's Sustainable Transport Initiative—accessible, safe, environment-friendly, and affordable.

<sup>4</sup> United Nations Development Program. 2011. *Human Development Report 2011*. New York; and The Economist Intelligence Unit. 2012. *Global Liveability Report*. London.

<sup>5</sup> Air pollution is proven to be a leading cause of mortality, especially in Dhaka where particulate matter above 10 microns (PM<sub>10</sub>) has been identified as a primary pollutant, with a level significantly above World Health Organization guidelines (50 milligram per cubic meter) for around 100 days per year over a 7-year period.

studies indicate that out of six suburban corridors analyzed, the corridor connecting the emerging GCC (over 80% of its length) with DNCC (over 20% of its length), from Gazipur to the international airport, has the best potential to organize urban development and support a mass transit infrastructure; and that BRT is the most cost-effective mass transit mode for this corridor.

5. GCC is being created from the merger of Tongi and Gazipur *pourashavas* (municipalities) as a satellite city on the northern edge of Dhaka with an estimated official population of 1 million, and a large floating population. The area is a garment hub, with 272 factories in the immediate vicinity of the corridor employing about 1 million workers. This adds to the high levels of demand for travel. GCC's current traffic is characterized by the following modal split: (i) 22% of trips are made by private modes; (ii) 40% by public transport (buses); and (iii) 38% are nonmotorized, made on foot or by cycle-rickshaws. The high level of congestion and pollution result from (i) rapid motorization, (ii) a weak road network, (iii) weak traffic management to organize many competing modes, (iv) lack of transport demand management, and (v) inefficient public transport services. Close to 4,900 large and mini buses run through the project corridor, 25% of which do not have a proper permit; they are shared between 61 licensed city routes operated by 45 companies, mostly private, and 38 intercity routes. The bus fleet is in poor condition; bus stops are rudimentary, without information on schedule or itinerary; the ticketing system is not developed; and operators compete for passengers, worsening congestion and impairing safety. The situation in road-based traffic collisions is deteriorating, mostly affecting pedestrians (the poorest) who represent more than half of road accident fatalities in DNCC and GCC streets. This safety issue becomes even more acute when looked at from a gender perspective: 80% of garment workers are women, mostly commuting on foot.

6. **Alignment with country strategy.** The project will support the government's Sixth Five-Year Plan 2011–2015 and the country partnership strategy of the Asian Development Bank (ADB). It addresses (i) green growth, (ii) climate change mitigation, and (iii) inclusive social development.<sup>6</sup> It will contribute to national priorities to make Dhaka more livable and safe, develop green urban infrastructures, boost private sector investment, and foster gender equity. It complies with some of the recommendations of the Strategic Transport Plan for Dhaka, approved by the government in 2008.<sup>7</sup> The project is also well aligned with ADB's Sustainable Transport Initiative.<sup>8</sup> Lessons from past assistance have been incorporated into the project design, notably the need to strengthen good governance and government agencies' capacities for project implementation, the need for a gradual approach to sector reform and organizational arrangements, as well as the need to expand support for private sector development.

7. **Development partnership.** Close coordination will be ensured with other development partners in the urban transport sector. The World Bank is currently studying the feasibility of the continuation of the selected BRT route from the airport into Dhaka city center. Both sections will be integrated and will lead ultimately to a 40 km long mass transit corridor. Japan International Cooperation Agency recently undertook the feasibility study of a mass rapid transit (or metro) system. Potential synergy can be found with this project, notably in capacity building and necessary organizational developments to improve Dhaka's UTS management.

## B. Impact and Outcome

8. The project impact will be to develop a sustainable UTS in DNCC and GCC. The project outcome will be to improve the public transport system of DNCC and GCC, benefiting a population of 1 million.

<sup>6</sup> Government of Bangladesh, Planning Commission. 2011. *Sixth Five-Year Plan FY2011–FY2015*. Dhaka; and ADB. 2011. *Country Partnership Strategy for Bangladesh, 2011–2015*. Manila.

<sup>7</sup> Dhaka Transport Coordination Board. 2005. *Strategic Transport Plan for Dhaka*. Dhaka.

<sup>8</sup> ADB. 2010. *Sustainable Transport Initiative Operational Plan*. Manila.

## C. Outputs

9. **Output 1: DNCC and GCC’s main urban corridor restructuring.** This will include the construction of (i) a 20-km BRT route designed and built following international best practices and quality standards;<sup>9</sup> (ii) sidewalks, two mixed-traffic lanes, and one NMT lane per direction along the BRT; (iii) a high-capacity drainage system along the corridor; and (iv) BRT depot and terminal facilities in Gazipur. Under this output, 155 access roads will also be improved for NMT over a 100-meter stretch, and a public–private partnership (PPP) scheme will be developed to finance the BRT airport terminal as part of an intermodal hub.

10. **Output 2: Effective project management and sustainable bus rapid transit operations.** This will include organizational developments such as (i) establishing a special project organization (SPO) (para. 20) to support project management, and monitor future BRT operations with the private sector; (ii) supporting the transformation of Dhaka Transport Coordination Board into Dhaka Transport Coordination Authority, to undertake planning, regulation, and coordination of all mass transit systems; (iii) designing an operational plan and a business model for the BRT system; (iv) conducting negotiations and facilitating consolidation of the existing bus industry to operate the BRT; (v) building capacity of the SPO, Dhaka Transport Coordination Authority, and selected private bus operators; (vi) setting up a fleet scrapping program and compensation mechanism for operators not participating in BRT operations; (vii) procuring and leasing 50 compressed natural gas buses to selected private bus operating companies; (viii) procuring and installing intelligent transport systems (ITSs) for the BRT, including the fare collection system; (ix) training bus drivers and testing the BRT system prior to the operational start; and (x) conducting media and community awareness campaigns.

11. **Output 3: Improved urban quality of the corridor.** This will include activities such as (i) procuring and installing 1,000 energy-efficient streetlights along the corridor; (ii) improving municipal infrastructure, including 10 local markets, nine drains, 141 local roads, and two pedestrian-friendly pilot roads; and (iii) procuring and installing equipment for the traffic police to improve traffic management, including 70 BRT-priority traffic lights, 150 closed-circuit television cameras at main junctions, and mobile vehicle emission-testing devices.

## D. Investment and Financing Plans

12. The project is estimated to cost \$255 million (Table 1), out of which land acquisition and resettlement costs of \$8 million are to be financed by the government. Detailed cost estimates by expenditure category and detailed cost estimates by financier are in the project administration manual (PAM).<sup>10</sup>

**Table 1: Project Investment Plan (\$ million)**

Item	Amount <sup>a</sup>
<b>A. Base Cost<sup>a</sup></b>	
1. Output 1: Urban corridor restructuring (including BRT infrastructure)	150.24
2. Output 2: Effective project management and sustainable BRT operations	53.39
3. Output 3: Corridor urban quality improvement	19.62
<b>Subtotal (A)</b>	<b>223.25</b>
<b>B. Contingencies<sup>b</sup></b>	<b>24.68</b>
<b>C. Financing Charges During Implementation<sup>c</sup></b>	<b>7.07</b>
<b>Total (A+B+C)</b>	<b>255.00</b>

<sup>9</sup> To reach BRT system efficiency, and starting from the Gazipur terminal, the BRT infrastructure will include (i) one segregated lane per direction from km 0.0 to km 12.5, (ii) two segregated lanes per direction from km 12.5 to km 20.0 (airport terminal), (iii) a 4.5 km elevated section in Tongi from km 12.5 to km 17.0, (iv) seven additional overpasses at main junctions and one U-turn, (v) BRT lanes with reinforced concrete pavement, (vi) 31 closed stations with three accesses at grade and 28 underpasses (eight with elevators), and (vii) two terminals.

<sup>10</sup> Project Administration Manual (accessible from the list of linked documents in Appendix 2).

- <sup>a</sup> In mid-2011 prices. Includes taxes and duties of \$26.5 million to be financed from government resources.
- <sup>b</sup> Physical contingencies computed at 8% for civil works and equipment. Price contingencies computed at 1.5% per annum. Includes provision for potential exchange rate fluctuation.
- <sup>c</sup> Includes interest and commitment charges. Interest during construction for Asian Development Bank (ADB) loans has been computed at 1% for Asian Development Fund (ADF) (both soft and hard terms), and 0.9% for ordinary capital resources (OCR) (including a spread of 0.4% for the OCR loan). There is a 0.15% per annum commitment charge for the ADB OCR loan, and no commitment charges for ADB ADF loans. All charges for the Agence Française de Développement loan are included in the interest rate.

Source: Asian Development Bank estimates.

13. To help finance the project, the government has requested the following loans from ADB:
- (i) A \$100 million loan from ADB's ordinary capital resources. This loan will have a 25-year term, including a grace period of 7 years, an annual interest rate determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility, a commitment charge of 0.15% per year (the interest and other charges during construction to be capitalized in the loan), and such other terms and conditions set forth in the ordinary capital resources loan agreement. The government has provided ADB with (a) the reasons for its decision to borrow under ADB's LIBOR-based lending facility based on these terms and conditions, and (b) an undertaking that these choices were its own independent decision and not made in reliance on any communication or advice from ADB.
  - (ii) Two loans in various currencies, one in an amount equivalent to SDR29,179,000 million from ADB's Special Funds resources with soft terms, and another in the amount equivalent to SDR9,726,000 million from ADB's Special Funds resources with hard terms. The two loans will have a 32-year term including a grace period of 8 years, an interest charge of 1.0% per annum during the grace period and 1.5% per annum thereafter, and other terms and conditions set forth in the Asian Development Fund loan agreement.
14. ADB loans in the amount of \$160 million, or 62.7% of the total project investment cost, will be used to finance (i) large civil works packages for the corridor restructuring, such as those described in para. 9 and footnote 9; (ii) vehicles and equipment; (iii) consulting services, including surveys and capacity building; (iv) a compensation mechanism and fleet scrapping program for bus operators; (v) SPO's operating costs during the construction period; (vi) media and community awareness campaigns; (vii) interest charge during implementation; and (viii) transportation and insurance costs. The government's financing of \$45.4 million, or about 17.9% of the total project cost, will be used to finance land acquisition and resettlement, taxes and duties, and a small part of civil works and SPO operating costs.
15. The government has also sought a loan from AFD of about \$45 million equivalent to finance part of the project. The AFD loan will have the following conditions: (i) a 20-year maturity, including a grace period of 5 years; and (ii) an annual interest rate determined in accordance with the European Interbank Offered Rate-based lending facility plus 150 base points per annum. A front-end fee and a commitment charge are included in the proposed interest rate. The AFD cofinancing will be partially administered by ADB.<sup>11</sup>
16. The government has also requested a \$4.6 million grant from the GEF to help finance part of the project. The GEF grant cofinancing will be administered by ADB, and will be used mostly to finance energy-efficient street-lighting, and part of the acquisition of the BRT bus fleet.
17. The financing plan is in Table 2.

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<sup>11</sup> AFD will confirm its participation in the financing within 2 month after approval by the ADB Board of Directors.

**Table 2: Financing Plan**

<b>Source</b>	<b>Amount (\$ million)</b>	<b>Share of Total (%)</b>
Asian Development Bank – ADF (soft terms)	45.00	17.60
Asian Development Bank – ADF (hard terms)	15.00	5.90
Asian Development Bank – OCR	100.00	39.20
Agence Française de Développement	45.00	17.70
Global Environment Facility	4.60	1.80
Government	45.40	17.80
<b>Total</b>	<b>255.00</b>	<b>100.00</b>

ADF = Asian Development Fund, OCR = ordinary capital resources.

Source: Asian Development Bank estimates.

## **E. Implementation Arrangements**

18. The implementation arrangements are summarized in Table 3 and described in detail in the PAM (footnote 11). The Roads Division, under the Ministry of Communications, will be the executing agency and will also be responsible for the overall coordination and supervision of the project. A project management unit (PMU) will be established at the Roads Division, headed by a project coordinator, and supported by the project management, coordination, and capacity building (PMCCB) consultants.

19. The project will be implemented by three government agencies: (i) the Roads and Highways Department (RHD) will implement the main corridor restructuring, excluding the elevated section, and will prepare the PPP scheme to finance the BRT terminal near the airport; (ii) Bangladesh Bridge Authority (BBA), whose mandate includes all matters related to elevated structures of 1500m or over, will implement the 4.5 km elevated section, integrating the new Tongi bridge and the Abdullahpur intersection overpass; and (iii) the Local Government Engineering Department (LGED) will implement the BRT depot in Gazipur and small municipal infrastructure improvements (local roads, drains, and markets). A project implementation unit (PIU) will be established in each of these implementing agencies, headed by a full-time project director. The PIUs will receive support from the engineering, procurement, and construction management (EPCM) consultants, and RHD's PIU will be assisted by a nongovernment organization (NGO) to implement the resettlement plan.

20. The government is establishing an SPO as a corporation, 100% owned by the government, in accordance with the Companies Act, 1994. Its board will be chaired by the secretary of the Roads Division, and will include directors from public and private organizations, as recommended by ADB. The SPO, tasked as the fourth implementing agency, will implement most activities under output 2 and will receive support from the PMCCB consultants and the operational design and business model (ODBM) consultants. During project implementation and until revenues from BRT operations can finance all SPO operating costs, the project will finance SPO staff salaries, the lease, and other recurrent costs for the SPO office. All three PIUs and consultants will be located in the office leased by the project for the SPO. After the project is completed, all BRT assets will be transferred as a grant under the ownership of the SPO, which will manage and monitor the BRT operations and maintenance with the private sector.

21. Consultants' recruitment will be carried out in accordance with ADB's Guidelines on the Use of Consultants (2010, as amended from time to time). Four consulting packages (PMCCB, EPCM, ODBM, and NGO) will be procured under the project. At the government's request, the consulting firms will be selected by ADB, and engaged and employed by the executing agency. All procurement of works, goods, and services will be carried out in accordance with ADB's Procurement Guidelines (2010, as amended from time to time). The consulting services and the agreed procurement plan, indicating contract packages and procurement procedures, are described in detail in the PAM.

**Table 3: Implementation Arrangements**

Aspects	Arrangements		
Implementation period	June 2012–June 2017		
Estimated completion date	30 June 2017		
<b>Management</b>			
(i) Oversight body	Inter-Ministerial Project Steering Committee Cochair: Secretary, Roads Division, and Secretary, Bridges Division, both under the Ministry of Communications Members: Representative of each project stakeholder (to be determined)		
(ii) Executing agency	Roads Division (project management unit, 9 staff)		
(iii) Key implementing agencies	RHD, BBA, LGED, and Special Project Organization		
(iv) Implementation unit	RHD (19 staff), BBA (13 staff), and LGED (6 staff)		
Procurement	International competitive bidding	9 contracts	Above \$1,000,000 for works, above \$500,000 for goods
	Shopping	multiple contracts	\$100,000 or less
	No national competitive bidding		
Consulting services (4 packages)	QCBS - 90:10, and QBS	1,224 person-months	\$13,200,000
Retroactive financing and/or advance contracting	Advance contracting and retroactive financing is proposed for the recruitment of the four consulting packages and recurrent costs. <sup>a</sup>		
Disbursement	The ADB and AFD loan and GEF grant proceeds will be disbursed in accordance with ADB's <i>Loan Disbursement Handbook</i> (2007, as amended from time to time) and detailed arrangements agreed upon between the government and ADB. AFD funds will be partially administered by ADB with regard to disbursement.		

ADB = Asian Development Bank, AFD = Agence Française de Développement, BBA = Bangladesh Bridges Authority, GEF = Global Environment Facility, LGED = Local Government Engineering Department, QBS = quality-based selection, QCBS = quality- and cost-based selection, RHD = Roads and Highways Department.

<sup>a</sup> The amount to be retroactively financed will not exceed the equivalent of 20% of the ADB loan, and may finance costs incurred before loan effectiveness but not more than 12 months before the signing of the loan agreement.

Source: Asian Development Bank estimates.

### III. TECHNICAL ASSISTANCE

22. The creation of GCC provides the opportunity to revise its detailed area plan (land use), integrate it with a transport plan, and design an integrated urban development strategy. The proposed capacity development TA will focus on increasing the density and location of public facilities along the BRT corridor, notably around the BRT stations, following the transit-oriented development concept. The second output will be to draft enhanced traffic management and parking regulations, and conduct a large capacity building program on enforcement for the traffic police, and awareness campaigns on proper traffic behaviors and road safety.<sup>12</sup>

23. The TA is estimated to cost \$1 million and will be financed on a grant basis by the Japan Fund for Poverty Reduction, and administered by ADB. The executing agency will be LGED, and the implementing agencies will be GCC and the traffic police.

### IV. DUE DILIGENCE

#### A. Technical

24. Technical viability has been confirmed through the project preparatory TA. The feasibility study and preliminary design for the BRT corridor were completed in May 2011. Based on the consultants' recommendations, the government chose a high-capacity scenario to respond to an increasing transport demand (from 100,000 to 300,000 passengers per day) once the World Bank section of the BRT corridor starts to operate. Two segregated lanes per direction for the

<sup>12</sup> TA: Transit-Oriented Development and Improved Traffic Management in GCC (accessible from the list of linked documents in Appendix 2).

BRT on 40% of the corridor length are needed, and will require elevating a 4.5 km section in Tongi where the right-of-way is too narrow. The structure will integrate the new eight-lane Tongi bridge, and an overpass. BBA has been chosen to implement these complex civil works.

25. The project has some advanced technical aspects relating to BRT operations and ITS (fare collection, and passenger information), with technology choices based on efficient and proven designs. The SPO will procure and own all ITS and rolling stock (articulated buses) for the BRT, while their operation and maintenance (O&M) will be outsourced to the private sector, and evaluated against criteria included in performance-based contracts. LGED will procure, and the traffic police will undertake O&M of streetlights and all equipment related to traffic management (traffic lights, closed-circuit television cameras, and control center). Local capacity for proper O&M of such systems and facilities will be strengthened under the project.

26. Although the project does not finance directly any PPP component, it demonstrates how various PPP modalities can be effectively integrated into public services delivery to yield high quality and high-value facilities operated and maintained to a good standard. It seeks to apply PPP principles to promote some of its core aspects: bus operations' performance-based contracting, fare collection system concession, and PPP-based mixed use intermodal hub development. The bus operating and fare collection contracts will support sustainable operations of the BRT. The intermodal transit hub will represent the debut of PPP real estate development to deliver public infrastructure in Bangladesh. The fare collection concession can also provide profit sharing between concessionaire(s) and the government. The PPP plans associated with the project are a timely integration with the overall national implementation of the government's policy and strategy for PPP (August 2010) as one of the first projects contemplated under the program.<sup>13</sup>

## **B. Economic and Financial**

27. The project will contribute to improve public transport and traffic management, resulting in less congestion, noise pollution, GHG and particulate matters emissions. Coupled with capacity development and awareness programs on traffic behavior in DNCC and GCC, the public investment will have a significant impact on environmental and public health. It is estimated that carbon dioxide emissions will be reduced by 40,000 tons per year from the project. Opportunities to utilize the Clean Development Mechanism and obtain carbon credits from emission reductions for enhanced revenue streams for the BRT operations are available and assessed under the project.<sup>14</sup>

28. The economic analysis was conducted assuming the following benefits: (i) savings in vehicle operating costs, (ii) journey time savings, and (iii) increase in land values. Economic costs were calculated based over a 30-year projection period, including a construction period of 5 years. Three alternatives were analyzed: (i) excluding investments costs not directly related to BRT operations, (ii) excluding Tongi bridge investment costs, and (iii) comprising all investment costs. The economic internal rate of return (EIRR) is 18.4% for alternative (i), 17.2% for (ii), and 15.1% for (iii). The corresponding net present values are \$69.08 million for alternative (i), \$59.94 million for (ii), and \$35.60 million for (iii). The EIRR is higher than the economic opportunity cost of capital estimated at 12.0%. A sensitivity analysis was also undertaken with the following scenarios: (i) capital costs increased by 10%, (ii) O&M costs increased by 10%, (iii) benefits reduced by 10%, (iv) 1-year delay, and (v) no increase in land value. The EIRRs varied from 12.2% to 18.4%, the most sensitive risk factors being the lack of increase in land value and a 1-year delay in project completion. However, in all cases, the EIRR remains above 12%.

<sup>13</sup> Public-Private Partnership Opportunities (accessible from the list of linked documents in Appendix 2).

<sup>14</sup> ADB. 2011. *Dhaka's Bus Rapid Transit: A Potential Clean Development Mechanism Project*. Manila.

29. The financial internal rate of return (FIRR) was estimated with the following assumptions: (i) a project implementation period of 5 years from 2012; (ii) an evaluation period of 30 years from commission; (iii) 2011 constant prices; (iv) an exchange rate of Tk70 = \$1; and (v) a weighted average cost of capital (WACC) estimated at 0.52%. Considering the initial investment as a subsidy, the FIRR is 16.5% and the corresponding net present value is \$60.2 million. The FIRR is above the WACC in the base case scenario. An O&M cost increase of 10% decreases the FIRR to 4.7% and a revenue reduction of 10% decreases the FIRR to 1%; both are still above the WACC.<sup>15</sup>

### **C. Governance**

30. ADB financial management and procurement requirements, following ADB's Procurement Guidelines, have been discussed and agreed with all involved agencies. Financial management and procurement capacity assessments were carried out in 2010 for LGED, RHD, and BBA, indicating that financial management practices in these agencies are generally sound. Risks in public procurement, corruption, and financial management for the implementing agencies will be mitigated through financial systems improvement and comprehensive capacity building provided under separate projects by ADB and development partners. The project will coordinate closely with those ongoing initiatives, currently in the initial stages, to cover potential gaps and avoid overlaps.

31. ADB's Anticorruption Policy (1998, as amended to date) was explained to and discussed with the government. Specific policy requirements and supplementary measures are in the PAM. Adequate mitigation measures have been identified and incorporated in the project design, such as (i) establishing a mechanism for regular voluntary disclosure of project-related information to citizens through media awareness campaigns; (ii) developing and updating the project website to enhance transparency in project implementation, procurement and safeguards; and (iii) establishing a grievance redress mechanism to ensure quick and effective relief in corruption, safeguards, or other project-related activities. The project intends to maximize transparency, including procurement and financing, to reduce central level risks, including via a project website.

### **D. Poverty and Social**

32. The project will provide a high level of accessibility, mobility, safety and service reliability in DNCC and GCC. Direct poverty benefits include (i) supporting an employer-based cross-subsidy program to reduce costs of transit fares for low-income workers, particularly garment employees within the corridor; and (ii) employment opportunities during construction and operation of the BRT system. Indirect benefits include reduced health costs associated with less vehicular pollution and road accidents, as well as reduced travel times. The project is classified effective gender mainstreaming and a gender action plan has been prepared to address specific gender-related concerns, including dedicated bus seating for women and reserved commercial spaces at BRT stations for women-operated vendors. A community awareness and participation plan has been prepared to encourage awareness building and public participation among key stakeholders to ensure widespread, ongoing, and meaningful participation with an emphasis on poor and vulnerable households.<sup>16</sup> The gender action plan and the community awareness and participation plan will be implemented with the assistance of an NGO and PMCCB consultants. Monitoring and reporting of progress will be ensured on a quarterly basis.

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<sup>15</sup> Economic Analysis and Financial Analysis (accessible from the list of linked documents in Appendix 2).

<sup>16</sup> Summary Poverty Reduction and Social Strategy, Gender Action Plan, and Community Awareness and Participation Plan (accessible from the list of linked documents in Appendix 2).

## E. Safeguards

33. **Environmental safeguards.** The project is classified category B for environment. An initial environmental examination (IEE) including an environmental management plan (EMP) was prepared in accordance with ADB's Safeguard Policy Statement (2009) and government laws.<sup>17</sup> The IEE concludes that no significant adverse impacts are anticipated and that net environmental benefits will be positive and large, including (i) improved air quality and health co-benefits from clean fuel buses and reduced traffic and congestion, and (ii) improved community and pedestrian safety from better storm water drainage and energy-efficient street-lighting. The EMP emphasizes good traffic management during the construction period to ensure limited disruption to existing traffic flows and local businesses. Implementation arrangements ensure that the PMU and PIUs have adequate capacity to manage environmental impacts through consultant support and capacity building. The IEE and EMP will be updated during detailed design and incorporated into bidding and contract documents to be implemented by contractors and monitored by EPCM consultants and the PMU. An environmental assessment and review framework was also prepared to address small improvements on municipal infrastructure to be defined through detailed design after approval by the ADB Board of Directors.<sup>18</sup>

34. **Social safeguards.** The project is classified category A for involuntary resettlement and category C for indigenous peoples. A resettlement plan was prepared in accordance with ADB's Safeguard Policy Statement and government laws, and disclosed.<sup>19</sup> A total of 2,482 households (10,474 affected persons) will be impacted by the project. These impacts consist primarily of relocating informal vendors within the right-of-way; only a small portion (2%) of the overall impacts will include physical relocation from housing. The resettlement impacts include (i) relocation of 1,704 informal vendors conducting businesses within the right-of-way; (ii) relocation of 46 non-titled residential settlers along the northern banks of the Turag River; (iii) partial physical impacts to 498 commercial establishments operating within the corridor; (iv) partial loss to 225 commercial structures situated on feeder roads near junctions; (v) partial impacts to 6 industrial establishments along the corridor; and (vi) strip land taking of private land. In addition, temporary disruption to income will occur to 966 workers during preconstruction activities. The two terminals and the depot are proposed on government-owned lands. Alternative locations for informal vendors and non-titled residential settlers were identified and agreed with local government officials. The resettlement plan will be implemented by the PIUs, with the support of an NGO, and EPCM consultants who will provide a capacity building program to ensure the PIUs have adequate capacity to manage social impacts. Considering the urban locations of these subprojects, no impacts to indigenous peoples are expected. Meaningful, widespread consultations will continue with all communities in the project area. A resettlement framework was also prepared to address small municipal infrastructure improvements to be defined through detailed design after Board approval.<sup>20</sup>

## F. Risks and Mitigating Measures

35. Major risks and mitigating measures are described in detail in the risk assessment and risk management plan.<sup>21</sup> As major risks could be mitigated to a manageable level, intended benefits and impacts of the project are expected to outweigh the costs. Weak governance in financial management and procurement will be mitigated through capacity building, accountability and transparency measures (para. 29 and 30), as well as the use of the direct

<sup>17</sup> Initial Environment Examination (accessible from the list of linked documents in Appendix 2).

<sup>18</sup> Environmental Assessment and Review Framework (accessible from the list of linked documents in Appendix 2).

<sup>19</sup> Resettlement Plan (accessible from the list of linked documents in Appendix 2).

<sup>20</sup> Resettlement Framework (accessible from the list of linked documents in Appendix 2).

<sup>21</sup> Risk Assessment and Risk Management Plan (accessible from the list of linked documents in Appendix 2).

payment procedure for large contracts. Non-cooperation from the existing bus industry will be mitigated through limitation of affected routes, sound BRT business model, incentives and compensation mechanism.

## **V. ASSURANCES**

36. The government has assured ADB that implementation of the project shall conform to all applicable ADB policies including those concerning anticorruption measures, safeguards, gender, procurement, consulting services, and disbursement as described in detail in the PAM and loan documents.

37. The government has agreed with ADB on certain covenants for the project, which are set forth in the loan agreements and project agreement. For the ADF loans, disbursement for the compensation mechanism and fleet scrapping program will be subject to ADB's approval of the program. For the OCR loan, disbursement for the construction of the BRT depot in Gazipur will be subject to the formal transfer of the land to the Ministry of Communications.

## **VI. RECOMMENDATION**

38. I am satisfied that the proposed loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve:

- (i) the loan of \$100,000,000 to the People's Republic of Bangladesh for the Greater Dhaka Sustainable Urban Transport Project, from ADB's ordinary capital resources, with interest to be determined in accordance with ADB's London interbank offered rate (LIBOR)-based lending facility; for a term of 25 years, including a grace period of 7 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
- (ii) the loan in various currencies equivalent to SDR29,179,000 to the People's Republic of Bangladesh for the Greater Dhaka Sustainable Urban Transport Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
- (iii) the loan in various currencies equivalent to SDR9,726,000 to the People's Republic of Bangladesh for the Greater Dhaka Sustainable Urban Transport Project, from ADB's Special Funds resources, with an interest charge at the rate of 1.0% per annum during the grace period and 1.5% per annum thereafter; for a term of 32 years, including a grace period of 8 years; and such other terms and conditions as are substantially in accordance with those set forth in the draft loan and project agreements presented to the Board;
- (iv) the administration by ADB of a loan not exceeding the equivalent of \$45,000,000 to the People's Republic of Bangladesh for the Greater Dhaka Sustainable Urban Transport Project, to be provided by the Agence Française de Développement; and
- (v) the administration by ADB of a grant not exceeding the equivalent of \$4,600,000 to the People's Republic of Bangladesh for the Greater Dhaka Sustainable Urban Transport Project, to be provided by the Global Environment Facility.

Haruhiko Kuroda  
President

## DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
<p><b>Impact</b> A sustainable<sup>a</sup> urban transport system is developed in DNCC and GCC.</p>	<p>By 2020: Project saves average 40,000 tCO<sub>2</sub> equivalent/year (versus without-project scenario)</p> <p>Air pollutants (PM<sub>10</sub>) annual level decreases by 20% (2006 baseline: 76.72 µg/m<sup>3</sup>)</p> <p>GCC walkability index rating improves from 39 (2010: baseline) to 60 out of 100</p>	<p>Clean Development Mechanism evaluation reports (validator)</p> <p>Department of Environment annual report, and PMU results monitoring of the ADB study<sup>b</sup></p> <p>Clean Air Initiative for Asia walkability index and Dhaka survey</p>	<p><b>Assumption</b> Sustained government commitment to institutional reforms in the sector, and to private sector development</p>
<p><b>Outcome</b> The public transport system is improved in DNCC and GCC, benefiting a population of 1 million.</p>	<p>By 2017: Residents' positive perception of public transport and urban life quality improves by 50% from 2012 baseline</p> <p>BRT achieves 100,000 passengers/day ridership (at least 30% women) in first year of operation</p> <p>Modal share of public transport increases from 40% (2011 baseline) to 50%</p>	<p>SPO claim book and socioeconomic and perception survey</p> <p>SPO annual reports</p> <p>SPO/DTCA annual reports</p>	<p><b>Risk</b> Political instability in GCC, following its creation</p>
<p><b>Outputs</b> 1. DNCC's and GCC's main urban transport corridor is restructured.</p>	<p>20 km BRT route, mixed traffic lanes, NMT lanes, sidewalks, and terminal and depot in Gazipur completed by 2016 as per design and international quality standards, including safety design features for women, children, and the disabled</p> <p>90% flood-free days along the corridor by 2017</p> <p>100 meter stretch in 155 access roads improved for NMT by 2016</p> <p>Airport BRT terminal developed as part of an intermodal hub through PPP scheme, by 2016</p>	<p>PMU/SPO annual reports</p> <p>SPO flood incidents annual report</p> <p>PMU/SPO annual reports</p> <p>SPO annual reports</p>	<p><b>Risk</b> Frequent strikes (garment workers and bus operators) causing project delays</p>

Design Summary	Performance Targets and Indicators with Baselines	Data Sources and Reporting Mechanisms	Assumptions and Risks
2. Project management is effective, and BRT operations are sustainable.	<p>Budget for SPO and DTCA approved by 2012</p> <p>75% of SPO/DTCA trainees (30% women) get 80% high score in final test</p> <p>Private company(ies) formed to run BRT under SPO register 5% profit in first year of operation (2017)</p> <p>Carbon credits finance at least 5% of BRT's O&amp;M by 2018</p> <p>BRT reaches operational targets of 30 km/hour average speed and 3-minute headway by 2017</p> <p>70% of garment workers (mostly women) using BRT receive subsidized monthly travel passes by 2017</p> <p>BRT is accessible/friendly to women, children, and the disabled</p> <p>PIUs are appropriately staffed (with 20% women) and trained by 2013</p> <p>Project performance management system with gender indicator is developed by 2012</p>	<p>National Budget 2012 yearbook</p> <p>SPO/DTCA human resource training completion reports by consultant</p> <p>SPO annual reports Private operator(s) balance sheet</p> <p>SPO annual reports</p> <p>SPO annual reports</p> <p>SPO annual reports</p> <p>Project design Socioeconomic survey</p> <p>Project progress reports</p> <p>Project progress reports</p>	<p><b>Assumption</b> PIUs are all regrouped in the SPO office and coordination is efficient</p> <p><b>Risks</b> Resistance to the project from power groups and vested interests (rickshaw associations, existing bus operators, cars and trucks drivers)</p> <p>Delayed start of BRT operations resulting from financing of the airport BRT terminal under PPP scheme</p>
3. Urban quality of the corridor is improved.	<p>95% days with streetlights in the evening along corridor by 2017</p> <p>Traffic accidents per year are reduced by 20% by 2017 from 2012 baseline</p> <p>At least 1,500 vehicles parked illegally towed away per year, and 100 parking fines issued per day by 2017 (2011 baseline: 0)</p> <p>Average travel time by bus from Gazipur to airport) decrease by 50% by 2017 (2011 baseline: 80 minutes)</p> <p>Municipal infrastructure (10 local markets, 9 drains, and 141 local roads) improved by 2016 (target: 30% women participation in design)</p>	<p>SPO annual reports</p> <p>Traffic police annual report</p> <p>Traffic police annual report</p> <p>DTCA and SPO annual reports</p> <p>Project progress reports</p>	<p><b>Risk</b> Gazipur District Traffic Police is not committed to strict traffic rules and parking policy enforcement</p>

Activities with Milestones	Inputs		
<p><b>1. DNCC and GCC's main urban transport corridor restructuring</b></p> <p>1.1 Complete land acquisition and obtain environmental clearances (Q3 2012)</p> <p>1.2 Prepare detailed design and bid documents (Q2 2012–Q2 2013)</p> <p>1.3 Award contracts for civil works (Q4 2013)</p> <p>1.4 Complete restructuring of GCC urban transport corridor, including BRT (Q4 2016)</p> <p>1.5 Complete improvement of access roads for NMT (Q4 2016)</p> <p>1.6 Complete efficient high-capacity drainage system (Q4 2016)</p> <p>1.7 Complete PPP scheme (Q3 2013) and prepare bid documents (Q2 2014) for the construction of the airport intermodal hub, including BRT terminal</p> <p><b>2. Effective project management and sustainable BRT operations</b></p> <p>2.1 Publish DTCA Act, and create SPO (Q1 2012)</p> <p>2.2 Create and fully staff PMU and PIUs (Q2 2012)</p> <p>2.3 Recruit PMCCB, EPCM, operation design and business model, and nongovernment organization consultants (Q2 2012)</p> <p>2.4 Implement monitoring and evaluation system (Q3 2012)</p> <p>2.5 Conduct all primary and baseline data surveys (Q4 2012)</p> <p>2.6 Conduct capacity building programs for PMU/PIU staff (2012), and for staff in SPO/DTCA (2013–2014)</p> <p>2.7 Conduct negotiations with existing private bus operators and design a sustainable business model for BRT operations (Q1 2013–Q2 2014)</p> <p>2.8 Set up a compensation mechanism and a fleet scrapping program for nonparticipating private operators (2013)</p> <p>2.9 Set up fare policy and pro-poor cross-subsidies (Q2 2014)</p> <p>2.10 Set up the fare collection and clearinghouse with private sector (Q4 2014)</p> <p>2.11 Create private company(ies) to run BRT operations (Q1 2015)</p> <p>2.12 Procure 50 articulated buses (2015) and lease to private companies (Q4 2016)</p> <p>2.13 Procure (2015) and install intelligent transport systems equipment for BRT operations (Q4 2016)</p> <p>2.14 Train bus drivers and test BRT operations (Q1 2017)</p> <p>2.15 Start BRT operations (Q2 2017)</p> <p>2.16 Conduct awareness campaigns on HIV prevention for construction workers (Q1 2014) and for BRT users (Q3 2017)</p> <p>2.17 Conduct socioeconomic and perception surveys (Q3 2017)</p> <p><b>3. Improved urban quality along the GCC corridor</b></p> <p>3.1 Complete improvements of municipal infrastructures (Q4 2016)</p> <p>3.2 Procure (2015) and install 1,000 energy-efficient streetlights along the 20 km corridor (Q4 2016)</p> <p>3.3 Procure (2015) and install 70 traffic lights and 150 CCTVs (Q4 2016)</p> <p>3.4 Procure emission testing and other sets of equipment for traffic police (Q1 2014)</p> <p>3.5 Conduct training on O&amp;M of equipment for traffic police (2016)</p>	<b>ADB loans: \$100 million OCR, and \$60 million ADF</b>		
		<b>Item</b>	<b>Amount (\$ million)</b>
		Civil works	84.4
		Equipment	17.0
		Consulting services	13.2
		Compensation/ fleet scrapping program	9.7
		SPO operating cost	14.0
		Interest charge and contingencies	21.7
		<b>AFD loan: \$45 million</b>	
		<b>Item</b>	<b>Amount (\$ million)</b>
		Civil works	39.2
		Contingencies	5.8
		<b>Government: \$45.4 million</b>	
		<b>Item</b>	<b>Amount (\$ million)</b>
		Taxes and duties	26.5
		Civil works	3.5
		SPO operating cost	3.3
	Land acquisition and resettlement	8.1	
	Interest charge and contingencies	4.0	
	<b>GEF grant: \$4.6 million</b>		
	<b>Item</b>	<b>Amount (\$ million)</b>	
	Street lights	1.6	
	BRT fleet	3.0	
	<b>Associated Technical Assistance: \$1 million</b>		
	Inputs of international consultants	33 person-months	
	Inputs of national consultants	32 person-months	

ADB = Asian Development Bank; ADF = Asian Development Fund; AFD = Agence Française de Développement; BRT = bus rapid transit; CCTV = closed-circuit television; CO<sub>2</sub> = carbon dioxide; DNCC = Dhaka North City Corporation; DTCA = Dhaka Transport Coordination Authority; EPCM = engineering, procurement, and construction management; GCC = Gazipur City Corporation; GEF = Global Environment Facility; JFPR = Japan Fund for Poverty Reduction; km = kilometer; µg/m<sup>3</sup> = milligrams per cubic meters; NMT = nonmotorized transport; O&M = operation and maintenance; OCR = ordinary capital resources; PIU = project implementation unit; PM<sub>10</sub> = particulate matters less than 10 microns; PMCCB = project management, coordination, and capacity building; PMU = project management unit; PPP = public–private partnership; Q = quarter; SPO = special project organization; TA = technical assistance; tCO<sub>2</sub> = tons of carbon dioxide.

<sup>a</sup> A sustainable urban transport system is defined as in ADB's Sustainable Transport Initiative—accessible, safe, environment-friendly, and affordable. Reliability, efficiency, and full integration can be added in reference to the sector outcome in the country partnership strategy results framework.

<sup>b</sup> ADB. 2011. *Technical Assistance to the People's Republic of Bangladesh for Quantifying the Health Benefits of the Greater Dhaka Sustainable Urban Transport Project*. Manila.

Source: Asian Development Bank.

### **LIST OF LINKED DOCUMENTS**

<http://adb.org/Documents/RRPs/?id=42169-013-3>

1. Loan Agreements
2. Grant Agreement
3. Project Agreement
4. Sector Assessment (Summary): Urban Transport
5. Project Administration Manual
6. Contribution to the ADB Results Framework
7. Development Coordination
8. Financial Analysis
9. Economic Analysis
10. Country Economic Indicators
11. Summary Poverty Reduction and Social Strategy
12. Gender Action Plan
13. Initial Environmental Examination
14. Environmental Assessment and Review Framework
15. Resettlement Plan
16. Resettlement Framework
17. Risk Assessment and Risk Management Plan

### **Supplementary Documents**

18. Community Awareness and Participation Plan
19. Public–Private Partnership Opportunities
20. TA: Transit-Oriented Development and Improved Traffic Management in GCC