ADB Japan Fund for Poverty Reduction

July 2013

TA-8128 BAN (PPTA): Preparing Coastal Towns Infrastructure Improvement Project

DRAFT FINAL REPORT
VOLUME 6: ANNEX – FINANCIAL AND ECONOMIC ANALYSES

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Cover Photographs

Latrine, Amtali Pourashava	Damaged outfall flapgate, Galachipa Pourashava
Possible site for boat landing station, Pirojpur Pourashava	Water supply pond, and pond sand filter unit, Mathbaria Pourashava

This report consists of six volumes:

Volume 1	Main Report
Volume 2	Appendices
Volume 3	Project Administration Manual
Volume 4	Annex: Climate Change Assessment and Adaptation Strategy
Volume 5	Annex: Infrastructure, Water Resources
Volume 6	**Annex: Financial and Economic Analyses**

PREPARING COASTAL TOWNS INFRASTRUCTURE IMPROVEMENT PROJECT
PPTA - TA-8128 BAN

DRAFT FINAL REPORT

VOLUME 6: FINANCE AND ECONOMICS

List of Contents

GLOSSARY OF BANGLADESHI TERMS

crore	10 million (= 100 lakh)
ghat	boat landing station
hartal	nationwide strike/demonstration called by opposition parties
khal	drainage ditch/canal
khas, khash	belongs to government (e.g. land)
katcha	poor quality, poorly built
lakh, lac	100,000
madrasha	Islamic college
mahalla	community area
mouza	government-recogized land area
parashad	authority (pourashava)
pourashava	municipality
pucca	good quality, well built, solid
thana	police station
upazila	subdistrict

ACRONYMS

ABD	Asian Development Bank
ADP	annual development plan
ADSL	Associates for Development Services
AIFC	average incremental financial cost
AP	affected person (resettlement)
BBS	Bangladesh Bureau of Statistics
BC	bitumous carpeting
BCCRF	Bangladesh Climate Change Resilience Fund
BDT	Bangladesh Taka
bgl	below ground level
BLS	boat landing station
BMD	Bangladesh Meteorological Department
BMDF	Bangladesh Municipal Development Fund
BMGF	Bill and Melinda Gates Foundation
BRAC	Bangladesh Rural Advancement Committee
BRM	Bangladesh Resident Mission (ADB)
BT	bitumen topped (road)
BUET	Bangladesh University of Engineering and Technology
BWDB	Bangladesh Water Development Board
CAG	Comptroller and Auditor General
CAGR	compounded annual growth rate
CARE	An NGO
CBO	community-based organization
CC	city corporation; cement concrete; climate change
CCA	climate change adaptation
CCF	Climate Change Fund
CCR	climate change resilience
CCRIP	Climate Change Resilient Infrastructure Project
CDIA	Cities Development Initiative for Asia
CDMP	Comprehensive Disaster Management Programme
CDTA	capacity development technical assistance
CEIP	Coastal Embankment Improvement Program
CEP	Coastal Embankment Project
CLTS	Community-Led Total Sanitation
CQS	Consultants' Qualification Selection
CTIIP	Coastal Towns Infrastructure Improvement Project
CUIDG	

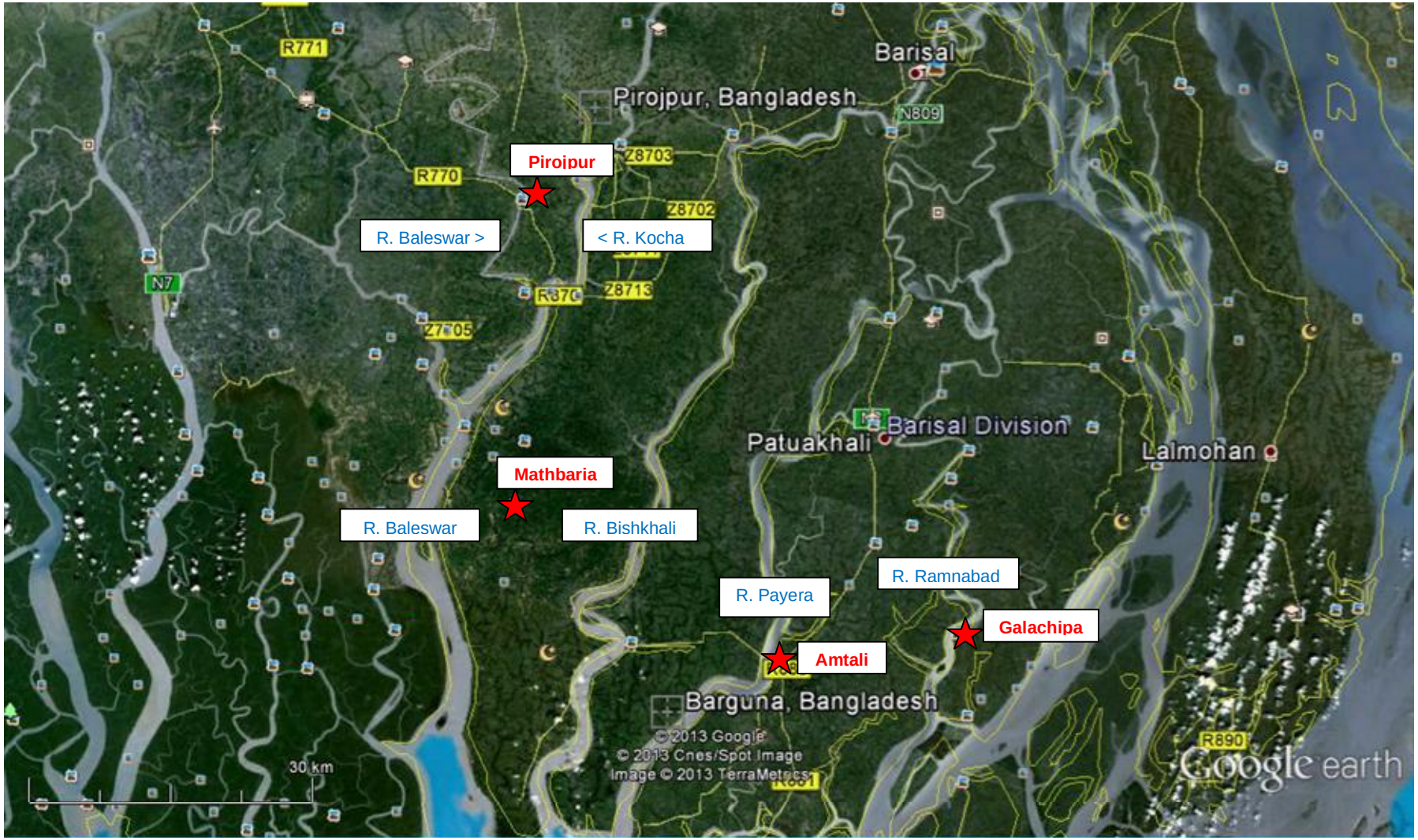
DANIDA	Danish International Development Agency
DED	detailed engineering design
DEM	digital elevation models
DEWATS	decentralized wastewater treatment system
DFID	Department for International Development (UK)
DFR	draft final report
DM	disaster management
DMC	developing member country
DMF	design and monitoring framework
DP	development partner
DPHE	Department of Public Health Engineering
DPP	development project proforma
DRM	disaster risk management
DRR	disaster risk reduction
DSCR	debt service coverage ratio
DSK	Dushthya Shasthya Kendra (an NGO)
DSP	deep set pump (in tubewell)
DTIDP	District Towns Infrastructure Development Project
DWASA	Dhaka Water Supply and Sanitation Authority
EA	executing agency
EARF	environmental assessment review framework
EIA	environmental impact analysis
EIRR	economic internal rate of return
EMP	environmental management plan
EOCC	economic opportunity cost of capital
EU	European Union
FAPAD	Foreign Aided Project Audit Directorate
FGD	focus group discussion
FMAQ	financial management assessment questionnaire
forex	foreign exchange
FS	feasibility study
FY	fiscal year (1 July – 30 June)
GBM	Ganges-Brahmaputra-Meghna river basin
GCM	General Circulation Model
GHG	greenhouse gas
GHK	GHK Consulting Limited (ICF GHK)
GIS	geographic information system
GIZ	German Society for International Cooperation
GOB	Government of Bangladesh
HBB	herring bone bond (road)
HH	household
IA	implementing agency
ICB	international competitive bidding
IEC	information-education-communication
IEE	initial environmental examination
IIED	International Institute of Economic Development
IOL	inventory of losses
IPCC	International Panel on Climate Change
IPPF	indigenous peoples planning framework
IT	information technology
IUCN	International Union for Conservation of Nature
IWA	International Water Association
JFPR	Japan Fund for Poverty Reduction

JICA	Japan International Cooperation Agency
KfW	German development funding agency
KPI	key performance indicators
LARP	land acquisition and resettlement plan
LBDT	lakh Bangladesh taka (BDT100,000)
LDRRF	local disaster risk reduction fund
LGD	Local Government Division
LGED	Local Government Engineering Department
LGI	local government institution
LOI	letter of intent
LS	lump sum
l/s, lps	liters per second
MAR	managed aquifer recharge
MBDT	million Bangldesh taka
MCA	multi-criteria analysis
MDG	Millennium Development Goals
M&E	monitoring and evaluation
MFF	Multitranche Financing Facility (ADB)
MHRW	Ministry of Housing and Public Works
MIDP	municipal infrastructure development plan
MIS	management information system
MLD	million liters per day
MLGRDC	Ministry of Local Government, Rural Development, and Cooperatives
MODMR	Ministry of Disaster Management and Relief
MOE	Ministry of Education
MOF	Ministry of Finance
MOU	memorandum of understanding
MSP	Municipal Services Project
MTBF	Medium Term Budget Framework
NAPA	National Adaptation Program of Action
NCB	national competitive bidding
NGO	non-government organization
NIRAPAD	Network for Information, Response and Preparedness Activities on Disaster
NPDM	National Plan for Disaster Management
NPV	net present value
NRW	non-revenue water
OCR	Ordinary Capital Resources (ADB)
ODA	official development assistance
OHT	overhead tank
OJT	on-the-job training
O&M	operation and maintenance
PAM	project administration manual (ADB)
PD	project director
PDA	project design advance
PDP	pourashava development plan
PIU	project implementation unit
PMO	project management office
PMU	project management unit
PPCR	Pilot Program for Climate Resilience
PPMS	project performance management system
PPP	public-private partnership
PPTA	project preparatory technical assistance
PRA	participatory rural appraisal

PSF	pond sand filter
PSU	pourashava sanitation unit
PWD	Public Works Department (datum)
QC	quality control
QCBS	Quality- and Cost-Based Selection
QM	quality management
RAJUK	Rajdhani Unnayan Katripakkha
RCC	reinforced cement concrete
RF	resettlement framework
ROW	right of way
R&R	resettlement and rehabilitation
RRP	report and recommendation of the president (ADB)
RSC	rural sanitation center
SCF	Strategic Climate Fund (ADB)
SDP	sector development plan
SEWTPS	socioeconomic and willingness-to-pay survey
SFYP	(Bangladesh) Sixth Five-Year Plan
SIDA	Swedish International Development Agency
SLR	sea level rise
SPA	social poverty assessment
SPCR	Strategic Program for Climate Resilience (GOB, 2010)
SPEC	Special Project Evaluation Committee
SPS	Safeguard Policy Statement (ADB)
SST	sea surface temperature
STWSSSP	Secondary Towns Water Supply and Sanitation Sector Project
SWM	solid waste management
SWOT	strength-weakness-opportunities-threat (analysis)
SWTP	surface water treatment plant
TA	technical assistance
TNA	training needs assessment
TOR	terms of reference
TOT	training-of-trainers
TRM	tidal river management
UDD	Urban Development Directorate, Ministry of Housing and Public Works
UFW	unaccounted-for water
UGIAP	urban governance improvement action plan
UGIIP	Urban Governance Infrastructure Improvement Project
ULB	urban local body
UNDP	United Nations Development Programme
UNFRA	United Nations Food Relief Agency
UN-HABITAT	United Nations agency for human settlements
UNICEF	United Nations Children's Fund
UP	union parashad
UPPRP	Urban Partnerships for Poverty Reduction Project
USAID	United States Agency for International Development
UTIDP	Upazila Towns Infrastructure Development Project
V	variation (contract)
VRC	vulnerability reduction credit (climate change adaptation)
WACC	weighted average cost of capital
WAPDA	Water and Power Development Authority
WARPO	Water Resources Planning Organization
WASH	water, sanitation and hygiene
watsan	water and sanitation

WB	World Bank
WFPF	Water Financing Partnership Facility (Netherlands Trust Fund)
WHO	World Health Organization
WQ	water quality
WRM	water resources management
WS	water supply
WSP	water service provider
WSP-EAP	Water and Sanitation Program – East Asia Pacific
WSS	water supply and sanitation
WSUP	Water and Sanitation for Urban Poor
WTP	willingness-to-pay
WWTP	wastewater treatment plant

LOCATION MAP



★ **Study town**

1 FINANCIAL PERFORMANCE

1.1 RECENT TRENDS IN CURRENT AND CAPITAL EXPENDITURE

1. A study of the country budget of GOB shows that the revenue expenditure over the last 10 years period till FY 2013 has grown at a CAGR of 16.3 percent, from BDT284 billion in FY 2002 to BDT1106 billion in FY 2013 **(Table 1.1)**.

2. Capital expenditure through Annual Development Programs (ADP) grew at a CAGR of 13.0 percent over the last 10 years till FY 2013, from BDT190 billion in FY 2002 to BDT571 billion in FY 2013.

3. Investments made in the urban sector for the last five years by the executing agencies from project aid and GOB fund is shown in **Table 1.2**.

4. The Bangladesh Municipal Development Fund (BMDF) is a grant-loan mix financing to pourashavas, 85% is grant and 15% is loan, for the development of infrastructure.

5. An understanding has been given by DPHE that about 85% of urban investment would be on account of water supply and the rest, 15%, would be for sanitation and hygiene purposes.

6. Based on data for 2012-2013, LGED investment has been allocated among rural, urban and others at the ratio of 73%, 20% and 7% respectively.

7. The investment plan in the sector for the next five years by the executing agencies is shown in **Table 1.3**.

8. Country's external debt outstanding was US$ 22.1[1] billion as at end of FY 2012 and constituted about 42.7% of the Country's GDP at constant prices.

[1] Economic Review 2013

Table 1.1: Government of Bangladesh - Macro Economic Indicators

Particulars	03-04	04-05	05-06	06-07	07-08	08-09	09-10	10-11	11-12	12-13	CAGR
						Tk Billion					
GDP at current price	3329.7	3707.1	4157.3	4724.8	5458.2	6148	6943.2	7967	9181.4	10379.7	13.5%
GDP at constant price	2519.7	2669.7	2846.7	3029.7	3217.3	3402	3608.4	3848.9	4088.7	4335.2	6.2%
Growth of GDP at constant price (in %)	6.27%	5.95%	6.63%	6.43%	6.19%	5.74%	6.07%	6.67%	6.23%	6.03%	
Population (million)	135.2	137	138.8	140.6	142.4	144.2	146.1	149.7	151.6	153.6	1.4%
Per Capital GDP (Tk) at current price	24,628	27,059	29,952	33,605	38,330	42,635	47,524	53,220	60,563	67,576	11.9%
Total Revenue	254	392	448.7	494.7	605.4	691.8	794.9	951.8	1170.3	1396.7	20.9%
- Tax Revenue	183	319.5	361.8	392.5	480.1	555.3	639.6	790.5	947.5	1122.6	22.3%
- NBR Tax Revenue	170.5	305	344.6	374.8	459.7	530	610	756	905.2	1072.1	22.7%
- Non NBR Tax Revenue	12.5	14.5	17.2	17.7	20.4	25.3	29.6	34.5	42.3	50.5	16.8%
- Non Tax Revenue	71	72.5	86.9	102.2	125.3	136.5	155.3	161.3	222.8	274.1	16.2%
Total Expenditure	493.7	556.3	610.2	668.4	936.1	941.4	1105.2	1298.8	1566.5	1887.01	16.1%
- Revenue Expenditure (non development)	283.9	333.2	366.2	454.1	574.3	671.2	687.1	832.4	1011.1	1106.31	16.3%
- Annual Development Program	190	205	215	179.2	225	230	285	358.8	410	571.2	13.0%
- Other Expenditure	19.8	18.1	29	35.1	136.8	40.2	133.1	107.6	145.4	209.5	30.0%
Budget Balance (except grants)	-239.7	-164.3	-161.5	-173.7	-330.7	-249.6	-310.3	-347	-396.2	-490.31	8.3%
Budget Balance (including grants)	-113	-137.9	-137.1	-152.1	-286.8	-200.3	-273	-306	-413.2	-456.7	16.8%

Source: Government of Bangladesh.

Table 1.2: Investments in Sector over Last Five Years

MBDT

Executing Agency	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
BMDF Financing to PS	**179.200**	**68.000**	**110.400**	**1,979.000**	**969.800**
DPHE: (GoB + P. Aid)					
Rural	1,334.970	1,781.100	1,673.505	2,761.101	3,054.960
Urban	1,631.630	2,176.900	2,045.395	3,374.678	3,733.840
Total DPHE	**2,966.600**	**3,958.000**	**3,718.900**	**6,135.779**	**6,788.800**
LGED (GoB + P. Aid)					
Rural	23,026.828	28,613.226	28,346.265	31,760.986	37,427.600
Urban	6.308.720	7,839.240	7,766.100	8,701.640	9,504.900
Others	2,208.052	2,743.734	2,718.135	3,045.574	3,792.000
Total LGED	**31,543.600**	**39,196.200**	**38,830.500**	**43,508.200**	**50,724.500**

Sources: BMDF, DPHE, LGED.

Table 1.3: Investment Plan in Sector for Next Five Years

MBDT

Executing Agency	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
BMDF Financing Plan	**1,287.000**	**2,067.000**	**1,989.00**	**1,404.000**	**1,053.000**
DPHE: (GoB + P. Aid)					
Rural	3,472.758	5,330.115	5,836.500	6,246.000	5,886.000
Urban	4,244.482	6,514.585	7,133.500	7,634.000	7,194.000
Total DPHE	**7,717.240**	**11,844.700**	**12,970.000**	**13,880.000**	**13,080.000**
LGED (GoB + P. Aid)					
Rural	37,589.160	73,139.357	40,050.501	43,580.927	49,115.057
Urban	10,298.400	20,038.180	10,972.740	11,939.980	13,456.180
Others	3,604.440	7,013.363	3,840.459	4,178.993	4,709.663
Total LGED	**51,492.000**	**100,190.900**	**54,863.700**	**59,699.900**	**67,280.900**

Sources: BMDF, DPHE, LGED.

1.2 TYPE AND COMPOSITION OF EXPENDITURES

9. The composition of Annual Development Program (capital expenditures) in respect of 10 major sectors for the last three financial years is given in **Table 1.4**.

Table 1.4: Composition of Annual Development Program

Sector / Department	% to total national budget		
	FY 2011	FY 2012	FY 2013
Local Government Division	22	20	20
Power	14	16	14
Primary and Mass Education	9	8	8
Health and Family Welfar	8	8	7
Roads and Railways	13	10	11
Education	5	5	5
Water Resources	4	3	4
Industries	3	1	3
Energy and Minerals	3	2	3

Source: GOB Finance Department.

2 FINANCIAL ASSESSMENT STUDIES

2.1 TARIFF LEVEL AND FINANCIAL SUSTAINABILITY

10. Pourashavas are empowered vide Section 98 of the Municipalities / Pourashavas Act, 2009, to levy and collect tax for services, as laid down in Schedule 3 provided by it.

11. Present revenues in pourashavas are in the form of tax revenues and non-tax revenues which form their own source revenues **(Table 2.1)**. In addition to this they get revenue grants from the Government of Bangladesh (GOB) for meeting their operating expenses.

12. In addition to the water tax the pourashavas are empowered to collect user charges for water in order to fully recover the operation and maintenance costs. Volumetric tariff for piped water supply in project towns presently levied and collected is given in **Table 2.2**.

13. Non tax revenues comprise of immovable property transfer fee, professional license fees, income from own properties and others.

Table 2.1: Pourashava Tax Revenues

In percentage of ARV[2]

	Property Tax	Conservancy Tax	Lighting Tax	Water Tax	Total
Galachipa[3]	7	3	0	3	13
Amtali[4]	7	4	3	6	20
Pirojpur[5]	7	7	3	0	17
Mathbaria[6]	7	7	3	0	17

Source: Pourashavas Account section.

Table 2.2: Water Supply Tariff in Pourashavas

	Water Supply Tariff (Taka/m^3)	
	Domestic	Non Domestic / Commercial
Galachipa	10	15
Amtali	10	20
Pirojpur	8.5	12.5

Source: Pourashavas Account section.

2.2 FINANCIAL STATUS OF STUDY TOWNS

14. Pourashavas will create urban service infrastructure by creating project implementation units under the overall guidance of Project Management Unit or Office (PMU/PMO) at LGED.

[2] Annual Rental Value (ARV).
[3] Last assessment was done in 2008-2009 and next assessment would be due in 2012-2013.
[4] Last assessment of holding tax has been done and effected from 2012-2013.
[5] Last assessment of holding tax was done and effected from 2010-2011 and the next assessment would be due in 2015-2016.
[6] Last assessment was done in 2011-2012.

15. In order to bring accountability in urban service delivery, it is desirable that pourashavas collect the user charges and use them exclusively for the specific services which user charges are levied for **(Table 2.3)**.

16. This section examines the current status of pourashava finances to assess how the cost of operations and maintenance is financed.

Table 2.3: O&M and User Charge

	Operations and maintenance	Collection of user charges
Water supply	Pourashava	Pourashava: Water Tax as part of Property Tax and user charge per m^3 in case of short recovery of O&M costs
Sewerage	Pourashava	Pourashava (no user charges but a part of property tax)
Solid waste management	Pourashava	Pourashava (No user charge at present)
Drainage	Pourashava	Pourashava (No user charge at present)

Source: PPTA Consultant.

2.2.1 Summary of Financial Data of Study Pourashavas

17. The key features of current pourashava finances are:

- Own revenue: comprising of tax and non tax revenue was 98.6% in Galachipa, 98.7% in Amtali, 99.2% in Pirojpur and 99.0% in Mathbaria pourashava of total revenue income.
- Own revenue growth was 27.2% in Amtali, 19.7% in Galachipa, 28.1% in Mathbaria and 11.3% in Pirojpur.
- Collection efficiency for property tax: was 17.5% in Galachipa, 43.3% in Pirojpur, 63.2% in Mathbaria and 75.5% in Amtali.
- Revenue expenditure growth, was 0.9% in Pirojpur, 13.3% in Mathbaria, 25.7% in Amtali and 26.3% in Galachipa pourashava.

18. **Table 2.4** shows the past financial performance of the study pourashavas over the last five years. Detailed financial performance tables of each Pourashava are given in **Annex 2.1**.

Table 2.4: Revenue and Expenditure – Past Financial Performance - Last Five Years

BDT Million

Amtali PS Summary of financial data	2007-08 Actual	2008-09 Actual	2009-10 Actual	2010-11 Actual	2011-12 Actual	CAGR
Revenue Income						
Income from Taxes	0.6	0.6	0.4	0.6	0.8	9.7
Non Tax Income	4.9	5.5	7.9	6.3	13.4	28.9
Total Own Revenue	5.5	6.1	8.3	6.9	14.2	27.2
Government Grants	0.3	0.2	0.2	0.2	0.2	
Other Income	0	0	0	0	0	
Total Income	**5.8**	**6.3**	**8.5**	**7.1**	**14.4**	26.1
Expenditure						
Revenue Expenditure	5.3	6.0	7.5	9.6	13.1	25.7
Total Expenditure	5.3	6.0	7.5	9.6	13.1	
Revenue Surplus / (Deficit)	**0.4**	**0.4**	**1.1**	**-2.5**	**1.3**	

Source: PS accounts.

BDT Million

Galachipa PS Summary of financial data	2007-08 Actual	2008-09 Actual	2009-10 Actual	2010-11 Actual	2011-12 Actual	CAGR
Revenue Income						
Income from Taxes	0.5	0.9	0.6	0.8	0.9	15.4
Non Tax Income	6.2	5.6	5.6	8.9	12.9	20.0
Total Own Revenue	6.7	6.5	6.3	9.6	13.8	19.7
Government Grants	0.2	0.2	0.2	0.2	0.2	7.7
Other Income	0	0	0	0	0	
Total Income	**7.0**	**6.7**	**6.4**	**9.9**	**14.0**	19.0
Expenditure						
Revenue Expenditure	4.4	5.4	7.4	11.9	11.3	26.3
Total Expenditure	4.4	5.4	7.4	11.9	11.3	
Revenue Surplus / (Deficit)	**2.6**	**1.3**	**-1.0**	**-2.0**	**2.7**	1.7

Source: PS accounts

BDT Million

Mathboria PS Summary of financial data	2007-08 Actual	2008-09 Actual	2009-10 Actual	2010-11 Actual	2011-12 Actual	CAGR
Revenue Income						
Income from Taxes	2.1	2.6	1.3	2.7	8.4	41.5
Non Tax Income	6.7	8.7	9.8	13.0	15.4	22.9
Total Own Revenue	8.8	11.3	11.1	15.7	23.8	28.1
Government Grants	5.1	0.2	0.3	0.3	0.2	-53.8
Other Income	0	0	0	0	0	
Total Income	**13.9**	**11.5**	**11.3**	**16.0**	**24.0**	2.5
Expenditure						
Revenue Expenditure	19.2	14.6	16.8	19.0	24.8	6.6
Total Expenditure	19.2	14.6	16.8	19.0	24.8	
Revenue Surplus / (Deficit)	**-5.3**	**-3.1**	**-5.5**	**-3.0**	**-0.8**	

Source: PS accounts

BDT Million

Pirojpur PS Summary of financial data	2007-08 Actual	2008-09 Actual	2009-10 Actual	2010-11 Actual	2011-12 Actual	CAGR
Revenue Income						
Income from Taxes	6.0	4.2	4.7	5.1	5.9	-0.4
Non Tax Income	17.7	18.4	19.0	22.9	30.4	14.5
Total Own Revenue	23.7	22.7	23.7	28.0	36.4	11.3
Government Grants	13.0	0.5	0.4	0.2	0.3	-61.4
Other Income	0	0	0	0	0	
Total Income	**36.8**	**23.2**	**24.1**	**28.3**	**36.7**	-0.1
Expenditure						
Revenue Expenditure	38.0	32.0	26.8	26.7	36.6	-0.9
Total Expenditure	38.0	32.0	26.8	26.7	36.6	
Revenue Surplus / (Deficit)	**-1.2**	**-8.8**	**-2.6**	**1.6**	**0.0**	

Source: PS accounts

2.2.2 Operation and Maintenance – Water Supply and Other Services

19. Operation and maintenance of water supply is with the pourashava. Details of the annual O&M costs as per the accounts of the Pourashavas are given in **Table 2.5**. At present operation and maintenance cost recovery is to the extent of 143 percent in Galachipa; 155 percent in case of Amtali, and 98 percent in Pirojpur Pourashava.

Table 2.5: Present Water Supply Annual Operation and Maintenance Cost

BDT Million

Particulars	Galachipa (FY 2011-12)	Amtali (FY 2011-12)	Pirojpur (FY 2011-12)
Staff costs	1.2	1.3	5.9
Power	0.8	0.6	1.2
Consummables			2.8
Repair & Maintenance	0.2	0.1	0.8
Others	0.6	0.6	1.8
Total O&M	**2.8**	**2.6**	**12.5**
Revenue	**4.0**	**4.0**	**12.3**
Cost recovery (%)	**143**	**155**	**98**

Note: Mathbaria – no piped water supply at present.
Source: Pourashava accounts sections.

2.2.3 Collection Efficiency

20. **Table 2.6** gives the collection efficiency of the study towns in the financial year 2011-12 in respect of property tax and water charges.

Table 2.6: Study Towns Demand Collection Statement

BDT Million

Towns	Total Demand	Collection	Efficiency %
Property Tax			
Galachipa	6.0	1.0	17.5
Amtali	1.3	1.0	75.6
Pirojpur	13.7	6.0	43.4
Mathbaria	13.4	8.0	59.9
Water charge			
Galachipa	3.7	3.5	96.0
Amtali	3.3	3.1	95.0
Pirojpur	13.6	11.7	86.0

Source: Pourashava accounts sections.

2.3 LENDING MODALITY AND PROJECT FRAMEWORK

21. A sector lending modality is considered to be most appropriate for CTIIP. A sector modality is particularly appropriate when there will be a large number of subprojects to be implemented in phases, with the best practices and methodologies developed during the first phase or batch acting as the model for the implementation of subsequent phases/batches.

22. Under the PPTA investment packages have been prepared for the four Batch 1 pourashavas, with subprojects to be prepared for the remaining towns (Batch 2) by the executing agencies (EA) during project implementation using the techniques developed during the PPTA as a model. During a sector loan, sector policies can be improved and institutional capacity strengthened.

2.4 ACCOUNTING STANDARDS AND STATUS OF AUDITING IN POURASHAVAS

23. A cash-based accounting system is being followed in all the study pourashavas. The audit status of the pourashava accounts is as follows:

- Galachipa: Completed for financial year 2010-11;
- Amtali: Completed for financial year 2010-11;
- Pirojpur: Completed for financial year 2007-08; and
- Mathbaria: Completed for financial year 2007-08.

24. All pourashavas are preparing their accounts as per the software developed by LGED. Trainings were given through the National Institute of Local Governance (NILG) to pourashava accounts personnel in the implantation of accounting software. Pourashava accounts sections compile the accounts and prepare financial statements under the new system.

2.5 FINANCIAL MANAGEMENT ASSESSMENT OF STUDY TOWNS

25. Five major findings common to the study pourashavas are presented in **Table 2.7**.

Table 2.7: Major Findings of Financial Management Assessment – Study Towns

Particulars	Findings	Solution / Action
Accounting System	Cash based accounting system; All five pourashavas have implemented the new accounting software system developed by LGED.	
Staffing	Present staff is adequate to cover the existing operations of Pourashavas	
Auditing	Audit status: Galachipa – FY 2010-11 Amtali – FY 2010-11 Pirojpur – FY2007-08 and Mathbaria – FY 2007- 08	Mathbaria Pourashava has written to C&AG's office for conducting the audit of FY2009 to FY2012 vide their letter dated 18th February 2013 These pourashavas will also need to be covered by FAPAD of CAG as is the case in pourashavas implementing ongoing externally assisted projects.
Weak Financial Situation	At present project pourashavas are spending within their own source of income with minimum revenue grants from GOB. In the absence of full information due to the limitation of cash based accounting system it is difficult	

Particulars	Findings	Solution / Action
	to say whether pourashavas revenue is adequate to cover all expenses in a year. Pourashavas dependent on GOB grants and supports to meet its development expenses.	
Training	Pourashava staff will need to be trained on ADB disbursement procedures	Training will be extended by the project management consultants (PMC) to be recruited under the Project

Source: PPTA Consultant.

2.6 FINANCIAL MANAGEMENT ASSESSMENT OF EXECUTING/ IMPLEMENTING AGENCIES

2.6.1 Introduction

26. Financial management assessment (FMA) is an attempt to determine the capacity of the executing and/or implementing agency to effectively manage its financial resources. Such a capacity is critical for the success of the project. FMA involves a review of the accounting system, reporting, auditing, internal controls, cash disbursement and cash flow disbursement arrangements.

27. The main instrument used to facilitate the financial management assessment was the questionnaire furnished by the ADB. Completed financial management assessment questionnaires are shown in **Annex 2.2 of this Volume**.

2.6.2 Project Management Unit (PMU)

28. **Executing Agency – LGED, CTIIP.** LGED of the Government of Bangladesh looks after urban development. As for other ADB assisted and other externally aided projects, LGED will be the PMU for CTIIP.

29. PMUs of LGED have implemented many ADB and other multilateral agency projects.

30. **Funds flow arrangements.** Funds received from ADB or any other donor agency will be received through GOB.

31. The Borrower will be GOB, LGD, and LGED (Executing Agency) will be the project management unit/office.

32. **Staffing and organization**. This is shown on an organogram.

33. **Accounting policies and procedure.** LGD accounts are prepared as per the accepted government accounting standards which are generally compatible with international accounting standards duly disclosing the generally accepted accounting policies.

34. Important project documents are retained on a permanent basis and are preserved for several years as per GOB rules.

35. **Segregation of duties.** Separate responsibilities for budget, payment, recording, reporting and audit are assigned to separate groups of officers and staff.

36. **Budgeting system.** PMUs/PMOs prepare the budget once in a year according to the financial year (July-June) following an assessment of funds requirement for various activities in terms of physical and financial targets. The Manager (Finance), with support of project management consultants and the PIUs, prepares the budget for approval by the Steering Committee.

37. Actual expenditure is compared with budget on a regular basis. The PMO also prepares monthly financial reports for comparing actual against budget figures and monthly progress reports on project execution to monitor physical and financial progress of project execution. The budget variances are reportedly discussed in monthly meetings. A revised budget is prepared whenever necessary.

38. **Payments.** Invoice-processing and payroll preparation procedures follow the GoB procedures and are usually stamped “PAID”.

39. **Policies procedures.** The cash basis of accounting, as followed by LGD, will be adopted for project accounts.

40. **Cash at bank.** The Project Director of a PMU/PMO is the authorized signatory (of cheque payments).

41. At the PIUs, the authorised joint signatories will be the mayor and secretary of the pourashava.

42. **Safeguard over assets.** There are adequate safeguards over assets under the GOB rules. Annual physical verification of assets will be introduced and assets insured depending upon the nature and cost of assets.

43. **Other office and Implementing entities.** For each of the project towns there will be a separate project implementation unit (PIU) headed by a Project Manager reporting to PMU/PMO. Flows of funds to PIUs will be through the PMU/PMO. PIUs are the first layer of accounting, with consolidation of accounts done at the PMU/PMO. To facilitate monitoring and co-ordination, a management information system (MIS) will be developed and installed. In addition to the financial statements, monthly and quarterly internal financial reports which are useful to the management for decision making purpose will be prepared.

44. **Internal and external audit.** An internal audit system will be extended by LGED (PM) to CTIIP as well.

45. The Annual Statutory Audit is conducted by Comptroller and Auditor General (C&AG). Project accounts will be audited by FAPAD under the guidance the C&AG.

46. **Conclusion and recommendations.** LGED (PMO/PMU) has the systems and procedures in place to successfully execute the project. A summary assessment is shown in **Table 2.8**.

Table 2.8: LGED (PMO) - Summary Financial Management Assessment

Area of Assessment	Findings
Executing Agency (EA) and Implementing Agency (IA)	• The EA is the LGED. PMO will staffed by drawing personnel from the finance department, line agencies and contract employees as required. • IAs are the five Pourashavas The financial assessment has been done for five Pourashavas, including Patuakhali, Galachipa, Amtali, Pirojpur and Mathbaria.
Major Experiences of EA and IA in Managing ADB Financed Projects	• LGED has managed many ADB and external donor financed projects. • LGED is implementing UGIIP-2. The average annual loan utilizations are $___ million for loan ___. • IAs: Project pourashavas have not implemented any ADB financed project. - Galachipa: BMDF and Danida/DPHE Water Supply - Amtali: BMDF and Danida/DPHE Water Supply - Pirojpur:BMDF, MSP-World Bank and Secondary Towns Water Supply (ADB/DPHE) - Mathbaria: BMDF only. No prior experience of ADB funded project for all IAs except for Pirojpur.
Fund Flow Arrangements	• Loan proceeds under Project will follow the existing fund flow arrangement for UGIIP-2. • ADB disburses the loan proceeds to the Government of Bangladesh (Government) account in the Bangladesh Bank (BB). • LGED, as the PMO, will manage loan proceeds through direct payment procedures, statement of expenditure procedures, and reimbursement procedures. The Project pourashavas, being the project implementation units (PIU), will receive funds from PMO. Expenditures are consolidated monthly by PMO and reimbursement claims are then preferred to ADB.
Organization and Staffing of EA and IAs	• There are at present 3 officers / staff at LGED solely designated for CTIIP. Among them, __ are finance officers / analysts with relevant experience and qualifications. • IAs: - Galachipa: Accountant – 1; Accounts Assistant – 1; Cashier - 1 - Amtali: Accountant – 1; Accounts Assistant – 1; Cashier - 1 - Pirojpur: Accounts Officer – 1; Accountant – 1; Accounts Assistant – 1; Cashier - 1 - Mathbaria: Accounts Officer – 1 (vacant at present); Accountant – 1; Accounts Assistant – 1; Cashier - 1
Accounting Policy and Procedure and Information System	• LGED (PMO) accounts are maintained on accounting software based in Bangladesh accounting standards which compare well with international standards. • There are established procedures for recording the transactions, record keeping and reports, and cost accounting (including cost control and analysis) at LGED (PMO) and the pourashavas.
Segregation of Duties in EA	• Authorization to execute a transaction, recording of the transaction; and custody of assets involved in transaction are performed by different persons. • The functions of ordering, receiving, accounting for, and paying for goods and services are segregated.
Budgeting System in EA and IA	• LGED prepares the budget once in a year according to financial year following an assessment of funds requirement for various activities – in terms of physical and financial targets for the financial year. Manager (Finance) prepares the Budget which is approved by Project Director. Actual expenditure is compared with budget on regular basis. LGED also prepares monthly financial reports comparing actual against budget figures and explanations are required for significant variations from the budget. Monthly progress reports provide information about stage of project execution. • Pourashavas prepare budgets once a year according to financial year.

Area of Assessment	Findings
	The Accounts Section prepares the budget which is then approved by Mayor and Municipal Councils. Actual expenditures are compared to budget for significant variations.
Payments in EA and IAs	• All bills and invoices are stamped PAID.
Cash at Bank in EA	• Project Director is the sole authorised signatory for issuance of all check payments at LGED. • Pourashavas: Joint authorized signatory – Mayor and Secretary is required for issuance of all check payments at the pourashavas. • LGED and the pourashavas maintain adequate, up-to-date cashbooks, recording receipts and payments. Bank and cash are reconciled on monthly basis.
Safeguard over Assets by EA and IAs	• The fixed assets register exists, following the laws and rules. • LGED assets are covered under insurance depending upon the nature and cost of assets. • Except for vehicles, pourashavas do not insure for other assets.
Other Offices of EA	• LGED has established controls and procedures for flow of funds, financial information, accountability, and audits in relation to its Regional Office and Divisional offices.
Internal Audit in EA	• Internal audit of LGED is inhouse. • No internal audit done at pourashavas. There is an audit and inspection committee which takes up the work on need basis. Performance review is carried out by Additional Municipal Commissioner (ADC) on behalf of District Commissioner at pourashavas.
External Audit in EA	• The Annual Statutory Audit is conducted by Comptroller and Auditor General (CAG). Detailed audit guidelines are provided by the CAG. • All external audits are of pourashavas are also carried out by CAG office. • There are no major audit recommendations that need to be implemented.
Reporting and Monitoring in IA	• Financial Statements of the pourashavas are prepared in accordance with Bangladesh Government accounting standards, and under generally accepted accounting principles. Financial statements are prepared implementing unit wise, funding source wise and project wise. Project wise financial statements are submitted to LGED on a monthly basis. • In addition to the financial statements, monthly and quarterly internal financial reports which are useful to the management for decision making purpose are also prepared. • Financial reports are prepared on the excel spreadsheet on the basis of the accounting report generated through automated accounting system.

Source: PPTA Consultant.

APPENDIX 2.1: FINANCIAL PERFORMANCE OF STUDY POURASHAVAS

1. Amtali Pourashava financial performance

Taka Million

	Actual				
Head of Accounts	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Recurring Income					
Holding tax- current	0.6	0.6	0.4	0.6	0.8
Holding tax- arrears					
Immovable property transfer fee	0.4	0.4	0.7	0.9	1.9
Professional license/ fees	0.3	0.4	0.4	0.5	0.6
Income from properties	3.0	3.1	4.0	2.1	6.6
Water User Charges	1.0	1.6	2.5	2.8	4.0
Others	0.2	0.1	0.3	0.1	0.2
Total Recurring Income	**5.4**	**6.1**	**8.4**	**6.9**	**14.2**
GoB Revenue / Other Grant	0.3	0.2	0.2	0.2	0.2
Additional Income _UGIIP					
Total Income	**5.7**	**6.3**	**8.6**	**7.2**	**14.4**
Expenditure					
Establishment cost					
Honoraria	0.3	0.3	0.3	3.0	0.8
Salaries and allowances	1.3	1.7	2.1	2.7	3.7
General administration	0.8	1.0	1.9	1.3	2.2
Electricity	0.1	0.1	0.1	0.1	0.1
Other costs and disbursements	2.2	1.7	1.4	0.4	3.8
Water Operation Maintenance	0.6	1.2	1.7	2.1	2.6
Total Operating Expenses	**5.3**	**6.0**	**7.5**	**9.6**	**13.1**
Revenue Surplus (deficit)	0.4	0.4	1.1	-2.5	1.3
Operating Ratio	***0.9***	***0.9***	***0.9***	***1.3***	***0.9***

Source: Pourashave financial statements.

2. Galachipa Pourashava financial performance

Taka Million

	Actual				
Head of Accounts	**2007-08**	**2008-09**	**2009-10**	**2010-11**	**2011-12**
Recurring Income					
Holding tax- current					
Holding tax- arrears					
Total Collection - Holding Tax	0.5	0.9	0.6	0.8	0.9
Immovable property transfer fee	0.4	0.5	0.4	1.1	1.6
Professional license/ fees	0.6	0.3	0.4	0.4	0.4
Income from properties	3.4	2.7	2.2	4.1	6.7
Water User Charges	1.7	1.9	2.5	3.0	4.0
Others	0.2	0.2	0.2	0.3	0.2
Total Recurring Income	**6.7**	**6.5**	**6.3**	**9.6**	**13.8**
GoB Revenue / Other Grant	0.2	0.2	0.2	0.2	0.2
Additional Income _UGIIP					
Total Income	7.0	6.7	6.4	9.9	14.0
Expenditure					
Establishment cost					
Honoraria	0.2	0.2	0.2	0.2	1.0
Salaries and allowances	1.7	1.7	2.4	3.5	3.1
General administration	0.6	0.6	0.6	1.0	1.1
Electricity	0.0	0.0	0.0	0.0	0.0
Other costs and disbursements	0.8	1.4	2.4	2.5	3.2
Water operation maintenance	1.1	1.6	1.9	4.7	2.8
Total Operating Expenses	**4.4**	**5.4**	**7.4**	**11.9**	**11.3**
Revenue Surplus (deficit)	2.6	1.3	-1.0	-2.0	2.7
Operating Ratio	***0.6***	***0.8***	***1.2***	***1.2***	***0.8***

Source: Pourashave financial statements.

3. Pirojpur Pourashava financial performance

Taka Million

Head of Accounts	Actual 2007-08	2008-09	2009-10	2010-11	2011-12
Recurring Income					
Holding tax- current					
Holding tax- arrears					
Total Collection - Holding Tax	6.0	4.2	4.7	5.1	5.9
Immovable property transfer fee	2.5	3.2	3.9	7.0	10.5
Professional license/ fees	2.5	2.0	2.6	2.7	3.8
Income from properties	4.5	2.5	3.5	3.4	3.4
Water User Charges	7.9	10.5	8.8	9.7	12.3
Others	0.3	0.3	0.3	0.2	0.4
Total Recurring Income	**23.7**	**22.7**	**23.7**	**28.0**	**36.4**
GoB Revenue / Other Grant	13.0	0.5	0.4	0.2	0.3
Additional Income _UGIIP					
Total Income	**36.8**	**23.2**	**24.1**	**28.3**	**36.7**
Expenditure					
Establishment cost					
Honoraria	0.3	0.1	0.2	0.1	0.4
Salaries and allowances	7.5	6.9	8.0	9.1	11.0
General administration	1.7	2.1	2.8	3.4	4.4
Electricity	1.4	0.6	0.4	0.4	0.4
Other costs and disbursements	14.0	2.5	2.8	3.4	4.5
Water operation maintenance	7.8	11.3	7.7	8.2	12.5
Total Operating Expenses	**38.0**	**32.0**	**26.8**	**26.7**	**36.6**
Revenue Surplus (deficit)	-1.2	-8.8	-2.6	1.6	0.0
Operating Ratio	***1.0***	***1.4***	***1.1***	***0.9***	***1.0***

Source: Pourashave financial statements.

4. Mathbaria Pourashava financial performance

Taka Million

Head of Accounts	Actual 2007-08	2008-09	2009-10	2010-11	2011-12
Recurring Income					
Holding tax- current					
Holding tax- arrears					
Total Collection - Holding Tax	2.1	2.6	1.3	2.7	8.4
Immovable property transfer fee	1.2	1.7	2.2	3.0	5.7
Professional license/ fees	0.8	0.7	0.6	1.1	1.6
Income from properties	4.5	6.1	6.3	8.7	7.4
Others	0.2	0.2	0.7	0.2	0.6
Total Recurring Income	**8.8**	**11.3**	**11.1**	**15.7**	**23.8**
GoB Revenue / Other Grant	5.1	0.2	0.3	0.3	0.2
Additional Income – UGIIP					
Total Income	**13.9**	**11.5**	**11.3**	**16.0**	**24.0**
Expenditure					
Establishment cost					
Honoraria	0.3	0.3	0.2	2.3	1.7
Salaries and allowances	3.5	4.2	4.4	6.2	11.1
General administration	2.2	1.5	0.5	1.1	1.8
Electricity	0.2	0.0	0.2	0.1	0.6
Other costs and disbursements	8.3	4.9	5.4	6.0	8.6
O&M of UGIIP Projects					
Total Operating Expenses	**19.2**	**14.6**	**16.8**	**19.0**	**24.8**
Revenue Surplus (deficit)	-5.3	-3.1	-5.5	-3.0	-0.8
Operating Ratio	***1.4***	***1.3***	***1.5***	***1.2***	***1.0***

Source: Pourashave financial statements.

APPENDIX 2.2: FINANCIAL MANAGEMENT ASSESSMENTS

1. Financial Management Assessment Questionnaire for LGED

Topic		Response	Remarks
1.	**Implementing Agency**		
1.1	What is the entity's legal status / registration?	LGED is a government agency under the Local Government Division of M/o LGRD&C	The GoB formed LGED in 1984 to assist the Central Government in building rural infrastructure
1.2	Has the entity implemented an externally-financed project in the past (if so, please provide details)?	Yes. LGED since its inception has been implementing a large number of aided projects funded by WB, ADB, JBIC, IFAD, DANIDA, DFID, IDB, GTA, KfW etc.	Over the years the management of LGED has gained experience on donor conditional ties and procedures in terms of financial operation. At present LGED is working on similar projects.
1.3	What are the statutory reporting requirements for the entity?	Agency head is reporting to Ministry.	The C & AG an independent SAI conducts the audit of public sector organizations and statutory bodies and report to Parliament/President.
1.4	Is the governing body for the project independent?	No. The PMO and Project Sterring Committee (PSC) are not fully independent with regard to administrative and financial operations.	With regard to budget allocation and disbursement the PMO and PSC has to depend on the Administrative Ministry, Ministry of Finance and Planning Commission
1.5	Is the organizational structure appropriate for the needs of the project?	Yes. During the design of Development Project Proposal (DPP) the EA / IAs provides necessary management arrangement/ organizational structure in order to implement the project activities	The organizational structure within the DPP to be review and all positions to be filled without delay
2.	**Funds Flow Arrangements**		
2.1	Describe (proposed) project funds flow arrangements, including a chart and explanation of the flow of funds from ADB, government and other financiers.	ADB to Central Bank at Bangladesh to Commercial Bank to Contractors. In the case of GoB annual funds are available in four quarters through the Government Treasury	Disbursement and Fund flow diagram attached in Fig 1 for ADB. Detailed arrangements for other co-financiers to be confirmed.
2.2	Are the (proposed) arrangements to transfer the proceeds of the loan (from the government / Finance Ministry) to the entity satisfactory?	Yes	
2.3	What have been the major problems in the past in receipt of funds by the entity?	None significant	
2.4	In which bank will the Imprest Account be opened?	Bangladesh Bank or in a commercial bank approved b the Ministry of Finance (MoF) as per loan agreement.	

Topic		Response	Remarks
2.5	Does the (proposed) project implementing unit (PIU) have experience in the management of disbursements from ADB?	Yes.	Since they implemented previous ADB assisted projects, it is assumed that they have adequate experience.
2.7	Does the entity have/need a capacity to manage foreign exchange risks?	Yes. .	Since the entity has been managing a large number of foreign assisted projects over the years and hence it is assumed that they are capable of managing foreign exchange risks
2.8	How are the counterpart funds accessed?	Through annual development program of GoB.The fund is released in favor of project annually in four installments.	
2.9	How are payments made from the counterpart funds?	From CAG Office on the basis of GO.	
2.10	If part of the project is implemented by communities or NGOs, does the PIU have the necessary reporting and monitoring features built into its systems to track the use of project proceeds by such agencies?	Yes.	The project receives periodical reports to track financial transactions from NGOs. This provides a built in control over the financial management of the NGOs as there are subject to annual audit.
2.11	Are the beneficiaries required to contribute to project costs? If beneficiaries have an option to contribute in kind (in the form of labor), are proper guidelines formulated to record and value the labor contribution?	Specific guidelines are there.	
3.	**Staffing**		
3.1	What is the (proposed) organizational structure of the accounting department? Attach an organization chart.	N/A. A project organogram is already in place	Prepare one for CTIIP
3.2	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience. Attach job descriptions and CVs of key accounting staff.	Most of the accounting staff is of commerce graduate and they are being trained periodically.	Get the numbers and ensure staffing in PMO / PIUs.
3.3	Is the project finance and accounting function staffed adequately?	Yes.	
3.4	Is the finance and accounts staff adequately qualified and experienced?	Yes. Most of them are commerce graduates and are performing well.	
3.5	Is the project accounts and finance staff trained in ADB procedures?	Yes. LGED's training unit has conducted a number of financial management courses covering ADB's disbursement and financial management procedures.	

	Topic	Response	Remarks
3.6	What is the duration of the contract with the finance and accounts staff?	Most of them are regular staff of LGED	
3.7	Indicate key positions not contracted yet, and the estimated date of appointment.	N/A. Key GoB personnel are already engaged in the existing project	
3.10	Does the project have written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	Yes	ToR of consultants' key position have been prepared. LGED staff working on the Project are to have clearly defined roles and responsibilities prepared.
3.11	At what frequency are personnel transferred?	Normally after three years.	
3.12	What is training policy for the finance and accounting staff?	Yearly LGED prepares a calendar of training to conduct a number of training courses for finance and accounting staff.	
4.	**Accounting Policies and Procedures**		
4.1	Does the entity have an accounting system that allows for the proper recording of project financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the project use the entity accounting system?	Yes. The entity follows the Project Accounting Manual issued by MOF. This allows the capture of proper recording of Project financial transactions, including the allocation of expenditure in accordance with respective components, disbursement categories and sources of funds.	
4.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Yes. All the transactions are made in accordance with appropriate budget allocation with the approval of authorized person of the Project as mentioned in the Delegation of Financial Power issued by MoF.	
4.3	Is the chart of accounts adequate to properly account for and report on project activities and disbursement categories?	Yes. The Government has issued a chart of accounts of 14 digits to identify the transactions and its records. This ensures the accounts are recorded against project activities and disbursement categories.	
4.4	Are cost allocations to the various funding sources made accurately and in accordance with established agreements?	Yes	
4.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	Yes. Periodical reconciliation is made to ascertain the tracking of the expenditures	
4.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Yes. The Government has necessary directives to preserve the documents based on types for a period. Yes. Authorized persons can have access to records.	

Topic	Response	Remarks
Segregation of Duties		
4.7 Are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Yes. Only the PD, EEs and other designated personnel are authorized to approve the expenditure as per the delegation of financial power and recording is done by the accounting personnel.	
4.8 Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Yes	
4.9 Are bank reconciliations prepared by someone other than those who make or approve payments?	Yes	
Budgeting System		
4.10 Do budgets include physical and financial targets?	Yes. The Government has introduced Mid Term Budgeting Framework (MTBF) system of budget and this contains the physical and financial target.	
4.11 Are budgets prepared for all significant activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	Yes. The budget code is exhaustive and contains the classification of allocation in defined activities.	
4.12 Are actual expenditures compared to the budget with reasonable frequency, and explanations required for significant variations from the budget?	Yes. LGED centrally monitors project activities with budget variance analysis for timely intervention.	
4.13 Are approvals for variations from the budget required in advance or after the fact?	Yes. Approvals are required in advance	
4.14 Who is responsible for preparation and approval of budgets?	Centrally MOF is responsible for preparation and approval of budget with necessary support from Planning Commission and respective department/ project entities	
4.15 Are procedures in place to plan project activities, collect information from the units in charge of the different components, and prepare the budgets?	Yes. Preparation of budget is a bottom up approach. PIUs provide the actual data from field / cost centers to PMO. PMO consolidates and compiles and forwards to LGED HQ for further approval from Administrative Ministry and finally sent to MoF and Planning Ministry for approval.	
4.16 Are the project plans and budgets of project activities realistic, based on valid assumptions, and developed by knowledgeable individuals?	Yes. At the entity level, the budget is prepared by Budget Working Group (BWG) in accordance with set procedures.	

Topic	Response	Remarks
Payment		
4.17 Do invoice-processing procedures provide for: (i) Copies of purchase orders and receiving reports to be obtained directly from issuing departments? (ii) Comparison of invoice quantities, prices and terms, with those indicated on the purchase order and with records of goods actually received? (iii) Comparison of invoice quantities with those indicated on the receiving reports? (iv) Checking the accuracy of calculations?	Yes. Standard procedures for invoice processing are in place to check and process payments	
4.18 Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	Yes. As soon as payment is cleared all invoices are stamped as PAID for further accounting actions.	
4.19 Do controls exist for the preparation of the payroll and are changes to the payroll properly authorized?	Yes. Payroll is made in accordance with the information in attendance registers.	
Policies And Procedures		
4.20 What is the basis of accounting (e.g., cash, accrual)?	Cash Basis.	
4.21 What accounting standards are followed?	Government Accounting Standards issued by MOF as indicated in the Project Accounting Manual	(PAM for this Project need to be prepared and adopted?)
4.22 Does the project have an adequate policies and procedures manual to guide activities and ensure staff accountability?	Yes. DPP contains policies to adhere while executing project activities.	
4.23 Is the accounting policy and procedure manual updated for the project activities?	Yes. Standard policies are in place all the project activities are conducted accordingly	
4.24 Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	Yes. Since the accounting principle is set by the Central Government, the change in policy requires approval of Central Government	In some cases procedures for reporting can be customized / tailored with approval of appropriate authority
4.25 Are there written policies and procedures covering all routine financial management and related administrative activities?	Yes. Delegation of financial power, PAM issued by MoF and other GOB guidelines to be followed.	
4.26 Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	Yes. Financial rules issued by MOF lays down procedures in this regard	
4.27 Are manuals distributed to appropriate personnel?	Yes	
Cash and Bank		
4.28 Indicate names and positions of authorized signatories in the bank accounts.	Project Director at PMO level and Mayor and secretary or PIU head at IA level	

Topic	Response	Remarks
4.29 Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Yes	
4.30 Do controls exist for the collection, timely deposit and recording of receipts at each collection location?	Yes	
4.31 Are bank and cash reconciled on a monthly basis?	Yes	
4.32 Are all unusual items on the bank reconciliation reviewed and approved by a responsible official?	Yes	
4.33 Are all receipts deposited on a timely basis?	Yes.	
Safeguard over Assets		
4.34 Is there a system of adequate safeguards to protect assets from fraud, waste and abuse?	Yes. LGED and respective projects prepare annual stock inventory and annual verifications are done through a committee.	
4.35 Are subsidiary records of fixed assets and stocks kept up to date and reconciled with control accounts?	Yes	
4.36 Are there periodic physical inventories of fixed assets and stocks?	Yes	
4.37 Are assets sufficiently covered by insurance policies?	Insurance policies are done where applicable	
Other Offices and Implementing Entities		
4.38 Are there any other regional offices or executing entities participating in implementation?	Yes. PIUs at PS	
4.39 Has the project established controls and procedures for flow of funds, financial information, accountability, and audits in relation to the other offices or entities?	Yes. PPMS and PMIS established to generate project and financial information and ensure accountability	
4.40 Does information among the different offices/implementing agencies flow in an accurate and timely fashion?	Yes.	
4.41 Are periodic reconciliations performed among the different offices/implementing agencies?	Yes. Done every month / quarter / annually.	
Other		
4.42 Has the project advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of project resources or property?	Yes	
5. Internal Audit		
5.1 Is there a internal audit department in the entity?	Yes. LGED has established an internal audit cell since 1984	

	Topic	Response	Remarks
5.2	What are the qualifications and experience of audit department staff?	Most staff are qualified and experienced in the field of audit and they also receive regular training.	
5.3	To whom does the internal auditor report?	Chief Engineer, Head of Agency	
5.4	Will the internal audit department include the project in its work program?	Yes. Periodically LGED conducts internal audit of ongoing projects	
5.5	Are actions taken on the internal audit findings?	Yes. Remedial measures are initiated	
6.	**External Audit**		
6.1	Is the entity financial statement audited regularly by an independent auditor? Who is the auditor?	Yes. Foreign Aided Project Audit Directorate (FAPAD) on behalf of C & AG which is constitutionally responsible for conducting external audit.	
6.2	Are there any delays in audit of the entity? When are the audit reports issued?	No. FAPAD has been conducting timely audits and submits the reports on time	
6.3	Is the audit of the entity conducted according to the International Standards on Auditing?	Yes. FAPAD conducts its audits as per international auditing standards.	
6.4	Were there any major accountability issues brought out in the audit report of the past three years?	Issues are brought to the notice of management for follow up and necessary action is taken in order to settle audit observations	
6.5	Will the entity auditor audit the project accounts or will another auditor be appointed to audit the project financial statements?	FAPAD regularly audits the financial statements and relevant books of the project.	
6.6	Are there any recommendations made by the auditors in prior audit reports or management letters that have not yet been implemented?	No. The management letter and audit findings are regularly monitored and regular follow up is done	
6.7	Is the project subject to any kind of audit from an independent governmental entity (e.g., the supreme audit institution) in addition to the external audit?	Yes. FAPAD sometimes conducts Performance Audit in several projects of LGED	
6.8	Has the project prepared acceptable terms of reference for an annual project audit?	Yes,if needed	
7.	**Reporting and Monitoring**		
7.1	Are financial statements prepared for the entity? In accordance with which accounting standards?	Yes. Financial statements are prepared in accordance with the Government principles of accounting	
7.2	Are financial statements prepared for the implementing unit?	Yes.	
7.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to useful to management for decision making?	Annual Financial Statements are prepared for each project. Yes	

	Topic	Response	Remarks
7.4	Does the reporting system need to be adapted to report on the project components?	Yes. Projects implemented by LGED are subject to report in financial matters as suggested in the Loan Agreement	
7.5	Does the reporting system have the capacity to link the financial information with the project's physical progress? If separate systems are used to gather and compile physical data, what controls are in place to reduce the risk that the physical data may not synchronize with the financial data?	Yes. The projects are reporting to different government agencies and donors with a comprehensive summary report on physical and financial targets.	
7.6	Does the project have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and how they are to be used?	Yes. PPMS and PMIS lays down the responsibilities and reports to be prepared and their usage.	
7.7	Are financial management reports used by management?	Yes	
7.8	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	Yes	
7.9	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	LGED has developed UFMS software and this is being introduced / adopted in different projects. Besides this all other reports are prepared on computer.	
8.	**Information Systems**		
8.1	Is the financial management system computerized?	Same as in 7.9	
8.2	Can the system produce the necessary project financial reports?	Yes. UFMS	Monthly expenditure report by category, payments report on going contracts etc
8.3	Is the staff adequately trained to maintain the system?	LGED has already conducted training in computer software including UFMS. Annually a number of computer courses are being / will be organized for Project Staff on a routine.	
8.4	Does the management organization and processing system safeguard the confidentiality, integrity and availability of the data?	Yes. LGED is committed to appropriate processing of financial and other data and to preserve this important data for future availability and subsequent use.	

2. Financial Management Assessment Questionnaire for Amtali Paurashava

	Topic	Response	Remarks
1.	**Implementing Agency**		
1.1	What is the entity's legal status / registration?	Local Government Institution (LGI), Paurashava	'B' category paurashava established in 1998. Governed by Local Government (Paurashava) Institutional Act 2009.
1.2	Has the entity implemented an externally-financed project in the past (if so, please provide details)?	Yes, project implemented under Bangladesh Municipal Development Fund (BMDF) and DANIDA-DPHE water supply.	Supervision consultant was provided from both the projects.
1.3	What are the statutory reporting requirements for the entity?	To Local Government Division (LGD), Ministry of LGRD&C.	Annual accounts with budget is submitted to LGD for approval.
1.4	Is the governing body for the project independent?	Yes, the Paurashava has elected Parishad (Council).	The Paurashava Parishad approves budget, policies, activities, etc.
1.5	Is the organizational structure appropriate for the needs of the project?	Yes, may need necessary management arrangement/ organizational structure in order to implement the project activities.	The organizational structure to be review and all required positions to be filled accordingly.
2.	**Funds Flow Arrangements**		
2.1	Describe (proposed) project funds flow arrangements, including a chart and explanation of the flow of funds from ADB, government and other financiers.	ADB to Central Bank at Bangladesh to Project Bank Account to Contractors.	GoB funds are available in four quarters through the Government Treasury.
2.2	Are the (proposed) arrangements to transfer the proceeds of the loan (from the government / Finance Ministry) to the entity satisfactory?	Yes, Paurashava should have control over project fund management.	
2.3	What have been the major problems in the past in receipt of funds by the entity?	Nothing significant	
2.4	In which bank will the Imprest Account be opened?	Agrani Bank Ltd, Amtali branch.	
2.5	Does the (proposed) project implementing unit (PIU) have experience in the management of disbursements from ADB?	No. Orientation and training to be provided on ADB procedures under the project.	However, it has gained little experience on management of BMDF-WB and DANIDA-DPHE funding.
2.7	Does the entity have/need a capacity to manage foreign exchange risks?	No. Paurashave would not involve in it, this will be managed at GoB level.	The fund will be transferred to Paurashava in local currency from the imprest account.
2.8	How are the counterpart funds accessed?	Through budgetary allocation of the Paurashava.	
2.9	How are payments made from the counterpart funds?	Amount will be deposited to project account and from there payment will be made.	

Topic		Response	Remarks
2.10	If part of the project is implemented by communities or NGOs, does the PIU have the necessary reporting and monitoring features built into its systems to track the use of project proceeds by such agencies?	Yes. It will be managed and reported as per guidelines of the Project.	The project receives periodical reports to track financial transactions from NGOs. This provides a built in control over the financial management of the NGOs as they will subject to audit.
2.11	Are the beneficiaries required to contribute to project costs? If beneficiaries have an option to contribute in kind (in the form of labor), are proper guidelines formulated to record and value the labor contribution?	Yes, Paurashava and beneficiaries, if needed, will contribute to the project both in cash and kind and keep record as per guidelines of the project.	Specific instruction and procedures will be there.
3.	**Staffing**		
3.1	What is the (proposed) organizational structure of the accounting department? Attach an organization chart.	1. Accountant – 1 2. Accounts Assistant – 1 3. Cashier – 1 4. MLSS – 1	
3.2	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience. Attach job descriptions and CVs of key accounting staff.	1. Accountant – 1, B. Com 2. Accounts Assistant – 1, BA (Electrical Mechanics working as Assistant Accountant) 3. MLSS – 1	Job title, responsibility, etc are described in the service rules framed by the Government.
3.3	Is the project finance and accounting function staffed adequately?	Yes.	Adequate with present situation.
3.4	Is the finance and accounts staff adequately qualified and experienced?	Yes. Key position staffs are commerce graduates, experienced and performing well.	
3.5	Is the project accounts and finance staff trained in ADB procedures?	No. Needs orientation and training on ADB's disbursement and financial management procedures.	
3.6	What is the duration of the contract with the finance and accounts staff?	Most of them are regular staff and working with Paurashava for long time.	As per service rule provision of transfer is there.
3.7	Indicate key positions not contracted yet, and the estimated date of appointment.	Recruitment of key position staff is not in the hand of the Paurashava.	
3.10	Does the project have written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	Yes, it is as per service rule and also guided by Paurashava finance rules and manual.	
3.11	At what frequency are personnel transferred?	Normally after three years.	Actually transfer is not done as per provision.
3.12	What is training policy for the finance and accounting staff?	LGD provides training through NILG, besides training from projects like RMSU is available.	Accounts staff received those training.

	Topic	Response	Remarks
4.	**Accounting Policies and Procedures**		
4.1	Does the entity have an accounting system that allows for the proper recording of project financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the project use the entity accounting system?	Yes. The Paurashava follows GoB accounting system that allows the capture of proper recording of financial transactions, including the allocation of expenditure in accordance with respective components, disbursement categories and sources of funds.	
4.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Yes. All the transactions are made in accordance with appropriate budget allocation with the approval of authorized person following delegation of financial power framed by GoB.	
4.3	Is the chart of accounts adequate to properly account for and report on project activities and disbursement categories?	Yes. Paurashava has chart of accounts issued by Government to identify the transactions and its records.	This ensures the accounts are recorded against project activities and disbursement categories.
4.4	Are cost allocations to the various funding sources made accurately and in accordance with established agreements?	Yes, fund wise accounts are maintained.	
4.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	Yes. Periodical reconciliation is made to ascertain tracking of the transactions and balance.	
4.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Yes. Paurashava preserves the documents permanently as per GoB directives and authorized persons have access to records.	
Segregation of Duties			
4.7	Are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Yes. Mayor and other designated personnel are authorized to approve the expenditure as per the delegation of financial power and recording is done by the accounting personnel. Stock and assets register is maintained with custody.	
4.8	Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Yes, functions are well segregated.	
4.9	Are bank reconciliations prepared by someone other than those who make or approve payments?	Yes, reconciliation is done by someone other that who makes payments.	
	Budgeting System		
4.10	Do budgets include physical and financial targets?	Yes. Inputs are given by the respective departments with physical and financial targets.	
4.11	Are budgets prepared for all significant activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	Yes. Budget is prepared with sufficient detail and can be used for subsequent performance monitoring.	

Topic	Response	Remarks
4.12 Are actual expenditures compared to the budget with reasonable frequency, and explanations required for significant variations from the budget?	Yes. Paura Parishad in its monthly meeting reviews progress of the activities with budget and suggest to take timely intervention.	
4.13 Are approvals for variations from the budget required in advance or after the fact?	Yes. Approvals are required and taken in advance.	
4.14 Who is responsible for preparation and approval of budgets?	Accountant with the help of other departments compile budget and it is approved by the Paura Parishad and send to LGD for concurrence.	Pre budget meeting is conducted by the Paurashava with the elites to get feed back on budget from them.
4.15 Are procedures in place to plan project activities, collect information from the units in charge of the different components, and prepare the budgets?	Yes. Preparation of budget is a bottom up approach. Concerned departments provide budgetary information to the Accountant compiles the preliminary budget.	
4.16 Are the project plans and budgets of project activities realistic, based on valid assumptions, and developed by knowledgeable individuals?	Yes. The budget is prepared based on data, information, assumption, knowledge and in accordance with set procedures.	
Payment		
4.17 Do invoice-processing procedures provide for: (i) Copies of purchase orders and receiving reports to be obtained directly from issuing departments? (ii) Comparison of invoice quantities, prices and terms, with those indicated on the purchase order and with records of goods actually received? (iii) Comparison of invoice quantities with those indicated on the receiving reports? (iv) Checking the accuracy of calculations?	Yes. All the formalities are performed following standard procedures as per finance manual and rules for processing payments and the documents are preserved accordingly.	
4.18 Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	Yes. As soon as payment is cleared all invoices are stamped as PAID and recorded in proper heads of account.	
4.19 Do controls exist for the preparation of the payroll and are changes to the payroll properly authorized?	Yes. Payroll is made in accordance with the information in attendance registers.	
Policies And Procedures		
4.20 What is the basis of accounting (e.g., cash, accrual)?	Cash basis.	
4.21 What accounting standards are followed?	Government Accounting Standards issued by MOF.	
4.22 Does the project have an adequate policies and procedures manual to guide activities and ensure staff accountability?	Yes. Paurashava finance manual and rules contains set procedures and staff responsibility.	
4.23 Is the accounting policy and procedure manual updated for the project activities?	Yes. Standard policies are in place, if updating is needed it is done by LGD/MoF	

Topic		Response	Remarks
4.24	Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	Yes. Since the accounting principle is set by the Central Government, the change in policy requires approval of Central Government	In some cases procedures for reporting can be customized / tailored with approval of appropriate authority
4.25	Are there written policies and procedures covering all routine financial management and related administrative activities?	Yes. Paurashava finance manual and service rules contained the procedures with delegation of power.	
4.26	Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	Yes. Paurashava finance manual and service rules as well as financial directives issued by LGD/MoF lays down procedures in this regard.	
4.27	Are manuals distributed to appropriate personnel?	Yes. Accounts staff is informed and aware of manuals.	
Cash and Bank			
4.28	Indicate names and positions of authorized signatories in the bank accounts.	Mayor and Secretary or Equivalent Officer is authorised to operate jointly the bank accounts.	
4.29	Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Yes	
4.30	Do controls exist for the collection, timely deposit and recording of receipts at each collection location?	Yes, most of the collections are made through bank and recorded accordingly.	
4.31	Are bank and cash reconciled on a monthly basis?	Yes	
4.32	Are all unusual items on the bank reconciliation reviewed and approved by a responsible official?	Yes, reviewed and approve by responsible official.	
4.33	Are all receipts deposited on a timely basis?	Yes	
Safeguard over Assets			
4.34	Is there a system of adequate safeguards to protect assets from fraud, waste and abuse?	Yes. Paurashsva maintains stock & assets register mentioning name of users.	
4.35	Are subsidiary records of fixed assets and stocks kept up to date and reconciled with control accounts?	Yes	
4.36	Are there periodic physical inventories of fixed assets and stocks?	Yes	
4.37	Are assets sufficiently covered by insurance policies?	Insurance are taken where needed, specially for vehicles.	
Other Offices and Implementing Entities			
4.38	Are there any other regional offices or executing entities participating in implementation?	Paurashava has its main office only having departments/sections. Besides it has no other offices.	

Topic		Response	Remarks
4.39	Has the project established controls and procedures for flow of funds, financial information, accountability, and audits in relation to the other offices or entities?	N/A	However, there are set procedures for controlling among the departments.
4.40	Does information among the different offices/implementing agencies flow in an accurate and timely fashion?	N/A	However, information flows timely among the departments.
4.41	Are periodic reconciliations performed among the different offices/implementing agencies?	N/A	However, coordination among the departments in place.
	Other		
4.42	Has the project advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of project resources or property?	Yes, Mayor advises everybody to report to Paurashava if they notice such matters.	
5.	**Internal Audit**		
5.1	Is there an internal audit department in the entity?	No internal audit department.	However, Paurashava has audit and inspection committee.
5.2	What are the qualifications and experience of audit department staff?	N/A.	
5.3	To whom does the internal auditor report?	N/A	Committee report to Mayor
5.4	Will the internal audit department include the project in its work program?	N/A	Audit & inspection committee if needed may conduct audit.
5.5	Are actions taken on the internal audit findings?	N/A	Appropriate actions are taken as per recommendation.
6.	**External Audit**		
6.1	Is the entity financial statement audited regularly by an independent auditor? Who is the auditor?	Yes. Revenue Audit Directorate of C & AG which is constitutionally responsible for conducting external audit.	
6.2	Are there any delays in audit of the entity? When are the audit reports issued?	Audit is done up to 2009-2011 simultaneously and report submitted on 13.09 2012.	Audit is normally carried out bi-annually.
6.3	Is the audit of the entity conducted according to the International Standards on Auditing?	As per GoB standards framed by C&AG.	
6.4	Were there any major accountability issues brought out in the audit report of the past three years?	Issues are brought to the notice of management for follow up and necessary action is taken in order to settle audit observations	
6.5	Will the entity auditor audit the project accounts or will another auditor be appointed to audit the project financial statements?	C & AG audit will cover the project audit along with paurashava audit.	FAPAD of C & AG may also conduct project audit and if needed other auditor may conduct audit.

	Topic	Response	Remarks
6.6	Are there any recommendations made by the auditors in prior audit reports or management letters that have not yet been implemented?	Issues and findings of auditors are monitored and reply has already given with compliance for settlement on 07.03.2013.	
6.7	Is the project subject to any kind of audit from an independent governmental entity (e.g., the supreme audit institution) in addition to the external audit?	If needed by the project, such external audit may be conducted.	
6.8	Has the project prepared acceptable terms of reference for an annual project audit?	Yes, if needed terms of reference for project audit will prepare from the project.	
7.	**Reporting and Monitoring**		
7.1	Are financial statements prepared for the entity? In accordance with which accounting standards?	Yes. Financial statements are prepared in accordance with the GoB accounting standards.	
7.2	Are financial statements prepared for the implementing unit?	Yes.	
7.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to useful to management for decision making?	Monthly accounts are prepared for presenting to Paura Parishad meeting and finally annual financial statements are prepared.	
7.4	Does the reporting system need to be adapted to report on the project components?	Yes. Report will be prepared and adopted as per guidelines of the Project.	
7.5	Does the reporting system have the capacity to link the financial information with the project's physical progress? If separate systems are used to gather and compile physical data, what controls are in place to reduce the risk that the physical data may not synchronize with the financial data?	Yes. It is done from time to time by the Engineering Department in association with Accounts Department and the result is discussed in Paura Parishad meeting for initiating corrective measures.	
7.6	Does the project have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and how they are to be used?	It will be specified and done under the project and accordingly Paurashava will comply with them.	
7.7	Are financial management reports used by management?	Yes	
7.8	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	Yes	

Topic		Response	Remarks
7.9	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	UFMS software developed by LGED is in place for recording transactions, but automated financial statements and reports could not produce, financial statements and other reports are prepared in spreadsheet. Accounts staff needs more training on the software for generating automated reports.	Customization of the software and adequate training of the accounts personnel is needed for proper use of the system.
8.	**Information Systems**		
8.1	Is the financial management system computerized?	Same as in 7.9	
8.2	Can the system produce the necessary project financial reports?	Yes. UFMS	Due to lack of knowledge and training on the UFMS required reports cannot produce.
8.3	Is the staff adequately trained to maintain the system?	Received preliminary training in computer including UFMS from RMSU. Needs intensive training to maintain and use the system properly.	
8.4	Does the management organization and processing system safeguard the confidentiality, integrity and availability of the data?	Yes. Paurashava is committed to appropriate processing of financial and other data and to preserve this important data for future availability and subsequent use.	

3. Financial Management Assessment Questionnaire for Galachipa Paurashava

Topic		Response	Remarks
1.	**Implementing Agency**		
1.1	What is the entity's legal status / registration?	Local Government Institution (LGI), Paurashava	'B' category paurashava established in 1997. Governed by Local Government (Paurashava) Institutional Act 2009.
1.2	Has the entity implemented an externally-financed project in the past (if so, please provide details)?	Yes, project implemented under Bangladesh Municipal Development Fund (BMDF) and DANIDA-DPHE water supply.	Supervision consultant was provided from both the projects.
1.3	What are the statutory reporting requirements for the entity?	To Local Government Division (LGD), Ministry of LGRD&C.	Annual accounts with budget is submitted to LGD for approval.
1.4	Is the governing body for the project independent?	Yes, the Paurashava has elected Parishad (Council).	The Paurashava Parishad approves budget, policies, activities, etc.
1.5	Is the organizational structure appropriate for the needs of the project?	Yes, may need necessary management arrangement/ organizational structure in order to implement the project activities.	The organizational structure to be review and all required positions to be filled accordingly.
2.	**Funds Flow Arrangements**		
2.1	Describe (proposed) project funds flow arrangements, including a chart and explanation of the flow of funds from ADB, government and other financiers.	ADB to Central Bank at Bangladesh to Project Bank Account to Contractors.	GoB funds are available in four quarters through the Government Treasury.
2.2	Are the (proposed) arrangements to transfer the proceeds of the loan (from the government / Finance Ministry) to the entity satisfactory?	Yes	
2.3	What have been the major problems in the past in receipt of funds by the entity?	Nothing significant	
2.4	In which bank will the Imprest Account be opened?	Uttara Bank Ltd, Galachipa Branch.	
2.5	Does the (proposed) project implementing unit (PIU) have experience in the management of disbursements from ADB?	No, training to be provided to accounts personnel on ADB procedures under the project.	However, it has gained little experience on management of BMDF-WB and DANIDA-DPHE funding.
2.7	Does the entity have/need a capacity to manage foreign exchange risks?	No. Paurashava would not involve in it, this will be managed at GoB level.	The fund will be transferred to Paurashava in local currency from the imprest account.
2.8	How are the counterpart funds accessed?	Through budgetary allocation of the Paurashava.	
2.9	How are payments made from the counterpart funds?	Paurashava will deposit the fund to project account as needed and payment will be made from there.	

Topic		Response	Remarks
2.10	If part of the project is implemented by communities or NGOs, does the PIU have the necessary reporting and monitoring features built into its systems to track the use of project proceeds by such agencies?	Yes. It will be managed and reported as per guidelines of the Project.	The project receives periodical reports to track financial transactions from NGOs. This provides a built in control over the financial management of the NGOs as they will be subject to audit.
2.11	Are the beneficiaries required to contribute to project costs? If beneficiaries have an option to contribute in kind (in the form of labor), are proper guidelines formulated to record and value the labor contribution?	If needed the beneficiaries will contribute both in cash and kind and maintain record as per guidelines of the project.	Specific instruction and procedures will be there.
3.	**Staffing**		
3.1	What is the (proposed) organizational structure of the accounting department? Attach an organization chart.	1. Accountant – 1 2. Accounts Assistant – 1 3. Cashier – 1 4. MLSS – 1	
3.2	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience. Attach job descriptions and CVs of key accounting staff.	1. Accountant – 1, B. Com 2. Cashier – 1, M. Com	Job title, responsibility, etc are described in the service rules framed by the Government.
3.3	Is the project finance and accounting function staffed adequately?	Yes.	Adequate with present situation.
3.4	Is the finance and accounts staff adequately qualified and experienced?	Yes. Key position staffs are commerce graduates, experienced and performing well.	
3.5	Is the project accounts and finance staff trained in ADB procedures?	No. Needs training on ADB's disbursement and financial management procedures.	
3.6	What is the duration of the contract with the finance and accounts staff?	Most of them are regular staff and working with Paurashava for long time.	As per service rule provision of transfer is there.
3.7	Indicate key positions not contracted yet, and the estimated date of appointment.	Recruitment of key position staff is not in the hand of the Paurashava.	
3.10	Does the project have written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	Yes, it is as per service rule and also guided by Paurashava finance rules and manual.	
3.11	At what frequency are personnel transferred?	Normally after three years.	Actually transfer is not done as per provision.
3.12	What is training policy for the finance and accounting staff?	LGD provides training through NILG, besides training from projects like RMSU is available.	Accounts staff received those training.

	Topic	Response	Remarks
4.	**Accounting Policies and Procedures**		
4.1	Does the entity have an accounting system that allows for the proper recording of project financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the project use the entity accounting system?	Yes. The Paurashava follows GoB accounting system that allows the capture of proper recording of financial transactions, including the allocation of expenditure in accordance with respective components, disbursement categories and sources of funds.	
4.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Yes. All the transactions are made in accordance with appropriate budget allocation with the approval of authorized person following delegation of financial power framed by GoB.	
4.3	Is the chart of accounts adequate to properly account for and report on project activities and disbursement categories?	Yes. Paurashava has chart of accounts issued by Government to identify the transactions and its records.	This ensures the accounts are recorded against project activities and disbursement categories.
4.4	Are cost allocations to the various funding sources made accurately and in accordance with established agreements?	Yes, fund wise accounts are maintained.	
4.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	Yes. Periodical reconciliation is made to ascertain tracking of the transactions and balance.	
4.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Yes. Paurashava preserves the documents permanently as per GoB directives and authorized persons have access to records.	
Segregation of Duties			
4.7	Are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Yes. Mayor and other designated personnel are authorized to approve the expenditure as per the delegation of financial power and recording is done by the accounting personnel. Stock register is maintained with custody.	
4.8	Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Yes, functions are well segregated.	
4.9	Are bank reconciliations prepared by someone other than those who make or approve payments?	Yes, reconciliation is done by someone other than who approves payments.	
	Budgeting System		
4.10	Do budgets include physical and financial targets?	Yes. Inputs are given by the respective departments with physical and financial targets.	
4.11	Are budgets prepared for all significant activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	Yes. Budget is prepared with sufficient detail and can be used for subsequent performance monitoring.	

Topic	Response	Remarks
4.12 Are actual expenditures compared to the budget with reasonable frequency, and explanations required for significant variations from the budget?	Yes. Paura Parishad in its monthly meeting reviews progress of the activities with budget and suggest to take timely intervention.	
4.13 Are approvals for variations from the budget required in advance or after the fact?	Yes. Approvals are required and taken in advance.	
4.14 Who is responsible for preparation and approval of budgets?	Accountant with the help of other departments compile budget and it is approved by the Paura Parishad and send to LGD for concurrence.	Pre budget meeting is conducted by the Paurashava with the elites to get feed back on budget from them.
4.15 Are procedures in place to plan project activities, collect information from the units in charge of the different components, and prepare the budgets?	Yes. Preparation of budget is a bottom up approach. Concerned departments provide budgetary information to the Accountant compiles the preliminary budget.	
4.16 Are the project plans and budgets of project activities realistic, based on valid assumptions, and developed by knowledgeable individuals?	Yes. The budget is prepared based on data, information, assumption, knowledge and in accordance with set procedures.	
Payment		
4.17 Do invoice-processing procedures provide for: (i) Copies of purchase orders and receiving reports to be obtained directly from issuing departments? (ii) Comparison of invoice quantities, prices and terms, with those indicated on the purchase order and with records of goods actually received? (iii) Comparison of invoice quantities with those indicated on the receiving reports? (iv) Checking the accuracy of calculations?	Yes. All the formalities are performed following standard procedures as per finance rules for processing payments and the documents are preserved accordingly.	
4.18 Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	Yes. As soon as payment is cleared all invoices are stamped as PAID and recorded in proper heads of account.	
4.19 Do controls exist for the preparation of the payroll and are changes to the payroll properly authorized?	Yes. Payroll is made in accordance with the information in attendance registers.	
Policies And Procedures		
4.20 What is the basis of accounting (e.g., cash, accrual)?	Cash basis.	
4.21 What accounting standards are followed?	Government Accounting Standards issued by MOF.	
4.22 Does the project have an adequate policies and procedures manual to guide activities and ensure staff accountability?	Yes. Paurashava finance manual and rules contains set procedures and responsibility.	
4.23 Is the accounting policy and procedure manual updated for the project activities?	Yes. Standard policies are in place, if updating is needed it is done by LGD/MoF	

	Topic	Response	Remarks
4.24	Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	Yes. Since the accounting principle is set by the Central Government, the change in policy requires approval of Central Government	In some cases procedures for reporting can be customized / tailored with approval of appropriate authority
4.25	Are there written policies and procedures covering all routine financial management and related administrative activities?	Yes. Paurashava finance manual and service rules contained the procedures and delegation of financial power.	
4.26	Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	Yes. Paurashava finance manual, service rules and financial directives issued by LGD/MOF lays down procedures in this regard.	
4.27	Are manuals distributed to appropriate personnel?	Yes. Accounts staff is informed and aware of manuals.	
	Cash and Bank		
4.28	Indicate names and positions of authorized signatories in the bank accounts.	Mayor and Secretary or Equivalent Officer is authorised to operate jointly the bank accounts.	
4.29	Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Yes	
4.30	Do controls exist for the collection, timely deposit and recording of receipts at each collection location?	Yes, most of the collections are made through bank and recorded accordingly.	
4.31	Are bank and cash reconciled on a monthly basis?	Yes	
4.32	Are all unusual items on the bank reconciliation reviewed and approved by a responsible official?	Yes	
4.33	Are all receipts deposited on a timely basis?	Yes	
	Safeguard over Assets		
4.34	Is there a system of adequate safeguards to protect assets from fraud, waste and abuse?	Yes. Paurashsva maintains stock & assets register mentioning name of users.	
4.35	Are subsidiary records of fixed assets and stocks kept up to date and reconciled with control accounts?	Yes	
4.36	Are there periodic physical inventories of fixed assets and stocks?	Yes	
4.37	Are assets sufficiently covered by insurance policies?	Insurance are taken where needed, specially for vehicles.	
	Other Offices and Implementing Entities		
4.38	Are there any other regional offices or executing entities participating in implementation?	Paurashava has its main office only having departments/sections.	

Topic		Response	Remarks
4.39	Has the project established controls and procedures for flow of funds, financial information, accountability, and audits in relation to the other offices or entities?	N/A	However, there are set procedures for controlling among the departments.
4.40	Does information among the different offices/implementing agencies flow in an accurate and timely fashion?	N/A	However, information flows timely among the departments.
4.41	Are periodic reconciliations performed among the different offices/implementing agencies?	N/A	However, coordination among the departments in place.
	Other		
4.42	Has the project advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of project resources or property?	Yes, Mayor advises to everybody to report to Paurashava if they notice such matters.	
5.	**Internal Audit**		
5.1	Is there an internal audit department in the entity?	No internal audit department.	However, Paurashava has audit and inspection committee.
5.2	What are the qualifications and experience of audit department staff?	N/A.	
5.3	To whom does the internal auditor report?	N/A	Committee report to Mayor
5.4	Will the internal audit department include the project in its work program?	N/A	Audit & inspection committee if needed may conduct audit.
5.5	Are actions taken on the internal audit findings?	N/A	Appropriate actions are taken as per recommendation.
6.	**External Audit**		
6.1	Is the entity financial statement audited regularly by an independent auditor? Who is the auditor?	Yes. Revenue Audit Directorate of C & AG which is constitutionally responsible for conducting external audit.	
6.2	Are there any delays in audit of the entity? When are the audit reports issued?	Audit is done up to 2009-2011 simultaneously and report submitted on 05.04 2012.	Audit is normally carried out bi-annually.
6.3	Is the audit of the entity conducted according to the International Standards on Auditing?	As per GoB standards framed by C&AG.	
6.4	Were there any major accountability issues brought out in the audit report of the past three years?	Issues are brought to the notice of management for follow up and necessary action is taken in order to settle audit observations	
6.5	Will the entity auditor audit the project accounts or will another auditor be appointed to audit the project financial statements?	C & AG audit will cover the project audit along with paurashava audit.	FAPAD of C & AG may also conduct project audit and if needed other auditor may conduct audit.

Topic		Response	Remarks
6.6	Are there any recommendations made by the auditors in prior audit reports or management letters that have not yet been implemented?	Issues and findings of auditors are monitored and already replied with compliance on 23.08.2012 for settlement.	
6.7	Is the project subject to any kind of audit from an independent governmental entity (e.g., the supreme audit institution) in addition to the external audit?	If needed by the project, such external audit may be conducted.	
6.8	Has the project prepared acceptable terms of reference for an annual project audit?	If needed it will be framed under the project.	
7.	**Reporting and Monitoring**		
7.1	Are financial statements prepared for the entity? In accordance with which accounting standards?	Yes. Financial statements are prepared in accordance with the GoB accounting standards.	
7.2	Are financial statements prepared for the implementing unit?	Yes.	
7.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to useful to management for decision making?	Monthly accounts are prepared for presenting to Paura Parishad meeting and finally annual financial statements are prepared.	
7.4	Does the reporting system need to be adapted to report on the project components?	Yes. Report will be prepared and adopted as per guidelines of the Project.	
7.5	Does the reporting system have the capacity to link the financial information with the project's physical progress? If separate systems are used to gather and compile physical data, what controls are in place to reduce the risk that the physical data may not synchronize with the financial data?	Yes. It is done from time to time by the by the Engineering Department in association with Accounts Department and the result is discussed in Paura Parishad meeting for initiating corrective measures.	
7.6	Does the project have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and how they are to be used?	It will be specified and done under the project and accordingly Paurashava will comply with them.	
7.7	Are financial management reports used by management?	Yes	
7.8	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	Yes	

Topic		Response	Remarks
7.9	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	UFMS software developed by LGED is in place for recording transactions, but automated financial statements and report could not produce, financial statements and other reports are prepared in spreadsheet. Accounts staff needs more training on the software for generating automated reports.	Customization of the software and adequate training of the accounts personnel on it is needed for proper use of the system.
8.	**Information Systems**		
8.1	Is the financial management system computerized?	Same as in 7.9	
8.2	Can the system produce the necessary project financial reports?	Yes. UFMS	Due to lack of knowledge and training on the UFMS required reports cannot produce.
8.3	Is the staff adequately trained to maintain the system?	Received preliminary training in computer including UFMS from RMSU. Needs intensive training to maintain and use the system properly.	
8.4	Does the management organization and processing system safeguard the confidentiality, integrity and availability of the data?	Yes. Paurashava is committed to appropriate processing of financial and other data and to preserve this important data for future availability and subsequent use.	

4. Financial Management Assessment Questionnaire for Pirojpur Paurashava

	Topic	Response	Remarks
1.	**Implementing Agency**		
1.1	What is the entity's legal status / registration?	Local Government Institution (LGI), Paurashava	'A' category paurashava established in 1885. Governed by Local Government (Paurashava) Institutional Act 2009.
1.2	Has the entity implemented an externally-financed project in the past (if so, please provide details)?	Yes, project implemented under MSP-WB-LGED, Bangladesh Municipal Development Fund (BMDF), Secondary Towns Water Supply ADB-DPHE (On going).	Supervision consultants were provided from all the projects. Paurashava accounts staff had little scope to look into the financial procedures.
1.3	What are the statutory reporting requirements for the entity?	To Local Government Division (LGD), Ministry of LGRD&C.	Annual accounts with budget is submitted to LGD for approval.
1.4	Is the governing body for the project independent?	Yes, the Paurashava has elected Parishad (Council).	The Paurashava Parishad approves budget, policies, activities, etc.
1.5	Is the organizational structure appropriate for the needs of the project?	Yes, may need necessary management arrangement/ organizational structure in order to implement the project activities.	The organizational structure to be reviewed and all required positions to be filled accordingly.
2.	**Funds Flow Arrangements**		
2.1	Describe (proposed) project funds flow arrangements, including a chart and explanation of the flow of funds from ADB, government and other financiers.	ADB to Central Bank at Bangladesh to Project Bank Account to Contractors.	GoB funds are available in four quarters through the Government Treasury.
2.2	Are the (proposed) arrangements to transfer the proceeds of the loan (from the government / Finance Ministry) to the entity satisfactory?	Yes, Paurashava should have control over project fund management.	
2.3	What have been the major problems in the past in receipt of funds by the entity?	Nothing significant	
2.4	In which bank will the Imprest Account be opened?	Pubali Bank Limited, Pirojpur Branch.	
2.5	Does the (proposed) project implementing unit (PIU) have experience in the management of disbursements from ADB?	No, training to be provided to the Paurashava accounts personnel to make them capable in ADB fund management procedures.	However, it has acquired little knowledge on management of MSP-WB, BMDF-WB and ADB-DPHE funding.
2.7	Does the entity have/need a capacity to manage foreign exchange risks?	No. Paurashava would not involve in managing foreign currency, it will be managed at GoB level.	The fund will be transferred to Paurashava in local currency from the imprest account.
2.8	How are the counterpart funds accessed?	Through budgetary allocation of the Paurashava.	
2.9	How are payments made from the counterpart funds?	Paurashava will deposit the money to project account and from there payment will be made.	

Topic		Response	Remarks
2.10	If part of the project is implemented by communities or NGOs, does the PIU have the necessary reporting and monitoring features built into its systems to track the use of project proceeds by such agencies?	Yes. It will be managed and reported as per guidelines of the Project	The project receives periodical reports to track financial transactions from NGOs. This provides a built in control over the financial management of the NGOs as they will be subject to audit.
2.11	Are the beneficiaries required to contribute to project costs? If beneficiaries have an option to contribute in kind (in the form of labor), are proper guidelines formulated to record and value the labor contribution?	If needed the beneficiaries will contribute both in cash and kind and keep record as per guidelines of the project.	Specific guidelines are there.
3.	**Staffing**		
3.1	What is the (proposed) organizational structure of the accounting department? Attach an organization chart.	1. Accounts officer – 1 2. Accountant – 1 3. Accounts Assistant – 2 4. Cashier – 1 5. MLSS – 1	The positions are shown as per organization structure.
3.2	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience. Attach job descriptions and CVs of key accounting staff.	1. Accountant – 1, B.Com 2. Accounts Assistant – 1, HSC 3. Accounts Assistant – 1, BA (On deputation) 4. Cashier – 1, BA (On deputation) 5. MLSS -1	Job title, responsibility, etc are described in the service rules framed by the Government.
3.3	Is the project finance and accounting function staffed adequately?	Yes.	Adequate with present situation.
3.4	Is the finance and accounts staff adequately qualified and experienced?	Yes. Key position staffs are commerce graduates, experienced and performing well.	
3.5	Is the project accounts and finance staff trained in ADB procedures?	No. Needs training on ADB's disbursement and financial management procedures.	
3.6	What is the duration of the contract with the finance and accounts staff?	Most of them are regular staff and working with Paurashava for a long time.	As per service rule provision of transfer is there.
3.7	Indicate key positions not contracted yet, and the estimated date of appointment.	Recruitment of key position staff is not in the hand of the Paurashava.	
3.10	Does the project have written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	Yes, it is as per service rules and also guided by Paurashava finance manual.	
3.11	At what frequency are personnel transferred?	Normally after three years.	Actually transfer is not done as per the provision.
3.12	What is training policy for the finance and accounting staff?	LGD provides training through NILG, besides training from projects like RMSU is available.	Accounts staff received those training.

	Topic	Response	Remarks
4.	**Accounting Policies and Procedures**		
4.1	Does the entity have an accounting system that allows for the proper recording of project financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the project use the entity accounting system?	Yes. The Paurashava follows GoB accounting system that allows the capture of proper recording of financial transactions, including the allocation of expenditure in accordance with respective components, disbursement categories and sources of funds.	
4.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Yes. All the transactions are made in accordance with appropriate budget allocation with the approval of authorized person following delegation of financial power framed by GoB.	
4.3	Is the chart of accounts adequate to properly account for and report on project activities and disbursement categories?	Yes. Paurashava has chart of accounts issued by Government to identify the transactions and its records.	This ensures the accounts are recorded against project activities and disbursement categories.
4.4	Are cost allocations to the various funding sources made accurately and in accordance with established agreements?	Yes, fund wise accounts are maintained.	
4.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	Yes. Periodical reconciliation is made to ascertain tracking of the transactions and balance.	
4.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Yes. Paurashava preserves the documents permanently as per GoB directives and authorized persons have access to records.	
Segregation of Duties			
4.7	Are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Yes. Mayor and designated officers are authorized to approve the expenditure as per the delegation of financial power and the transactions are recorded by the accounts personnel. Stock and assets register is maintained with custody of assets.	
4.8	Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Yes, functions are well segregated.	
4.9	Are bank reconciliations prepared by someone other than those who make or approve payments?	Yes, done by different person other than who makes or approves payments.	
	Budgeting System		
4.10	Do budgets include physical and financial targets?	Yes. Inputs are given by the departments with physical and financial targets.	

Topic	Response	Remarks
4.11 Are budgets prepared for all significant activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	Yes. Budget is prepared with sufficient detail and can be used for subsequent performance monitoring.	
4.12 Are actual expenditures compared to the budget with reasonable frequency, and explanations required for significant variations from the budget?	Yes. Paura Parishad in its monthly meeting reviews progress of the activities with budget and suggests for taking measures for timely intervention.	
4.13 Are approvals for variations from the budget required in advance or after the fact?	Yes. Approvals are required and taken in advance.	
4.14 Who is responsible for preparation and approval of budgets?	Accountant with the help of other departments compiles budget and it is approved by the Paura Parishad and send to LGD for concurrence.	Pre budget meeting is conducted by the Paurashava with the local elites to get feed back on budget from them.
4.15 Are procedures in place to plan project activities, collect information from the units in charge of the different components, and prepare the budgets?	Yes. Preparation of budget is a bottom up approach. Concerned departments provide budgetary information to the Accountant who compiles the preliminary budget.	
4.16 Are the project plans and budgets of project activities realistic, based on valid assumptions, and developed by knowledgeable individuals?	Yes. The budget is prepared based on data, information, assumption, knowledge and in accordance with set procedures.	
Payment		
4.17 Do invoice-processing procedures provide for: (i) Copies of purchase orders and receiving reports to be obtained directly from issuing departments? (ii) Comparison of invoice quantities, prices and terms, with those indicated on the purchase order and with records of goods actually received? (iii) Comparison of invoice quantities with those indicated on the receiving reports? (iv) Checking the accuracy of calculations?	Yes. All the formalities are performed following standard procedures as per Paurashava finance rules and manual for processing payments and the documents are preserved accordingly.	
4.18 Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	Yes. As soon as payment is cleared all invoices are stamped as PAID and recorded in proper heads of account.	
4.19 Do controls exist for the preparation of the payroll and are changes to the payroll properly authorized?	Yes. Payroll is made in accordance with the information in attendance registers.	
Policies And Procedures		
4.20 What is the basis of accounting (e.g., cash, accrual)?	Cash basis.	
4.21 What accounting standards are followed?	Government Accounting Standards issued by MOF.	

Topic	Response	Remarks
4.22 Does the project have an adequate policies and procedures manual to guide activities and ensure staff accountability?	Yes. Paurashava finance manual and rules contains set procedures and responsibility of staff.	
4.23 Is the accounting policy and procedure manual updated for the project activities?	Yes. Standard policies are in place, if updating is needed it is done by LGD/MoF.	
4.24 Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	Yes. Since the accounting principle is set by the Central Government, the change in policy requires approval of Central Government.	In some cases procedures for reporting can be customized / tailored with approval of appropriate authority
4.25 Are there written policies and procedures covering all routine financial management and related administrative activities?	Yes. Paurashava finance manual and rules, service rules and time to time directives issued by LGD covers these.	
4.26 Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	Yes. Paurashava finance manual and rules, service rules and financial instructions issued by LGD/MoF lay down procedures in this regard.	
4.27 Are manuals distributed to appropriate personnel?	Yes. Accounts staff is informed and aware of manuals.	
Cash and Bank		
4.28 Indicate names and positions of authorized signatories in the bank accounts.	Mayor and Secretary or Equivalent Officer is authorised to operate jointly the bank accounts.	
4.29 Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Yes	
4.30 Do controls exist for the collection, timely deposit and recording of receipts at each collection location?	Yes, most of the collections are made through bank and recorded accordingly.	
4.31 Are bank and cash reconciled on a monthly basis?	Yes	
4.32 Are all unusual items on the bank reconciliation reviewed and approved by a responsible official?	Yes, unusual items are reviewed and approved by responsible official.	
4.33 Are all receipts deposited on a timely basis?	Yes	
Safeguard over Assets		
4.34 Is there a system of adequate safeguards to protect assets from fraud, waste and abuse?	Yes. Paurashsva maintains stock & assets register mentioning name of users.	
4.35 Are subsidiary records of fixed assets and stocks kept up to date and reconciled with control accounts?	Yes	
4.36 Are there periodic physical inventories of fixed assets and stocks?	Yes	
4.37 Are assets sufficiently covered by insurance policies?	Insurance are taken where needed, specially for vehicles.	

Topic		Response	Remarks
Other Offices and Implementing Entities			
4.38	Are there any other regional offices or executing entities participating in implementation?	Paurashava has its main office only having departments/sections. Besides, it has no other office.	
4.39	Has the project established controls and procedures for flow of funds, financial information, accountability, and audits in relation to the other offices or entities?	N/A	However, there are set procedures for controlling among the departments.
4.40	Does information among the different offices/implementing agencies flow in an accurate and timely fashion?	N/A	However, information flows timely among the departments.
4.41	Are periodic reconciliations performed among the different offices/implementing agencies?	N/A	However, coordination among the departments in place.
Other			
4.42	Has the project advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of project resources or property?	Yes, Mayor advises every body to report to Paurashava if such matter is noticed by them.	
5.	**Internal Audit**		
5.1	Is there an internal audit department in the entity?	Paurashava has no internal audit department.	However, Paurashava has audit and inspection committee.
5.2	What are the qualifications and experience of audit department staff?	N/A.	
5.3	To whom does the internal auditor report?	N/A	Committee report to Mayor
5.4	Will the internal audit department include the project in its work program?	N/A	Audit & inspection committee if needed may conduct audit.
5.5	Are actions taken on the internal audit findings?	N/A	Appropriate actions are taken as per recommendation.
6.	**External Audit**		
6.1	Is the entity financial statement audited regularly by an independent auditor? Who is the auditor?	Yes. Revenue Audit Directorate of C & AG which is constitutionally responsible for conducting external audit.	
6.2	Are there any delays in audit of the entity? When are the audit reports issued?	Audit is done up to 2007-2008. Since then audit is pending.	Paurashava has issued letter requesting to conduct up to date audit.
6.3	Is the audit of the entity conducted according to the International Standards on Auditing?	As per GoB standards framed by C&AG.	
6.4	Were there any major accountability issues brought out in the audit report of the past three years?	Issues are brought to the notice of management for follow up and necessary action is taken in order to settle audit observations	

	Topic	Response	Remarks
6.5	Will the entity auditor audit the project accounts or will another auditor be appointed to audit the project financial statements?	C & AG audit will cover the project audit along with paurashava audit.	FAPAD of C & AG may also conduct project audit and if needed other auditor may conduct audit.
6.6	Are there any recommendations made by the auditors in prior audit reports or management letters that have not yet been implemented?	Issues and findings of auditors are monitored and already settled.	
6.7	Is the project subject to any kind of audit from an independent governmental entity (e.g., the supreme audit institution) in addition to the external audit?	If needed by the project, such external audit may be conducted.	
6.8	Has the project prepared acceptable terms of reference for an annual project audit?	Yes, if needed terms of reference for audit will be formulated under the project.	
7.	**Reporting and Monitoring**		
7.1	Are financial statements prepared for the entity? In accordance with which accounting standards?	Yes. Financial statements are prepared in accordance with the GoB accounting standards.	
7.2	Are financial statements prepared for the implementing unit?	Yes.	
7.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to useful to management for decision making?	Monthly accounts are prepared for presenting to Paura Parishad meeting and final annual financial statements are prepared.	
7.4	Does the reporting system need to be adapted to report on the project components?	Yes. Report will be prepared and adopted as per guidelines of the Project.	
7.5	Does the reporting system have the capacity to link the financial information with the project's physical progress? If separate systems are used to gather and compile physical data, what controls are in place to reduce the risk that the physical data may not synchronize with the financial data?	Yes. It is done from time to time by the by the Engineering Department in association with Accounts Department and the result is discussed in Paura Parishad meeting for initiating corrective measures.	
7.6	Does the project have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and how they are to be used?	It will be specified and done under the project and accordingly Paurashava will comply with them.	
7.7	Are financial management reports used by management?	Yes	
7.8	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	Yes, it is done in the monthly meeting of the Paura Parishad.	

Topic		Response	Remarks
7.9	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	UFMS software developed by LGED is in place for recording transactions, but automated financial statements and reports could not produce, reports are prepared in spreadsheet. Accounts staff needs more training on the software for generating automated reports.	Customization of the software and adequate training of the related personnel is needed for proper use of the system.
8.	**Information Systems**		
8.1	Is the financial management system computerized?	Same as in 7.9	
8.2	Can the system produce the necessary project financial reports?	Yes. UFMS can produce necessary financial reports.	Due to lack of knowledge and training on the UFMS required reports cannot produce.
8.3	Is the staff adequately trained to maintain the system?	Received preliminary training in computer including UFMS from RMSU. Needs intensive training to maintain and use the system properly.	
8.4	Does the management organization and processing system safeguard the confidentiality, integrity and availability of the data?	Yes. Paurashava is committed to appropriate processing of financial and other data and to preserve this important data for future availability and subsequent use.	

5. Financial Management Assessment Questionnaire for Mathbaria Paurashava

	Topic	Response	Remarks
1.	**Implementing Agency**		
1.1	What is the entity's legal status / registration?	Local Government Institution (LGI), Paurashava	'A' category paurashava established in 1993. Governed by Local Government (Paurashava) Institutional Act 2009.
1.2	Has the entity implemented an externally-financed project in the past (if so, please provide details)?	Yes, project implemented under Bangladesh Municipal Development Fund (BMDF).	Supervision consultant was provided from BMDF.
1.3	What are the statutory reporting requirements for the entity?	To Local Government Division (LGD), Ministry of LGRD&C.	Annual accounts with budget is submitted to LGD for approval.
1.4	Is the governing body for the project independent?	Yes, the Paurashava has elected Parishad (Council).	The Paurashava Parishad approves budget, policies, activities, etc.
1.5	Is the organizational structure appropriate for the needs of the project?	Yes, may need necessary management arrangement/ organizational structure in order to implement the project activities.	The organizational structure to be review and all required positions to be filled accordingly.
2.	**Funds Flow Arrangements**		
2.1	Describe (proposed) project funds flow arrangements, including a chart and explanation of the flow of funds from ADB, government and other financiers.	ADB to Central Bank at Bangladesh to Project Bank Account to Contractors.	GoB funds are available in four quarters through the Government Treasury.
2.2	Are the (proposed) arrangements to transfer the proceeds of the loan (from the government / Finance Ministry) to the entity satisfactory?	Yes	
2.3	What have been the major problems in the past in receipt of funds by the entity?	Nothing significant	
2.4	In which bank will the Imprest Account be opened?	BASIC Bank, Mathbaria.	
2.5	Does the (proposed) project implementing unit (PIU) have experience in the management of disbursements from ADB?	No, training to be provided under the project.	However, it has gained little experience on management of BMDF-WB funding.
2.7	Does the entity have/need a capacity to manage foreign exchange risks?	No. Paurashava would not involve in it, this will be managed at GoB level.	The fund will be transferred to Paurashava in local currency from the imprest account.
2.8	How are the counterpart funds accessed?	Through budgetary allocation of the Paurashava.	
2.9	How are payments made from the counterpart funds?	Paurashava will deposit the fund to project account first and from there payment will be made.	
2.10	If part of the project is implemented by communities or NGOs, does the PIU have the necessary reporting and monitoring features built into its systems to track the use of project proceeds by such agencies?	Yes. It will be managed and reported as per guideline of the Project.	The project receives periodical reports to track financial transactions from NGOs. This provides a built in control over the financial management of the NGOs as they are subject to audit.

Topic		Response	Remarks
2.11	Are the beneficiaries required to contribute to project costs? If beneficiaries have an option to contribute in kind (in the form of labor), are proper guidelines formulated to record and value the labor contribution?	If needed the beneficiaries will contribute and keep record as per guidelines of the project.	Specific guidelines are there.
3.	**Staffing**		
3.1	What is the (proposed) organizational structure of the accounting department? Attach an organization chart.	1. Accounts officer - 1 2. Accountant – 1 3. Accounts Assistant – 2 4. Cashier – 1 5. MLSS - 1	
3.2	Identify the (proposed) accounts staff, including job title, responsibilities, educational background and professional experience. Attach job descriptions and CVs of key accounting staff.	1. Accountant – 1, B.Com 2. Accounts Assistant – 1, SSC (Working on deputation) 3. Cashier – 1, B. Com 4. MLSS -1	Job title, responsibility, etc are described in the service rules framed by the Government.
3.3	Is the project finance and accounting function staffed adequately?	Yes.	Adequate with present situation.
3.4	Is the finance and accounts staff adequately qualified and experienced?	Yes. Key position staffs are commerce graduates, experienced and are performing well.	
3.5	Is the project accounts and finance staff trained in ADB procedures?	No. Needs training on ADB's disbursement and financial management procedures.	
3.6	What is the duration of the contract with the finance and accounts staff?	Most of them are regular staff and working with Paurashava for long time.	As per service rule provision of transfer is there.
3.7	Indicate key positions not contracted yet, and the estimated date of appointment.	Recruitment of key position staff is not in the hand of the Paurashava.	
3.10	Does the project have written position descriptions that clearly define duties, responsibilities, lines of supervision, and limits of authority for all of the officers, managers, and staff?	Yes, it is as per service rule and also guided by Paurashava finance manual.	
3.11	At what frequency are personnel transferred?	Normally after three years.	Actually transfer is not done as per the provision.
3.12	What is training policy for the finance and accounting staff?	LGD provides training through NILG, besides training from projects like RMSU is available.	Accounts staff received those training.
4.	**Accounting Policies and Procedures**		
4.1	Does the entity have an accounting system that allows for the proper recording of project financial transactions, including the allocation of expenditures in accordance with the respective components, disbursement categories, and sources of funds? Will the project use the entity accounting system?	Yes. The Paurashava follows GoB accounting system that allows the capture of proper recording of financial transactions, including the allocation of expenditure in accordance with respective components, disbursement categories and sources of funds.	

Topic		Response	Remarks
4.2	Are controls in place concerning the preparation and approval of transactions, ensuring that all transactions are correctly made and adequately explained?	Yes. All the transactions are made in accordance with appropriate budget allocation with the approval of authorized person following delegation of financial power framed by GoB.	
4.3	Is the chart of accounts adequate to properly account for and report on project activities and disbursement categories?	Yes. Paurashava has chart of accounts issued by Government to identify the transactions and its records.	This ensures the accounts are recorded against project activities and disbursement categories.
4.4	Are cost allocations to the various funding sources made accurately and in accordance with established agreements?	Yes, fund wise accounts are maintained.	
4.5	Are the General Ledger and subsidiary ledgers reconciled and in balance?	Yes. Periodical reconciliation is made to ascertain tracking of the transactions and balance.	
4.6	Are all accounting and supporting documents retained on a permanent basis in a defined system that allows authorized users easy access?	Yes. Paurashava preserves the documents permanently as per GoB directives and authorized persons have access to records.	
Segregation of Duties			
4.7	Are the following functional responsibilities performed by different units or persons: (i) authorization to execute a transaction; (ii) recording of the transaction; and (iii) custody of assets involved in the transaction?	Yes. Mayor and other designated personnel are authorized to approve the expenditure as per the delegation of financial power and recording is done by the accounting personnel. Stock and assets register is maintained with custody.	
4.8	Are the functions of ordering, receiving, accounting for, and paying for goods and services appropriately segregated?	Yes, functions are well segregated.	
4.9	Are bank reconciliations prepared by someone other than those who make or approve payments?	Yes, reconciliation is not done by the same person.	
Budgeting System			
4.10	Do budgets include physical and financial targets?	Yes. Inputs are given by the departments with physical and financial targets.	
4.11	Are budgets prepared for all significant activities in sufficient detail to provide a meaningful tool with which to monitor subsequent performance?	Yes. Budget is prepared with sufficient detail and can be used for subsequent monitoring.	
4.12	Are actual expenditures compared to the budget with reasonable frequency, and explanations required for significant variations from the budget?	Yes. Paura Parishad in its monthly meeting reviews progress of the activities with budget and suggest timely intervention.	
4.13	Are approvals for variations from the budget required in advance or after the fact?	Yes. Approvals are required in advance	

Topic	Response	Remarks
4.14 Who is responsible for preparation and approval of budgets?	Accountant with the help of other departments compile budget and it is approved by the Paura Parishad and send to LGD for concurrence.	Pre budget meeting is conducted by the Paurashava with the elites to get feed back on budget from them
4.15 Are procedures in place to plan project activities, collect information from the units in charge of the different components, and prepare the budgets?	Yes. Preparation of budget is a bottom up approach. All departments provide budgetary information to the Accountant who compiles the budget.	
4.16 Are the project plans and budgets of project activities realistic, based on valid assumptions, and developed by knowledgeable individuals?	Yes. The budget is prepared based on data, information, assumption, knowledge and in accordance with set procedures.	
Payment		
4.17 Do invoice-processing procedures provide for: (i) Copies of purchase orders and receiving reports to be obtained directly from issuing departments? (ii) Comparison of invoice quantities, prices and terms, with those indicated on the purchase order and with records of goods actually received? (iii) Comparison of invoice quantities with those indicated on the receiving reports? (iv) Checking the accuracy of calculations?	Yes. All the formalities are performed following standard procedures as per finance rules for processing payments and the documents are preserved accordingly.	
4.18 Are all invoices stamped PAID, dated, reviewed and approved, and clearly marked for account code assignment?	Yes. As soon as payment is cleared all invoices are stamped as PAID and recorded in proper heads of account.	
4.19 Do controls exist for the preparation of the payroll and are changes to the payroll properly authorized?	Yes. Payroll is made in accordance with the information in attendance registers.	
Policies And Procedures		
4.20 What is the basis of accounting (e.g., cash, accrual)?	Cash basis.	
4.21 What accounting standards are followed?	Government Accounting Standards issued by MOF.	
4.22 Does the project have an adequate policies and procedures manual to guide activities and ensure staff accountability?	Yes. Paurashava finance manual and rules contains set procedures.	
4.23 Is the accounting policy and procedure manual updated for the project activities?	Yes. Standard policies are in place, if updating is needed it is done by LGD/MoF	
4.24 Do procedures exist to ensure that only authorized persons can alter or establish a new accounting principle, policy or procedure to be used by the entity?	Yes. Since the accounting principle is set by the Central Government, the change in policy requires approval of Central Government	In some cases procedures for reporting can be customized / tailored with approval of appropriate authority
4.25 Are there written policies and procedures covering all routine financial management and related administrative activities?	Yes. Paurashava finance manual and rules, service rules and time to time directives issued by LGD covers these.	

Topic	Response	Remarks
4.26 Do policies and procedures clearly define conflict of interest and related party transactions (real and apparent) and provide safeguards to protect the organization from them?	Yes. Paurashava finance manual and rules, service rules and financial directives issued by LGD/MoF lay down procedures in this regard.	
4.27 Are manuals distributed to appropriate personnel?	Yes. Accounts staff is informed and aware of manuals.	
Cash and Bank		
4.28 Indicate names and positions of authorized signatories in the bank accounts.	Mayor and Secretary or Equivalent Officer is authorised to operate jointly the bank accounts.	
4.29 Does the organization maintain an adequate, up-to-date cashbook, recording receipts and payments?	Yes	
4.30 Do controls exist for the collection, timely deposit and recording of receipts at each collection location?	Yes, most of the collections are made through bank and recorded accordingly.	
4.31 Are bank and cash reconciled on a monthly basis?	Yes	
4.32 Are all unusual items on the bank reconciliation reviewed and approved by a responsible official?	Yes, reviewed and approved by responsible official.	
4.33 Are all receipts deposited on a timely basis?	Yes	
Safeguard over Assets		
4.34 Is there a system of adequate safeguards to protect assets from fraud, waste and abuse?	Yes. Paurashsva maintains stock & assets register mentioning name of users.	
4.35 Are subsidiary records of fixed assets and stocks kept up to date and reconciled with control accounts?	Yes	
4.36 Are there periodic physical inventories of fixed assets and stocks?	Yes	
4.37 Are assets sufficiently covered by insurance policies?	Insurance are taken where needed, specially for vehicles.	
Other Offices and Implementing Entities		
4.38 Are there any other regional offices or executing entities participating in implementation?	Paurashava has its main office only having departments/sections. It has no other office.	
4.39 Has the project established controls and procedures for flow of funds, financial information, accountability, and audits in relation to the other offices or entities?	N/A	However, there are set procedures for controlling among the departments.
4.40 Does information among the different offices/implementing agencies flow in an accurate and timely fashion?	N/A	However, information flows timely among the departments.
4.41 Are periodic reconciliations performed among the different offices/implementing agencies?	N/A	However, coordination among the departments in place.

	Topic	Response	Remarks
	Other		
4.42	Has the project advised employees, beneficiaries and other recipients to whom to report if they suspect fraud, waste or misuse of project resources or property?	Yes, Mayor advises everybody to report to Paurashava if they notice such matters.	
5.	**Internal Audit**		
5.1	Is there an internal audit department in the entity?	No internal audit department.	However, Paurashava has audit and inspection committee.
5.2	What are the qualifications and experience of audit department staff?	N/A.	
5.3	To whom does the internal auditor report?	N/A	Committee report to Mayor
5.4	Will the internal audit department include the project in its work program?	N/A	Audit & inspection committee if needed may conduct audit.
5.5	Are actions taken on the internal audit findings?	N/A	Appropriate actions are taken as per recommendation.
6.	**External Audit**		
6.1	Is the entity financial statement audited regularly by an independent auditor? Who is the auditor?	Yes. Revenue Audit Directorate of C & AG which is constitutionally responsible for conducting external audit.	
6.2	Are there any delays in audit of the entity? When are the audit reports issued?	Audit is done up to 2005-2008 simultaneously. Since then audit is pending.	Paurashava has issued letter requesting to conduct up to date audit.
6.3	Is the audit of the entity conducted according to the International Standards on Auditing?	As per GoB standards framed by C&AG.	
6.4	Were there any major accountability issues brought out in the audit report of the past three years?	Issues are brought to the notice of management for follow up and necessary action is taken in order to settle audit observations	
6.5	Will the entity auditor audit the project accounts or will another auditor be appointed to audit the project financial statements?	C & AG audit will cover the project audit along with paurashava audit.	FAPAD of C & AG may also conduct project audit and if needed other auditor may conduct audit.
6.6	Are there any recommendations made by the auditors in prior audit reports or management letters that have not yet been implemented?	Issues and findings of auditors are monitored and already settled.	
6.7	Is the project subject to any kind of audit from an independent governmental entity (e.g., the supreme audit institution) in addition to the external audit?	If needed by the project, such external audit may be conducted.	
6.8	Has the project prepared acceptable terms of reference for an annual project audit?	Yes, if needed it will be framed under the project.	

Topic		Response	Remarks
7.	**Reporting and Monitoring**		
7.1	Are financial statements prepared for the entity? In accordance with which accounting standards?	Yes. Financial statements are prepared in accordance with the GoB accounting standards.	
7.2	Are financial statements prepared for the implementing unit?	Yes.	
7.3	What is the frequency of preparation of financial statements? Are the reports prepared in a timely fashion so as to useful to management for decision making?	Monthly accounts are prepared for presenting to Paura Parishad meeting and finally annual financial statements are prepared.	
7.4	Does the reporting system need to be adapted to report on the project components?	Yes. Report will be prepared and adopted as per guidelines of the Project.	
7.5	Does the reporting system have the capacity to link the financial information with the project's physical progress? If separate systems are used to gather and compile physical data, what controls are in place to reduce the risk that the physical data may not synchronize with the financial data?	Yes. It is done from time to time by the by the Engineering Department in association with Accounts Department and the result is discussed in Paura Parishad meeting for initiating corrective measures.	
7.6	Does the project have established financial management reporting responsibilities that specify what reports are to be prepared, what they are to contain, and how they are to be used?	It will be specified and done under the project and accordingly Paurashava will comply with them.	
7.7	Are financial management reports used by management?	Yes	
7.8	Do the financial reports compare actual expenditures with budgeted and programmed allocations?	Yes	
7.9	Are financial reports prepared directly by the automated accounting system or are they prepared by spreadsheets or some other means?	UFMS software developed by LGED is in place for recording transactions, but automated financial statements and report could not produce, financial statements and other reports are prepared in spreadsheet. Accounts staff needs more training on the software for generating automated reports.	Customization of the software and adequate training of the related personnel is needed for proper use of the system.
8.	**Information Systems**		
8.1	Is the financial management system computerized?	Same as in 7.9	
8.2	Can the system produce the necessary project financial reports?	Yes. UFMS	Due to lack of knowledge and training on the UFMS required reports cannot produce.

Topic		Response	Remarks
8.3	Is the staff adequately trained to maintain the system?	Received preliminary training in computer including UFMS from RMSU. Needs intensive training to maintain and use the system properly.	
8.4	Does the management organization and processing system safeguard the confidentiality, integrity and availability of the data?	Yes. Paurashava is committed to appropriate processing of financial and other data and to preserve this important data for future availability and subsequent use.	

3 FINANCIAL ANALYSIS

3.1 INTRODUCTION AND METHODOLOGY

47. The Project finances basic urban services improvement in the selected four pourashavas in Batch 1 and more towns to be selected based on selection criteria for the project in Bangladesh. Financial requirement for urban development in the eight Project Pourashavas is estimated to be $115 million over the next five to six years. This financial analysis appraises the financial sustainability and viability of the Project investments for Batch 1 four towns. The financial analysis was prepared in accordance with ADB Guidelines for the Financial Governance and Management of Investment Projects Financed by ADB (July 2005).

48. Financial sustainability and viability analysis of the Project assesses the ability of each sector to meet future costs including capital expenditure, O&M, debt services, depreciation and re-investment margins if appropriate on a present value basis. A financial discounted cash flow (DCF) analysis has been conducted in real terms to determine the weighted average cost of capital (WACC), financial internal rate of return (FIRR), financial net present value (FNPV) and average incremental financial cost (AIFC) where applicable, to assess the financial viability of each subproject and the incremental tariff required. For non-revenue generating sectors, economic analysis and justification are required, and the financial analysis focuses on the Government's financial capacity to meet recurrent costs of the sector. Financial projections for the Project Pourashavas were conducted to assess the pourashava's overall financial capacity to meet their responsibilities in providing urban services including those assisted under the this Project.

3.2 DISCOUNTED CASH FLOW (DCF) ANALYSIS AND SUBPROJECT VIABILITY

49. DCF analysis was undertaken in real terms using constant 2013 prices, to compute the FIRR, FNPV and AIFC. The DCF analysis follows standard ADB methodology. The analysis was conducted on a with- and without- Project basis by estimating incremental costs and revenues over a **20**-year period. The subproject capital costs, O&M costs were derived from the engineer's estimates, including (i) capital expenditures under the Project including physical contingencies and tax/duties, (ii) O&M expenditures, and (iii) additional capital expenditures to repair and rehabilitate the assets created under the Project. The revenue projections, including (i) user charges from domestic and non-domestic customers and (ii) connection fees from new customers for water supply, user charges for sanitation and solid waste are based on a projected number of consumers and an assumed user charge or fee revision schedule. User charge revision is proposed to recover the full O&M cost. The FNPV and AIFC were computed based on WACC, and FIRR was compared to the WACC. The FIRR is computed in real terms over 20-year period, including all capital and operating cash flow, and physical but not price contingencies. Interest and other financing charges during construction are not included in the costs. The residual value of physical assets is assumed to equal its remaining book or depreciated value at the end of the evaluation period.

50. The WACC calculation considers various funding sources and their terms, incorporating the re-lending arrangements between the Government and the Pourashavas. The cost of loan funds, for revenue earning sub-projects, is set at 4%. 13.2% is assumed in nominal terms as the cost of contributions from the Government and 10% is assumed in nominal terms as the cost of equity from Pourashavas. The domestic long-term inflation of 6% is assumed to convert the nominal rates into the real rates. For all the foreign exchange funding, the US dollar inflation rate of 0.8% is assumed. The WACC of 3.09% was computed for the Project in real terms.

	GoB (ADB) Loan	GOB Financing	Pourashava	Total
Weighting	50.00%	40.00%	10.00%	100.00%
Nominal Cost	4.0%	13.19%	10.00%	
Tax Rate				
Tax Adjusted Nominal Cost	4.0%	13.19%	10.00%	
Inflation Rate	6.0%	6.00%	6.00%	
Real Cost	-1.89%	6.78%	3.77%	
Weighted Component of WACC	0.89%	1.13%	0.38%	3.09%

3.3 REVENUE EARNING PROJECTS

3.3.1 Project Assumptions

a. All costs are expressed in April 2013 prices.

b. The Project is analyzed over a 20 year (30-year for water) period.

c. Capital expenditures include all costs, less price contingencies; capital expenditures are recorded at the time they are incurred, while interest and finance charges are excluded. The value of benefits arising from water sales was calculated by multiplying the volume of water sold each year by the proposed tariffs used for each year in constant prices

d. The cost estimate considered for financial and economic analysis for the project is shown in the Section ___ of Main Report – DFR.

e. Water losses or Non Revenue Water (NRW) in the project area are assumed as mentioned above in the without project situation.

f. The implementation period for water sub projects is 36 months, for other projects it is 24 months. It is assumed the process will commence in the year 2014 and will be completed by year 2016. The phasing of project implementation period is assessed as 20%, 40%, and 40% for water and for others 60% and 40% respectively over the period 2014 to 2016.

g. The weighted average cost of capital employed in the financial analysis is set out below and is estimated at 3.09%.

h. Collection efficiency has been assumed as 85%.

3.3.2 Water Supply

51. The water supply subprojects will provide incremental water supply to meet water demand increase assuming that 90% of total population is connected to piped water supply by end of Project. Project revenues are based on the water tariff charged on the water supplied by the Subproject, taking into account the water demand assessment, the number of connections, the gradually reduced non-revenue water (NRW). User charge revision is proposed to satisfy the Project's objective to recover the full O&M cost for the whole water supply system. The proposal on user charges for water supply includes: (i) introduction of volumetric tariff; and (iii) in subsequent years there would be a need to increase tariff by 5%

(Galachipa) 15%(Mathbaria) to 25% (Amtali) every four years from FY 2022. The connection fee for new customers is assumed at BDT. 1500 (Galachipa and Mathbaria) to BDT 5000 (Amtali) per connection.

52. Under the above mentioned major assumptions, FIRRs are computed for the water supply subprojects in the all three Pourashavas including cost of climate resilience measures. **Table 3.1** shows summary results of the financial analysis. The FIRRs in the base case for water supply subprojects are estimated at 3.3% to 6.2%. FIRRs for water supply subprojects in the Pourashavas are estimated to exceed the WACC of 3.09%. A sensitivity analysis was also conducted under various assumptions. The FIRRs are relatively more sensitive to changes in incremental revenues for all the subprojects.

53. Under the above mentioned major assumptions, FIRRs are computed for the water supply subprojects in the all three Pourashavas in without cost of climate resilience measures as well. **Table 3.2** shows summary results of the financial analysis. The FIRRs in the base case for water supply subprojects are estimated at 3.5% to 7.1%. FIRRs for water supply subprojects in the Pourashavas are estimated to exceed the WACC of 3.09%. A sensitivity analysis was also conducted under various assumptions. The FIRRs are relatively more sensitive to changes in incremental revenues for all the subprojects.

Table 3.1: Summary of Financial Evaluation – Water Supply with CCR

	Amtali		Galachipa		Mathbaria	
	FIRR(%)	SI	FIRR(%)	SI	FIRR(%)	SI
Base Case	4.8		6.2		3.3	
Capital Cost +10%	4.3	1.1	5.5	1.3	2.7	2.1
O&M Cost +10%	4.4	0.9	6.0	0.3	3.1	0.4
Revenues -10%	3.8	2.5	5.2	1.9	2.5	3.1
Worst Case	3.0		4.3		1.8	
One Year Delay	4.5		6.0		3.0	
WACC	3.09					

Source: PPTA consultant analysis

Table 3.2: Summary of Financial Evaluation – Water Supply without CCR

	Amtali		Galachipa		Mathbaria	
	FIRR(%)	SI	FIRR(%)	SI	FIRR(%)	SI
Base Case	7.1		7.4		3.5	
Capital Cost +10%	6.4	1.0	6.7	1.1	2.9	1.9
O&M Cost +10%	7.0	0.2	7.3	0.2	3.4	0.4
Revenues -10%	6.2	1.4	6.5	1.5	2.7	2.8
Worst Case	5.5		5.6		2.1	
One Year Delay	6.9		7.3		3.2	
WACC	3.09					

Source: PPTA consultant analysis

3.3.3 Sanitation

54. Under sanitation, among the items, financial analysis have been carried out for investment in de-sludge machine and public toilets combined as those will generate direct income. Each public toilet has 4 toilets. The fee for using toilet per person is Tk. 2 and 50 persons can use a toilet in a day with 300 days in a year. Analysis is done considering

economic life 20 years. The fee for each time de-sludge is Tk. 1,200. The machine can be used 5 times in a day for 300 days in a year.

55. The O&M costs estimated to be 5% of the capital cost.

56. Based on the said parameters the FIRR of the sub-project with cost climate for climate resilience measures so calculated have been found to exceed the rate of cost of capital and hence financially feasible. Summary results are given in **Table 3.3**.

57. Based on the said parameters the FIRR of the sub-project without cost climate for climate resilience measures so calculated have been found to exceed the rate of cost of capital and hence financially feasible. Summary results are given in **Table 3.4**.

Table 3.3: Summary of Financial Evaluation – Sanitation with CCR

	Amtali		Galachipa		Mathbaria	
	FIRR(%)	SI	FIRR(%)	SI	FIRR(%)	SI
Base Case	19.9		18.8		18.8	
Capital Cost +10%	18.2	0.8	17.2	0.9	17.2	0.9
O&M Cost +10%	19.5	0.2	18.4	0.2	18.4	0.2
Revenues -10%	17.7	1.1	16.6	1.1	16.6	1.1
Worst Case	15.7		14.7		14.7	
One Year Delay	19.8		18.6		18.6	
WACC	3.09					

Source: PPTA consultant analysis.

Table 3.4: Summary of Financial Evaluation – Sanitation without CCR

	Amtali		Galachipa		Mathbaria	
	FIRR(%)	SI	FIRR(%)	SI	FIRR(%)	SI
Base Case	17.8		17.0		17.0	
Capital Cost +10%	16.2	0.9	15.5	0.9	15.5	0.9
O&M Cost +10%	17.4	0.2	16.6	0.2	16.6	0.2
Revenues -10%	15.7	1.2	14.9	1.2	14.9	1.2
Worst Case	13.9		13.2		13.2	
One Year Delay	17.6		16.8		16.8	
WACC	3.09					

Source: PPTA consultant analysis

3.3.4 Solid Waste

58. It is assessed that the households covered under the solid waste management would pay @ Tk. 5 per month.

59. The O&M costs estimated to be 10% of the capital cost.

60. Based on the said parameters the FIRR of the sub-project with cost climate for climate resilience measures so calculated have been found to exceed the rate of cost of capital and hence financially feasible. Summary results are given in **Table 3.5**.

Table 3.5: Summary of Financial Evaluation – Solid Waste With CCR

	Amtali		Galachipa		Mathbaria		Pirojpur	
	FIRR(%)	SI	FIRR(%)	SI	FIRR(%)	SI	FIRR(%)	SI
Base Case	66.5		78.5		72.5		81.6	
Capital Cost +10%	61.8	0.7	73.2	0.7	67.5	0.7	76.0	0.7
O&M Cost +10%	65.9	0.1	78.0	0.1	72.2	0.1	81.1	0.1
Revenues -10%	60.8	0.9	72.1	0.8	66.7	0.8	74.9	0.8
Worst Case	56.0		66.6		61.8		69.3	
One Year Delay	66.5		78.5		72.5		81.6	
WACC	3.09							

Source: PPTA consultant analysis

61. For all the above mentioned subprojects the FIRR is more than the WACC. Sensitivity analysis shows FIRRs are generally robust and relatively sensitive to changes in revenues. For all the above subprojects and overall systems in the four pourashavas, the total projections demonstrate that they are sustainable as the revenue account will be in surplus.

3.4 NON-REVENUE EARNING PROJECTS

62. For non-revenue-generating sectors— drainage, roads, bridges and cyclone shelters—the analysis focused on the capacity of the Project Pourashavas to sustain the assets created under the Project by providing financial resources for maintenance and debt service, if any. Financial projections of cash flow were made over a 20-year period for the Project Pourashavas, incorporating the impact of the subprojects as well as the proposed reform. For the four Project Pourashavas, the financial projections show that the Project Pourashavas can absorb the investment in appraised subprojects, as they are expected to have a revenue account surplus and a positive close balance for the revenue account.

63. Financial analysis workings for each subproject are given in **Annex 3.1**.

3.5 FINANCIAL PERFORMANCE OF POURASHAVAS

64. An analysis of financial performance of the Project Pourashavas for the FY2012 highlights generally weak financial positions of the ULBs. The analysis shows that: (i) Though the pourashavas were able to generate own revenues to meet their revenue expenditure, they lack the capacity to generate funds for development projects and are in turn dependent heavily on central government for funds mostly in the form of grants; (ii) revenue expenditure has increased at the average annual rate of 0.9% in Pirojpur to 26.3% in Galachipa, compared to the average revenue income growth rate of nil in Pirojpur to 26.1% in Amtali. The single largest receipt in tax income used to come from property tax and accounted for 6.6% in Amtali to 35.2% in Mathbaria of total revenue income. **Table 3.6** presents summarized financial performance of the four Project Pourashavas in FY2012. The historic financial statements of the 4 Pourashavas are presented in **Annex 3.2**. As the collection performance for property tax has been low – for example, 17.5 % in Galachipa, the actual potential of the property tax has never been materialized. The other receipts in own revenue income include income from by-laws, income from municipal property rentals, investment income, fines, etc.

Table 3.6: Summary Financial Performance of Project Pourashavas in 2012

	Amtali	Galachipa	Mathbaria	Pirojpur
RESOURCE MOBILISATION				
Per Capita Income (BDT)	833.0	669.1	1,308.1	604.5
Sources of Funds				
Share of Own Sources in Total Revenue Income (%)	98.7	98.6	99.0	99.2%
Share of Property Tax in Total Revenue Income (%)	6.6	7.3	35.1	16.2
Share of Revenue Grants & Subsidies in Total Revenue Income (%)	1.3	1.4	1.0	0.8
Growth in Revenue Income (%)	26.1	19.0	14.6	-ve
Growth in Own Sources - Revenue Income (%)	27.2	19.7	28.1	11.3
FUND APPLICATION				
Per Capita Expenditure (BDT)	758.9	532.4	1,292.6	603.9
Share of Establishment Expenditure in Total Revenue Expenditure (%)	68.6	78.1	74.2	76.4
Share of O&M Expenditure in Total Revenue Expenditure (%)(%)	31.4	21.9	25.8	23.6
Share of Establishment Expenditure to Total Revenue Income (%)	62.5	62.2	73.3	76.3
Growth in Establishment Expenditure (%)	28.8	20.5	25.2	13.6
Growth in O&M Expenditure (%)	43.3	25.4	28.7	8.7
Growth in Total Revenue Expenditure (%)	25.7	26.3	13.3	(0.9)
Performance Indicators				
Operating Ratio	0.9	0.8	1.0	1.0
Property Tax Collection Efficiency (%)	75.5	17.5	63.2	43.4
Water charges - Collection Efficiency (%)	95.7	95.8	0.0	86.4

Source: Consultant Analysis.

3.6 FINANCIAL PROJECTIONS OF POURASHAVAS

65. Financial projections of cash flow for the four Project Pourashavas are conducted through 20 years. The projections for the Batch 1 four Project Pourashavas demonstrate that the Pourashavas from their operating surplus can sustain the non-revenue generating subprojects by maintaining the assets, providing the improved services and meeting the debt service payment obligations to the National Government.

66. Assumptions for financial projections:

- Holding tax: Number of properties is projected to increase by 1% per annum and the assessable value increase by 15% every four years;
- Income from non tax revenue sources are expected to increase 10% (Amtali), 7.5% (Galachipa), 10% (Mathbaria) and 8 to 10% per annum in Pirojpur;
- Establishment expenditure is expected to increase by 10% per annum across all pourashavas;
- Operation and maintenance expenditure is expected to increase by 10% (Galachipa), 8% (Pirojpur); 10% (Mathbaria) and 10% (Amtali) per annum.

67. Annual projected operation and maintenance cost for all pourashavas for all sub-

projects with CCR is given in **Table 3.7** and without CCR in **Table 3.8**:

68. Financial Projection statements for the four Pourashavas are given in **Annex 3.3**.

Table 3.7: Projected incremental Annual Operation & Maintenance Costs with CCR (BDT Million)

	Amtali	Galachipa	Pirojpur	Mathbaria
Drainage - first 10 yrs	0.21	1.02	1.84	0.61
Drainage - after 10 yrs	0.42	2.04	3.68	1.20
Roads	1.88	1.25	3.64	1.59
Bridges	0.00	0.00	0.02	0.03
Sanitation	0.58	0.74	0.65	0.89
Solid Waste Mgmt	0.02	0.02	0.03	0.02
Water	6.93	2.68	0.0	4.42
Cyclone Shelters	0.31	0.31	0.42	0.10
Total	**10.36**	**8.06**	**10.27**	**8.87**

PPTA consultant estimates

Table 3.8: Projected incremental Annual Operation & Maintenance Costs without CCR (BDT Million)

	Amtali	Galachipa	Pirojpur	Mathbaria
Drainage - first 10 yrs	0.17	0.84	1.49	0.48
Drainage - after 10 yrs	0.34	1.67	2.98	0.95
Roads	1.58	0.97	3.52	1.63
Bridges	0.00	0.00	0.02	0.02
Sanitation	0.49	0.62	0.54	0.73
Solid Waste Mgmt	0.02	0.02	0.03	0.02
Water	2.07	1.60	0.00	3.88
Cyclone Shelters	0.21	0.28	0.38	0.09
Total	**4.88**	**6.00**	**8.95**	**7.81**

PPTA consultant estimates

3.7 TARIFF AND COST RECOVERY MECHANISM

69. **User Charges and Cost Recovery Mechanism**. The current tariff level can recover only the direct O&M costs on average in the two Project Pourashavas. Revision in existing tariff will be the first important step towards full O&M cost recovery. The Government is required to monitor costs and revenues for all the schemes and adjust tariff gradually to cover the full O&M costs of the schemes assisted under the Project. The Government's water policy stipulates that (water) rates shall be prescribed from time to time to move towards covering at least the annual maintenance and operation charges and part of the fixed costs within a specified time frame. In consistence with this policy statement the institutional and financial improvement action plan under the Project requires 100% full O&M cost recovery of water supply and other revenue earning operations for each of the Project Pourashavas within the period of the Project implementation. Under the Project, rationalization of tariff is proposed in which the target of introduction of volumetric tariffs is set for full O&M cost recovery for each Project Pourashavas. This combined with increase service coverage and collection efficiency, set at no less than 85% coupled with the NRW

reduction through rehabilitation of distribution network, will help Government to minimize the required increases in tariff to meet the important target of full O&M cost recovery.

70. According to the financial analysis and projections, to achieve full O&M cost recovery, a volumetric tariff rate of BDT. 10 (in case of Mathbaria 12 BDT per KL) and BDT. 20 per KL (in case of Mathbaria 24 BDT per KL) for domestic and non-domestic, i.e., commercial and industrial consumers will be introduced by the end of this project period in 2016. Where there is already volumetric tariff for water (Amtali, Galachipa and Pirojpur), the same will be extended to news areas of pourashavas proposed to be covered under the Project. Subsequent to this, tariff increases have been proposed from FY 2022 at the rate of 5% (Galachipa), 15% (Mathbaria) and 25% (Amtali) every four years. In addition to the proposed tariff increase, the program for UFW reduction, combined with optimal O&M, will help to improve cost recovery perspective for the water supply sector. **Table 3.7** presents proposed average water tariff levels required in the four Project Pourashavas.

Table 3.7: Proposed Average Water Tariff, Sanitation Fees, Solid Waste Charge Levels

	Amtali	**Galachipa**	**Mathbaria**	**Pirojpur**
Water (BDT/KL)	10.0	10.0	12.0	8.5 (present)
Sanitation	100.0	100.0	100.0	Not applicable
Solid Waste (Taka per month per HH)	5.0	5.0	5.0	5.0

3.8 AFFORDABILITY ANALYSIS

71. Affordability analysis for water supply, sanitation and solid waste management services was conducted by estimating percentages of utility bills in the average monthly household income. In the year of the Project completion (2016), average water bill is expected to reach to about BDT. 72 (Amtali), BDT 83 (Galachipa) and BDT 117 (Mathbaria) per month per household; BDT 100 per year per household for sanitation in all pourashavas and BDT. 5 per month for SWM in all pourashavas. Total utility bills including water supply, sanitation and solid waste management services in terms of percentages of monthly household income are around 0.2% to 2.2% (Amtali), 0.3% to 1.9% (Galachipa), 0.4% to 2.0% (Mathbaria) respectively, which are found generally affordable. **Table 3.8** provides the details of affordability in three pourashavas.

Table 3.8: Affordability - Water Tariff, Sanitation, Solid Waste Charge - % to HH Income

Income Group	Yearly Income HH	Amtali BDT yearly total utility bill per HH		Galachipa BDT yearly total utility bill per HH		Mathbaria BDT yearly total utility bill per HH	
	BDT	BDT	%	BDT	%	BDT	%
HIG	4,80,000	1,037	0.2%	1,295	0.3%	2,061	0.4%
MIG	2,40,000	1,140	0.5%	1,244	0.5%	1,744	0.7%
LIG	1,50,000	882	0.6%	1,140	0.8%	1,427	1.0%
BPL/Poor	48,000	1,037	2.2%	934	1.9%	984	2.0%

Source: Consultant Analysis

ANNEX 3.1

	FIRR 1 Amtali Water with Climate Resilient Measures											BDT Million
		Capital Cost	Incremental O&M Cost	Total Outflow	Incremental Revenue	Total Inflow	Net Cash Flow	Capital Cost increased by 10%	O & M Cost increased by 10%	Incremental Revenue Decreased by 10%	Worst Scenario	One Year Delay
1	2013	27.3		27.3			-27.3	-30.0	-27.3	-27.3	-30.0	
2	2014	54.6		54.6			-54.6	-60.1	-54.6	-54.6	-60.1	-27.3
3	2015	54.6		54.6			-54.6	-60.1	-54.6	-54.6	-60.1	-54.6
4	2016		6.9	6.9	14.6	14.6	7.7	7.7	7.0	6.2	5.5	-54.6
5	2017		6.9	6.9	6.4	6.4	-0.6	-0.6	-1.2	-1.2	-1.9	7.7
6	2018		6.9	6.9	6.6	6.6	-0.3	-0.3	-1.0	-0.9	-1.6	-0.6
7	2019		6.9	6.9	6.9	6.9	0.0	0.0	-0.7	-0.7	-1.4	-0.3
8	2020		6.9	6.9	7.2	7.2	0.3	0.3	-0.4	-0.4	-1.1	0.0
9	2021		6.9	6.9	9.4	9.4	2.5	2.5	1.8	1.5	0.8	0.3
10	2022		6.9	6.9	9.7	9.7	2.8	2.8	2.1	1.8	1.1	2.5
11	2023		6.9	6.9	10.0	10.0	3.1	3.1	2.4	2.1	1.4	2.8
12	2024		6.9	6.9	10.3	10.3	3.4	3.4	2.7	2.4	1.7	3.1
13	2025		6.9	6.9	10.6	10.6	3.7	3.7	3.0	2.6	2.0	3.4
14	2026		6.9	6.9	14.0	14.0	7.1	7.1	6.4	5.7	5.0	3.7
15	2027		6.9	6.9	14.4	14.4	7.5	7.5	6.8	6.0	5.4	7.1
16	2028		6.9	6.9	14.8	14.8	7.9	7.9	7.2	6.4	5.7	7.5
17	2029		6.9	6.9	15.2	15.2	8.3	8.3	7.6	6.8	6.1	7.9
18	2030		6.9	6.9	15.6	15.6	8.7	8.7	8.0	7.1	6.4	8.3
19	2031		6.9	6.9	20.6	20.6	13.7	13.7	13.0	11.7	11.0	8.7
20	2032		6.9	6.9	21.1	21.1	14.2	14.2	13.5	12.1	11.4	13.7
21	2033		6.9	6.9	20.6	20.6	13.6	13.6	13.0	11.6	10.9	14.2
22	2034		6.9	6.9	21.0	21.0	14.1	14.1	13.4	12.0	11.3	13.6
23	2035		6.9	6.9	21.5	21.5	14.6	14.6	13.9	12.4	11.7	14.1
24	2036		6.9	6.9	28.0	28.0	21.1	21.1	20.4	18.3	17.6	14.6
25	2037		6.9	6.9	28.6	28.6	21.6	21.6	21.0	18.8	18.1	21.1
26	2038		6.9	6.9	29.2	29.2	22.2	22.2	21.5	19.3	18.6	21.6
27	2039		6.9	6.9	29.7	29.7	22.8	22.8	22.1	19.8	19.1	22.2
28	2040		6.9	6.9	30.3	30.3	23.4	23.4	22.7	20.3	19.7	22.8
29	2041		6.9	6.9	38.4	38.4	31.5	31.5	30.8	27.7	27.0	23.4
30	2042		6.9	6.9	38.5	38.5	31.5	31.5	30.8	27.7	27.0	31.5
31	2043		6.9	6.9	38.5	38.5	31.6	31.6	30.9	27.7	27.0	31.5
32	2044		6.9	6.9	38.5	38.5	31.6	31.6	30.9	27.7	27.0	31.6
	Total	**136.5**	**201.0**	**337.5**	**570.5**	**570.5**	**233.1**	**219.4**	**213.0**	**176.0**	**142.3**	**201.5**
	NPV @ 3.09%	**127.7**	**120.0**	**247.7**	**298.8**	**298.8**	**51.1**	**38.4**	**39.1**	**21.3**	**-3.5**	**39.2**
				FIRR	**SI**	**SV**						
	Base Case			4.8%								
	Capital Costs Increased by 10		10%	4.3%	1.14	87%						
	O&M Costs Increased by 10%		10%	4.4%	0.90	111%						
	Incremental Revenue Decreas		10%	3.8%	2.50	40%						
	Worst Scenario			3.0%								
	One Year Delay			4.5%								

	FIRR 1 Galachipa Water with Climate Resilient Measures											BDT Million
		Capital Cost	Incremental O&M Cost	Total Outflow	Incremental Revenue	Total Inflow	Net Cash Flow	Capital Cost increased by 10%	O & M Cost increased by 10%	Incremental Revenue Decreased by 10%	Worst Scenario	One Year Delay
1	2013	25.6		25.6			-25.6	-28.1	-25.6	-25.6	-28.1	
2	2014	51.2		51.2			-51.2	-56.3	-51.2	-51.2	-56.3	-25.6
3	2015	51.2		51.2			-51.2	-56.3	-51.2	-51.2	-56.3	-51.2
4	2016		2.7	2.7	9.3	9.3	6.7	6.7	6.4	5.7	5.5	-51.2
5	2017		2.7	2.7	8.3	8.3	5.6	5.6	5.3	4.8	4.5	6.7
6	2018		2.7	2.7	8.9	8.9	6.2	6.2	6.0	5.3	5.1	5.6
7	2019		2.7	2.7	9.5	9.5	6.9	6.9	6.6	5.9	5.6	6.2
8	2020		2.7	2.7	10.3	10.3	7.6	7.6	7.3	6.5	6.3	6.9
9	2021		2.7	2.7	11.6	11.6	8.9	8.9	8.7	7.8	7.5	7.6
10	2022		2.7	2.7	11.4	11.4	8.8	8.8	8.5	7.6	7.3	8.9
11	2023		2.7	2.7	11.7	11.7	9.0	9.0	8.8	7.9	7.6	8.8
12	2024		2.7	2.7	12.0	12.0	9.3	9.3	9.0	8.1	7.8	9.0
13	2025		2.7	2.7	12.3	12.3	9.6	9.6	9.3	8.4	8.1	9.3
14	2026		2.7	2.7	13.3	13.3	10.6	10.6	10.3	9.3	9.0	9.6
15	2027		2.7	2.7	13.6	13.6	10.9	10.9	10.6	9.5	9.3	10.6
16	2028		2.7	2.7	13.9	13.9	11.2	11.2	10.9	9.8	9.5	10.9
17	2029		2.7	2.7	14.2	14.2	11.5	11.5	11.2	10.1	9.8	11.2
18	2030		2.7	2.7	14.5	14.5	11.8	11.8	11.5	10.4	10.1	11.5
19	2031		2.7	2.7	15.7	15.7	13.0	13.0	12.7	11.4	11.2	11.8
20	2032		2.7	2.7	15.9	15.9	13.2	13.2	12.9	11.6	11.4	13.0
21	2033		2.7	2.7	15.1	15.1	12.4	12.4	12.2	10.9	10.6	13.2
22	2034		2.7	2.7	15.3	15.3	12.6	12.6	12.4	11.1	10.8	12.4
23	2035		2.7	2.7	15.5	15.5	12.8	12.8	12.6	11.3	11.0	12.6
24	2036		2.7	2.7	16.6	16.6	14.0	14.0	13.7	12.3	12.0	12.8
25	2037		2.7	2.7	16.9	16.9	14.2	14.2	13.9	12.5	12.2	14.0
26	2038		2.7	2.7	17.1	17.1	14.4	14.4	14.2	12.7	12.4	14.2
27	2039		2.7	2.7	17.3	17.3	14.6	14.6	14.4	12.9	12.6	14.4
28	2040		2.7	2.7	17.5	17.5	14.9	14.9	14.6	13.1	12.8	14.6
29	2041		2.7	2.7	18.8	18.8	16.1	16.1	15.8	14.2	14.0	14.9
30	2042		2.7	2.7	19.0	19.0	16.4	16.4	16.1	14.5	14.2	16.1
31	2043		2.7	2.7	19.3	19.3	16.6	16.6	16.3	14.7	14.4	16.4
32	2044		2.7	2.7	19.5	19.5	16.9	16.9	16.6	14.9	14.6	16.6
	Total	**127.9**	**77.7**	**205.6**	**414.3**	**414.3**	**208.7**	**195.9**	**201.0**	**167.3**	**146.7**	**191.9**
	NPV @ 3.09%	**119.7**	**46.4**	**166.0**	**233.4**	**233.4**	**67.3**	**55.4**	**62.7**	**44.0**	**27.4**	**61.0**
				FIRR	**SI**	**SV**						
	Base Case			6.2%								
	Capital Costs Increased by 10		10%	5.5%	1.28	78%						
	O&M Costs Increased by 10%		10%	6.0%	0.33	299%						
	Incremental Revenue Decreas		10%	5.2%	1.89	53%						
	Worst Scenario			4.3%								
	One Year Delay			6.0%								

	FIRR 1 Mathbaria Water with Climate Resilient Measures											
												BDT Million
		Capital Cost	Incremental O&M Cost	Total Outflow	Incremental Revenue	Total Inflow	Net Cash Flow	Capital Cost increased by 10%	O & M Cost increased by 10%	Incremental Revenue Decreased by 10%	Worst Scenario	One Year Delay
1	2013	78.3		78.3			-78.3	-86.1	-78.3	-78.3	-86.1	
2	2014	156.5		156.5			-156.5	-172.2	-156.5	-156.5	-172.2	-78.3
3	2015	156.5		156.5			-156.5	-172.2	-156.5	-156.5	-172.2	-156.5
4	2016		4.4	4.4	19.3	19.3	14.9	14.9	14.5	13.0	12.5	-156.5
5	2017		4.4	4.4	15.8	15.8	11.4	11.4	10.9	9.8	9.3	14.9
6	2018		4.4	4.4	16.4	16.4	12.0	12.0	11.5	10.3	9.9	11.4
7	2019		4.4	4.4	17.1	17.1	12.6	12.6	12.2	10.9	10.5	12.0
8	2020		4.4	4.4	16.9	16.9	12.4	12.4	12.0	10.8	10.3	12.6
9	2021		4.4	4.4	19.6	19.6	15.2	15.2	14.7	13.2	12.8	12.4
10	2022		4.4	4.4	19.8	19.8	15.4	15.4	15.0	13.4	13.0	15.2
11	2023		4.4	4.4	20.0	20.0	15.6	15.6	15.2	13.6	13.2	15.4
12	2024		4.4	4.4	20.2	20.2	15.8	15.8	15.3	13.8	13.3	15.6
13	2025		4.4	4.4	20.4	20.4	16.0	16.0	15.5	13.9	13.5	15.8
14	2026		4.4	4.4	23.6	23.6	19.2	19.2	18.7	16.8	16.4	16.0
15	2027		4.4	4.4	23.8	23.8	19.4	19.4	18.9	17.0	16.6	19.2
16	2028		4.4	4.4	24.0	24.0	19.6	19.6	19.1	17.2	16.7	19.4
17	2029		4.4	4.4	24.2	24.2	19.8	19.8	19.3	17.4	16.9	19.6
18	2030		4.4	4.4	25.6	25.6	21.2	21.2	20.7	18.6	18.2	19.8
19	2031		4.4	4.4	29.2	29.2	24.8	24.8	24.4	21.9	21.4	21.2
20	2032		4.4	4.4	29.5	29.5	25.1	25.1	24.6	22.1	21.7	24.8
21	2033		4.4	4.4	30.8	30.8	26.4	26.4	25.9	23.3	22.8	25.1
22	2034		4.4	4.4	31.1	31.1	26.7	26.7	26.2	23.5	23.1	26.4
23	2035		4.4	4.4	31.4	31.4	26.9	26.9	26.5	23.8	23.4	26.7
24	2036		4.4	4.4	36.2	36.2	31.8	31.8	31.4	28.2	27.7	26.9
25	2037		4.4	4.4	36.5	36.5	32.1	32.1	31.7	28.5	28.0	31.8
26	2038		4.4	4.4	36.9	36.9	32.5	32.5	32.0	28.8	28.3	32.1
27	2039		4.4	4.4	38.9	38.9	34.5	34.5	34.0	30.6	30.2	32.5
28	2040		4.4	4.4	38.7	38.7	34.3	34.3	33.9	30.4	30.0	34.5
29	2041		4.4	4.4	44.8	44.8	40.4	40.4	39.9	35.9	35.4	34.3
30	2042		4.4	4.4	45.2	45.2	40.8	40.8	40.3	36.3	35.8	40.4
31	2043		4.4	4.4	45.2	45.2	40.8	40.8	40.3	36.3	35.8	40.8
32	2044		4.4	4.4	45.2	45.2	40.8	40.8	40.3	36.3	35.8	40.8
	Total	**391.3**	**128.2**	**519.5**	**826.3**	**826.3**	**306.8**	**267.7**	**294.0**	**224.2**	**172.2**	**266.0**
	NPV @ 3.09%	**366.0**	**76.6**	**442.6**	**453.8**	**453.8**	**11.2**	**-25.4**	**3.5**	**-34.2**	**-78.4**	**-4.2**
				FIRR	**SI**	**SV**						
	Base Case			3.3%								
	Capital Costs Increased by 10%		10%	2.7%	2.13	47%						
	O&M Costs Increased by 10%		10%	3.1%	0.40	251%						
	Incremental Revenue Decreased by 10%		10%	2.5%	3.06	33%						
	Worst Scenario			1.8%								
	One Year Delay			3.0%								

Financial Analysis of Sanitation	**Amtali**										
Schemes:	**10 community Latrines, 4 public Toilets and 1 Desludging Machine (In analysis CL Capital Cost excluded)**										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	8.967								
(of which labour)		20%	1.793								
						Fees per person using PL				2	
						Number of Persons benefited from PL				800	
Annual O&M Costs		5%	0.448								
(of which labour)		50%	0.224								
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.511	2.043								
Non traded	65%	4.663	4.663			Base Financial Benefit					
Labour		1.793	1.793			Fees from Latrines and Toilets			BDT Millio	0.48	
Total		**8.967**	**8.500**			Fees from Desludging Machine			BDT Millio	1.800	
						Annual increase (real)				2.00%	
Annual O&M Costs						Taxes and Duties					
Traded	35%	0.078	0.078			Custom Duty on Traded Cost			5.50%	0.467	
Non traded	65%	0.146	0.146								
Labour		0.224	0.224								
Total		**0.448**	**0.448**								

FINANCIAL INTERNAL RATE OF RETURN										BDT Million	
Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**ne year Dela**
1	60%	5.380	0.000	5.380	0.000	-5.380	-5.918	-5.380	-5.380	-5.918	
2	40%	3.587	0.000	3.587	0.000	-3.587	-3.945	-3.587	-3.587	-3.945	-5.380
3			0.448	0.448	2.281	1.833	1.833	1.788	1.604	1.560	-3.587
4			0.448	0.448	2.327	1.878	1.878	1.833	1.646	1.601	1.833
5			0.448	0.448	2.373	1.925	1.925	1.880	1.687	1.643	1.878
6			0.448	0.448	2.421	1.972	1.972	1.927	1.730	1.685	1.925
7			0.448	0.448	2.469	2.021	2.021	1.976	1.774	1.729	1.972
8			0.448	0.448	2.518	2.070	2.070	2.025	1.818	1.773	2.021
9			0.448	0.448	2.569	2.120	2.120	2.075	1.863	1.819	2.070
10			0.448	0.448	2.620	2.172	2.172	2.127	1.910	1.865	2.120
11			0.448	0.448	2.672	2.224	2.224	2.179	1.957	1.912	2.172
12			0.448	0.448	2.726	2.278	2.278	2.233	2.005	1.960	2.224
13			0.448	0.448	2.780	2.332	2.332	2.287	2.054	2.009	2.278
14			0.448	0.448	2.836	2.388	2.388	2.343	2.104	2.059	2.332
15			0.448	0.448	2.893	2.444	2.444	2.400	2.155	2.110	2.388
16			0.448	0.448	2.951	2.502	2.502	2.457	2.207	2.162	2.444
17			0.448	0.448	3.010	2.561	2.561	2.516	2.260	2.215	2.502
18			0.448	0.448	3.070	2.621	2.621	2.577	2.314	2.270	2.561
19			0.448	0.448	3.131	2.683	2.683	2.638	2.370	2.325	2.621
20			0.448	0.448	3.194	2.745	2.745	2.701	2.426	2.381	2.683
21			0.448	0.448	3.258	2.809	2.809	2.765	2.484	2.439	2.745
22			0.448	0.448	3.323	2.875	2.875	2.830	2.542	2.497	2.809
PV @ 3.09%				**14.818**	**37.709**	**22.891**	**22.031**	**22.268**	**19.120**	**17.64**	**21.419**
FIRR						**19.9%**	**18.2%**	**19.5%**	**17.7%**	**15.7%**	**19.8%**
Sensitivity Indicator							**0.84**	**0.20**	**1.14**		
Benefit / Cost Ratio						**2.54**					
Net Present Value						**22.891**					

Financial Analysis of Sanitation	**Galachipa**										
Schemes:	**8 Community Latrines, 3 School Latrines, 6 Public Toilets and 1 Desludging Machine (In analysis CL & SL Capital Cost excluded)**										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	10.451								
(of which labour)		20%	2.090								
						Fees per person using PL				2	
						Number of Persons benefited from PL				1,200	
Annual O&M Costs		5%	0.523								
(of which labour)		50%	0.261								
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.926	2.381								
Non traded	65%	5.434	5.434			Base Financial Benefit					
Labour		2.090	2.090			Fees from Latrines and Toilets			BDT Million	0.72	
Total		**10.451**	**9.906**			Fees from Desludging Machine			BDT Million	1.800	
						Annual increase (real)				2.00%	
Annual O&M Costs						Taxes and Duties					
Traded	35%	0.091	0.091			Custom Duty on Traded Cost			5.50%	0.545	
Non traded	65%	0.170	0.170								
Labour		0.261	0.261								
Total		**0.523**	**0.523**								

FINANCIAL INTERNAL RATE OF RETURN											
										BDT Million	
Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**One year Dela**
1	60%	6.270	0.000	6.270	0.000	-6.270	-6.897	-6.270	-6.270	-6.897	
2	40%	4.180	0.000	4.180	0.000	-4.180	-4.598	-4.180	-4.180	-4.598	-6.270
3			0.523	0.523	2.521	1.998	1.998	1.946	1.746	1.694	-4.180
4			0.523	0.523	2.571	2.049	2.049	1.997	1.792	1.740	1.998
5			0.523	0.523	2.623	2.100	2.100	2.048	1.838	1.786	2.049
6			0.523	0.523	2.675	2.153	2.153	2.101	1.885	1.833	2.100
7			0.523	0.523	2.729	2.206	2.206	2.154	1.933	1.881	2.153
8			0.523	0.523	2.783	2.261	2.261	2.209	1.983	1.930	2.206
9			0.523	0.523	2.839	2.317	2.317	2.264	2.033	1.980	2.261
10			0.523	0.523	2.896	2.373	2.373	2.321	2.084	2.031	2.317
11			0.523	0.523	2.954	2.431	2.431	2.379	2.136	2.084	2.373
12			0.523	0.523	3.013	2.490	2.490	2.438	2.189	2.137	2.431
13			0.523	0.523	3.073	2.551	2.551	2.498	2.243	2.191	2.490
14			0.523	0.523	3.135	2.612	2.612	2.560	2.299	2.246	2.551
15			0.523	0.523	3.197	2.675	2.675	2.622	2.355	2.303	2.612
16			0.523	0.523	3.261	2.739	2.739	2.686	2.413	2.360	2.675
17			0.523	0.523	3.326	2.804	2.804	2.752	2.471	2.419	2.739
18			0.523	0.523	3.393	2.870	2.870	2.818	2.531	2.479	2.804
19			0.523	0.523	3.461	2.938	2.938	2.886	2.592	2.540	2.870
20			0.523	0.523	3.530	3.007	3.007	2.955	2.654	2.602	2.938
21			0.523	0.523	3.601	3.078	3.078	3.026	2.718	2.666	3.007
22			0.523	0.523	3.673	3.150	3.150	3.098	2.783	2.731	3.078
PV @ 3.09%				**17.270**	**41.679**	**24.409**	**23.407**	**23.683**	**20.241**	**18.51**	**22.796**
FIRR						**18.8%**	**17.2%**	**18.4%**	**16.6%**	**14.7%**	**18.6%**
Sensitivity Indicator							**0.86**	**0.22**	**1.17**		
Benefit / Cost Ratio						**2.41**					
Net Present Value						**24.409**					

Financial Analysis of Sanitation	**Mathbaria**										
Schemes:	**8 Community Latrines, 6 Public Toilets, 7 School Latrines and 1 Desludging Machine (In analysis CL & SL Capital Cost excluded)**										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	10.451								
(of which labour)		20%	2.090								
						Fees per person using PL				2	
						Number of Persons benefited from PL				1,200	
Annual O&M Costs		5%	0.523								
(of which labour)		50%	0.261								
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.926	2.381								
Non traded	65%	5.434	5.434			Base Financial Benefit					
Labour		2.090	2.090			Fees from Latrines and Toilets			BDT Million	0.72	
Total		**10.451**	**9.906**			Fees from Desludging Machine			BDT Million	1.800	
						Annual increase (real)				2.00%	
Annual O&M Costs						Taxes and Duties					
Traded	35%	0.091	0.091			Custom Duty on Traded Cost			5.50%	0.545	
Non traded	65%	0.170	0.170								
Labour		0.261	0.261								
Total		**0.523**	**0.523**								

FINANCIAL INTERNAL RATE OF RETURN

Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**ne year Dela**
1	60%	6.270	0.000	6.270	0.000	-6.270	-6.897	-6.270	-6.270	-6.897	
2	40%	4.180	0.000	4.180	0.000	-4.180	-4.598	-4.180	-4.180	-4.598	-6.270
3			0.523	0.523	2.521	1.998	1.998	1.946	1.746	1.694	-4.180
4			0.523	0.523	2.571	2.049	2.049	1.997	1.792	1.740	1.998
5			0.523	0.523	2.623	2.100	2.100	2.048	1.838	1.786	2.049
6			0.523	0.523	2.675	2.153	2.153	2.101	1.885	1.833	2.100
7			0.523	0.523	2.729	2.206	2.206	2.154	1.933	1.881	2.153
8			0.523	0.523	2.783	2.261	2.261	2.209	1.983	1.930	2.206
9			0.523	0.523	2.839	2.317	2.317	2.264	2.033	1.980	2.261
10			0.523	0.523	2.896	2.373	2.373	2.321	2.084	2.031	2.317
11			0.523	0.523	2.954	2.431	2.431	2.379	2.136	2.084	2.373
12			0.523	0.523	3.013	2.490	2.490	2.438	2.189	2.137	2.431
13			0.523	0.523	3.073	2.551	2.551	2.498	2.243	2.191	2.490
14			0.523	0.523	3.135	2.612	2.612	2.560	2.299	2.246	2.551
15			0.523	0.523	3.197	2.675	2.675	2.622	2.355	2.303	2.612
16			0.523	0.523	3.261	2.739	2.739	2.686	2.413	2.360	2.675
17			0.523	0.523	3.326	2.804	2.804	2.752	2.471	2.419	2.739
18			0.523	0.523	3.393	2.870	2.870	2.818	2.531	2.479	2.804
19			0.523	0.523	3.461	2.938	2.938	2.886	2.592	2.540	2.870
20			0.523	0.523	3.530	3.007	3.007	2.955	2.654	2.602	2.938
21			0.523	0.523	3.601	3.078	3.078	3.026	2.718	2.666	3.007
22			0.523	0.523	3.673	3.150	3.150	3.098	2.783	2.731	3.078
PV @ 3.09%				**17.270**	**41.679**	**24.409**	**23.407**	**23.683**	**20.241**	**18.51**	**22.796**
FIRR						**18.8%**	**17.2%**	**18.4%**	**16.6%**	**14.7%**	**18.6%**
Sensitivity Indicator							**0.86**	**0.22**	**1.17**		
Benefit / Cost Ratio						**2.41**					
Net Present Value						**24.409**					

Financial Analysis of Sanitation	**Pirojpur**											
Schemes:	**23 Community Latrines, 2 Public Toilets and 1 Desludging Machine (In analysis CL Capital Cost excluded)**											
Million Taka (April 2013 Constant Prices)												
Base Prices							**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	7.484									
(of which labour)		20%	1.497									
							Fees per person using PL			2		
							Number of Persons benefited from PL			400		
Annual O&M Costs		5%	0.374									
(of which labour)		50%	0.187									
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**									
Investment Cost												
Traded	35%	2.095	1.705									
Non traded	65%	3.891	3.891				Base Financial Benefit					
Labour		1.497	1.497				Fees from Latrines and Toilets		BDT Million	0.24		
Total		**7.484**	**7.093**				Fees from Desludging Machine		BDT Million	1.800		
							Annual increase (real)			2.00%		
Annual O&M Costs							Taxes and Duties					
Traded	35%	0.065	0.065				Custom Duty on Traded Cost		5.50%	0.390		
Non traded	65%	0.122	0.122									
Labour		0.187	0.187									
Total		**0.374**	**0.374**									

FINANCIAL INTERNAL RATE OF RETURN											
										BDT Million	
Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**one year Dela**
1	60%	4.490	0.000	4.490	0.000	-4.490	-4.939	-4.490	-4.490	-4.939	
2	40%	2.993	0.000	2.993	0.000	-2.993	-3.293	-2.993	-2.993	-3.293	-4.490
3			0.374	0.374	2.041	1.667	1.667	1.629	1.463	1.425	-2.993
4			0.374	0.374	2.082	1.707	1.707	1.670	1.499	1.462	1.667
5			0.374	0.374	2.123	1.749	1.749	1.712	1.537	1.499	1.707
6			0.374	0.374	2.166	1.792	1.792	1.754	1.575	1.538	1.749
7			0.374	0.374	2.209	1.835	1.835	1.797	1.614	1.577	1.792
8			0.374	0.374	2.253	1.879	1.879	1.842	1.654	1.616	1.835
9			0.374	0.374	2.298	1.924	1.924	1.887	1.694	1.657	1.879
10			0.374	0.374	2.344	1.970	1.970	1.933	1.736	1.698	1.924
11			0.374	0.374	2.391	2.017	2.017	1.980	1.778	1.740	1.970
12			0.374	0.374	2.439	2.065	2.065	2.027	1.821	1.783	2.017
13			0.374	0.374	2.488	2.114	2.114	2.076	1.865	1.827	2.065
14			0.374	0.374	2.537	2.163	2.163	2.126	1.910	1.872	2.114
15			0.374	0.374	2.588	2.214	2.214	2.177	1.955	1.918	2.163
16			0.374	0.374	2.640	2.266	2.266	2.228	2.002	1.964	2.214
17			0.374	0.374	2.693	2.319	2.319	2.281	2.049	2.012	2.266
18			0.374	0.374	2.747	2.372	2.372	2.335	2.098	2.060	2.319
19			0.374	0.374	2.802	2.427	2.427	2.390	2.147	2.110	2.372
20			0.374	0.374	2.858	2.483	2.483	2.446	2.198	2.160	2.427
21			0.374	0.374	2.915	2.541	2.541	2.503	2.249	2.212	2.483
22			0.374	0.374	2.973	2.599	2.599	2.561	2.302	2.264	2.541
PV @ 3.09%				**12.367**	**33.740**	**21.373**	**20.656**	**20.854**	**17.999**	**16.76**	**20.042**
FIRR						**21.5%**	**19.7%**	**21.1%**	**19.1%**	**17.1%**	**21.4%**
Sensitivity Indicator							**0.83**	**0.18**	**1.10**		
Benefit / Cost Ratio						**2.73**					
Net Present Value						**21.373**					

Financial Analysis of Solid Waste	**Amtali - Solid Waste Management**											
Schemes:	**4 Rickshaw-van, 10 Push-cart, 2 Transfer-station and 1 Landfill**											
Million Taka (April 2013 Constant Prices)												
Base Prices							**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	0.242									
(of which labour)		20%	0.048									
							Fees per HH per Month			5		
							Number of HHs benefited from SWM			4,026		
Annual O&M Costs		10.0%	0.024									
(of which labour)		50%	0.012									
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**									
Investment Cost												
Traded	35%	0.068	0.055									
Non traded	65%	0.126	0.126				Base Financial Benefit					
Labour		0.048	0.048				Fees from SWM		BDT Million	0.24		
Total		**0.242**	**0.229**							-		
							Annual increase (real)			2.00%		
Annual O&M Costs							Taxes and Duties					
Traded	35%	0.004	0.004				Custom Duty on Traded Cost		5.50%	0.013		
Non traded	65%	0.008	0.008									
Labour		0.012	0.012									
Total		**0.024**	**0.024**									

FINANCIAL INTERNAL RATE OF RETURN

BDT Million

Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**ne year Dela**
1	60%	0.145	0.000	0.145	0.000	-0.145	-0.160	-0.145	-0.145	-0.160	
2	40%	0.097	0.000	0.097	0.000	-0.097	-0.106	-0.097	-0.097	-0.106	-0.145
3			0.024	0.024	0.242	0.217	0.217	0.215	0.193	0.191	-0.097
4			0.024	0.024	0.246	0.222	0.222	0.220	0.198	0.195	0.217
5			0.024	0.024	0.251	0.227	0.227	0.225	0.202	0.200	0.222
6			0.024	0.024	0.256	0.232	0.232	0.230	0.207	0.204	0.227
7			0.024	0.024	0.262	0.237	0.237	0.235	0.211	0.209	0.232
8			0.024	0.024	0.267	0.243	0.243	0.240	0.216	0.214	0.237
9			0.024	0.024	0.272	0.248	0.248	0.246	0.221	0.218	0.243
10			0.024	0.024	0.278	0.253	0.253	0.251	0.226	0.223	0.248
11			0.024	0.024	0.283	0.259	0.259	0.257	0.231	0.228	0.253
12			0.024	0.024	0.289	0.265	0.265	0.262	0.236	0.233	0.259
13			0.024	0.024	0.295	0.270	0.270	0.268	0.241	0.239	0.265
14			0.024	0.024	0.300	0.276	0.276	0.274	0.246	0.244	0.270
15			0.024	0.024	0.306	0.282	0.282	0.280	0.252	0.249	0.276
16			0.024	0.024	0.313	0.288	0.288	0.286	0.257	0.255	0.282
17			0.024	0.024	0.319	0.295	0.295	0.292	0.263	0.260	0.288
18			0.024	0.024	0.325	0.301	0.301	0.299	0.269	0.266	0.295
19			0.024	0.024	0.332	0.308	0.308	0.305	0.274	0.272	0.301
20			0.024	0.024	0.338	0.314	0.314	0.312	0.280	0.278	0.308
21			0.024	0.024	0.345	0.321	0.321	0.319	0.286	0.284	0.314
22			0.024	0.024	0.352	0.328	0.328	0.325	0.293	0.290	0.321
PV @ 3.09%				**0.568**	**3.995**	**3.427**	**3.404**	**3.394**	**3.028**	**2.97**	**3.260**
FIRR						**66.5%**	**61.8%**	**65.9%**	**60.8%**	**56.0%**	**66.5%**
Sensitivity Indicator							**0.70**	**0.08**	**0.86**		
Benefit / Cost Ratio						**7.04**					
Net Present Value						**3.427**					

Financial Analysis of Sanitation	**Galachipa - Solid Waste Management**										
Schemes:	**4 Rickshaw-van, 10 Push-cart, 2 Transfer-station and 1 Landfill**										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	0.242								
(of which labour)		20%	0.048								
						Fees per HH per Month				5	
						Number of HHs benefited from SWM				4,930	
Annual O&M Costs		10.0%	0.024								
(of which labour)		50%	0.012								
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	0.068	0.055								
Non traded	65%	0.126	0.126			Base Financial Benefit					
Labour		0.048	0.048			Fees from SWM			BDT Million	0.30	
Total		**0.242**	**0.229**							-	
						Annual increase (real)				2.00%	
Annual O&M Costs						Taxes and Duties					
Traded	35%	0.004	0.004			Custom Duty on Traded Cost			5.50%	0.013	
Non traded	65%	0.008	0.008								
Labour		0.012	0.012								
Total		**0.024**	**0.024**								

FINANCIAL INTERNAL RATE OF RETURN

Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**one year Dela**
1	60%	0.145	0.000	0.145	0.000	-0.145	-0.160	-0.145	-0.145	-0.160	
2	40%	0.097	0.000	0.097	0.000	-0.097	-0.106	-0.097	-0.097	-0.106	-0.145
3			0.024	0.024	0.296	0.272	0.272	0.269	0.242	0.240	-0.097
4			0.024	0.024	0.302	0.278	0.278	0.275	0.247	0.245	0.272
5			0.024	0.024	0.308	0.284	0.284	0.281	0.253	0.250	0.278
6			0.024	0.024	0.314	0.290	0.290	0.287	0.258	0.256	0.284
7			0.024	0.024	0.320	0.296	0.296	0.294	0.264	0.262	0.290
8			0.024	0.024	0.327	0.303	0.303	0.300	0.270	0.267	0.296
9			0.024	0.024	0.333	0.309	0.309	0.307	0.276	0.273	0.303
10			0.024	0.024	0.340	0.316	0.316	0.313	0.282	0.279	0.309
11			0.024	0.024	0.347	0.323	0.323	0.320	0.288	0.285	0.316
12			0.024	0.024	0.354	0.329	0.329	0.327	0.294	0.292	0.323
13			0.024	0.024	0.361	0.337	0.337	0.334	0.300	0.298	0.329
14			0.024	0.024	0.368	0.344	0.344	0.341	0.307	0.305	0.337
15			0.024	0.024	0.375	0.351	0.351	0.349	0.314	0.311	0.344
16			0.024	0.024	0.383	0.359	0.359	0.356	0.320	0.318	0.351
17			0.024	0.024	0.390	0.366	0.366	0.364	0.327	0.325	0.359
18			0.024	0.024	0.398	0.374	0.374	0.372	0.334	0.332	0.366
19			0.024	0.024	0.406	0.382	0.382	0.380	0.341	0.339	0.374
20			0.024	0.024	0.414	0.390	0.390	0.388	0.349	0.346	0.382
21			0.024	0.024	0.423	0.398	0.398	0.396	0.356	0.354	0.390
22			0.024	0.024	0.431	0.407	0.407	0.405	0.364	0.361	0.398
PV @ 3.09%				**0.568**	**4.893**	**4.325**	**4.302**	**4.291**	**3.836**	**3.78**	**4.117**
FIRR						**78.5%**	**73.2%**	**78.0%**	**72.1%**	**66.6%**	**78.5%**
Sensitivity Indicator							**0.69**	**0.06**	**0.82**		
Benefit / Cost Ratio						**8.62**					
Net Present Value						**4.325**					

Financial Analysis of Solid Waste	**Mathbaria - Solid Waste Management**										
Schemes:	**4 Rickshaw-van, 10 Push-cart, 2 Transfer-station and 1 Landfill**										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	0.242								
(of which labour)		20%	0.048								
						Fees per HH per Month				5	
						Number of HHs benefited from SWM				4,273	
Annual O&M Costs		5.0%	0.012								
(of which labour)		50%	0.006								
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	0.068	0.055								
Non traded	65%	0.126	0.126			Base Financial Benefit					
Labour		0.048	0.048			Fees from SWM			BDT Million	0.26	
Total		**0.242**	**0.229**							-	
						Annual increase (real)				2.00%	
Annual O&M Costs						Taxes and Duties					
Traded	35%	0.002	0.002			Custom Duty on Traded Cost			5.50%	0.013	
Non traded	65%	0.004	0.004								
Labour		0.006	0.006								
Total		**0.012**	**0.012**								

FINANCIAL INTERNAL RATE OF RETURN

Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**ne year Dela**
1	60%	0.145	0.000	0.145	0.000	-0.145	-0.160	-0.145	-0.145	-0.160	
2	40%	0.097	0.000	0.097	0.000	-0.097	-0.106	-0.097	-0.097	-0.106	-0.145
3				0.012	0.012	0.256	0.244	0.244	0.243	0.219	0.218	-0.097
4				0.012	0.012	0.262	0.250	0.250	0.248	0.223	0.222	0.244
5				0.012	0.012	0.267	0.255	0.255	0.254	0.228	0.227	0.250
6				0.012	0.012	0.272	0.260	0.260	0.259	0.233	0.232	0.255
7				0.012	0.012	0.278	0.266	0.266	0.264	0.238	0.237	0.260
8				0.012	0.012	0.283	0.271	0.271	0.270	0.243	0.242	0.266
9				0.012	0.012	0.289	0.277	0.277	0.276	0.248	0.247	0.271
10				0.012	0.012	0.295	0.283	0.283	0.281	0.253	0.252	0.277
11				0.012	0.012	0.301	0.288	0.288	0.287	0.258	0.257	0.283
12				0.012	0.012	0.307	0.294	0.294	0.293	0.264	0.263	0.288
13				0.012	0.012	0.313	0.301	0.301	0.299	0.269	0.268	0.294
14				0.012	0.012	0.319	0.307	0.307	0.306	0.275	0.274	0.301
15				0.012	0.012	0.325	0.313	0.313	0.312	0.281	0.279	0.307
16				0.012	0.012	0.332	0.320	0.320	0.319	0.287	0.285	0.313
17				0.012	0.012	0.338	0.326	0.326	0.325	0.293	0.291	0.320
18				0.012	0.012	0.345	0.333	0.333	0.332	0.299	0.297	0.326
19				0.012	0.012	0.352	0.340	0.340	0.339	0.305	0.304	0.333
20				0.012	0.012	0.359	0.347	0.347	0.346	0.311	0.310	0.340
21				0.012	0.012	0.366	0.354	0.354	0.353	0.318	0.316	0.347
22				0.012	0.012	0.374	0.362	0.362	0.360	0.324	0.323	0.354
PV @ 3.09%					**0.400**	**4.241**	**3.841**	**3.818**	**3.824**	**3.417**	**3.38**	**3.656**
FIRR							**72.5%**	**67.5%**	**72.2%**	**66.7%**	**61.8%**	**72.5%**
Sensitivity Indicator								**0.69**	**0.04**	**0.80**		
Benefit / Cost Ratio							**10.61**					
Net Present Value							**3.841**					

Financial Analysis of Solid Waste	**Pirojpur - Solid Waste Management**										
Schemes:	**6 Rickshaw-van, 15 Push-cart, 3 Transfer-station and 1 Landfill**										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	0.323								
(of which labour)		20%	0.065								
						Fees per HH per Month				5	
						Number of HHs benefited from SWM				6,893	
Annual O&M Costs		10.0%	0.032								
(of which labour)		50%	0.016								
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	0.090	0.073								
Non traded	65%	0.168	0.168			Base Financial Benefit					
Labour		0.065	0.065			Fees from SWM			BDT Million	0.41	
Total		**0.323**	**0.306**							-	
						Annual increase (real)				2.00%	
Annual O&M Costs						Taxes and Duties					
Traded	35%	0.006	0.006			Custom Duty on Traded Cost			5.50%	0.017	
Non traded	65%	0.010	0.010								
Labour		0.016	0.016								
Total		**0.032**	**0.032**								

FINANCIAL INTERNAL RATE OF RETURN

Year		**Capital Cost**	**Operating Cost**	**Total Cost**	**Financial Benefit**	**Net Benefits**	**Sensitivity**				
							Cost + 10%	**O&M+ 10%**	**Benefit - 10%**	**Cost +10% & Benefit-10%**	**ne year Dela**
1	60%	0.194	0.000	0.194	0.000	-0.194	-0.213	-0.194	-0.194	-0.213	
2	40%	0.129	0.000	0.129	0.000	-0.129	-0.142	-0.129	-0.129	-0.142	-0.194
3			0.032	0.032	0.414	0.381	0.381	0.378	0.340	0.337	-0.129
4			0.032	0.032	0.422	0.390	0.390	0.387	0.348	0.344	0.381
5			0.032	0.032	0.430	0.398	0.398	0.395	0.355	0.352	0.390
6			0.032	0.032	0.439	0.407	0.407	0.404	0.363	0.360	0.398
7			0.032	0.032	0.448	0.416	0.416	0.412	0.371	0.368	0.407
8			0.032	0.032	0.457	0.425	0.425	0.421	0.379	0.376	0.416
9			0.032	0.032	0.466	0.434	0.434	0.430	0.387	0.384	0.425
10			0.032	0.032	0.475	0.443	0.443	0.440	0.395	0.392	0.434
11			0.032	0.032	0.485	0.452	0.452	0.449	0.404	0.401	0.443
12			0.032	0.032	0.494	0.462	0.462	0.459	0.413	0.410	0.452
13			0.032	0.032	0.504	0.472	0.472	0.469	0.422	0.418	0.462
14			0.032	0.032	0.514	0.482	0.482	0.479	0.431	0.428	0.472
15			0.032	0.032	0.525	0.492	0.492	0.489	0.440	0.437	0.482
16			0.032	0.032	0.535	0.503	0.503	0.500	0.449	0.446	0.492
17			0.032	0.032	0.546	0.514	0.514	0.510	0.459	0.456	0.503
18			0.032	0.032	0.557	0.525	0.525	0.521	0.469	0.466	0.514
19			0.032	0.032	0.568	0.536	0.536	0.532	0.479	0.476	0.525
20			0.032	0.032	0.579	0.547	0.547	0.544	0.489	0.486	0.536
21			0.032	0.032	0.591	0.559	0.559	0.555	0.500	0.496	0.547
22			0.032	0.032	0.603	0.570	0.570	0.567	0.510	0.507	0.559
PV @ 3.09%				**0.757**	**6.840**	**6.083**	**6.052**	**6.038**	**5.399**	**5.32**	**5.791**
FIRR						**81.6%**	**76.0%**	**81.1%**	**74.9%**	**69.3%**	**81.6%**
Sensitivity Indicator							**0.68**	**0.06**	**0.81**		
Benefit / Cost Ratio						**9.04**					
Net Present Value						**6.083**					

	FIRR 1 Amtali Water without Climate Resilient Measures											
												BDT Million
		Capital Cost	Incremental O&M Cost	Total Outflow	Incremental Revenue	Total Inflow	Net Cash Flow	Capital Cost increased by 10%	O & M Cost increased by 10%	Incremental Revenue Decreased by 10%	Worst Scenario	One Year Delay
1	2013	25.8		25.8			-25.8	-28.4	-25.8	-25.8	-28.4	
2	2014	51.6		51.6			-51.6	-56.7	-51.6	-51.6	-56.7	-25.8
3	2015	51.6		51.6			-51.6	-56.7	-51.6	-51.6	-56.7	-51.6
4	2016		2.1	2.1	14.6	14.6	12.6	12.6	12.4	11.1	10.9	-51.6
5	2017		2.1	2.1	6.4	6.4	4.3	4.3	4.1	3.7	3.5	12.6
6	2018		2.1	2.1	6.6	6.6	4.6	4.6	4.4	3.9	3.7	4.3
7	2019		2.1	2.1	6.9	6.9	4.9	4.9	4.6	4.2	4.0	4.6
8	2020		2.1	2.1	7.2	7.2	5.2	5.2	5.0	4.4	4.2	4.9
9	2021		2.1	2.1	9.0	9.0	6.9	6.9	6.7	6.0	5.8	5.2
10	2022		2.1	2.1	9.3	9.3	7.2	7.2	7.0	6.3	6.1	6.9
11	2023		2.1	2.1	9.6	9.6	7.5	7.5	7.3	6.5	6.3	7.2
12	2024		2.1	2.1	9.9	9.9	7.8	7.8	7.6	6.8	6.6	7.5
13	2025		2.1	2.1	10.2	10.2	8.1	8.1	7.9	7.1	6.9	7.8
14	2026		2.1	2.1	12.8	12.8	10.8	10.8	10.5	9.5	9.3	8.1
15	2027		2.1	2.1	13.2	13.2	11.1	11.1	10.9	9.8	9.6	10.8
16	2028		2.1	2.1	13.5	13.5	11.5	11.5	11.3	10.1	9.9	11.1
17	2029		2.1	2.1	13.9	13.9	11.8	11.8	11.6	10.5	10.2	11.5
18	2030		2.1	2.1	14.3	14.3	12.2	12.2	12.0	10.8	10.6	11.8
19	2031		2.1	2.1	18.1	18.1	16.1	16.1	15.9	14.3	14.0	12.2
20	2032		2.1	2.1	18.5	18.5	16.5	16.5	16.3	14.6	14.4	16.1
21	2033		2.1	2.1	18.0	18.0	15.9	15.9	15.7	14.1	13.9	16.5
22	2034		2.1	2.1	18.4	18.4	16.3	16.3	16.1	14.5	14.3	15.9
23	2035		2.1	2.1	18.8	18.8	16.7	16.7	16.5	14.8	14.6	16.3
24	2036		2.1	2.1	23.5	23.5	21.4	21.4	21.2	19.0	18.8	16.7
25	2037		2.1	2.1	23.9	23.9	21.9	21.9	21.7	19.5	19.3	21.4
26	2038		2.1	2.1	24.4	24.4	22.4	22.4	22.2	19.9	19.7	21.9
27	2039		2.1	2.1	24.9	24.9	22.9	22.9	22.7	20.4	20.2	22.4
28	2040		2.1	2.1	25.4	25.4	23.3	23.3	23.1	20.8	20.6	22.9
29	2041		2.1	2.1	31.0	31.0	28.9	28.9	28.7	25.8	25.6	23.3
30	2042		2.1	2.1	31.0	31.0	28.9	28.9	28.7	25.8	25.6	28.9
31	2043		2.1	2.1	31.0	31.0	28.9	28.9	28.7	25.8	25.6	28.9
32	2044		2.1	2.1	31.0	31.0	28.9	28.9	28.7	25.8	25.6	28.9
	Total	**129.0**	**59.9**	**188.9**	**495.2**	**495.2**	**306.3**	**293.4**	**300.3**	**256.8**	**237.9**	**277.4**
	NPV @ 3.09%	**120.6**	**35.8**	**156.4**	**263.8**	**263.8**	**107.4**	**95.3**	**103.8**	**81.0**	**65.4**	**96.5**
				FIRR	**SI**	**SV**						
	Base Case			7.1%								
	Capital Costs Increased by 10		10%	6.4%	1.01	99%						
	O&M Costs Increased by 10%		10%	7.0%	0.18	541%						
	Incremental Revenue Decrea		10%	6.2%	1.37	73%						
	Worst Scenario			5.5%								
	One Year Delay			6.9%								

	FIRR 1 Galachipa Water without Climate Resilient Measures											
												BDT Million
		Capital Cost	Incremental O&M Cost	Total Outflow	Incremental Revenue	Total Inflow	Net Cash Flow	Capital Cost increased by 10%	O & M Cost increased by 10%	Incremental Revenue Decreased by 10%	Worst Scenario	One Year Delay
1	2013	24.1		24.1			-24.1	-26.5	-24.1	-24.1	-26.5	
2	2014	48.2		48.2			-48.2	-53.0	-48.2	-48.2	-53.0	-24.1
3	2015	48.2		48.2			-48.2	-53.0	-48.2	-48.2	-53.0	-48.2
4	2016		1.6	1.6	9.3	9.3	7.8	7.8	7.6	6.8	6.7	-48.2
5	2017		1.6	1.6	8.3	8.3	6.7	6.7	6.5	5.9	5.7	7.8
6	2018		1.6	1.6	8.9	8.9	7.3	7.3	7.1	6.4	6.3	6.7
7	2019		1.6	1.6	9.5	9.5	7.9	7.9	7.8	7.0	6.8	7.3
8	2020		1.6	1.6	10.3	10.3	8.7	8.7	8.5	7.6	7.5	7.9
9	2021		1.6	1.6	11.6	11.6	10.0	10.0	9.8	8.8	8.7	8.7
10	2022		1.6	1.6	11.4	11.4	9.8	9.8	9.7	8.7	8.5	10.0
11	2023		1.6	1.6	11.7	11.7	10.1	10.1	10.0	8.9	8.8	9.8
12	2024		1.6	1.6	12.0	12.0	10.4	10.4	10.2	9.2	9.0	10.1
13	2025		1.6	1.6	12.3	12.3	10.7	10.7	10.5	9.4	9.3	10.4
14	2026		1.6	1.6	13.3	13.3	11.7	11.7	11.5	10.3	10.2	10.7
15	2027		1.6	1.6	13.6	13.6	12.0	12.0	11.8	10.6	10.4	11.7
16	2028		1.6	1.6	13.9	13.9	12.3	12.3	12.1	10.9	10.7	12.0
17	2029		1.6	1.6	14.2	14.2	12.6	12.6	12.4	11.2	11.0	12.3
18	2030		1.6	1.6	14.5	14.5	12.9	12.9	12.7	11.4	11.3	12.6
19	2031		1.6	1.6	15.7	15.7	14.1	14.1	13.9	12.5	12.3	12.9
20	2032		1.6	1.6	15.9	15.9	14.3	14.3	14.1	12.7	12.5	14.1
21	2033		1.6	1.6	15.1	15.1	13.5	13.5	13.3	12.0	11.8	14.3
22	2034		1.6	1.6	15.3	15.3	13.7	13.7	13.6	12.2	12.0	13.5
23	2035		1.6	1.6	15.5	15.5	13.9	13.9	13.8	12.4	12.2	13.7
24	2036		1.6	1.6	16.6	16.6	15.1	15.1	14.9	13.4	13.2	13.9
25	2037		1.6	1.6	16.9	16.9	15.3	15.3	15.1	13.6	13.4	15.1
26	2038		1.6	1.6	17.1	17.1	15.5	15.5	15.3	13.8	13.6	15.3
27	2039		1.6	1.6	17.3	17.3	15.7	15.7	15.6	14.0	13.8	15.5
28	2040		1.6	1.6	17.5	17.5	15.9	15.9	15.8	14.2	14.0	15.7
29	2041		1.6	1.6	18.8	18.8	17.2	17.2	17.0	15.3	15.2	15.9
30	2042		1.6	1.6	19.0	19.0	17.4	17.4	17.3	15.5	15.4	17.2
31	2043		1.6	1.6	19.3	19.3	17.7	17.7	17.5	15.8	15.6	17.4
32	2044		1.6	1.6	19.5	19.5	17.9	17.9	17.8	16.0	15.8	17.7
	Total	**120.4**	**46.3**	**166.7**	**414.3**	**414.3**	**247.6**	**235.5**	**242.9**	**206.1**	**189.5**	**229.6**
	NPV @ 3.09%	**112.6**	**27.7**	**140.3**	**233.4**	**233.4**	**93.1**	**81.8**	**90.3**	**69.7**	**55.7**	**86.3**
				FIRR	**SI**	**SV**						
	Base Case			7.4%								
	Capital Costs Increased by 10		10%	6.7%	1.14	88%						
	O&M Costs Increased by 10%		10%	7.3%	0.16	612%						
	Incremental Revenue Decreas		10%	6.5%	1.48	67%						
	Worst Scenario			5.6%								
	One Year Delay			7.3%								

	FIRR 1 Mathbaria Water without Climate Resilient Measures											
												BDT Million
		Capital Cost	Incremental O&M Cost	Total Outflow	Incremental Revenue	Total Inflow	Net Cash Flow	Capital Cost increased by 10%	O & M Cost increased by 10%	Incremental Revenue Decreased by 10%	Worst Scenario	One Year Delay
1	2013	62.6		62.6			-62.6	-68.9	-62.6	-62.6	-68.9	
2	2014	125.2		125.2			-125.2	-137.7	-125.2	-125.2	-137.7	-62.6
3	2015	125.2		125.2			-125.2	-137.7	-125.2	-125.2	-137.7	-125.2
4	2016		3.9	3.9	15.1	15.1	11.2	11.2	10.8	9.7	9.3	-125.2
5	2017		3.9	3.9	11.5	11.5	7.6	7.6	7.2	6.5	6.1	11.2
6	2018		3.9	3.9	12.1	12.1	8.3	8.3	7.9	7.0	6.7	7.6
7	2019		3.9	3.9	12.8	12.8	8.9	8.9	8.5	7.6	7.3	8.3
8	2020		3.9	3.9	12.7	12.7	8.8	8.8	8.4	7.5	7.2	8.9
9	2021		3.9	3.9	14.9	14.9	11.0	11.0	10.7	9.6	9.2	8.8
10	2022		3.9	3.9	15.3	15.3	11.4	11.4	11.0	9.9	9.5	11.0
11	2023		3.9	3.9	15.6	15.6	11.7	11.7	11.3	10.2	9.8	11.4
12	2024		3.9	3.9	16.0	16.0	12.1	12.1	11.7	10.5	10.1	11.7
13	2025		3.9	3.9	16.3	16.3	12.4	12.4	12.0	10.8	10.4	12.1
14	2026		3.9	3.9	19.1	19.1	15.3	15.3	14.9	13.3	13.0	12.4
15	2027		3.9	3.9	19.5	19.5	15.7	15.7	15.3	13.7	13.3	15.3
16	2028		3.9	3.9	20.0	20.0	16.1	16.1	15.7	14.1	13.7	15.7
17	2029		3.9	3.9	20.4	20.4	16.5	16.5	16.1	14.5	14.1	16.1
18	2030		3.9	3.9	22.0	22.0	18.2	18.2	17.8	16.0	15.6	16.5
19	2031		3.9	3.9	25.4	25.4	21.5	21.5	21.1	19.0	18.6	18.2
20	2032		3.9	3.9	25.7	25.7	21.8	21.8	21.4	19.2	18.9	21.5
21	2033		3.9	3.9	27.0	27.0	23.1	23.1	22.7	20.4	20.0	21.8
22	2034		3.9	3.9	27.3	27.3	23.4	23.4	23.0	20.7	20.3	23.1
23	2035		3.9	3.9	27.5	27.5	23.7	23.7	23.3	20.9	20.5	23.4
24	2036		3.9	3.9	31.8	31.8	28.0	28.0	27.6	24.8	24.4	23.7
25	2037		3.9	3.9	32.2	32.2	28.3	28.3	27.9	25.1	24.7	28.0
26	2038		3.9	3.9	32.5	32.5	28.6	28.6	28.2	25.4	25.0	28.3
27	2039		3.9	3.9	34.5	34.5	30.6	30.6	30.3	27.2	26.8	28.6
28	2040		3.9	3.9	34.4	34.4	30.5	30.5	30.1	27.0	26.6	30.6
29	2041		3.9	3.9	39.7	39.7	35.9	35.9	35.5	31.9	31.5	30.5
30	2042		3.9	3.9	40.2	40.2	36.3	36.3	35.9	32.3	31.9	35.9
31	2043		3.9	3.9	40.6	40.6	36.7	36.7	36.3	32.6	32.2	36.3
32	2044		3.9	3.9	41.0	41.0	37.1	37.1	36.7	33.0	32.6	36.7
	Total	**313.0**	**112.6**	**425.6**	**703.1**	**703.1**	**277.5**	**246.2**	**266.2**	**207.2**	**164.6**	**240.4**
	NPV @ 3.09%	**292.8**	**67.2**	**360.0**	**380.4**	**380.4**	**20.3**	**-8.9**	**13.6**	**-17.7**	**-53.7**	**6.3**
				FIRR	**SI**	**SV**						
	Base Case			3.5%								
	Capital Costs Increased by 10%		10%	2.9%	1.91	52%						
	O&M Costs Increased by 10%		10%	3.4%	0.39	258%						
	Incremental Revenue Decreased by 10%		10%	2.7%	2.76	36%						
	Worst Scenario			2.1%								
	One Year Delay			3.2%								

Financial Analysis of Sanitation	Amtali	without CCR									
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	8.580								
(of which labour)											
						Fees per person using PL				2	
						Number of Persons benefited from PL				800	
Annual O&M Costs		5%	0.386								
(of which labour)											
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.402	1.955								
Non traded	65%	4.462	4.462			Base Financial Benefit					
Labour		1.716	1.716			Fees from Latrines and Toilets			BDT Millio	0.41	
Total		**8.580**	**8.133**			Fees from Desludging Machine			BDT Millio	1.530	
						Annual increase (real)				2.00%	
Annual O&M Costs											
Traded	35%	0.068	0.068								
Non traded	65%	0.125	0.125								
Labour		0.193	0.193								
Total		**0.386**	**0.386**								

FINANCIAL INTERNAL RATE OF RETURN

BDT Million

Year		Capital Cost	Operating Cost	Total Cost	Financial Benefit	Net Benefits	Sensitivity				
							Cost + 10%	O&M+ 10%	Benefit - 10%	Cost +10% & Benefit-10%	ne year Dela
1	60%	5.148	0.000	5.148	0.000	-5.148	-5.663	-5.148	-5.148	-5.663	
2	40%	3.432	0.000	3.432	0.000	-3.432	-3.775	-3.432	-3.432	-3.775	-5.148
3			0.386	0.386	1.939	1.553	1.553	1.514	1.359	1.320	-3.432
4			0.386	0.386	1.978	1.591	1.591	1.553	1.394	1.355	1.553
5			0.386	0.386	2.017	1.631	1.631	1.592	1.429	1.391	1.591
6			0.386	0.386	2.057	1.671	1.671	1.633	1.466	1.427	1.631
7			0.386	0.386	2.099	1.712	1.712	1.674	1.503	1.464	1.671
8			0.386	0.386	2.141	1.754	1.754	1.716	1.540	1.502	1.712
9			0.386	0.386	2.183	1.797	1.797	1.759	1.579	1.540	1.754
10			0.386	0.386	2.227	1.841	1.841	1.802	1.618	1.580	1.797
11			0.386	0.386	2.272	1.885	1.885	1.847	1.658	1.620	1.841
12			0.386	0.386	2.317	1.931	1.931	1.892	1.699	1.661	1.885
13			0.386	0.386	2.363	1.977	1.977	1.939	1.741	1.702	1.931
14			0.386	0.386	2.411	2.025	2.025	1.986	1.783	1.745	1.977
15			0.386	0.386	2.459	2.073	2.073	2.034	1.827	1.788	2.025
16			0.386	0.386	2.508	2.122	2.122	2.083	1.871	1.833	2.073
17			0.386	0.386	2.558	2.172	2.172	2.133	1.916	1.878	2.122
18			0.386	0.386	2.609	2.223	2.223	2.185	1.962	1.924	2.172
19			0.386	0.386	2.662	2.275	2.275	2.237	2.009	1.971	2.223
20			0.386	0.386	2.715	2.329	2.329	2.290	2.057	2.019	2.275
21			0.386	0.386	2.769	2.383	2.383	2.344	2.106	2.067	2.329
22			0.386	0.386	2.824	2.438	2.438	2.400	2.156	2.117	2.383
PV @ 3.09%				**13.583**	**32.053**	**18.470**	**17.647**	**17.934**	**15.264**	**13.906**	**17.221**
EIRR						**17.8%**	**16.2%**	**17.4%**	**15.7%**	**13.9%**	**17.6%**
Sensitivity Indicator							**0.88**	**0.21**	**1.18**		
Benefit / Cost Ratio						**2.36**					
Net Present Value						**18.470**					

Financial Analysis of Sanitation	Galachipa without CCR										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	9.870								
(of which labour)											
						Fees per person using PL				2	
						Number of Persons benefited from PL				1,200	
Annual O&M Costs		5%	0.444								
(of which labour)											
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.764	2.249								
Non traded	65%	5.132	5.132			Base Financial Benefit					
Labour		1.974	1.974			Fees from Latrines and Toilets		BDT Million		0.61	
Total		**9.870**	**9.355**			Fees from Desludging Machine		BDT Million		1.530	
						Annual increase (real)				2.00%	
Annual O&M Costs											
Traded	35%	0.078	0.078								
Non traded	65%	0.144	0.144								
Labour		0.222	0.222								
Total		**0.444**	**0.444**								

FINANCIAL INTERNAL RATE OF RETURN

BDT Million

Year		Capital Cost	Operating Cost	Total Cost	Financial Benefit	Net Benefits	Sensitivity				
							Cost + 10%	O&M+ 10%	Benefit - 10%	Cost +10% & Benefit-10%	ne year Dela
1	60%	5.922	0.000	5.922	0.000	-5.922	-6.514	-5.922	-5.922	-6.514	
2	40%	3.948	0.000	3.948	0.000	-3.948	-4.343	-3.948	-3.948	-4.343	-5.922
3			0.444	0.444	2.143	1.699	1.699	1.654	1.484	1.440	-3.948
4			0.444	0.444	2.186	1.742	1.742	1.697	1.523	1.479	1.699
5			0.444	0.444	2.229	1.785	1.785	1.741	1.562	1.518	1.742
6			0.444	0.444	2.274	1.830	1.830	1.785	1.602	1.558	1.785
7			0.444	0.444	2.319	1.875	1.875	1.831	1.643	1.599	1.830
8			0.444	0.444	2.366	1.922	1.922	1.877	1.685	1.641	1.875
9			0.444	0.444	2.413	1.969	1.969	1.925	1.728	1.683	1.922
10			0.444	0.444	2.461	2.017	2.017	1.973	1.771	1.727	1.969
11			0.444	0.444	2.511	2.067	2.067	2.022	1.815	1.771	2.017
12			0.444	0.444	2.561	2.117	2.117	2.072	1.861	1.816	2.067
13			0.444	0.444	2.612	2.168	2.168	2.124	1.907	1.862	2.117
14			0.444	0.444	2.664	2.220	2.220	2.176	1.954	1.909	2.168
15			0.444	0.444	2.718	2.274	2.274	2.229	2.002	1.957	2.220
16			0.444	0.444	2.772	2.328	2.328	2.283	2.051	2.006	2.274
17			0.444	0.444	2.827	2.383	2.383	2.339	2.101	2.056	2.328
18			0.444	0.444	2.884	2.440	2.440	2.395	2.151	2.107	2.383
19			0.444	0.444	2.942	2.498	2.498	2.453	2.203	2.159	2.440
20			0.444	0.444	3.001	2.556	2.556	2.512	2.256	2.212	2.498
21			0.444	0.444	3.061	2.616	2.616	2.572	2.310	2.266	2.556
22			0.444	0.444	3.122	2.678	2.678	2.633	2.365	2.321	2.616
PV @ 3.09%				**15.626**	**35.427**	**19.801**	**18.855**	**19.185**	**16.259**	**14.70**	**18.431**
EIRR						**17.0%**	**15.5%**	**16.6%**	**14.9%**	**13.2%**	**16.8%**
Sensitivity Indicator							**0.89**	**0.22**	**1.21**		
Benefit / Cost Ratio						**2.27**					
Net Present Value						**19.801**					

Financial Analysis of Sanitation	Mathbaria Without CCR										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	9.870								
(of which labour)											
						Fees per person using CL and PL				2	
						No. of Households benefited				1,200	
Annual O&M Costs		5%	0.444								
(of which labour)											
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.764	2.249								
Non traded	65%	5.132	5.132			Base Financial Benefit					
Labour		1.974	1.974			Fees from Latrines and Toilets			BDT Million	0.61	
Total		**9.870**	**9.355**			Fees from Desludging Machine			BDT Million	1.530	
						Annual increase (real)				2.00%	
Annual O&M Costs											
Traded	35%	0.078	0.078								
Non traded	65%	0.144	0.144								
Labour		0.222	0.222								
Total		**0.444**	**0.444**								

FINANCIAL INTERNAL RATE OF RETURN

BDT Million

Year		Capital Cost	Operating Cost	Total Cost	Financial Benefit	Net Benefits	Sensitivity				
							Cost + 10%	O&M+ 10%	Benefit - 10%	Cost +10% & Benefit-10%	ne year Dela
1	60%	5.922	0.000	5.922	0.000	-5.922	-6.514	-5.922	-5.922	-6.514	
2	40%	3.948	0.000	3.948	0.000	-3.948	-4.343	-3.948	-3.948	-4.343	-5.922
3			0.444	0.444	2.143	1.699	1.699	1.654	1.484	1.440	-3.948
4			0.444	0.444	2.186	1.742	1.742	1.697	1.523	1.479	1.699
5			0.444	0.444	2.229	1.785	1.785	1.741	1.562	1.518	1.742
6			0.444	0.444	2.274	1.830	1.830	1.785	1.602	1.558	1.785
7			0.444	0.444	2.319	1.875	1.875	1.831	1.643	1.599	1.830
8			0.444	0.444	2.366	1.922	1.922	1.877	1.685	1.641	1.875
9			0.444	0.444	2.413	1.969	1.969	1.925	1.728	1.683	1.922
10			0.444	0.444	2.461	2.017	2.017	1.973	1.771	1.727	1.969
11			0.444	0.444	2.511	2.067	2.067	2.022	1.815	1.771	2.017
12			0.444	0.444	2.561	2.117	2.117	2.072	1.861	1.816	2.067
13			0.444	0.444	2.612	2.168	2.168	2.124	1.907	1.862	2.117
14			0.444	0.444	2.664	2.220	2.220	2.176	1.954	1.909	2.168
15			0.444	0.444	2.718	2.274	2.274	2.229	2.002	1.957	2.220
16			0.444	0.444	2.772	2.328	2.328	2.283	2.051	2.006	2.274
17			0.444	0.444	2.827	2.383	2.383	2.339	2.101	2.056	2.328
18			0.444	0.444	2.884	2.440	2.440	2.395	2.151	2.107	2.383
19			0.444	0.444	2.942	2.498	2.498	2.453	2.203	2.159	2.440
20			0.444	0.444	3.001	2.556	2.556	2.512	2.256	2.212	2.498
21			0.444	0.444	3.061	2.616	2.616	2.572	2.310	2.266	2.556
22			0.444	0.444	3.122	2.678	2.678	2.633	2.365	2.321	2.616
PV @ 3.09%				**15.626**	**35.427**	**19.801**	**18.855**	**19.185**	**16.259**	**14.70**	**18.431**
FIRR						**17.0%**	**15.5%**	**16.6%**	**14.9%**	**13.2%**	**16.8%**
Sensitivity Indicator							**0.89**	**0.22**	**1.21**		
Benefit / Cost Ratio						**2.27**					
Net Present Value						**19.801**					

Financial Analysis of Sanitation	Pirojpur without CCR										
Million Taka (April 2013 Constant Prices)											
Base Prices						**Financial Benefits**					
Capital cost (Base + Physical Contingencies)		Million Tk.	7.290								
(of which labour)											
						Fees per person using CL and PL				2	
						No. of Households benefited				400	
Annual O&M Costs		5%	0.328								
(of which labour)											
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**								
Investment Cost											
Traded	35%	2.041	1.661								
Non traded	65%	3.791	3.791			Base Financial Benefit					
Labour		1.458	1.458			Fees from Latrines and Toilets			BDT Million	0.20	
Total		**7.290**	**6.910**			Fees from Desludging Machine			BDT Million	1.530	
						Annual increase (real)				2.00%	
Annual O&M Costs											
Traded	35%	0.057	0.057								
Non traded	65%	0.107	0.107								
Labour		0.164	0.164								
Total		**0.328**	**0.328**								

FINANCIAL INTERNAL RATE OF RETURN

BDT Million

Year		Capital Cost	Operating Cost	Total Cost	Financial Benefit	Net Benefits	Sensitivity				
							Cost + 10%	O&M+ 10%	Benefit - 10%	Cost +10% & Benefit-10%	ne year Dela
1	60%	4.374	0.000	4.374	0.000	-4.374	-4.811	-4.374	-4.374	-4.811	
2	40%	2.916	0.000	2.916	0.000	-2.916	-3.208	-2.916	-2.916	-3.208	-4.374
3			0.328	0.328	1.735	1.407	1.407	1.374	1.233	1.200	-2.916
4			0.328	0.328	1.769	1.441	1.441	1.409	1.264	1.232	1.407
5			0.328	0.328	1.805	1.477	1.477	1.444	1.296	1.263	1.441
6			0.328	0.328	1.841	1.513	1.513	1.480	1.329	1.296	1.477
7			0.328	0.328	1.878	1.550	1.550	1.517	1.362	1.329	1.513
8			0.328	0.328	1.915	1.587	1.587	1.554	1.396	1.363	1.550
9			0.328	0.328	1.954	1.625	1.625	1.593	1.430	1.397	1.587
10			0.328	0.328	1.993	1.665	1.665	1.632	1.465	1.433	1.625
11			0.328	0.328	2.032	1.704	1.704	1.672	1.501	1.468	1.665
12			0.328	0.328	2.073	1.745	1.745	1.712	1.538	1.505	1.704
13			0.328	0.328	2.115	1.787	1.787	1.754	1.575	1.542	1.745
14			0.328	0.328	2.157	1.829	1.829	1.796	1.613	1.580	1.787
15			0.328	0.328	2.200	1.872	1.872	1.839	1.652	1.619	1.829
16			0.328	0.328	2.244	1.916	1.916	1.883	1.692	1.659	1.872
17			0.328	0.328	2.289	1.961	1.961	1.928	1.732	1.699	1.916
18			0.328	0.328	2.335	2.007	2.007	1.974	1.773	1.740	1.961
19			0.328	0.328	2.381	2.053	2.053	2.021	1.815	1.782	2.007
20			0.328	0.328	2.429	2.101	2.101	2.068	1.858	1.825	2.053
21			0.328	0.328	2.478	2.150	2.150	2.117	1.902	1.869	2.101
22			0.328	0.328	2.527	2.199	2.199	2.166	1.946	1.914	2.150
PV @ 3.09%				**11.541**	**28.679**	**17.138**	**16.439**	**16.682**	**14.270**	**13.12**	**16.012**
FIRR						**18.9%**	**17.3%**	**18.5%**	**16.7%**	**14.9%**	**18.7%**
Sensitivity Indicator							**0.86**	**0.19**	**1.15**		
Benefit / Cost Ratio						**2.48**					
Net Present Value						**17.138**					

ANNEX 3.2

1. Amtali Pourashava financial performance

Taka Million

Head of Accounts	Actual 2007-08	2008-09	2009-10	2010-11	2011-12
Recurring Income					
Holding tax- current	0.6	0.6	0.4	0.6	0.8
Holding tax- arrears					
Immovable property transfer fee	0.4	0.4	0.7	0.9	1.9
Professional license/ fees	0.3	0.4	0.4	0.5	0.6
Income from properties	3.0	3.1	4.0	2.1	6.6
Water User Charges	1.0	1.6	2.5	2.8	4.0
Others	0.2	0.1	0.3	0.1	0.2
Total Recurring Income	**5.4**	**6.1**	**8.4**	**6.9**	**14.2**
GoB Revenue / Other Grant	0.3	0.2	0.2	0.2	0.2
Additional Income _UGIIP					
Total Income	**5.7**	**6.3**	**8.6**	**7.2**	**14.4**
Expenditure					
Establishment cost					
Honoraria	0.3	0.3	0.3	3.0	0.8
Salaries and allowances	1.3	1.7	2.1	2.7	3.7
General administration	0.8	1.0	1.9	1.3	2.2
Electricity	0.1	0.1	0.1	0.1	0.1
Other costs and disbursements	2.2	1.7	1.4	0.4	3.8
Water Operation Maintenance	0.6	1.2	1.7	2.1	2.6
Total Operating Expenses	**5.3**	**6.0**	**7.5**	**9.6**	**13.1**
Revenue Surplus (deficit)	0.4	0.4	1.1	-2.5	1.3
Operating Ratio	***0.9***	***0.9***	***0.9***	***1.3***	***0.9***

Source: Pourashave financial statements.

2. Galachipa Pourashava financial performance

Taka Million

Head of Accounts	Actual 2007-08	2008-09	2009-10	2010-11	2011-12
Recurring Income					
Holding tax- current					
Holding tax- arrears					
Total Collection - Holding Tax	0.5	0.9	0.6	0.8	0.9
Immovable property transfer fee	0.4	0.5	0.4	1.1	1.6
Professional license/ fees	0.6	0.3	0.4	0.4	0.4
Income from properties	3.4	2.7	2.2	4.1	6.7
Water User Charges	1.7	1.9	2.5	3.0	4.0
Others	0.2	0.2	0.2	0.3	0.2
Total Recurring Income	**6.7**	**6.5**	**6.3**	**9.6**	**13.8**
GoB Revenue / Other Grant	0.2	0.2	0.2	0.2	0.2
Additional Income _UGIIP					
Total Income	7.0	6.7	6.4	9.9	14.0
Expenditure					
Establishment cost					
Honoraria	0.2	0.2	0.2	0.2	1.0
Salaries and allowances	1.7	1.7	2.4	3.5	3.1
General administration	0.6	0.6	0.6	1.0	1.1
Electricity	0.0	0.0	0.0	0.0	0.0
Other costs and disbursements	0.8	1.4	2.4	2.5	3.2
Water operation maintenance	1.1	1.6	1.9	4.7	2.8
Total Operating Expenses	**4.4**	**5.4**	**7.4**	**11.9**	**11.3**
Revenue Surplus (deficit)	2.6	1.3	-1.0	-2.0	2.7
Operating Ratio	***0.6***	***0.8***	***1.2***	***1.2***	***0.8***

Source: Pourashave financial statements.

3. Pirojpur Pourashava financial performance

Taka Million

Head of Accounts	Actual 2007-08	2008-09	2009-10	2010-11	2011-12
Recurring Income					
Holding tax- current					
Holding tax- arrears					
Total Collection - Holding Tax	6.0	4.2	4.7	5.1	5.9
Immovable property transfer fee	2.5	3.2	3.9	7.0	10.5
Professional license/ fees	2.5	2.0	2.6	2.7	3.8
Income from properties	4.5	2.5	3.5	3.4	3.4
Water User Charges	7.9	10.5	8.8	9.7	12.3
Others	0.3	0.3	0.3	0.2	0.4
Total Recurring Income	**23.7**	**22.7**	**23.7**	**28.0**	**36.4**
GoB Revenue / Other Grant	13.0	0.5	0.4	0.2	0.3
Additional Income _UGIIP					
Total Income	**36.8**	**23.2**	**24.1**	**28.3**	**36.7**
Expenditure					
Establishment cost					
Honoraria	0.3	0.1	0.2	0.1	0.4
Salaries and allowances	7.5	6.9	8.0	9.1	11.0
General administration	1.7	2.1	2.8	3.4	4.4
Electricity	1.4	0.6	0.4	0.4	0.4
Other costs and disbursements	14.0	2.5	2.8	3.4	4.5
Water operation maintenance	7.8	11.3	7.7	8.2	12.5
Total Operating Expenses	**38.0**	**32.0**	**26.8**	**26.7**	**36.6**
Revenue Surplus (deficit)	-1.2	-8.8	-2.6	1.6	0.0
Operating Ratio	***1.0***	***1.4***	***1.1***	***0.9***	***1.0***

Source: Pourashave financial statements.

4. Mathbaria Pourashava financial performance

Taka Million

Head of Accounts	Actual 2007-08	2008-09	2009-10	2010-11	2011-12
Recurring Income					
Holding tax- current					
Holding tax- arrears					
Total Collection - Holding Tax	2.1	2.6	1.3	2.7	8.4
Immovable property transfer fee	1.2	1.7	2.2	3.0	5.7
Professional license/ fees	0.8	0.7	0.6	1.1	1.6
Income from properties	4.5	6.1	6.3	8.7	7.4
Others	0.2	0.2	0.7	0.2	0.6
Total Recurring Income	**8.8**	**11.3**	**11.1**	**15.7**	**23.8**
GoB Revenue / Other Grant	5.1	0.2	0.3	0.3	0.2
Additional Income – UGIIP					
Total Income	**13.9**	**11.5**	**11.3**	**16.0**	**24.0**
Expenditure					
Establishment cost					
Honoraria	0.3	0.3	0.2	2.3	1.7
Salaries and allowances	3.5	4.2	4.4	6.2	11.1
General administration	2.2	1.5	0.5	1.1	1.8
Electricity	0.2	0.0	0.2	0.1	0.6
Other costs and disbursements	8.3	4.9	5.4	6.0	8.6
O&M of UGIIP Projects					
Total Operating Expenses	**19.2**	**14.6**	**16.8**	**19.0**	**24.8**
Revenue Surplus (deficit)	-5.3	-3.1	-5.5	-3.0	-0.8
Operating Ratio	***1.4***	***1.3***	***1.5***	***1.2***	***1.0***

Source: Pourashave financial statements.

ANNEX 3.3

Amtali Pourashava												
Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
A. Amtali Pourashava (Revenue Account)												
Opening Balance		**5.1**	**10.4**	**16.6**	**23.4**	**30.9**	**39.3**	**82.4**	**147.1**	**216.7**	**311.7**	**350.6**
Revenue Income												
Tax Revenue	0.8	0.6	0.9	1.0	1.1	1.2	1.2	1.4	1.9	2.2	2.6	2.7
Non Tax Revenue	13.4	14.8	16.3	18.1	20.0	22.1	24.4	36.4	54.3	73.3	98.9	109.4
Grants & Contribution	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4
Total- Revenue Income	**14.4**	**15.6**	**17.5**	**19.3**	**21.2**	**23.5**	**25.8**	**38.0**	**56.4**	**75.8**	**101.9**	**112.4**
Revenue Expenditure												
Salaries & Allowances	6.6	7.3	8.0	8.8	9.7	10.7	11.8	17.2	25.2	33.6	44.7	49.1
Operation and Maintenance	2.7	3.0	3.3	3.6	4.0	4.4	4.8	7.0	10.3	13.7	18.3	20.1
Debt Servicing												
Total- Revenue Expenditure	**9.4**	**10.3**	**11.3**	**12.5**	**13.7**	**15.1**	**16.6**	**24.3**	**35.5**	**47.3**	**62.9**	**69.2**
Revenue Surplus /(Deficit)	5.1	5.3	6.2	6.8	7.5	8.4	9.2	13.7	20.9	28.5	39.0	43.2
Closing Balance	**5.1**	**10.4**	**16.6**	**23.4**	**30.9**	**39.3**	**48.5**	**96.1**	**168.0**	**245.2**	**350.6**	**393.8**

Amtali Pourashava												
Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
B. Amtali Pourashava (CTIIP Account) WITH CCR												
Opening Balance				**(5.5)**	**(18.7)**	**(31.3)**	**(31.4)**	**(81.2)**	**(136.9)**	**(185.1)**	**(241.5)**	**(258.1)**
Sources of Fund												
Debt Drawdown			5.5	13.4	12.7							
Govt. Grant			19.3	47.0	44.3							
Subsidy												
- Equity												
- Debt Servicing								1.7	1.7	1.7	1.6	1.6
Water Supply												
- Income -Existing												
- Income - Incremental						5.3	5.6	8.8	10.1	14.2	19.9	20.4
-New Connection Fees				0.2	0.1	9.3	0.8	0.6	0.6	0.6	0.8	0.8
Public Toilets						2.3	2.3	2.5	2.7	2.9	3.1	3.1
Solid Waste						0.2	0.2	0.3	0.3	0.3	0.3	0.3
Total- Inflow			**24.8**	**60.6**	**57.1**	**17.1**	**9.0**	**13.9**	**15.3**	**19.7**	**25.7**	**26.2**
Disposition of Funds												
Equity Drawdown			2.8	6.7	6.3							
Project Capex			27.5	67.1	63.3							
Water Supply, Sanitation and Solid waste												
- Debt - Principal								1.6	1.6	1.6	1.6	1.6
- Debt - Interest								0.1	0.1	0.1	0.1	0.1
Water Supply												
- Expenditure - Existing												
- Expenditure - Incremental						8.9	9.4	11.5	13.8	15.8	17.9	18.6
Drainage						0.4	0.4	0.6	0.7	2.2	2.7	2.8
Roads												
Bridges						0.6	0.6	0.8	1.0	1.2	1.4	1.5
Sanitation						0.0	0.0	0.0	0.0	0.1	0.1	0.1
Solid Waste						6.9	9.4	11.5	13.8	15.8	17.9	18.6
Cyclone Shelters						0.3	0.3	0.4	0.5	0.6	0.7	0.8
Total- Outflow			**30.3**	**73.9**	**69.6**	**17.2**	**20.2**	**26.5**	**31.6**	**37.3**	**42.3**	**44.1**
Closing Balance			**(5.5)**	**(18.7)**	**(31.3)**	**(31.4)**	**(42.7)**	**(93.8)**	**(153.1)**	**(202.7)**	**(258.1)**	**(276.0)**
Cumulative Closing Balance	**5.1**	**10.4**	**11.1**	**4.6**	**(0.4)**	**7.9**	**5.8**	**2.3**	**14.9**	**42.5**	**92.5**	**117.8**

Galachipa Pourashava												
Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
A. Galachipa Pourashava (Revenue Account)												
Opening Balance		**5.9**	**11.8**	**18.1**	**24.5**	**31.0**	**37.8**	**65.0**	**91.2**	**107.7**	**118.2**	**119.8**
Revenue Income												
Tax Revenue	0.9	0.7	1.0	1.0	1.1	1.3	1.2	1.5	2.0	2.4	2.8	2.9
Non Tax Revenue	12.9	13.9	14.9	15.9	17.1	18.3	19.6	26.0	34.5	42.6	52.8	56.7
Grants & Contribution	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.4	0.4
Total- Revenue Income	**14.0**	**14.7**	**16.1**	**17.2**	**18.4**	**19.8**	**21.1**	**27.7**	**36.7**	**45.3**	**56.0**	**60.0**
Revenue Expenditure												
Salaries & Allowances	5.3	5.8	6.4	7.0	7.7	8.5	9.3	13.6	20.0	26.6	35.4	38.9
Operation and Maintenance	2.8	3.1	3.4	3.8	4.1	4.6	5.0	7.3	10.8	14.3	19.1	21.0
Debt Servicing												
Total- Revenue Expenditure	**8.1**	**8.9**	**9.8**	**10.8**	**11.8**	**13.0**	**14.3**	**21.0**	**30.7**	**40.9**	**54.4**	**59.9**
Revenue Surplus /(Deficit)	5.9	5.8	6.3	6.4	6.6	6.8	6.8	6.7	6.0	4.4	1.5	0.1
Closing Balance	**5.9**	**11.8**	**18.1**	**24.5**	**31.0**	**37.8**	**44.5**	**71.8**	**97.3**	**112.2**	**119.8**	**119.9**

Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
B. Galachipa Pourashava (CTIIP Account) with Climate Resilient Measures												
Opening Balance				**(5.1)**	**(18.2)**	**(30.4)**	**(27.4)**	**(23.6)**	**(18.9)**	**(15.9)**	**(14.6)**	**(14.1)**
Sources of Fund												
Debt Drawdown			5.1	13.1	12.2							
Govt. Grant			17.9	45.9	42.8							
Subsidy												
- Equity												
- Debt Servicing								1.4	1.4	1.4	1.3	1.3
Water Supply												
- Income -Existing	1.6	1.6	1.7	1.7	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
- Income - Incremental						7.2	7.7	11.0	12.1	13.7	15.5	15.7
-New Connection Fees				0.1	0.0	2.2	0.5	0.6	0.2	0.2	0.2	0.2
Public Toilets						2.5	2.6	2.8	3.0	3.2	3.4	3.5
Solid Waste						0.3	0.3	0.3	0.4	0.4	0.4	0.4
Total- Inflow			**23.1**	**59.2**	**55.1**	**12.2**	**11.1**	**16.1**	**17.0**	**18.8**	**20.8**	**21.1**
Disposition of Funds												
Equity Drawdown			2.6	6.6	6.1							
Project Capex			25.6	65.6	61.2							
Water Supply, Sanitation and Solid waste												
- Debt - Principal								1.3	1.3	1.3	1.3	1.3
- Debt - Interest								0.1	0.1	0.1	0.0	0.0
Water Supply												
- Expenditure - Existing	2.8	2.9	3.1	3.2	3.4	7.1	4.0	4.9	5.8	6.6	7.5	7.8
- Expenditure - Incremental						3.5	3.6	4.4	5.3	6.1	6.9	7.2
Drainage						2.0	2.2	2.7	3.4	2.9	3.5	3.7
Roads												
Bridges						0.7	0.8	1.0	1.3	1.5	1.8	1.9
Sanitation						0.0	0.0	0.0	0.0	0.0	0.1	0.1
Solid Waste						2.7	3.5	4.1	4.8	5.4	6.0	6.3
Cyclone Shelters						0.3	0.3	0.4	0.5	0.6	0.7	0.8
Total- Outflow			**28.2**	**72.2**	**67.3**	**9.2**	**10.4**	**14.1**	**16.8**	**17.9**	**20.3**	**21.2**
Net Cash Flow			(5.1)	(13.0)	(12.2)	2.9	0.7	2.0	0.2	0.8	0.5	(0.1)
Govt Subsidy for Tariff												
Net Cash Flow (after subsidy			(5.1)	(13.0)	(12.2)	2.9	0.7	2.0	0.2	0.8	0.5	(0.1)
Closing Balance			**(5.1)**	**(18.2)**	**(30.4)**	**(27.4)**	**(26.7)**	**(21.6)**	**(18.7)**	**(15.1)**	**(14.1)**	**(14.3)**
Cumulative Closing Balance	**5.9**	**11.8**	**12.9**	**6.3**	**0.7**	**10.3**	**17.8**	**50.1**	**78.6**	**97.1**	**105.6**	**105.6**

Mathbaria Pourashava												
Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
A. Mathbaria Pourashava (Revenue Account)												
Opening Balance		**8.9**	**15.8**	**25.8**	**36.4**	**47.8**	**60.6**	**116.5**	**188.1**	**256.8**	**342.2**	**376.2**
Revenue Income												
Tax Revenue	8.4	6.3	9.4	9.9	10.6	12.0	11.8	14.0	18.9	22.4	26.6	27.3
Non Tax Revenue	15.4	16.9	18.6	20.6	22.7	25.0	27.5	40.7	60.2	80.9	108.8	125.2
Grants & Contribution	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Total- Revenue Income	**24.0**	**23.5**	**28.3**	**30.7**	**33.5**	**37.2**	**39.5**	**54.9**	**79.4**	**103.5**	**135.6**	**152.7**
Revenue Expenditure												
Salaries & Allowances	14.6	16.0	17.6	19.4	21.3	23.4	25.8	37.8	55.3	73.6	97.9	107.7
Operation and Maintenance	0.6	0.6	0.7	0.7	0.8	0.9	1.0	1.4	2.1	2.8	3.7	4.1
Debt Servicing												
Total- Revenue Expenditure	**15.1**	**16.6**	**18.3**	**20.1**	**22.1**	**24.3**	**26.8**	**39.2**	**57.4**	**76.4**	**101.7**	**111.8**
Revenue Surplus /(Deficit)	8.9	6.9	10.0	10.6	11.4	12.9	12.8	15.7	22.0	27.2	34.0	40.9
Closing Balance	**8.9**	**15.8**	**25.8**	**36.4**	**47.8**	**60.6**	**73.4**	**132.2**	**210.0**	**284.0**	**376.2**	**417.1**

Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
B. Mathbaria Pourashava (CTIIP Account) with Climate Resilient Measures												
Opening Balance				(15.7)	(50.3)	(84.0)	(74.3)	(58.8)	(42.7)	(34.6)	(31.6)	(28.4)
Sources of Fund												
Debt Drawdown			15.7	34.6	33.7							
Govt. Grant			54.9	121.2	118.0							
Subsidy												
- Equity												
- Debt Servicing								7.5	6.7	6.1	5.5	5.4
Water Supply												
- Income -Existing												
- Income - Incremental						14.7	15.3	19.5	20.3	23.9	29.1	29.4
-New Connection Fees						4.6	0.5	0.1	0.1	0.1	0.1	0.1
Public Toilets						2.5	2.6	2.8	3.0	3.2	3.4	3.5
Solid Waste						0.3	0.3	0.3	0.3	0.3	0.3	0.4
Total- Inflow			**70.6**	**155.9**	**151.7**	**22.1**	**18.6**	**30.1**	**30.4**	**33.6**	**38.5**	**38.7**
Disposition of Funds												
Equity Drawdown			7.8	17.3	16.9							
Project Capex			78.4	173.2	168.5							
Water Supply, Sanitation, Solid Waste												
- Debt - Principal								4.2	4.2	4.2	4.2	4.2
- Debt - Interest								3.3	2.5	1.9	1.3	1.2
Water Supply												
- Expenditure - Existing												
- Expenditure - Incremental						5.7	6.0	7.3	8.8	10.1	11.4	11.9
Drainage						1.2	1.3	1.6	2.0	3.7	4.4	4.7
Roads						0.0	0.0	0.0	0.0	0.1	0.1	0.1
Bridges						0.9	0.9	1.2	1.5	1.8	2.1	2.3
Sanitation						0.0	0.0	0.0	0.0	0.1	0.1	0.1
Solid Waste						4.4	6.0	7.3	8.8	10.1	11.4	11.9
Cyclone Shelters						0.1	0.1	0.1	0.2	0.2	0.2	0.3
Total- Outflow			**86.3**	**190.5**	**185.4**	**12.4**	**14.4**	**25.1**	**28.1**	**32.1**	**35.3**	**36.5**
Closing Balance			(15.7)	(50.3)	(84.0)	(74.3)	(70.1)	(53.8)	(40.5)	(33.0)	(28.4)	(26.3)
Cumulative Closing Balance	**8.9**	**15.8**	**10.1**	(13.9)	(36.2)	(13.6)	**3.3**	**78.4**	**169.6**	**250.9**	**347.8**	**390.8**

Pirojpur Pourashava												
Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
A. Pirojpur Pourashava (Revenue Account)												
Opening Balance		**8.0**	**14.6**	**23.4**	**32.6**	**42.4**	**53.3**	**100.9**	**162.8**	**223.4**	**300.8**	**331.9**
Revenue Income												
Tax Revenue	5.9	4.5	6.6	7.0	7.5	8.4	8.3	9.9	13.3	15.8	18.7	19.2
Non Tax Revenue	30.4	33.1	35.9	39.1	42.6	46.4	50.6	71.8	102.7	134.7	177.2	194.2
Grants & Contribution	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Total- Revenue Income	**36.7**	**37.8**	**42.9**	**46.4**	**50.3**	**55.1**	**59.1**	**82.0**	**116.3**	**150.8**	**196.2**	**213.7**
Revenue Expenditure												
Salaries & Allowances	15.8	17.3	19.1	21.0	23.1	25.4	27.9	40.9	59.9	79.7	106.1	116.7
Operation and Maintenance	12.9	13.9	15.0	16.2	17.4	18.8	20.3	27.5	37.3	46.9	58.9	63.6
Debt Servicing												
Total- Revenue Expenditure	**28.7**	**31.2**	**34.1**	**37.2**	**40.5**	**44.2**	**48.2**	**68.4**	**97.2**	**126.6**	**165.0**	**180.3**
Revenue Surplus /(Deficit)	8.0	6.6	8.8	9.2	9.8	10.9	10.9	13.6	19.1	24.2	31.2	33.4
Closing Balance	**8.0**	**14.6**	**23.4**	**32.6**	**42.4**	**53.3**	**64.2**	**114.5**	**181.9**	**247.6**	**331.9**	**365.3**

Particulars	Actual	Projections in BDT Million										
	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17	2017-18	2021-22	2025-26	2028-29	2031-32	2032-33
B. Pirojpur Pourashava (CTIIP Account) with Climate Resilience Measures												
Opening Balance						**(0.1)**	**(4.4)**	**(24.6)**	**(50.5)**	**(76.5)**	**(108.9)**	**(121.0)**
Sources of Fund												
Debt Drawdown					0.1							
Govt. Grant					0.2							
Subsidy												
- Equity												
- Debt Servicing								0.0	0.0	0.0	0.0	0.0
Solid Waste						0.4	0.4	0.5	0.5	0.5	0.6	0.6
Total- Inflow					**0.3**	**0.4**	**0.4**	**0.5**	**0.5**	**0.5**	**0.6**	**0.6**
Disposition of Funds												
Equity Drawdown					0.0							
Project Capex					0.3							
Solid Waste												
- Debt - Principal								0.0	0.0	0.0	0.0	0.0
- Debt - Interest								0.0	0.0	0.0	0.0	0.0
Drainage						3.68	3.90	4.92	6.21	8.53	10.16	10.77
Roads						0.0	0.02	0.03	0.04	0.04	0.05	0.06
Bridges						0.6	0.69	0.87	1.09	1.30	1.55	1.64
Solid Waste												
Cyclone Shelters						0.4	0.44	0.56	0.70	0.84	0.99	1.05
Total- Outflow					**0.4**	**4.7**	**5.0**	**6.3**	**8.0**	**10.7**	**12.7**	**13.5**
Net Cash Flow					(0.1)	(4.3)	(4.6)	(5.9)	(7.5)	(10.1)	(12.1)	(12.9)
Govt Subsidy for Tariff												
Net Cash Flow (after subsidy					(0.1)	(4.3)	(4.6)	(5.9)	(7.5)	(10.1)	(12.1)	(12.9)
Closing Balance					**(0.1)**	**(4.4)**	**(9.0)**	**(30.5)**	**(58.0)**	**(86.6)**	**(121.0)**	**(133.9)**
Cumulative Closing Balance	**8.0**	**14.6**	**23.4**	**32.6**	**42.3**	**48.9**	**55.2**	**84.0**	**123.9**	**161.0**	**210.9**	**231.4**

4 ECONOMIC ANALYSIS

4.1 INTRODUCTION AND METHODOLOGY

72. Bangladesh has a population of nearly 150 million (Census 2011).[7] Whilst the urban population is modest by proportion—estimated to be around 28% of the total population—Bangladesh is a rapidly urbanizing country.[8] Of the total urban population, 60% reside in the four largest cities: Dhaka, Chittagong, Khulna and Rajshahi. United Nations projections indicate that 50% or more of the population will be classified as urban by around the year 2045.[9] In general terms this rapid urbanization has occurred because of: i) natural increases in the urban population, ii) territorial expansion of the urban areas and reclassification of rural areas as urban, and iii) considerable rural-to-urban migration.

73. The Government's rapid growth in economic activities, in particular, in the tertiary sector has centered around Dhaka and resulted in uneven economic development within the country. Coastal lags behind in economic growth, urban infrastructure development, and poverty reduction. Recognizing the importance of urbanization to economic growth, the Government of Bangladesh (GoB) has emphasized on urban development in Coastal towns through various national as well foreign aided programs.

74. Investments made in the urban sector for the last five years by the executing agencies from project aid and GOB fund is shown in **Table 4.1**.

75. The Bangladesh Municipal Development Fund (BMDF) is a grant-loan mix financing to pourashavas, 85% is grant and 15% is loan, for the development of infrastructure.

76. An understanding has been given by DPHE that about 85% of urban investment would be on account of water supply and the rest, 15%, would be for sanitation and hygiene purposes.

77. Based on data for 2012-2013, LGED investment has been allocated among rural, urban and others at the ratio of 73%, 20% and 7% respectively.

Table 4.1: Investments in Sector over Last Five Years (Million US $)

Executing Agency	2008-2009	2009-2010	2010-2011	2011-2012	2012-2013
BMDF Financing to PS	2.3	0.9	1.4	25.4	12.4
DPHE: (GoB + P. Aid)	0	0	0	0.00	0
Rural	17.1	22.8	21.5	35.4	39.2
Urban	20.9	27.9	26.2	43.3	47.9
Total DPHE	38.03	50.74	47.68	78.66	87.04
LGED (GoB + P. Aid)					
Rural	295.2	366.8	363.4	407.2	479.8
Urban	80.9	100.5	99.6	111.6	121.9
Others	28.3	35.2	34.8	39.0	48.6
Total LGED	**404.4**	**502.5**	**497.8**	**557.8**	**650.3**

Sources: BMDF, DPHE, LGED.

[7] We are unable to verify an accurate estimate of the % of urban population based on the Census 2011; only enumerated unadjusted figures are publicly accessible. The 2011 enumerated 149,772,364 million, an average growth rate of 1.37% and an average population density of 1015 per person per Km sq. The total enumerated urban population as a % of total population was 19.2%, much lower than widely used estimates. (Source BBS Census 2011).

[8] ' World Urbanisation Prospects: The 2011 Revision' records a total population of 150,494,000 and a total urban population of 42,698,000 (28.4%), United Nations, Department of Economic and Social Affairs, Population Division.

[9] United Nations, Department of Economic and Social Affairs, Population Division.

78. The investment plan in the sector for the next five years by the executing agencies is shown in **Table 4.2**.

Table 4.2: Investment Plan in Sector for Next Five Years – Million US $

Executing Agency	2013-2014	2014-2015	2015-2016	2016-2017	2017-2018
BMDF Financing Plan	16.5	26.5	25.5	18.0	13.5
DPHE: (GoB + P. Aid)	0	0	0	0	0
Rural	44.5	68.3	74.8	80.1	75.5
Urban	54.4	83.5	91.5	97.9	92.2
Total DPHE	98.94	151.86	166.28	177.95	167.69
LGED (GoB + P. Aid)					
Rural	481.9	937.7	513.5	558.7	629.7
Urban	132.0	256.9	140.7	153.1	172.5
Others	46.2	89.9	49.2	53.6	60.4
Total LGED	**660.2**	**1,284.5**	**703.4**	**765.4**	**862.6**

Sources: BMDF, DPHE, LGED.

4.2 ECONOMIC ANALYSIS OF PROJECT

79. A detailed economic analysis of the Batch 1 towns' subprojects under Project was conducted and the salient features of the analysis are summarized below in this Appendix. As this Project is formulated as sector lending, the economic analysis follows ADB's Technical Note Series No.14 (2005), Assessing Aid for a Sector Development Plan: Economic Analysis of a Sector Loan.

80. **Rationale for Government Involvement**. The government intervention under Project is limited to basic urban services where (i) there is natural monopoly in the sector; (ii) the services provided are public good; and (iii) integrated and coordinated management by the government is required due to externality and interdependence of these sectors. Where technically and commercially feasible, private sector participation will be promoted. The government involvement in basic urban services is also in line with the urban sector development plans and programs that the government is pursuing.

81. **Goals of the Project**. The goals of Project are to increase economic potential through development of basic urban infrastructure in the selected Pourashavas of the Country. Under Batch 1 or Phase 1, 4 Pourashavas were strategically selected to maximize the Project's contribution to balanced economic growth potential. The 4 selected Pourashavas are a mix of small and medium sized cities and towns.

82. **Sector Development Plan**. Project will cover part of the 10-year period financing requirements in the selected 4 Pourashavas. Each Pourashava has identified infrastructure gaps, develops and the Project prioritizes options to close the gaps, proposes subprojects in each urban sub-sector, and recommends an institutional and financial mechanism to sustain the improved service delivery.

83. **Associated Economic Policies**. Promoting urban development is a national policy of Bangaldesh. The Country has already taken up initiatives under national urban agenda to advance priority projects and governance reforms. Tariff and user charge reform is part of Project. Some of the pourashavas are already implementing volumetric water tariff in selected areas wherein piped water supply exists. This is a critical step towards financial sustainability.

84. **Government Capacity**. The Government, through its nodal agency LGED acting as the executing agency, is fully capable of executing Project. LGED has implemented and is

still handling several externally aided projects, such as two ADB-assisted projects and two World Bank-assisted projects in urban development in addition to centrally sponsored schemes. LGED has developed adequate capacity in managing projects, having learned from experiences in implementing other externally funded projects.

85. **Government Commitment**. The government commitment to support urban development is firm, as demonstrated by increased budgetary allocation to the sector. From FY2008-09 to FY2012-13, national development expenditures on water, sanitation and urban development have grown by a CAGR of 12.6 percent.

4.3 ECONOMIC ANALYSIS OF SUBPROJECTS

86. Economic analysis has been conducted for all the Batch 1 towns' subprojects under Project in accordance with the ADB's Guidelines, including Guidelines for the Economic Analysis of the Projects and Guidelines for the Economic Analysis of Water Supply Projects. The subproject life is assumed to be 20 years with salvage values. The analysis is based on domestic numeraire in April 2013 constant prices. The shadow wage factor of 0.94 and the shadow exchange factor of 1.07 are applied to convert financial values to economic values. The population growth in each town is projected based on historical trend. Parameters assumed are drawn from socio economic surveys , public statistics, field surveys, and discussions with experts.

87. Analysis has been carried out in following scenarios:

a. Present situation –without project;
b. Project investment without Climate Resilience Measures (CCR) and
c. Project investment With Climate Resilience Measures (CCR)

88. For subprojects with quantifiable economic benefits and costs, economic internal rate of return (EIRR) was calculated and then compared to the economic opportunity cost of capital estimated at 12%.

89. All the subprojects have been designed on least cost option basis as described in the technical section of the DFR.

90. Detailed subproject economic analysis for various subprojects are presented below.

4.3.1 Water Supply Subprojects

91. A summary of the EIRR as well as the sensitivity analysis results is included in **Table 4.3**.

Table 4.3: EIRR and Sensitivity Results of Project Pourashavas – With CCR

Sub-project	Base	Capital Cost +20%	O&M Cost +20%	Benefit -20%	Worst Case	One Year Delay
Amtali	17.7%	14.9%	17.1%	14.8%	12.0%	17.4%
Galachipa	14.0%	11.6%	13.7%	11.8%	9.5%	13.8%
Mathbaria	15.3%	12.6%	15.2%	13.0%	10.5%	15.1%

Source: PPTA consultant analysis.

Water Supply - Amtali

92. **Demand and Rationale**. Due to limited supply and distribution capacity, the service coverage of piped water supply remains at 39%, with 1296 household connections. In areas of the city, where there is no piped water supply households have to resort to alternative water sources such as public stand posts, tanker supply, and bottled water. With the project, the coverage will reach 60%, 3,212 households and the consumption will increase to 100 lpcd for the connected households.

93. **Willingness-to-pay**. According to the socioeconomic survey, most of the households prefer house connections and the mean willingness to pay for improved water supply services is at BDT 226 per month[10] . The proposed volumetric water tariff is same as the existing one of BDT 10 per kiloliter for domestic and BDT 20 per kiloliter for non-domestic consumers, upon project completion in 2016, with periodic revisions in real terms of 25% from FY 2022 every five years.

94. **Valuation of Benefits**. The subproject will increase the water available for distribution sufficient to fill the current demand gap up to 100 lpcd and to allow for 3,836 additional household connections. The accounted economic benefits are from resource cost savings on the non-incremental water consumption by switching from alternative sources to piped water. The resource cost savings include labor costs to fetch water from public stand posts[11], cost to install storage tank[12], cost to boil water for drinking purpose[13], and cost of water purchased from private vendor[14]. The estimated EIRR in base case is 17.7%, above opportunity cost of capital at 12%. The result is acceptable against downside risks, including 20% increase in capital expenditure, 20% increase in operation cost, 20% decrease in benefit, and one year delay in completion.

Water Supply - Galachipa

95. **Demand and Rationale**. Due to limited supply and distribution capacity, the service coverage of piped water supply remains at 39%, with 2,050 household connections. In areas of the city, where there is no piped water supply households have to resort to alternative water sources such as public stand posts, tanker supply, and bottled water. With the project, the coverage will reach 80%, 4,672 households, and the consumption will increase to 100 lpcd for the connected households.

96. **Willingness-to-pay**. According to the socioeconomic survey, most of the households prefer house connections and the mean willingness to pay for improved water supply services is at BDT 156.8 per month [15] . The proposed volumetric water tariff is same as the existing one of BDT 10 per kiloliter, upon project completion in 2016, with periodic revisions in real terms of 5% from FY 2022 every five years.

97. **Valuation of Benefits**. The subproject will increase the water available for distribution sufficient to fill the current demand gap up to 100 lpcd and to allow for 2,672 additional household connections. The accounted economic benefits are from resource cost savings on the non-incremental water consumption by switching from alternative sources to piped water.

[10] In May 2013 price. Source: Socioeconomic survey conducted in 2013
[11] Assumed a household spends 18 minutes per day for fetching water as per socioeconomic survey report. The time spent is valuated at wage rate of unskilled labor at BDT 375 per day.
[12] The cost of storage tank, including operation and maintenance,is assumed at BDT 1,042 as per Source: socioeconomic survey
[13] Assuming 5 minutes work of unskilled labour per day among other costs. Other monthly cost for purification per HH BDT 129 Source: socioeconomic survey
[14] The cost of water purchased from private vender is assumed at BDT. 100/m3. Source – physical enquires
[15] In May 2013 price. Source: Socioeconomic survey conducted in 2013.

The resource cost savings include labor costs to fetch water from public stand posts[16], cost to install storage tank[17], cost to boil water for drinking purpose[18], and cost of water purchased from private vendor[19]. The estimated EIRR in base case is 14.0%, above opportunity cost of capital at 12%. The result is acceptable against downside risks, including 20% increase in capital expenditure, 20% increase in operation cost, 20% decrease in benefit, and one year delay in completion.

Water Supply - Mathbaria

98. **Demand and Rationale**. Due to limited supply and distribution capacity, the service coverage of piped water supply remains at 0%, with no household connections. In city, households have to resort to alternative water sources such as public stand posts, tanker supply, and bottled water. With the project, the coverage will reach 80%, 4,000 households, and the consumption will increase to 100 lpcd for the connected households.

99. **Willingness-to-pay**. According to the socioeconomic survey, most of the households prefer house connections and the mean willingness to pay for improved water supply services is at BDT 186.5 per month[20] . The proposed volumetric water tariff is BDT 12 per kiloliter, upon project completion in 2016, with periodic revisions in real terms of 15% from FY FY2022 every five years.

100. **Valuation of Benefits**. The subproject will increase the water available for distribution sufficient to fill the current demand gap up to 100 lpcd and to allow for 4,000 additional household connections. The accounted economic benefits are from resource cost savings on the non-incremental water consumption by switching from alternative sources to piped water. The resource cost savings include labor costs to fetch water from public stand posts[21], cost to install storage tank[22], cost to boil water for drinking purpose[23], and cost of water purchased from private vendor[24]. The estimated EIRR in base case is 15.3%, above opportunity cost of capital at 12%. The result is acceptable against downside risks, including 20% increase in capital expenditure, 20% increase in operation cost, 20% decrease in benefit, and one year delay in completion.

101. In case of the Project investment without CCR measures it is estimated that only 80% of the resource cost savings – labour cost to fetch water and cost of water purchased from private vendor will accrue. The EIRRs have been estimated accordingly and given in the following **Table 4.4**.

[16] Assumed a household spend 14 minutes per day for fetching water as per socioeconomic survey report. The time spent is valuated at wage rate of unskilled labor at BDT 375 per day.
[17] The cost of storage tank, including operation and maintenance, is assumed at BDT 2,320, Source: socioeconomic survey
[18] Assuming nil minute work of unskilled labour per day among other costs as socio economic survey did not indicate this. Other monthly cost for purification per HH BDT nil, Source: socioeconomic survey
[19] The cost of water purchased from private vender is assumed at BDT. 100/m3. Source: socioeconomic survey
[20] In May 2013 price. Source: Socioeconomic survey conducted in 2013
[21] Assumed a household spend 25.6 minutes per day for fetching water. The time spent is valuated at wage rate of unskilled labor at BDT 375 per day.
[22] The cost of storage tank, including operation and maintenance, is assumed at BDT 3,463 based on Source: socioeconomic survey
[23] Assuming nil minutes work of unskilled labour per day among other costs. Other monthly cost for purification per HH BDT nil Source: socioeconomic survey
[24] The cost of water purchased from private vender is assumed at BDT. 237/m3. Source: socioeconomic survey.

Table 4.4: EIRR and Sensitivity Results of Project Pourashavas – Without CCR

Sub-project	Base	Capital Cost +20%	O&M Cost +20%	Benefit -20%	Worst Case	One Year Delay
Amtali	16.0%	13.5%	15.8%	14.0%	11.7%	15.8%
Galachipa	14.2%	11.9%	14.1%	12.2%	10.0%	14.1%
Mathbaria	17.1%	14.3%	16.9%	14.6%	12.0%	16.9%

Source: PPTA consultant analysis.

4.3.2 Drainage Subprojects

102. A summary of the EIRR as well as the sensitivity analysis results is included in **Table 4.5**. Summary of economic benefits ascertained is given in **Table 4.6**.

Table 4.5: Drainage EIRR and Sensitivity Results of Project Pourashavas – With CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit -20%	Cost +20% & Benefit-20%	One Year Delay
Amtali	49.3	28.1	23.8	28.0	22.7	18.9	28.1
Galachipa	206.8	23.9	20.1	23.8	19.2	15.8	23.8
Pirojpur	768.5	45.9	39.2	45.8	37.8	32.1	45.9
Mathbaria	288.6	39.8	33.9	39.7	32.6	27.6	39.7
Total / Average	**1313.3**	**36.3**	**30.9**	**29.7**	**29.8**	**25.1**	**36.3**

Source: PPTA consultant analysis.

Table 4.6: Summary of Drainage Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Properties Damage Benefit	59.8	101.7	425.2	152.9
Saved Loss of Income	8.1	177.9	154.7	146.1
Saved Medical Cost Benefit	0.6	15.2	16.2	7.1
Agricultural Loss	12.6	27.3	309.1	21.0
Saved business Income	3.0	110.3	91.9	70.6
Saved Road Damage	5.2	5.2	38.8	15.5
Total	**89.3**	**437.5**	**1036.0**	**413.3**

Source: PPTA consultant analysis.

Drainage - Amtali

103. 2.731 kilometers of drain are proposed under the subproject. This will benefit 680 number of properties, 239 households' loss of income and savings in medical cost, loss of business income, 0.3 square kilometers of agricultural land crop loss and 2.0 kilometers of roads from damage to flooding.

104. **Valuation of Benefits**. Properties damage benefits have been assessed based on the construction cost[25], repair cost[26] and clean up costs[27] of the properties[28] likely to be

[25] BDT 1200 per square foot, BDT 1600 per square foot and BDT 2000 per square foot for katcha, semi-pakka and pakka house. Source CDTA DFR

affected in floods in without project situation. Projected inundation levels affecting different types of properties, commercial, public, katcha, pakka and semi pakka, are considered in the technical design of the project. Average area[29] of different types of properties estimated based on the available data in two pourashavas. Damage benefit and repair benefit have been estimated on five percent of properties projected to get inundated greater than 0.25 m. Clean up cost benefit have been estimated on all properties expected to get inundated. Saved income[30] loss benefit has been estimated on the number of households likely to be affected due to number of days of flooding. Saved medical cost benefit has been estimated based on the average expenditure on treatment[31] for waterborne diseases per household on the number of households likely to be affected due to flooding. Loss of business income has been estimated based on household expenditure[32] spent on purchases from markets and percentage of households unable to access market place due to floods. Agricultural crop loss due to flooding has been estimated on area of land[33], average yield[34] and market price of crop[35]. Saved road damage benefit has been assessed on the kilometers[36] of road likely to be affected due to floods and the repair cost[37] thereof. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[38].

Drainage - Galachipa

105. 10.28 kilometers of drain are proposed under the subproject. This will benefit 2018 number of properties, 2,287 households' loss of income and savings in medical cost, loss of business income, 0.65 square kilometers of agricultural land crop loss and 2.0 kilometers of roads from damage to flooding.

106. **Valuation of Benefits**. Properties damage benefits have been assessed based on the construction cost[39], repair cost[40] and clean up costs[41] of the properties[42] likely to be

[26] Repair cost – 6% of construction cost. Source CDTA DFR.
[27] BDT 2,000, BDT 5,000 and BDT 9,000 cleanup cost for LIG, MIG and HIG. Source CDTA DFR
[28] Number of properties likely to be affected as per projected inundation levels given in Table below

Depth	Commercial	Public	Katcha	Pacca	Semi Pucca
< 0.25m inundation	42	22	170	16	63
> 0.25m inundation	48	26	199	19	75

[29] Commercial buildings– 93 square meters; Public buildings – 46 square meters; Katch houses – 9 square meters; Pacca houses – 70 square meters and Semi pacca houses – 28 square meters
[30] Average household income for Amtali BDT 13,841; average number of days of flooding – 11.4 days; affected households 239; Source: Socioeconomic survey report
[31] BDT 1,097 monthly expenditure on treatment;
[32] Monthly household expenditure – BDT 9,606 – 70% of which is assumed to spent in market purchases. 45.50% of households are unable to access market on 11.4 days of flooding; source socioeconomic survey report
[33] 0.3 square kilometre of agricultural land is likely to be affected due to flooding; source technical estimate
[34] Average yield assumed to be 1.5 tonne per acre; source technical estimate
[35] Average support price assumed to be BDT 17,500 per tonne – source – market / Government enquiries
[36] 2.0 kilometers likely to be affected – as per technical estimate
[37] Repair cost – 4 lakh BDT – as per technical estimate
[38] Average GDP growth rate of GoB is 6 per cent per annum
[39] BDT 1200 per square foot, BDT 1600 per square foot and BDT 2000 per square foot for katcha, semi-pakka and pakka house. Source CDTA DFR
[40] Repair cost – 6% of construction cost. Source CDTA DFR
[41] BDT 2,000, BDT 5,000 and BDT 9,000 cleanup cost for LIG, MIG and HIG. Source CDTA DFR
[42] Number of properties likely to be affected as per projected inundation levels given in the table below:

Depth	Commercial	Public	Katcha	Pacca	Semi Pucca
< 0.25m inundation	173	63	798	109	292
> 0.25m inundation	39	28	335	38	120
>0.75m inundation	2	2	13	2	4

affected in floods in without project situation. Projected inundation levels affecting different types of properties, commercial, public, katcha, pakka and semi pakka, are considered in the technical design of the project. Average area[43] of different types of properties estimated based on the available data in two pourashavas. Damage benefit and repair benefit have been estimated on five percent of properties projected to get inundated greater than 0.25 m. Clean up cost benefit have been estimated on all properties expected to get inundated. Saved income[44] loss benefit has been estimated on the number of households likely to be affected due to number of days of flooding. Saved medical cost benefit has been estimated based on the average expenditure on treatment[45] for waterborne diseases per household on the number of households likely to be affected due to flooding. Loss of business income has been estimated based on household expenditure[46] spent on purchases from markets and percentage of households unable to access market place due to floods. Agricultural crop loss due to flooding has been estimated on area of land[47], average yield[48] and market price of crop[49]. Saved road damage benefit has been assessed on the kilometers[50] of road likely to be affected due to floods and the repair cost[51] thereof. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[52]

Drainage - Pirojpur

107. 24.78 kilometers of drain are proposed under the subproject. This will benefit 8,906 number of properties, 10,670 households' loss of income and savings in medical cost, loss of business income, 7.37 square kilometers of agricultural land crop loss and 15 kilometers of roads from damage to flooding.

108. **Valuation of Benefits**. Properties damage benefits have been assessed based on the construction cost[53], repair cost[54] and clean up costs[55] of the properties[56] likely to be affected in floods in without project situation. Projected inundation levels affecting different types of properties, commercial, public, katcha, pakka and semi pakka, are considered in the technical design of the project. Average area[57] of different types of properties estimated based on the available data in two pourashavas. Damage benefit and repair benefit have been estimated on five percent of properties projected to get inundated greater than 0.25 m.

[43] Commercial buildings– 93 square meters; Public buildings – 46 square meters; Katch houses – 9 square meters; Pacca houses – 70 square meters and Semi pacca houses – 28 square meters

[44] Average household income for Galachipa BDT 13,167; average number of days of flooding – 27.4 days; affected households 2287; Source: Socioeconomic survey report

[45] BDT 1,126 monthly expenditure on treatment;

[46] Monthly household expenditure – BDT 11,834 – 70% of which is assumed to spent in market purchases. 87.9% of households are unable to access market on 27.4 days of flooding; source socioeconomic survey report

[47] 0.65 square kilometre of agricultural land is likely to be affected due to flooding; source technical estimate

[48] Average yield assumed to be 1.5 tonne per acre; source technical estimate

[49] Average support price assumed to be BDT 17,500 per tonne – source – market / Government enquiries

[50] 2 kilometers likely to be affected – as per technical estimate

[51] Repair cost – 4 lakh BDT – as per technical estimate

[52] Average GDP growth rate of GoB is 6 per cent per annum

[53] BDT 1200 per square foot, BDT 1600 per square foot and BDT 2000 per square foot for katcha, semi-pakka and pakka house. Source CDTA DFR

[54] Repair cost – 6% of construction cost. Source CDTA DFR

[55] BDT 2,000, BDT 5,000 and BDT 9,000 cleanup cost for LIG, MIG and HIG. Source CDTA DFR

[56] Number of properties likely to be affected as per projected inundation levels given in the table below:

Depth	Commercial	Public	Katcha	Pacca	Semi Pucca
< 0.25m inundation	532	951	4231	524	795
> 0.25m inundation	158	250	1102	143	220
>0.75m inundation	0	0	0	0	0

[57] Commercial buildings– 93 square meters; Public buildings – 46 square meters; Katch houses – 9 square meters; Pakka houses – 70 square meters and Semi pakka houses – 28 square meters.

Clean up cost benefit have been estimated on all properties expected to get inundated. Saved income[58] loss benefit has been estimated on the number of households likely to be affected due to number of days of flooding. Saved medical cost benefit has been estimated based on the average expenditure on treatment[59] for waterborne diseases per household on the number of households likely to be affected due to flooding. Loss of business income has been estimated based on household expenditure[60] spent on purchases from markets and percentage of households unable to access market place due to floods. Agricultural crop loss due to flooding has been estimated on area of land[61], average yield[62] and market price of crop[63]. Saved road damage benefit has been assessed on the kilometers[64] of road likely to be affected due to floods and the repair cost[65] thereof. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[66]

Drainage - Mathbaria

109. 10.8 kilometers of drain are proposed under the subproject. This will benefit 1840 number of properties, 861 households' loss of income and' savings in medical cost, loss of business income, 0.5 square kilometers of agricultural land crop loss and 6 kilometers of roads from damage to flooding.

110. **Valuation of Benefits**. Properties damage benefits have been assessed based on the construction cost[67], repair cost[68] and clean up costs[69] of the properties[70] likely to be affected in floods in without project situation. Projected inundation levels affecting different types of properties, commercial, public, katcha, pakka and semi pakka, are considered in the technical design of the project. Average area[71] of different types of properties estimated based on the available data in two pourashavas. Damage benefit and repair benefit have been estimated on five percent of properties projected to get inundated greater than 0.25 m. Clean up cost benefit have been estimated on all properties expected to get inundated. Saved income[72] loss benefit has been estimated on the number of households likely to be affected due to number of days of flooding. Saved medical cost benefit has been estimated based on the average expenditure on treatment[73] for waterborne diseases per household on the number of households likely to be affected due to flooding. Loss of business income has

[58] Average household income for Pirojpur BDT 14,620; average number of days of flooding – 4.6 days; affected households 10670; Source: Socioeconomic survey report

[59] BDT 1,533 monthly expenditure on treatment;

[60] Monthly household expenditure – BDT 12,874 – 70% of which is assumed to spent in market purchases. 93.50% of households are unable to access market on 4.6 days of flooding; source socioeconomic survey report

[61] 7.37 square kilometre of agricultural land is likely to be affected due to flooding; source technical estimate

[62] Average yield assumed to be 1.5 tonne per acre; source technical estimate

[63] Average support price assumed to be BDT 17,500 per tonne – source – market / Government enquiries

[64] 15 kilometers likely to be affected – as per technical estimate

[65] Repair cost – 4 lakh BDT – as per technical estimate

[66] Average GDP growth rate of GoB is 6 per cent per annum

[67] BDT 1200 per square foot, BDT 1600 per square foot and BDT 2000 per square foot for katcha, semi-pakka and pakka house. Source CDTA DFR

[68] Repair cost – 6% of construction cost. Source CDTA DFR

[69] BDT 2,000, BDT 5,000 and BDT 9,000 cleanup cost for LIG, MIG and HIG. Source CDTA DFR

[70] Number of properties likely to be affected as per projected inundation levels given in the table below:

Depth	Commercial	Public	Katcha	Pacca	Semi Pucca
< 0.25m inundation	90	43	424	46	154
> 0.25m inundation	129	61	605	66	220

[71] Commercial buildings– 93 square meters; Public buildings – 46 square meters; Katch houses – 9 square meters; Pakka houses – 70 square meters and Semi pakka houses – 28 square meters

[72] Average household income for Mathbaia BDT 21,744; average number of days of flooding – 36.2 days; affected households 861; Source: Socioeconomic survey report

[73] BDT 1,061 monthly expenditure on treatment.

been estimated based on household expenditure[74] spent on purchases from markets and percentage of households unable to access market place due to floods. Agricultural crop loss due to flooding has been estimated on area of land[75], average yield[76] and market price of crop[77]. Saved road damage benefit has been assessed on the kilometers[78] of road likely to be affected due to floods and the repair cost[79] thereof. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[80].

111. In case of the Project investment without CCR measures it is estimated that only 75% of the property damages benefit and 80% of road damages benefit are likely to be achieved The EIRRs have been estimated accordingly and given in **Table 4.7**. Corresponding economic benefits ascertained is given in **Table 4.8**.

Table 4.7: Drainage EIRR & Sensitivity Results of Project Pourashavas – Without CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit- 20%	One Year Delay
Amtali	41.0	28.5	24.1	28.4	23.1	19.2	28.4
Galachipa	171.5	23.8	19.9	23.7	19.1	15.7	23.7
Pirojpur	689.6	48.4	41.4	48.3	39.9	33.9	48.4
Mathbaria	257.8	42.0	35.8	41.9	34.5	29.2	41.9
Total / Average	**1159.9**	**37.8**	**32.1**	**30.9**	**31.0**	**26.1**	**37.7**

Source: PPTA consultant analysis

Table 4.8: DrainageSummary of Benefits - NPV (Tk Million) without CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Properties Damage Benefit	44.6	83.4	356.7	122.9
Saved Loss of Income	8.1	177.9	154.7	149.3
Saved Medical Cost Benefit	0.6	15.2	16.2	7.3
Agricultural Loss	12.6	27.3	309.1	21.0
Saved business Income	3.0	57.1	44.7	48.0
Saved Road Damage	4.1	3.9	29.1	11.6
Total	**73.1**	**364.7**	**910.6**	**360.2**

Source: PPTA consultant analysis.

4.3.3 Sanitation Subprojects

112. A summary of the EIRR as well as the sensitivity analysis results is included in **Table 4.9**. Summary of economic benefits ascertained is given in **Table 4.10**.

[74] Monthly household expenditure – BDT 17,554 – 70% of which is assumed to spent in market purchases. 68.40% of households are unable to access market on 11.4 days of flooding; source socioeconomic survey report

[75] 0.5 square kilometre of agricultural land is likely to be affected due to flooding; source technical estimate

[76] Average yield assumed to be 1.5 tonne per acre; source technical estimate

[77] Average support price assumed to be BDT 17,500 per tonne – source – market / Government enquiries

[78] 6 kilometers likely to be affected – as per technical estimate

[79] Repair cost – 4 lakh BDT – as per technical estimate

[80] Average GDP growth rate of GoB is 6 per cent per annum.

Table 4.9: Sanitation EIRR and Sensitivity Results of Project Pourashavas – With CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit- 20%	One Year Delay
Amtali	16.2	16.0	13.3	40.3	11.7	8.6	15.8
Galachipa	27.6	22.4	19.0	21.6	17.4	13.8	22.3
Pirojpur	22.0	20.3	17.2	19.5	15.6	12.2	20.2
Mathbaria	39.5	26.9	23.0	26.1	21.3	17.4	26.8
Total / Average	**105.4**	**22.1**	**18.8**	**17.2**	**18.1**	**13.6**	**22.0**

Source: PPTA consultant analysis.

Table 4.10: Summary of Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Income Loss	4.1	5.7	NA	11.2
Saved Medical Cost	12.1	21.9	NA	28.3
Total Benefits	**16.2**	**27.6**		**39.5**

Source: PPTA consultant analysis.

Sanitation - Amtali

113. Construction of Ten community latrines, four public toilets and procurement of.one desludge equipment is proposed under this subproject. This subproject will benefit 455 households in a day.

114. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[81] loss saved and second is saved medical costs[82] due to number of days of sickness[83] caused due to improper or inadequate sanitation. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[84]

Sanitation - Galachipa

115. Construction of eight community latrines, three school latrines, six public toilets and procurement of.one desludge equipment is proposed under this subproject. This subproject will benefit 800 households in a day.

116. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[85] loss saved and second is saved medical costs[86] due to number of days of sickness[87] caused due to improper or inadequate sanitation. Benefits are adjusted for real

[81] Monthly household income BDT 13,841; source- socioeconomic survey
[82] Monthly household expenditure on health – BDT 1,097, 30% of this attributed to sanitation; source- socioeconomic survey
[83] 2.5 days per year for each household: ; source- socioeconomic survey
[84] Average GDP growth rate of GoB is 6 per cent per annum
[85] Monthly household income BDT 13,167 in Galachipa; source- socioeconomic survey
[86] Monthly household expenditure on health – BDT 1,126, 30% of this attributed to sanitation in Galachipa; source- socioeconomic survey
[87] 2.1 days per year for each household: ; source- socioeconomic survey.

GDP growth rate of 2 per cent per annum over the analysis period[88]

Sanitation - Mathbaria

117. Construction of eight community latrines, six school latrines, six public toilets and procurement of.one desludge equipment is proposed under this subproject. This subproject will benefit 1,100 households in a day.

118. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[89] loss saved and second is saved medical costs[90] due to number of days of sickness[91] caused due to improper or inadequate sanitation. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[92]

119. In case of the Project investment without CCR measures it is estimated that only 85% of the saved medical cost benefit is likely to be achieved The EIRRs have been estimated accordingly and given in **Table 4.11**. Summary of benefits ascertained is given in **Table 4.12**.

Table 4.11: Sanitation EIRR & Sensitivity Results of Project Pourashavas – Without CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit- 20%	One Year Delay
Amtali	14.4	15.3	12.6	14.5	11.2	10.9	15.1
Galachipa	24.3	21.6	18.3	20.9	16.9	13.4	21.5
Pirojpur	NA	NA					
Mathbaria	35.3	26.6	22.7	25.9	21.2	17.2	26.5
Total / Average	**93.2**	**21.5**	**17.4**	**13.4**	**13.9**	**12.9**	**17.0**

Source: PPTA consultant analysis.

Table 4.12: Summary of Benefits - NPV (Tk Million) without CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Income Loss	4.1	5.7	3.4	11.2
Saved Medical Cost	10.3	18.6	NA	24.1
Total	**14.4**	**24.3**		**35.3**

Source: PPTA consultant analysis.

4.3.4 Road Subprojects

120. A summary of the EIRR as well as the sensitivity analysis results is included in **Table 4.13**. Summary of benefits ascertained is given in **Table 4.14**.

Table 4.13: Road EIRR and Sensitivity Results of Project Pourashavas – With CCR

Town	Net Present	EIRR Base	Sensitivity (%)		

[88] Average GDP growth rate of GoB is 6 per cent per annum
[89] Monthly household income BDT 21,744 in Mathbaria; source- socioeconomic survey
[90] Monthly household expenditure on health – BDT 1,061, 30% of this attributed to sanitation in Mathbaria; source- socioeconomic survey
[91] 2 days per year for each household in Mathbaria: ; source- socioeconomic survey
[92] Average GDP growth rate of GoB is 6 per cent per annum.

	Value						
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
Amtali	181.8	20.6	17.3	20.4	16.3	13.2	20.5
Galachipa	162.1	20.9	17.4	20.7	16.5	13.3	20.8
Pirojpur	541.1	21.4	18.0	21.3	17.1	16.1	21.3
Mathbaria	181.1	20.3	17.0	20.1	16.1	15.2	20.2

Source: PPTA consultant analysis

Table 4.14: Summary of Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Properties Damage	55.5	78.4	123.6	43.1
Vehicle Operating Cost Savings	49.5	12.7	140.0	49.0
Time Savings	76.9	71.1	277.5	88.9
Total	181.8	162.1	541.1	181.1

Source: PPTA consultant analysis

Roads - Amtali

121. Construction of 8.38 kilometers of road is proposed under this subproject.

122. **Valuation of Benefits**. In the absence of traffic count / surveys, the number of vehicles in the pourashava has been based upon to estimate the number of vehicles[93] in the subproject areas. Two flow benefits are envisaged under this subproject. First is the vehicle operating cost savings [94] and second is saved time cost[95] due to lesser time taken for commuting on the improved project roads. In addition to this, the climate resilience measures will ensure that there is prevention of road damage[96] due to floods. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period.[97]

Roads - Galachipa

123. Construction of 7 kilometers of road is proposed under this subproject.

124. **Valuation of Benefits**. In the absence of traffic count / surveys, the number of vehicles in the pourashava has been based upon to estimate the number of vehicles[98] in the subproject areas. Two flow benefits are envisaged under this subproject. First is the vehicle operating cost savings [99] and second is saved time cost[100] due to lesser time taken for commuting on the improved project roads. In addition to this, the climate resilience measures

[93] Number of vehicles per day on project roads has been assumed to be 83 four wheeler, 150 baby taxi, 900 two wheeler, 113 bus and 75 trucks in Amtali

[94] Savings in vehicle operating cost has been assumed at BDT 10 per vehicle for car, BDT 4 per vehicle for baby taxi, BDT 1.5 per vehicle for two wheeler, BDT 13 per vehicle for bus and BDT 16 per vehicle for truck

[95] Savings in time assumed to be 5 minutes and earnings per kilometre assumed to be BDT 14 based on a average monthly HH income of BDT 13,841 in Amtali as per socioeconomic survey

[96] In the initial five years 5% per year, followed by 4% per year for next five years, then 3% per year for the next five years and 2% per year thereafter, of project roads are expected to be affected. Damage benefits based on the 2013 estimated construction cost duly increased by 2 per cent real increase every year.

[97] Average GDP growth rate of GoB is 6 per cent per annum

[98] Number of vehicles per day on project roads has been assumed to be 45 four wheeler, 64 baby taxi, 300 two wheeler, 2 bus and 20 trucks in Galachipa

[99] Savings in vehicle operating cost has been assumed at BDT 10 per vehicle for car, BDT 4 per vehicle for baby taxi, BDT 1.5 per vehicle for two wheeler, BDT 13 per vehicle for bus and BDT 16 per vehicle for truck

[100] Savings in time assumed to be 5 minutes and earnings per kilometre assumed to be BDT 13 based on a average monthly HH income of BDT 13,167 in Galachipa as per socioeconomic survey.

will ensure that there is prevention of road damage[101] due to floods. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[102]

Roads - Pirojpur

125. Construction of 34.2 kilometers of road is proposed under this subproject.

126. **Valuation of Benefits**. In the absence of traffic count / surveys, the number of vehicles in the pourashava has been based upon to estimate the number of vehicles[103] in the subproject areas. Two flow benefits are envisaged under this subproject. First is the vehicle operating cost savings [104] and second is saved time cost[105] due to lesser time taken for commuting on the improved project roads. In addition to this, the climate resilience measures will ensure that there is prevention of road damage[106] due to floods. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[107].

Roads - Mathbaria

127. Construction of 8 kilometers of road is proposed under this subproject.

128. **Valuation of Benefits**. In the absence of traffic count / surveys, the number of vehicles in the pourashava has been based upon to estimate the number of vehicles[108] in the subproject areas. Two flow benefits are envisaged under this subproject. First is the vehicle operating cost savings [109] and second is saved time cost[110] due to lesser time taken for commuting on the improved project roads. In addition to this, the climate resilience measures will ensure that there is prevention of road damage[111] due to floods. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[112].

129. In case of the Project investment without CCR measures it is estimated that only road damage benefit is will not be achieved The EIRRs have been estimated accordingly and given in **Table 4.15**. Summary of economic benefits ascertained given in **Table 4.16**.

Table 4.15: EIRR and Sensitivity Results of Project Pourashavas – Without CCR

Town	Net	EIRR	Sensitivity (%)		

[101] In the initial five years 5% per year, followed by 4% per year for next five years, then 3% per year for the next five years and 2% per year thereafter, of project roads are expected to be affected. Damage benefits based on the 2013 estimated construction cost duly increased by 2 per cent real increase every year.
[102] Average GDP growth rate of GoB is 6 per cent per annum
[103] Number of vehicles per day on project roads has been assumed to be 70 four wheeler, 28 baby taxi, 665 two wheeler, 88 bus and 70 trucks in Pirojpur
[104] Savings in vehicle operating cost has been assumed at BDT 10 per vehicle for car, BDT 4 per vehicle for baby taxi, BDT 1.5 per vehicle for two wheeler, BDT 13 per vehicle for bus and BDT 16 per vehicle for truck
[105] Savings in time assumed to be 5 minutes and earnings per kilometre assumed to be BDT 15 based on a average monthly HH income of BDT 14,620 in Pirojpur as per socioeconomic survey
[106] In the initial five years 5% per year, followed by 4% per year for next five years, then 3% per year for the next five years and 2% per year thereafter, of project roads are expected to be affected. Damage benefits based on the 2013 estimated construction cost duly increased by 2 per cent real increase every year.
[107] Average GDP growth rate of GoB is 6 per cent per annum
[108] Number of vehicles per day on project roads has been assumed to be 10 four wheeler, 88 baby taxi, 2000 two wheeler, 100 bus and 60 trucks in Mathbaria
[109] Savings in vehicle operating cost has been assumed at BDT 10 per vehicle for car, BDT 4 per vehicle for baby taxi, BDT 1.5 per vehicle for two wheeler, BDT 13 per vehicle for bus and BDT 16 per vehicle for truck
[110] Savings in time assumed to be 5 minutes and earnings per kilometre assumed to be BDT 22 based on a average monthly HH income of BDT 21,744 in Mathbaria as per socioeconomic survey
[111] In the initial five years 5% per year, followed by 4% per year for next five years, then 3% per year for the next five years and 2% per year thereafter, of project roads are expected to be affected. Damage benefits based on the 2013 estimated construction cost duly increased by 2 per cent real increase every year.
[112] Average GDP growth rate of GoB is 6 per cent per annum.

	Present Value	Base					
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
Amtali	135.3	17.9	14.9	17.6	14.1	11.3	17.7
Galachipa	93.6	13.6	11.1	13.4	10.3	9.6	13.4
Pirojpur	439.5	21.1	17.8	20.9	16.9	16.0	21.0
Mathbaria	145.6	18.7	15.7	18.4	14.8	13.9	18.5

Source: PPTA consultant analysis.

Table 4.16: Roads Summary of Benefits - NPV (Tk Million) without CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Properties Damage	0.0	0.0	0.0	0.0
Vehicle Operating Cost Savings	53.0	14.1	147.3	51.8
Time Savings	82.3	79.4	292.3	93.9
Total	**135.3**	**93.6**	**439.5**	**145.6**

Source: PPTA consultant analysis.

4.3.5 Bridge Subprojects

130. A summary of the EIRR as well as the sensitivity analysis results is included in **Table 4.17**. Summary of economic benefits ascertained is given in **Table 4.18**.

Table 4.17: Bridges EIRR and Sensitivity Results of Project Pourashavas – With CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
Amtali	NA	NA					
Galachipa	NA	NA					
Pirojpur	31.7	22.6	19.2	22.6	18.4	15.4	22.5
Mathbaria	41.2	22.2	18.8	22.2	18.1	15.1	22.1

Source: PPTA consultant analysis.

Table 4.18: Bridges Summary of Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Vehicle Operating Cost Savings	NA	NA	0.1	0.2
Time Savings	NA	NA	31.6	41.0
Total			**31.7**	**41.2**

Source: PPTA consultant analysis.

Bridges - Pirojpur

131. Construction of four bridges is proposed under this subproject.

132. **Valuation of Benefits**. Number and category of vehicles[113] which will use these

[113] Number of vehicles per day on Pirojpur project bridges has been assumed to be 5 four wheeler, 75 baby taxi and 150 two wheeler

bridges has been estimated. Two flow benefits are envisaged under this subproject. First is the vehicle operating cost savings [114] and second is saved time cost[115] due to lesser time taken for commuting on the new bridges. At present automated vehicles are not able to cross over as the existing bridges are not designed as such and cannot take their load. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[116]

Bridges - Mathbaria

133. Construction of one bridges is proposed under this subproject.

134. **Valuation of Benefits**. Number and category of vehicles[117] which will use these bridges has been estimated. Two flow benefits are envisaged under this subproject. First is the vehicle operating cost savings [118] and second is saved time cost[119] due to lesser time taken for commuting on the new bridges. At present automated vehicles are not able to cross over as the existing bridges are not designed as such and cannot take their load.

135. In case of the Project investment without CCR measures it is estimated that only 75% of the both the benefits, vehicle operating costs and time savings, is likely to be achieved The EIRRs have been estimated accordingly and given in **Table 4.19**. Summary of economic benefits ascertained is given in **Table 4.20**.

Table 4.19: Bridges EIRR and Sensitivity Results of Project Pourashavas – Without CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
Amtali	NA	NA					
Galachipa	NA	NA					
Pirojpur	19.8	15.9	13.1	15.9	12.5	10.1	15.7
Mathbaria	25.7	15.6	12.9	15.6	12.3	9.9	15.4

Source: PPTA consultant analysis.

Table 4.20: Bridges Summary of Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Vehicle Operating Cost Savings	NA	NA	0.1	0.1
Time Savings	NA	NA	19.8	25.6
Total			**19.8**	**25.7**

Source: PPTA consultant analysis.

[114] Savings in vehicle operating cost has been assumed at BDT 10 per vehicle for car, BDT 4 per vehicle for baby taxi and BDT 1.5 per vehicle for two wheeler

[115] Savings in time assumed to be 9 minutes and earnings per kilometre assumed to be BDT 15 based on a average monthly HH income of BDT 14,620 in Pirojpur as per socioeconomic survey

[116] Average GDP growth rate of GoB is 6 per cent per annum

[117] Number of vehicles per day on Mathbaria project bridges has been assumed to be 20 four wheeler, 200 baby taxi and 250 two wheeler

[118] Savings in vehicle operating cost has been assumed at BDT 10 per vehicle for car, BDT 4 per vehicle for baby taxi and BDT 1.5 per vehicle for two wheeler

[119] Savings in time assumed to be 8.5 minutes and earnings per kilometre assumed to be BDT 22 based on a average monthly HH income of BDT 21,744 in Pirojpur as per socioeconomic survey.

4.3.6 Solid Waste Subprojects

136. A summary of the EIRR as well as the financial internal rate of return is included in **Table 4.21**. Summary of economic benefits ascertained is given in **Table 4.22**.

Table 4.21: Solid Waste EIRR and Sensitivity Results of Pourashavas – With CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit- 20%	One Year Delay
Amtali	1.4	60.7	52.7	59.6	49.9	42.1	60.7
Galachipa	1.7	70.1	61.0	69.0	58.0	49.3	70.1
Pirojpur	2.7	82.6	72.1	81.6	68.9	59.0	82.6
Mathbaria	2.1	84.7	74.0	83.7	70.7	60.6	84.7
Total / Average	**7.8**	**75.4**	**65.8**	**62.6**	**63.8**	**53.4**	**75.4**

Source: PPTA consultant analysis.

Table 4.22: Solid Waste Summary of Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Loss of Income	1.1	1.3	2.0	1.8
Saved Medical Cost	0.3	0.4	0.7	0.3
Total	**1.4**	**1.7**	**2.7**	**2.1**

Source: PPTA consultant analysis.

Solid Waste - Amtali

137. Provision of solid waste collection equipments is proposed in this subproject . This subproject will benefit the entire pourashava.

138. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[120] loss saved and second is saved medical costs[121] due to number of days of sickness[122] caused due to improper or inadequate sanitation. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[123].

Solid Waste - Galachipa

139. Provision of solid waste collection equipments is proposed in this subproject . This subproject will benefit the entire pourashava.

140. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[124] loss saved and second is saved medical costs[125] due to number of days of sickness[126] caused due to improper or inadequate sanitation. Benefits are adjusted for real

[120] Monthly household income BDT 13,841 in Amtali; source- socioeconomic survey
[121] Monthly household expenditure on health – BDT 1,097, 1% of this attributed to solid waste in Amtali; source- socioeconomic survey
[122] 0.1 minute per day solid waste collection time saved for each household in Amtali
[123] Average GDP growth rate of GoB is 6 per cent per annum
[124] Monthly household income BDT 13,167 in Galachipa; source- socioeconomic survey
[125] Monthly household expenditure on health – BDT 1,126, 1% of this attributed to solid waste in Galachipa; source- socioeconomic survey
[126] 0.1 minute per day solid waste collection time saved for each household in Galachipa

GDP growth rate of 2 per cent per annum over the analysis period[127].

Solid Waste - Pirojpur

141. Provision of solid waste collection equipments is proposed in this subproject . This subproject will benefit the entire pourashava.

142. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[128] loss saved and second is saved medical costs[129] due to number of days of sickness[130] caused due to improper or inadequate sanitation. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[131].

Solid Waste - Pirojpur

143. Provision of solid waste collection equipment is proposed in this subproject . This subproject will benefit the entire pourashava.

144. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[132] loss saved and second is saved medical costs[133] due to number of days of sickness[134] caused due to improper or inadequate sanitation. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[135].

145. In case of the Project investment without CCR measures it it is estimated that there will be no change as only equipments are being provided under the Project.

4.3.7 Cyclone Shelters Subprojects

146. A summary of the EIRR as well as the sensitivity analysis results is included in **Table 4.23**. Summary of economic benefit ascertained is given in **Table 4.24**.

Table 4.23: Cyclone Shelter EIRR and Sensitivity Results of Pourashavas – With CCR

Town	Net Present Value	EIRR Base	Sensitivity (%)				
	Taka/Ml.	(%)	Capital Cost + 20%	O&M Cost +20%	Economic Benefit - 20%	Cost +20% & Benefit- 20%	One Year Delay
Amtali	90.7	16.5	13.7	16.4	13.0	10.5	16.3
Galachipa	94.0	17.1	14.2	17.1	13.6	11.0	16.9
Pirojpur	141.6	19.3	16.2	19.2	15.5	12.7	19.1
Mathbaria	69.9	35.0	30.1	35.0	29.0	24.8	35.0

Source: PPTA consultant analysis.

[127] Average GDP growth rate of GoB is 6 per cent per annum
[128] Monthly household income BDT 14,620 in Pirojpur; source- socioeconomic survey
[129] Monthly household expenditure on health – BDT 1,533, 1% of this attributed to solid waste in Pirojpur; source- socioeconomic survey
[130] 0.1 minute per day solid waste collection time saved for each household in Pirojpur
[131] Average GDP growth rate of GoB is 6 per cent per annum
[132] Monthly household income BDT 21,744 in Mathbaria; source- socioeconomic survey
[133] Monthly household expenditure on health – BDT 1,061, 1% of this attributed to solid waste in Mathbaria; source- socioeconomic survey
[134] 0.1 minute per day solid waste collection time saved for each household in Mathbaria
[135] Average GDP growth rate of GoB is 6 per cent per annum.

Table 4.24: Cyclone Shelters Summary of Benefits - NPV (Tk Million) with CCR

	Amtali	Galachipa	Pirojpur	Mathbaria
Saved Loss of Income	84.0	86.6	128.2	66.7
Saved Medical Cost	6.7	7.4	13.4	3.3
Total	**90.7**	**94.0**	**141.6**	**69.9**

Source: PPTA consultant analysis.

Cyclone Shelters - Amtali

147. Provision of three cyclone shelters each with a capacity of 1200 persons is proposed in this subproject. This subproject will benefit about 3600 persons.

148. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[136] loss saved and second is saved medical costs[137] due to number of days of sickness[138] caused due to improper or inadequate sanitation. As per the technical experts forecast and simulation two cyclones are expected to occur due to climate change. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[139].

Cyclone Shelters - Galachipa

149. Provision of three cyclone shelters each with a capacity of 1300 persons is proposed in this subproject. This subproject will benefit about 3900 persons.

150. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[140] loss saved and second is saved medical costs[141] due to number of days of sickness[142] caused due to improper or inadequate sanitation. As per the technical experts forecast and simulation two cyclones are expected to occur due to climate change. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[143].

Cyclone Shelters - Pirojpur

151. Provision of four cyclone shelters each with a capacity of 1300 persons is proposed in this subproject. This subproject will benefit about 5200 persons.

152. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[144] loss saved and second is saved medical costs[145] due to number of days of sickness[146] caused due to improper or inadequate sanitation. As per the technical experts forecast and simulation two cyclones are expected to occur due to climate change. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[147].

[136] Monthly household income BDT 13,841 in Amtali; source- socioeconomic survey;
[137] Saved expenditure on health – BDT 1,097 per household.,
[138] 15 days' loss of income is assumed to be saved 1800 household in Amtali
[139] Average GDP growth rate of GoB is 6 per cent per annum
[140] Monthly household income BDT 13,167 in Galachipa; source- socioeconomic survey;
[141] Saved expenditure on health – BDT 1,126 per household.,
[142] 15 days' loss of income is assumed to be saved 1900 household in Galachipa.
[143] Average GDP growth rate of GoB is 6 per cent per annum
[144] Monthly household income BDT 14,620 in Pirojpur; source- socioeconomic survey;
[145] Saved expenditure on health – BDT 1,533 per household.,
[146] 15 days' loss of income is assumed to be saved 2200 household in Pirojpur
[147] Average GDP growth rate of GoB is 6 per cent per annum

Cyclone Shelters - Mathbaria

153. Provision of one cyclone shelters each with a capacity of 2000 persons is proposed in this subproject. This subproject will benefit about 2000 persons.

154. **Valuation of Benefits**. Two benefits are envisaged under this subproject. First is the benefit of income[148] loss saved and second is saved medical costs[149] due to number of days of sickness[150] caused due to improper or inadequate sanitation. As per the technical experts forecast and simulation two cyclones are expected to occur due to climate change. Benefits are adjusted for real GDP growth rate of 2 per cent per annum over the analysis period[151].

155. In case of the Project investment without CCR measures it it is estimated that there will be no change under the Project.

4.3.8 Conclusion

156. All the subprojects' base economic internal rate of return is above the economic opportunity cost of capital of 12%. Sensitivity analysis also showed robust results. Thus all the subprojects of Batch 1 towns, as discussed in above paragraphs, are economically viable.

157. Economic analysis workings are given in **Annex 4.1** for investment projects with cost of climate change resilience measures. **Annex 4.2** details the economic analysis workings for investment projects without cost of climate change resilience measures.

[148] Monthly household income BDT 21,744 in Mathbaria; source- socioeconomic survey;
[149] Saved expenditure on health – BDT 1,061 per household.,
[150] 15 days' loss of income is assumed to be saved 1800 household in Mathbaria
[151] Average GDP growth rate of GoB is 6 per cent per annum.

ANNEX 4.1

BDT Million

Economic Internal Rate of Return - Amtali Water Supply with CCR															
		Benefit					Cost				Sensitivity				
		Labor cost saved (stand post user)	Storage tank cost saved	Non-incremental benefit	Saved Purification Cost	Total	Investment	OM	Total	Net	Capital Cost Over-run by 20 %	O&M Over-run by 20%	Benefits reduced by 20%	Worst Scenario (all combined)	One Year Delay
1	2013	0.0	0.0	0.0	0.0	0.0	25.5	0.0	25.5	-25.5	-30.6	-25.5	-25.5	-30.6	-12.8
2	2014	0.0	0.0	0.0	0.0	0.0	51.0	0.0	51.0	-51.0	-61.3	-51.0	-51.0	-61.3	-12.8
3	2015	0.0	0.0	0.0	0.0	0.0	51.0	0.0	51.0	-51.0	-61.3	-51.0	-51.0	-61.3	-51.0
4	2016	9.4	1.9	6.1	8.2	25.7	0.0	6.5	6.5	19.1	8.9	17.8	14.0	3.8	-51.0
5	2017	10.0	0.1	6.6	8.6	25.4	0.0	6.5	6.5	18.8	18.8	17.5	13.7	12.4	19.1
6	2018	10.7	0.1	7.0	9.0	26.8	0.0	6.5	6.5	20.3	20.3	19.0	14.9	13.6	18.8
7	2019	11.3	0.1	7.4	9.4	28.3	0.0	6.5	6.5	21.7	21.7	20.4	16.1	14.8	20.3
8	2020	11.9	0.1	7.8	9.8	29.7	0.0	6.5	6.5	23.2	23.2	21.8	17.2	15.9	21.7
9	2021	12.3	0.1	8.1	10.1	30.6	0.0	6.5	6.5	24.1	24.1	22.8	17.9	16.6	23.2
10	2022	12.7	0.1	8.3	10.4	31.6	0.0	6.5	6.5	25.0	25.0	23.7	18.7	17.4	24.1
11	2023	13.1	0.1	8.6	10.7	32.5	0.0	6.5	6.5	26.0	26.0	24.6	19.5	18.1	25.0
12	2024	13.6	0.1	8.9	11.0	33.7	0.0	6.5	6.5	27.1	27.1	25.8	20.4	19.1	26.0
13	2025	14.1	0.1	9.3	11.3	34.8	0.0	6.5	6.5	28.3	28.3	27.0	21.3	20.0	27.1
14	2026	14.6	0.1	9.6	11.6	36.0	0.0	6.5	6.5	29.4	29.4	28.1	22.2	20.9	28.3
15	2027	15.1	0.1	9.9	11.9	37.1	0.0	6.5	6.5	30.5	30.5	29.2	23.1	21.8	29.4
16	2028	15.7	0.1	10.2	12.2	38.2	0.0	6.5	6.5	31.7	31.7	30.4	24.0	22.7	30.5
17	2029	16.2	0.1	10.6	12.5	39.4	0.0	6.5	6.5	32.8	32.8	31.5	24.9	23.6	31.7
18	2030	16.7	0.1	10.9	12.8	40.5	0.0	6.5	6.5	33.9	33.9	32.6	25.8	24.5	32.8
19	2031	17.4	0.1	11.4	13.2	42.1	0.0	6.5	6.5	35.5	35.5	34.2	27.1	25.8	33.9
20	2032	18.0	0.1	11.8	13.6	43.6	0.0	6.5	6.5	37.0	37.0	35.7	28.3	27.0	35.5
21	2033	18.7	0.1	12.3	14.0	45.1	0.0	6.5	6.5	38.5	38.5	37.2	29.5	28.2	37.0
22	2034	19.4	0.1	12.7	14.4	46.6	0.0	6.5	6.5	40.0	40.0	38.7	30.7	29.4	38.5
23	2035	20.1	0.1	13.1	14.7	48.1	-442.7	6.5	-436.1	484.2	484.2	482.9	474.6	473.3	40.0
						0.0					0.0	0.0	0.0	0.0	484.2
Total		291.1	4.1	190.6	229.8	715.5	-315.1	131.0	-184.1	**899.6**	**863.9**	**873.4**	**756.5**	**695.9**	**899.6**
	NPV @ 12%	67.6	1.7	44.2	55.0	168.6	67.1	34.8	102.0	**66.6**	**40.2**	**59.6**	**32.9**	**0.3**	**58.2**
	EIRR						Base EIRR			17.7%					
							Sensitivity				SI	SV			
							Capital Cost Over-run by 20%		12%	14.9%	1.5	64.6%			
							O&M Cost over-run by 20%		12%	17.1%	0.3	333.2%			
							Benefits reduced by 20%		12%	14.8%	1.6	61.8%			
							Worst Scenario (all three)		12%	12.0%					
							One Year Delay in Implementation			17.4%					

BDT Million

Economic Internal Rate of Return - Galachipa Water Supply with CCR														
		Benefit				Cost				Sensitivity				
		Labor cost saved (stand post user)	Storage tank cost saved	Non-incremental benefit	Total	Investment	OM	Total	Net	Capital Cost Over-run by 20 %	O&M Over-run by 20%	Benefits reduced by 20%	Worst Scenario (all combined)	One Year Delay
1	2013	0.0	0.0	0.0	0.0	23.9	0.0	23.9	-23.9	-28.7	-23.9	-23.9	-28.7	-12.0
2	2014	0.0	0.0	0.0	0.0	47.8	0.0	47.8	-47.8	-57.4	-47.8	-47.8	-57.4	-12.0
3	2015	0.0	0.0	0.0	0.0	47.8	0.0	47.8	-47.8	-57.4	-47.8	-47.8	-57.4	-47.8
4	2016	5.5	3.2	4.6	13.3	0.0	2.7	2.7	10.6	1.1	10.1	8.0	-1.6	-47.8
5	2017	6.7	0.7	5.6	13.0	0.0	2.7	2.7	10.3	10.3	9.8	7.7	7.2	10.6
6	2018	7.9	0.7	6.7	15.3	0.0	2.7	2.7	12.6	12.6	12.1	9.6	9.0	10.3
7	2019	9.2	0.7	7.7	17.7	0.0	2.7	2.7	15.0	15.0	14.5	11.5	10.9	12.6
8	2020	10.5	0.8	8.9	20.1	0.0	2.7	2.7	17.5	17.5	16.9	13.4	12.9	15.0
9	2021	11.9	0.8	10.0	22.7	0.0	2.7	2.7	20.0	20.0	19.5	15.5	14.9	17.5
10	2022	12.1	0.1	10.1	22.3	0.0	2.7	2.7	19.6	19.6	19.1	15.2	14.6	20.0
11	2023	12.2	0.1	10.3	22.6	0.0	2.7	2.7	19.9	19.9	19.4	15.4	14.9	19.6
12	2024	12.5	0.2	10.5	23.2	0.0	2.7	2.7	20.6	20.6	20.0	15.9	15.4	19.9
13	2025	12.8	0.2	10.8	23.8	0.0	2.7	2.7	21.1	21.1	20.6	16.4	15.8	20.6
14	2026	13.1	0.2	11.1	24.4	0.0	2.7	2.7	21.7	21.7	21.2	16.8	16.3	21.1
15	2027	13.4	0.2	11.3	24.9	0.0	2.7	2.7	22.3	22.3	21.7	17.3	16.7	21.7
16	2028	13.8	0.2	11.6	25.5	0.0	2.7	2.7	22.8	22.8	22.3	17.7	17.2	22.3
17	2029	14.1	0.2	11.8	26.1	0.0	2.7	2.7	23.4	23.4	22.9	18.2	17.6	22.8
18	2030	14.4	0.2	12.1	26.6	0.0	2.7	2.7	24.0	24.0	23.4	18.6	18.1	23.4
19	2031	14.7	0.2	12.4	27.3	0.0	2.7	2.7	24.6	24.6	24.1	19.2	18.6	24.0
20	2032	15.1	0.2	12.7	28.0	0.0	2.7	2.7	25.3	25.3	24.8	19.7	19.2	24.6
21	2033	15.4	0.2	13.0	28.6	0.0	2.7	2.7	25.9	25.9	25.4	20.2	19.7	25.3
22	2034	15.8	0.2	13.3	29.3	0.0	2.7	2.7	26.6	26.6	26.1	20.7	20.2	25.9
23	2035	16.1	0.2	13.6	29.9	-274.2	2.7	-271.5	301.4	301.4	300.9	295.4	294.9	26.6
					0.0					0.0	0.0	0.0	0.0	301.4
Total		247.3	9.4	208.1	464.8	-154.6	53.6	-101.0	**565.8**	**532.3**	**555.1**	**472.8**	**429.2**	**565.8**
	NPV @ 12%	56.1	4.1	47.2	107.3	73.3	14.2	87.5	**19.8**	**-5.0**	**17.0**	**-1.7**	**-29.0**	**16.5**
	EIRR					Base EIRR			14.0%					
						Sensitivity				SI	SV			
						Capital Cost Over-run by 20%		12%	11.6%	1.7	58.0%			
						O&M Cost over-run by 20%		12%	13.7%	0.2	576.5%			
						Benefits reduced by 20%		12%	11.8%	1.5	66.3%			
						Worst Scenario (all three)		12%	9.5%					
						One Year Delay in Implementation			13.8%					

Economic Internal Rate of Return - Mathbaria Water Supply with CCR														BDT Million
		Benefit				Cost				Sensitivity				
		Labor cost saved (stand post user)	Storage tank cost saved	Non-incremental benefit	Total	Investment	OM	Total	Net	Capital Cost Over-run by 20 %	O&M Over-run by 20%	Benefits reduced by 20%	Worst Scenario (all combined)	One Year Delay
1	2013	0.0	0.0	0.0	0.0	73.2	0.0	73.2	-73.2	-87.8	-73.2	-73.2	-87.8	-36.6
2	2014	0.0	0.0	0.0	0.0	146.3	0.0	146.3	-146.3	-175.6	-146.3	-146.3	-175.6	-36.6
3	2015	0.0	0.0	0.0	0.0	146.3	0.0	146.3	-146.3	-175.6	-146.3	-146.3	-175.6	-146.3
4	2016	22.4	10.6	24.5	57.6	0.0	4.4	4.4	53.2	23.9	52.3	41.6	12.4	-146.3
5	2017	24.6	1.0	26.9	52.6	0.0	4.4	4.4	48.1	48.1	47.3	37.6	36.7	53.2
6	2018	26.9	1.1	29.3	57.3	0.0	4.4	4.4	52.9	52.9	52.0	41.4	40.6	48.1
7	2019	29.2	1.1	31.9	62.2	0.0	4.4	4.4	57.8	57.8	56.9	45.4	44.5	52.9
8	2020	29.8	0.3	32.5	62.5	0.0	4.4	4.4	58.1	58.1	57.2	45.6	44.7	57.8
9	2021	30.3	0.3	33.1	63.7	0.0	4.4	4.4	59.3	59.3	58.4	46.5	45.7	58.1
10	2022	30.9	0.3	33.7	64.9	0.0	4.4	4.4	60.5	60.5	59.6	47.5	46.6	59.3
11	2023	31.5	0.3	34.3	66.1	0.0	4.4	4.4	61.7	61.7	60.8	48.5	47.6	60.5
12	2024	32.1	0.3	35.0	67.3	0.0	4.4	4.4	62.9	62.9	62.0	49.4	48.5	61.7
13	2025	32.6	0.3	35.6	68.5	0.0	4.4	4.4	64.1	64.1	63.2	50.4	49.5	62.9
14	2026	33.2	0.3	36.2	69.7	0.0	4.4	4.4	65.3	65.3	64.4	51.3	50.5	64.1
15	2027	33.8	0.3	36.8	70.9	0.0	4.4	4.4	66.5	66.5	65.6	52.3	51.4	65.3
16	2028	34.4	0.3	37.5	72.1	0.0	4.4	4.4	67.7	67.7	66.8	53.3	52.4	66.5
17	2029	34.9	0.3	38.1	73.3	0.0	4.4	4.4	68.9	68.9	68.0	54.2	53.3	67.7
18	2030	37.7	1.3	41.1	80.2	0.0	4.4	4.4	75.8	75.8	74.9	59.7	58.8	68.9
19	2031	38.4	0.3	41.9	80.7	0.0	4.4	4.4	76.3	76.3	75.4	60.2	59.3	75.8
20	2032	39.2	0.3	42.7	82.3	0.0	4.4	4.4	77.8	77.8	76.9	61.4	60.5	76.3
21	2033	39.9	0.3	43.5	83.8	0.0	4.4	4.4	79.4	79.4	78.5	62.6	61.7	77.8
22	2034	40.6	0.3	44.3	85.3	0.0	4.4	4.4	80.9	80.9	80.0	63.8	62.9	79.4
23	2035	41.4	0.3	45.1	86.8	-845.5	4.4	-841.1	927.9	927.9	927.1	910.6	909.7	80.9
					0.0					0.0	0.0	0.0	0.0	927.9
Total		663.9	19.6	724.2	1,407.8	-479.8	88.4	-391.3	**1,799.1**	**1,696.7**	**1,781.4**	**1,517.5**	**1,398.3**	**1,799.1**
	NPV @ 12%	160.0	9.4	174.5	343.9	223.7	23.5	247.2	**96.7**	**20.9**	**92.0**	**27.9**	**-52.1**	**82.8**
	EIRR					Base EIRR			15.3%					
						Sensitivity				SI	SV			
						Capital Cost Over-run by 20%		12%	12.6%	1.8	55.7%			
						O&M Cost over-run by 20%		12%	15.2%	0.1	1119.0%			
						Benefits reduced by 20%		12%	13.0%	1.5	66.0%			
						Worst Scenario (all three)		12%	10.5%					
						One Year Delay in Implementation			15.1%					

Economic Analysis of Drainage Schemes: Amtali with CCR										
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits BDT Million**				
Capital cost (Base + Physical Contingencies)		Million Tk.	47.770							
(of which labour)		20%	9.554							
						No. of Properties benefited				680
Annual O&M Costs		1%	0.239	0.9%		Saved Properties Damage Benefit				9.244
(of which labour)		70%	0.167			Saved Loss of Income				1.26
						Saved Medical Cost Benefit				0.100
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Agricultural Loss				1.95
						Saved business Income				0.47
						Saved Road Damage				0.80
Investment Cost						Base Economic Benefit				13.812
Traded	35%	13.376	10.885	1.070	11.647	Annual increase (real)				1.02%
Non traded	65%	24.840	24.840	1.000	24.840					
Labour		9.554	9.554	0.940	8.981					
Total		**47.770**	**45.279**		**45.468**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	2.490
Traded	35%	0.025	0.025	1.070	0.027					
Non traded	65%	0.047	0.047	1.000	0.047					
Labour		0.167	0.167	0.940	0.157					
Total		**0.239**	**0.239**		**0.231**					

BDT Million

ECONOMIC INTERNAL RATE OF RETURN											
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One year Delay
1	40%	18.187	0.000	18.187	0.000	-18.187	-21.825	-18.187	-18.187	-21.825	
2	60%	27.281	0.000	27.281	0.000	-27.281	-32.737	-27.281	-27.281	-32.737	-18.187
3			0.231	0.231	14.094	13.864	13.864	13.818	11.045	10.999	-27.281
4			0.231	0.231	14.238	14.007	14.007	13.961	11.160	11.114	13.864
5			0.231	0.231	14.383	14.153	14.153	14.107	11.276	11.230	14.007
6			0.231	0.231	14.530	14.299	14.299	14.253	11.393	11.347	14.153
7			0.231	0.231	14.678	14.448	14.448	14.401	11.512	11.466	14.299
8			0.231	0.231	14.828	14.597	14.597	14.551	11.632	11.586	14.448
9			0.231	0.231	14.979	14.749	14.749	14.702	11.753	11.707	14.597
10			0.231	0.231	15.132	14.901	14.901	14.855	11.875	11.829	14.749
11			0.551	0.551	15.286	14.736	14.736	14.626	11.678	11.568	14.901
12			0.551	0.551	15.442	14.892	14.892	14.781	11.803	11.693	14.736
13			0.551	0.551	15.600	15.049	15.049	14.939	11.929	11.819	14.892
14			0.551	0.551	15.759	15.208	15.208	15.098	12.056	11.946	15.049
15			0.551	0.551	15.920	15.369	15.369	15.259	12.185	12.075	15.208
16			0.551	0.551	16.082	15.531	15.531	15.421	12.315	12.205	15.369
17			0.551	0.551	16.246	15.695	15.695	15.585	12.446	12.336	15.531
18			0.551	0.551	16.412	15.861	15.861	15.751	12.579	12.469	15.695
19			0.551	0.551	16.579	16.028	16.028	15.918	12.713	12.603	15.861
20			0.551	0.551	16.748	16.198	16.198	16.087	12.848	12.738	16.028
21			0.551	0.551	16.919	16.368	16.368	16.258	12.985	12.875	16.198
22			0.551	0.551	17.092	16.541	16.541	16.431	13.123	13.013	16.368
PV @ 12%				**39.998**	**89.335**	**49.337**	**41.739**	**48.935**	**31.470**	**23.47**	**47.97**
EIRR						**28.1%**	**23.8%**	**28.0%**	**22.7%**	**18.9%**	**28.1%**
Sensitivity Indicator							**0.78**	**0.02**	**0.96**		
Benefit / Cost Ratio						**2.23**					
Net Present Value						**49.337**					
Switching Value							129%	5754%	104%		

Economic Analysis of Drainage Schemes: Galachipa with CCR										
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits (BDT Million)**				
Capital cost (Base + Physical Contingencies)		Million Tk.	279.479							
(of which labour)		20%	55.896			Catchment Area				
						No. of Properties benefited				2,018
Annual O&M Costs		0%	1.118	0.8%		Saved Properties Damage Benefit				15.718
(of which labour)		70%	0.783			Saved Loss of Income				27.50
						Saved Medical Cost Benefit				2.352
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Agricultural Loss				4.22
						Saved business Income				17.05
						Saved Road Damage				0.80
Investment Cost						Base Economic Benefit				67.639
Traded	35%	78.254	63.684	1.070	68.142	Annual increase (real)				1.02%
Non traded	65%	145.329	145.329	1.000	145.329					
Labour		55.896	55.896	0.940	52.542					
Total		**279.479**	**264.909**		**266.013**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	14.570
Traded	35%	0.117	0.117	1.070	0.126					
Non traded	65%	0.218	0.218	1.000	0.218					
Labour		0.783	0.783	0.940	0.736					
Total		**1.118**	**1.118**		**1.079**					

ECONOMIC INTERNAL RATE OF RETURN	Galachipa with CCR										
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost +	O&M Cost +	Benefit -	Cost +20% &	One year Delay
				BDT Million			20%	20%	20%	Benefit-20%	
1	40%	106.405	0.000	106.405	0.000	-106.405	-127.686	-106.405	-106.405	-127.686	
2	60%	159.608	0.000	159.608	0.000	-159.608	-191.529	-159.608	-159.608	-191.529	-106.405
3			1.079	1.079	69.019	67.940	67.940	67.724	54.136	53.920	-159.608
4			1.079	1.079	69.723	68.644	68.644	68.428	54.699	54.483	67.940
5			1.079	1.079	70.434	69.355	69.355	69.139	55.268	55.052	68.644
6			1.079	1.079	71.152	70.073	70.073	69.857	55.843	55.627	69.355
7			1.079	1.079	71.878	70.799	70.799	70.583	56.423	56.207	70.073
8			1.079	1.079	72.611	71.532	71.532	71.316	57.010	56.794	70.799
9			1.079	1.079	73.352	72.273	72.273	72.057	57.602	57.386	71.532
10			1.079	1.079	74.100	73.021	73.021	72.805	58.201	57.985	72.273
11			2.059	2.059	74.856	72.797	72.797	72.385	57.825	57.414	73.021
12			2.059	2.059	75.619	73.560	73.560	73.148	58.436	58.024	72.797
13			2.059	2.059	76.391	74.332	74.332	73.920	59.053	58.642	73.560
14			2.059	2.059	77.170	75.111	75.111	74.699	59.677	59.265	74.332
15			2.059	2.059	77.957	75.898	75.898	75.486	60.306	59.895	75.111
16			2.059	2.059	78.752	76.693	76.693	76.281	60.943	60.531	75.898
17			2.059	2.059	79.555	77.496	77.496	77.084	61.585	61.173	76.693
18			2.059	2.059	80.367	78.308	78.308	77.896	62.234	61.823	77.496
19			2.059	2.059	81.187	79.127	79.127	78.716	62.890	62.478	78.308
20			2.059	2.059	82.015	79.956	79.956	79.544	63.553	63.141	79.127
21			2.059	2.059	82.851	80.792	80.792	80.380	64.222	63.810	79.956
22			2.059	2.059	83.696	81.637	81.637	81.225	64.898	64.486	80.792
PV @ 12%				**230.623**	**437.467**	**206.843**	**162.395**	**205.167**	**119.350**	**73.23**	**200.10**
EIRR						**23.9%**	**20.1%**	**23.8%**	**19.2%**	**15.8%**	**23.8%**
Sensitivity Indicator							**0.80**	**0.02**	**0.99**		
Benefit / Cost Ratio						**1.90**					
Net Present Value						**206.843**					
Switching Value							124%	6027%	101%		

Economic Analysis of Drainage Schemes: Pirojpur with CCR										
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits BDT Million**				
Capital cost (Base + Physical Contingencies)		Million Tk.	319.866							
(of which labour)		20%	63.973							
						No. of Properties benefited				8,906
Annual O&M Costs		1%	1.599	0.7%		Saved Properties Damage Benefit				65.749
(of which labour)		70%	1.120			Saved Loss of Income				23.92
						Saved Medical Cost Benefit				2.508
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Agricultural Loss				47.79
						Saved business Income				14.21
						Saved Road Damage				6.00
Investment Cost						Base Economic Benefit				160.185
Traded	35%	89.563	72.887	1.070	77.989	Annual increase (real)				1.02%
Non traded	65%	166.330	166.330	1.000	166.330					
Labour		63.973	63.973	0.940	60.135					
Total		**319.866**	**303.191**		**304.454**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	16.675
Traded	35%	0.168	0.168	1.070	0.180					
Non traded	65%	0.312	0.312	1.000	0.312					
Labour		1.120	1.120	0.940	1.052					
Total		**1.599**	**1.599**		**1.544**					

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur	with CCR									
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One year Delay
1	40%	121.782	0.000	121.782	0.000	-121.782	-146.138	-121.782	-121.782	-146.138	
2	60%	182.673	0.000	182.673	0.000	-182.673	-219.207	-182.673	-182.673	-219.207	-121.782
3			1.544	1.544	163.453	161.909	161.909	161.600	129.218	128.910	-182.673
4			1.544	1.544	165.120	163.576	163.576	163.268	130.552	130.243	161.909
5			1.544	1.544	166.804	165.261	165.261	164.952	131.900	131.591	163.576
6			1.544	1.544	168.506	166.962	166.962	166.653	133.261	132.952	165.261
7			1.544	1.544	170.225	168.681	168.681	168.372	134.636	134.327	166.962
8			1.544	1.544	171.961	170.417	170.417	170.108	136.025	135.716	168.681
9			1.544	1.544	173.715	172.171	172.171	171.862	137.428	137.119	170.417
10			1.544	1.544	175.487	173.943	173.943	173.634	138.846	138.537	172.171
11			3.524	3.524	177.277	173.753	173.753	173.048	138.298	137.593	173.943
12			3.524	3.524	179.085	175.561	175.561	174.856	139.744	139.039	173.753
13			3.524	3.524	180.912	177.388	177.388	176.683	141.205	140.501	175.561
14			3.524	3.524	182.757	179.233	179.233	178.528	142.682	141.977	177.388
15			3.524	3.524	184.621	181.097	181.097	180.392	144.173	143.468	179.233
16			3.524	3.524	186.504	182.980	182.980	182.276	145.679	144.975	181.097
17			3.524	3.524	188.407	184.883	184.883	184.178	147.201	146.497	182.980
18			3.524	3.524	190.328	186.804	186.804	186.100	148.739	148.034	184.883
19			3.524	3.524	192.270	188.746	188.746	188.041	150.292	149.587	186.804
20			3.524	3.524	194.231	190.707	190.707	190.002	151.861	151.156	188.746
21			3.524	3.524	196.212	192.688	192.688	191.983	153.446	152.741	190.707
22			3.524	3.524	198.213	194.689	194.689	193.985	155.047	154.342	192.688
PV @ 12%				**267.502**	**1036.027**	**768.526**	**717.654**	**765.897**	**561.320**	**507.820**	**752.44**
EIRR						**45.9%**	**39.2%**	**45.8%**	**37.8%**	**32.1%**	**45.9%**
Sensitivity Indicator							**0.73**	**0.01**	**0.88**		
Benefit / Cost Ratio						**3.87**					
Net Present Value						**768.526**					
Switching Value							138%	11833%	113%		

Economic Analysis of Drainage Schemes: Mathbaria with CCR										
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits BDT Million**				
Capital cost (Base + Physical Contingencies)		Million Tk.	150.930							
(of which labour)		20%	30.186							
						No. of Properties benefited				1,840
Annual O&M Costs		0%	0.604	1.5%		Saved Properties Damage Benefit				23.642
(of which labour)		70%	0.423			Saved Loss of Income				22.59
						Saved Medical Cost Benefit				1.102
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Agricultural Loss				3.24
						Saved business Income				10.92
						Saved Road Damage				2.40
Investment Cost						Base Economic Benefit				63.899
Traded	35%	42.260	34.392	1.070	36.799	Annual increase (real)				1.02%
Non traded	65%	78.484	78.484	1.000	78.484					
Labour		30.186	30.186	0.940	28.375					
Total		**150.930**	**143.062**		**143.658**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	7.868
Traded	35%	0.063	0.063	1.070	0.068					
Non traded	65%	0.118	0.118	1.000	0.118					
Labour		0.423	0.423	0.940	0.397					
Total		**0.604**	**0.604**		**0.583**					

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria with CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One year Delay
1	40%	57.463	0.000	57.463	0.000	-57.463	-68.956	-57.463	-57.463	-68.956	
2	60%	86.195	0.000	86.195	0.000	-86.195	-103.434	-86.195	-86.195	-103.434	-57.463
3			0.583	0.583	65.202	64.620	64.620	64.503	51.579	51.463	-86.195
4			0.583	0.583	65.867	65.285	65.285	65.168	52.111	51.995	64.620
5			0.583	0.583	66.539	65.956	65.956	65.840	52.649	52.532	65.285
6			0.583	0.583	67.218	66.635	66.635	66.519	53.192	53.075	65.956
7			0.583	0.583	67.904	67.321	67.321	67.204	53.740	53.624	66.635
8			0.583	0.583	68.596	68.013	68.013	67.897	54.294	54.178	67.321
9			0.583	0.583	69.296	68.713	68.713	68.597	54.854	54.737	68.013
10			0.583	0.583	70.003	69.420	69.420	69.303	55.419	55.303	68.713
11			1.183	1.183	70.717	69.534	69.534	69.297	55.391	55.154	69.420
12			1.183	1.183	71.438	70.255	70.255	70.019	55.968	55.731	69.534
13			1.183	1.183	72.167	70.984	70.984	70.747	56.551	56.314	70.255
14			1.183	1.183	72.903	71.720	71.720	71.483	57.139	56.903	70.984
15			1.183	1.183	73.646	72.464	72.464	72.227	57.734	57.498	71.720
16			1.183	1.183	74.398	73.215	73.215	72.978	58.335	58.099	72.464
17			1.183	1.183	75.157	73.974	73.974	73.737	58.942	58.706	73.215
18			1.183	1.183	75.923	74.740	74.740	74.504	59.556	59.319	73.974
19			1.183	1.183	76.698	75.515	75.515	75.278	60.175	59.939	74.740
20			1.183	1.183	77.480	76.297	76.297	76.060	60.801	60.565	75.515
21			1.183	1.183	78.270	77.087	77.087	76.851	61.433	61.197	76.297
22			1.183	1.183	79.068	77.886	77.886	77.649	62.072	61.835	77.087
PV @ 12%				**124.687**	**413.278**	**288.590**	**264.586**	**287.657**	**205.935**	**180.997**	**282.15**
EIRR						**39.8%**	**33.9%**	**39.7%**	**32.6%**	**27.6%**	**39.7%**
Sensitivity Indicator							**0.74**	**0.01**	**0.90**		
Benefit / Cost Ratio						**3.31**					
Net Present Value						**288.590**					
Switching Value							136%	12263%	111%		

						Economc Benefit Cost Calculation							
Coastal Towns Infrastructure Improvement Project (CTIIP)						Days	300	250 (Rickshaw)					
Economic Analysis of Road :	**Amtali**					Road Length	8.38						
Road Name:	**Amtali Roads**			**Road Length: 8.38km**				**Light Vehicle**			**Heavy Vehicle**		**Total**
Million Taka (April 2013 Constant Prices)								**Car/Taxi**	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
						Traffic Volume	No./ Day	83	150	900	113	75	1321
Base Prices						**Without Project**							
Capital cost (Base + Physical Contingencies)		Million Tk.	125.345			Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
(of which labour)		20%	25.069			Total Operating Cost	Tk./Year	35,88,986	30,16,800	54,30,240	52,55,517	39,59,550	212,51,093
						with Project							
Annual O&M Costs		2%	1.880			Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
(of which labour)		70%	1.316			Total Operating Cost	Tk./Year	20,86,620	15,08,400	33,93,900	36,93,066	30,16,800	136,98,786
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	**Savings per Year**		**15,02,366**	**15,08,400**	**20,36,340**	**15,62,451**	**9,42,750**	**75,52,307**
		Cost incl.	**Cost excl.**	**Factor**	**Cost**								
		Taxes	**Taxes**			**Rickshaw**	**Trips**	**Minutes**	**Earnings per**	**Earning per**			
Investment Cost								**per km.**	**Km . (Tk.)**	**Minute (Tk.)**			
Traded	35%	35.097	28.562	1.070	30.561	**Without Project**	1500						
Non traded	65%	65.179	65.179	1.000	65.179	Time taken to travel		12.5	14	1.12			
Labour		25.069	25.069	0.940	23.565								
Total		**125.345**	**118.810**		**119.306**	**with Project**							
Annual O&M Costs						Time taken to travel		7.5	14	1.87			
Traded	35%	0.197	0.197	1.070	0.211								
Non traded	65%	0.367	0.367	1.000	0.367	Benefit/saving		5	0	0.75			
Labour		1.316	1.316	0.940	1.237	Road length (Km)				8.38			
Total		**1.880**	**1.880**		**1.815**	Savings per trip				31.29			
Taxes and Duties						**Yearly Savings**							**117,32,000**
VAT			5.50%	6.535		**Damage to property due to Floods**							**see below**
						Total Savings							**192,84,307**
Annual increase (real)			2.00%										

ECONOMIC INTERNAL RATE OF RETURN	Amtali Roads with CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	71.583	0.000	71.583	0.000	-71.583	-85.900	-71.583	-71.583	-85.900	
2	40%	47.722	0.000	47.722	0.000	-47.722	-57.267	-47.722	-47.722	-57.267	-71.583
3			1.815	1.815	28.530	26.715	26.715	26.352	21.009	20.646	-47.722
4			1.815	1.815	29.187	27.372	27.372	27.009	21.535	21.172	26.715
5			1.815	1.815	29.769	27.954	27.954	27.591	22.001	21.638	27.372
6			1.815	1.815	30.361	28.546	28.546	28.183	22.474	22.111	27.954
7			1.815	1.815	30.963	29.148	29.148	28.785	22.956	22.593	28.546
8			1.815	1.815	29.691	27.876	27.876	27.513	21.938	21.575	29.148
9			1.815	1.815	30.278	28.463	28.463	28.100	22.407	22.044	27.876
10			1.815	1.815	30.875	29.060	29.060	28.697	22.885	22.522	28.463
11			1.815	1.815	31.483	29.667	29.667	29.304	23.371	23.008	29.060
12			1.815	1.815	32.101	30.286	30.286	29.923	23.866	23.503	29.667
13			1.815	1.815	30.662	28.847	28.847	28.484	22.714	22.351	30.286
14			1.815	1.815	31.264	29.449	29.449	29.086	23.196	22.833	28.847
15			1.815	1.815	31.878	30.063	30.063	29.700	23.687	23.324	29.449
16			1.815	1.815	32.502	30.687	30.687	30.324	24.187	23.824	30.063
17			1.815	1.815	33.138	31.323	31.323	30.960	24.695	24.332	30.687
18			1.815	1.815	31.525	29.710	29.710	29.347	23.405	23.042	31.323
19			1.815	1.815	32.144	30.329	30.329	29.966	23.900	23.537	29.710
20			1.815	1.815	32.775	30.960	30.960	30.597	24.405	24.042	30.329
21			1.815	1.815	33.418	31.603	31.603	31.240	24.919	24.556	30.960
22			1.815	1.815	34.073	32.258	32.258	31.895	25.443	25.080	31.603
PV @ 12%				**112.765**	**181.792**	**69.027**	**48.635**	**66.865**	**32.669**	**10.12**	**66.36**
EIRR						**20.6%**	**17.3%**	**20.4%**	**16.3%**	**13.2%**	**20.5%**
Sensitivity Indicator							**0.81**	**0.06**	**1.05**		
Benefit / Cost Ratio						**1.61**					
Net Present Value						**69.027**					
Switching Value							123%	1644%	95%		

Coastal Towns Infrastructure Improvement Project (CTIIP)					
Economic Analysis of Road :	**Galachipa**				
Road Name:	**Galachipa Roads**			**Road Length: 6.995km**	
Million Taka (April 2013 Constant Prices)					
Base Prices					
Capital cost (Base + Physical Contingencies)		Million Tk.	113.628		
(of which labour)		20%	22.726		
Annual O&M Costs		1%	1.250		
(of which labour)		70%	0.875		
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**
Investment Cost					
Traded	35%	31.816	25.892	1.070	27.704
Non traded	65%	59.086	59.086	1.000	59.086
Labour		22.726	22.726	0.940	21.362
Total		**113.628**	**107.704**		**108.153**
Annual O&M Costs					
Traded	35%	0.131	0.131	1.070	0.140
Non traded	65%	0.244	0.244	1.000	0.244
Labour		0.875	0.875	0.940	0.822
Total		**1.250**	**1.250**		**1.207**
Taxes and Duties					
VAT			5.50%	5.924	
Annual increase (real)			2.00%		

Economc Benefit Cost Calculation							
Days	300	300 (Rickshaw)					
Road Length	6.995						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	45	64	300	2	20	431
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	16,24,239	10,74,432	15,10,920	77,645	8,81,370	51,68,606
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	9,44,325	5,37,216	9,44,325	54,561	6,71,520	31,51,947
Savings per Year		**6,79,914**	**5,37,216**	**5,66,595**	**23,084**	**2,09,850**	**20,16,659**
Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	1556						
Time taken to travel		12.5	13	1.04			
with Project							
Time taken to travel		7.5	13	1.73			
Benefit/saving		5	0	0.69			
Road length (Km)				6.995			
Savings per trip				24.25			
Yearly Savings							**113,19,589**
Damage to property due to Floods							**see below**
Total Savings							**133,36,247**

ECONOMIC INTERNAL RATE OF RETURN	Galachipa Roads		With CCR								
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	64.892	0.000	64.892	0.000	-64.892	-77.870	-64.892	-64.892	-77.870	
2	40%	43.261	0.000	43.261	0.000	-43.261	-51.913	-43.261	-43.261	-51.913	-64.892
3			1.207	1.207	26.363	25.157	25.157	24.915	19.884	19.643	-43.261
4			1.207	1.207	27.018	25.811	25.811	25.570	20.408	20.166	25.157
5			1.207	1.207	27.556	26.349	26.349	26.108	20.838	20.597	25.811
6			1.207	1.207	28.102	26.895	26.895	26.654	21.275	21.033	26.349
7			1.207	1.207	28.656	27.450	27.450	27.208	21.718	21.477	26.895
8			1.207	1.207	26.439	25.232	25.232	24.991	19.945	19.703	27.450
9			1.207	1.207	26.958	25.751	25.751	25.510	20.359	20.118	25.232
10			1.207	1.207	27.484	26.278	26.278	26.036	20.781	20.540	25.751
11			1.207	1.207	28.019	26.813	26.813	26.571	21.209	20.968	26.278
12			1.207	1.207	28.563	27.356	27.356	27.115	21.644	21.403	26.813
13			1.207	1.207	26.065	24.858	24.858	24.617	19.645	19.404	27.356
14			1.207	1.207	26.570	25.364	25.364	25.123	20.050	19.808	24.858
15			1.207	1.207	27.084	25.878	25.878	25.636	20.461	20.220	25.364
16			1.207	1.207	27.607	26.400	26.400	26.159	20.879	20.638	25.878
17			1.207	1.207	28.138	26.931	26.931	26.690	21.304	21.063	26.400
18			1.207	1.207	25.343	24.137	24.137	23.896	19.068	18.827	26.931
19			1.207	1.207	25.834	24.627	24.627	24.386	19.461	19.219	24.137
20			1.207	1.207	26.333	25.127	25.127	24.885	19.860	19.619	24.627
21			1.207	1.207	26.841	25.635	25.635	25.394	20.267	20.025	25.127
22			1.207	1.207	27.358	26.152	26.152	25.911	20.680	20.439	25.635
PV @ 12%				**99.611**	**162.136**	**62.525**	**44.040**	**61.088**	**30.098**	**10.18**	**60.36**
EIRR						**20.9%**	**17.4%**	**20.7%**	**16.5%**	**13.3%**	**20.8%**
Sensitivity Indicator							**0.83**	**0.04**	**1.05**		
Benefit / Cost Ratio						**1.63**					
Net Present Value						**62.525**					
Switching Value							120%	2226%	95%		

						Economc Benefit Cost Calculation							
Coastal Towns Infrastructure Improvement Project (CTIIP)						Days	300	300 (Rickshaw)					
Economic Analysis of Road :	**Pirojpur**					Road Length	34.2						
Road Name:	**Pirojpur Roads with CCR**			**Road Length: 34.2km**				**Light Vehicle**			**Heavy Vehicle**		**Total**
Million Taka (April 2013 Constant Prices)								**Car/Taxi**	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
						Traffic Volume	No./ Day	70	28	665	88	70	921
Base Prices						**Without Project**							
Capital cost (Base + Physical Contingencies)		Million Tk.	363.888			Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
(of which labour)		20%	72.778			Total Operating Cost	Tk./Year	123,53,040	22,98,240	163,74,960	167,03,280	150,82,200	628,11,720
						with Project							
Annual O&M Costs		1%	3.639			Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
(of which labour)		70%	2.547			Total Operating Cost	Tk./Year	71,82,000	11,49,120	102,34,350	117,37,440	114,91,200	417,94,110
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	**Savings per Year**		**51,71,040**	**11,49,120**	**61,40,610**	**49,65,840**	**35,91,000**	**210,17,610**
						Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Investment Cost													
Traded	35%	101.889	82.918	1.070	88.722	**Without Project**	1015						
Non traded	65%	189.222	189.222	1.000	189.222	Time taken to travel		12.5	15	1.2			
Labour		72.778	72.778	0.940	68.411								
Total		**363.888**	**344.917**		**346.355**	**with Project**							
Annual O&M Costs						Time taken to travel		7.5	15	2.00			
Traded	35%	0.382	0.382	1.070	0.409								
Non traded	65%	0.710	0.710	1.000	0.710	Benefit/saving		5	0	0.80			
Labour		2.547	2.547	0.940	2.394	Road length (Km)				34.2			
Total		**3.639**	**3.639**		**3.513**	Savings per trip				136.80			
Taxes and Duties						**Yearly Savings**							**416,55,600**
VAT			5.50%	18.970		**Damage to property due to Floods**							**see below**
						Total Savings							**626,73,210**
Annual increase (real)			2.00%										

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur Roads with CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				One Year Delay
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	
1	60%	207.813	0.000	207.813	0.000	-207.813	-249.375	-207.813	-207.813	-249.375	
2	40%	138.542	0.000	138.542	0.000	-138.542	-166.250	-138.542	-138.542	-166.250	-207.813
3			3.513	3.513	83.763	80.251	80.251	79.548	63.498	71.874	-138.542
4			3.513	3.513	85.439	81.926	81.926	81.223	64.838	73.382	80.251
5			3.513	3.513	87.148	83.635	83.635	82.932	66.205	74.920	81.926
6			3.513	3.513	88.890	85.378	85.378	84.675	67.600	76.489	83.635
7			3.513	3.513	90.668	87.155	87.155	86.453	69.022	78.089	85.378
8			3.513	3.513	88.384	84.871	84.871	84.168	67.194	76.033	87.155
9			3.513	3.513	90.151	86.639	86.639	85.936	68.608	77.623	84.871
10			3.513	3.513	91.954	88.442	88.442	87.739	70.051	79.246	86.639
11			3.513	3.513	93.793	90.281	90.281	89.578	71.522	80.901	88.442
12			3.513	3.513	95.669	92.157	92.157	91.454	73.023	82.590	90.281
13			3.513	3.513	93.058	89.545	89.545	88.843	70.934	80.240	92.157
14			3.513	3.513	94.919	91.407	91.407	90.704	72.423	81.915	89.545
15			3.513	3.513	96.818	93.305	93.305	92.602	73.941	83.623	91.407
16			3.513	3.513	98.754	95.241	95.241	94.539	75.491	85.366	93.305
17			3.513	3.513	100.729	97.216	97.216	96.514	77.071	87.144	95.241
18			3.513	3.513	97.748	94.236	94.236	93.533	74.686	84.461	97.216
19			3.513	3.513	99.703	96.191	96.191	95.488	76.250	86.220	94.236
20			3.513	3.513	101.697	98.185	98.185	97.482	77.845	88.015	96.191
21			3.513	3.513	103.731	100.219	100.219	99.516	79.472	89.845	98.185
22			3.513	3.513	105.806	102.293	102.293	101.591	81.132	91.713	100.219
PV @ 12%				**316.909**	**541.142**	**224.233**	**165.034**	**220.049**	**116.004**	**110.92**	**215.78**
EIRR						**21.4%**	**18.0%**	**21.3%**	**17.1%**	**16.1%**	**21.3%**
Sensitivity Indicator							**0.80**	**0.04**	**1.00**		
Benefit / Cost Ratio						**1.71**					
Net Present Value						**224.233**					
Switching Value							125%	2623%	100%		

						Economc Benefit Cost Calculation							
Coastal Towns Infrastructure Improvement Project (CTIIP)						Days	300	300 (Rickshaw)					
Economic Analysis of Road :	**Mathbaria**					Road Length	8						
Road Name:	**Mathbaria Roads with CCR**			**Road Length: 8 km**				**Light Vehicle**			**Heavy Vehicle**		**Total**
Million Taka (April 2013 Constant Prices)								**Car/Taxi**	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
						Traffic Volume	No./ Day	10	88	2000	100	60	2258
Base Prices						**Without Project**							
Capital cost (Base + Physical Contingencies)		Million Tk.	127.173			Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
(of which labour)		20%	25.435			Total Operating Cost	Tk./Year	4,12,800	16,89,600	115,20,000	44,40,000	30,24,000	210,86,400
						with Project							
Annual O&M Costs		1%	1.590			Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
(of which labour)		70%	1.113			Total Operating Cost	Tk./Year	2,40,000	8,44,800	72,00,000	31,20,000	23,04,000	137,08,800
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	**Savings per Year**		**1,72,800**	**8,44,800**	**43,20,000**	**13,20,000**	**7,20,000**	**73,77,600**
						Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Investment Cost													
Traded	35%	35.608	28.978	1.070	31.007	**Without Project**	950						
Non traded	65%	66.130	66.130	1.000	66.130	Time taken to travel		12.5	22	1.76			
Labour		25.435	25.435	0.940	23.908								
Total		**127.173**	**120.543**		**121.045**	**with Project**							
Annual O&M Costs						Time taken to travel		7.5	22	2.93			
Traded	35%	0.167	0.167	1.070	0.179								
Non traded	65%	0.310	0.310	1.000	0.310	Benefit/saving		5	0	1.17			
Labour		1.113	1.113	0.940	1.046	Road length (Km)				8			
Total		**1.590**	**1.590**		**1.535**	Savings per trip				46.93			
Taxes and Duties						**Yearly Savings**							**133,76,000**
VAT			5.50%	6.630		**Damage to property due to Floods**							**see below**
						Total Savings							**207,53,600**
Annual increase (real)			2.00%										

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria Roads with CCR									BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				One Year Delay
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	
1	60%	72.627	0.000	72.627	0.000	-72.627	-87.152	-72.627	-72.627	-87.152	
2	40%	48.418	0.000	48.418	0.000	-48.418	-58.102	-48.418	-48.418	-58.102	-72.627
3			1.535	1.535	28.078	26.543	26.543	26.236	20.928	23.735	-48.418
4			1.535	1.535	28.639	27.105	27.105	26.798	21.377	24.241	26.543
5			1.535	1.535	29.212	27.678	27.678	27.371	21.835	24.756	27.105
6			1.535	1.535	29.796	28.262	28.262	27.955	22.303	25.282	27.678
7			1.535	1.535	30.392	28.858	28.858	28.551	22.779	25.819	28.262
8			1.535	1.535	29.568	28.033	28.033	27.727	22.120	25.077	28.858
9			1.535	1.535	30.159	28.625	28.625	28.318	22.593	25.609	28.033
10			1.535	1.535	30.763	29.228	29.228	28.921	23.075	26.152	28.625
11			1.535	1.535	31.378	29.843	29.843	29.536	23.568	26.705	29.228
12			1.535	1.535	32.005	30.471	30.471	30.164	24.070	27.270	29.843
13			1.535	1.535	31.064	29.530	29.530	29.223	23.317	26.423	30.471
14			1.535	1.535	31.686	30.151	30.151	29.844	23.814	26.982	29.530
15			1.535	1.535	32.319	30.785	30.785	30.478	24.321	27.553	30.151
16			1.535	1.535	32.966	31.431	31.431	31.124	24.838	28.135	30.785
17			1.535	1.535	33.625	32.090	32.090	31.783	25.365	28.728	31.431
18			1.535	1.535	32.552	31.017	31.017	30.710	24.507	27.762	32.090
19			1.535	1.535	33.203	31.668	31.668	31.361	25.028	28.348	31.017
20			1.535	1.535	33.867	32.332	32.332	32.025	25.559	28.945	31.668
21			1.535	1.535	34.544	33.010	33.010	32.703	26.101	29.555	32.332
22			1.535	1.535	35.235	33.700	33.700	33.393	26.653	30.177	33.010
PV @ 12%				**112.582**	**181.054**	**68.472**	**47.783**	**66.644**	**32.261**	**29.68**	**65.69**
EIRR						**20.3%**	**17.0%**	**20.1%**	**16.1%**	**15.2%**	**20.2%**
Sensitivity Indicator							**0.81**	**0.05**	**1.03**		
Benefit / Cost Ratio						**1.61**					
Net Present Value						**68.472**					
Switching Value							123%	1956%	97%		

Coastal Towns Infrastructure Improvement Project (CTIIP)					
Economic Analysis of Bridges :	**Pirojpur**				
Bridges Name:	**Four Bridges with CCR**			**Road Length: 1*75**	
Million Taka (April 2013 Constant Prices)					
Base Prices					
Capital cost (Base + Physical Contingencies)		Million Tk.	20.425		
(of which labour)		20%	4.085		
Annual O&M Costs		0%	0.022	7.3%	
(of which labour)		70%	0.016		
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**
Investment Cost					
Traded	35%	5.719	4.654	1.070	4.980
Non traded	65%	10.621	10.621	1.000	10.621
Labour		4.085	4.085	0.940	3.840
Total		**20.425**	**19.360**		**19.441**
Annual O&M Costs					
Traded	35%	0.002	0.002	1.070	0.003
Non traded	65%	0.004	0.004	1.000	0.004
Labour		0.016	0.016	0.940	0.015
Total		**0.022**	**0.022**		**0.022**
Taxes and Duties					
VAT			5.50%	1.065	
Annual increase (real)			2.00%		

Economc Benefit Cost Calculation							
Days	300	250 (Rickshaw)					
Bridge Length	0.075						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	5	75	150	0	0	230
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	1,935	13,500	8,100	-	-	23,535
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	1,125	6,750	5,063	-	-	12,938
Savings per Year		**810**	**6,750**	**3,038**	**-**	**-**	**10,598**
	Trips	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	7500						
Time taken to travel		12.5	15	1.2			
with Project							
Time taken to travel		3.5	15	4.29			
Benefit/saving		9	0	3.09			
Road length (Km)				0.075			
Savings per trip				2.08			
Yearly Savings							**46,86,429**
Total Savings							**46,97,026**

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur	Four Bridges with CCR									
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +5% & Benefit-10%	One Year Delay
1	60%	11.665	0.000	11.665	0.000	-11.665	-13.997	-11.665	-11.665	-13.997	
2	40%	7.776	0.000	7.776	0.000	-7.776	-9.332	-7.776	-7.776	-9.332	-11.665
3			0.022	0.022	4.697	4.675	4.675	4.671	3.736	3.732	-7.776
4			0.022	0.022	4.791	4.769	4.769	4.765	3.811	3.807	4.675
5			0.022	0.022	4.887	4.865	4.865	4.861	3.888	3.883	4.769
6			0.022	0.022	4.985	4.963	4.963	4.958	3.966	3.962	4.865
7			0.022	0.022	5.084	5.063	5.063	5.058	4.046	4.041	4.963
8			0.022	0.022	5.186	5.164	5.164	5.160	4.127	4.123	5.063
9			0.022	0.022	5.290	5.268	5.268	5.264	4.210	4.206	5.164
10			0.022	0.022	5.395	5.374	5.374	5.369	4.295	4.290	5.268
11			0.022	0.022	5.503	5.482	5.482	5.477	4.381	4.377	5.374
12			0.022	0.022	5.613	5.592	5.592	5.587	4.469	4.465	5.482
13			0.022	0.022	5.726	5.704	5.704	5.700	4.559	4.554	5.592
14			0.022	0.022	5.840	5.818	5.818	5.814	4.650	4.646	5.704
15			0.022	0.022	5.957	5.935	5.935	5.931	4.744	4.740	5.818
16			0.022	0.022	6.076	6.054	6.054	6.050	4.839	4.835	5.935
17			0.022	0.022	6.198	6.176	6.176	6.172	4.936	4.932	6.054
18			0.022	0.022	6.322	6.300	6.300	6.296	5.036	5.031	6.176
19			0.022	0.022	6.448	6.426	6.426	6.422	5.137	5.132	6.300
20			0.022	0.022	6.577	6.555	6.555	6.551	5.240	5.236	6.426
21			0.022	0.022	6.709	6.687	6.687	6.682	5.345	5.341	6.555
22			0.022	0.022	6.843	6.821	6.821	6.817	5.452	5.448	6.687
PV @ 12%				**16.743**	**31.676**	**14.933**	**11.610**	**14.907**	**8.598**	**5.25**	**14.37**
EIRR						**22.6%**	**19.2%**	**22.6%**	**18.4%**	**15.4%**	**22.5%**
Sensitivity Indicator							**0.77**	**0.00**	**0.93**		
Benefit / Cost Ratio						**1.89**					
Net Present Value						**14.933**					
Switching Value							131%	26313%	108%		

Coastal Towns Infrastructure Improvement Project (CTIIP)					
Economic Analysis of Bridges :	**Mathbaria**				
Bridges Name:	**One Bridge with CCR**			**Road Length: 1*75**	
Million Taka (April 2013 Constant Prices)					
Base Prices					
Capital cost (Base + Physical Contingencies)		Million Tk.	27.090		
(of which labour)		20%	5.418		
Annual O&M Costs		0%	0.027	5.5%	
(of which labour)		70%	0.019		
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**
Investment Cost					
Traded	35%	7.585	6.173	1.070	6.605
Non traded	65%	14.087	14.087	1.000	14.087
Labour		5.418	5.418	0.940	5.093
Total		**27.090**	**25.678**		**25.785**
Annual O&M Costs					
Traded	35%	0.003	0.003	1.070	0.003
Non traded	65%	0.005	0.005	1.000	0.005
Labour		0.019	0.019	0.940	0.018
Total		**0.027**	**0.027**		**0.026**
Taxes and Duties					
VAT			5.50%	1.412	
Annual increase (real)			2.00%		

Economc Benefit Cost Calculation							
Days	300	250 (Rickshaw)					
Bridge Length	0.075						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	20	200	250	0	0	470
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	7,740	36,000	13,500	-	-	57,240
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	4,500	18,000	8,438	-	-	30,938
Savings per Year		**3,240**	**18,000**	**5,063**	**-**	**-**	**26,303**
	Trips	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	5100						
Time taken to travel		12.5	22	1.76			
with Project							
Time taken to travel		3	22	7.33			
Benefit/saving		9.5	0	5.57			
Road length (Km)				0.075			
Savings per trip				3.97			
Yearly Savings							**60,75,630**
Total Savings							**61,01,933**

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria	One Bridge with CCR								BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				One Year Delay
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +5% & Benefit-10%	
1	60%	15.471	0.000	15.471	0.000	-15.471	-18.565	-15.471	-15.471	-18.565	
2	40%	10.314	0.000	10.314	0.000	-10.314	-12.377	-10.314	-10.314	-12.377	-15.471
3			0.026	0.026	6.102	6.076	6.076	6.071	4.855	4.850	-10.314
4			0.026	0.026	6.224	6.198	6.198	6.193	4.953	4.948	6.076
5			0.026	0.026	6.348	6.322	6.322	6.317	5.053	5.047	6.198
6			0.026	0.026	6.475	6.449	6.449	6.444	5.154	5.149	6.322
7			0.026	0.026	6.605	6.579	6.579	6.574	5.258	5.253	6.449
8			0.026	0.026	6.737	6.711	6.711	6.706	5.363	5.358	6.579
9			0.026	0.026	6.872	6.846	6.846	6.840	5.471	5.466	6.711
10			0.026	0.026	7.009	6.983	6.983	6.978	5.581	5.576	6.846
11			0.026	0.026	7.149	7.123	7.123	7.118	5.693	5.688	6.983
12			0.026	0.026	7.292	7.266	7.266	7.261	5.808	5.803	7.123
13			0.026	0.026	7.438	7.412	7.412	7.407	5.924	5.919	7.266
14			0.026	0.026	7.587	7.561	7.561	7.556	6.043	6.038	7.412
15			0.026	0.026	7.739	7.713	7.713	7.707	6.165	6.160	7.561
16			0.026	0.026	7.894	7.867	7.867	7.862	6.289	6.283	7.713
17			0.026	0.026	8.051	8.025	8.025	8.020	6.415	6.410	7.867
18			0.026	0.026	8.212	8.186	8.186	8.181	6.544	6.539	8.025
19			0.026	0.026	8.377	8.350	8.350	8.345	6.675	6.670	8.186
20			0.026	0.026	8.544	8.518	8.518	8.513	6.809	6.804	8.350
21			0.026	0.026	8.715	8.689	8.689	8.684	6.946	6.941	8.518
22			0.026	0.026	8.889	8.863	8.863	8.858	7.085	7.080	8.689
PV @ 12%				**22.191**	**41.151**	**18.960**	**14.553**	**18.929**	**10.730**	**6.29**	**18.23**
EIRR						**22.2%**	**18.8%**	**22.2%**	**18.1%**	**15.1%**	**22.1%**
Sensitivity Indicator							**0.77**	**0.00**	**0.93**		
Benefit / Cost Ratio						**1.85**					
Net Present Value						**18.960**					
Switching Value							130%	28261%	107%		

Economic Analysis of Sanitation	**Amtali with CCR**									
Schemes:	**10 community Latrines, 4 public Toilets and 1 Desludging Machine**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	11.890							
(of which labour)		20%	2.378							
						Average monthly household expenditure on health (Taka) /a				1,097
						No. of Households benefited				455
Annual O&M Costs		5%	0.594			/a: Source: SEWTP				
(of which labour)		50%	0.297			Days saved due to	Days			2.5
						HH income per day	Taka / day			532
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**					
						Yearly savings per HH				1,330.00
Investment Cost										
Traded	35%	3.329	2.709	1.070	2.899					
Non traded	65%	6.183	6.183	1.000	6.183	Base Economic Benefit				
Labour		2.378	2.378	0.940	2.235	Saved Income Loss			BDT Million	0.61
Total		**11.890**	**11.270**		**11.317**	Saved Medical Cost			BDT Million	1.796
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.104	0.104	1.070	0.111	Custom Duty on Traded Cost			5.50%	0.620
Non traded	65%	0.193	0.193	1.000	0.193					
Labour		0.297	0.297	0.940	0.279					
Total		**0.594**	**0.594**		**0.584**					

ECONOMIC INTERNAL RATE OF RETURN	Amtali with CCR										
	10 community Latrines, 4 public Toilets and 1 Desludging Machine										
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost +	O&M +	Benefit -	Cost +20% &	ne Year Dela
							20%	20%	20%	Benefit-20%	
1	60%	6.790	0.000	6.790	0.000	-6.790	-8.148	-6.790	-6.790	-8.148	
2	40%	4.527	0.000	4.527	0.000	-4.527	-5.432	-4.527	-4.527	-5.432	-6.790
3			0.584	0.584	2.402	1.818	1.818	5.546	1.338	1.221	-4.527
4			0.584	0.584	2.450	1.866	1.866	5.595	1.376	1.259	1.818
5			0.584	0.584	2.499	1.915	1.915	5.644	1.415	1.299	1.866
6			0.584	0.584	2.549	1.965	1.965	5.694	1.455	1.339	1.915
7			0.584	0.584	2.600	2.016	2.016	5.745	1.496	1.379	1.965
8			0.584	0.584	2.652	2.068	2.068	5.797	1.538	1.421	2.016
9			0.584	0.584	2.705	2.121	2.121	5.850	1.580	1.463	2.068
10			0.584	0.584	2.759	2.175	2.175	5.904	1.624	1.507	2.121
11			0.584	0.584	2.815	2.231	2.231	5.959	1.668	1.551	2.175
12			0.584	0.584	2.871	2.287	2.287	6.015	1.713	1.596	2.231
13			0.584	0.584	2.928	2.344	2.344	6.073	1.759	1.642	2.287
14			0.584	0.584	2.987	2.403	2.403	6.131	1.806	1.689	2.344
15			0.584	0.584	3.047	2.463	2.463	6.191	1.853	1.737	2.403
16			0.584	0.584	3.107	2.524	2.524	6.252	1.902	1.785	2.463
17			0.584	0.584	3.170	2.586	2.586	6.314	1.952	1.835	2.524
18			0.584	0.584	3.233	2.649	2.649	6.377	2.002	1.886	2.586
19			0.584	0.584	3.298	2.714	2.714	6.442	2.054	1.937	2.649
20			0.584	0.584	3.364	2.780	2.780	6.508	2.107	1.990	2.714
21			0.584	0.584	3.431	2.847	2.847	6.575	2.161	2.044	2.780
22			0.584	0.584	3.500	2.916	2.916	6.644	2.216	2.099	2.847
PV @ 12%				**13.148**	**16.200**	**3.052**	**1.118**	**25.252**	**-0.188**	**-2.82**	**2.81**
EIRR						**16.0%**	**13.3%**	**40.3%**	**11.7%**	**8.6%**	**15.8%**
Sensitivity Indicator							**0.85**	**-7.61**	**1.33**		
Benefit / Cost Ratio						**1.23**					
Net Present Value						**3.052**					
Switching Value							118%	-13%	75%		

Economic Analysis of Sanitation	Galachipa With CCR									
Schemes:	8 community Latrines, 3 school latrines and 6 public Toilets and 1 Desludging Machine									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	15.104							
(of which labour)		20%	3.021							
						Average monthly household expenditure on health (Taka) /a				1,126
						No. of Households benefited				800
Annual O&M Costs		5%	0.755			/a: Source: SEWTP				
(of which labour)		50%	0.378			Days saved due to	Days			2.1
						HH income per day	Taka / day			506
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**					
						Yearly savings per HH				1,062.60
Investment Cost										
Traded	35%	4.229	3.442	1.070	3.683					
Non traded	65%	7.854	7.854	1.000	7.854	Base Economic Benefit				
Labour		3.021	3.021	0.940	2.840	Saved Income Loss			BDT Million	0.85
Total		**15.104**	**14.316**		**14.376**	Saved Medical Cost			BDT Million	3.243
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.132	0.132	1.070	0.141	Custom Duty on Traded Cost			5.50%	0.787
Non traded	65%	0.245	0.245	1.000	0.245					
Labour		0.378	0.378	0.940	0.355					
Total		**0.755**	**0.755**		**0.742**					

ECONOMIC INTERNAL RATE OF RETURN	Galachipa With CCR										
	8 community Latrines, 3 school latrines and 6 public Toilets and 1 Desludging Machine									BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	8.626	0.000	8.626	0.000	-8.626	-10.351	-8.626	-8.626	-10.351	
2	40%	5.750	0.000	5.750	0.000	-5.750	-6.900	-5.750	-5.750	-6.900	-8.626
3			0.742	0.742	4.095	3.353	3.353	3.204	2.534	2.386	-5.750
4			0.742	0.742	4.176	3.435	3.435	3.286	2.599	2.451	3.353
5			0.742	0.742	4.260	3.518	3.518	3.370	2.666	2.518	3.435
6			0.742	0.742	4.345	3.603	3.603	3.455	2.734	2.586	3.518
7			0.742	0.742	4.432	3.690	3.690	3.542	2.804	2.656	3.603
8			0.742	0.742	4.521	3.779	3.779	3.631	2.875	2.726	3.690
9			0.742	0.742	4.611	3.869	3.869	3.721	2.947	2.799	3.779
10			0.742	0.742	4.703	3.962	3.962	3.813	3.021	2.873	3.869
11			0.742	0.742	4.797	4.056	4.056	3.907	3.096	2.948	3.962
12			0.742	0.742	4.893	4.152	4.152	4.003	3.173	3.025	4.056
13			0.742	0.742	4.991	4.250	4.250	4.101	3.251	3.103	4.152
14			0.742	0.742	5.091	4.349	4.349	4.201	3.331	3.183	4.250
15			0.742	0.742	5.193	4.451	4.451	4.303	3.413	3.264	4.349
16			0.742	0.742	5.297	4.555	4.555	4.407	3.496	3.347	4.451
17			0.742	0.742	5.403	4.661	4.661	4.513	3.580	3.432	4.555
18			0.742	0.742	5.511	4.769	4.769	4.621	3.667	3.518	4.661
19			0.742	0.742	5.621	4.879	4.879	4.731	3.755	3.607	4.769
20			0.742	0.742	5.733	4.992	4.992	4.843	3.845	3.697	4.879
21			0.742	0.742	5.848	5.106	5.106	4.958	3.937	3.788	4.992
22			0.742	0.742	5.965	5.223	5.223	5.075	4.030	3.882	5.106
PV @ 12%				**16.703**	**27.614**	**10.911**	**8.454**	**10.028**	**5.388**	**2.05**	**10.48**
EIRR						**22.4%**	**19.0%**	**21.6%**	**17.4%**	**13.8%**	**22.3%**
Sensitivity Indicator							**0.76**	**0.18**	**1.11**		
Benefit / Cost Ratio						**1.65**					
Net Present Value						**10.911**					
Switching Value							132%	564%	90%		

Economic Analysis of Sanitation	**Mathbaria with CCR**									
Schemes:	**8 community Latrines, 7 school latrines and 6 public Toilets and 1 Desludging Machine**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	18.071							
(of which labour)		20%	3.614							
						Average monthly household expenditure on health (Taka) /a				1,061
						No. of Households benefited				1,100
Annual O&M Costs		5%	0.904			/a: Source: SEWTP				
(of which labour)		50%	0.452			Days saved due to	Days			1.8
						HH income per day	Taka / day			836
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**					
						Yearly savings per HH				1,504.80
Investment Cost										
Traded	35%	5.060	4.118	1.070	4.406					
Non traded	65%	9.397	9.397	1.000	9.397	Base Economic Benefit				
Labour		3.614	3.614	0.940	3.397	Saved Income Loss			BDT Million	1.66
Total		**18.071**	**17.129**		**17.200**	Saved Medical Cost			BDT Million	4.202
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.158	0.158	1.070	0.169	Custom Duty on Traded Cost			5.50%	0.942
Non traded	65%	0.294	0.294	1.000	0.294					
Labour		0.452	0.452	0.940	0.425					
Total		**0.904**	**0.904**		**0.887**					

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria with CCR										
	8 community Latrines, 7 school latrines and 6 public Toilets and 1 Desludging Machine									BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	10.320	0.000	10.320	0.000	-10.320	-12.384	-10.320	-10.320	-12.384	
2	40%	6.880	0.000	6.880	0.000	-6.880	-8.256	-6.880	-6.880	-8.256	-10.320
3			0.887	0.887	5.859	4.972	4.972	4.794	3.800	3.622	-6.880
4			0.887	0.887	5.976	5.089	5.089	4.911	3.894	3.716	4.972
5			0.887	0.887	6.096	5.208	5.208	5.031	3.989	3.812	5.089
6			0.887	0.887	6.218	5.330	5.330	5.153	4.087	3.909	5.208
7			0.887	0.887	6.342	5.455	5.455	5.277	4.186	4.009	5.330
8			0.887	0.887	6.469	5.582	5.582	5.404	4.288	4.110	5.455
9			0.887	0.887	6.598	5.711	5.711	5.533	4.391	4.214	5.582
10			0.887	0.887	6.730	5.843	5.843	5.665	4.497	4.319	5.711
11			0.887	0.887	6.865	5.977	5.977	5.800	4.604	4.427	5.843
12			0.887	0.887	7.002	6.115	6.115	5.937	4.714	4.537	5.977
13			0.887	0.887	7.142	6.255	6.255	6.077	4.826	4.649	6.115
14			0.887	0.887	7.285	6.398	6.398	6.220	4.941	4.763	6.255
15			0.887	0.887	7.431	6.543	6.543	6.366	5.057	4.880	6.398
16			0.887	0.887	7.579	6.692	6.692	6.514	5.176	4.999	6.543
17			0.887	0.887	7.731	6.844	6.844	6.666	5.297	5.120	6.692
18			0.887	0.887	7.886	6.998	6.998	6.821	5.421	5.244	6.844
19			0.887	0.887	8.043	7.156	7.156	6.978	5.547	5.370	6.998
20			0.887	0.887	8.204	7.317	7.317	7.139	5.676	5.498	7.156
21			0.887	0.887	8.368	7.481	7.481	7.303	5.807	5.630	7.317
22			0.887	0.887	8.536	7.648	7.648	7.471	5.941	5.764	7.481
PV @ 12%				**19.984**	**39.514**	**19.530**	**16.590**	**18.473**	**11.627**	**7.63**	**18.90**
EIRR						**26.9%**	**23.0%**	**26.1%**	**21.3%**	**17.4%**	**26.8%**
Sensitivity Indicator							**0.73**	**0.14**	**1.03**		
Benefit / Cost Ratio						**1.98**					
Net Present Value						**19.530**					
Switching Value							137%	715%	97%		

Economic Analysis of Cyclone Shelter :	**Amtali**					Capacity of cy	1200			
Road Name:	**Amtali Cyclone Shelters**			**Numbers:**	3					
Million Taka (April 2013 Constant Prices)						Monthly HH In	BDT	13841		
						HH Size	Number	4		
Base Prices						Number of day	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	80.625			Additional pers	Number	3600		
(of which labour)		20%	16.125			Number of cyc	Number	2		
						Saved Medical	BDT	1097		
Annual O&M Costs		0%	0.323							
(of which labour)		70%	0.226			**Savings:**				
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Loss of Incom	BDT	**62,28,450**		
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Medical Cost I	BDT	**4,93,650**		
		Taxes	**Taxes**							
Investment Cost						**Yearly Savings**				**134,44,200**
Traded	35%	22.575	18.372	1.070	19.658	**Total Savings**				**134,44,200**
Non traded	65%	41.925	41.925	1.000	41.925					
Labour		16.125	16.125	0.940	15.158					
Total		**80.625**	**76.422**		**76.740**					
Annual O&M Costs										
Traded	35%	0.034	0.034	1.070	0.036					
Non traded	65%	0.063	0.063	1.000	0.063					
Labour		0.226	0.226	0.940	0.212					
Total		**0.323**	**0.323**		**0.311**					
Taxes and Duties										
VAT			5.50%	4.203						
Annual increase (real)			2.00%							

ECONOMIC INTERNAL RATE OF RETURN	Amtali Cyclone Shelter with CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	46.044	0.000	46.044	0.000	-46.044	-55.253	-46.044	-46.044	-55.253	
2	40%	30.696	0.000	30.696	0.000	-30.696	-36.835	-30.696	-30.696	-36.835	-46.044
3			0.311	0.311	13.444	13.133	13.133	13.071	10.444	10.382	-30.696
4			0.311	0.311	13.713	13.402	13.402	13.339	10.659	10.597	13.133
5			0.311	0.311	13.987	13.676	13.676	13.614	10.879	10.816	13.402
6			0.311	0.311	14.267	13.956	13.956	13.894	11.102	11.040	13.676
7			0.311	0.311	14.552	14.241	14.241	14.179	11.331	11.268	13.956
8			0.311	0.311	14.843	14.532	14.532	14.470	11.563	11.501	14.241
9			0.311	0.311	15.140	14.829	14.829	14.767	11.801	11.739	14.532
10			0.311	0.311	15.443	15.132	15.132	15.070	12.043	11.981	14.829
11			0.311	0.311	15.752	15.441	15.441	15.378	12.290	12.228	15.132
12			0.311	0.311	16.067	15.756	15.756	15.693	12.542	12.480	15.441
13			0.311	0.311	16.388	16.077	16.077	16.015	12.799	12.737	15.756
14			0.311	0.311	16.716	16.405	16.405	16.343	13.062	12.999	16.077
15			0.311	0.311	17.050	16.739	16.739	16.677	13.329	13.267	16.405
16			0.311	0.311	17.392	17.080	17.080	17.018	13.602	13.540	16.739
17			0.311	0.311	17.739	17.428	17.428	17.366	13.880	13.818	17.080
18			0.311	0.311	18.094	17.783	17.783	17.721	14.164	14.102	17.428
19			0.311	0.311	18.456	18.145	18.145	18.082	14.453	14.391	17.783
20			0.311	0.311	18.825	18.514	18.514	18.452	14.749	14.687	18.145
21			0.311	0.311	19.202	18.890	18.890	18.828	15.050	14.988	18.514
22			0.311	0.311	19.586	19.274	19.274	19.212	15.357	15.295	18.890
PV @ 12%				**67.435**	**90.667**	**23.231**	**10.115**	**22.860**	**5.098**	**-8.39**	**21.64**
EIRR						**16.5%**	**13.7%**	**16.4%**	**13.0%**	**10.5%**	**16.3%**
Sensitivity Indicator							**0.85**	**0.02**	**1.05**		
Benefit / Cost Ratio						**1.34**					
Net Present Value						**23.231**					
Switching Value							118%	4770%	95%		

						Economc Benefit Cost Calculation				
Coastal Towns Infrastructure Improvement Project (CTIIP)						Number of cyclone	3			
Economic Analysis of Cyclone Shelter	**Galachipa**					Capacity of cyclor	1300			
Road Name:	**Cyclone Shelters with CCR**			**Numbers:**	3					
Million Taka (April 2013 Constant Prices)						Monthly HH Incom	BDT	13167		
						HH Size	Number	4		
Base Prices						Number of days s	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	80.625			Additional persons	Number	3900		
(of which labour)		20%	16.125			Number of cyclone	Number	2		
						Saved Medical Co	BDT	1126		
Annual O&M Costs		0%	0.323							
(of which labour)		70%	0.226			**Savings:**				
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Loss of Income pe	BDT	**64,18,913**		
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Medical Cost Per	BDT	**5,48,925**		
		Taxes	**Taxes**							
Investment Cost						**Yearly Savings**				**139,35,676**
Traded	35%	22.575	18.372	1.070	19.658	**Total Savings**				**139,35,676**
Non traded	65%	41.925	41.925	1.000	41.925					
Labour		16.125	16.125	0.940	15.158					
Total		**80.625**	**76.422**		**76.740**					
Annual O&M Costs										
Traded	35%	0.034	0.034	1.070	0.036					
Non traded	65%	0.063	0.063	1.000	0.063					
Labour		0.226	0.226	0.940	0.212					
Total		**0.323**	**0.323**		**0.311**					
Taxes and Duties										
VAT			5.50%	4.203						
Annual increase (real)			2.00%							

ECONOMIC INTERNAL RATE OF RETURN	Galachipa	Cyclone Shelters with CCR								BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	46.044	0.000	46.044	0.000	-46.044	-55.253	-46.044	-46.044	-55.253	
2	40%	30.696	0.000	30.696	0.000	-30.696	-36.835	-30.696	-30.696	-36.835	-46.044
3			0.311	0.311	13.936	13.624	13.624	13.562	10.837	10.775	-30.696
4			0.311	0.311	14.214	13.903	13.903	13.841	11.060	10.998	13.624
5			0.311	0.311	14.499	14.187	14.187	14.125	11.288	11.225	13.903
6			0.311	0.311	14.789	14.477	14.477	14.415	11.520	11.457	14.187
7			0.311	0.311	15.084	14.773	14.773	14.711	11.756	11.694	14.477
8			0.311	0.311	15.386	15.075	15.075	15.013	11.998	11.935	14.773
9			0.311	0.311	15.694	15.383	15.383	15.320	12.244	12.181	15.075
10			0.311	0.311	16.008	15.696	15.696	15.634	12.495	12.433	15.383
11			0.311	0.311	16.328	16.017	16.017	15.954	12.751	12.689	15.696
12			0.311	0.311	16.654	16.343	16.343	16.281	13.012	12.950	16.017
13			0.311	0.311	16.988	16.676	16.676	16.614	13.279	13.216	16.343
14			0.311	0.311	17.327	17.016	17.016	16.954	13.550	13.488	16.676
15			0.311	0.311	17.674	17.362	17.362	17.300	13.828	13.765	17.016
16			0.311	0.311	18.027	17.716	17.716	17.654	14.111	14.048	17.362
17			0.311	0.311	18.388	18.077	18.077	18.014	14.399	14.337	17.716
18			0.311	0.311	18.756	18.444	18.444	18.382	14.693	14.631	18.077
19			0.311	0.311	19.131	18.819	18.819	18.757	14.993	14.931	18.444
20			0.311	0.311	19.513	19.202	19.202	19.140	15.299	15.237	18.819
21			0.311	0.311	19.904	19.592	19.592	19.530	15.612	15.549	19.202
22			0.311	0.311	20.302	19.990	19.990	19.928	15.930	15.868	19.592
PV @ 12%				**67.435**	**93.981**	**26.546**	**13.429**	**26.175**	**7.749**	**-5.74**	**24.89**
EIRR						**17.1%**	**14.2%**	**17.1%**	**13.6%**	**11.0%**	**16.9%**
Sensitivity Indicator							**0.84**	**0.02**	**1.04**		
Benefit / Cost Ratio						**1.39**					
Net Present Value						**26.546**					
Switching Value							119%	5003%	97%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						**Economc Benefit Cost Calculation**				
Economic Analysis of Cyclone Shelter :	**Pirojpur**					Number of cyclone shelters	4			
Road Name:	**Cyclone Shelters with CCR**			**Numbers:**	4	Capacity of cyclone shelters	1300			
Million Taka (April 2013 Constant Prices)										
						Monthly HH Income	BDT	14620		
						HH Size	Number	4		
Base Prices						Number of days saved	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	107.500			Additional persons accessing CS	Number	5200		
(of which labour)		20%	21.500			Number of cyclones per year	Number	2		
						Saved Medical Cost per HH	BDT	1533		
Annual O&M Costs		0%	0.430							
(of which labour)		70%	0.301			**Savings:**				
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Loss of Income per cyclone	BDT	**95,03,000**		
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Medical Cost Per cyclone	BDT	**9,96,450**		
		Taxes	**Taxes**							
Investment Cost						**Yearly Savings**				**209,98,900**
Traded	35%	30.100	24.496	1.070	26.210	**Total Savings**				**209,98,900**
Non traded	65%	55.900	55.900	1.000	55.900					
Labour		21.500	21.500	0.940	20.210					
Total		**107.500**	**101.896**		**102.320**					
Annual O&M Costs										
Traded	35%	0.045	0.045	1.070	0.048					
Non traded	65%	0.084	0.084	1.000	0.084					
Labour		0.301	0.301	0.940	0.283					
Total		**0.430**	**0.430**		**0.415**					
Taxes and Duties										
VAT			5.50%	5.604						
Annual increase (real)			2.00%							

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur	Cyclone Shelters with CCR									
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				One Year Delay
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	
1	60%	61.392	0.000	61.392	0.000	-61.392	-73.671	-61.392	-61.392	-73.671	
2	40%	40.928	0.000	40.928	0.000	-40.928	-49.114	-40.928	-40.928	-49.114	-61.392
3			0.415	0.415	20.999	20.584	20.584	20.501	16.384	16.301	-40.928
4			0.415	0.415	21.419	21.004	21.004	20.921	16.720	16.637	20.584
5			0.415	0.415	21.847	21.432	21.432	21.349	17.063	16.980	21.004
6			0.415	0.415	22.284	21.869	21.869	21.786	17.412	17.329	21.432
7			0.415	0.415	22.730	22.315	22.315	22.232	17.769	17.686	21.869
8			0.415	0.415	23.184	22.769	22.769	22.686	18.132	18.049	22.315
9			0.415	0.415	23.648	23.233	23.233	23.150	18.503	18.420	22.769
10			0.415	0.415	24.121	23.706	23.706	23.623	18.882	18.799	23.233
11			0.415	0.415	24.604	24.188	24.188	24.105	19.268	19.185	23.706
12			0.415	0.415	25.096	24.681	24.681	24.598	19.661	19.578	24.188
13			0.415	0.415	25.598	25.182	25.182	25.099	20.063	19.980	24.681
14			0.415	0.415	26.109	25.694	25.694	25.611	20.472	20.389	25.182
15			0.415	0.415	26.632	26.217	26.217	26.134	20.890	20.807	25.694
16			0.415	0.415	27.164	26.749	26.749	26.666	21.316	21.233	26.217
17			0.415	0.415	27.708	27.293	27.293	27.209	21.751	21.668	26.749
18			0.415	0.415	28.262	27.847	27.847	27.764	22.194	22.111	27.293
19			0.415	0.415	28.827	28.412	28.412	28.329	22.646	22.563	27.847
20			0.415	0.415	29.404	28.988	28.988	28.905	23.108	23.025	28.412
21			0.415	0.415	29.992	29.576	29.576	29.493	23.578	23.495	28.988
22			0.415	0.415	30.591	30.176	30.176	30.093	24.058	23.975	29.576
PV @ 12%				**89.914**	**141.615**	**51.701**	**34.212**	**51.206**	**23.378**	**5.40**	**49.21**
EIRR						**19.3%**	**16.2%**	**19.2%**	**15.5%**	**12.7%**	**19.1%**
Sensitivity Indicator							**0.80**	**0.02**	**0.99**		
Benefit / Cost Ratio						**1.58**					
Net Present Value						**51.701**					
Switching Value							125%	5856%	101%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						**Economc Benefit Cost Calculation**				
Economic Analysis of Cyclone Shelter :	**Mathbaria**					Number of cyclone shelters	1			
Road Name:	**Cyclone Shelters with CCR**			**Numbers:**	1	Capacity of cyclone shelters	2000			
Million Taka (April 2013 Constant Prices)										
						Monthly HH Income	BDT	21744		
						HH Size	Number	4.4		
Base Prices						Number of days saved	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	26.875			Additional persons accessing CS	Number	2000		
(of which labour)		20%	5.375			Number of cyclones per year	Number	2		
						Saved Medical Cost per HH	BDT	1061		
Annual O&M Costs		0%	0.108							
(of which labour)		70%	0.075			**Savings:**				
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Loss of Income per cyclone	BDT	**49,41,818**		
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Medical Cost Per cyclone	BDT	**2,41,136**		
		Taxes	**Taxes**							
Investment Cost						**Yearly Savings**				**103,65,908**
Traded	35%	7.525	6.124	1.070	6.553	**Total Savings**				**103,65,908**
Non traded	65%	13.975	13.975	1.000	13.975					
Labour		5.375	5.375	0.940	5.053					
Total		**26.875**	**25.474**		**25.580**					
Annual O&M Costs										
Traded	35%	0.011	0.011	1.070	0.012					
Non traded	65%	0.021	0.021	1.000	0.021					
Labour		0.075	0.075	0.940	0.071					
Total		**0.108**	**0.108**		**0.104**					
Taxes and Duties										
VAT			5.50%	1.401						
Annual increase (real)			2.00%							

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria	Cyclone Shelters with CCR								BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	15.348	0.000	15.348	0.000	-15.348	-18.418	-15.348	-15.348	-18.418	
2	40%	10.232	0.000	10.232	0.000	-10.232	-12.278	-10.232	-10.232	-12.278	-15.348
3			0.104	0.104	10.366	10.262	10.262	10.241	8.189	8.168	-10.232
4			0.104	0.104	10.573	10.469	10.469	10.449	8.355	8.334	10.262
5			0.104	0.104	10.785	10.681	10.681	10.660	8.524	8.503	10.469
6			0.104	0.104	11.000	10.897	10.897	10.876	8.697	8.676	10.681
7			0.104	0.104	11.220	11.117	11.117	11.096	8.873	8.852	10.897
8			0.104	0.104	11.445	11.341	11.341	11.320	9.052	9.031	11.117
9			0.104	0.104	11.674	11.570	11.570	11.549	9.235	9.214	11.341
10			0.104	0.104	11.907	11.803	11.803	11.783	9.422	9.401	11.570
11			0.104	0.104	12.145	12.042	12.042	12.021	9.612	9.592	11.803
12			0.104	0.104	12.388	12.284	12.284	12.264	9.807	9.786	12.042
13			0.104	0.104	12.636	12.532	12.532	12.511	10.005	9.984	12.284
14			0.104	0.104	12.889	12.785	12.785	12.764	10.207	10.186	12.532
15			0.104	0.104	13.146	13.043	13.043	13.022	10.413	10.393	12.785
16			0.104	0.104	13.409	13.306	13.306	13.285	10.624	10.603	13.043
17			0.104	0.104	13.678	13.574	13.574	13.553	10.838	10.818	13.306
18			0.104	0.104	13.951	13.847	13.847	13.827	11.057	11.036	13.574
19			0.104	0.104	14.230	14.126	14.126	14.106	11.280	11.260	13.847
20			0.104	0.104	14.515	14.411	14.411	14.390	11.508	11.487	14.126
21			0.104	0.104	14.805	14.701	14.701	14.681	11.740	11.720	14.411
22			0.104	0.104	15.101	14.997	14.997	14.977	11.977	11.956	14.701
PV @ 12%				**22.478**	**69.907**	**47.428**	**43.056**	**47.305**	**33.447**	**28.95**	**46.19**
EIRR						**35.0%**	**30.1%**	**35.0%**	**29.0%**	**24.8%**	**35.0%**
Sensitivity Indicator							**0.70**	**0.01**	**0.86**		
Benefit / Cost Ratio						**3.11**					
Net Present Value						**47.428**					
Switching Value							142%	12740%	117%		

Economic Analysis of Solid Waste Manageme	**Amtali**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	0.242							
(of which labour)		20%	0.048							
						Average household expendituer on health (Taka) /a				1,097
						No. of Households benefited				4,026
Annual O&M Costs		10%	0.024	206.718%		/a: Source: SEWTP				
(of which labour)		70%	0.017			Time Savings	minutes			0.1
						Time Savings	hour			0.002
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	HH income per day	Taka / day			532
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	HH income per day	Taka / hour			66.5
		Taxes	**Taxes**							
Investment Cost						Time Savings per H	Taka / hour			0.11
Traded	35%	0.068	0.055	1.070	0.059	Yearly savings per HH				40.45
Non traded	65%	0.126	0.126	1.000	0.126	Base Economic Benefit				
Labour		0.048	0.048	0.940	0.045	Saved Loss of Income			BDT Million	0.16
Total		**0.242**	**0.229**		**0.230**	Saved Medical Cost			BDT Million	0.044
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.003	0.003	1.070	0.003	Custom Duty on Traded Cost			5.50%	0.013
Non traded	65%	0.005	0.005	1.000	0.005					
Labour		0.017	0.017	0.940	0.016					
Total		**0.024**	**0.024**		**0.023**					

ECONOMIC INTERNAL RATE OF RETURN	Amtali	Solid Waste									
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost +	O&M +	Benefit -	Cost +20% &	ne Year Dela
							20%	20%	20%	Benefit-20%	
1	60%	0.138	0.000	0.138	0.000	-0.138	-0.166	-0.138	-0.138	-0.166	
2	40%	0.092	0.000	0.092	0.000	-0.092	-0.111	-0.092	-0.092	-0.111	-0.138
3			0.023	0.023	0.207	0.184	0.184	0.179	0.142	0.138	-0.092
4			0.023	0.023	0.211	0.188	0.188	0.183	0.146	0.141	0.184
5			0.023	0.023	0.215	0.192	0.192	0.187	0.149	0.144	0.188
6			0.023	0.023	0.220	0.196	0.196	0.192	0.152	0.148	0.192
7			0.023	0.023	0.224	0.201	0.201	0.196	0.156	0.151	0.196
8			0.023	0.023	0.229	0.205	0.205	0.201	0.160	0.155	0.201
9			0.023	0.023	0.233	0.210	0.210	0.205	0.163	0.159	0.205
10			0.023	0.023	0.238	0.215	0.215	0.210	0.167	0.162	0.210
11			0.023	0.023	0.243	0.219	0.219	0.215	0.171	0.166	0.215
12			0.023	0.023	0.247	0.224	0.224	0.219	0.175	0.170	0.219
13			0.023	0.023	0.252	0.229	0.229	0.224	0.179	0.174	0.224
14			0.023	0.023	0.257	0.234	0.234	0.229	0.183	0.178	0.229
15			0.023	0.023	0.263	0.239	0.239	0.235	0.187	0.182	0.234
16			0.023	0.023	0.268	0.245	0.245	0.240	0.191	0.186	0.239
17			0.023	0.023	0.273	0.250	0.250	0.245	0.195	0.191	0.245
18			0.023	0.023	0.279	0.255	0.255	0.251	0.200	0.195	0.250
19			0.023	0.023	0.284	0.261	0.261	0.256	0.204	0.199	0.255
20			0.023	0.023	0.290	0.267	0.267	0.262	0.209	0.204	0.261
21			0.023	0.023	0.296	0.272	0.272	0.268	0.213	0.209	0.267
22			0.023	0.023	0.302	0.278	0.278	0.274	0.218	0.213	0.272
PV @ 12%				**0.336**	**1.397**	**1.061**	**1.021**	**1.033**	**0.781**	**0.71**	**1.04**
EIRR						**60.7%**	**52.7%**	**59.6%**	**49.9%**	**42.1%**	**60.7%**
Sensitivity Indicator							**0.66**	**0.09**	**0.89**		
Benefit / Cost Ratio						**4.16**					
Net Present Value						**1.061**					
Switching Value							152%	1062%	112%		

Economic Analysis of Solid Waste Manag	Galachipa									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	0.242							
(of which labour)		20%	0.048							
						Average household expendituer on health (Taka) /a				1,127
						No. of Households benefited				4,930
Annual O&M Costs		10%	0.024	206.718%		/a: Source: SEWTP				
(of which labour)		70%	0.017			Time Savings	minutes			0.1
						Time Savings	hour			0.002
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	HH income pe	Taka / day			506
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	HH income pe	Taka / hour			63.25
		Taxes	**Taxes**							
Investment Cost						Time Savings	Taka / hour			0.11
Traded	35%	0.068	0.055	1.070	0.059	Yearly savings per HH				38.48
Non traded	65%	0.126	0.126	1.000	0.126	Base Economic Benefit				
Labour		0.048	0.048	0.940	0.045	Saved Loss of Income			BDT Million	0.19
Total		**0.242**	**0.229**		**0.230**	Saved Medical Cost			BDT Million	0.056
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.003	0.003	1.070	0.003	Custom Duty on Traded Cost			5.50%	0.013
Non traded	65%	0.005	0.005	1.000	0.005					
Labour		0.017	0.017	0.940	0.016					
Total		**0.024**	**0.024**		**0.023**					

ECONOMIC INTERNAL RATE OF RETURN		Galachipa	Solid Waste								
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost +	O&M +	Benefit -	Cost +20% &	ne Year Dela
							20%	20%	20%	Benefit-20%	
1	60%	0.138	0.000	0.138	0.000	-0.138	-0.166	-0.138	-0.138	-0.166	
2	40%	0.092	0.000	0.092	0.000	-0.092	-0.111	-0.092	-0.092	-0.111	-0.138
3			0.023	0.023	0.245	0.222	0.222	0.217	0.173	0.168	-0.092
4			0.023	0.023	0.250	0.227	0.227	0.222	0.177	0.172	0.222
5			0.023	0.023	0.255	0.232	0.232	0.227	0.181	0.176	0.227
6			0.023	0.023	0.260	0.237	0.237	0.232	0.185	0.180	0.232
7			0.023	0.023	0.266	0.242	0.242	0.238	0.189	0.184	0.237
8			0.023	0.023	0.271	0.248	0.248	0.243	0.193	0.189	0.242
9			0.023	0.023	0.276	0.253	0.253	0.248	0.198	0.193	0.248
10			0.023	0.023	0.282	0.258	0.258	0.254	0.202	0.197	0.253
11			0.023	0.023	0.287	0.264	0.264	0.259	0.207	0.202	0.258
12			0.023	0.023	0.293	0.270	0.270	0.265	0.211	0.207	0.264
13			0.023	0.023	0.299	0.276	0.276	0.271	0.216	0.211	0.270
14			0.023	0.023	0.305	0.282	0.282	0.277	0.221	0.216	0.276
15			0.023	0.023	0.311	0.288	0.288	0.283	0.226	0.221	0.282
16			0.023	0.023	0.317	0.294	0.294	0.289	0.231	0.226	0.288
17			0.023	0.023	0.324	0.300	0.300	0.296	0.236	0.231	0.294
18			0.023	0.023	0.330	0.307	0.307	0.302	0.241	0.236	0.300
19			0.023	0.023	0.337	0.313	0.313	0.309	0.246	0.241	0.307
20			0.023	0.023	0.344	0.320	0.320	0.316	0.251	0.247	0.313
21			0.023	0.023	0.350	0.327	0.327	0.322	0.257	0.252	0.320
22			0.023	0.023	0.357	0.334	0.334	0.329	0.263	0.258	0.327
PV @ 12%				**0.336**	**1.655**	**1.319**	**1.279**	**1.291**	**0.988**	**0.92**	**1.29**
EIRR						**70.1%**	**61.0%**	**69.0%**	**58.0%**	**49.3%**	**70.1%**
Sensitivity Indicator							**0.65**	**0.08**	**0.86**		
Benefit / Cost Ratio						**4.93**					
Net Present Value						**1.319**					
Switching Value							155%	1300%	116%		

Economic Analysis of Solid Waste Manag	Pirojpur									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	0.323							
(of which labour)		20%	0.065							
						Average household expendituer on health (Taka) /a				1,533
						No. of Households benefited				6,893
Annual O&M Costs		10%	0.032	155.039%		/a: Source: SEWTP				
(of which labour)		70%	0.023			Time Savings	minutes			0.1
						Time Savings	hour			0.00
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	HH income pe	Taka / day			562
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	HH income pe	Taka / hour			70.25
		Taxes	**Taxes**							
Investment Cost						Time Savings	Taka / hour			0.12
Traded	35%	0.090	0.073	1.070	0.079	Yearly savings per HH				42.74
Non traded	65%	0.168	0.168	1.000	0.168	Base Economic Benefit				
Labour		0.065	0.065	0.940	0.061	Saved Loss of Income			BDT Million	0.29
Total		**0.323**	**0.306**		**0.307**	Saved Medical Cost			BDT Million	0.106
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.003	0.003	1.070	0.004	Custom Duty on Traded Cost			5.50%	0.017
Non traded	65%	0.006	0.006	1.000	0.006					
Labour		0.023	0.023	0.940	0.021					
Total		**0.032**	**0.032**		**0.031**					

ECONOMIC INTERNAL RATE OF RETURN		Pirojpur	Solid Waste								
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost +	O&M +	Benefit -	Cost +20% &	ne Year Dela
							20%	20%	20%	Benefit-20%	
1	60%	0.184	0.000	0.184	0.000	-0.184	-0.221	-0.184	-0.184	-0.221	
2	40%	0.123	0.000	0.123	0.000	-0.123	-0.147	-0.123	-0.123	-0.147	-0.184
3			0.031	0.031	0.400	0.369	0.369	0.363	0.289	0.283	-0.123
4			0.031	0.031	0.408	0.377	0.377	0.371	0.296	0.289	0.369
5			0.031	0.031	0.417	0.385	0.385	0.379	0.302	0.296	0.377
6			0.031	0.031	0.425	0.394	0.394	0.388	0.309	0.303	0.385
7			0.031	0.031	0.433	0.402	0.402	0.396	0.316	0.309	0.394
8			0.031	0.031	0.442	0.411	0.411	0.405	0.323	0.316	0.402
9			0.031	0.031	0.451	0.420	0.420	0.414	0.330	0.323	0.411
10			0.031	0.031	0.460	0.429	0.429	0.423	0.337	0.331	0.420
11			0.031	0.031	0.469	0.438	0.438	0.432	0.344	0.338	0.429
12			0.031	0.031	0.479	0.447	0.447	0.441	0.352	0.345	0.438
13			0.031	0.031	0.488	0.457	0.457	0.451	0.359	0.353	0.447
14			0.031	0.031	0.498	0.467	0.467	0.460	0.367	0.361	0.457
15			0.031	0.031	0.508	0.477	0.477	0.470	0.375	0.369	0.467
16			0.031	0.031	0.518	0.487	0.487	0.481	0.383	0.377	0.477
17			0.031	0.031	0.528	0.497	0.497	0.491	0.392	0.385	0.487
18			0.031	0.031	0.539	0.508	0.508	0.502	0.400	0.394	0.497
19			0.031	0.031	0.550	0.519	0.519	0.512	0.409	0.402	0.508
20			0.031	0.031	0.561	0.530	0.530	0.523	0.417	0.411	0.519
21			0.031	0.031	0.572	0.541	0.541	0.534	0.426	0.420	0.530
22			0.031	0.031	0.583	0.552	0.552	0.546	0.436	0.429	0.541
PV @ 12%				**0.448**	**2.700**		**2.200**	**2.215**	**1.712**	**1.62**	**2.21**
EIRR						**82.6%**	**72.1%**	**81.6%**	**68.9%**	**59.0%**	**82.6%**
Sensitivity Indicator							**0.63**	**0.06**	**0.83**		
Benefit / Cost Ratio						**6.03**					
Net Present Value						**2.252**					
Switching Value							158%	1650%	120%		

Economic Analysis of Solid Waste Manag	Mathbaria									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	0.242							
(of which labour)		20%	0.048							
						Average household expenditure on health (Taka) /a				1,060
						No. of Households benefited				4,176
Annual O&M Costs		10%	0.024	206.718%		/a: Source: SEWTP				
(of which labour)		70%	0.017			Time Savings	minutes			0.1
						Time Savings	hour			0.00
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	HH income pe	Taka / day			836
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	HH income pe	Taka / hour			104.5
		Taxes	**Taxes**							
Investment Cost						Time Savings	Taka / hour			0.17
Traded	35%	0.068	0.055	1.070	0.059	Yearly savings per HH				63.57
Non traded	65%	0.126	0.126	1.000	0.126	Base Economic Benefit				
Labour		0.048	0.048	0.940	0.045	Saved Loss of Income			BDT Million	0.27
Total		**0.242**	**0.229**		**0.230**	Saved Medical Cost			BDT Million	0.044
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.003	0.003	1.070	0.003	Custom Duty on Traded Cost			5.50%	0.013
Non traded	65%	0.005	0.005	1.000	0.005					
Labour		0.017	0.017	0.940	0.016					
Total		**0.024**	**0.024**		**0.023**					

ECONOMIC INTERNAL RATE OF RETURN		Mathbaria	Solid Waste								
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost +	O&M +	Benefit -	Cost +20% &	ne Year Dela
							20%	20%	20%	Benefit-20%	
1	60%	0.138	0.000	0.138	0.000	-0.138	-0.166	-0.138	-0.138	-0.166	
2	40%	0.092	0.000	0.092	0.000	-0.092	-0.111	-0.092	-0.092	-0.111	-0.138
3			0.023	0.023	0.310	0.287	0.287	0.282	0.225	0.220	-0.092
4			0.023	0.023	0.316	0.293	0.293	0.288	0.230	0.225	0.287
5			0.023	0.023	0.322	0.299	0.299	0.294	0.235	0.230	0.293
6			0.023	0.023	0.329	0.306	0.306	0.301	0.240	0.235	0.299
7			0.023	0.023	0.335	0.312	0.312	0.307	0.245	0.240	0.306
8			0.023	0.023	0.342	0.319	0.319	0.314	0.250	0.246	0.312
9			0.023	0.023	0.349	0.326	0.326	0.321	0.256	0.251	0.319
10			0.023	0.023	0.356	0.333	0.333	0.328	0.261	0.257	0.326
11			0.023	0.023	0.363	0.340	0.340	0.335	0.267	0.262	0.333
12			0.023	0.023	0.370	0.347	0.347	0.342	0.273	0.268	0.340
13			0.023	0.023	0.378	0.354	0.354	0.350	0.279	0.274	0.347
14			0.023	0.023	0.385	0.362	0.362	0.357	0.285	0.280	0.354
15			0.023	0.023	0.393	0.370	0.370	0.365	0.291	0.286	0.362
16			0.023	0.023	0.401	0.378	0.378	0.373	0.297	0.293	0.370
17			0.023	0.023	0.409	0.386	0.386	0.381	0.304	0.299	0.378
18			0.023	0.023	0.417	0.394	0.394	0.389	0.310	0.306	0.386
19			0.023	0.023	0.425	0.402	0.402	0.397	0.317	0.312	0.394
20			0.023	0.023	0.434	0.411	0.411	0.406	0.324	0.319	0.402
21			0.023	0.023	0.443	0.419	0.419	0.415	0.331	0.326	0.411
22			0.023	0.023	0.451	0.428	0.428	0.423	0.338	0.333	0.419
PV @ 12%				**0.336**	**2.090**		**1.715**	**1.726**	**1.336**	**1.27**	**1.72**
EIRR						**84.7%**	**74.0%**	**83.7%**	**70.7%**	**60.6%**	**84.7%**
Sensitivity Indicator							**0.63**	**0.06**	**0.83**		
Benefit / Cost Ratio						**6.22**					
Net Present Value						**1.754**					
Switching Value							158%	1712%	121%		

ANNEX 4.2

BDT Million

Economic Internal Rate of Return - Amtali Water Supply without CCR															
		Benefit					Cost				Sensitivity				
		Labor cost saved (stand post user)	Storage tank cost saved	Non-incremental benefit	Saved Purification Cost	Total	Investment	OM	Total	Net	Capital Cost Over-run by 20 %	O&M Over-run by 20%	Benefits reduced by 20%	Worst Scenario (all combined)	One Year Delay
1	2013	0.0	0.0	0.0	0.0	0.0	24.1	0.0	24.1	-24.1	-28.9	-24.1	-24.1	-28.9	-12.1
2	2014	0.0	0.0	0.0	0.0	0.0	48.2	0.0	48.2	-48.2	-57.9	-48.2	-48.2	-57.9	-12.1
3	2015	0.0	0.0	0.0	0.0	0.0	48.2	0.0	48.2	-48.2	-57.9	-48.2	-48.2	-57.9	-48.2
4	2016	7.3	1.9	4.9	3.0	17.1	0.0	2.0	2.0	15.1	5.5	14.7	11.7	2.1	-48.2
5	2017	7.8	0.1	5.3	3.1	16.3	0.0	2.0	2.0	14.3	14.3	14.0	11.1	10.7	15.1
6	2018	8.3	0.1	5.6	3.3	17.3	0.0	2.0	2.0	15.3	15.3	14.9	11.9	11.5	14.3
7	2019	8.8	0.1	5.9	3.4	18.2	0.0	2.0	2.0	16.3	16.3	15.9	12.6	12.2	15.3
8	2020	9.3	0.1	6.2	3.5	19.2	0.0	2.0	2.0	17.2	17.2	16.9	13.4	13.0	16.3
9	2021	9.6	0.1	6.5	3.7	19.8	0.0	2.0	2.0	17.8	17.8	17.4	13.9	13.5	17.2
10	2022	9.9	0.1	6.7	3.8	20.4	0.0	2.0	2.0	18.4	18.4	18.1	14.4	14.0	17.8
11	2023	10.2	0.1	6.9	3.9	21.0	0.0	2.0	2.0	19.1	19.1	18.7	14.9	14.5	18.4
12	2024	10.6	0.1	7.1	4.0	21.8	0.0	2.0	2.0	19.9	19.9	19.5	15.5	15.1	19.1
13	2025	11.0	0.1	7.4	4.1	22.6	0.0	2.0	2.0	20.6	20.6	20.2	16.1	15.7	19.9
14	2026	11.4	0.1	7.7	4.2	23.3	0.0	2.0	2.0	21.4	21.4	21.0	16.7	16.3	20.6
15	2027	11.8	0.1	7.9	4.3	24.1	0.0	2.0	2.0	22.2	22.2	21.8	17.3	17.0	21.4
16	2028	12.2	0.1	8.2	4.4	24.9	0.0	2.0	2.0	22.9	22.9	22.5	18.0	17.6	22.2
17	2029	12.6	0.1	8.5	4.5	25.7	0.0	2.0	2.0	23.7	23.7	23.3	18.6	18.2	22.9
18	2030	16.7	0.1	8.7	4.6	30.1	0.0	2.0	2.0	28.2	28.2	27.8	22.1	21.8	23.7
19	2031	17.4	0.1	11.4	13.2	42.1	0.0	0.0	0.0	42.0	42.0	42.0	33.6	33.2	28.2
20	2032	18.0	0.1	11.8	13.6	43.6	0.0	0.0	0.0	43.6	43.6	43.6	34.9	34.9	42.0
21	2033	18.7	0.1	12.3	14.0	45.1	0.0	0.0	0.0	45.1	45.1	45.1	36.1	36.1	43.6
22	2034	19.4	0.1	12.7	14.4	46.6	0.0	0.0	0.0	46.6	46.6	46.6	37.3	37.3	45.1
23	2035	20.1	0.1	13.1	14.7	48.1	-442.7	0.0	-442.7	490.8	490.8	490.8	481.2	481.2	46.6
						0.0					0.0	0.0	0.0	0.0	490.8
Total		250.9	4.1	164.7	127.5	547.2	-322.1	29.3	-292.8	**840.0**	**806.3**	**834.2**	**730.6**	**691.0**	**840.0**
	NPV @ 12%	55.0	1.7	36.5	24.0	117.2	61.6	9.5	71.1	**46.1**	**21.1**	**44.2**	**22.7**	**-4.0**	**40.0**
	EIRR						Base EIRR			16.0%					
							Sensitivity				SI	SV			
							Capital Cost Over-run by 20%		12%	13.5%	1.5	67.6%			
							O&M Cost over-run by 20%		12%	15.8%	0.1	1091.8%			
							Benefits reduced by 20%		12%	14.0%	1.2	83.8%			
							Worst Scenario (all three)		12%	11.7%					
							One Year Delay in Implementation			15.8%					

BDT Million

Economic Internal Rate of Return - Galachipa Water Supply without CCR														
		Benefit				Cost				Sensitivity				
		Labor cost saved (stand post user)	Storage tank cost saved	Non-incremental benefit	Total	Investment	OM	Total	Net	Capital Cost Over-run by 20 %	O&M Over-run by 20%	Benefits reduced by 20%	Worst Scenario (all combined)	One Year Delay
1	2013	0.0	0.0	0.0	0.0	22.5	0.0	22.5	-22.5	-27.0	-22.5	-22.5	-27.0	-11.3
2	2014	0.0	0.0	0.0	0.0	45.0	0.0	45.0	-45.0	-54.0	-45.0	-45.0	-54.0	-11.3
3	2015	0.0	0.0	0.0	0.0	45.0	0.0	45.0	-45.0	-54.0	-45.0	-45.0	-54.0	-45.0
4	2016	4.3	3.2	4.6	12.1	0.0	1.6	1.6	10.5	1.5	10.2	8.1	-0.9	-45.0
5	2017	5.3	0.7	5.6	11.6	0.0	1.6	1.6	10.0	10.0	9.7	7.7	7.4	10.5
6	2018	6.2	0.7	6.7	13.6	0.0	1.6	1.6	12.0	12.0	11.7	9.3	9.0	10.0
7	2019	7.2	0.7	7.7	15.7	0.0	1.6	1.6	14.1	14.1	13.8	11.0	10.7	12.0
8	2020	8.3	0.8	8.9	17.9	0.0	1.6	1.6	16.3	16.3	16.0	12.7	12.4	14.1
9	2021	9.3	0.8	10.0	20.1	0.0	1.6	1.6	18.5	18.5	18.2	14.5	14.2	16.3
10	2022	9.5	0.1	10.1	19.7	0.0	1.6	1.6	18.1	18.1	17.8	14.2	13.8	18.5
11	2023	9.6	0.1	10.3	20.0	0.0	1.6	1.6	18.4	18.4	18.0	14.4	14.1	18.1
12	2024	9.8	0.2	10.5	20.6	0.0	1.6	1.6	19.0	19.0	18.6	14.8	14.5	18.4
13	2025	10.1	0.2	10.8	21.1	0.0	1.6	1.6	19.5	19.5	19.1	15.3	14.9	19.0
14	2026	10.3	0.2	11.1	21.6	0.0	1.6	1.6	20.0	20.0	19.6	15.7	15.3	19.5
15	2027	10.6	0.2	11.3	22.1	0.0	1.6	1.6	20.5	20.5	20.1	16.1	15.7	20.0
16	2028	10.8	0.2	11.6	22.6	0.0	1.6	1.6	21.0	21.0	20.6	16.5	16.1	20.5
17	2029	11.0	0.2	11.8	23.1	0.0	1.6	1.6	21.5	21.5	21.1	16.8	16.5	21.0
18	2030	14.4	0.2	12.1	26.6	0.0	1.6	1.6	25.0	25.0	24.7	19.7	19.4	21.5
19	2031	14.7	0.2	12.4	27.3	0.0	0.0	0.0	27.3	27.3	27.3	21.9	21.5	25.0
20	2032	15.1	0.2	12.7	28.0	0.0	0.0	0.0	28.0	28.0	28.0	22.4	22.4	27.3
21	2033	15.4	0.2	13.0	28.6	0.0	0.0	0.0	28.6	28.6	28.6	22.9	22.9	28.0
22	2034	15.8	0.2	13.3	29.3	0.0	0.0	0.0	29.3	29.3	29.3	23.4	23.4	28.6
23	2035	16.1	0.2	13.6	29.9	-274.2	0.0	-274.2	304.1	304.1	304.1	298.1	298.1	29.3
					0					0	0	0	0	304
Total		214	9	208	431	-162	24	-138	**569**	**538**	**564**	**483**	**446**	**569**
	NPV @ 12%	46	4	47	97	68	8	76	**22**	**-2**	**20**	**2**	**-22**	**18**
	EIRR					Base EIRR			14.2%					
						Sensitivity				SI	SV			
						Capital Cost Over-run by 20%		12%	11.9%	1.7	59.9%			
						O&M Cost over-run by 20%		12%	14.1%	0.1	1031.5%			
						Benefits reduced by 20%		12%	12.2%	1.4	73.5%			
						Worst Scenario (all three)		12%	10.0%					
						One Year Delay in Implementation			14.1%					

Economic Internal Rate of Return - Mathbaria Water Supply without CCR														BDT Million
		Benefit				Cost				Sensitivity				
		Labor cost saved (stand post user)	Storage tank cost saved	Non-incremental benefit	Total	Investment	OM	Total	Net	Capital Cost Over-run by 20 %	O&M Over-run by 20%	Benefits reduced by 20%	Worst Scenario (all combined)	One Year Delay
1	2013	0.0	0.0	0.0	0.0	58.5	0.0	58.5	-58.5	-70.2	-58.5	-58.5	-70.2	-29.3
2	2014	0.0	0.0	0.0	0.0	117.0	0.0	117.0	-117.0	-140.5	-117.0	-117.0	-140.5	-29.3
3	2015	0.0	0.0	0.0	0.0	117.0	0.0	117.0	-117.0	-140.5	-117.0	-117.0	-140.5	-117.0
4	2016	17.5	10.6	24.5	52.7	0.0	3.9	3.9	48.8	25.4	48.0	38.3	14.8	-117.0
5	2017	19.3	1.0	26.9	47.2	0.0	3.9	3.9	43.3	43.3	42.5	33.9	33.1	48.8
6	2018	21.0	1.1	29.3	51.4	0.0	3.9	3.9	47.6	47.6	46.8	37.3	36.5	43.3
7	2019	22.8	1.1	31.9	55.8	0.0	3.9	3.9	51.9	51.9	51.2	40.8	40.0	47.6
8	2020	23.3	0.3	32.5	56.0	0.0	3.9	3.9	52.1	52.1	51.3	40.9	40.1	51.9
9	2021	23.7	0.3	33.1	57.1	0.0	3.9	3.9	53.2	53.2	52.4	41.8	41.0	52.1
10	2022	24.2	0.3	33.7	58.1	0.0	3.9	3.9	54.3	54.3	53.5	42.6	41.9	53.2
11	2023	24.6	0.3	34.3	59.2	0.0	3.9	3.9	55.3	55.3	54.6	43.5	42.7	54.3
12	2024	25.0	0.3	35.0	60.3	0.0	3.9	3.9	56.4	56.4	55.6	44.4	43.6	55.3
13	2025	25.5	0.3	35.6	61.4	0.0	3.9	3.9	57.5	57.5	56.7	45.2	44.4	56.4
14	2026	25.9	0.3	36.2	62.4	0.0	3.9	3.9	58.6	58.6	57.8	46.1	45.3	57.5
15	2027	26.4	0.3	36.8	63.5	0.0	3.9	3.9	59.6	59.6	58.9	46.9	46.2	58.6
16	2028	26.8	0.3	37.5	64.6	0.0	3.9	3.9	60.7	60.7	59.9	47.8	47.0	59.6
17	2029	27.3	0.3	38.1	65.7	0.0	3.9	3.9	61.8	61.8	61.0	48.6	47.9	60.7
18	2030	37.7	1.3	41.1	80.2	0.0	3.9	3.9	76.3	76.3	75.5	60.3	59.5	61.8
19	2031	38.4	0.3	41.9	80.7	0.0	0.0	0.0	80.7	80.7	80.7	64.6	63.8	76.3
20	2032	39.2	0.3	42.7	82.3	0.0	0.0	0.0	82.3	82.3	82.3	65.8	65.8	80.7
21	2033	39.9	0.3	43.5	83.8	0.0	0.0	0.0	83.8	83.8	83.8	67.0	67.0	82.3
22	2034	40.6	0.3	44.3	85.3	0.0	0.0	0.0	85.3	85.3	85.3	68.2	68.2	83.8
23	2035	41.4	0.3	45.1	86.8	-845.5	0.0	-845.5	932.4	932.4	932.4	915.0	915.0	85.3
					0.0					0.0	0.0	0.0	0.0	932.4
Total		570.6	19.6	724.2	1,314.4	-552.9	58.2	-494.7	**1,809.1**	**1,727.2**	**1,797.5**	**1,546.2**	**1,452.7**	**1,809.1**
	NPV @ 12%	130.1	9.4	174.5	314.0	166.5	18.8	185.3	**128.7**	**68.1**	**125.0**	**65.9**	**1.9**	**112.1**
	EIRR					Base EIRR			17.2%					
						Sensitivity				SI	SV			
						Capital Cost Over-run by 20%		12%	14.3%	1.7	60.3%			
						O&M Cost over-run by 20%		12%	17.0%	0.1	1276.2%			
						Benefits reduced by 20%		12%	14.6%	1.4	70.2%			
						Worst Scenario (all three)		12%	12.1%					
						One Year Delay in Implementation			16.9%					

BDT Million

Economic Analysis of Drainage Schemes: Amtali without CCR									
Million Taka (April 2013 Constant Prices)									
Base Prices						**Economic Benefits**			
Capital cost (Base + Physical Contingencies)		Million Tk.	38.588						
(of which labour)		20%	7.718						
						No. of Properties benefited			510
Annual O&M Costs		1%	0.193	1.1%		Saved Properties Damage Benefit			6.899
(of which labour)		70%	0.135			Saved Loss of Income			1.26
						Saved Medical Cost Benefit			0.100
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Agricultural Loss			1.95
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Saved business Income			0.47
		Taxes	**Taxes**			Saved Road Damage			0.64
Investment Cost						Base Economic Benefit			11.308
Traded	35%	10.805	8.793	1.070	9.408	Annual increase (real)			1.02%
Non traded	65%	20.066	20.066	1.000	20.066				
Labour		7.718	7.718	0.940	7.255				
Total		**38.588**	**36.576**		**36.729**				
						Taxes and Duties			
Annual O&M Costs						Taxes on whole works		5.50%	2.012
Traded	35%	0.020	0.020	1.070	0.022				
Non traded	65%	0.038	0.038	1.000	0.038				
Labour		0.135	0.135	0.940	0.127				
Total		**0.193**	**0.193**		**0.186**				

BDT Million

ECONOMIC INTERNAL RATE OF RETURN	Amtali without CCR										
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				One year Delay
							Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	
1	40%	14.692	0.000	14.692	0.000	-14.692	-17.630	-14.692	-14.692	-17.630	
2	60%	22.037	0.000	22.037	0.000	-22.037	-26.445	-22.037	-22.037	-26.445	-14.692
3			0.186	0.186	11.538	11.352	11.352	11.315	9.044	9.007	-22.037
4			0.186	0.186	11.656	11.470	11.470	11.433	9.139	9.101	11.352
5			0.186	0.186	11.775	11.589	11.589	11.551	9.234	9.196	11.470
6			0.186	0.186	11.895	11.709	11.709	11.672	9.330	9.293	11.589
7			0.186	0.186	12.016	11.830	11.830	11.793	9.427	9.390	11.709
8			0.186	0.186	12.139	11.953	11.953	11.915	9.525	9.488	11.830
9			0.186	0.186	12.263	12.077	12.077	12.039	9.624	9.587	11.953
10			0.186	0.186	12.388	12.202	12.202	12.164	9.724	9.687	12.077
11			0.366	0.366	12.514	12.148	12.148	12.075	9.645	9.572	12.202
12			0.366	0.366	12.642	12.276	12.276	12.202	9.747	9.674	12.148
13			0.366	0.366	12.771	12.405	12.405	12.331	9.850	9.777	12.276
14			0.366	0.366	12.901	12.535	12.535	12.462	9.955	9.881	12.405
15			0.366	0.366	13.033	12.666	12.666	12.593	10.060	9.987	12.535
16			0.366	0.366	13.166	12.799	12.799	12.726	10.166	10.093	12.666
17			0.366	0.366	13.300	12.934	12.934	12.860	10.274	10.200	12.799
18			0.366	0.366	13.436	13.069	13.069	12.996	10.382	10.309	12.934
19			0.366	0.366	13.573	13.206	13.206	13.133	10.492	10.419	13.069
20			0.366	0.366	13.711	13.345	13.345	13.272	10.603	10.529	13.206
21			0.366	0.366	13.851	13.485	13.485	13.411	10.714	10.641	13.345
22			0.366	0.366	13.992	13.626	13.626	13.553	10.828	10.754	13.485
PV @ 12%				**32.154**	**73.135**	**40.981**	**34.844**	**40.688**	**26.354**	**19.92**	**39.86**
EIRR						**28.5%**	**24.1%**	**28.4%**	**23.1%**	**19.2%**	**28.4%**
Sensitivity Indicator							**0.77**	**0.02**	**0.95**		
Benefit / Cost Ratio						**2.27**					
Net Present Value						**40.981**					
Switching Value							129%	6162%	105%		

Economic Analysis of Drainage Schemes Galachipa Without CCR										
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits BDT Million**				
Capital cost (Base + Physical Contingencies)		Million Tk.	234.347							
(of which labour)		20%	46.869							
						No. of Properties benefited				1,514
Annual O&M Costs		0%	0.937	0.2%		Saved Properties Damage Benefit				12.896
(of which labour)		70%	0.656			Saved Loss of Income				27.50
						Saved Medical Cost Benefit				2.352
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Agricultural Loss				4.22
						Saved business Income				8.83
						Saved Road Damage				0.60
Investment Cost						Base Economic Benefit				56.393
Traded	35%	65.617	53.400	1.070	57.138	Annual increase (real)				1.02%
Non traded	65%	121.860	121.860	1.000	121.860					
Labour		46.869	46.869	0.940	44.057					
Total		**234.347**	**222.130**		**223.055**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	12.217
Traded	35%	0.098	0.098	1.070	0.105					
Non traded	65%	0.183	0.183	1.000	0.183					
Labour		0.656	0.656	0.940	0.617					
Total		**0.937**	**0.937**		**0.905**					

ECONOMIC INTERNAL RATE OF RETURN	Galachipa Without CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One year Delay
1	40%	89.222	0.000	89.222	0.000	-89.222	-107.067	-89.222	-89.222	-107.067	
2	60%	133.833	0.000	133.833	0.000	-133.833	-160.600	-133.833	-133.833	-160.600	-89.222
3			0.905	0.905	57.543	56.638	56.638	56.457	45.129	44.948	-133.833
4			0.905	0.905	58.130	57.225	57.225	57.044	45.599	45.418	56.638
5			0.905	0.905	58.723	57.818	57.818	57.637	46.073	45.892	57.225
6			0.905	0.905	59.322	58.417	58.417	58.236	46.553	46.372	57.818
7			0.905	0.905	59.927	59.022	59.022	58.841	47.037	46.856	58.417
8			0.905	0.905	60.538	59.633	59.633	59.452	47.526	47.345	59.022
9			0.905	0.905	61.156	60.251	60.251	60.070	48.020	47.839	59.633
10			0.905	0.905	61.779	60.875	60.875	60.694	48.519	48.338	60.251
11			1.655	1.655	62.410	60.755	60.755	60.424	48.273	47.942	60.875
12			1.655	1.655	63.046	61.391	61.391	61.060	48.782	48.451	60.755
13			1.655	1.655	63.689	62.034	62.034	61.703	49.296	48.965	61.391
14			1.655	1.655	64.339	62.684	62.684	62.353	49.816	49.485	62.034
15			1.655	1.655	64.995	63.340	63.340	63.009	50.341	50.010	62.684
16			1.655	1.655	65.658	64.003	64.003	63.672	50.872	50.541	63.340
17			1.655	1.655	66.328	64.673	64.673	64.342	51.407	51.076	64.003
18			1.655	1.655	67.004	65.349	65.349	65.018	51.949	51.618	64.673
19			1.655	1.655	67.688	66.033	66.033	65.702	52.495	52.164	65.349
20			1.655	1.655	68.378	66.723	66.723	66.392	53.048	52.717	66.033
21			1.655	1.655	69.076	67.421	67.421	67.090	53.606	53.275	66.723
22			1.655	1.655	69.780	68.125	68.125	67.794	54.169	53.838	67.421
PV @ 12%				**193.238**	**364.729**	**171.491**	**134.221**	**170.115**	**98.545**	**59.90**	**165.86**
EIRR						**23.8%**	**19.9%**	**23.7%**	**19.1%**	**15.7%**	**23.7%**
Sensitivity Indicator							**0.80**	**0.02**	**0.99**		
Benefit / Cost Ratio						**1.89**					
Net Present Value						**171.491**					
Switching Value							124%	6053%	101%		

Coastal Towns Infrastructure Improvement Project (CTIIP)										
Economic Analysis of Drainage Schemes:	**Pirojpur**	**without CCR**								
Annual O&M Costs		0%	1.257	0.2%		Saved Properties Damage Benefit				55.158
(of which labour)		70%	0.880			Saved Loss of Income				23.92
						Saved Medical Cost Benefit				2.508
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Agricultural Loss				47.79
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Saved business Income				6.92
		Taxes	**Taxes**			Saved Road Damage				4.50
Investment Cost						Base Economic Benefit				140.797
Traded	35%	74.085	60.291	1.070	64.512	Annual increase (real)				1.02%
Non traded	65%	137.587	137.587	1.000	137.587					
Labour		52.918	52.918	0.940	49.743					
Total		**264.590**	**250.796**		**251.841**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	13.794
Traded	35%	0.132	0.132	1.070	0.141					
Non traded	65%	0.245	0.245	1.000	0.245					
Labour		0.880	0.880	0.940	0.827					
Total		**1.257**	**1.257**		**1.213**					

BDT Million

Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				One year Delay
							Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	
1	40%	100.737	0.000	100.737	0.000	-100.737	-120.884	-100.737	-100.737	-120.884	
2	60%	151.105	0.000	151.105	0.000	-151.105	-181.326	-151.105	-151.105	-181.326	-100.737
3			1.213	1.213	143.669	142.456	142.456	142.214	113.722	113.480	-151.105
4			1.213	1.213	145.135	143.922	143.922	143.679	114.895	114.652	142.456
5			1.213	1.213	146.615	145.402	145.402	145.159	116.079	115.836	143.922
6			1.213	1.213	148.111	146.897	146.897	146.655	117.275	117.033	145.402
7			1.213	1.213	149.621	148.408	148.408	148.166	118.484	118.241	146.897
8			1.213	1.213	151.148	149.934	149.934	149.692	119.705	119.462	148.408
9			1.213	1.213	152.689	151.476	151.476	151.233	120.938	120.696	149.934
10			1.213	1.213	154.247	153.033	153.033	152.791	122.184	121.941	151.476
11			2.913	2.913	155.820	152.907	152.907	152.324	121.743	121.160	153.033
12			2.913	2.913	157.409	154.496	154.496	153.913	123.014	122.432	152.907
13			2.913	2.913	159.015	156.102	156.102	155.519	124.299	123.716	154.496
14			2.913	2.913	160.637	157.724	157.724	157.141	125.596	125.014	156.102
15			2.913	2.913	162.275	159.362	159.362	158.780	126.907	126.324	157.724
16			2.913	2.913	163.931	161.017	161.017	160.435	128.231	127.649	159.362
17			2.913	2.913	165.603	162.689	162.689	162.107	129.569	128.986	161.017
18			2.913	2.913	167.292	164.379	164.379	163.796	130.920	130.338	162.689
19			2.913	2.913	168.998	166.085	166.085	165.502	132.285	131.703	164.379
20			2.913	2.913	170.722	167.809	167.809	167.226	133.664	133.082	166.085
21			2.913	2.913	172.463	169.550	169.550	168.967	135.057	134.475	167.809
22			2.913	2.913	174.223	171.309	171.309	170.727	136.465	135.882	169.550
PV @ 12%				**221.018**	**910.632**	**689.613**	**647.533**	**687.490**	**507.487**	**463.284**	**675.46**
EIRR						**48.4%**	**41.4%**	**48.3%**	**39.9%**	**33.9%**	**48.4%**
Sensitivity Indicator							**0.72**	**0.01**	**0.88**		
Benefit / Cost Ratio						**4.12**					
Net Present Value						**689.613**					
Switching Value							139%	13348%	114%		

Economic Analysis of Drainage Schemes:	**Mathbaria without CCR**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits BDT Million**				
Capital cost (Base + Physical Contingencies)		Million Tk.	123.647							
(of which labour)		20%	24.729							
						No. of Properties benefited				1,380
Annual O&M Costs		0%	0.495	0.3%		Saved Properties Damage Benefit				19.010
(of which labour)		70%	0.346			Saved Loss of Income				23.09
						Saved Medical Cost Benefit				1.127
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Agricultural Loss				3.24
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Saved business Income				7.42
		Taxes	**Taxes**			Saved Road Damage				1.80
Investment Cost						Base Economic Benefit				55.689
Traded	35%	34.621	28.175	1.070	30.147	Annual increase (real)				1.02%
Non traded	65%	64.296	64.296	1.000	64.296					
Labour		24.729	24.729	0.940	23.246					
Total		**123.647**	**117.200**		**117.689**					
						Taxes and Duties				
Annual O&M Costs						Taxes on whole works			5.50%	6.446
Traded	35%	0.052	0.052	1.070	0.056					
Non traded	65%	0.096	0.096	1.000	0.096					
Labour		0.346	0.346	0.940	0.325					
Total		**0.495**	**0.495**		**0.477**					

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria without CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M Cost + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One year Delay
1	40%	47.076	0.000	47.076	0.000	-47.076	-56.491	-47.076	-47.076	-56.491	
2	60%	70.613	0.000	70.613	0.000	-70.613	-84.736	-70.613	-70.613	-84.736	-47.076
3			0.477	0.477	56.825	56.348	56.348	56.252	44.983	44.887	-70.613
4			0.477	0.477	57.405	56.927	56.927	56.832	45.446	45.351	56.348
5			0.477	0.477	57.990	57.513	57.513	57.417	45.915	45.819	56.927
6			0.477	0.477	58.582	58.104	58.104	58.009	46.388	46.293	57.513
7			0.477	0.477	59.179	58.702	58.702	58.606	46.866	46.771	58.104
8			0.477	0.477	59.783	59.306	59.306	59.210	47.349	47.254	58.702
9			0.477	0.477	60.393	59.915	59.915	59.820	47.837	47.741	59.306
10			0.477	0.477	61.009	60.531	60.531	60.436	48.330	48.234	59.915
11			1.077	1.077	61.631	60.554	60.554	60.338	48.227	48.012	60.531
12			1.077	1.077	62.260	61.182	61.182	60.967	48.730	48.515	60.554
13			1.077	1.077	62.895	61.817	61.817	61.602	49.238	49.023	61.182
14			1.077	1.077	63.536	62.459	62.459	62.243	49.752	49.536	61.817
15			1.077	1.077	64.184	63.107	63.107	62.891	50.270	50.055	62.459
16			1.077	1.077	64.839	63.762	63.762	63.546	50.794	50.578	63.107
17			1.077	1.077	65.500	64.423	64.423	64.208	51.323	51.107	63.762
18			1.077	1.077	66.169	65.091	65.091	64.876	51.857	51.642	64.423
19			1.077	1.077	66.843	65.766	65.766	65.551	52.397	52.182	65.091
20			1.077	1.077	67.525	66.448	66.448	66.232	52.943	52.727	65.766
21			1.077	1.077	68.214	67.137	67.137	66.921	53.494	53.278	66.448
22			1.077	1.077	68.910	67.832	67.832	67.617	54.050	53.835	67.137
PV @ 12%				**102.364**	**360.180**	**257.816**	**238.151**	**257.008**	**185.780**	**165.31**	**252.21**
EIRR						**42.0%**	**35.8%**	**41.9%**	**34.5%**	**29.2%**	**41.9%**
Sensitivity Indicator							**0.73**	**0.01**	**0.89**		
Benefit / Cost Ratio						**3.52**					
Net Present Value						**257.816**					
Switching Value							136%	13046%	112%		

Coastal Towns Infrastructure Improvement Project (CTIIP)					
Economic Analysis of Road :	**Amtali**	**Without CCR**			
Road Name:	**Amtali Roads**			**Road Length: 8.38km**	
Million Taka (April 2013 Constant Prices)					
Base Prices					
Capital cost (Base + Physical Contingencies)		Million Tk.	105.458		
(of which labour)		20%	21.092		
Annual O&M Costs		2%	1.582		
(of which labour)		70%	1.107		
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**
Investment Cost					
Traded	35%	29.528	24.030	1.070	25.712
Non traded	65%	54.838	54.838	1.000	54.838
Labour		21.092	21.092	0.940	19.826
Total		**105.458**	**99.960**		**100.376**
Annual O&M Costs					
Traded	35%	0.166	0.166	1.070	0.178
Non traded	65%	0.308	0.308	1.000	0.308
Labour		1.107	1.107	0.940	1.041
Total		**1.582**	**1.582**		**1.527**
Taxes and Duties					
VAT			5.50%	5.498	
Annual increase (real)			2.00%		

Economc Benefit Cost Calculation							
Days	300	250 (Rickshaw)					
Road Length	8.38						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	83	150	900	113	75	1321
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	35,88,986	30,16,800	54,30,240	52,55,517	39,59,550	212,51,093
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	20,86,620	15,08,400	33,93,900	36,93,066	30,16,800	136,98,786
Savings per Year		**15,02,366**	**15,08,400**	**20,36,340**	**15,62,451**	**9,42,750**	**75,52,307**
Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	1500						
Time taken to travel		12.5	14	1.12			
with Project							
Time taken to travel		7.5	14	1.87			
Benefit/saving		5	0	0.75			
Road length (Km)				8.38			
Savings per trip				31.29			
Yearly Savings							**117,32,000**
Total Savings							**192,84,307**

ECONOMIC INTERNAL RATE OF RETURN	Amtali Roads		Without CCR								
										BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				One Year Delay
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	
1	60%	60.226	0.000	60.226	0.000	-60.226	-72.271	-60.226	-60.226	-72.271	
2	40%	40.151	0.000	40.151	0.000	-40.151	-48.181	-40.151	-40.151	-48.181	-60.226
3			1.527	1.527	20.063	18.536	18.536	18.231	14.524	14.218	-40.151
4			1.527	1.527	20.465	18.938	18.938	18.632	14.845	14.539	18.536
5			1.527	1.527	20.874	19.347	19.347	19.041	15.172	14.867	18.938
6			1.527	1.527	21.291	19.764	19.764	19.459	15.506	15.201	19.347
7			1.527	1.527	21.717	20.190	20.190	19.885	15.847	15.541	19.764
8			1.527	1.527	22.152	20.625	20.625	20.319	16.194	15.889	20.190
9			1.527	1.527	22.595	21.068	21.068	20.762	16.549	16.243	20.625
10			1.527	1.527	23.047	21.519	21.519	21.214	16.910	16.605	21.068
11			1.527	1.527	23.507	21.980	21.980	21.675	17.279	16.974	21.519
12			1.527	1.527	23.978	22.451	22.451	22.145	17.655	17.350	21.980
13			1.527	1.527	24.457	22.930	22.930	22.625	18.039	17.733	22.451
14			1.527	1.527	24.946	23.419	23.419	23.114	18.430	18.125	22.930
15			1.527	1.527	25.445	23.918	23.918	23.613	18.829	18.524	23.419
16			1.527	1.527	25.954	24.427	24.427	24.122	19.236	18.931	23.918
17			1.527	1.527	26.473	24.946	24.946	24.641	19.652	19.346	24.427
18			1.527	1.527	27.003	25.476	25.476	25.170	20.075	19.770	24.946
19			1.527	1.527	27.543	26.016	26.016	25.710	20.507	20.202	25.476
20			1.527	1.527	28.094	26.567	26.567	26.261	20.948	20.642	26.016
21			1.527	1.527	28.655	27.128	27.128	26.823	21.397	21.092	26.567
22			1.527	1.527	29.229	27.702	27.702	27.396	21.856	21.550	27.128
PV @ 12%				**94.874**	**135.306**	**40.432**	**23.276**	**38.613**	**13.371**	**-5.604**	**38.143**
EIRR						**17.9%**	**14.9%**	**17.6%**	**14.1%**	**11.3%**	**17.7%**
Sensitivity Indicator							**0.82**	**0.07**	**1.07**		
Benefit / Cost Ratio						**1.43**					
Net Present Value						**40.432**					
Switching Value							122%	1416%	93%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						**Economc Benefit Cost Calculation**							
Economic Analysis of Road :	**Galachipa**	**Without CCR**				Days	300	300 (Rickshaw)					
Road Name:	**Galachipa Roads**			**Road Length: 6.995km**		Road Length	6.995						
Million Taka (April 2013 Constant Prices)								**Light Vehicle**			**Heavy Vehicle**		**Total**
								Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
						Traffic Volume	No./ Day	45	64	300	2	20	431
Base Prices						**Without Project**							
Capital cost (Base + Physical Contingencies)		Million Tk.	96.643			Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
(of which labour)		20%	19.329			Total Operating Cost	Tk./Year	16,24,239	10,74,432	15,10,920	77,645	8,81,370	51,68,606
						with Project							
Annual O&M Costs		1%	0.966			Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
(of which labour)		70%	0.676			Total Operating Cost	Tk./Year	9,44,325	5,37,216	9,44,325	54,561	6,71,520	31,51,947
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	**Savings per Year**		**6,79,914**	**5,37,216**	**5,66,595**	**23,084**	**2,09,850**	**20,16,659**
						Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Investment Cost						**Without Project**	1556						
Traded	35%	27.060	22.022	1.070	23.563	Time taken to travel		12.5	13	1.04			
Non traded	65%	50.254	50.254	1.000	50.254								
Labour		19.329	19.329	0.940	18.169								
Total		**96.643**	**91.604**		**91.986**	**with Project**							
Annual O&M Costs						Time taken to travel		7.5	13	1.73			
Traded	35%	0.101	0.101	1.070	0.109								
Non traded	65%	0.188	0.188	1.000	0.188	Benefit/saving		5	0	0.69			
Labour		0.676	0.676	0.940	0.636	Road length (Km)				6.995			
Total		**0.966**	**0.966**		**0.933**	Savings per trip				24.25			
Taxes and Duties						**Yearly Savings**							**113,19,589**
VAT			5.50%	5.038		**Total Savings**							**133,36,247**
Annual increase (real)			2.00%										

ECONOMIC INTERNAL RATE OF RETURN	Galachipa Roads		Without CCR								
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	55.192	0.000	55.192	0.000	-55.192	-66.230	-55.192	-55.192	-66.230	
2	40%	36.794	0.000	36.794	0.000	-36.794	-44.153	-36.794	-36.794	-44.153	-55.192
3			0.933	0.933	13.875	12.942	12.942	12.756	10.167	11.555	-36.794
4			0.933	0.933	14.153	13.220	13.220	13.033	10.389	11.804	12.942
5			0.933	0.933	14.436	13.503	13.503	13.316	10.616	12.059	13.220
6			0.933	0.933	14.724	13.791	13.791	13.605	10.846	12.319	13.503
7			0.933	0.933	15.019	14.086	14.086	13.899	11.082	12.584	13.791
8			0.933	0.933	15.319	14.386	14.386	14.200	11.322	12.854	14.086
9			0.933	0.933	15.626	14.693	14.693	14.506	11.567	13.130	14.386
10			0.933	0.933	15.938	15.005	15.005	14.819	11.818	13.411	14.693
11			0.933	0.933	16.257	15.324	15.324	15.137	12.073	13.698	15.005
12			0.933	0.933	16.582	15.649	15.649	15.462	12.333	13.991	15.324
13			0.933	0.933	16.914	15.981	15.981	15.794	12.598	14.289	15.649
14			0.933	0.933	17.252	16.319	16.319	16.132	12.869	14.594	15.981
15			0.933	0.933	17.597	16.664	16.664	16.477	13.145	14.904	16.319
16			0.933	0.933	17.949	17.016	17.016	16.829	13.426	15.221	16.664
17			0.933	0.933	18.308	17.375	17.375	17.188	13.713	15.544	17.016
18			0.933	0.933	18.674	17.741	17.741	17.554	14.006	15.874	17.375
19			0.933	0.933	19.047	18.115	18.115	17.928	14.305	16.210	17.741
20			0.933	0.933	19.428	18.495	18.495	18.309	14.610	16.553	18.115
21			0.933	0.933	19.817	18.884	18.884	18.697	14.921	16.902	18.495
22			0.933	0.933	20.213	19.280	19.280	19.094	15.238	17.259	18.884
PV @ 12%				**84.166**	**93.572**	**9.406**	**-6.316**	**8.295**	**-9.308**	**-15.673**	**7.813**
EIRR						**13.6%**	**11.1%**	**13.4%**	**10.3%**	**9.6%**	**13.4%**
Sensitivity Indicator							**0.93**	**0.07**	**1.20**		
Benefit / Cost Ratio						**1.11**					
Net Present Value						**9.406**					
Switching Value							108%	1470%	84%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						
Economic Analysis of Road :	**Pirojpur**					
Road Name:	**Pirojpur Roads without CCR**			**Road Length: 34.2km**		
Million Taka (April 2013 Constant Prices)						
Base Prices						
Capital cost (Base + Physical Contingencies)		Million Tk.	293.153			
(of which labour)		20%	58.631			
Annual O&M Costs		1%	3.518			
(of which labour)		70%	2.462			
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	
		Taxes	**Taxes**			
Investment Cost						
Traded	35%	82.083	66.800	1.070	71.476	
Non traded	65%	152.439	152.439	1.000	152.439	
Labour		58.631	58.631	0.940	55.113	
Total		**293.153**	**277.870**		**279.028**	
Annual O&M Costs						
Traded	35%	0.369	0.369	1.070	0.395	
Non traded	65%	0.686	0.686	1.000	0.686	
Labour		2.462	2.462	0.940	2.315	
Total		**3.518**	**3.518**		**3.396**	
Taxes and Duties						
VAT			5.50%	15.283		
Annual increase (real)			2.00%			

Economc Benefit Cost Calculation							
Days	300	300 (Rickshaw)					
Road Length	34.2						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	70	28	665	87.5	70	920.5
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	123,53,040	22,98,240	163,74,960	166,08,375	150,82,200	627,16,815
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	71,82,000	11,49,120	102,34,350	116,70,750	114,91,200	417,27,420
Savings per Year		**51,71,040**	**11,49,120**	**61,40,610**	**49,37,625**	**35,91,000**	**209,89,395**
Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	1015						
Time taken to travel		12.5	15	1.2			
with Project							
Time taken to travel		7.5	15	2.00			
Benefit/saving		5	0	0.80			
Road length (Km)				34.2			
Savings per trip				136.80			
Yearly Savings							**416,55,600**
Total Savings							**626,44,995**

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur Roads without CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	167.417	0.000	167.417	0.000	-167.417	-200.900	-167.417	-167.417	-200.900	
2	40%	111.611	0.000	111.611	0.000	-111.611	-133.933	-111.611	-111.611	-133.933	-167.417
3			3.396	3.396	65.176	61.780	61.780	61.101	48.745	55.262	-111.611
4			3.396	3.396	66.479	63.083	63.083	62.404	49.788	56.435	61.780
5			3.396	3.396	67.809	64.413	64.413	63.734	50.851	57.632	63.083
6			3.396	3.396	69.165	65.769	65.769	65.090	51.936	58.853	64.413
7			3.396	3.396	70.548	67.153	67.153	66.473	53.043	60.098	65.769
8			3.396	3.396	71.959	68.563	68.563	67.884	54.172	61.368	67.153
9			3.396	3.396	73.399	70.003	70.003	69.323	55.323	62.663	68.563
10			3.396	3.396	74.867	71.471	71.471	70.791	56.497	63.984	70.003
11			3.396	3.396	76.364	72.968	72.968	72.289	57.695	65.332	71.471
12			3.396	3.396	77.891	74.495	74.495	73.816	58.917	66.706	72.968
13			3.396	3.396	79.449	76.053	76.053	75.374	60.163	68.108	74.495
14			3.396	3.396	81.038	77.642	77.642	76.963	61.434	69.538	76.053
15			3.396	3.396	82.659	79.263	79.263	78.584	62.731	70.997	77.642
16			3.396	3.396	84.312	80.916	80.916	80.237	64.054	72.485	79.263
17			3.396	3.396	85.998	82.602	82.602	81.923	65.403	74.002	80.916
18			3.396	3.396	87.718	84.322	84.322	83.643	66.779	75.550	82.602
19			3.396	3.396	89.472	86.077	86.077	85.397	68.182	77.129	84.322
20			3.396	3.396	91.262	87.866	87.866	87.187	69.614	78.740	86.077
21			3.396	3.396	93.087	89.691	89.691	89.012	71.074	80.383	87.866
22			3.396	3.396	94.949	91.553	91.553	90.874	72.563	82.058	89.691
PV @ 12%				**258.676**	**439.540**	**180.864**	**133.173**	**176.820**	**92.956**	**89.22**	**173.298**
EIRR						**21.1%**	**17.8%**	**20.9%**	**16.9%**	**16.0%**	**21.0%**
Sensitivity Indicator							**0.78**	**0.05**	**0.99**		
Benefit / Cost Ratio						**1.70**					
Net Present Value						**180.864**					
Switching Value							128%	2203%	101%		

Coastal Towns Infrastructure Improvement Project (CTIIP)					
Economic Analysis of Road :	**Mathbaria**				
Road Name:	**Mathbaria Roads without CCR**			**Road Length: 8 km**	
Million Taka (April 2013 Constant Prices)					
Base Prices					
Capital cost (Base + Physical Contingencies)		Million Tk.	108.683		
(of which labour)		20%	21.737		
Annual O&M Costs		2%	1.630		
(of which labour)		70%	1.141		
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**
		Cost incl.	**Cost excl.**	**Factor**	**Cost**
		Taxes	**Taxes**		
Investment Cost					
Traded	35%	30.431	24.765	1.070	26.499
Non traded	65%	56.515	56.515	1.000	56.515
Labour		21.737	21.737	0.940	20.432
Total		**108.683**	**103.017**		**103.446**
Annual O&M Costs					
Traded	35%	0.171	0.171	1.070	0.183
Non traded	65%	0.318	0.318	1.000	0.318
Labour		1.141	1.141	0.940	1.073
Total		**1.630**	**1.630**		**1.574**
Taxes and Duties					
VAT			5.50%	5.666	
Annual increase (real)			2.00%		

Economc Benefit Cost Calculation							
Days	300	300 (Rickshaw)					
Road Length	8						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	10	88	2000	100	60	2258
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	4,12,800	16,89,600	115,20,000	44,40,000	30,24,000	210,86,400
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	2,40,000	8,44,800	72,00,000	31,20,000	23,04,000	137,08,800
Savings per Year		**1,72,800**	**8,44,800**	**43,20,000**	**13,20,000**	**7,20,000**	**73,77,600**
Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	950						
Time taken to travel		12.5	22	1.76			
with Project							
Time taken to travel		7.5	22	2.93			
Benefit/saving		5	0	1.17			
Road length (Km)				8			
Savings per trip				46.93			
Yearly Savings							**133,76,000**
Total Savings							**207,53,600**

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria Roads without CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	62.068	0.000	62.068	0.000	-62.068	-74.481	-62.068	-62.068	-74.481	
2	40%	41.378	0.000	41.378	0.000	-41.378	-49.654	-41.378	-41.378	-49.654	-62.068
3			1.574	1.574	21.592	20.018	20.018	19.704	15.700	17.859	-41.378
4			1.574	1.574	22.024	20.450	20.450	20.135	16.045	18.248	20.018
5			1.574	1.574	22.464	20.891	20.891	20.576	16.398	18.644	20.450
6			1.574	1.574	22.914	21.340	21.340	21.025	16.757	19.049	20.891
7			1.574	1.574	23.372	21.798	21.798	21.483	17.124	19.461	21.340
8			1.574	1.574	23.839	22.266	22.266	21.951	17.498	19.882	21.798
9			1.574	1.574	24.316	22.742	22.742	22.428	17.879	20.311	22.266
10			1.574	1.574	24.802	23.229	23.229	22.914	18.268	20.748	22.742
11			1.574	1.574	25.299	23.725	23.725	23.410	18.665	21.195	23.229
12			1.574	1.574	25.804	24.231	24.231	23.916	19.070	21.650	23.725
13			1.574	1.574	26.321	24.747	24.747	24.432	19.483	22.115	24.231
14			1.574	1.574	26.847	25.273	25.273	24.958	19.904	22.589	24.747
15			1.574	1.574	27.384	25.810	25.810	25.495	20.333	23.072	25.273
16			1.574	1.574	27.932	26.358	26.358	26.043	20.772	23.565	25.810
17			1.574	1.574	28.490	26.916	26.916	26.602	21.218	24.067	26.358
18			1.574	1.574	29.060	27.486	27.486	27.172	21.674	24.580	26.916
19			1.574	1.574	29.641	28.068	28.068	27.753	22.139	25.103	27.486
20			1.574	1.574	30.234	28.660	28.660	28.346	22.614	25.637	28.068
21			1.574	1.574	30.839	29.265	29.265	28.950	23.097	26.181	28.660
22			1.574	1.574	31.456	29.882	29.882	29.567	23.591	26.736	29.265
PV @ 12%				**97.775**	**145.615**	**47.840**	**30.159**	**45.966**	**18.717**	**15.60**	**45.37**
EIRR						**18.7%**	**15.7%**	**18.4%**	**14.8%**	**13.9%**	**18.5%**
Sensitivity Indicator							**0.81**	**0.07**	**1.05**		
Benefit / Cost Ratio						**1.49**					
Net Present Value						**47.840**					
Switching Value							124%	1501%	95%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						
Economic Analysis of Road :	**Pirojpur**					
Road Name:	**Four Bridges without CCR**			**Road Length: 1*75**		
Million Taka (April 2013 Constant Prices)						
Base Prices						
Capital cost (Base + Physical Contingencies)		Million Tk.	18.598			
(of which labour)		20%	3.720			
Annual O&M Costs		0%	0.020			
(of which labour)		70%	0.014			
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	
		Taxes	**Taxes**			
Investment Cost						
Traded	35%	5.207	4.238	1.070	4.534	
Non traded	65%	9.671	9.671	1.000	9.671	
Labour		3.720	3.720	0.940	3.496	
Total		**18.598**	**17.628**		**17.701**	
Annual O&M Costs						
Traded	35%	0.002	0.002	1.070	0.002	
Non traded	65%	0.004	0.004	1.000	0.004	
Labour		0.014	0.014	0.940	0.013	
Total		**0.020**	**0.020**		**0.020**	
Taxes and Duties						
VAT			5.50%	0.970		
Annual increase (real)			1.05%			

Economc Benefit Cost Calculation							
Days	300	250 (Rickshaw)					
Road Length	0.075						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	4	56	113	0	0	173
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	1,548	10,080	6,102	-	-	17,730
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	900	5,040	3,814	-	-	9,754
Savings per Year		**648**	**5,040**	**2,288**	**-**	**-**	**7,976**
Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	5625						
Time taken to travel		12.5	15	1.2			
with Project							
Time taken to travel		3.5	15	4.29			
Benefit/saving		9	0	3.09			
Road length (Km)				0.075			
Savings per trip				2.08			
Yearly Savings							**29,29,018**
Total Savings							**29,36,994**

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur	Four Bridges without CCR									
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +5% & Benefit-10%	One Year Delay
1	60%	10.621	0.000	10.621	0.000	-10.621	-12.745	-10.621	-10.621	-12.745	
2	40%	7.081	0.000	7.081	0.000	-7.081	-8.497	-7.081	-7.081	-8.497	-10.621
3			0.020	0.020	2.937	2.917	2.917	2.913	2.330	2.326	-7.081
4			0.020	0.020	2.996	2.976	2.976	2.972	2.377	2.373	2.917
5			0.020	0.020	3.056	3.036	3.036	3.032	2.425	2.421	2.976
6			0.020	0.020	3.117	3.097	3.097	3.093	2.474	2.470	3.036
7			0.020	0.020	3.179	3.159	3.159	3.155	2.524	2.520	3.097
8			0.020	0.020	3.243	3.223	3.223	3.219	2.574	2.570	3.159
9			0.020	0.020	3.308	3.288	3.288	3.284	2.626	2.622	3.223
10			0.020	0.020	3.374	3.354	3.354	3.350	2.679	2.675	3.288
11			0.020	0.020	3.441	3.421	3.421	3.417	2.733	2.729	3.354
12			0.020	0.020	3.510	3.490	3.490	3.486	2.788	2.784	3.421
13			0.020	0.020	3.580	3.560	3.560	3.556	2.844	2.840	3.490
14			0.020	0.020	3.652	3.632	3.632	3.628	2.902	2.898	3.560
15			0.020	0.020	3.725	3.705	3.705	3.701	2.960	2.956	3.632
16			0.020	0.020	3.799	3.780	3.780	3.776	3.020	3.016	3.705
17			0.020	0.020	3.875	3.856	3.856	3.852	3.080	3.077	3.780
18			0.020	0.020	3.953	3.933	3.933	3.929	3.142	3.139	3.856
19			0.020	0.020	4.032	4.012	4.012	4.008	3.206	3.202	3.933
20			0.020	0.020	4.113	4.093	4.093	4.089	3.270	3.266	4.012
21			0.020	0.020	4.195	4.175	4.175	4.171	3.336	3.332	4.093
22			0.020	0.020	4.279	4.259	4.259	4.255	3.403	3.399	4.175
PV @ 12%				**15.245**	**19.807**	**4.562**	**1.536**	**4.538**	**0.600**	**-2.45**	**4.21**
EIRR						**15.9%**	**13.1%**	**15.9%**	**12.5%**	**10.1%**	**15.7%**
Sensitivity Indicator							**0.86**	**0.01**	**1.05**		
Benefit / Cost Ratio						**1.30**					
Net Present Value						**4.562**					
Switching Value							116%	16452%	95%		

Coastal Towns Infrastructure Improvement Project (CTIIP)					
Economic Analysis of Road :	**Mathbaria**				
Road Name:	**One Bridge without CCR**			**Road Length: 1*75**	
Million Taka (April 2013 Constant Prices)					
Base Prices					
Capital cost (Base + Physical Contingencies)		Million Tk.	24.618		
(of which labour)		20%	4.924		
Annual O&M Costs		0%	0.025		
(of which labour)		70%	0.017		
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**
		Cost incl.	**Cost excl.**	**Factor**	**Cost**
		Taxes	**Taxes**		
Investment Cost					
Traded	35%	6.893	5.610	1.070	6.002
Non traded	65%	12.801	12.801	1.000	12.801
Labour		4.924	4.924	0.940	4.628
Total		**24.618**	**23.334**		**23.431**
Annual O&M Costs					
Traded	35%	0.003	0.003	1.070	0.003
Non traded	65%	0.005	0.005	1.000	0.005
Labour		0.017	0.017	0.940	0.016
Total		**0.025**	**0.025**		**0.024**
Taxes and Duties					
VAT			5.50%	1.283	
Annual increase (real)			1.05%		

Economc Benefit Cost Calculation							
Days	300	250 (Rickshaw)					
Road Length	0.075						
		Light Vehicle			**Heavy Vehicle**		**Total**
		Car/Taxi	**Baby Taxi**	**Motor Cycle**	**Bus**	**Truck**	
Traffic Volume	No./ Day	15	150	188	0	0	353
Without Project							
Operating Cost	Tk./Vehicle	17.2	8	2.4	18.5	21	
Total Operating Cost	Tk./Year	5,805	27,000	10,152	-	-	42,957
with Project							
Operating Cost	Tk./Vehicle	10	4	1.5	13	16	
Total Operating Cost	Tk./Year	3,375	13,500	6,345	-	-	23,220
Savings per Year		**2,430**	**13,500**	**3,807**	**-**	**-**	**19,737**
Rickshaw	**Trips**	**Minutes per km.**	**Earnings per Km . (Tk.)**	**Earning per Minute (Tk.)**			
Without Project	3825						
Time taken to travel		12.5	22	1.76			
with Project							
Time taken to travel		3	22	7.33			
Benefit/saving		9.5	0	5.57			
Road length (Km)				0.075			
Savings per trip				3.97			
Yearly Savings							**37,97,269**
Total Savings							**38,17,006**

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria	One Bridge without CCR								BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +5% & Benefit-10%	One Year Delay
1	60%	14.059	0.000	14.059	0.000	-14.059	-16.871	-14.059	-14.059	-16.871	
2	40%	9.373	0.000	9.373	0.000	-9.373	-11.247	-9.373	-9.373	-11.247	-14.059
3			0.024	0.024	3.817	3.793	3.793	3.788	3.030	3.025	-9.373
4			0.024	0.024	3.893	3.870	3.870	3.865	3.091	3.086	3.793
5			0.024	0.024	3.971	3.947	3.947	3.943	3.153	3.148	3.870
6			0.024	0.024	4.051	4.027	4.027	4.022	3.217	3.212	3.947
7			0.024	0.024	4.132	4.108	4.108	4.103	3.282	3.277	4.027
8			0.024	0.024	4.214	4.191	4.191	4.186	3.348	3.343	4.108
9			0.024	0.024	4.299	4.275	4.275	4.270	3.415	3.410	4.191
10			0.024	0.024	4.385	4.361	4.361	4.356	3.484	3.479	4.275
11			0.024	0.024	4.472	4.448	4.448	4.444	3.554	3.549	4.361
12			0.024	0.024	4.562	4.538	4.538	4.533	3.626	3.621	4.448
13			0.024	0.024	4.653	4.629	4.629	4.624	3.699	3.694	4.538
14			0.024	0.024	4.746	4.722	4.722	4.717	3.773	3.768	4.629
15			0.024	0.024	4.841	4.817	4.817	4.812	3.849	3.844	4.722
16			0.024	0.024	4.938	4.914	4.914	4.909	3.926	3.922	4.817
17			0.024	0.024	5.036	5.013	5.013	5.008	4.005	4.001	4.914
18			0.024	0.024	5.137	5.113	5.113	5.109	4.086	4.081	5.013
19			0.024	0.024	5.240	5.216	5.216	5.211	4.168	4.163	5.113
20			0.024	0.024	5.345	5.321	5.321	5.316	4.252	4.247	5.216
21			0.024	0.024	5.452	5.428	5.428	5.423	4.338	4.333	5.321
22			0.024	0.024	5.561	5.537	5.537	5.532	4.425	4.420	5.428
PV @ 12%				**20.166**	**25.742**	**5.576**	**1.571**	**5.547**	**0.427**	**-3.61**	**5.12**
EIRR						**15.6%**	**12.9%**	**15.6%**	**12.3%**	**9.9%**	**15.4%**
Sensitivity Indicator							**0.87**	**0.01**	**1.06**		
Benefit / Cost Ratio						**1.28**					
Net Present Value						**5.576**					
Switching Value							115%	17666%	94%		

Economic Analysis of Sanitation	**Amtali**	**without CCR**								
Schemes:	**10 community Latrines, 4 public Toilets and 1 Desludging Machine**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	11.180							
(of which labour)		20%	2.236							
						Average household expenditure on health (Taka) /a				1,097
						No. of Households benefited				455
Annual O&M Costs		5%	0.503	4.472%		/a: Source: SEWTP				
(of which labour)		50%	0.252			Days saved due t	Days			2.5
						HH income per da	Taka / day			532
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**					
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Yearly savings per HH				1,330.00
		Taxes	**Taxes**							
Investment Cost										
Traded	35%	3.130	2.548	1.070	2.726					
Non traded	65%	5.814	5.814	1.000	5.814	Base Economic Benefit				
Labour		2.236	2.236	0.940	2.102	Saved Income Loss			BDT Million	0.61
Total		**11.180**	**10.597**		**10.641**	Saved Medical Cost			BDT Million	1.527
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.088	0.088	1.070	0.094	Custom Duty on Traded Cost			5.50%	0.583
Non traded	65%	0.164	0.164	1.000	0.164					
Labour		0.252	0.252	0.940	0.236					
Total		**0.503**	**0.503**		**0.494**					

ECONOMIC INTERNAL RATE OF RETURN	Amtali	without CCR									
	10 community Latrines, 4 public Toilets and 1 Desludging Machine									BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	6.385	0.000	6.385	0.000	-6.385	-7.662	-6.385	-6.385	-7.662	
2	40%	4.257	0.000	4.257	0.000	-4.257	-5.108	-4.257	-4.257	-5.108	-6.385
3			0.494	0.494	2.133	1.638	1.638	1.540	1.212	1.425	-4.257
4			0.494	0.494	2.175	1.681	1.681	1.582	1.246	1.464	1.638
5			0.494	0.494	2.219	1.725	1.725	1.626	1.281	1.503	1.681
6			0.494	0.494	2.263	1.769	1.769	1.670	1.316	1.543	1.725
7			0.494	0.494	2.308	1.814	1.814	1.715	1.353	1.583	1.769
8			0.494	0.494	2.355	1.860	1.860	1.762	1.390	1.625	1.814
9			0.494	0.494	2.402	1.908	1.908	1.809	1.427	1.667	1.860
10			0.494	0.494	2.450	1.956	1.956	1.857	1.466	1.711	1.908
11			0.494	0.494	2.499	2.005	2.005	1.906	1.505	1.755	1.956
12			0.494	0.494	2.549	2.055	2.055	1.956	1.545	1.800	2.005
13			0.494	0.494	2.600	2.106	2.106	2.007	1.586	1.846	2.055
14			0.494	0.494	2.652	2.158	2.158	2.059	1.627	1.892	2.106
15			0.494	0.494	2.705	2.211	2.211	2.112	1.670	1.940	2.158
16			0.494	0.494	2.759	2.265	2.265	2.166	1.713	1.989	2.211
17			0.494	0.494	2.814	2.320	2.320	2.221	1.757	2.038	2.265
18			0.494	0.494	2.870	2.376	2.376	2.277	1.802	2.089	2.320
19			0.494	0.494	2.928	2.434	2.434	2.335	1.848	2.141	2.376
20			0.494	0.494	2.986	2.492	2.492	2.393	1.895	2.193	2.434
21			0.494	0.494	3.046	2.552	2.552	2.453	1.943	2.247	2.492
22			0.494	0.494	3.107	2.613	2.613	2.514	1.991	2.302	2.552
PV @ 12%				**12.037**	**14.382**	**2.346**	**0.527**	**1.757**	**-0.531**	**-0.91**	**2.13**
EIRR						**15.3%**	**12.6%**	**14.5%**	**11.2%**	**10.9%**	**15.1%**
Sensitivity Indicator							**0.87**	**0.26**	**1.33**		
Benefit / Cost Ratio						**1.19**					
Net Present Value						**2.346**					
Switching Value							116%	379%	75%		

Economic Analysis of Sanitation	**Galachipa Without CCR**									
Schemes:	**8 community Latrines, 3 school latrines and 6 public Toilets and 1 Desludging Machine**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	13.975							
(of which labour)		20%	2.795							
						Average household expenditure on health (Taka) /a				1,126
						No. of Households benefited				800
Annual O&M Costs		5%	0.629	3.578%		/a: Source: SEWTP				
(of which labour)		50%	0.314			Days saved due t	Days			2.1
						HH income per da	Taka / day			506
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**					
						Yearly savings per HH				1,062.60
Investment Cost										
Traded	35%	3.913	3.184	1.070	3.407					
Non traded	65%	7.267	7.267	1.000	7.267	Base Economic Benefit				
Labour		2.795	2.795	0.940	2.627	Saved Income Loss			BDT Million	0.85
Total		**13.975**	**13.246**		**13.302**	Saved Medical Cost			BDT Million	2.756
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.110	0.110	1.070	0.118	Custom Duty on Traded Cost			5.50%	0.729
Non traded	65%	0.204	0.204	1.000	0.204					
Labour		0.314	0.314	0.940	0.296					
Total		**0.629**	**0.629**		**0.618**					

ECONOMIC INTERNAL RATE OF RETURN	Galachipa Without CCR										
	8 community Latrines, 3 school latrines and 6 public Toilets and 1 Desludging Machine									BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	7.981	0.000	7.981	0.000	-7.981	-9.577	-7.981	-7.981	-9.577	
2	40%	5.321	0.000	5.321	0.000	-5.321	-6.385	-5.321	-5.321	-6.385	-7.981
3			0.618	0.618	3.608	2.990	2.990	2.867	2.269	2.145	-5.321
4			0.618	0.618	3.680	3.062	3.062	2.939	2.326	2.203	2.990
5			0.618	0.618	3.754	3.136	3.136	3.012	2.385	2.262	3.062
6			0.618	0.618	3.829	3.211	3.211	3.088	2.445	2.322	3.136
7			0.618	0.618	3.905	3.288	3.288	3.164	2.507	2.383	3.211
8			0.618	0.618	3.983	3.366	3.366	3.242	2.569	2.446	3.288
9			0.618	0.618	4.063	3.445	3.445	3.322	2.633	2.509	3.366
10			0.618	0.618	4.144	3.527	3.527	3.403	2.698	2.574	3.445
11			0.618	0.618	4.227	3.610	3.610	3.486	2.764	2.641	3.527
12			0.618	0.618	4.312	3.694	3.694	3.571	2.832	2.708	3.610
13			0.618	0.618	4.398	3.780	3.780	3.657	2.901	2.777	3.694
14			0.618	0.618	4.486	3.868	3.868	3.745	2.971	2.848	3.780
15			0.618	0.618	4.576	3.958	3.958	3.835	3.043	2.919	3.868
16			0.618	0.618	4.667	4.050	4.050	3.926	3.116	2.993	3.958
17			0.618	0.618	4.761	4.143	4.143	4.019	3.191	3.067	4.050
18			0.618	0.618	4.856	4.238	4.238	4.115	3.267	3.143	4.143
19			0.618	0.618	4.953	4.335	4.335	4.212	3.345	3.221	4.238
20			0.618	0.618	5.052	4.434	4.434	4.311	3.424	3.300	4.335
21			0.618	0.618	5.153	4.535	4.535	4.412	3.505	3.381	4.434
22			0.618	0.618	5.256	4.638	4.638	4.515	3.587	3.464	4.535
PV @ 12%				**15.046**	**24.332**	**9.286**	**7.013**	**8.550**	**4.420**	**1.41**	**8.90**
EIRR						**21.6%**	**18.3%**	**20.9%**	**16.9%**	**13.4%**	**21.5%**
Sensitivity Indicator							**0.77**	**0.17**	**1.11**		
Benefit / Cost Ratio						**1.62**					
Net Present Value						**9.286**					
Switching Value							130%	600%	90%		

Economic Analysis of Sanitation	**Mathbaria Without CCR**									
Schemes:	**8 community Latrines, 6 school latrines and 6 public Toilets and 1 Desludging Machine**									
Million Taka (April 2013 Constant Prices)										
Base Prices						**Economic Benefits**				
Capital cost (Base + Physical Contingencies)		Million Tk.	16.555							
(of which labour)		20%	3.311							
						Average household expendituer on health (Taka) /a				1,061
						No. of Households benefited				1,100
Annual O&M Costs		5%	0.745	3.020%		/a: Source: SEWTP				
(of which labour)		50%	0.372			Days saved due t	Days			2
						HH income per da	Taka / day			836
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**					
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Yearly savings per HH				1,504.80
		Taxes	**Taxes**							
Investment Cost										
Traded	35%	4.635	3.772	1.070	4.036					
Non traded	65%	8.609	8.609	1.000	8.609	Base Economic Benefit				
Labour		3.311	3.311	0.940	3.112	Saved Income Loss			BDT Million	1.66
Total		**16.555**	**15.692**		**15.757**	Saved Medical Cost			BDT Million	3.571
						Annual increase (real)				2.00%
Annual O&M Costs						Taxes and Duties				
Traded	35%	0.130	0.130	1.070	0.139	Custom Duty on Traded Cost			5.50%	0.863
Non traded	65%	0.242	0.242	1.000	0.242					
Labour		0.372	0.372	0.940	0.350					
Total		**0.745**	**0.745**		**0.732**					

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria Without CCR										
	8 community Latrines, 6 school latrines and 6 public Toilets and 1 Desludging Machine									BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	9.454	0.000	9.454	0.000	-9.454	-11.345	-9.454	-9.454	-11.345	
2	40%	6.303	0.000	6.303	0.000	-6.303	-7.564	-6.303	-6.303	-7.564	-9.454
3			0.732	0.732	5.229	4.497	4.497	4.351	3.451	3.305	-6.303
4			0.732	0.732	5.333	4.602	4.602	4.455	3.535	3.389	4.497
5			0.732	0.732	5.440	4.708	4.708	4.562	3.620	3.474	4.602
6			0.732	0.732	5.549	4.817	4.817	4.671	3.707	3.561	4.708
7			0.732	0.732	5.660	4.928	4.928	4.782	3.796	3.650	4.817
8			0.732	0.732	5.773	5.041	5.041	4.895	3.887	3.740	4.928
9			0.732	0.732	5.888	5.157	5.157	5.010	3.979	3.833	5.041
10			0.732	0.732	6.006	5.274	5.274	5.128	4.073	3.927	5.157
11			0.732	0.732	6.126	5.394	5.394	5.248	4.169	4.023	5.274
12			0.732	0.732	6.249	5.517	5.517	5.371	4.267	4.121	5.394
13			0.732	0.732	6.374	5.642	5.642	5.496	4.367	4.221	5.517
14			0.732	0.732	6.501	5.769	5.769	5.623	4.469	4.323	5.642
15			0.732	0.732	6.631	5.899	5.899	5.753	4.573	4.427	5.769
16			0.732	0.732	6.764	6.032	6.032	5.886	4.679	4.533	5.899
17			0.732	0.732	6.899	6.167	6.167	6.021	4.788	4.641	6.032
18			0.732	0.732	7.037	6.305	6.305	6.159	4.898	4.752	6.167
19			0.732	0.732	7.178	6.446	6.446	6.300	5.011	4.864	6.305
20			0.732	0.732	7.321	6.590	6.590	6.443	5.125	4.979	6.446
21			0.732	0.732	7.468	6.736	6.736	6.590	5.243	5.096	6.590
22			0.732	0.732	7.617	6.885	6.885	6.739	5.362	5.216	6.736
PV @ 12%				**17.823**	**35.262**	**17.438**	**14.745**	**16.567**	**10.386**	**6.82**	**16.87**
EIRR						**26.6%**	**22.7%**	**25.9%**	**21.2%**	**17.2%**	**26.5%**
Sensitivity Indicator							**0.73**	**0.13**	**1.02**		
Benefit / Cost Ratio						**1.98**					
Net Present Value						**17.438**					
Switching Value							137%	782%	98%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						
Economic Analysis of Road :	**Amtali**					
Road Name:	**Amtali Cyclone Shelters W/o CCR**			**Numbers:**	**3**	
Million Taka (April 2013 Constant Prices)						
Base Prices						
Capital cost (Base + Physical Contingencies)		Million Tk.	73.315			
(of which labour)		20%	14.663			
Annual O&M Costs		0%	0.220			
(of which labour)		70%	0.154			
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	
		Taxes	**Taxes**			
Investment Cost						
Traded	35%	20.528	16.706	1.070	17.876	
Non traded	65%	38.124	38.124	1.000	38.124	
Labour		14.663	14.663	0.940	13.783	
Total		**73.315**	**69.493**		**69.783**	
Annual O&M Costs						
Traded	35%	0.023	0.023	1.070	0.025	
Non traded	65%	0.043	0.043	1.000	0.043	
Labour		0.154	0.154	0.940	0.145	
Total		**0.220**	**0.220**		**0.212**	
Taxes and Duties						
VAT			5.50%	3.822		
Annual increase (real)			1.05%			

Economc Benefit Cost Calculation					
Number of cyclone shelters	**3**				
Capacity of cyclone shelters	**1020**				
Monthly HH Income	BDT	13841			0
HH Size	Number	4			0
Number of days saved	Number	15			0
Additional persons accessing CS	Number	3060			0
Number of cyclones per year	Number	2			0
Saved Medical Cost per HH	BDT	1020			0
Savings:					
Loss of Income per HH	BDT	**52,94,183**			
Medical Cost Per HH	BDT	**3,90,150**			
Yearly Savings					**113,68,666**
Total Savings					**113,68,666**

ECONOMIC INTERNAL RATE OF RETURN	Amtali Cyclone Shelters W/o CCR										
										BDT Million	
Year		Capital	Operating	Total	Economic	Net	Sensitivity				
		Cost	Cost	Cost	Benefit	Benefits	Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	41.870	0.000	41.870	0.000	-41.870	-50.243	-41.870	-41.870	-50.243	
2	40%	27.913	0.000	27.913	0.000	-27.913	-33.496	-27.913	-27.913	-33.496	-41.870
3			0.212	0.212	11.369	11.156	11.156	11.114	8.883	8.840	-27.913
4			0.212	0.212	11.488	11.276	11.276	11.233	8.978	8.936	11.156
5			0.212	0.212	11.609	11.396	11.396	11.354	9.075	9.032	11.276
6			0.212	0.212	11.731	11.518	11.518	11.476	9.172	9.130	11.396
7			0.212	0.212	11.854	11.641	11.641	11.599	9.271	9.228	11.518
8			0.212	0.212	11.978	11.766	11.766	11.723	9.370	9.328	11.641
9			0.212	0.212	12.104	11.892	11.892	11.849	9.471	9.428	11.766
10			0.212	0.212	12.231	12.019	12.019	11.976	9.573	9.530	11.892
11			0.212	0.212	12.359	12.147	12.147	12.105	9.675	9.633	12.019
12			0.212	0.212	12.489	12.277	12.277	12.234	9.779	9.737	12.147
13			0.212	0.212	12.620	12.408	12.408	12.366	9.884	9.842	12.277
14			0.212	0.212	12.753	12.541	12.541	12.498	9.990	9.948	12.408
15			0.212	0.212	12.887	12.674	12.674	12.632	10.097	10.055	12.541
16			0.212	0.212	13.022	12.810	12.810	12.767	10.205	10.163	12.674
17			0.212	0.212	13.159	12.947	12.947	12.904	10.315	10.272	12.810
18			0.212	0.212	13.297	13.085	13.085	13.042	10.425	10.383	12.947
19			0.212	0.212	13.437	13.224	13.224	13.182	10.537	10.495	13.085
20			0.212	0.212	13.578	13.365	13.365	13.323	10.650	10.607	13.224
21			0.212	0.212	13.720	13.508	13.508	13.465	10.764	10.721	13.365
22			0.212	0.212	13.864	13.652	13.652	13.610	10.879	10.837	13.508
PV @ 12%				**60.900**	**72.194**	**11.294**	**-0.633**	**11.041**	**-3.145**	**-15.32**	**10.17**
EIRR						**14.6%**	**11.9%**	**14.5%**	**11.2%**	**8.8%**	**14.4%**
Sensitivity Indicator							**0.93**	**0.02**	**1.14**		
Benefit / Cost Ratio						**1.19**					
Net Present Value						**11.294**					
Switching Value							108%	5205%	88%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						**Economc Benefit Cost Calculation**				
Economic Analysis of Road :	**Galachipa**					Number of cyclone	**3**			
Road Name:	**Cyclone Shelters without CCR**			**Numbers:**	**3**	Capacity of cyclor	**1105**			
Million Taka (April 2013 Constant Prices)						Monthly HH Incom	BDT	13167		
						HH Size	Number	4		
Base Prices						Number of days s	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	73.315			Additional persons	Number	3315		
(of which labour)		20%	14.663			Number of cyclone	Number	2		
						Saved Medical Co	BDT	1126		
Annual O&M Costs		0%	0.293							
(of which labour)		70%	0.205			**Savings:**				
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Loss of Income pe	BDT	**54,56,076**		
						Medical Cost Per	BDT	**4,66,586**		
Investment Cost						**Yearly Savings**				**118,45,324**
Traded	35%	20.528	16.706	1.070	17.876	**Total Savings**				**118,45,324**
Non traded	65%	38.124	38.124	1.000	38.124					
Labour		14.663	14.663	0.940	13.783					
Total		**73.315**	**69.493**		**69.783**					
Annual O&M Costs										
Traded	35%	0.031	0.031	1.070	0.033					
Non traded	65%	0.057	0.057	1.000	0.057					
Labour		0.205	0.205	0.940	0.193					
Total		**0.293**	**0.293**		**0.283**					
Taxes and Duties										
VAT			5.50%	3.822						
Annual increase (real)			1.05%							

ECONOMIC INTERNAL RATE OF RETURN	Galachipa	Cyclone Shelters without CCR									
										BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	41.870	0.000	41.870	0.000	-41.870	-50.243	-41.870	-41.870	-50.243	
2	40%	27.913	0.000	27.913	0.000	-27.913	-33.496	-27.913	-27.913	-33.496	-41.870
3			0.283	0.283	11.845	11.562	11.562	11.506	9.193	9.137	-27.913
4			0.283	0.283	11.970	11.687	11.687	11.630	9.293	9.236	11.562
5			0.283	0.283	12.095	11.812	11.812	11.756	9.393	9.337	11.687
6			0.283	0.283	12.222	11.939	11.939	11.883	9.495	9.438	11.812
7			0.283	0.283	12.351	12.068	12.068	12.011	9.597	9.541	11.939
8			0.283	0.283	12.480	12.197	12.197	12.141	9.701	9.645	12.068
9			0.283	0.283	12.611	12.328	12.328	12.272	9.806	9.749	12.197
10			0.283	0.283	12.744	12.461	12.461	12.404	9.912	9.855	12.328
11			0.283	0.283	12.878	12.595	12.595	12.538	10.019	9.962	12.461
12			0.283	0.283	13.013	12.730	12.730	12.673	10.127	10.071	12.595
13			0.283	0.283	13.150	12.866	12.866	12.810	10.237	10.180	12.730
14			0.283	0.283	13.288	13.004	13.004	12.948	10.347	10.290	12.866
15			0.283	0.283	13.427	13.144	13.144	13.087	10.459	10.402	13.004
16			0.283	0.283	13.568	13.285	13.285	13.228	10.571	10.515	13.144
17			0.283	0.283	13.711	13.427	13.427	13.371	10.685	10.629	13.285
18			0.283	0.283	13.855	13.571	13.571	13.515	10.801	10.744	13.427
19			0.283	0.283	14.000	13.717	13.717	13.660	10.917	10.860	13.571
20			0.283	0.283	14.147	13.864	13.864	13.807	11.035	10.978	13.717
21			0.283	0.283	14.296	14.012	14.012	13.956	11.153	11.097	13.864
22			0.283	0.283	14.446	14.163	14.163	14.106	11.273	11.217	14.012
PV @ 12%				**61.321**	**75.221**	**13.899**	**1.972**	**13.562**	**-1.145**	**-13.41**	**12.73**
EIRR						**15.1%**	**12.4%**	**15.1%**	**11.7%**	**9.2%**	**15.0%**
Sensitivity Indicator							**0.91**	**0.02**	**1.13**		
Benefit / Cost Ratio						**1.23**					
Net Present Value						**13.899**					
Switching Value							110%	4110%	89%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						**Economc Benefit Cost Calculation**				
Economic Analysis of Road :	**Pirojpur**					Number of cy	**4**			
Road Name:	**Cyclone Shelters without CCR**			**Numbers:**	**4**	Capacity of c	**1105**			
Million Taka (April 2013 Constant Prices)						Monthly HH I	BDT	14620		
						HH Size	Number	4		
Base Prices						Number of da	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	97.718			Additional pe	Number	4420		
(of which labour)		20%	19.544			Number of cy	Number	2		
						Saved Medic	BDT	1533		
Annual O&M Costs		0%	0.391							
(of which labour)		70%	0.274			**Savings:**				
Economic and Financial Prices		**Financial**	**Financial**	**Conversion**	**Economic**	Loss of Incor	BDT	**80,77,550**		
		Cost incl.	**Cost excl.**	**Factor**	**Cost**	Medical Cost	BDT	**8,46,983**		
		Taxes	**Taxes**							
Investment Cost						**Yearly Savings**				**178,49,066**
Traded	35%	27.361	22.267	1.070	23.825	**Total Savings**				**178,49,066**
Non traded	65%	50.813	50.813	1.000	50.813					
Labour		19.544	19.544	0.940	18.371					
Total		**97.718**	**92.623**		**93.009**					
Annual O&M Costs										
Traded	35%	0.041	0.041	1.070	0.044					
Non traded	65%	0.076	0.076	1.000	0.076					
Labour		0.274	0.274	0.940	0.257					
Total		**0.391**	**0.391**		**0.377**					
Taxes and Duties										
VAT			5.50%	5.094						
Annual increase (real)			1.05%							

ECONOMIC INTERNAL RATE OF RETURN	Pirojpur	Cyclone Shelters without CCR								BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Dela
1	60%	55.806	0.000	55.806	0.000	-55.806	-66.967	-55.806	-55.806	-66.967	
2	40%	37.204	0.000	37.204	0.000	-37.204	-44.644	-37.204	-37.204	-44.644	-55.806
3			0.377	0.377	17.849	17.472	17.472	17.396	13.902	13.826	-37.204
4			0.377	0.377	18.036	17.659	17.659	17.584	14.052	13.976	17.472
5			0.377	0.377	18.226	17.849	17.849	17.773	14.203	14.128	17.659
6			0.377	0.377	18.417	18.040	18.040	17.964	14.356	14.281	17.849
7			0.377	0.377	18.611	18.233	18.233	18.158	14.511	14.436	18.040
8			0.377	0.377	18.806	18.429	18.429	18.353	14.667	14.592	18.233
9			0.377	0.377	19.003	18.626	18.626	18.551	14.825	14.750	18.429
10			0.377	0.377	19.203	18.826	18.826	18.750	14.985	14.910	18.626
11			0.377	0.377	19.405	19.027	19.027	18.952	15.146	15.071	18.826
12			0.377	0.377	19.608	19.231	19.231	19.156	15.309	15.234	19.027
13			0.377	0.377	19.814	19.437	19.437	19.362	15.474	15.399	19.231
14			0.377	0.377	20.022	19.645	19.645	19.570	15.641	15.565	19.437
15			0.377	0.377	20.233	19.855	19.855	19.780	15.809	15.733	19.645
16			0.377	0.377	20.445	20.068	20.068	19.992	15.979	15.903	19.855
17			0.377	0.377	20.660	20.282	20.282	20.207	16.150	16.075	20.068
18			0.377	0.377	20.877	20.499	20.499	20.424	16.324	16.249	20.282
19			0.377	0.377	21.096	20.719	20.719	20.643	16.499	16.424	20.499
20			0.377	0.377	21.317	20.940	20.940	20.865	16.677	16.601	20.719
21			0.377	0.377	21.541	21.164	21.164	21.088	16.856	16.780	20.940
22			0.377	0.377	21.767	21.390	21.390	21.315	17.037	16.961	21.164
PV @ 12%				**81.732**	**113.346**	**31.614**	**15.717**	**31.165**	**8.945**	**-7.40**	**29.85**
EIRR						**17.2%**	**14.2%**	**17.1%**	**13.6%**	**10.9%**	**17.1%**
Sensitivity Indicator							**0.86**	**0.02**	**1.06**		
Benefit / Cost Ratio						**1.39**					
Net Present Value						**31.614**					
Switching Value							116%	4884%	94%		

Coastal Towns Infrastructure Improvement Project (CTIIP)						**Economc Benefit Cost Calculation**				
Economic Analysis of Road :	**Mathbaria**					Number of cyclone shelters		**1**		
Road Name:	**Cyclone Shelters without CCR**			**Numbers:**	**1**	Capacity of cyclone shelters		**1700**		
Million Taka (April 2013 Constant Prices)										
						Monthly HH Income	BDT	21744		
						HH Size	Number	4.3		
Base Prices						Number of days saved	Number	15		
Capital cost (Base + Physical Contingencies)		Million Tk.	24.403			Additional persons accessing CS	Number	1700		
(of which labour)		20%	4.881			Number of cyclones per year	Number	2		
						Saved Medical Cost per HH	BDT	1061		
Annual O&M Costs		0%	0.098							
(of which labour)		70%	0.068			**Savings:**				
Economic and Financial Prices		**Financial Cost incl. Taxes**	**Financial Cost excl. Taxes**	**Conversion Factor**	**Economic Cost**	Loss of Income per HH	BDT	**42,98,233**		
						Medical Cost Per HH	BDT	**2,09,733**		
Investment Cost						**Yearly Savings**				**90,15,932**
Traded	35%	6.833	5.561	1.070	5.950	**Total Savings**				**90,15,932**
Non traded	65%	12.689	12.689	1.000	12.689					
Labour		4.881	4.881	0.940	4.588					
Total		**24.403**	**23.130**		**23.227**					
Annual O&M Costs										
Traded	35%	0.010	0.010	1.070	0.011					
Non traded	65%	0.019	0.019	1.000	0.019					
Labour		0.068	0.068	0.940	0.064					
Total		**0.098**	**0.098**		**0.094**					
Taxes and Duties										
VAT			5.50%	1.272						
Annual increase (real)			1.05%							

ECONOMIC INTERNAL RATE OF RETURN	Mathbaria	Cyclone Shelters without CCR								BDT Million	
Year		Capital Cost	Operating Cost	Total Cost	Economic Benefit	Net Benefits	Sensitivity				
							Cost + 20%	O&M + 20%	Benefit - 20%	Cost +20% & Benefit-20%	One Year Delay
1	60%	13.936	0.000	13.936	0.000	-13.936	-16.723	-13.936	-13.936	-16.723	
2	40%	9.291	0.000	9.291	0.000	-9.291	-11.149	-9.291	-9.291	-11.149	-13.936
3			0.094	0.094	9.016	8.922	8.922	8.903	7.119	7.100	-9.291
4			0.094	0.094	9.111	9.016	9.016	8.998	7.194	7.175	8.922
5			0.094	0.094	9.206	9.112	9.112	9.093	7.271	7.252	9.016
6			0.094	0.094	9.303	9.209	9.209	9.190	7.348	7.329	9.112
7			0.094	0.094	9.401	9.306	9.306	9.288	7.426	7.407	9.209
8			0.094	0.094	9.499	9.405	9.405	9.386	7.505	7.486	9.306
9			0.094	0.094	9.599	9.505	9.505	9.486	7.585	7.566	9.405
10			0.094	0.094	9.700	9.606	9.606	9.587	7.666	7.647	9.505
11			0.094	0.094	9.802	9.707	9.707	9.689	7.747	7.728	9.606
12			0.094	0.094	9.905	9.810	9.810	9.792	7.829	7.811	9.707
13			0.094	0.094	10.009	9.914	9.914	9.896	7.913	7.894	9.810
14			0.094	0.094	10.114	10.019	10.019	10.001	7.997	7.978	9.914
15			0.094	0.094	10.220	10.126	10.126	10.107	8.082	8.063	10.019
16			0.094	0.094	10.327	10.233	10.233	10.214	8.168	8.149	10.126
17			0.094	0.094	10.436	10.341	10.341	10.323	8.254	8.235	10.233
18			0.094	0.094	10.545	10.451	10.451	10.432	8.342	8.323	10.341
19			0.094	0.094	10.656	10.562	10.562	10.543	8.431	8.412	10.451
20			0.094	0.094	10.768	10.674	10.674	10.655	8.520	8.501	10.562
21			0.094	0.094	10.881	10.787	10.787	10.768	8.610	8.592	10.674
22			0.094	0.094	10.995	10.901	10.901	10.882	8.702	8.683	10.787
PV @ 12%				**20.410**	**57.253**	**36.843**	**32.873**	**36.731**	**25.392**	**21.31**	**35.94**
EIRR						**33.0%**	**28.2%**	**32.9%**	**27.2%**	**23.0%**	**33.0%**
Sensitivity Indicator							**0.73**	**0.01**	**0.89**		
Benefit / Cost Ratio						**2.81**					
Net Present Value						**36.843**					
Switching Value							138%	11511%	113%		