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1. 調査団員・氏名

1. 調査団員・氏名

(1) 基本設計調査団（現地調査 1）

No.	担 当	氏名・役職	現地着発期間
1	総括	坂本隆（SAKAMOTO Takashi） JICA バングラデシュ事務所 所長	2/29～3/4
2	計画管理	宇野純子（UNO Junko） JICA 無償資金協力部 業務第一課	2/28～3/5
3	業務主任／援助動向	松本俊幸（MATSUMOTO Toshiyuki） 国際航業株式会社	2/28～3/17
4	運営維持管理／水質分析 1	福田宗弘（FUKUDA Munehiro） 国際航業株式会社	2/28～3/17

(2) 基本設計調査団（現地調査 2）

No.	担 当	氏名・役職	現地着発期間
1	業務主任／援助動向	松本俊幸（MATSUMOTO Toshiyuki） 国際航業株式会社	4/11～4/18
2	運営維持管理／水質分析 1	福田宗弘（FUKUDA Munehiro） 国際航業株式会社	4/6～4/30
3	機材計画／水質分析 2	肥後武司（HIGO Takeshi） 国際航業株式会社	4/6～4/30
4	施設計画	佐藤尚文（SATO Naofumi） 国際航業株式会社	4/11～4/24
5	調達計画／積算	中野武（NAKANO Takeshi） 国際航業株式会社	4/6～4/21

(3) 基本設計調査団（基本設計概要説明）

No.	担 当	氏名・役職	現地着発期間
1	総括	坂本隆（SAKAMOTO Takashi） JICA バングラデシュ事務所 所長	6/13～6/17
2	計画管理	宇野純子（UNO Junko） JICA 無償資金協力部 業務第 1 グループ 水・衛生チーム	6/12～6/18
3	業務主任／援助動向	松本俊幸（MATSUMOTO Toshiyuki） 国際航業株式会社	6/12～6/18
4	運営維持管理／水質分析 1	福田宗弘（FUKUDA Munehiro） 国際航業株式会社	6/12～6/18

2. 調査行程

2. 調査行程

(1) 基本設計調査団（現地調査 1）

No.	日付	時間・訪問先	調査内容	滞在地
1	2/29（日）	9:15 JICA 事務所 11:00 BAMWSP 14:30 ERD 15:30 LGD 17:45 日本大使館	打ち合わせ（日程、対処方針等） 情報収集と意見交換 表敬、先方負担事項の説明 表敬、協力方針・先方負担事項の協議 表敬、対処方針説明	ダッカ
2	3/1（月）	9:30 DPHE	協議（要請内容確認、予算措置等）	
3	3/2（火）	10:00 Mohakhali、 Tejgaon	中央ラボ建設候補地視察	
4	3/3（水）	9:30 World Bank 11:00 DPHE 13:00 ITN-BUET 13:30 LGD 16:00 DANIDA	情報収集と意見交換 協議（ミニッツ案確認） 情報収集と意見交換 協議（ミニッツ案確認） 砒素コアドナー会議に参加、調査の紹介とプロジェクトについて意見交換	
5	3/4（木）	13:00 ERD 16:00 日本大使館	ミニッツ署名 調査結果報告と今後の方針協議	

2004 年 3 月 5 日以降はコンサルタント団員の調査行程を示す。

No.	日時		松本	福田	滞在地	
6	3月5日	金	データ整理、施設機材概要案検討		ダッカ	
7	3月6日	土	施設計画に関わる土質基礎問題の検討			
8	3月7日	日	DPHE との協議			
9	3月8日	月	DPHE との協議、Tongi 現場訪問、AAN 訪問（午後）			
10	3月9日	火	調査業者打ち合わせ	DOE、AEC ラボ訪問	ジェソール	
			民間ラボ見学、ジェソール移動			
11	3月10日	水	ジェナイダラボ訪問、AAN ラボ訪問、ダッカ移動			ダッカ
12	3月11日	木	ノアカリ移動、DANIDA 訪問、ラボ訪問、ダッカ移動			
13	3月12日	金	資料整理			
14	3月13日	土	資料整理			
15	3月14日	日	GOB-UNICEF Project World Bank	NGO フォーラム Soil Resource Development Inst.		
			WHO 訪問			
16	3月15日	月	UNICEF、ADB、DOE、UNDP、JICA（菅原職員、Ali 職員と協議） 訪問			
17	3月16日	火	DPHE と BAMWSP との協議、APSU 訪問、JICA 事務所報告、 地紙専門家との協議（技プロについて）			
18	3月17日	水	Dhaka (13:10, TG322)→Bangkok (16:25) (23:40, NH916)			機内泊
19	3月18日	木	Narita(7:30)			

BAMWSP: Bangladesh Arsenic Mitigation Water Supply Project

ERD: Economic Relations Division, Ministry of Finance

LGD: Local Government Division, Ministry of Local Government, Rural Development and Cooperatives (MLGRD&C)

DPHE: Department of Public Health Engineering, MLGRD&C

ITN-BUET: International Training Network, Bangladesh University of Engineering and Technology バ国工科大学研修ネットワーク（DANIDA 支援）

AAN: Asia Arsenic Network

GOB: Government of Bangladesh

DOE: Department of Environment

AEC: Atomic Energy Centre

ADB: Asian Development Bank

APSU: Arsenic Policy Support Unit

(2) 基本設計調査団（現地調査2）

	日		松本	福田	肥後	佐藤	中野
1	2004/4/5			日本発 バンコク着			日本発 バンコク着
2	2004/4/6			バンコク発ダッカ着 JICA訪問打ち合わせ			バンコク発ダッカ着 JICA訪問打ち合わせ
3	2004/4/7			分析法と装置資料整理	試薬現地調達検討		機材見積依頼
4	2004/4/8			分析法と装置資料整理	試薬現地調達検討		機材見積依頼
5	2004/4/9			分析法と装置資料整理	試薬現地調達検討		機材見積依頼
6	2004/4/10	Sat	日本発 バンコク着	分析法と装置資料整理	試薬現地調達検討	日本発 バンコク着	機材見積依頼
7	2004/4/11	Sun	バンコク発 ダッカ着 民間ラボ訪問 中央ラボサイト調査	DOE訪問 現地機材業者訪問	現地試薬業者訪問	バンコク発 ダッカ着 民間ラボ訪問 中央ラボサイト調査	機材見積依頼 民間ラボ訪問
8	2004/4/12	Mon	DPHEとの協議				
9	2004/4/13	Tue	DPHEとの協議 BAMWSPとの協議		DPHEとの協議 試薬現地調達調査	DPHEとの協議 現地コンサルとサイト調査	
10	2004/4/14	Wed	DPHEとの協議		機材調達調査	中央ラボ施設設計	市場調査
11	2004/4/15	Thu	DPHEとの協議 JICA 報告 AAN訪問			中央ラボ施設設計 JICA報告	DPHEとの協議 現地コンサルと打合せ 見積査収
12	2004/4/16	Fri	世銀ミッションとの協議		資料整理	中央ラボ施設設計	資料整理 レポート執筆
13	2004/4/17	Sat	中央ラボ施設設計 母子健康保健センター 訪問	DPHEとの協議 世銀ミッションとの協 議	機材調達調査	中央ラボ施設設計 母子健康保健センター 訪問	中央ラボ施設設計 母子健康保健センター 訪問
14	2004/4/18	Sun	ダッカ発 バンコク着一発	DPHEとの協議	機材調達調査	DPHEとの協議 現地コンサルとサイト 調査	見積査収 資料整理
15	2004/4/19	Mon	日本着	移動ダッカ⇒ノアカリ ノアカリラボ訪問・現 地調査	機材調達調査	移動ダッカ⇒ノアカリ ノアカリラボ訪問・現 地調査	見積査収 資料整理
16	2004/4/20	Tue		移動 ⇒ コミラ コミララボ訪問 移動⇒ダッカ	機材調達調査	移動 ⇒ コミラ コミララボ訪問 移動⇒ダッカ	見積査収 資料整理
17	2004/4/21	Wed		DPHEとの協議 APSUとの協議	移動 ダッカ⇒ジェナイダ ジェナイダラボ訪問・現地調査		ダッカ発 バンコク着一発
18	2004/4/22	Thu		DPHEとの協議 BAMWSPとの協議	移動 ⇒ ダッカ		日本着
19	2004/4/23	Fri		資料整理	資料整理	現地資材価格調査	
20	2004/4/24	Sat		資料整理	資料整理	ダッカ発 バンコク着一発	
21	2004/4/25	Sun		DPHEワークショップ への参加	民間ラボ訪問 DPHEとの協議	日本着	
22	2004/4/26			DPHEとの協議	機材調達調査		
23	2004/4/27			DPHEとのテクニカルノート確認 JICA報告			
24	2004/4/28			資料整理			
25	2004/4/29			日本大使館 報告			
26	2004/4/30			ダッカ発 バンコク着一発			
27	2004/5/1			日本着			

(3) 基本設計調査団（基本設計概要説明）

No.	日付	時間・訪問先	調査内容	滞在地
1	6/12（土）	11:55 空港着 14:30 DPHE	英文ドラフト渡し、情報交換	ダッカ
2	6/13（日）	9:30 JICA 事務所 11:30 日本大使館 14:00 LGD 15:00 ERD 17:30 JICA 事務所	打ち合わせ（日程、対処方針等） 表敬、対処方針説明 表敬、概要書の説明、負担事項の確認 表敬、概要書の説明、負担事項の確認 打ち合わせ（技術協力プロジェクト等）	
3	6/14（月）	9:30 JICA 事務所 14:00 DPHE	作業 概要書の打ち合わせ、討議、修正	
4	6/15（火）	9:30 DPHE	概要書の打ち合わせ、討議、修正	
5	6/16（水）	9:30 JICA 事務所 12:30 LGD	概要書修正作業、ミニッツ案文作成等 ミニッツ案の説明、打ち合わせ	
6	6/17（木）	10:00 ERD 14:00 JICA 事務所 16:00 日本大使館	ミニッツ署名 打ち合わせ 概要説明報告と今後の方針協議	

3. 関係者(面会者)リスト

3. 関係者（面会者）リスト

（１）基本設計調査団（現地調査１）

Economic Relations Division, Ministry of Finance（財務省経済協力局）

Mr. Mahmudul Huq Bhuiyan Deputy Secretary

Ministry of Local Government, Rural Development and Cooperatives （地方行政農村開発組合省）

Md. Abdullah Deputy Chief

Local Government Division（地方行政庁）

Mr. M. Sharful Alam Director General

Department of Public Health Engineering（公衆衛生工学局）

Mr. Md. Khurshed Alam Chief Engineer
Mr. Amanullah Al Mahmood Superintending Engineer, Planning Circle
Mr. Iftishamol Huq Assistant Chief Engineer
Mr. Md. Siddique Amis Talukder Sr. Chemist, Rajshahi Zonal Laboratory
地紙 広 砒素汚染対策長期専門家
Mr. Md. Rashidul Huque Executive Engineer, GOB-UNICEF PROJECT
Mr. Panna Lal Chowdhury Senior Chemist Comila Laboratory
Mr. Aya Imtiazul Haque DPHE-Danida

Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP)

Mr. Khoda Baksh Project Director
Mr. J.T.A. Chowdhury Consultant, Project Management Unit

Arsenic Policy Support Unit, DPHE

Guy Howard International Specialist

The World Bank（世界銀行）

Mr. Tanveer Ahsan Urban Specialist, Water and Sanitation Program
Mr. Shafiul Azam Ahmed Water & Sanitation Specialist, Water and Sanitation Program

Asian Development Bank（アジア銀行）

Mr. Md. Rafiqul Islam Project Implementation Officer

ITN-BUET (バ国工科大学研修センター)

Mr. Sk, Abu Jafar Shamsuddin	Center Manager
Dr. A.B.M. Badruzzaman	Professor and Environmental Consultant

Soil Resource Development Institute (土壌資源管理研究所)

Mr. Mainul Ahsan	Principal Scientific Officer
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FAO (国連食糧農業機関)

Mr. Alex Heikens	Associate Professional Officer
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CIDA

Ms. Aylvia Islam	Senior Development Adviser
Ms. Elene Uarabeda	Program Coordinator, OCETA

World Health Organization (世界保健機構)

Mr. Han A. Heijnen	Environmental Health Advisor
Mr. Roy K. Boerschke	Senior Advisor

UNICEF (国連児童基金)

Mr. Sahiqul Islam	Team leader, Arsenic Unit
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DANIDA

Mr. Carel P.M. de Groot	Sector Program Coordinator
Mr. Alok Majumder	Program Officer

Australian Agency for International Development (AusAID)

Ms. Rifat Shahpar Khan	Senior Program Officer
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Asia Arsenic Network (アジア砒素ネットワーク)

川原一之	ダッカ事務所長
対馬幸枝	事務局長代理
緒方隆二	ジェソール事務所長
Mr. MD. Shamin Uddin	Environmental Chemist
Mr. Tarun Kanti Hore	Accountant & Office Administrator

NGO FORUM (NGO フォーラム)

Mr. S. M. Shahidullah	Chemist Drinking Water Supply & Sanitation
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在バングラデシュ日本国大使館

紀谷昌彦	参事官
松本曜一	一等書記官
木村安邦	二等書記官

JICA バングラデシュ事務所

Mr. Zulfiker Ali	所員
菅原卓也	所員
Mr. Md. Mokirul Islam	所員

(2) 基本設計調査団（現地調査2）

Department of Public Health Engineering（公衆衛生工學局）

Mr. Md. Khurshed Alam	Chief Engineer
Mr. Amanullah Al Mahmood	Superintending Engineer, Planning Circle
地紙 広	砒素汚染対策長期専門家
Mr. Md. Siddique Amis Talukder	Sr. Chemist, Rajshahi Zonal Laboratory
Mr. Md Abdus Sattar Mia	Sr. Chemist, Khuluna Zonal Laboratory
Mr. Md Serajul Haque	Jr. Chemist, Khuluna Zonal Laboratory
Mr. Panna Lal Chowdhury	Sr. Chemist Comilla Zonal laboratory
Mr. Md Mostaque	Jr. Chemist Comilla Zonal laboratory
Mr. Md Fakar Uddin	Sr. Chemist, Mymensign Zonal Laboratory
Mr. Md Anisur Rahman Khan	Jr. Chemist, Mymensign Zonal Laboratory
Mr. Md. Nazmul Haque	Executive Engineer DPHE Noakhali Division

Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP)

Mr. J.T.A. Chowdhury	Consultant, Project Management Unit
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Department of Environment

Ms. B.U.H. Mst Akhtaruzzahan	Sr. Chemist, Dhaka division
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Arsenic Policy Support Unit, DPHE

Mr. Guy Howard	International Specialist
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The World Bank（世界銀行）

Ms. Karin Kemper	Task Manager/BAMWSP
Ms. Amal Talbi	Water Resource Management Specialist
Mr. Albert Tuinhof	Groundwater management advisory team member

Asia Arsenic Network (アジア砒素ネットワーク)

川原一之

ダツカ事務所長

在バングラデシュ日本国大使館

紀谷昌彦

参事官

松本曜一

一等書記官

JICA バングラデシュ事務所

Mr. Zulfiker Ali

所員

菅原卓也

所員

(3) 基本設計調査団（基本設計概要説明）

Economic Relations Division, Ministry of Finance (財務省経済協力局)

Mr. Iqbal mahmood

Deputy Secretary

Local Government Division (地方行政庁)

Mr. M. Sharful Alam

Director General

Department of Public Health Engineering (公衆衛生工学局)

Mr. Md. Khurshed Alam

Chief Engineer

Mr. Amanullah Al Mahmood

Superintending Engineer, Planning Circle

地紙 広

砒素污染対策長期専門家

Mr.Akm Ibrahm

Executive Engineer in charge of BAMWSP 担当

Mr.Monwar Ali

Executive Engineer Planning Division

Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP)

Mr. J.T.A. Chowdhury

Consultant, Project Management Unit

DANIDA

Mr. Carel P.M. de Groot

Sector Program Coordinator

Asia Arsenic Network (アジア砒素ネットワーク)

川原一之

ダツカ事務所長

高橋麻子

ジェソール事務所長

在バングラデシュ日本国大使館

堀口松城

特命全權大使

紀谷昌彦

参事官

松本曜一

一等書記官

木村安邦

二等書記官

JICA バングラデシュ事務所

河崎充良

次長

Mr. Zulfiker Ali

所員

菅原卓也

所員

Mr. Md. Mokirul Islam

所員

4. 当該国の社会経済状況(国別基本情報抜粋)

	バングラデシュ人民共和国
	People's Republic of Bangladesh

主要指標一覧

	指標項目	1989年	1999年	2000年	2001年	2001年の 地域平均値
社会 指 標 等	国土面積(1000km ²)	130	130	130	130	n.a.
	人口(百万人)	107.4	128.8	131.1	133.3	1,377.8
	人口増加率(%)	2.4	1.7	1.7	1.7	1.7
	出生時平均余命(歳)	n.a.	n.a.	61	62	63
	妊産婦死亡率(／10万人)	n.a.	n.a.	n.a.	440(90-98)	n.a.
	乳児死亡率(／1000人)	n.a.	n.a.	54.0	51.0	70.6
	一人当たりカロリー摂取量(kcal/1日)*1	2,038	2,122	2,158	2,187	2,701
	初等教育総就学率(男)(%)	n.a.	100.8	99.7	n.a.	n.a.
	(女)(%)	n.a.	100.8	100.9	n.a.	n.a.
	中等教育総就学率(男)(%)	n.a.	44.5	44.6	n.a.	n.a.
	(女)(%)	n.a.	45.1	46.9	n.a.	n.a.
	高等教育総就学率(%)	n.a.	5.6	6.6	n.a.	n.a.
	成人非識字率(15歳以上の人口の内:%)	66.3	60.6	60.0	59.4	44.7
	絶対的貧困水準(1日1\$以下の人口比:%)	n.a.	n.a.	n.a.	36.0(2000)	n.a.
	失業率(%)	1.2	n.a.	n.a.	n.a.	n.a.
経 済 指 標	GDP(百万USドル)	27,025	45,962	47,106	46,706	613,755
	一人当たりGNI(USドル)	270	350	370	360	450
	実質GDP成長率(%)	2.5	4.9	5.9	5.3	4.9
	産業構造(対GDP比:%)					
	農業	37.2	25.3	24.6	23.3	24.9
	工業	15.4	24.3	24.4	25.1	25.9
	サービス業	47.4	50.5	51.0	51.6	49.2
	産業別成長率(%)					
	農業	-1.1	4.8	7.4	3.1	4.2
	工業	4.8	4.9	6.2	7.2	3.4
	サービス業	3.2	5.2	5.5	5.5	6.0
	消費者物価上昇率(インフレ:%)	6.0	8.9	3.9	1.1	n.a.
	財政収支(対GDP比:%)	-0.3	-2.8	n.a.	n.a.	-4.9
	輸出成長率(金額:%)	10.0	2.3	8.6	22.8	9.1
	輸入成長率(金額:%)	3.0	2.3	5.7	23.5	4.6
	経常収支(対GDP比:%)	-5.1	-0.9	0.0	-1.7	n.a.
	外国直接投資純流入額(百万ドル)	0.02	179.70	280.40	77.50	4,066
	総資本形成率(対GDP比:%)	12.9	22.2	23.0	23.1	21.6
	貯蓄率(対GDP比:%)	2.6	16.7	17.8	16.2	19.4
	対外債務残高(対GNI比:%)	1.9	1.6	1.7	1.4	2.3
	DSR(対外債務返済比率:%)	20.8	9.2	9.2	7.3	12.7
	外貨準備高(対輸入月比:%)	1.6	2.2	1.9	1.5	6.9
	名目対ドル為替レート*2	32.270	49.085	52.142	55.807	n.a.
	(通貨単位:タカ Taka)					

政*3	政治体制:共和制。議院内閣制
治	憲法:1972年12月16日公布。91年9月改正
指	元首:大統領。イアジュディン・アハメド(Iajuddin AHMED)。間接選挙制。任期5年。2002年9月6日就任
標	議会:1院制。300議席。任期5年

出典 World Development Indicators CD-ROM 2003 WB

*1 FAO Food Balance Sheets 2003年6月 FAO Homepage

*2 International Financial Statistics Yearbook 2002 IMF

*3 世界年鑑 2003 共同通信社

注 ● ()に示されている数値は調査年を示す。(90-98)と示されている場合は1990年度から98年度までの間の最新値を示す

● 「人口」、「GDP」及び「外国直接投資純流入額」の「2001年の地域平均値」においては、地域の総数を示す

● 地域は南アジア。ただし「一人当たりカロリー摂取量」における地域はアジア広域

● 就学率が100を超えているのは、学齢人口推計値と実際の就学データの間にずれがあるため

	バングラデシュ人民共和国
	People's Republic of Bangladesh

政府歳入・歳出〔バングラデシュ〕

	1998年 (十億タカ)	1999年 (十億タカ)	2000年Est. (十億タカ) (百万US\$)*		2000年 対GDP比**
歳入＋贈与受取額	n.a.	n.a.	n.a.	n.a.	n.a.
歳入	189.0	204.0	228.0	4,372.7	9.6%
經常歳入	n.a.	n.a.	n.a.	n.a.	n.a.
租税収入	153.0	158.0	191.0	3,663.1	8.1%
非税収入	36.0	45.0	37.0	709.6	1.6%
資本歳入	n.a.	n.a.	n.a.	n.a.	n.a.
贈与受取額	n.a.	n.a.	n.a.	n.a.	n.a.
歳出＋純貸付額	n.a.	n.a.	n.a.	n.a.	n.a.
歳出	301.0	342.0	357.0	6,846.7	15.1%
經常歳出	166.0	184.0	197.0	3,778.1	8.3%
資本歳出	n.a.	n.a.	n.a.	n.a.	n.a.
純貸付額	n.a.	n.a.	n.a.	n.a.	n.a.
財政収支	-112.0	-138.0	-130.0	-2,493.2	-5.5%

歳出内訳〔バングラデシュ〕

	1998年 (十億タカ)	1999年 (十億タカ)	2000年Est. (十億タカ) (百万US\$)*		2000年 内訳 対GDP比**	
歳出	301	342	357	6,846.7	100.0%	15.1%
一般サービス	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
国防	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
公安	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
教育	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
保健・医療	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
社会保障・福祉	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
住宅・生活関連施設	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
レクリエーション・文化	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
エネルギー	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
農林水産業	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
鉱工業・建設業	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
運輸・通信	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
その他	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

会計年度は7月～6月

*: 対ドル換算レートは、Official Rate, Period Average 出典はInternational Financial Statistics Yearbook 2002 IMF

** : GDPの出典は、The World Economic Outlook 2003 IMF Homepage

出典 IMF Staff Country Report NO. 02/113 June 2002 IMF

JICAの対バングラデシュ技術協力

通貨単位	1997年度	1998年度	1999年度	2000年度	2001年度	累計
億円	18.66	18.67	20.86	24.23	21.60	397.35
百万ドル	15.42	14.26	18.31	22.48	17.78	

注: 年の区切りは日本の会計年度(4月～3月)。また、対ドル換算レートは、国際協力機構情報管理課による。

出典 国際協力事業団実績表 2002年3月 国際協力事業団

我が国の対バングラデシュODA実績

(単位: 百万ドル)

暦年	贈与					政府貸付			合計	
	無償資金協力	技術協力	計			支出総額	支出純額			
96	184.77 (←)	30.52 (←)	215.28	(←)		105.56	-41.25 (←)		174.03	(100)
97	169.60 (←)	26.83 (←)	196.44	(←)		75.99	-66.45 (←)		129.98	(100)
98	216.35 (←)	22.83 (←)	239.19	(←)		93.32	-50.14 (←)		189.05	(100)
99	204.43 (←)	25.04 (←)	226.47	(←)		77.68	-102.81 (←)		123.66	(100)
2000	201.96 (←)	40.55 (←)	242.52	(←)		161.06	-40.90 (←)		201.62	(100)
累計	2,845.27 (58)	431.10 (9)	3,276.39	(67)		3,258.16	1,619.60 (33)		4,895.95	(100)

注: 年の区切りは、1月～12月の暦年。

()内はODA 合計に占める各形態の割合(%)。

出典 ODA 国別データブック 2001 外務省

DAC諸国・国際機関の対バングラデシュODA実績

(支出純額、単位: 百万ドル)

暦年	1位	2位	3位	4位	5位	うち日本	合計
97	日本 130.0	カナダ 73.4	英国 70.3	オランダ 63.7	ドイツ 47.3	130.0	560.0
98	日本 189.1	英国 99.0	ドイツ 65.1	オランダ 57.9	カナダ 53.5	189.1	623.9
99	日本 123.7	英国 114.9	米国 113.6	ドイツ 46.6	デンマーク 42.0	123.7	607.3

暦年	1位	2位	3位	4位	5位	その他	合計
97	IDA 245.1	ADB 149.2	CEC 81.1	WFP 39.6	UNICEF 18.0	-80.7	452.3
98	IDA 290.8	ADB 183.3	CEC 87.3	UNDP 20.8	WFP 16.1	31.8	630.1
99	IDA 339.6	ADB 214.1	CEC 64.1	WFP 23.1	UNDP 13.9	-80.5	588.2
					UNICEF 13.9		

注: 年の区切りは、1月～12月の暦年。

出典 ODA 国別データブック 2001 外務省

5. 討議議事録(M/D)

**MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY (FIRST FIELD SURVEY)
ON THE PROJECT ON STRENGTHENING OF WATER EXAMINATION SYSTEM
IN THE PEOPLE'S REPUBLIC OF BANGLADESH**

In response to a request from the Government of the People's Republic of Bangladesh (hereinafter referred to as "Bangladesh"), the Government of Japan has decided to conduct a Basic Design Study on the Project on Strengthening of Water Examination System (hereinafter referred to as "the Project") and entrusted the study to the Japan International Cooperation Agency (hereinafter referred to as "JICA").

JICA sent to Bangladesh the Basic Design Study Team (hereinafter referred to as "the Team"), headed by Mr. Takashi Sakamoto, Resident Representative, Bangladesh Office, JICA, and is scheduled to stay in the country from February 28 to March 17, 2004.

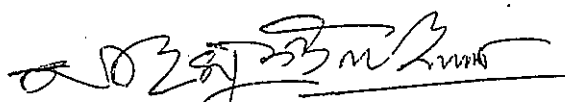
The Team held discussions with the officials concerned of the Government of Bangladesh, and conducted a field survey at the project sites.

In the course of discussions and field survey, both parties confirmed the main items described on the attached sheets.

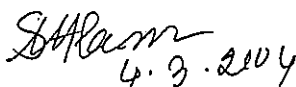
Dhaka, 4 March, 2004



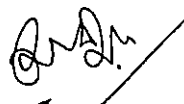
Takashi Sakamoto
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan



Mahmudul Huq Bhuiyan
Deputy Secretary
Economic Relations Division
Ministry of Finance
The People's Republic of Bangladesh


4.3.2004

Syed Mamunul Alam
Senior Assistant Chief
Ministry of Local Government,
Rural Development & Cooperatives
The People's Republic of Bangladesh



Amanullah Al Mahmood
Superintending Engineer
Department of Public Health Engineering
Ministry of Local Government,
Rural Development & Cooperatives
The People's Republic of Bangladesh

ATTACHMENT

1. Objective of the Project

The objective of the Project is to establish the Central Laboratory in Dhaka and to improve the facilities of the two zonal laboratories in order to strengthen the overall water examination system with special emphasis on arsenic analysis and promote arsenic mitigation activities in Bangladesh through procurement of materials and equipment necessary for laboratories and construction of the Central Laboratory.

2. Project Sites

The Project sites requested by the Bangladeshi side are as follows which are shown in annex-1.

- The Central Laboratory, to be established in Dhaka City at Mohakhali DPHE land
- Jhenaidah Zonal Laboratory
- Noakhali Zonal Laboratory

3. Sponsoring Ministry and Implementing Agency

The sponsoring ministry for the Project is the Ministry of Local Government, Rural Development & Cooperatives: MLGRD&C (Local Government Division: LGD).

The implementing agency of the Project is Department of Public Health Engineering (DPHE).

In terms of executing proper operation and maintenance of the equipment and facilities as well as enhancing the effectiveness of the Project, LGD/DPHE is responsible for coordination with the relevant ministries and agencies such as Economic Relations Division (ERD).

The organization chart of DPHE is shown in annex-2.

4. Items Requested by the Government of Bangladesh

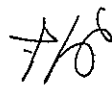
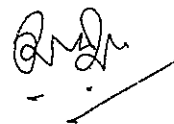
After discussions, the Team and the Bangladeshi side confirmed the items described in annex-3 as component of request by the Government of Bangladesh at this moment in time.

The Team proceeds with further study in 1st and 2nd field surveys based on this mutual understanding as annex-3, and final components of the request from the Government of Bangladesh will be confirmed during 2nd field survey scheduled in April 2004.

Both sides fully understood that the appropriateness of the request shall be assessed according to the further studies and analysis in Japan and the final components of the Project shall be decided after the assessment.

5. Japan's Grant Aid System

- (1) The Bangladeshi side has understood Japan's Grant Aid system explained by the Team as described in annex-4.

  2  

- (2) The Bangladeshi side will take necessary measures, as described in annex-4 for smooth implementation of the Project, on condition that the Grant Aid Assistance by the Government of Japan is extended to the Project.

6. Schedule of the Study

- (1) The consultants of the Team will proceed to carry out further studies in Bangladesh until March 16, 2004.
- (2) After analyzing the result of the study, JICA will dispatch the Basic Design Study Team (2nd Field Survey Team) to Bangladesh in April 2004, to conduct further investigation.
- (3) Based on the Minutes of Discussions and technical examination of the study results, JICA will prepare a draft report in English and dispatch a mission to Bangladesh in order to explain its contents around June 2004.
- (4) If the contents of the draft report are accepted in principle by the Bangladeshi side, JICA will complete the final report and send it to the Bangladeshi side around August 2004.

7. Other Relevant Issues

The following issues were discussed and confirmed by both sides.

(1) Policy for strengthening of the water examination system

The Bangladeshi side explained the importance of strengthening of the water examination system in accordance with the draft National Arsenic Mitigation Policy that is under examination for the Cabinet approval and which states necessity of the followings;

- Capacity building for water quality monitoring and surveillance of existing safe tube wells and the proposed interventions
- Establishment of a network of well equipped laboratories with arsenic measurement capacity at appropriate levels

(2) Necessity and appropriateness on implementation of the Project

The Team explained that based on the result of this study, the Japanese side shall analyze necessity and appropriateness on implementation of the Project and JICA will dispatch the 2nd Field Survey Team only when the Project implementation is judged as necessary and appropriate.

(3) Functions of the Central Laboratory

Both sides confirmed the functions of the Central Laboratory to be established are as follows.

- to coordinate and manage all zonal laboratories of DPHE as the center of laboratory
- to train and develop human resources in the zonal laboratories
- to manage the zonal laboratories in terms of quality assurance and quality control (QA/QC)
- to provide technical support for zonal laboratories in terms of maintenance of equipment.
- to establish and manage water quality analysis data at all level

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- to analyze water samples from rural areas where zonal laboratories can not cover
- to give support for research, which will be utilized to make policies and actions for securing supply of safe drinking water

(4) Staffing plan for the laboratories

The Bangladeshi side assured the Team all the necessary staff and its budget for the new Central Laboratory and the two existing laboratories (Jhenaidah and Noakhali) were to be assigned under revenue establishment of DPHE in time before completion of the Project. LGD (DPHE) shall submit necessary PCP (Project Concept Paper) in June 2004 to the Planning Commission for approval after getting the draft report of the Project scheduled in early June 2004 and promote the documents be approved at the earliest, not later than September 2004. If actual proceeding cannot satisfy the due schedule, the Japanese side will re-consider the appropriateness of implementation of the Project.

Both sides agreed that the number and qualification of staff for the Central Laboratory shall be assessed in the 2nd Field Survey scheduled in April 2004.

(5) Budgetary arrangement for operation and maintenance

The Bangladeshi side assured the Team to allocate sufficient budget necessary for the operation and maintenance for the new Central Laboratory and existing zonal laboratories in time before completion of the Project. LGD (DPHE) shall submit necessary PCP in June 2004 to the Planning Commission for approval after getting the draft report of the Project scheduled in early June 2004 and promote the documents be approved at the earliest, not later than September 2004. If actual proceeding cannot satisfy the due schedule, the Japanese side will re-consider the appropriateness of implementation of the Project. Also as for operation cost of laboratories, the Bangladeshi side explained that the plan to introduce revolving fund system using water analysis fee is under examination for approval by the competent authorities and once it is approved it will help greatly for sustainability of the laboratories.

Both sides agreed that the amount of budget for operation and maintenance shall be assessed in the 2nd Field Survey scheduled in April 2004.

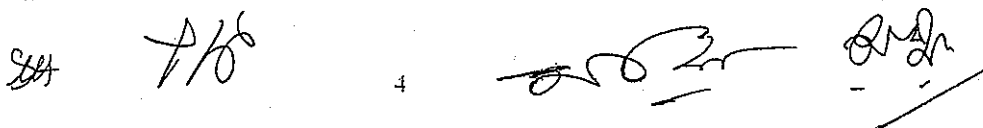
(6) Capacity building

The Bangladeshi side requested the technical guidance ("Soft Component") by the Japanese side for operation and maintenance of the equipment to be included in the Project in order to ensure the prompt set up of the laboratory.

In Addition, the Bangladeshi side fully understood the importance of the staff training and requested the Japanese side to consider technical cooperation. Both sides agreed that technical cooperation for enhancing capacity towards water quality examination especially arsenic mitigation activity was indispensable to secure sustainability of the Project and discussion of the issue shall be proceeded to.

(7) Data management system of the Central Laboratory

Both sides agreed that the data management system shall be established between DPHE headquarters and existing zonal laboratories by Bangladesh Arsenic Mitigation Water Supply Project

The bottom of the page features several handwritten signatures and initials. On the left, there are two sets of initials, possibly 'SA' and 'P/O'. In the center, there is a small number '4'. To the right of the number, there are two more sets of handwritten signatures, one appearing to be 'S/O' and the other 'S/O'.

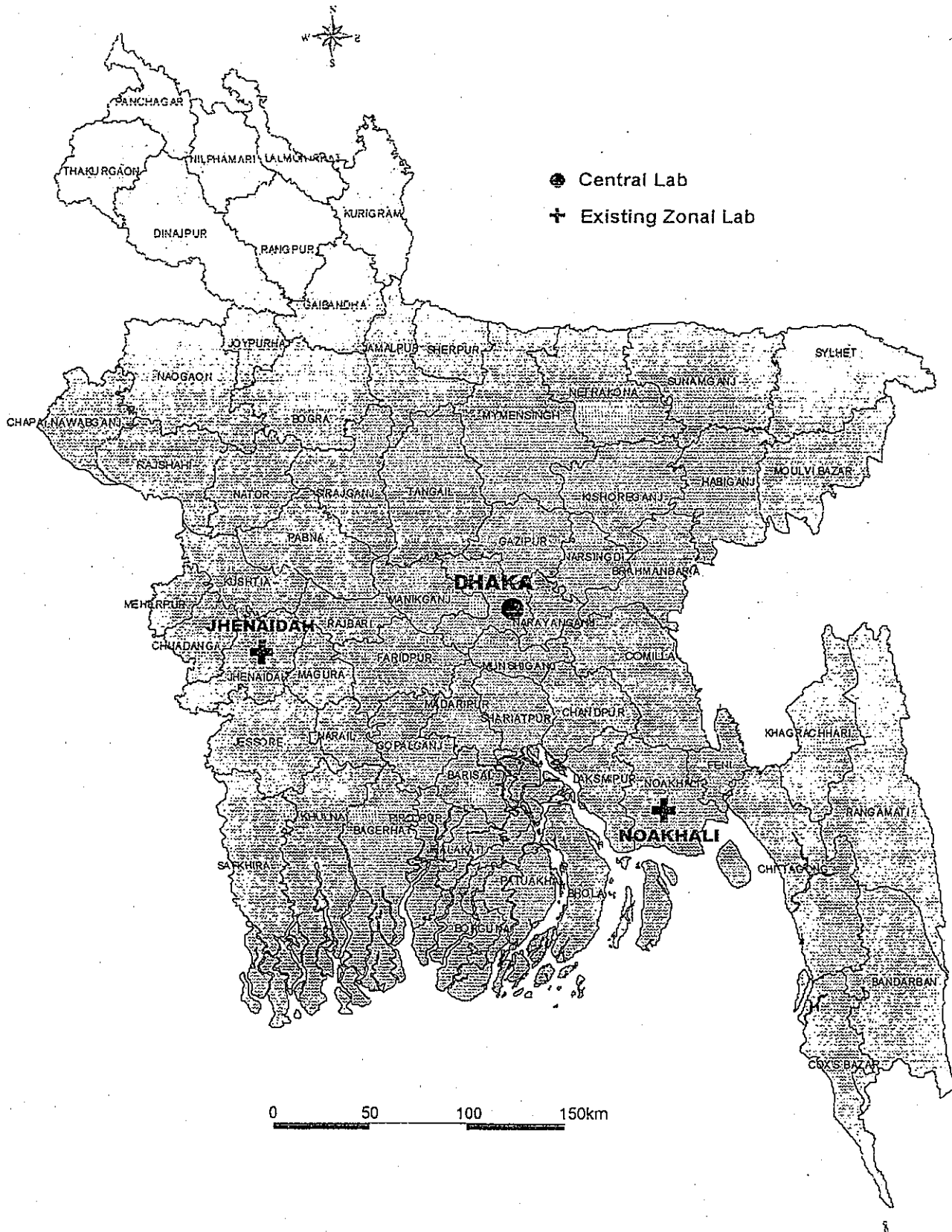
(BAMWSP) as LIMS (Laboratory Information Management System) before set up of the Central Laboratory. Since the LIMS will be transferred to the Central Laboratory in future, equipment plan for the Central Laboratory will be assessed in consideration of the equipment by the LIMS.

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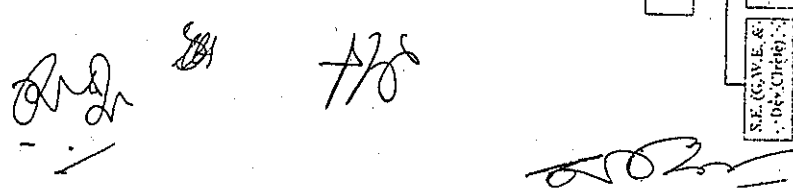
Project Sites Map

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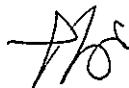
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Contents of the request by the Government of Bangladesh

1. Establishment of the Central Laboratory in Dhaka
 - Construction of a laboratory building
 - Procurement of necessary equipment and materials
2. Upgrading the existing two laboratories (Jhenaidah and Noakhali)
 - Procurement of necessary equipment and materials
 - Internal repair of the existing facilities, only when it is necessary
3. Technical support in capacity building for newly recruited staff in the Central Laboratory as well as the staff of zonal laboratories in order to operate and maintain equipment properly



JAPAN'S GRANT AID

1. Japan's Grant Aid System

(1) Grant Aid Procedures:

- 1) Japan's Grant Aid Program is executed through the following procedures.
 - Application (Request made by a recipient country)
 - Study (Basic Design Study conducted by JICA)
 - Appraisal & Approval (Appraisal by the Government of Japan and Approval by the Cabinet)
 - Determination of the implementation
(The Notes exchanged between the Governments of Japan and the recipient country)
 - Implementation (Implementation of the Project)
- 2) Firstly, the application or request for a Grant Aid project submitted by a recipient country is examined by the Government of Japan (the Ministry of Foreign Affairs) to determine whether or not it is eligible for Grant Aid. If the request is deemed appropriate, the Government of Japan assigns JICA to conduct a study on the request.

Secondly, JICA conducts the study (Basic Design Study), using Japanese consulting firms.

Thirdly, the Government of Japan appraises the project to see whether or not it is suitable for Japan's Grant Aid Programme, based on the Basic Design Study report prepared by JICA, and the results are then submitted to the Cabinet for approval.

Fourthly, the project, once approved by the Cabinet, becomes official with the Exchange of Notes signed by the Governments of Japan and the recipient country.

Finally, for the implementation of the project, JICA assists the recipient country in such matters as preparing tenders, contracts and so on.

(2) Basic Design Study
1) Contents of the Study

The aim of the Basic Design Study (hereinafter referred to as "the Study"), conducted by JICA on a requested project (hereinafter referred to as "the Project"), is to provide a basic document necessary for the appraisal of the Project by the Government of Japan. The contents of the Study are as follows:

- i) Confirmation of the background, objectives and benefits of the Project and also institutional capacity of agencies concerned of the recipient country necessary for the Project's implementation;
- ii) Evaluation of the appropriateness of the Project to be implemented under the Grant Aid Scheme from a technical, social and economic points of view;
- iii) Confirmation of items agreed on by both parties concerning the basic concept of the Project;
- iv) Preparation of a basic design of the Project; and
- v) Estimation of costs of the Project.

The contents of the original request are not necessarily approved in their initial form as the contents of the Grant Aid project. The Basic Design of the Project is confirmed considering the guidelines of Japan's Grant Aid Scheme.

The Government of Japan requests the Government of the recipient country to take whatever measures are necessary to ensure its self-reliance in the implementation of the Project. Such measures must be guaranteed even through they may fall outside of the jurisdiction of the organization in the recipient country actually implementing the Project. Therefore, the implementation of the Project is confirmed by all relevant organizations of the recipient country through the Minutes of Discussions.

2) Selection of Consultants

For the smooth implementation of the Study, JICA uses a registered consulting firm. JICA selects a firm based on proposals submitted by interested firms. The firm selected carries out a Basic Design Study and writes a report, based upon terms of reference set by JICA.

The consultant firm used for the Study is recommended by JICA to the recipient country to also work in the Project's implementation after the Exchange of Notes, in order to maintain technical consistency and also to avoid any undue delay in implementation should the selection process be prepared.

(3) Japan's Grant Aid Scheme

1) What is Grant Aid?

The Grant Aid Program provides a recipient country with non-reimbursable funds to procure the facilities, equipment and services (engineering services and transportation of the products, etc.) for economic and social development of the country under principles in accordance with the relevant laws and regulations of Japan. Grant Aid is not supplied through the donation of materials as such.

2) Exchange of Notes (E/N)

Japan's Grant Aid is extended in accordance with the Notes exchanged by the two Governments concerned, in which the objectives of the project, period of execution, conditions and amount of the Grant Aid, etc., are confirmed.

3) "The period of the Grant" means the one fiscal year which the Cabinet approves the project for. Within the fiscal year, all procedure such as exchanging of the Notes, concluding contracts with consulting firms and contractors and final payment to them must be completed.

However, in case of delays in delivery, installation or construction due to unforeseen factors such as weather, the period of the Grant Aid can be further extended for a maximum of one fiscal year at most by mutual agreement between the two Governments.

4) Under the Grant, in principle, Japanese products and services including transport or those of the recipient country are to be purchased.

When the two Governments deem it necessary, the Grant Aid may be used for the purchase of the products or services of a third country.

However, the prime contractors, namely consulting, contracting and procurement firms, are limited to "Japanese nationals". (The term "Japanese nationals" means persons of Japanese nationality or Japanese corporations controlled by persons of Japanese nationality.)

5) Necessity of "Verification"

The Government of the recipient country or its designated authority will conclude contracts denominated in Japanese yen with Japanese nationals. Those contracts shall be verified by the Government of Japan. This "Verification" is deemed necessary to secure accountability of Japanese taxpayers.

6) Undertakings required to the Government of the recipient country

In the implementation of the Grant Aid project, the recipient country is required to undertake such necessary measures as the followings:

i) To secure land necessary for the sites of the Project and to clear, level and reclaim the land prior to commencement of the construction;

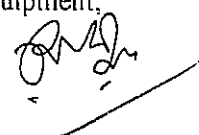
ii) To provide facilities for the distribution of electricity, water supply and drainage and other incidental facilities in and around the site;

iii) To secure buildings prior to the procurement in case the installation of the equipment;

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- iv) To ensure all the expenses and prompt execution for unloading, customs clearance at the port of disembarkation and internal transportation of the products purchased under the Grant Aid;
- v) To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts;
- vi) To accord Japanese nationals whose services may be required in connection with the supply of the products and services under the verified contracts such as facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work;
- vii) "Proper Use"
The recipient country is required to maintain and use the facilities constructed and equipment purchased under the Grant Aid properly and effectively and to assign the necessary staff for this operation and maintenance as well as to bear all the expenses other than those covered by the Grant Aid.
- viii) "Re-export"
The products purchased under the Grant Aid shall not be re-exported from the recipient country.
- ix) Banking Arrangement (B/A)
 - a) The Government of the recipient country or its designated authority should open an account in the name of the Government of the recipient country in an authorized foreign exchange bank in Japan (hereinafter referred to as "the Bank"). The Government of Japan will execute the Grant Aid by making payments in Japanese yen to cover the obligations incurred by the Government of the recipient country or its designated authority under the verified contracts.
 - b) The payments will be made when payment requests are presented by the Bank to the Government of Japan under an Authorization to Pay (A/P) issued by the Government of recipient country or its designated authority.

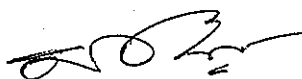
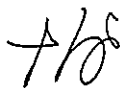
2. Grant Aid Procedure

(1) Flowchart of Japan's Grant Aid Procedures

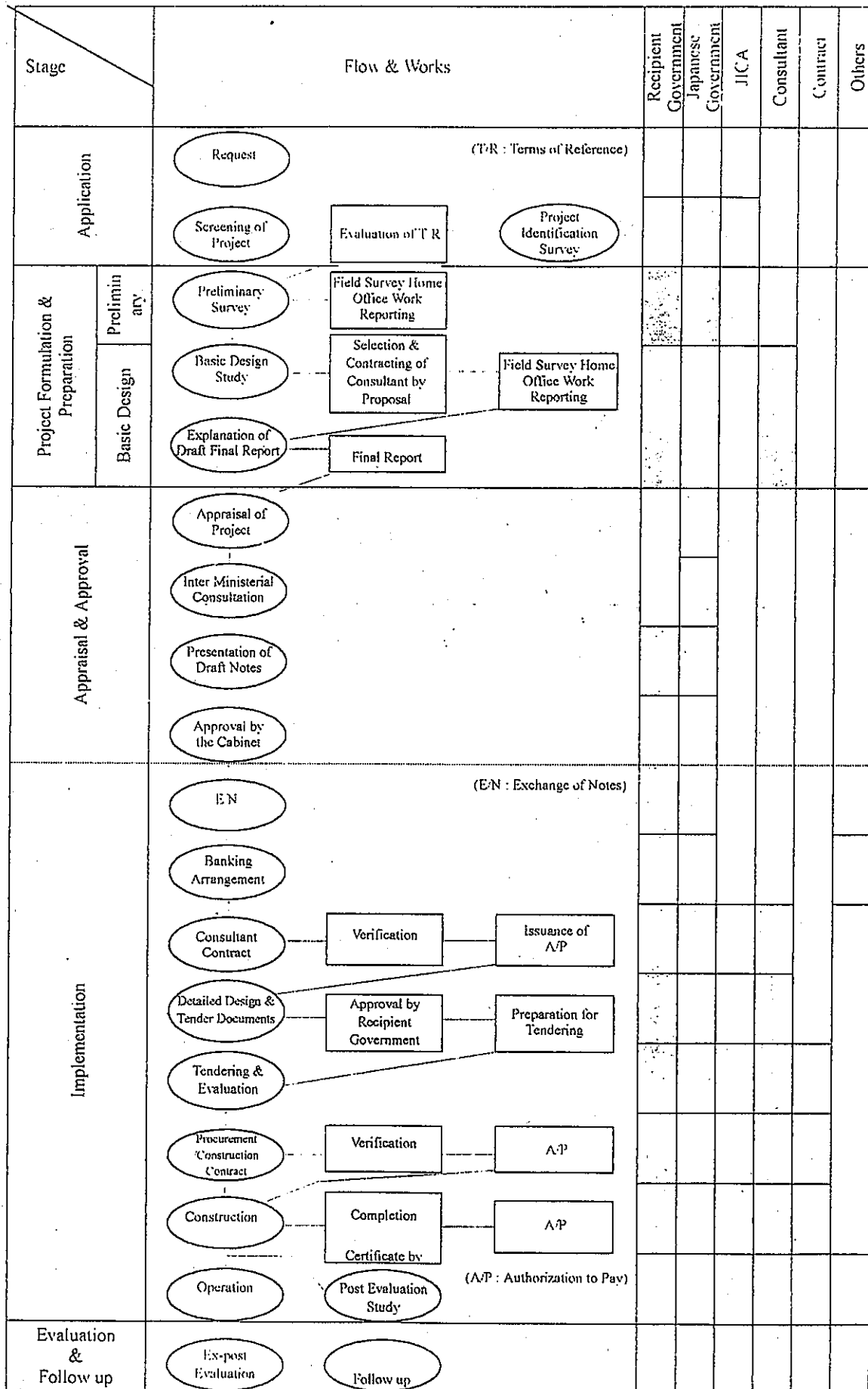
Refer to Attachment 1.

(2) Major Undertaking to be taken by Each Government

Refer to Attachment 2.



FLOW CHART OF JAPAN'S GRANT AID PROCEDURES



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A. B. R.

R. S. R.

Major Undertakings to be taken by Each Government (Construction)

No	Items	To be covered by	
		Grant Aid	Recipient Country
1	To secure land		●
2	To clear, level and reclaim the site when needed		●
3	To construct gates and fences in and around the site		●
4	To construct the parking lot	●	
5	To construct roads		
	1) Within the site	●	
	2) Outside the site		●
6	To construct the building	●	
7	To provide facilities for the distribution of electricity, water supply, drainage and other incidental facilities		
	1) Electricity		
	a. The distributing line to the site		●
	b. The drop wiring and internal wiring within the site	●	
	c. The main circuit breaker and transformer	●	
	2) Water Supply		
	a. The city water distribution main to the site		●
	b. The supply system within the site (receiving and/or elevated tanks)	●	
	3) Drainage		
	a. The city drainage main (for storm, sewer and others) to the site		●
	b. The drainage system (for toilet sewer, ordinary waste, storm drainage and others) within the sit	●	
	4) Gas Supply		
	a. The city gas main to the site		●
	b. The gas supply system within the site	●	
	5) Telephone System		
	a. The telephone trunk line to the main distribution frame/panel (MDF) of the building		●
	b. The MDF and the extension after the frame/panel	●	
	6) Furniture and Equipment		
	a. General furniture		●
	b. Project equipment	●	
8	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		●
	2) Payment commission		●
9	To ensure prompt unloading and customs clearance at port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	●	
	2) Tax exemption and customs clearance of the products at the port of disembarkation		●

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	3) Internal transportation from the port of disembarkation to the project site	(●)	(●)
10	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work		●
11	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contracts		●
12	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		●
13	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for construction of the facilities as well as for the transportation and installation of the equipment		●

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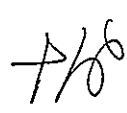
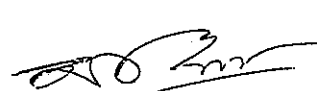
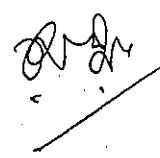
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Major Undertakings to be taken by Each Government (Equipment)

NO	Items	To be covered by Grant Aid	To be covered by Recipient
1	To bear the following commissions to a bank of Japan for the banking services based upon the B/A		
	1) Advising commission of A/P		•
	2) Payment commission		•
2	To ensure prompt unloading and customs clearance at the port of disembarkation in recipient country		
	1) Marine(Air) transportation of the products from Japan to the recipient country	•	
	2) Tax exemption and custom clearance of the products at the port of disembarkation		•
	3) Internal transportation from the port of disembarkation to the project	(•)	(•)
3	To accord Japanese nationals whose services may be required in connection with the supply of the products and the services under the verified contract such facilities as may be necessary for their entry into the recipient country and stay therein for the performance of their work.		•
4	To exempt Japanese nationals from customs duties, internal taxes and other fiscal levies which may be imposed in the recipient country with respect to the supply of the products and services under the verified contract		•
5	To maintain and use properly and effectively the facilities constructed and equipment provided under the Grant Aid		•
6	To bear all the expenses, other than those to be borne by the Grant Aid, necessary for the transportation and installation of the equipment		•

**MINUTES OF DISCUSSIONS
ON THE BASIC DESIGN STUDY
ON THE PROJECT ON STRENGTHENING OF WATER EXAMINATION SYSTEM
IN THE PEOPLE'S REPUBLIC OF BANGLADESH
(EXPLANATION OF THE DRAFT REPORT)**

In March and April 2004, Japan International Cooperation Agency (hereinafter referred to as "JICA") dispatched the Basic Design Study Teams on the Project on Strengthening of Water Examination System (hereinafter referred to as "the Project") to the People's Republic of Bangladesh (hereinafter referred to as "Bangladesh"), and through discussion, field survey in Bangladesh and technical examination of the results in Japan, JICA prepared a draft report of the study.

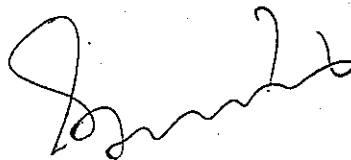
In order to explain and to consult with Bangladesh on the components of the draft report, JICA sent to Bangladesh the Draft Report Explanation Team (hereinafter referred to as "the Team"), which is headed by Mr. Takashi Sakamoto, Resident Representative, JICA Bangladesh Office, and is scheduled to stay in the country from June 12 to 18, 2004.

As a result of discussions, both parties confirmed the main items described on the attached sheets.

Dhaka, 17 June, 2004



Takashi Sakamoto
Leader
Basic Design Study Team
Japan International Cooperation Agency
Japan



Iqbal Mahmood
Deputy Secretary
Economic Relations Division
Ministry of Finance
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Department of Public Health Engineering
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ATTACHMENT

1. Components of the Draft Report

The Government of Bangladesh agreed and accepted in principle the components of the draft report explained by the Team.

2. Minutes of Discussions (4 March, 2004)

Both sides read and confirmed again all the contents of the previous Minutes of Discussions, on the basic design study of 4 March 2004.

3. Japan's Grant Aid System

The Bangladeshi side has understood Japan's Grant Aid System and the necessary measures to be taken by the Government of Bangladesh as explained by the Team and described in annex-4 of the Minutes of Discussions signed by both parties on 4 March, 2004.

4. Schedule of the Study

JICA will complete the final report in accordance with the items confirmed and send it to Bangladesh around August 2004.

5. Other Relevant Issues

The following issues were discussed and confirmed by both sides.

(1) Components of the Project

Both sides agreed that the Project would be composed of the following components when the Japanese Government finally decides to implement the Project.

- Construction of the new Central Laboratory at Mohakhali, Dhaka
- Repair work for Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory
- Procurement of equipment and materials for the Central Laboratory, Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory listed in annex-1
- Technical support in the field of laboratory management and water quality analysis, operation and maintenance of the main equipment and basic operation of water quality data management system ("Soft Component").

(2) Staffing plan for the laboratories

Both sides confirmed that Department of Public Health and Engineering (DPHE) shall set up the Water Quality Monitoring and Surveillance Circle (WQMSC), which is responsible for drinking

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water quality monitoring and surveillance, and allocate thirty nine staff for the Central Laboratory and nine staff for all eleven zonal laboratories respectively. As for qualification of staff for the laboratories, the Japanese side requested the Bangladeshi side to consider relevant laboratory experience at recruitment of personnel.

The Bangladeshi side assured the Team of creation of all necessary posts under revenue establishment of DPHE and allocation of personnel to the posts for the new Central Laboratory and the two existing zonal laboratories (Jhenaidah and Noakhali) by September 2005 at latest.

The Bangladeshi side also assured that (i) necessary staff shall be allocated to the vacant posts of four existing zonal laboratories (Khulna, Rajshahi, Mymensingh and Comilla), and that (ii) creation of nine posts under revenue establishment and allocation of personnel to the posts for the new five zonal laboratories (Rangpur, Barisal, Sylhet, Bogra and Tongi) respectively, which are to be constructed under BAMWSP, by September 2005 at latest in order to strengthen their functions and thus to ensure the overall water examination system works effectively.

(3) Budgetary arrangement for implementation of the Project and annual operation and maintenance

Both side confirmed that the Bangladeshi side shall make necessary budgetary arrangement to cover required amount of cost for the Project implementation shown in annex-2 in time.

Furthermore, the Bangladeshi side assured the Team to allocate sufficient budget necessary for annual operation and maintenance for the new Central Laboratory and the eleven zonal laboratories. Both sides agreed that a revolving fund system using water analysis fee for management of the laboratories is indispensable in order for proper management of the laboratories. The Bangladeshi side assured the system would be introduced as soon as possible after consultation with concerned organizations of Bangladesh. The Japanese side expressed that the Government of Japan might have difficulty to implement the Project and to consider further assistance to the laboratories if such system would not be introduced before the completion of the Project at latest.

(4) Approval of the Project Concept Paper (PCP)

In order to secure necessary budget and human resources for the Project, LGD (DPHE) shall submit necessary PCP in early July 2004 to the Planning Commission for approval in accordance with the draft report of the Project and promote the documents be approved at the earliest, not later than September 2004.

(5) Regulatory framework and drinking water quality examination programme in national level

Both sides agreed the importance of introduction of regulation to enforce water quality monitoring and surveillance for existing and new drinking water sources. Such regulation shall show clear criteria of priority of the sources which quality to be examined, as it is not possible to cover all the drinking water sources in the nation at one time. Based on the regulation, drinking water quality examination programme in national level shall be formulated. The regulation and programme shall be shared with other organizations concerning water quality examinations to coordinate activities. DPHE agreed to conduct workshops for establishment and share the system around October 2004 and the Japanese side will support the activity through the soft component under the Project.

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(6) Other responsibility of the Bangladeshi side

The Bangladeshi side assured to take necessary measures for items described in annex-3 during implementation of the Project in due time.

(7) Project Management Unit for implementation

Both side agreed the necessity of setting up a Project Management Unit (PMU) as soon as the PCP approved in DPHE for smooth implementation of the Project. The PMU will be composed of the staff from DPHE, headed by the Superintending Engineer of WQMSC.

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List of Main Equipment

annex-I
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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
A-01-01	Atomic absorption spectrophotometer	HVG	1			1
A-01-02	Atomic absorption spectrophotometer	Heavy metals	1			1
A-01-03	Atomic absorption spectrophotometer	AL, Ba, Na	1			1
A-01-04	Atomic absorption spectrophotometer	All elements			1	1
A-02	Atomic absorption spectrophotometer for Hg analysis		1			1
A-03-01	Ion chromatograph	Anion	1			1
A-03-02	Ion chromatograph	Sesivalent chrome	1			1
A-04-01	Gas chromatograph	Solvent extraction	1			1
A-04-02	Gas chromatograph	With verge & trap	1			1
A-05	Flow injection analyzer	Total P, Total N	1			1
A-06	UV-VIS spectrophotometer		2		1	3
A-07	Infrared spectrophotometer		1			1
A-08	pH meter		1	1	1	3
A-09	ORP meter		1	1	1	3
A-10	Ion meter	With selective electrodes	5	5	5	15
A-11	DO meter	Benchtop	1		1	2
A-12	Turbidity meter		1		1	2
A-13	TDS/EC/Salinity meter	Portable		1	1	2
A-14	COD meter	Benchtop	1	1	1	3
A-15	TOC analyzer		1			1
A-16	Microwave digestion apparatus		1			1
A-17	Pure water apparatus		1	1	1	3
A-18	Precision balance		2	1	1	4
A-19	Table for balance		2	1	1	4
A-20-01	Draft chamber with treatment	With acidic gas emission	1			1
A-20-02	Draft chamber with treatment	With solvent adsorption device	1			1
A-20-03	Draft chamber without treatment	Without acidic gas emission and solvent adsorption device		1		1
A-21-01	Clean bench	Fixed type	1			1
A-21-02	Clean bench	Desktop type		1	1	2
A-22	Autoclave	Microorganisms, 47L	1	1	1	3
A-23	Incubator	BOD and microorganisms	2	1		3
A-24	dry-heat sterilizer	Microorganisms, 150L	1			1
A-25	Dehydrator	SS, TDS	2	1	1	4
A-26	Refrigerator for reagent		3			3
A-27	Dehumidifier	15-20m2	5		1	6
A-28	Rotary evaporator	For waste solvent recycling V type	1			1
A-29	Pipet washer	Ultrasonic wave type	1			1
A-30	Shaker	Phenol chloride (for separatory funnel)	1			1
A-31	Muffle furnace		1			1
A-32	Water bath		3			3
A-33	Hot Plate		3	1	1	5
A-34	Magnetic Stirrer		3	1	1	5
A-35	Blender		1			1
A-36	Stirrer		1			1
A-37	Shaker	For single test tube	3	1	1	5
A-38	Centrifuge		1			1

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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
A-39	End-point detection apparatus		1			1
A-40	Microscope and light source		1			1
A-41	Optical Counting Equipment		1			1
A-42-01	Temperature-Monitoring Devices		1			1
A-42-02	Thermometer	0-100°C and others	5	4	4	13
A-42-03	Thermometer		3			3
A-43	Platinum sticks		3			3
A-44	Gas flow meter	For GC flow confirmation/detergent	3			3
A-45	Ice machine		1			1
A-46	Ultrasonic cleaner		1			1
A-47	Vacuum pump	Desktop compact type		1	1	2
A-48	Automatic dispenser	10 and 20ml	3			3
A-49	Desiccator		1			1
A-50	Balance	up to 3000g	1		1	2
A-51	Membrane filtration unit	0.45microm filter paper			1	1
A-52	UPS	5KVA	5		1	6
A-53	Stabilizer		12		1	13
A-54	Waste water treatment device					
A-55	Storage cabin		2	1	1	4
A-56	Syring rack		2	1	1	4
A-57	Potable water quality sensor		12			12
A-58	Potable water quality test kit		12			12
A-59-01	Work table	1.5x4.2m	1			1
A-59-02	Work table	1.5x3.0m	1	1		2
A-60-01	Side work table	0.75x1.5m	12		1	13
A-60-02	Side work table	0.75x3.0m	2			2
B-01-01	Beaker	50ml	40	10	10	60
B-01-02	Beaker	100ml	20			20
B-01-03	Beaker	200ml	20	20	20	60
B-01-04	Beaker	300ml	20	20	20	60
B-01-05	Beaker	500ml	20	5	5	30
B-01-06	Beaker	1000ml	5	5	5	15
B-01-07	Beaker	2000ml	5	2	2	9
B-02-01	Conical beaker	50ml		5	5	10
B-02-02	Conical beaker	100ml	20	20	20	60
B-02-03	Conical beaker	200ml	20			20
B-02-04	Conical beaker	300ml	20	20	20	60
B-02-05	Conical beaker	500ml	10	6	6	22
B-02-06	Conical beaker	1000ml	5	5	5	15
B-03-01	Odor flasks	200ml		11	11	22
B-03-02	Odor flasks	300ml		6	6	12
B-03-03	Odor flasks	500ml	50			50
B-03-04	Odor flasks	1000ml		4	4	8
B-04-01	Round bottom flask	200ml	10			10
B-04-02	Round bottom flask	500ml	10	6	6	22
B-04-03	Round bottom flask	1000ml	5	5	5	15
B-04-04	Round bottom flask	2000ml		3	3	6
B-05-01	Erlenmeyer flask	50ml	20			20
B-05-02	Erlenmeyer flask	100ml	20			20

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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
B-05-03	Erlenmyer flask	200ml	20			20
B-05-04	Erlenmyer flask	300ml	20	5	5	30
B-05-05	Erlenmyer flask	500ml	10	5	5	20
B-05-06	Erlenmyer flask	1000ml	5	3	3	11
B-06-01	Volumetric flask, TS stopper	25ml	100			100
B-06-02	Volumetric flask, TS stopper	50ml	100	11	11	122
B-06-03	Volumetric flask, TS stopper	100ml	20	16	16	52
B-06-04	Volumetric flask, TS stopper	200ml	20			20
B-06-05	Volumetric flask, TS stopper	250ml	20	16	16	52
B-06-06	Volumetric flask, TS stopper	500ml	10	6	6	22
B-06-07	Volumetric flask, TS stopper	1000ml	5	5	5	15
B-06-08	Volumetric flask, TS stopper	2000ml	5			5
B-06-09	Volumetric flask, TS stopper	3000ml	5			5
B-06-10	Volumetric flask, TS stopper	5000ml	5			5
B-07-01	Kjeldahl flask	100ml	5			5
B-07-02	Kjeldahl flask	300ml	5			5
B-07-03	Kjeldahl flask	500ml	5			5
B-08-01	Measuring pipette	1ml	10	6	6	22
B-08-02	Measuring pipette	2ml	10			10
B-08-03	Measuring pipette	5ml	10	6	6	22
B-08-04	Measuring pipette	10ml	10	6	6	22
B-08-05	Measuring pipette	20ml	10			10
B-08-06	Measuring pipette	25ml	10	5	5	20
B-08-07	Measuring pipette	50ml	5	5	5	15
B-09-01	Volumetric pipette	1ml	20			20
B-09-02	Volumetric pipette	2ml	20			20
B-09-03	Volumetric pipette	5ml	20	5	5	30
B-09-04	Volumetric pipette	10ml	20	5	5	30
B-09-05	Volumetric pipette	20ml	20			20
B-09-06	Volumetric pipette	25ml	20	3	3	26
B-09-07	Volumetric pipette	50ml	10	3	3	16
B-09-08	Volumetric pipette	100ml	10			10
B-10-01	Komagome pipette	1ml	10			10
B-10-02	Komagome pipette	3ml	10			10
B-10-03	Komagome pipette	5ml	10			10
B-10-04	Komagome pipette	10ml	10			10
B-10-05	Komagome pipette	20ml	5			5
B-11	Rubber blower		20			20
B-12-01	Cylinder, Graduated	25ml	10			10
B-12-02	Cylinder, Graduated	50ml	10	6	6	22
B-12-03	Cylinder, Graduated	100ml	10	8	8	26
B-12-04	Cylinder, Graduated	200ml	10			10
B-12-05	Cylinder, Graduated	250ml	10	6	6	22
B-12-06	Cylinder, Graduated	300ml	10			10
B-12-07	Cylinder, Graduated	500ml	10	6	6	22
B-12-08	Cylinder, Graduated	1000ml	5	5	5	15
B-13-01	Test tube	12mm dia. x 120mm(H), plastic coated	100			100
B-13-02	Test tube	15mm dia. x 120mm(H), plastic coated	100			100
B-14-01	Reagent bottle, Narrow mouth, plane	50ml	5	5	5	15
B-14-02	Reagent bottle, Narrow mouth, plane	100ml	10	10	10	30

No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
B-14-03	Reagent bottle, Narrow mouth, plane	250ml	10	10	10	30
B-14-04	Reagent bottle, Narrow mouth, plane	500ml	5	5	5	15
B-14-05	Reagent bottle, Narrow mouth, plane	1000ml	5	5	5	15
B-14-06	Reagent bottle, Narrow mouth, amber	50ml	10	10	10	30
B-14-07	Reagent bottle, Narrow mouth, amber	100ml	10	10	10	30
B-14-08	Reagent bottle, Narrow mouth, amber	250ml	10	11	11	32
B-14-09	Reagent bottle, Narrow mouth, amber	500ml	5	5	5	15
B-14-10	Reagent bottle, Narrow mouth, amber	1000ml	5	5	5	15
B-14-11	Reagent bottle, Wide mouth, plane	250ml	10			10
B-14-12	Reagent bottle, Wide mouth, plane	500ml	5			5
B-14-13	Reagent bottle, Wide mouth, plane	1000ml	5			5
B-14-14	Reagent bottle, Wide mouth, amber	250ml	10			10
B-14-15	Reagent bottle, Wide mouth, amber	500ml	5			5
B-14-16	Reagent bottle, Wide mouth, amber	1000ml	5			5
B-15-01	Burette	10ml, plane	5			5
B-15-02	Burette	25ml, plane	5			5
B-15-03	Burette	50ml, plane	5	5	5	15
B-15-04	Burette	10ml, amber	5			5
B-15-05	Burette	25ml, amber	5			5
B-15-06	Burette	50ml, amber	5			5
B-16-01	Separatory funnel	200ml	10			10
B-16-02	Separatory funnel	500ml	10	3	3	16
B-16-03	Separatory funnel	1000ml	5			5
B-16-04	Separatory funnel	2000ml	5			5
B-17-01	Funnel for filtering, Plain	45mm dia.	10			10
B-17-02	Funnel for filtering, Plain	60mm dia.	10			10
B-17-03	Funnel for filtering, Plain	90mm dia.	10	3	3	16
B-17-04	Funnel for filtering, Plain	105mm dia.		3	3	6
B-17-05	Funnel for filtering, Plain	120mm dia.	10			10
B-18-01	Dropping bottle, Plane	60ml	5			5
B-18-02	Dropping bottle, Plane	120ml	5			5
B-18-03	Dropping bottle, Plane	250ml	5			5
B-18-04	Dropping bottle, Amber	60ml	5			5
B-18-05	Dropping bottle, Amber	120ml	5			5
B-18-06	Dropping bottle, Amber	250ml	5			5
B-19-01	Weighing bottle	40mm dia. x 30mm(H)	10			10
B-19-02	Weighing bottle	40mm dia. x 40mm(H)	10			10
B-19-03	Weighing bottle	40mm dia. x 50mm(H)	10			10
B-19-04	Weighing bottle	50mm dia. x 30mm(H)	10			10
B-19-05	Weighing bottle	50mm dia. x 40mm(H)	10			10
B-19-06	Weighing bottle	50mm dia. x 50mm(H)	10			10
B-19-07	Weighing bottle	24ml (30 ϕ mm x 50(H)mm)		3	3	6
B-19-08	Weighing bottle	58ml (60 ϕ mm x 40(H)mm)		3	3	6
B-20-01	Petri dish	60mm dia.		16	16	32
B-20-02	Petri dish	90mm dia.	20			20
B-20-03	Petri dish	100mm dia.	50	16	16	82
B-20-04	Petri dish	120mm dia.	20			20
B-21-01	Watch glass	60mm dia.	20			20
B-21-02	Watch glass	80mm dia.		5	5	10
B-21-03	Watch glass	120mm dia.	20			20

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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
B-22-01	Evaporating dish, Porcelain	90mm dia.	20			20
B-22-02	Evaporating dish, Porcelain	120mm dia.	20			20
B-23-01	Color comparison tube, TS stopper 100ml	50ml, 24/25	10			10
B-23-02	Color comparison tube, TS stopper 100ml	100ml, 24/25	10			10
B-24-01	Desiccators with plate	240mm dia.	3	3	3	9
B-24-02	Desiccators with plate	300mm dia.	3			3
B-24-03	Desiccator with vacuum	180mm, with flange & lid		3	3	6
B-25-01	Glass tube	8mm dia.	5			5
B-25-02	Glass tube	10mm dia.	5			5
B-26-01	Washing bottle	250ml	10			10
B-26-02	Washing bottle	500ml	5			5
B-26-03	Wash bottle (plastic)	250ml		5	5	10
B-26-04	Wash bottle (plastic)	500ml		5	5	10
B-27	BOD bottle	100ml	100			100
B-28-01	Centrifugal tubes	10ml	20			20
B-28-02	Centrifugal tubes	15ml	20			20
B-28-03	Centrifugal tubes	50ml	10			10
B-28-04	Centrifugal tubes	100ml	50			50
B-29-01	Filtering bottle	3L	3			3
B-29-02	Filtering bottle	5L	3			3
B-30-01	Condenser Liebig	300mm	10			10
B-30-02	Condenser Liebig	200mm		3	3	6
B-31	Filtration apparatus	47mm diameter	3			3
B-32-01	Auto buret, plane	25ml	3	2	2	7
B-32-02	Auto buret, amber	25ml	3	2	2	7
B-33	Sample bottle, amber	Glass with a screw cap lined with TFE	50			50
B-34	Chromatographic column	100mm x 10mm ID, with TFE stopcock with reagent	5			5
B-35	Reaction flask	15 to 25mL with standard tapered joint	10			10
B-36-01	Tall beaker	100ml	10			10
B-36-02	Tall beaker	200ml	10			10
B-37	Aspirator bottle	5000ml		3	3	6
B-38-01	Bottle with screwcap	25ml		5	5	10
B-38-02	Bottle with screwcap	50ml		5	5	10
B-38-03	Bottle with screwcap	250ml		5	5	10
B-38-04	Bottle with screwcap	500ml		5	5	10
B-38-05	Bottle with screwcap	1000ml		3	3	6
B-39	BDH crucible with sintered disk, grade 40	50ml		3	3	6
B-40	Buchner funnel with sintered disk	80ml		3	3	6
B-41	Mortar with pestle (porcelain)	Volume 400cm (300 ϕ mm)		3	3	6
B-42	Alcohol lamp			5	5	10
B-43	Filter paper Whatmann grade 1	9cm dia.		5		5
B-44	Pasture pipette	250pcs pack		3	3	6
B-45	Pipette filler (rubber made)	10ml		5	5	10
B-46	Chemical gloves			3	3	6
B-47	Heat resistance glove			3	3	6
B-48	Glassware dry stand	24 holds		3	3	6
B-49	Safety glass	UV proof and chemical resistance		3	3	6
B-50	Millipore filter paper, size 47 ϕ mm	0.45U		3	3	6
B-51	Glass-fiber filter disks		3			3
B-52	Membrane filter	For micro-organisms test, 47mm diameter	3			3

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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
B-53	Membrane filter	47mm diameter, particle holding 0.1 μ m	3			3
B-54	Filter funnels	55mm diameter filter paper	3			3
B-55	Filter paper for phase separation		3			3
B-56	Ion-exchange column	With ion exchange resin	5			5
B-57	Soxhlet extraction apparatus	150mL	1			1
B-58	Filter paper		3			3
B-59-01	Gas dispersion tube	1.2m long, 6mm diameter	3			3
B-59-02	Gas dispersion tube	1.2m long, 7mm diameter	3			3
B-60-01	Syringes	0.5mL	3			3
B-60-02	Syringes	1.0mL	3			3
B-60-03	Syringes	5.0mL	3			3
B-60-04	Syringes	25.0mL	3			3
B-61-01	Microsyringes	10-iL	3			3
B-61-02	Microsyringes	25-iL	3			3
B-61-03	Microsyringes	100-iL	3			3
B-62-01	Gastight syringe	10-iL	3			3
B-62-02	Gastight syringe	25-iL	3			3
B-62-03	Gastight syringe	100-iL	3			3
B-63	Kuderna-Danish apparatus		3			3
B-64	Concentrator tube		50			50
B-65	Vials		50			50
B-66	Boiling chips		1			1
B-67-01	Sample bottle	General water quality elements	1,000			1,000
B-67-02	Sample bottle	For heavy metal	1,000			1,000
B-67-03	Sample bottle	For micro-organisms test	500			500
B-67-04	Sample bottle	Effluvium	500			500
B-68	Dilution bottle		100			100
B-69	Fermentation Tubes and Vials		100			100
B-70-01	Micro pipetter	1-5ml	3		1	4
B-70-02	Micro pipetter	2-10ml	3		1	4
B-71	Crucible, made by Alumina		5			5
B-72	Crucible tong	300ml	2			2
B-73	Combustion Tube, Alumina made		5			5
C-01	pH standard solution 4.01		20			20
C-02	pH standard solution 6.86		20			20
C-03	(NH ₂) ₂ ·H ₂ SO ₄		2			2
C-04	(CH ₂) ₆ N ₄		20			20
C-05	KH ₂ PO ₄		2			2
C-06	K ₂ HPO ₄		8			8
C-07	Na ₂ HPO ₄ ·7H ₂ O		2			2
C-08	NH ₄ Cl		4			4
C-09	MgSO ₄ ·7H ₂ O		2			2
C-10	CaCl ₂		2			2
C-11	FeCl ₃ ·6H ₂ O		2			2
C-12	sodium hydroxide		2			2
C-13	Na ₂ SO ₃		2			2
C-14	glucose		4			4
C-15	glutamic acid		4			4
C-16	K ₂ Cr ₂ O ₇		2			2

No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
C-17	Ag ₂ SO ₄		2			2
C-18	H ₂ SO ₄		10			10
C-19	1,10-phenanthroline monohydrate		4			4
C-20	FeSO ₄ ·7H ₂ O		2			2
C-21	Fe(NH ₄) ₂ (SO ₄) ₂ ·6H ₂ O		2			2
C-22	HgSO ₄ , crystals or powder		2			2
C-23	HOOC ₆ H ₄ COOK		4			4
C-24	K ₂ S ₂ O ₈		8			8
C-25	NH ₄ OH		6			6
C-26	H ₃ PO ₄		4			4
C-27	Sulfanilamide		2			2
C-28	N-(1-naphthyl)ethylenediamine dihydrochloride	NED	2			2
C-29	CuSO ₄ ·5H ₂ O		3			3
C-30	Copperized cadmium granules		3			3
C-31	KNO ₃		3			3
C-32	NaOH		8			8
C-33	NH ₃	1000mg/L	2			2
C-34	CH ₃ COOH		2			2
C-35	NaCl		6			6
C-36	1,2-cyclohexylenediaminetetraacetic acid	CDTA	3			3
C-37	F	1000mg/L	2			2
C-38	KOH		2			2
C-39	CN	1000mg/L	2			2
C-40	KCl		2			2
C-41	Ascorbic acid		3			3
C-42	Na ₂ H ₂		2			2
C-43	Na ₂ S·9H ₂ O		2			2
C-44	K ₂ SO ₄		2			2
C-45	Na ₂ S ₂ O ₃ ·5H ₂ O		6			6
C-46	1,1-Dichloroethylene in methanol	packed in pierceable ampules	2			2
C-47	1,2-Dichloroethylene in methanol	packed in pierceable ampules	3			3
C-48	Tetrachloroethylene in methanol	packed in pierceable ampules	3			3
C-49	Trichloroethylene in methanol	packed in pierceable ampules	3			3
C-50	Chloroform in methanol	packed in pierceable ampules	3			3
C-51	Benzene in methanol	packed in pierceable ampules	3			3
C-52	Na ₂ SO ₄		4			4
C-53	Acetone		2			2
C-54	Methanol		10			10
C-55	Methylene chloride		2			2
C-56	K ₂ CO ₃		2			2
C-57	α-bromopentafluorotoluene		2			2
C-58	1,4,7,10,13,16-hexaoxacyclooctadecane		2			2
C-59	2-propanol		2			2
C-60	Hexane		2			2
C-61	Toluene		2			2
C-62	Silica gel		6			6
C-63	Sodium carbonate		2			2
C-64	Standard solutions	1000mg/L	2			2
C-65	Standard solutions	1000mg/L	2			2
C-66	H ₂ SO ₄		4			4

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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
C-67	(NH ₄) ₆ Mo ₇ O ₂₄ ·4H ₂ O		2			2
C-68	C ₈ H ₄ K ₂ O ₁₂ Sb ₂ ·3H ₂ O		2			2
C-69	KH ₂ PO ₄		2			2
C-70	Standard solutions	1000mg/L	2			2
C-71	HNO ₃ , conc.		6			6
C-72	Aluminum	1000mg/L	2			2
C-73	Ammonium acetate		2			2
C-74	8-hydroxyquinoline		2			2
C-75	Reagent grade		2			2
C-76	Hydroxylamine hydrochloride		2			2
C-77	Barium	1000mg/L	2			2
C-78	Curcumin		2			2
C-79	Oxalic acid		2			2
C-80	Ethyl alcohol		2			2
C-81	Hydrochloric acid, conc		10			10
C-82	Cl ₂	1000mg/L	2			2
C-83	SO ₄	1000mg/L	2			2
C-84	CaCO ₃		2			2
C-85	Lanthanum oxide		8			8
C-86	Hydrogen peroxide	30%	2			2
C-87	Ca	1000mg/L	2			2
C-88	Mg	1000mg/L	2			2
C-89	Phenol		2			2
C-90	KBrO ₃		2			2
C-91	KBr		2			2
C-92	starch powder		2			2
C-93	KH ₂ PO ₄		6			6
C-94	4-aminoantipyrine		2			2
C-95	K ₃ Fe(CN) ₆		2			2
C-96	CHCL ₃		2			2
C-97	anhydrous Na ₂ SO ₄ , granular		2			2
C-98	Potassium bi-iodate anhydrous		2			2
C-99	Phenylarsine oxide		2			2
C-100	anhyrous NaC ₂ H ₃ O ₂		2			2
C-101	Tryptose		4			4
C-102	Lactose		4			4
C-103	Sodium lauryl sulfate		2			2
C-104	Nitrogen gas		2			2
C-105	Ethyl acetate		2			2
C-106	NaHCO ₃		4			4
C-107	1,1,2-trichloro-1,2,2-trifluoro ethane		2			2
C-108	Isooctane		2			2
C-109	Hexadecane		3			3
C-110	Benzene		2			2
C-111	NaBH ₄		2			2
C-112	KI, crystals		4			4
C-113	conc H ₂ SO ₄		2			2
C-114	K ₂ S ₂ O ₈		2			2
C-115	HClO ₄ , conc		2			2
C-116	HCl conc		4			4

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No.	Name	Specification	Quantity			
			Dakha	Jhenaidah	Noakhali	Total
C-117	As	1000mg/L	2			2
C-118	Se	1000mg/L	2			2
C-119	Cd	1000mg/L	2			2
C-120	Cr	1000mg/L	2			2
C-121	(NH ₄) ₂ SO ₄		2			2
C-122	1,5-diphenylcarbazide		2			2
C-123	HPLC-grade methanol		2			2
C-124	K ₂ Cr ₂ O ₇ standard grade		2			2
C-125	Cu	1000mg/L	2			2
C-126	Fe	1000mg/L	2			2
C-127	Pb	1000mg/L	2			2
C-128	Mn	1000mg/L	2			2
C-129	KMnO ₄		2			2
C-130	NH ₂ OH·H ₂ SO ₄		2			2
C-131	SnCl ₂		2			2
C-132	Ni	1000mg/L	2			2
C-133	Sn	1000mg/L	2			2
C-134	Zn	1000mg/L	2			2
C-135	Ag	1000mg/L	2			2
C-136	Na	1000mg/L	2			2
C-137	Na ₂ CO ₃		2			2
D-01	4WD passenger vehicle	For mananement of zonal laboratories	2			2
D-02	Microbus	For training	1			1
D-03	Pick-up truck	To tranport samples and material	1			1
E-01	Projector		1			1
E-02	Opaque projector		1			1
E-03	Screen		2			2
E-04	Laptop PC		1			1
E-05	Digital video camera		1			1
E-06	Printer		1			1
E-07	Photocopy machine		1			1
F-01	PC for server		1			1
F-02	PC		10			10
F-03	Printer		1			1
F-04	Scanner		1			1
F-05	Digitizer		1			1
F-06	Software		1			1

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Costs to be borne by the Bangladeshi Side

annex-2

Unit: TK

Item	Cost (Sep.2004-Jun.2005)	Deadline	Cost (Jul.2005-Mar.2006)	Deadline
Leveling of ground	360,000	Sep.2004	0	—
Construction permit	50,000	Dec.2004	0	—
Installation of electricity	200,000	Feb.2005	200,000	Nov.2005
Connection of water supply, telephone line, etc.	50,000	Feb.2005	50,000	Aug.2005
Installation of fence and outer wall	30,000 (temporary)	Feb.2005	140,000 (permanent)	Feb.2006
Purchase of general furniture	0	—	1,800,000	Dec.2005
Relocation of facilities for renovation work	0	—	100,000	Aug.2005
Connection of electricity, water supply, telephone line, etc.	0	—	300,000	Jul.2005
Purchase of general furniture	0	—	400,000	Dec.2005
Operation & Maintenance (for 6 months)	0	—	6,044,000	Nov.2005
Customs duty, B/A set up fee	4,125,000	Sep.2004	6,000,000	Jul.2005
Total	4,815,000	—	15,034,000	—

* Contingency is not included in the cost.

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Items to be managed by the Bangladeshi side during implementation of the Project

- (1) All necessary procedures described in annex-4 of the Minutes of Discussion signed by the Bangladeshi side and the Japanese side on 4 March 2004.
- (2) Land leveling of the site for the Central Laboratory by September 2004
- (3) Provision of space to store equipment and materials near the Central Laboratory
- (4) Acquisition of construction permission for the Central Laboratory
- (5) Preparation of utilities such electricity, water service, sewage, gas and telephone, for the Central Laboratory, Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory
- (6) Construction of fences and outer walls surrounding the Central Laboratory
- (7) Procurement of general furniture for the Central Laboratory, Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory
- (8) To remove temporarily the existing equipment and material during renovation of Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory and replace them as requiring
- (9) To secure offices for staff in Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory
- (10) Introduction and improvement of regulatory framework for drinking water examination in national level
- (11) To secure the Water Quality Monitoring and Surveillance Circle in DPHE
- (12) Establishment of revolving fund system to secure budget for laboratory management and operation before completion of the Project
- (13) To secure budget for laboratory management and operation until the revolving fund system can provide full cost
- (14) To secure posts for staff of the Central Laboratory, Jhenaidah Zonal Laboratory and Noakhali Zonal Laboratory on a revenue basis and recruitment of staff by September, 2005 at latest
- (15) To secure the posts for staff for the other nine zonal laboratories on a revenue basis and recruitment of staff by September, 2005 at latest

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6. 基本設計概要表

基本設計概要表

1. 案件名
バングラデシュ人民共和国 水質検査システム強化計画基本設計調査
2. 要請の背景（協力の必要性・位置付け）
1983 年インド国西ベンガル州において地下水に起因した砒素中毒患者が診断されて以来、隣接するバングラデシュ人民共和国（以下バングラデシュ国と略す）においては、西部地域で 1993 年に砒素汚染された井戸が最初に確認され、1994 年には、最初の砒素中毒患者が同じ西部地域で確認された。その後全国的な調査が実施された結果、地下水の砒素汚染が全国に広がっていることが判明した。現在、1,000 万本と推定される井戸の約 25%がバングラデシュ国水質基準値（0.05mg/L。WHO ガイドラインでは 0.01mg/L）を超える砒素を含有しており、その飲用人口は約 3,000 万人以上、砒素中毒患者数は 1 万人を超えている（2001 年公式発表）。しかしながら、飲用水の安全性に関し、簡易キットによる水質測定は実施されているが、精度の高い飲用水質検査の実施体制は十分確立されていない。この現状を鑑み、National Policy for Arsenic Mitigation 2003 (NPAM, 2004 年閣議決定)においては、砒素汚染対策に関わる飲用水供給政策の一環として、水質検査体制の強化が強調されている。 - 飲用水質検査体制の現状と問題点として、実施体制の未確立、組織・制度・財源の未整備が挙げられる。実施体制の問題としては、検査ラボ・検査機材・検査人材の不足、不適切な機材維持保守・試薬部品調達、精度管理・水質データ管理・検査結果の施策への反映の不在などがある。以上の状況から、バングラデシュ国は水質検査体制の整備・強化を行うこととし、我が国に支援を要請した。プロジェクト全体計画（バングラデシュ国の独自の取り組みのほか、無償資金協力、技術協力プロジェクトを想定）の上位目標は、砒素等の水質問題のない安全な水が供給されることであり、プロジェクト目標は「飲用水質検査体制の強化」である。本無償資金協力案件は、飲用水質検査体制強化のための基盤整備を実施することにより、別途取り組みが進められている「砒素汚染対策・飲用水供給事業の推進」とともに、上位目標の達成に資するものである。
3. プロジェクト全体計画概要
※下線部：本無償資金協力で直接関係する成果、活動及び投入 (1) プロジェクト全体計画の目標（裨益対象の範囲および規模） バングラデシュ国における飲用水質検査実施体制が確立・強化される。 《裨益対象の範囲および規模》 - 公衆衛生工学局（Department of Public Health Engineering: DPHE）11 地方ラボにより飲用水質検査が行われるバングラデシュ国全人口（1 億 2900 万人） (2) プロジェクト全体計画の成果 - ア <u>中央ラボ及び 2 地方ラボ（ジェナイダ、ノアカリ）の施設・機材が新たに整備される。</u> - イ 飲用水質検査のための実施体制が整備・確立される。 - ウ 飲用水質検査のための組織・制度・財源が整備される。 - エ 実施機関の水質検査にかかる技術力が向上する。 (3) プロジェクト全体計画の主要活動 - ア <u>中央ラボの新規建設及び 2 地方ラボの改修を行なう。</u> - イ <u>中央ラボ及び 2 地方ラボへの水質分析用資機材を調達する。</u> - ウ 全国レベルの水質検査システムを構築する。 - エ 水質検査に伴い必要な各種規制を整備する。 - オ 水質検査担当部署の新設と、人員配置、予算措置（ラボ回転基金の導入含む）を行う。 - カ <u>担当職員の水質検査にかかる能力向上のための指導を行う。</u>

- キ 地方ラボの分析精度管理を行う。
- ク 地方ラボの装置維持保守体制を強化する。
- ケ 試薬、消耗品供給のための体制を強化する。
- コ データ管理解析を実施する。
- サ 応用研究を実施するとともに研究支援、砒素対策を始めとした施策への反映を行う。

(4) 投入（インプット）

ア 日本側：無償資金協力 4.95 億円、技術協力プロジェクト検討中

イ バングラデシュ国側

- (7) 中央ラボ新設、地方ラボ拡充に伴う必要な人員
- (イ) 中央ラボ建設用地の確保と更地化
- (ウ) 施設・機材の運営・維持管理に係る経費（人件費含む）

(5) 実施体制

実施機関：DPHE（公衆衛生工学局）

主管官庁：Ministry of Local Government, Rural Development & Cooperatives/Local Government Division（地方行政農村開発組合省/地方行政庁）

4. 無償資金協力案件の内容

(1) サイト

- 中央ラボ：ダッカ市モハカリ
- 地方ラボ：ジェナイダ県、ノアカリ県

(2) 概要

- ア ダッカ市モハカリにおける中央ラボ施設の建設
- イ 中央ラボへの水質検査等に必要な資機材の調達
- ウ ジェナイダ県、ノアカリ県における既存地方ラボへの資機材の調達、設備関係の整備
- エ 地方の分析技術者を対象にした技術指導
- オ 中央ラボを対象にした運営管理指導、機器分析指導およびデータベース管理指導

(3) 相手国側負担事項

- ア 中央ラボ建設用地の確保と更地化
- イ 中央ラボ建設の認可など、バ国内法規上必要な認可承認の取得
- ウ ジェナイダおよびノアカリ地方ラボ改修のための既設資機材の移設および改修後の再設置
- エ 中央ラボおよび地方ラボにおける電気、水道、ガスなどのユーティリティの接続

(4) 概算事業費

概算事業費 5.35 億円（無償資金協力 4.95 億円、バングラデシュ国側負担 0.40 億円）

(5) 工期

詳細設計・入札期間を含め約 19 ヶ月（予定）

(6) 貧困・ジェンダー、環境および社会面への配慮

水質分析時に発生する有害ガス及び廃液を中央ラボにおいて処理できるようにする。中央ラボでは、地方ラボで発生する廃液も定期的に回収し処理する。

5. 外部要因リスク（プロジェクト全体計画の目標の達成に関するもの）

- NGO、関係機関の水質分析に対するニーズが激減しない。
- 砒素汚染対策に対する国家政策に変更がない。

6. 過去の類似案件からの教訓の活用

なし

7. プロジェクト全体計画の事後評価に係る提案

（１） プロジェクト全体計画の目標達成を示す成果指標

既存地方ラボ

	現状	計画値（事業実施から５年）
飲用水質検査年間 試料数	約 8,000 （水質検査が明確に制 度化されておらず、不 定期にラボに持ち込ま れる試料を分析）	30,000 （水質検査を明確に制度化、 年間水質検査計画を策定し定 期的に実施）

中央ラボ

	現状	計画値（事業実施から５年）
中央ラボにおける年間試 料数	0	1,500 以上
DPHE における年間研修数	0	26

（２） 評価のタイミング

2011 年以降（検討中の技術協力プロジェクトの終了時評価時点）

7. 参考資料／入手資料リスト

7. 参考資料／入手資料リスト

番号	名 称	形 態 (図書・ビデオ・ 地図・写真等)	オリジナル・ コピー	発行機関	発行年
1	DPHE 中央ラボ組織予定図	予定図	オリジナル	DPHE	2004
2	DPHE 53 ディストリクト・ラボ計画 PCP (ベンガル語バージョン)		コピー	DPHE	2004
3	AAN、NGO フォーラム、WHO 等の質問票	質問票	オリジナル	AAN、NGO フォーラム、 WHO	2004
4	NGO フォーラム活動パンフレット	パンフレット	コピー	NGO フォーラム	
5	Water Quality and Follow-up Survey on Arsenic Contamination of Dugwells in Sharsha Upazila	パンフレット	コピー		
6	Arsenic Contamination of Deep Tubewells in Sharsha Upazila	パンフレット	コピー		
7	BEMP (Bangladesh Environmental Management Project) パンフレット	パンフレット	コピー	DOE	
8	SEMP (Sustainable Environmental Management Programme) パンフレット	パンフレット	コピー	UNDP	
9	Emerging Issues in Water and Infectious Disease	パンフレット	コピー	WHO	
10	Willingness to pay for Arsenic-Free, Safe Drinking Water in Bangladesh	パンフレット	コピー	World Bank	
11	Draft National Policy for Arsenic Mitigation 2003	図 書	コピー	LGD/MLGRD&C	2003
12	National Policy for Arsenic Mitigation 2004	図 書	オリジナル	LGD/MLGRD&C	2003
13	Draft Implementation Plan for Arsenic Mitigation in Bangladesh 2003	図 書	コピー		2003
14	Bangladesh National Building Code 1993	図 書	コピー	Housing and Building Research Institute	1993
15	Schedule of Rates	図 書	コピー	Public Works Department	2002
16	National Policy for Arsenic Mitigation 2004	図 書	コピー		2004
17	Implementation Plan for Arsenic Mitigation in Bangladesh	図 書	コピー		