



Report and Recommendation of the President to the Board of Directors

Project Number: 35049
November 2009

Proposed Supplementary Loan
People's Republic of Bangladesh: Padma
Multipurpose Bridge Design Project

CURRENCY EQUIVALENTS

(as of 27 October 2009)

Currency Unit – taka (Tk)

Tk1.00 = \$0.01448

\$1.00 = Tk69.055

ABBREVIATIONS

ADB	–	Asian Development Bank
BBA	–	Bangladesh Bridge Authority
JICA	–	Japan International Cooperation Agency
JBIC	–	Japan Bank for International Cooperation
POE	–	panel of experts
PPTA	–	project preparatory technical assistance
TA	–	technical assistance
TOR	–	term(s) of reference

NOTE

In this report, "\$" refers to US dollars.

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SUPPLEMENTARY LOAN AND PROJECT SUMMARY

Borrower	People's Republic of Bangladesh
Classification	<p>Targeting classification: General intervention</p> <p>Sector (subsector): Transport and information and communication technology (road transport)</p> <p>Themes (subthemes): Economic growth (widening access to markets and economic opportunities), regional cooperation and integration, capacity development (institutional development)</p> <p>Location impact: Rural (medium impact), urban (low impact), national (high impact), regional (medium impact)</p>
Rationale for the Supplementary Loan	<p>The ongoing Padma Multipurpose Bridge Design Project (the Project) is to develop the detailed design for the Padma bridge, which is one of the Bangladesh Government's top priority projects. The original technical assistance (TA) loan for the Project was approved in December 2007 for Special Drawing Rights 11,179,000 (\$17.6 million equivalent). Apart from the initial delay to engage the design consultants, project implementation has been smooth with strong support from the Government and other development partners.</p> <p>The ensuing investment project to construct the Padma bridge is included in the 2009–2011 country operations business plan for Bangladesh as a firm loan. Four major potential cofinanciers (Asian Development Bank [ADB], Islamic Development Bank, Japan International Cooperation Agency, and the World Bank) are involved in reviewing the Project's progress and developing the ensuing project.</p> <p>The Project's cost overrun is mainly due to underestimation of the cost of the design consultant's inputs, including remuneration and cost of field surveys and studies.</p> <p>The initial contract cost of the design consultant, arrived at by strictly following ADB's quality-based selection, was \$2.3 million higher than the estimate.</p> <p>Since its mobilization in February 2009, the design consultant has carried out, as part of its terms of reference, a fresh assessment of the requirements for field surveys and studies to develop the detailed design. The original budget allocation under the design consultant's contract for these cost items is now considered to be grossly insufficient with a fund shortage of about \$6.4 million. Though the cost increase is significant, these surveys and studies are essential for preparing an engineering design with due consideration to economy, effectiveness, constructability, functionality, ease in operation and maintenance, and sustainability of the ensuing project.</p>

The cost overrun, under the design consultant's contract, has been ongoing since January 2009. The Government requests that ADB continue to finance the cost overrun for the following reasons: (i) switching funding sources of an ongoing contract would disrupt the design consultant's activities, and may result in significant delay in completion of the detailed design; (ii) the Government does not have readily available funding to accommodate the identified cost increase; and (iii) without external financiers' involvement, lack of proper guidance in the appointment of specialized subconsultants to carry out the surveys and studies and the use of funds by the subconsultants could compromise the quality of these surveys and studies .

Revised Investment Plan	The investment cost of the Project is estimated at \$34.7 million, including taxes and duties of \$4.4 million.
Revised Financing Plan	Under the revised financing arrangements, the two ADB loans will cover 79.5% of the total investment costs. The Government will finance 16.2%, and the World Bank will finance 4.3%.
Supplementary Loan Amount and Terms	A loan of Special Drawing Rights 6,274,000 (\$10 million equivalent) from ADB's Special Funds resources will be provided. The loan will have a term of 32 years, including a grace period of 8 years, with an interest rate of 1.0% per annum during the grace period and 1.5% per annum thereafter.
Period of Utilization	August 2011
Implementation Arrangements	<p>Implementation arrangements for the Project under the supplementary loan, including project management; consulting services; ADB's <i>Anticorruption Policy</i> (1998, as amended to date); disbursement arrangements; accounting, auditing, and reporting; and project review remain the same as for the original loan, except for the following:</p> <ul style="list-style-type: none"> (i) Implementation period. Taking account of the initial delays in recruiting the design consultants (12 months from the original schedule), the implementation period will be extended by one year from February 2010 to February 2011. (ii) Consulting services. Selection of consultants will be in accordance with the <i>Guidelines on the Use of Consultants</i> (2007, as amended from time to time). Quality-based selection will be used to recruit checking engineers rather than the originally proposed quality- and cost-based selection. (iii) Audit. Audit provisions under the Project will be in line with ADB's general requirements including maintenance of separate accounts for the Project, auditing of such accounts annually by independent auditors acceptable to ADB and provision of certified copies of such audited accounts for ADB within 6 months after the end of the relevant fiscal year.

I. THE PROPOSAL

1. I submit for your approval the following report and recommendation on a proposed supplementary loan to the People's Republic of Bangladesh for the Padma Multipurpose Bridge Design Project. The updated design and monitoring framework in Appendix 1 reflects progress with project implementation.

II. THE APPROVED PROJECT

A. Project Rationale

2. The subcontinent's major rivers—the Padma, Jamuna (Brahmaputra), Ganges, and Meghna—geographically divide Bangladesh into four principal zones: north-central (Dhaka Division), east (Chittagong and Sylhet divisions), northwest (Rajshahi Division), and southwest (Khulna and Barisal divisions). The Government developed the road network with its own resources and external financial assistance (Appendix 2). The network now provides good links connecting the northwest, north-central, and east zones, encompassing the national capital, Dhaka. It includes five highway bridges constructed over the major rivers. Three bridges cross the Meghna River and its tributaries (Meghna bridge, Meghna-Gumti bridge, and Bhairab bridge), one multipurpose (highway and railway) bridge crosses the Jamuna (Bangabandhu bridge), and one bridge crosses the Ganges (Paksey bridge).

3. The Padma River separates the southwest zone of Bangladesh from other parts of the country, especially from the north-central zone, where Dhaka is located. Although the road network of the southwest zone has been improved and developed, links with the rest of the country across the Padma River are still only by ferry. Ferry service capacity is limited, and waiting time at ferry ghats (a broad flight of steps to the bank of a river) is about 1 hour for buses and light vehicles, and 2 hours for trucks. In addition, the riverbanks of the Padma are very unstable, and the river width changes frequently, leaving some ghats inoperative during certain seasons. The expansion of existing ferry terminals is made difficult by these conditions. Moreover, dangerous ferry and launch operations between Dhaka and the southwest region need to be urgently replaced by safer and more reliable surface transport. Overloaded vessels frequently sink in this waterway when passing through the treacherously turbulent confluence of the Padma and Meghna rivers.

4. The social, economic, and industrial underdevelopment of the southwest zone—which encompasses Bangladesh's second major port, Mongla, its third main city, Khulna, and the inland port at Benapole—is due in part to difficult access across the Padma River to the rest of the country. A bridge across the Padma River will strengthen links between the southwest and north-central zones. A highway bridge, in particular, will enhance freight and passenger transportation between Dhaka and major points in the southwest zone, and contribute substantially to development of the southwest zone and to national economic growth.

5. Asian Highways, conceived and pursued by the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) as a road network linking Asia and Europe, will pass through Bangladesh, making it the link between South and Southeast Asia. One section of Asian Highway Route A-1, the main Asian Highways route of connecting Asia to Europe (Tokyo [Japan] to Kapikule [Turkey], via Pusan [Republic of Korea], Beijing [People's Republic of China], Delhi [India], and Istanbul [Turkey]), is to connect Kolkata in India to Dhaka in the area near the Padma River. This will become an important highway for trading goods between Bangladesh and India.

B. Objectives and Scope

6. The original TA loan for the Project was approved in December 2007 for SDR11,179,000 (\$17.6 million equivalent) to assist the Government in preparing the detailed engineering documents and procurement for Padma bridge construction and to facilitate preparation for an investment project for external financing.¹

7. The ensuing project will help the Government achieve poverty reduction through economic growth by improving transport efficiency and strengthening integrated road networks. The ensuing investment project is included in ADB's 2009–2011 country operations business plan as a firm loan.² Four major potential cofinanciers (ADB, Islamic Development Bank, Japan International Cooperation Agency, and the World Bank) are involved in developing the ensuing project.

8. The Project is to develop a detailed design for the Padma bridge, including river-training works and approach roads, and assist the Executing Agency, BBA, in engaging contractors. It will be carried out through four continual processes of (i) scheme design, (ii) technical studies, (iii) detail design, and (iv) tender action. It will minimize technical uncertainty and ensure readiness to implement the ensuing loan project.

9. The TA loan is to finance (i) the design consultants to prepare detailed design of all structures, and help BBA with tendering, (ii) checking engineers to confirm the selected deliverables of the design consultants, and (iii) a panel of experts (POE) comprising reputed international and national experts to provide advisory services to BBA from the design phase to the end of the ensuing investment project.

C. Cost Estimates and Financing Plan

10. The total cost of the Project was estimated at \$22.0 million equivalent, including taxes and duties of \$2.8 million. Table 1 summarizes the original cost estimates.

11. ADB provided a loan of \$17.6 million equivalent from its Special Funds resources. The loan has a term of 32 years, including a grace period of 8 years and an interest charge of 1.0% per year during the grace period and 1.5% per annum thereafter. The Government transfers the loan proceeds to BBA through the execution of a subsidiary financing agreement in the form of a government grant.

¹ ADB. 2007. *Report and Recommendation of the President to the Board of Directors on a Proposed Technical Assistance Loan to the People's Republic of Bangladesh for the Padma Multipurpose Bridge Design Project*. Manila.

² ADB. 2008. *Country Operations Business Plan (2009–2011): Bangladesh*. Manila.

Table 1: Summary of Original Project Cost Estimates
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Detailed Design Consultant	16.9
2. Independent Checking Engineer and Panel of Experts	3.1
3. Incremental Administrative Support	0.5
Subtotal (A)	20.5
B. Contingencies^c	1.3
C. Financing Charges during Implementation	0.2
Total (A+B+C)	22.0

^a Includes taxes and duties of \$2.8 million.

^b In mid-2007 prices.

^c Physical contingencies computed at 5% and price contingencies at 0.8% on foreign exchange costs and local currency costs.

Source: Asian Development Bank estimates.

Table 2: Financing Plan
(\$ million)

Source	Total	%
Asian Development Bank	17.6	80
Government	4.4	20
Total	22.0	100

Source: Asian Development Bank estimates.

D. Status of and Progress with Project Implementation

12. **Overview.** Three sets of consulting services were to be engaged under the original TA loan.

- (i) **Design consultants.** ADB conducted recruitment of the design consultants using quality-based selection up to the stage of technical ranking. The request for proposal was issued in March 2008, 6 months later than in the original plan. This was mostly due to additional time required to fine-tune the terms of reference (TOR). In July 2008, ADB provided BBA with the technical ranking. Contract negotiations began in September 2008 and concluded in January 2009. The design consultants were mobilized in February 2009, and have been producing deliverables in a timely manner.
- (ii) **Checking engineers.** The design consultants have developed outline TOR for the checking engineers, and BBA is starting the consultant recruitment processes. The engineers are expected to be appointed by January 2010.
- (iii) **POE.** Due to the higher costs for the design consultants, not enough loan financing remained to fund the POE when recruitment was to take place. The POE was to be appointed immediately after mobilizing the design consultants to guide BBA on various technical matters arising from the design consultants' study. The World Bank is currently financing the POE under a \$3 million project preparatory facility. This change in funding sources has been processed

separately as a change in implementation arrangements. The POE has been meeting monthly since early July 2009 to review and comment on deliverables by the design consultants.

13. The three sets of consulting services are either in place or are being procured, generally following the sequence originally planned.

14. BBA has expanded its staffing for this TA loan to respond to the increasing workload, including consultant selection, contract administration, coordination with other government agencies, and organization of aid coordination meetings.

15. Further, since the formulation of the original TA loan and after mobilization of the design consultants, the development partners (ADB, Islamic Development Bank, Japan International Cooperation Agency, and the World Bank) have fielded three joint missions, primarily focusing on safeguard matters, so that the ensuing project will be in compliance with the development partners' various policy requirements.

16. **Cost Overrun.** The design consultants' contract cost was about \$2.3 million higher than the estimate. After mobilization, a fresh assessment of the cost of surveys and studies, carried out as part of the design consultants' assignment, identified the need for more surveys and studies estimated to cost about \$8 million. The original cost estimate for these cost items was \$1.6 million. A cost overrun of \$6.4 million is expected under these cost items. In total, a cost overrun of \$8.7 million is expected during project implementation.

III. THE PROPOSED SUPPLEMENTARY LOAN

A. The Cost Overrun

17. The cost overrun resulted from an increase in detailed design cost, caused mainly by an underestimation of the cost of the consultant's input including remuneration, and cost of surveys and studies.

18. The original cost estimate for the design consultants' contract was \$14.6 million, excluding taxes and duties. Following the quality-based selection modality, the final negotiated price of the contract, on the same basis, was about \$16.9 million. At that time, the cost overrun of about \$2.3 million was mainly due to higher remuneration rates. However, BBA accepted the price as it was still within the loan amount—about \$17 million equivalent (decreased by \$0.6 million due to weakening of the SDR).

19. After mobilization, the design consultants made a fresh assessment of the cost of surveys and studies required under the TOR; a provisional sum of \$1.6 million was included in the design consultants' contract. This amount turned out to be grossly insufficient. The latest cost estimate of the surveys and studies is about \$8 million, after incorporating the POE's suggestions on suitable technical alternatives for surveys and studies. The POE considers the proposed surveys and studies to be essential for preparing detailed design of the ensuing investment project. This would result in an additional cost overrun of about \$6.4 million.

20. The overall estimate of the identified cost overrun under the detailed design component is \$8.7 million (\$2.3 million plus \$6.4 million). Including the contingencies for unidentified additional surveys and studies, and the risk of SDR depreciation against the currencies used in

the design consultants' contract, BBA has requested a supplementary loan of \$10 million. Cost overrun details are in Appendix 3.

B. Impact on the Project

21. The surveys and studies proposed by the design consultants are necessary for arriving at the most suitable engineering options for the Padma bridge, which will be the first fixed crossing over the Padma River. The cost of this investment project is currently estimated at \$2.4 billion. Considering the size of the investment, any change in the assumptions adopted in the engineering design parameters could result in a huge cost overrun or major review of the project scope itself. Removing as much uncertainty involved in the bridge construction as possible at the detailed design stage is prudent. The main objective of providing the original TA loan was to help the Government in this process. If the required surveys and studies are not properly conducted due to fund shortage under ADB financing, the original objective of providing a TA loan would be defeated.

22. Much of the increased cost of surveys and studies comes from geotechnical investigation (about \$4.8 million) and hydrological studies for the design of bridge piers and river training works (\$1.8 million), which are both crucial in removing uncertainty in engineering design. These surveys and studies need to be carried out without delay so that the follow-on engineering design work will be properly fed with reliable data derived from them. Some of the surveys are to capture seasonal changes in the hydrology of the project sites and their engineering implications, and need to be carried out in a timely manner. Reliability of the data from these surveys and studies is extremely important in the context of Bangladesh, and for the Padma bridge, for which data required for the engineering design is limited and their reliability is often questionable. The composition of the surveys and studies currently proposed by BBA is in Appendix 3.

C. Rationale

23. The ensuing investment project, the Padma Bridge Project, is one of the top priority projects of the Government, and apart from the initial delay in engaging the design consultants, implementation of the Project so far has been smooth with strong support from the Government and other development partners.

24. The survey and studies, whose increased cost is the main contributing factor to the cost overrun, are essential for preparing engineering design with due consideration to economy, effectiveness, constructability, functionality, ease in operation and maintenance, and sustainability of the ensuing project.

25. The cost overrun is under the design consultant's contract that has been running since January 2009. The Government is requesting ADB to continue financing the cost overrun under the ongoing contract, for the following reasons: (i) switching funding sources of the ongoing contract would disrupt the design consultant's activities, and may result in significant delay in completion of the detailed design; (ii) the Government does not have readily available funding that can accommodate the identified cost increase; and (iii) without external financiers' involvement, lack of proper guidance in the appointment of specialized subconsultants to carry out the surveys and studies and the use of funds by the subconsultants could compromise the quality of these surveys and studies.

D. Revised Cost Estimates

26. Revised costs for the Project, including those to be financed under the proposed supplementary loan, are estimated at \$34.7 million, including taxes and duties, contingencies, and financing charges during implementation.

Table 3: Revised Project Investment Plan
(\$ million)

Item	Amount ^a
A. Base Cost^b	
1. Detailed Design Consultant	26.8
2. Independent Checking Engineer and Panel of Experts	3.2
3. Incremental Administrative Support	0.5
Subtotal (A)	30.5
B. Contingencies	3.9
C. Financing Charges during Implementation	0.3
Total (A+B+C)	34.7

^a Includes taxes and duties of \$4.4 million.

^b In mid-2009 prices.

Source: Asian Development Bank estimates.

E. Revised Financing Plan

27. Of the additional project costs, estimated at \$12.7 million, ADB will finance \$10 million from its Special Funds resources as was the case with the original loan. The Government will finance taxes and duties estimated at \$1.2 million. The POE cost, estimated at \$1.5 million, was originally to be financed by ADB but is currently being financed separately by the World Bank; it is presented as part of the revised cost for greater clarity. Appendix 4 includes details of the revised financing plan.

Table 4: Financing Plan
(\$ million)

Source	Total	%
Asian Development Bank ^a	27.6	79.5
Original Allocation	17.6	
Supplementary Allocation	10.0	
World Bank	1.5	4.3
Original Allocation	0.0	
Supplementary Allocation	1.5	
Government	5.6	16.2
Original Allocation	4.4	
Supplementary Allocation	1.2	
Total	34.7	100.0

^a From the Special Funds resources of the Asian Development Bank.

Source: Asian Development Bank estimates.

F. Remedial Steps

28. **Cost Overrun.** The risk of further cost overrun is low because (i) all surveys and studies required to be conducted by the design consultants have been identified, (ii) though the checking engineers are yet to be engaged, BBA confirms that the original allocation will be sufficient to carry out the required tasks, and (iii) the revised cost estimate for the supplementary loan includes larger contingencies.

G. Implementation Arrangements

29. Implementation arrangements for the Project under the proposed supplementary loan, including project management; consulting services (a procurement plan is in Appendix 5); ADB's *Anticorruption Policy* (1998, as amended to date); disbursement arrangements; accounting, auditing and reporting; and project review remain the same as those for the original loan, except for the following:

- (i) **Implementation period.** Taking account of the initial delays in recruiting the design consultants (12 months from the original schedule), the implementation period will be extended by 1 year from February 2010 to February 2011.
- (ii) **Consulting services.** Consultant selection will be in accordance with the *Guidelines on the Use of Consultants* (2007, as amended from time to time). For the selection of the checking engineers, quality-based selection will be used instead of the originally proposed quality- and cost-based selection. This is in consideration of the high-end expertise required for checking the ensuing project's complex design.
- (iii) **Audit.** Audit provisions under the Project will be in line with ADB's general requirements including maintenance of separate accounts for the Project, auditing of such accounts annually by independent auditors acceptable to ADB and provision of certified copies of such audited accounts for ADB within 6 months after the end of the relevant fiscal year.

IV. PROJECT BENEFITS, IMPACTS, ASSUMPTIONS, AND RISKS

30. The project benefits, impacts, assumptions, and risks remain the same as those stated in the original report and recommendation of the President (footnote 1). Project implementation will be extended by 1 year. However, this is not expected to delay the start of the ensuing construction project and realization of project benefits. The design consultants have proposed to overlap the procurement action and finalization of the detailed design deliverables. The latter will be carried out while the selection of civil works contractors is under way, and the final detailed design will be available at the time of contract negotiations for the civil works contracts. BBA aims to award the contract by September 2010, which is 7 months later than the original plan.

V. ASSURANCES

31. The covenants set forth in the TA Loan Agreement (Special Operations) and Project Agreement, both dated 12 December 2007, will generally continue to be applicable to the proposed supplementary loan, except that applicable ADB policy for any resettlement or land

acquisition activity under the ensuing investment project shall be ADB's Safeguard Policy Statement (2010), and will be reflected, as necessary, in the new loan and project agreements.

VI. RECOMMENDATION

32. I am satisfied that the proposed supplementary loan would comply with the Articles of Agreement of the Asian Development Bank (ADB) and recommend that the Board approve the supplementary loan in various currencies equivalent to Special Drawing Rights 6,274,000 to the People's Republic of Bangladesh for the Padma Multipurpose Bridge Design 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; 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.

Haruhiko Kuroda
President

5 November 2009

REVISED DESIGN AND MONITORING FRAMEWORK

Design Summary	Performance Targets/Indicators	Data Sources/Reporting Mechanisms	Assumptions and Risks
Impact Project preparation for an investment loan to construct the Padma bridge facilitated	Preparation of technically sound detailed design for the Padma bridge, river-training works, and access roads Selection of a technically and financially qualified contractor for construction of the Padma bridge	Asian Development Bank (ADB) project performance audit report ADB review missions Project completion report	Assumption Political and security situation improves and is stable
Outcome Detailed design of the Padma bridge and other auxiliary works agreed by the Government and ADB	Submission of acceptable detailed design by June 2010	ADB review missions Project completion report	Assumption Government's timely provision of counterpart funding
Outputs Scheme designs Technical studies Detailed design Tender action Environmental impact assessment Resettlement plan Land acquisition plan	Scheme design report by August 2009 Interpretative reports for technical studies (including additional studies) by November 2009 Detailed design reports and design certificates including the methodology and procedures for poverty impact assessment by June 2010 Tender documents by June 2010 Construction contract documentation by December 2010	ADB missions to monitor project implementation Consultant's progress report	Assumptions Restructuring of the Bangladesh Bridge Authority to strengthen project implementation capacity Provision of capable counterpart staff from the Bangladesh Bridge Authority
Activities with Milestones 1. Design Consultancy Services Preparation of request for proposals by February 2008 Short-listing of consultants and issuance of request for proposals in March 2008 Evaluation of proposals by December 2008 Contract negotiation concluded by January 2009			Inputs (\$ million) ADB Original 17.6 Supplementary 10.0 World Bank Original 0.0 Supplementary 1.5

Activities with Milestones	Inputs (\$ million)	
Consultants mobilized in February 2009	Government	
Detailed design and tender action for construction contracts by December 2010	Original	4.4
	Supplementary	1.2
2. Panel of Experts		
Selection in May 2009		
First meeting in July 2009		
3. Checking Engineer		
Preparation of request for proposals by August 2009		
Short-listing of consultants and issuance of request for proposals in November 2009		
Evaluation of proposals by December 2009		
Contract negotiation concluded by January 2010		
Contract award and mobilization in January 2010		

EXTERNAL ASSISTANCE TO ROADS, 1977–2009

Source	Project	Amount (\$ million)	Year of Approval
A. Asian Development Bank	Khulna–Mongla Road	15.00	1977
	Feeder Roads Improvement	58.00	1985
	Road Improvement	137.50	1987
	Flood Damage Restoration	40.00	1988
	Second Flood Damage Restoration	80.00	1989
	Cyclone Damaged Roads Reconstruction	28.80	1991
	Road Overlay and Improvement Project	68.00	1993
	Jamuna Multipurpose Bridge	200.00	1994
	Jamuna Bridge Access Roads Project	74.25	1997
	Flood Damage Rehabilitation Project (1998)	45.60	1998
	Southwest Road Network Development Project	115.00	1999
	Road Maintenance and Improvement	68.70	2000
	Road Network Improvement and Maintenance	65.00	2002
	Road Network Improvement and Maintenance-II	126.00	2004
	Emergency Flood Damage Rehabilitation Project	50.50	2005
Emergency Disaster Damage Rehabilitation Project	20.18	2008	
	Subtotal (A)	1,192.53	
B. World Bank	Second Highway	10.00	1979
	First Highway Supplemental	6.00	1982
	Road Rehabilitation and Maintenance	102.00	1987
	Flood Damage Rehabilitation	25.00	1989
	Second Road Rehabilitation and Maintenance	146.80	1994
	Jamuna Multipurpose Bridge	200.00	1994
	Third Road Rehabilitation and Maintenance	270.96	1998
	Subtotal (B)	785.76	
C. Japan	Upazila Connecting Roads (JICA)	4.40	1985
	Construction of Meghna Bridge (JICA)	56.00	1986
	Construction of Meghna–Gumuti Bridge (JICA)	74.00	1991
	Jamuna Multipurpose Bridge (JBIC)	200.00	1994
	Jamuna Bridge Access Road Project (JBIC)	50.40	1997
	Paksey Bridge (JBIC)	116.93	1997
	Construction of Small and Medium Bridges on Dhaka-Chittagong Highway (JICA)	21.23	1998
	Meghna Bridge Resettlement Project (JICA)	1.66	1999
	Rupsa Bridge (JBIC)	77.85	2001
	Subtotal (C)	602.47	
D. People's Republic of China	Buriganga Bridge	19.00	1986
	Shambhuganj Bridge	14.00	1989
	Mohananda Bridge	6.50	1991
	Karatua Bridge	8.50	1996
	Gabkhan Bridge	10.30	1998
	Sixth Bangladesh-China Friendship (Mukterpur) Bridge	19.30	2002
	Subtotal (D)	77.60	

Source	Project	Amount (\$ million)	Year of Approval
E. United Kingdom	Bailey Bridges	25.00	1981
	Gorai River Bridge	69.00	1986
	Institutional Development Component-2	10.00	1994
	Institutional Development Component-3	7.00	1999
	Bridge Improvement and Maintenance Project-2	20.90	1995
	Bhairab Bridge	37.94	1998
	Reconstruction of Narrow Bridge and Culvert	11.00	1999
	Subtotal (E)	180.84	
F. Denmark	Road Maintenance Equipment	3.50	1981
	Supply of Road Rollers	2.50	1983
	Dhaka–Aricha Highway	30.00	1993
	Important Road Rehabilitation in Patuakhali and Barguna	33.70	1999
		Subtotal (F)	69.70
G. Kuwait	Sylhet-Tamabil Jaflong Road Pr	22.00	1996
	Doarika–Shikerpur Bridge Project	21.63	1998
	Third Karnaphuli Bridge	53.58	2005
		Subtotal (G)	97.11

JBIC = Japan Bank for International Cooperation, JICA = Japan International Cooperation Agency.
Source: Asian Development Bank estimates.

DETAILS OF THE COST OVERRUN

1. The cost overrun is due to an increase in detailed design cost, caused mainly by underestimation of the cost of the consultant's input including remuneration, and cost of surveys and studies to be carried out as part of the terms of reference (TOR) for the design consultant. The cost overrun as a result of higher remuneration is about \$2.3 million, and about \$6.4 million from higher costs of surveys and studies. The total amount of the estimated cost overrun is \$8.7 million.

1. Remuneration

2. The remuneration rate used for the cost estimate was \$20,000 per person-month, which was a reference rate used by the Asian Development Bank (ADB) to estimate costs of consulting services in the transport sector in 2007. The final average remuneration rate of the design consultant's contract exceeds \$25,000. Under quality-based selection, the financial proposal is subject to negotiations. The rates arrived at are deemed to be acceptable for both the client and consultant, and reflect the cost elements that should be included in the remuneration and other cost items. In this particular case, the higher rates quoted by the design consultant should be considered to reflect the higher qualifications of the consultant's experts, on account of which the current design consultant was chosen as technically most qualified.

2. Surveys and Additional Studies

3. Surveys and additional studies are within the scope of the design consultant's TOR, which specify the following:

- (i) Additional studies prior to or during detailed design are expected to be needed to provide important additional information necessary to reduce uncertainty associated with technical, program, and commercial aspects of the Project.
- (ii) The additional studies are expected to include geotechnical investigations; topographic survey; bathymetric survey; and river flow, scour, and hydrological studies including physical modeling; monitoring to determine other site-specific environmental design parameters; and wind tunnel testing (if necessary).
- (iii) The design consultant will identify the extent of these studies and any tests or investigations considered necessary to reduce design and construction risk and uncertainty to reasonably acceptable levels. The design consultant and Bangladesh Bridge Authority (BBA) will agree on the scope and extent of the proposed additional studies. As part of this undertaking the design consultant will define in detail when and, if appropriate, how the additional studies should be executed and identify the objectives of the studies.

4. The cost estimate of these surveys and studies was \$1.2 million at the time of the project preparatory technical assistance (PPTA) and was increased to \$1.6 million before issuing the request for proposal. The original cost estimate of the detailed design consultancy services was based on the PPTA output, which recommended considering the design-and-build contracting modality for some of the project components that could attract the interest of the private sector. It was not envisaged at the time of PPTA that full detailed engineering design would be prepared for all project components. Greater private sector participation through build-operate-transfer (BOT) or other similar modalities was expected for this national

flagship project. Accordingly, the TOR of the design consultants prepared under the PPTA require them to study different contracting modalities in the first phase of the assignment, and recommend an optimal contracting modality for each of the project components, with due consideration to the possibility of private sector participation.

5. The cost estimate for these surveys and studies at the time of the request for proposal was given as a provisional sum item of the consulting services contract. This is a standard arrangement as the client is normally not in a position to estimate the details of the surveys and studies required to be carried out to deliver a particular set of design.

6. The sudden economic downturn hit when the design consultant selection process reached the contract negotiations stage in September 2008. The contract negotiations were concluded in January 2009 with a contract price about \$2.3 million higher than the original estimate. The cost of surveys and studies was intact at \$1.6 million as it was a provisional sum item, and due to the higher contract price resulting from higher remuneration rates the provisional amount could not be increased. However, the design consultant during contract negotiations clearly expressed concern that the amount allocated to surveys and studies would be insufficient to meet all the requirements under the TOR.

7. Further during the inception stage of the design consultant in May–June 2009, BBA, as advised by the POE, requested the design consultant to conduct full geotechnical investigation and studies, and develop detailed engineering design for all project components. By this time, the general understanding among BBA, POE, and the cofinanciers was that (i) adopting a contracting modality such as build–operate–transfer, turn–key, or design–build, which leave greater design responsibility and risks to the civil works contractors or concessionaire, would be extremely difficult for the Padma bridge, under the prevailing economic conditions and due to the sheer magnitude of risks involved; and (ii) if the conventional item-rate contract operating under the FIDIC (Fédération Internationale des Ingénieurs-conseils) contract conditions is to be used, leaving verification of physical conditions to the contractors could result in (a) higher price quotations by the bidders to take account of the risk of encountering unforeseeable physical conditions, and/or (b) claims by the civil works contractors for an extension of time required or payment of cost incurred due to unforeseeable physical conditions during contract execution. Both could result in a huge cost overrun in the investment project phase, and therefore conduct of necessary surveys and studies by BBA (the employer of the civil works contracts) would be prudent during detailed design to reduce technical uncertainties as much as possible, and arrive at more reliable cost estimates of the ensuing investment project.

8. The current cost estimate for the surveys and studies is about \$8 million. The design consultant is to use competitive procedures to procure specialized subconsultants to complete the surveys and studies. ADB will conduct prior review of the subcontracting. The breakdown of the surveys and studies is shown in Table A3.

Table A3: Composition of Surveys and Additional Studies

Item	Cost Estimate (\$ million)
Geotechnical investigations	4.8
Topographic survey	0.1
Bathymetric survey	0.4
River flow, scour, and hydrological studies including physical modeling	1.8
Wind tunnel testing	0.4
Others	0.5
Total	8.0

Source: Asian Development Bank estimates.

DETAILED COST ESTIMATES BY FINANCIER
(\$ million)

Item	Cost		ADB		World Bank		Government	
	Original	Revised	Original	Revised	Original	Revised	Original	Revised
A. Base Cost								
1. Detailed Design Consultant	16.9	26.8	14.6	23.3			2.3	3.5
2. Independent Checking Engineer ^a								
Panel of Experts ^a	3.2	1.4	2.7	1.2	0.0	0.0	0.5	0.2
							1.5	0.3
3. Incremental Administrative Support	0.5	0.5	0.1	0.1			0.4	0.4
Subtotal (A)	20.6	30.5	17.4	24.6	0.0	1.5	3.2	4.4
B. Contingencies								
1. Physical	1.0	3.6	0.0	2.6			1.0	1.0
2. Price	0.2	0.3	0.0	0.1			0.2	0.2
Subtotal (B)	1.2	3.9	0.0	2.7	0.0	0.0	1.2	1.2
C. Financing Charges during Implementation	0.2	0.3	0.2	0.3	0.0	0.0	0.0	0.0
Total	22.0	34.7	17.6	27.6	0.0	1.5	4.4	5.6

ADB = Asian Development Bank.

^a No breakdown was given in the original estimates.

Source: Asian Development Bank estimates.

PROCUREMENT PLAN

Basic Data

Project Name: Padma Multipurpose Bridge Design Project—Supplementary	
Country: People's Republic of Bangladesh	Executing Agency: Bangladesh Bridge Authority
Loan Amount: SDR11,179,000 (Original Loan) SDR 6,274,000 (Supplementary Loan)	Project Number: 35049
Date of First Procurement Plan: 19 October 2009	

A. Process Thresholds, Review and 18-Month Procurement Plan

1. Project Procurement Thresholds

1. Except as the Asian Development Bank (ADB) may otherwise agree, the following process thresholds shall apply to procurement of goods and works.

Procurement of Goods and Works

Method	Threshold
Not Applicable	

2. ADB Prior or Post Review

2. Except as ADB may otherwise agree, the following prior or post review requirements apply to the various procurement and consultant recruitment methods used for the project.

Procurement Method	Prior or Post	Comments
Recruitment of Consulting Firms		
Quality- Based Selection	Prior	

3. Consulting Services Contracts Estimated to Cost More Than \$100,000

3. The following table lists consulting services contracts for which procurement activity is either ongoing or expected to commence within the next 18 months.

General Description	Contract Value	Recruitment Method ¹	Advertisement Date (quarter/year)	International or National Assignment	Comments
Checking Engineer	\$1 million	Quality- Based Selection	4 August 2009	International	