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PROJECT APPRAISAL DOCUMENT

FOR A

PROPOSED CREDIT

IN THE AMOUNT OF SDR 24.2 MILLION EQUIVALENT

TO THE

PEOPLE'S REPUBLIC OF BANGLADESH

FOR A

ARSENIC MITIGATION - WATER SUPPLY PROJECT

AUGUST 7, 1998

Rural Development Sector Unit
South Asia Region

CURRENCY EQUIVALENTS

(Exchange Rate Effective May 26, 1998)

Currency Unit = Taka (Tk.)

US$ 1.00 = Tk 46.30

FISCAL YEAR: July 1 - June 30

ABBREVIATIONS AND ACRONYMS

ADB	Asian Development Bank
BCA	Benefit Cost Analysis
BWDB	Bangladesh Water Development Board
CAS	Country Assistance Strategy
CBO	Community-Based Organization
CIDA	Canadian International Development Agency
DANIDA	Danish International Development Agency
DC	Direct Contract
DfID	Department for International Development (UK)
DGHS	Directorate General of Health Services
DPHE	Department of Public Health Engineering
ECNEC	Executive Committee of the National Economic Council
ERD	Economic Relations Division
FY	Fiscal Year
GOB	Government of the People's Republic of Bangladesh
HPPP	Health and Population Program Project
ICB	International Competitive Bidding
IDA	International Development Association
LCG	Local Coordination Group (donors)
LGD	Local Government Division
LGED	Local Government Engineering Department
LIL	Learning and Innovation Loan
MoHFW	Ministry of Health and Family Welfare Development and Cooperatives
n.a.	not applicable
NAMIC	National Arsenic Mitigation Information Center
NCB	National Competitive Bidding
NGO	Non-governmental Organization
NIPSOM	National Institute for Preventive, Social and Occupational Medicine
NMDC	Netherlands Ministry of Development Cooperation
NS	National Shopping
O&M	Operation and maintenance costs
PAD	Project Appraisal Document
PCP	Project Concept Paper
PD	Project Director
PDAT	Procurement, Disbursement and Audit Team
PIP	Project Implementation Plan
PMU	Project Management Unit
QCBS	Quality and Cost Based Selection
RWSG	Regional Water Supply and Sanitation Group
RPMU	Regional Project Management Unit
SA	Service Agencies
SDC	Swiss Agency for Development Cooperation
SDR	Special Drawing Rights
SO	Support Organization
SOEs	Statement of Expenditures
TA	Technical Assistance
TAG	Technology Assessment Group
UNDP	United Nations Development Program
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organisation
WSS	Water Supply and Sanitation

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People's Republic of Bangladesh

Arsenic Mitigation-Water Supply Project

Project Appraisal Document

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Bangladesh
Arsenic Mitigation - Water Supply Project

Project Appraisal Document

South Asia Region
Bangladesh Country Department

Date: August 7, 1998	Task Team Leaders: Nadim Khouri, Guy Alaerts, Babar Kabir
Country Director: Pierre Landell-Mills	Sector Managers: Ridwan Ali, Michael Baxter
Project ID: BD-PE-50745 Sector: Water Supply	Program Objective Category: EN
Lending Instrument: SIL	Program of Targeted Intervention: [x] Yes [ ] No

Project Financing Data [ ] **Loan** [x] **Credit** [ ] **Guarantee** [ ] **Other [Specify]**

For Loans/Credits/Others:

Amount (US$m/SDRm): 32.4m/SDR24.2m

Proposed terms:	Credit	[ ]	Multicurrency	[ ]	Single currency, specify	
Grace period (years):	10	[ ]	Standard Variable	[ ]	Fixed	[ ] LIBOR-based
Years to maturity:	40					
Commitment fee:	Not exceeding 0.5%					
Service charge:	0.75					

Financing plan (US$m):

Source	Local	Foreign	Total
Government	4.9		4.9
Cofinanciers (Switzerland)	1.5	1.5	3.0
IBRD			
IDA	27.2	5.2	32.4
Other (Community)	4.1		4.1
Total	37.7	6.7	44.4

Borrower: Government of Bangladesh (GOB)
Guarantor: Not applicable
Responsible agency(ies): Department of Public Health Engineering, Ministry of Local Government, Rural Development & Cooperatives

Estimated disbursements (Bank FY/US$M):

	1999	2000	2001	2002	2003
Annual	3.5	7.9	10.8	8.3	1.9
Cumulative	3.5	11.4	22.2	30.5	32.4

Project implementation period: 4 years* Expected effectiveness date: 10/1/98 Expected closing date:9/30/2002
*Elapsed time is 4 years but disbursements cover 5 fiscal years.

A. Project Development Objective

To alleviate arsenic water contamination as a factor in the reduction of arsenic-induced mortality and morbidity. (See Annex 1 for key performance indicators.)

B. Strategic Context

1. Sector-related Country Assistance Strategy (CAS) goal supported by the project (see Annex 1):

CAS document number: 17453-BD Date of latest CAS: March 6, 1998

The project supports GOB and the Bangladesh people in responding to the following CAS objectives: (i) improving rural and urban infrastructure through increased access to safe water, especially for the poor; (ii) improving service delivery in health; and (iii) helping redefine and support the government's role in designing more effective institutions.

2. Main sector issues and Government strategy:

(a) Impact of the arsenic crisis: High concentrations of arsenic are found in water from thousands of wells across more than half of Bangladesh's 64 Districts. The extent of the problem and its impact on health and production are still unknown, but millions of people are threatened while there have been an unknown number of deaths and related illnesses since 1993 when GOB first became aware of the problem. A recent (February, 1998) international conference issued the Dhaka Declaration that included the following statements: *...The cause of this arsenic contamination is geological; A large number of people including children are suffering from chronic arsenic poisoning; The arsenic problem is a threat to public health and the social structure of Bangladesh; Supply of arsenic-free water is the only solution;...* Following decades of water development strategies that emphasized the use of groundwater for irrigation and water supply, this crisis and the human suffering it is causing, is leading to the re-examination of Bangladesh's water policies. There are examples of geologic arsenic contamination in other parts of the world (including West Bengal in India), but they are all relatively site-specific affecting limited numbers of people. This arsenic contamination crisis in Bangladesh is of an unprecedented magnitude that could not have been predicted.

(b) Lack of information/knowledge: A major constraint to addressing the arsenic problem in Bangladesh is the lack of information on the extent, causes and proven remedial interventions. In general, the Government's level of information on water supply and sanitation is inadequate. Although many of the country's research organizations, governmental agencies and NGOs are now engaged in data gathering[1], information on groundwater arsenic contamination does not cover all areas of potential contamination and is not always reliable or conclusive. Testing for arsenic is usually prompted by reports in the press, communication to DPHE officials or cases of patent poisoning that health workers come across. Where these "hot spots" are identified, all wells are routinely tested for arsenic contamination. Data on the possible causes of groundwater poisoning are also inconclusive. The presence of arsenic-containing pyrite in the alluvial and deltaic sediments is cited to be the underlying cause leading to the hypothesis that increased extraction of irrigation water from shallow tubewells in the last 15 years has seasonally lowered the groundwater table and allowed the oxidation of pyrite

[1] A rapid assessment has been conducted by DPHE and Jadavpur University, Calcutta, on deep and shallow wells in western Bangladesh; by the National Institute for Preventive, Social and Occupational Medicine (NIPSOM) and Dhaka Community Hospital registering the arsenicosis patients; and by the Bangladesh University of Engineering and Technology.

and the release of arsenic. The evidence for this hypothesis, however, is largely indirect and as yet unproved. Knowledge on long-term, sustainable, remedial interventions is also inadequate, and investigations on appropriate low-cost technical options for alternatives or treated water supply are urgently needed.

(c) On-site issues: The present arsenic crisis is jeopardizing the progress made in the last two decades in increasing the supply of safe drinking water to urban and rural populations. There are two major on-site impacts of the crisis: (i) in the absence of acceptable alternatives, people are continuing to consume arsenic-contaminated water and (ii) in the absence of proper on-site water and sanitation, communities that are worried that their groundwater might be contaminated with arsenic may end up drinking pathogen-contaminated surface water that is more harmful than arsenic. There are both urgent and long-term socially acceptable investment needs to address these issues in a sustainable way. The technical options for developing clean water supplies for arsenic-contaminated areas will need to be based on an analysis of existing water supply infrastructure, options for alternative supply and treatment of water and the ability of the proposed technical solutions to be socially acceptable, cost effective and sustainable. As of 1997, this analysis had only been partially initiated and key gaps remain, mainly due to lack of policy direction and institutional capabilities.

(d) Policy/institutional issues: There are several issues related to sector strategy and institutional functioning that potentially hinder an effective management of the present situation; (i) there is limited institutional capability in the sector (at DPHE and elsewhere in Government) to promote social awareness of the linkages between water, sanitation, hygiene and health. This issue is likely to affect arsenic mitigation. In particular, without the requisite experience in community-based activities, DPHE's experience, skills and resources are not adequate to enable effective implementation of grassroot arsenic mitigation strategies; (ii) although GOB enacted a law in 1997 that institutionalizes the Gram Parishads at the local level and entrusts them with water and sanitation responsibilities, these forms of local government still lack the experience, models and procedures to allow them to assume these responsibilities in the short term; (iii) DPHE's investigation activities receive low priority and focus on technology development and hydrogeology. Research activities are not integrated into project development to improve the design of projects. In addition, water quality monitoring and surveillance receive little emphasis. Laboratory findings are not incorporated into operational activities and the quality of laboratory analyses is questionable; (iv) some of the key issues resulting from the poor strategic content of Government's sector work include: limited participation of local communities in the design and implementation of sector projects, limited knowledge of local capacity in cost recovery for water and sanitation works, lack of clarity on central vs. regional division of responsibilities in the sector; and (v) limited capacity in institutional coordination. Although DPHE under LGD is responsible for water supply, other governmental agencies such as the MoHFW and the Ministry of Water Resources also are concerned with various aspects of the problem. Given the intersectoral nature of the overall arsenic problem, coordination between these agencies is essential, but likely to be difficult. In addition, the centralized nature of the agencies, especially DPHE, causes poor responsiveness to local needs, slow processing and decision making, and is likely to affect implementation. The involvement of NGOs, the private sector (about two-thirds of the tubewells in rural Bangladesh are privately owned) and donors also requires effective coordination.

(e) Government strategy: At present, GOB is seeking assistance to articulate a strategy on arsenic mitigation. This is partly due to the fact that the sectors of environmental health, water supply and sanitation and overall water resources lack adequate strategies at the sector-specific as well as at intersectoral levels. Planning in the sectors is still predominantly project-based and not part of a long-term sector development vision. National development strategies outlined in Five-Year Plans provide some guidance for projects. *The arsenic emergency, however, is forcing many of these policy/strategy issues to be revisited by the Government as well*

as NGOs and civil society, in Bangladesh. GOB has taken the following positions and initiated policy reform: (i) coordinated policy on the arsenic problem at interministerial level (Sept. 97); (ii) new law setting up Gram Parishads at village level with elected permanent committees responsible for water and sanitation (Sept. 97); (iii) first sector policy being emergency, however, is forcing many of these policy/strategy issues to be revisited by the Government, as well as NGOs and developed stressing cost recovery, demand, and role for private and local initiatives (1998); (iv) agreement that DPHE needs to be "re-invented"; and (v) agreement that the approaches to be used for the arsenic project become a "role model" for the new institutions that will emerge over time when decentralization to local government takes root.

3. Sector issues to be addressed by the project and strategic choices:

The proposed project will support the Government's strategy for the phased, participatory and sustainable implementation of actions to address all key technical, social and institutional issues linked to the arsenic crisis (see above Section B.2.) Although these issues are multi sectoral, the strategy recommended for this program will be to deal primarily with water supply and sanitation interventions at the policy and investment levels. In addition, linkages with health, overall water management and other related sectors that have a direct impact on the arsenic issue will be clearly established and addressed in the program, but the program will not address policy/institutional reform issues in sectors other than water supply and sanitation.

C. Project Description Summary

1. Project components (see Annex 2 for a detailed description and Annex 3 for a detailed cost breakdown):

Component	Category	Cost Incl. Contingencies (US$M)	% of Total	Bank/Donor-financing (US$M)	% of Bank/Donor-financing
On-site Mitigation	Works; Goods; TA	18.7	42	10.5	56
Improved Understanding of the Arsenic Problem	Equipment; Studies; TA	4.4	10	2.7	61
Strengthening of Implementation Capacity	TA; Training; "Mass Awareness"	21.3	48	19.3	90
Total		**44.4**	**100**	**32.4**	**73**

Key interventions with components:

The following is a brief description of key interventions that the Project will support.

(a) **On-site mitigation: US$18.7 million**: The Project will have interventions in the rural areas (villages) and in urban areas (municipalities). Peri-urban areas will be considered rural, where institutionally appropriate. The municipalities will be assisted in their surveys, feasibility studies and implementation by DPHE and LGED

(LGED will be active in those towns where it is already active in water supply). Physical interventions in towns include installation of deep tubewells; provision of hardware for rainwater harvesting and/or sanitation treatment plants (for arsenic removal or to treat alternative surface water) and expansion of distribution systems. For the rural program, the Project Management Unit (PMU) will select Support Organizations (SOs) to carry out surveys, prefeasibility studies, community development (development of a water committee, Permanent Committee of Gram Parishad or equivalent) and appropriate mitigation measures in prioritized villages in a participatory fashion. Physical works will be low cost and include installation of shallow and deep tubewells, ponds with filters, handpumps, treatment and rainwater catchment systems. For the purpose of project preparation, rural and municipal schemes will be classified as a function of the vulnerability to contamination, social characteristics and demand of the community, as case A (only local capacity building required), B (capacity building and limited physical intervention), or C (capacity building and substantial physical intervention) and their numbers estimated. Selection and eligibility criteria iterated here will be further developed by the PMU to prioritize subprojects within these broad categories. During implementation, however, the actual situation in each community/village will determine the type of intervention, to the extent that the number of type A,B,C schemes used for the project's budget calculations cannot be considered as physical targets. A part of this program will be emergency relief, which involves (i) rapid well screening; (ii) information dissemination; and (iii) provision of arsenic-free water and medical help on a temporary basis to communities waiting for the set up of a sustainable water supply. The MoHFW will participate in the survey and health relief activities.

(b) **Improved understanding of the arsenic problem: US$4.4 million**: The exhaustive field surveys will yield baseline data on arsenic contamination and set in place a mechanism for continued monitoring. A National Arsenic Mitigation Information Center (NAMIC) will be set up to collect, manage, interpret and disseminate all relevant hydrogeological, water quality, health, socioeconomic and technical information necessary for PMU to devise strategy, prioritize action and monitor progress. NAMIC will interact with a network of other established research and study agencies that can be providers and users of information. A Technology Assessment Group (TAG) will be set up to review technology options as well as social and economic project approaches in an objective and impartial way. The TAG consists of a fund that will finance study proposals submitted by local research establishments to competitive peer review. A DfID-funded hydrogeological study has commenced to elucidate the origin and extent of arsenic release into groundwater. A laboratory calibration and verification system will be set up to ensure analytical quality control. Funds will be provided to undertake studies and research on all aspects of the arsenic problem. Coordination will be ensured with the Bangladesh Water Development Board, the Geological Survey of Bangladesh, the Bangladesh Atomic Energy Commission, and the Department of the Environment.

(c) **Strengthening of implementation capacity: US$21.3 million**: As part of the on-site mitigation interventions, capacity building measures will include training and development of coordination and supervision arrangements. Capacity will be strengthened within communities (water committees or equivalent), and to the extent necessary, Paurashavas, to implement and maintain the field interventions and manage funds allocated or collected for that purpose. Planning, coordination, supervision and capacity building activities will be implemented within DPHE and at Gram Parishad and higher levels of local government. For the health sector, selective support for capacity building will be included. Assistance on arsenic diagnosis will be provided to medical universities and colleges. Training material will be provided to DGHS (Directorate General of Health Services) medical and field staff, and the Bangladesh Medical Association as apex organization of private and

government medical doctors, to address arsenic-related diagnosis and patient referral[2]. The Project will pilot new approaches in water service delivery as well as in strengthening of the village-level local government. These activities will support the National Safe Drinking Water Supply and Sanitation (WSS) Policy (1998).

2. Key policy and institutional reforms supported by the project:

The Government has recently drafted a National WSS Sector Policy (Annex 8). The policy articulates that the main objective of the Government is to facilitate access of all citizens to basic levels of WSS services and to promote sustainable water and sanitation services. It similarly recognizes the importance of bringing about behavioral changes in order to improve public health.

The policy further states that the goal of the sector would be to recover capital costs through community cost sharing; it would gradually introduce economic pricing for WSS, thereby enhancing local resource mobilization. It recognizes that communities are the focus of all water supply and sanitation activities and that elected local government institutions have a direct role in the planning, implementation and maintenance of WSS schemes. It further recognizes the need for institutional reforms to bring about these changes.

The project supports and/or fits with the following policy and institutional reforms pursued by the Government of Bangladesh: (i) overall administrative decentralization; (ii) recently drafted policy for rural and urban water supply and sanitation; (iii) increased partnership between the formal, private and informal sectors; (iv) health policies implemented under the proposed Health and Population Program; (v) increased intersectoral integration of water management planning; and (vi) mainstreaming the implementation of national environmental priorities. One of the conditions of effectiveness of this Credit would be the submission of this final draft policy by LGD to GOB for approval.

3. Benefits and target population:

Immediate direct benefits would accrue to arsenic-affected communities who will be able to consume arsenic-free water. People who are currently affected by arsenic poisoning would receive advice and be directed to appropriate medical authorities for diagnosis and treatment. Many poor people currently do not have access to safe drinking water or are unable to seek remedial measures. Indirectly, rural and urban dwellers will benefit from the project's capacity building efforts directed at the formal and nonformal sectors and from increased participation of the private sector in water supply. Over the long run, studies of the causes and extent of the arsenic problem will allow better planning of groundwater use and prevent further damage to the appreciable majority of the people of Bangladesh. The project will have more direct interventions in rural areas, where most of Bangladesh's low-income people are, than in urban areas. In urban settings the municipality structure gives a relatively more manageable system for self-regulation and sustainability. The project will therefore target its direct interventions to ensuring that the peri-urban poor and rural people are covered by sustainable water supply and sanitation services.

[2] The project will coordinate health-related activities with the Health and Population Program Project (HPPP) of GOB.

4. Institutional and implementation arrangements:

(a) **Project management structure**: The project will be managed by a PMU headed by a Project Director (PD) who is selected from DPHE staff and appointed by LGD for a period of at least three years. The PMU will be autonomous with respect to financial, administrative and project management. The PMU will be answerable to a Project Steering Committee in LGD chaired by the Secretary, LGD, with membership from all relevant and associated Ministries and Departments. In addition, the PMU will comprise about 16 professional staff, including deputed government staff, who would be supported by international technical assistance (TA) consultants all hired on a competitive basis through normal GOB and IDA procedures. After initiation of project activities, the establishment of Regional Project Management Units (RPMU) will be planned to facilitate project responsiveness to field needs. A total of three RPMUs are envisaged under the project and overall program, which will be set up after a period of learning and consolidation at the PMU. After the PMU and RPMU are operational and deemed effective, staff from DPHE will be seconded to these entities for extended periods of time for on-the-job capacity development as well as support to the work of the Project. The detailed objectives and responsibilities of the PMU have been agreed on and are incorporated in the PIP.

(b) **Overall coordination, monitoring and evaluation:** To have effective long-term funding and intersectoral collaboration in the implementation of project activities, a Project Steering Committee will be formally established within LGD. This Committee will oversee the activities of the PMU as a virtual "Board of Directors", with the PMU acting as its executive entity. The Project Steering Committee will meet on a regular basis and assess the half-yearly performance report and the annual workplan of the PMU. To coordinate with policymaking in other sectors, the Project Steering Committee will be chaired by the Secretary, LGD, and will include members at senior level from the MoHFW, the Ministry of Water Resources, the Ministry of Finance, the Ministry of Environment and Forests, the Planning Commission, two NGO representatives and two academics. Internal monitoring and evaluation of project activities will be the responsibility of the PMU. External monitoring and evaluation will be contracted out to an entity capable of monitoring key indicators that relate to the Project's immediate results as well as its long-term impact and sustainability. LGD and DPHE capacity in financial management was assessed and actions to reinforce this capacity (appointment of long-term staff and training in financial management, accounting and internal and external controls) as well as detailed financial management mechanisms and reporting formats, were agreed on as a document in the Project File (Annex 8) and are incorporated in the Government's PIP. The Committee will assist the National Steering Committee on Arsenic, headed by the Minister of Health and Family Welfare, in the formulation of long-term policy directions for a continued and sustainable mitigation effort.

(c) **Field implementation**: The project will start with extensive surveys of tubewell water quality and patient assessment in a number of villages and municipalities. Based on this comprehensive assessment, and the community's commitment, an action plan for each village/municipality will be developed. In urban areas, the PMU will establish direct contacts with municipalities so that they may be assisted by DPHE and LGED in proposal preparation and detailed design and implementation of the selected proposals. This will include the participatory design of interventions, appraisal, construction, operation, capacity building, monitoring and evaluation. In rural and peri-urban areas, where there are no operational municipalities to interface with the PMU, community-based organizations (CBOs) will be developed through the assistance of Support Organizations (SOs) such as NGOs. These grassroot entities could eventually become a water subcommittee or equivalent of the new Gram Parishads. In anticipation of this, the PMU will establish operational linkages with DPHE and local government administration at the District, Thana and Union levels. After training, the SOs, in

partnership with CBOs and the private sector, will survey wells; raise local people's awareness in water supply and sanitation; and assist communities in planning, design and implementation of both the short-term mitigation and long-term sustainable access to arsenic-free water and environmental sanitation. Eligible communities will be identified through established eligibility criteria based on the extent of the problem, community readiness for improvement of service through willingness to contribute valuable resources, and community willingness to manage the improved system with its own resources. Criteria will be in line with the new National Policy. All things being equal, implementation of mitigation measures will be based on prioritization criteria based on the level of community contribution for capital investment. This will ensure acceleration of the implementation of mitigation measures based on community demand and ownership of the system. Emergency relief activities will be carefully designed to ensure that they do not conflict with the long-term activities outlined in this section.

(d) **Capacity building:** The project will continuously assist GOB with the enhancement and reform of its sector through a capacity building approach, with the aim to make it more effective in addressing the country's current and future water supply and sanitation challenges. The capacity building instruments include (i) designated training programs; (ii) systems to involve senior and selected DPHE and other government staff in the operation of the PMU and the RPMUs; (iii) short-term involvement (immersion programs) for junior DPHE staff in the field work and, notably, the social activities with the NGOs, carried out by the RPMUs; and (iv) the operation of the PMU and RPMU as a "role model" and "learning platform" to pilot new demand-driven and participatory approaches. In addition, capacity building efforts (notably training) are also directed at (i) local communities; (ii) local government levels as far as they are involved in the arsenic mitigation; and (iii) NGOs and other SOs that have to implement large parts of the community development and the subproject preparation.

(e) **Coordination with external support agencies:** External support agencies that have been active in the sector, and in arsenic mitigation in particular, include UNDP, the DfID, the Netherlands Ministry of Development Cooperation (NMDC), DANIDA, the Japanese government, CIDA, SDC, WHO and UNICEF. During project preparation, external assistance coordination through the Local Consultative Group has effectively ensured the streamlining of multi-donor support to GOB and NGOs acting in the sector. The investments required to deal effectively with the arsenic situation exceed GOB's present capabilities and no one donor is capable of supporting the Government's efforts alone. Donor coordination will be conducted by ERD in consultation with the LCG. Funds have been secured to augment the IDA-funded capacity at the field level to monitor project implementation. As requested by its members, the LCG will increase its technical meetings to provide a mechanism to coordinate specific actions of government agencies, NGOs, and external support agencies. These and other donors have indicated their willingness to participate in the implementation of a coordinated program of assistance. *IDA has finalized consultation with SDC (Switzerland) for cofinancing of the Project and will continue to elicit additional donor financing during Project implementation (Attachment 4 to Annex 2).*

(f) **Flexible approach:** An agreed strategic framework emphasizing sustainable and participatory development of water supply and sanitation will be finalized by negotiations and closely monitored during implementation. Within this framework, individual site-specific investments (subprojects) will be worked out in detail in annual workplans. Throughout the period of project implementation, proposals for the funding of subprojects will be prepared by municipalities and rural communities (with project assistance) and will be reviewed and prioritized according to agreed eligibility and prioritization criteria. As the first subprojects are being implemented, experience with concept, technological options, and institutional options will be

incorporated to improve subsequent subproject design. Similarly, where information is inadequate, different options will be piloted, and lessons learned. Project supervision will be continuous as well (through external and internal auditing and supervision and through external monitoring and evaluation), and annual workplans will be based on progress achieved in the implementation of previous workplans. It is expected that implementation will accelerate after a certain initial lag, and the annual workplans will reflect this acceleration.

(g)**Participatory approach:** It is necessary to mobilize both government and non government capabilities and resources in order to address the local decline of safe water resources and increase in cost of treatment as well as to fulfill the high social content of the project and its geographic spread. On the public sector side, in view of the urgency of the task and its multi sectoral nature, it is important to ensure that a lean, temporary structure that is dedicated to this project be mobilized from existing line agencies, as well as ensuring proper coordination between line agencies and local administrations. Operationally (i.e., with respect to flow of funds), a two-tier system was agreed on: The PMU will review priorities and approve funding that will go directly to the local/field level where activities will be required. At the field level, monitoring of project fund disbursement and supervision of interventions will be performed by local government entities. Overall, the approach will be one of stakeholder partnership with communities at the apex and government as a facilitator.

D: Project Rationale

1. Project alternatives considered and reasons for rejection:

(a)**Learning and Innovation Loan (LIL):** This option would have allowed the direct mobilization of less than US$5 million to tackle urgent issues of research and demonstration of technical and implementation issues. It was felt, however, that (i) a sector approach (water supply and sanitation) is needed, which will take many years to implement; (ii) the funds needed for immediate interventions exceed by far the US$5 million threshold; and (iii) a one-time LIL might delay the initiation of the long-term program that is needed to sustain arsenic mitigation efforts where continuity is important to maintain the partnership between our client, other donors, and the Bank.

(b)**Design as a health project**: The initial indications are that there are relatively few areas where the effects of arsenic contamination have reached the point where large numbers of people are suffering from irreversible arsenicosis. Early stages (1 and 2) of arsenicosis can be completely cured through the consumption of arsenic-free water, although there remains the potential for cancers to develop in the long term. For the population potentially at risk, the critical parameter is also the provision of arsenic-free water. Under these circumstances, the focus is on the provision of an arsenic-free water supply. The project design does include, however, provision for health-related education programs; training in arsenic-related diagnosis; ointments and creams, etc., to alleviate some of the side effects of arsenicosis; and directing people with advanced stages of arsenicosis to the proper medical facilities.

(c)**"Business-as-usual" implementation mechanism:** This would have implied investing in a generally supply-driven program of sinking wells and supplying other systems. The policy of GOB now supports a more decentralized and participatory strategy for the sector. For this reason, the PMU formed for the purpose of the

project, will be intimately linked to DPHE and help GOB in its efforts to "re-invent" DPHE.

2. Major related projects financed by the Bank and/or other development agencies (completed, ongoing and planned):

Donors provide 60% of the investment in the water sector and have been active in the first steps toward a concerted approach to arsenic mitigation. Multilateral support to the sector has come from IDA, ADB, UNICEF, UNDP and WHO. Donors have been active promoters of recent initiatives toward institutional strengthening, decentralization and social mobilization. Several institutions have carried out data collection or community support in relation to arsenic mitigation. These initiatives are valuable and commonly address important site-specific analysis or other particular aspects of the arsenic problem, such as sampling of a limited number of tubewells in a series of villages or doing preliminary studies. The proposed project will build on this acquired data and experience. For example, UNICEF is assisting DPHE in baseline data collection and management. The results of this effort, covering some parts of the area under the purview of the project, will be used in the project to avoid duplication after calibration of a data sample against those of the project. Japanese assistance will provide short-term relief in the form of the rehabilitation of some abandoned surface water supply systems in rural areas constructed earlier under Japanese aid; to ensure sustainability they will adopt the NGO support mechanism described in the project. The ongoing UNDP-funded Emergency Program Team will assist in providing field testing kits and provide feedback for their further improvement. The project will also link with the rural water quality component of the proposed Bangladesh Environment Project, with the health-sector Health and Population Program Project (HPPP) and with the National Water Management Plan, which is being developed under the River Bank Protection Project (RBPP).

3.(a) Lessons learned and reflected in the project design:

Sector issue	**Project**	**Latest Supervision (Form 590) Ratings (Bank-financed projects only)**	
		Implementation Progress (IP)	Development Objective (DO)
Bank-financed			
Poverty Alleviation	Poverty Alleviation	HS	HS
Education	Nonformal Education	S	S
Education	Female Secondary Schools	S	S
Water Supply	Dhaka Water & Sanitation IV	U	U
Water Supply	BWDB System Rehabilitation	S	U
Other development agencies			
Water supply and sanitation (UNDP/World Bank)	Water and Sanitation Program (ongoing)		
Water Supply and Sanitation (SDC)	Pilot on participatory WSS, low cost technologies, community mobilization		
Water Supply and Sanitation (UNICEF)	Several initiatives on installation of handpumps, community participation, hydrological mapping.		

Study (DfID)	Hydrogeological study, cause of arsenic release, modelling of groundwater quality		
Water Supply and Sanitation (DANIDA)	WSS project in coastal areas, both urban and rural		

IP/DO Ratings: HS (Highly Satisfactory), S (Satisfactory), U (Unsatisfactory), HU (Highly Unsatisfactory)

3. (b) Lessons learned and reflected in the project design:

Lessons learnt from previous and ongoing Bank projects in the water sector and in emergency relief in Bangladesh point to the following lessons:

(i) Government's lengthy project approval and fund release procedures should be reduced to a minimum for emergency rehabilitation projects;

(ii) Devolution of implementation responsibility to field staff expedites project performance;

(iii) For multisectoral projects, IDA's supervision responsibilities should be clearly delineated;

(iv) Institutional support needs to be clearly linked to institutional objectives and specific components to have any significant impact; and

(v) Projects based on careful sector and policy analysis and involving agreement on a policy strategy agreed by Government and donors provide a good basis for making politically problematic policy reforms.

4. Indications of borrower commitment and ownership:

GOB shares with NGOs and the donor community the sense of urgency to prevent the loss of human life and illness due to arsenic intoxication. Unfortunately, the pressure to act and the comparatively easy availability of financial support may cause poor coordination, decision making and planning. GOB has solicited Bank support to help address the arsenic problem. GOB has established high level bodies to organize a response to the problem. In 1993, the MoHFW initiated a National Arsenic Steering Committee. GOB has also initiated the establishment of a Secretaries' Working Group on Arsenic, involving the Secretaries of Local Government, Health and Water Resources. The LGD will be responsible for all activities that deal with water supply and determination of the cause of the contamination. GOB's Project Concept Paper (PCP) for this project has been approved. Addressing the arsenic contamination problem is also a specific priority objective in GOB's water supply and sanitation policy. Finally, LGD has clearly indicated its willingness to reform its institutions in order to fulfill its obligations to the people of Bangladesh under this present Project and in the overall water supply and sanitation sector.

5. Value added of Bank support in this project:

As a major provider of funds for water sector reform, poverty alleviation and natural disaster alleviation in Bangladesh, the Bank is in a position to coordinate the institutional and donor response to the situation. The Bank plays a leadership role in aid coordination generally. More particularly, the UNDP/World Bank Water Program is the convenor of the multidonor Local Consultative Group on Water Supply and Sanitation.

Effective coordination of donors has already begun through the early implementation of the Rapid Investigative Phase, which is now being executed by DfID, NMDC and UNDP. The Bank's coordinating role manages to strengthen its partnerships with government agencies as well as NGOs. Further, with an active and large Resident Mission in Bangladesh, and the Dhaka office of the UNDP/World Bank Regional Water and Sanitation Group, the Bank has the requisite in-country presence to maintain and orient the dialogue with GOB, other donors and NGOs.

E: Summary Project Analysis

1. Economic (supported by Annex 4):

[ ] Cost-Benefit Analysis : [x] Cost Effectiveness Analysis:

The benefits from the project will be primarily health related. Other benefits could possibly include time savings. Because of inadequate dose-response relationships between current arsenic levels and ingestion, the health benefits accruing to current arsenicosis alleviated and future cases foregone could not be estimated at appraisal. Interventions will be undertaken in approximately 4,000 villages and 64 urban areas with between 3 to 5 million beneficiaries.

Health awareness activities and testing of wells will be conducted across the whole country, commencing in those areas where large numbers of water sources have already been identified as being heavily contaminated with arsenic. Potentially upward of 40 - 50 million people are likely to benefit in some way from these activities.

The investment component of the project is a line of credit for predominantly village level subprojects, where none of the subprojects have been identified or appraised at this time. The project also provides substantial funds for emergency activities and for institutional strengthening.

Data will become available during the course of the project that will permit a mid-term or ex-post evaluation of the impacts of the project, including health-related impacts.

2. Financial (see Annex 5):

Fiscal impact: With approximately 90% of all project costs to be borne by IDA, the Government of Switzerland and the community, the fiscal impact of the project during implementation is not expected to place any undue financial strain on the GOB. Average annual project expenditure of about US$11 million is relatively small compared to overall government expenditures on water-related infrastructure. Given the nature of the emergency, it is expected that the GOB will provide additional funding to LGD and DPHE to meet its commitments to the project and not expect it to sacrifice other equally important activities.

Operating costs are estimated to be approximately US$3.0 million per annum.

Discussions undertaken with NGOs and information obtained from directly interviewing villagers indicated that the community contribution for capital works are reasonable.

At the local and municipal level, the project design calls for beneficiaries to fund 100% of O&M costs and therefore local government revenues should not be required to maintain facilities built under the project. A key component of the project is to instill a strong sense of community ownership in project facilities, and experience in other projects has shown that where such a strong sense of ownership exists, facilities are well maintained.

Subprojects will not proceed unless there is a clear and unequivocal commitment from the community to be actively involved in the project. Before any work is undertaken, communities must make a formal commitment to collect funds to operate and maintain project facilities. O&M costs are affordable.

3. Technical

Technical issues that will be critically considered in the design of subprojects include: (i) appropriateness of the technology to allow local maintenance and operation; (ii) thorough review of the technical/scientific data as a precondition for long-term policy definition; (iii) consideration of both alternative water supply sources and alternative water treatment methods; (iv) testing of various technical interventions before large-scale application. The range of technical options and interventions is discussed in detail in the annexes.

4. Institutional:

a. Executing agencies: LGD has called for the "re-invention" of DPHE on the basis that it needs (with the water supply and sanitation as a whole) to undertake fundamental reform to make it more responsive to users' demands, private sector interventions and overall GOB policy favoring decentralization and empowerment of local government. The following areas of support to institutional capacity building were identified: (i) ensuring that participatory and gender-balanced policies are implemented in the staffing of DPHE, PMU and other entities associated with the project as well as in their execution of project activities; (ii) supplementing the skills available to the PMU in the areas of demand-driven service delivery, technical know-how in water supply and sanitation and water quality management, including arsenic, and assessment of environmental, social and financial soundness of subprojects; (iii) ensuring effective decision making by new, multisectoral project entities such as the Steering Committee, PMU and NAMIC; (iv) assisting the PMU in the selection, training and monitoring of NGOs associated with the project (the SOs); (v) supporting SOs and other partners (line agencies, NGOs, local government, private sector, academic entities) to deliver information to villages and communities on measures to counteract arsenic contamination; (vi) providing support in the areas of community development and subproject planning and implementation to different levels of decentralized government Permanent Committee of the Gram Parishad, select members of the Ward-level Parishad, the Union Parishad and the Thana Parishad. These local institutions are new, and in many areas they are not yet in place. They will therefore need special attention in capacity building. Guidelines, programs and criteria to implement the above areas of institutional support have been prepared and approved at negotiations as part of the PIP.

b. Project management: The PMU will be within LGD and the procedures for procurement and financial management were reviewed and found to be reasonably adaptable to Bank processing and reporting requirements. Standard Bank reporting documents were provided to LGD, and there was agreement on the following: (i) the appointment of one full-time financial manager in the PMU and each of the RPMUs; (ii) agreement, during negotiations, on a detailed financial management mechanism at the local level, as long as the Parishads are not functional; and (iii) agreement on simple guidelines that prevent misuse of emergency funds.

5. Social:

Consultation with people in arsenic-affected areas showed that there is a good proportion of communities that are well organized, with NGOs working with them in a range of activities. In a nationwide program such as this one, it will be important to monitor that there is some increased attention given to potentially vulnerable groups: (i) people already suffering from arsenicosis and who may be discriminated against because of their symptoms; (ii) disadvantaged and underserved groups; (iii) women and children who may have to walk longer distances to collect arsenic-free water or fetch fuelwood for boiling water; and (iv) the poor and malnourished are at greater risk of arsenic contamination than higher income people because they have less options for water sources and because malnourished people have decreased capacity to resist arsenic contamination.

The social aspects of the project will focus on social intermediation and health and hygiene education. Social intermediation will assist communities to make collective decisions and actions through (a) assisting the community in making choices on technical and service levels available; (b) assisting to make agreements between the various actors during project implementation; and (c) training the communities to operate and maintain the facilities provided under the project.

Health and hygiene education is designed to change individual and community behavior and to assist the community in recognizing environmental problems associated with arsenic contamination and how to become active in solving or containing these problems.

The PMU, RPMU and Project teams working in communities will have specialists in social sciences and participation and will conduct site-specific social assessments as part of the evaluation process for water supply and sanitation schemes. Criteria, guidelines and staffing to initiate implementation of subproject social assessment will be submitted for IDA review by March 1, 1999.

On the issue of possible resettlement of families because of the site of potential water supply, treatment or sanitation, LGD and IDA have agreed that the procedures and guidelines used in previous Bank-supported projects will be adapted to this Project.

6. Environmental assessment: Environmental Category [ ] A[X] B [ ] C

Overall positive effects on the environment are expected from this Project. Disposal of arsenic-rich water treatment sludge is the only aspect of the project that could potentially have a harmful impact on people's health and the environment if proper precautions are not taken. Lessons learned from "typical" sector investments will be applied in addition to project features that are specific to the environmental impact of managing arsenic-contaminated water: (i) hygiene and environmental health messages to communities will be an integral part of the project to ensure the full benefits of increased water supply coverage; (ii) ensuring proper sanitation in rural and urban areas will also be an integral part of any water supply system designed or implemented under the project; (iii) water supplied under the project will be tested for key quality parameters, including arsenic; and (iv) sludge and other arsenic-rich waste material will be disposed of using cost-effective techniques of storage, transportation and final disposal that are environmentally sound. A full assessment of these technologies in Bangladesh's context will be undertaken by TAG which will recommend an interim disposal solution at the same time that the project is developing permanent solutions for the disposal of arsenic-rich wastes.

Even though the institutional and legal framework exists, the capacity of DPHE to undertake routine environmental assessment of subprojects (and arsenic-related projects in particular) is practically nonexistent.

The project will concentrate its environmental capacity building on the establishment of PMU and RPMU positions, supported by TA and support staff, for the environmental review of subproject proposals in the overall framework of Bangladesh's environmental assessment laws and regulations, and in conformity with IDA's guidelines on participatory environmental review and mitigation of impacts. The project will facilitate the participation of the private sector in all relevant aspects of subproject identification and implementation, as well as in the monitoring of the arsenic situation in Bangladesh.

7. Participatory approach:

a. Primary beneficiaries and other affected groups: Given the urgent nature of the project, during project preparation it was not possible to undertake an exhaustive or statistically representative consultation with the primary beneficiaries of the proposed project: the people of urban and rural Bangladesh over practically the entire area of the country. However, in view of the nature of this project, where detailed interventions are designed only during project implementation, the preparation strategy on participation supported two lines of action: (i) selective field visits and discussion groups with villagers and a cross section of NGOs active in grassroot activities of vulnerable and affected groups, their needs, possible response to Project interventions and interface with the project's organizational structure; and (ii) assessing GOB, NGO and community needs for support in ensuring that the planning, design, implementation, and monitoring of subprojects are undertaken with full participation of local people and the vulnerable groups in particular. GOB's new sector policy with its participatory philosophy offers a suitable framework for these individual activities.

b. Other key stakeholders: Project preparation benefited from many consultative activities (only some of them Bank-supported) that were undertaken between key stakeholders in the arsenic crisis. The project will aim to support these consultations during project implementation, with special emphasis on the following stakeholders that were identified in addition to local people in project intervention areas (see Section E.5 above) as needing proactive project support: GOB: line agencies at LGD and other government agencies involved in water, health and environment; Decentralized government entities at the levels of district, union, thana and village; NGOs: involved in capacity building, support to subproject preparation implementation and monitoring; Private Sector: the role of private entities in support of sustainable water supply and sanitation is now explicitly recognized by GOB's policies, and promotion of this role has been identified at various consultations as a priority for the present Project; Supporting Entities: they include academic institutions of teaching and research, think tanks on community/sustainable development, hospitals and health centers, who can contribute knowledge and learning across disciplines; and External Support Entities: including donor agencies, academic institutions, government and regulatory agencies with experience in water quality management (and arsenic in particular). Project support to investment and organizational activities will include arrangements for continued consultation with the above stakeholders.

F: Sustainability and Risks

1. Sustainability:

The Government has drafted a National Policy For the Water Supply and Sanitation Sector for Bangladesh, to incorporate the lessons from the past and to address the emerging challenges ahead. Consideration of freshwater as a finite resource and hence an economic good as well as a social good is the kingpin of the new policy. This is very much in line with the Bank policy for the sector. The challenge for the GOB and other sector

stakeholders is to operationalize the above principles through enabling strategies and institutional arrangements. The basic principle in developing an appropriate strategy is to formulate project rules to guide the communities to choose a particular technological option and level of service based on the economic demand of water. This will ensure optimization of resource through local resource mobilization, reduction in per-capita investment cost and affordable recurrent expenditure for the community. These are the key elements to promote sustainability of service delivery and guarantee the long-term impact of addressing the current arsenic emergency.

2. Critical Risks (reflecting assumptions in the fourth column of Annex 1):

Risk	Risk Rating	Risk Minimization Measure
Health of patients affected by arsenicosis does not improve with clean water;	M	Provide training/support to field health workers and relief treatment;
Use of surface water introduces other water-related diseases;	M	Project includes assessment of overall safety of alternative water supplies;
GOB and donors do not remain committed to the agreed project principles in arsenic-affected areas	N	Consultative and iterative approach to project design and implementation;
Cost recovery of alternative water supply cannot be borne by rural communities and urban consumers;	N	Rates will be based on sound estimates of willingness to pay;
Emergency interventions undermine long-term, sustainable water supply and sanitation;	M	Conditionality on widespread application of cost-recovery;
The Project is correct in the assumed linkages in the natural/socioeconomic system of arsenic contamination;	N	Causalities will be based on rigorous analysis of results of Project studies;
Organizational capacity and internal coherence of local communities and government are not effective;	M	Role of NGOs as the Project's SOs;
The empowerment of local government, CBOs and NGOs is not facilitated;	N	Project covenant;
Number of entities involved is not manageable;	M	Demand-base approach of the Project limits the need for central orchestration;
Partnerships and fair competition are not facilitated at the local level;	M	Decentralized management, at the community level, whenever possible;

Risk	Risk Rating	Risk Mitigation Measure
No effective collaboration of scientific institutions;	M	Project study funds NAMIC supported by the Project
Capable entities for studies and research are not successfully identified;	M	Selection on competitive basis, monitoring;
Effective network of information exchange in Bangladesh and globally is not available;	N	NAMIC;
Project staffing is not based on competition and merit;	M	Agreement with government criteria for staff and consultants
Effective coordination between entities under different Ministries is difficult.	M	Multi sectoral composition of PSC
The project does not contribute to the process of "re-inventing" DPHE	M	Maintain policy dialogue with government fully utilize project potential through operational mechanisms
Overall Risk Rating	M	

Risk Rating - H (High Risk), S (Substantial Risk), M (Modest Risk), N (Negligible or Low Risk)

3. Possible Controversial Aspects:

"Why is it taking the Bank so long to address the arsenic crisis?": The Bank went into action as soon as information on the potential magnitude and gravity of the arsenic crisis was known. It is clear that earlier signs of arsenic contamination (early to mid-1990s) were not isolated events. The issue is how fast we can go to address this crisis. Experience shows that we need to establish very close linkages between emergency relief aid and overall development objectives for the effort to be justified. The time taken in establishing consensus and "rules" around these linkages should be largely justified by the more effective implementation of Project activities.

"How can the Bank justify funding when the problem and its solution are still largely unknown? While the magnitude of the arsenic contamination problem seems to be unprecedented, there is a very good chance we can address it successfully based on existing technologies and participatory delivery mechanisms. The Project is built as a flexible learning instrument with each year's action program agreed based on the year's performance. This should ensure that most of the lessons learned from early mistakes are internalized by the Project.

G. Main Credit Conditions

1. Conditions for Effectiveness:

(a) All conditions precedent to the effectiveness of the Swiss Grant Agreement have been fulfilled;
(b) The letter of Invitation for selection of an internationally recruited consulting firm to assist GOB in the carrying out of the project has been issued; and
(c) GOB has appointed the key staff for the PMU in a manner satisfactory to the Association.

2. Other

A: Implementation:

LGD shall implement in a timely fashion an Action Plan, satisfactory to IDA, for carrying out the Project;

LGD shall:

(a) commencing in 1999, by June 30 of each year or such other date as the LGD and the Association may agree, until completion of the Project, carry out an annual review of the Arsenic Mitigation-Water Supply Project jointly with IDA;

and

(b) one month prior to such review furnish to IDA: (i) a subprogram for the following fiscal year, for approval by IDA; (ii) a report on the Project monitoring indicators; (iii) a review of the implementation of the Action Plan, indicating progress achieved and suggesting remedial actions where needed; (iv) a report assessing progress in achieving the project impacts through participatory means; (v) a review of NGO participation in the programs of LGD and the coordination between the Borrower and such NGOs; and (vi) a review of the status of key donor programs, in addition to the present project.

LGD shall promptly establish and maintain until completion of the project PMU, which shall assist LGD in the planning, monitoring and coordination of the project. In view of the nature of the Project, the PMU will have a level of gender balance to be agreed on between LGD and IDA;

LGD shall ensure, from the outset of the project, that all project works are implemented by CBOs (Committees of Gram Parishad where they exist, or village-level organizations established by project-supported NGOs where Gram Parishad are not yet established) according to standard agreements, satisfactory to IDA, between these CBOs and the PMU.

LGD will submit, by December 31, 1998, for IDA review a draft report on detailed and exhaustive eligibility criteria for subproject investments implemented by PMU based on participatory, environmental and cost-effective principles agreed on at negotiations. The criteria will be finalized soon afterward and applied in all subproject interventions. By March 1, 1999, LGD shall inform IDA that the procedures for environmental and social review of subprojects are in place, as well as all other support mechanisms to ensure the timely development of subprojects;

LGD shall commence by January 15, 1999, a review of the activities of the institutions involved in the water and sanitation sector and subsequently implement a plan, in consultation with the IDA, for increased efficiency and capacity building in the sector with a view to increasing the demand-responsive nature of the sector.

B: Reporting:

LGD shall:

(a) maintain policies and procedures adequate to enable it to monitor and evaluate on an ongoing basis, in accordance with indicators satisfactory to IDA, the carrying out of the Project and the achievement of the objectives of the Project, and in addition prepare the quarterly financial management reports agreed with IDA;

(b) prepare, under terms of reference satisfactory to IDA, and furnish to IDA, on or about March 1, 2001, a report integrating the results of the monitoring and evaluation activities and setting out the measures recommended to ensure the efficient carrying out of the Project and the achievement of the objectives of the Project following such date; and

(c) review with IDA, by April 1, 2001, or such later date as IDA shall request, the report referred to in paragraph (b) of this Section, and, thereafter, take all measures required to ensure the efficient completion of the Project and the achievement of its objectives, based on the conclusions and recommendations of the said report and IDA's views on the matter.

H. Readiness for Implementation

[ ] The engineering design documents for the first year's activities are complete and ready for the start of project implementation. [X] Not applicable.

[x] The procurement documents for the first year's activities are complete and ready for the start of project implementation.

[x] The Project Implementation Plan has been appraised and found to be realistic and of satisfactory quality.

[ ] The following items are lacking and are discussed under loan conditions (Section G):

I. Compliance with Bank Policies

This project complies with all applicable Bank policies.

Task Team Leader: Nadim Khouri

Sector Manager: Michael Baxter

(S.V. IYER)

Pierre Landell-Mills, Country Director

Annex 1

Bangladesh - Arsenic Mitigation-Water Supply Project

Project Design Summary

Narrative Summary	Performance Indicators	Monitoring & Supervision	Assumptions (risks)
Sector -Related Country Assistance Strategy Goals: Improve access of the poor to basic services; Improve rural infrastructure; Develop a land/water management strategy.	Increased capacity at local level (rural villages, and towns) to plan, operate and maintain water supply and increased capacity with national service agencies to support this; Lessons learnt from the project are integrated in water resources management plans.	Statistics on water supply coverage and institutional capacity of LGD, UNICEF and RWSG-SA; Statistics on public health of MoHFW; Water management plans; CAS discussions and review.	**(From Goal to Bank Mission)** Adequate availability of good water resources; Project does not divert resources from other priority water supply programs; Institutional linkages expand between project and other water management agencies.
Development Objective: Reduce mortality and morbidity in rural and urban population caused by arsenic contamination of Bangladesh's groundwater within sustainable water supply, health and water management strategies	1. Quantity of arsenic ingested by most of the population at risk is significantly reduced; 2. Coverage of sustainable safe water supply increased; 3. Increased percentage of treated arsenicosis patients in the project areas.	Reports and statistics of LGD, MoHFW, third-party monitoring and donor coordination, PMU and others.	**(From Development Objective to Project)** Stakeholders learn lessons from successes and mistakes of current project to continue with the long-term investment program.
Outputs: 1. Rural and urban infrastructure for water supply and sanitation and for water treatment in arsenic-affected areas. Selective emergency health and water supply interventions. Design of investment plans to expand sustainable water supply and sanitation;	1.1. Increased awareness in all arsenic-affected areas (occurrence, effect and testing); 1.2. Arsenic-free, safe, drinking water in 4,000 villages covered by the project; 1.3. Sixty-four municipalities surveyed and arsenic mitigation strategies developed for implementation; 1.4. Decrease of the time required to supply local populations with short-term supplies of safe water while long-term options are evaluated.	1. Records of Ministry of Local Government, Rural Development and Cooperatives 2. Records of NGOs 3. Records of PMU (NAMIC)	**(From Outputs to Development Objective** 1 Health of patients affected by arsenicosis does improve with clean water 2 Use of surface water doesn't introduce other water-related diseases 3 GoB and donors remain committed 4 Community can be organized to bear O&M costs and - % of capital costs. 5 Emergency interventions do not undermine long-term, sustainable water-supply and sanitation 6 The Project is correct in the assumed linkages in the natural/socioeconomic system of arsenic contamination.

2. Sustainable water supply and treatment strategies and technologies. Description of the origin of arsenic and processes of groundwater contamination in Bangladesh and options for policy implications.	2.1. Improved knowledge of extent and origin of arsenic contamination and potential water policy implications available for participatory decision making; 2.2. Improved mechanism for data analysis and exchange; 2.3. Increase in number of options of technologies and delivery systems for water supply in arsenic-affected areas;		
3. Strengthened, decentralized technical and socioeconomic capacity to prepare and execute participatory and rural/urban water supply projects. Collaborative institutional framework to: (i) prioritize on-site arsenic mitigation interventions; (ii) test technologies and delivery mechanisms; and (iii) disseminate information.	3.1. Increased capacity of communities, local and central government, NGOs and the private sector in participatory planning and design, and in O&M of water supply systems; 3.2. Increased capacity of DPHE to support demand-driven and decentralized water and sanitation projects, through (i) improved skills mix, (ii) enhanced internal procurements, (iii) appropriate mandate in sector policy. 3.3. Improved cost recovery in rural and urban schemes; 3.4. Good quality annual plans produced and processed timely; 3.5. A substantial number of CBOs organized, empowered and operational; 3.6. Population in all arsenic-affected areas is aware of its occurrence, effect, and how to obtain test and mitigation advice.		

Project Components/ Subcomponents):	**Inputs: (Budget for each component)**	PMU progress reports; NGO reports; Local government reports; IDA supervision reports; Audit reports; Donor coordination reports;	**(From Components to Outputs-Risks)**
1. On-Site Mitigation: Urgent health interventions; Emergency water supply; Sustainable rural water supply/sanitation; Sustainable urban water supply and sanitation; Community education and participation.	US$ 18.7 million		Organizational capacity and internal coherence of local communities and government are effective. The empowerment of local government, CBOs and NGOs are facilitated. Number of entities involved is manageable. Partnerships and fair competition are facilitated at the local level.
2. Improved Understanding of the Arsenic Problem: Data-base on arsenic contamination, water quality, socioeconomic conditions in arsenic-affected areas; Studies and research in arsenic-affected areas on: participatory planning and implementation of appropriate technology for water supply and sanitation; cost-recovery in rural and urban schemes; appropriate technology for testing and arsenic water treatment; hydrogeology and geochemistry of arsenic in groundwater; land-use/arsenic interactions.	US$4.4 million	PMU reports; research institution reports; IDA supervision reports; Audit reports; Donor coordination reports;	Effective collaboration of scientific institutions. Capable entities for studies and research are successfully identified. Effective network of information exchange in Bangladesh and globally.
3. Strengthening of Implementation Capacity: Capacity building in project management and subproject appraisal. Capacity building on arsenic mitigation and participatory water supply and sanitation at the levels of communities and	US$ 21.3 million	PMU reports; IDA supervision reports; Audit reports; Sector Policy documents; NGO documents; Donor coordination reports.	Project staffing is based on competition and merit. Key project staff who are effective are kept for at least three years. Effective coordination between entities under different Ministries.

villages, local and central government, DPHE, private and government laboratories, NGOs, health workers, physicians and medical students. Monitoring and support to the implementation of Bangladesh's National Water Supply and Sanitation Sector Review.			

Annex 2

Project Description

The Project includes the following three components:

I. On-site Mitigation

II. Improved Understanding of the Arsenic Problem

III. Strengthening of Implementation Capacity

I.On-site Mitigation (US$18.7 Million)

I.1 Strengthening and Operation of the Project Management Unit (PMU).

The Project will serve as a multi-agency umbrella effort, facilitating GOB, donors/lenders, NGOs, local governments and other interested parties to mount a well-coordinated and strategically aligned effort in Arsenic Mitigation-Water Supply/Sanitation services. The PMU will be responsible for overseeing and managing the Project and for ensuring that all project components are implemented according to agreed criteria. At field level, the PMU will have (during the three-year first phase) three Regional Project Management Units (RPMUs) at its disposal. The project will support this institutional setup with technical assistance, training and logistic support.

I.2 Implementation of Community Interventions and Water Supply/Sanitation Schemes

Each intervention in a village or municipality consists of a sequence of actions;

The typical sequence of actions is:

strategy development and planning at a District or Thana level;

assessment of the situation in villages/municipalities together with simultaneous engagement in a discussion with the community and with local government; where contamination is excessive, health has already deteriorated and no good water supply alternatives are available, drinking water will be provided on a short-term relief basis;

development of a community-based organization that is able to sustain remedial activities, in particular the operation and maintenance of alternative water supply/sanitation infrastructure, and is willing to contribute 20-40% of capital costs;

preparation of a technical and financial proposal together with the community;

submission of proposal to PMU and vetting of proposal;

implementation of the proposal; community takeover of O&M responsibilities;

audit, evaluation and monitoring of project impact and of groundwater quality.

I.2.(a) Urban Interventions and Water Supply Schemes

The Project will undertake to determine appropriate intervention strategies for urban areas, examining the institutional, economic, social, technology and health issues involved. The schemes will be allocated to both engineering agencies as a function of their prior relationship with the selected towns. It is expected that 64 Pourashavas will be surveyed and follow-up interventions will be designed and implemented in this project or through other investment sources.

I.2.(b) Rural Water Supply Interventions and Schemes

This first-phase project will survey approximately 4000 rural arsenic-affected villages. The total number of villages that is considered "at risk" and needs to be surveyed is estimated at 43,000, of which possibly 21,500 will need further assistance. The project envisages a participatory, community-managed approach in which the principal users themselves, assisted by SOs, are involved as key decision makers in all three kinds of interventions. This will take place in coordination with, and facilitated by, local government. In full schemes, or type C schemes, this would entail enabling and capacity building of communities, and include community-based assessment, analysis, planning, execution and operation and maintenance of their own water supply and sanitation schemes; developing strategies to mitigate arsenic problems in their communities; and improving overall management of environmental resources. In line with well-established community-organizing efforts by NGOs in Bangladesh, this also implies an effort to bring women and poorer groups into the decision-making efforts through effective targeting within communities and creating an environment in which they are enabled to play greater roles at all project stages and also be strengthened through a variety of women's development initiatives.

II. Improved Understanding of the Arsenic Problem (US$4.4 Million)

Bangladesh is faced with an enormous task of initial investigation and subsequent monitoring on a continuing basis of the status of its current water supply system, primarily the status of potentially affected groundwater tubewells in an estimated 43,000 villages and 250 towns. This constitutes about 50% of its overall drinking water sources.

Data being collected by DPHE, National Institute of Preventive, Social and Occupational Medicine (NIPSOM), Bangladesh Water Development Board (BWDB), professional/educational institutions, NGOs and other agencies need to be systematically analyzed, compiled, and made accessible for informing key strategic decisions for mitigation of the problem. Support to strengthening such data collection will be provided by the PMU. A National Arsenic Mitigation Information Center (NAMIC) would be established as part of the

umbrella project, as a cell located within the premises of DPHE, and staffed with hired professionals from DPHE, NGOs and professional institutions with the requisite skills to organize existing data, develop and implement strategies for further investigations and monitoring, manage the emerging information and prepare it for use by the PMU and its Strategy Network, as well as others engaged in arsenic mitigation and related activities. NAMIC reports to the PMU and closely interacts with the Strategy Network (Annex 9).

Funds will be provided under a Technology Assessment Group (TAG) arrangement to undertake studies and research on priority aspects of the arsenic problem. TAG will actively develop and work with a network of relevant institutions in Bangladesh to promote and finance focused studies and ensure adequate sharing of existing and new information.

III. Strengthening of Implementation Capacity (US$21.3 Million)

NAMIC will compile and analyze data on the hydrogeological and water quality situation, as well as all other technical, health, economic and social data that are relevant in the development of priorities and a strategy. The NAMIC will comprise one NAMIC manager (Assistant Project Director) who will report to the PD. In addition it will comprise 10 technical and 8 support staff.

Costs include operating costs, equipment and vehicles, strengthening of zonal laboratories and arsenic measurement quality control, technical assistance for NAMIC and Zonal Laboratories Strengthening, surveys, and NAMIC training and communications.

Furthermore, the project component includes capacity building activities aimed at all partners; media support; project-related studies (including the TAG), institutional studies; support to private rural initiatives, monitoring and third-party supervision, and, importantly, health-sector development.

Attachment 1 to Annex 2

Selection and Eligibility Criteria

The PMU will select and prioritize Districts, and within these, Union-level regions, in which it will start operations in this first project. Although the information currently is insufficiently comprehensive to decide on an "absolute" priority listing (i.e., in view of the true situation in each locality countrywide), data are already sufficiently complete to conclude that (i) a number of areas are in definite and urgent need of assistance, and (ii) a tentative priority ranking can be attributed to a fairly large number of areas. As the instruments are being put in place to achieve this, the quality and comprehensiveness of the data will improve drastically over the first years, which will allow PMU to plan for expected future projects to expand the program. PMU will limit the number of Districts in which it will operate at the same time, and preferably work in contiguous Unions/Thanas to optimally use resources.

Once a Union is selected, the field teams of SOs, in close coordination with the local government at different levels and with DPHE, will visit all communities/villages, unless convincing technical arguments exist to assume that parts of the Union are incurring no direct or indirect (e.g., caused by local panicking) risk.

The areas are selected based on following criteria:

Intensity of contamination and health status: number of wells contaminated and levels of contamination; and number of arsenicosis patients.

Vulnerability of the population: unavailability of alternative water sources without project intervention, average health condition, and average poverty situation (the poorer and less physically resilient the people, the higher the priority).

Expected willingness-to-pay: the higher the awareness level, the level of local/community organization, and willingness-to-pay, the higher the priority.

Relative accessibility for the PMU teams, and intensity of prior activities of NGOs. Expected progress rate that can be achieved, with priority given to those areas where the highest progress rate is expected.

The project should not put the hard-core poor into a disadvantaged position. Each community/village in the area is assessed individually with respect to the contamination degree, health status, vulnerability, willingness-to-pay, and the remedial measures. The remedial measures may differ from one community/village to another, and can take the forms as described as the cases A, B and C. However, although for planning purposes a certain assumption is made regarding the number of cases in these categories, this does not imply that these numbers are targets to be achieved.

The criteria that a community/village has to meet to be eligible for funding comprise:

The local survey conducted by the SO confirms the seriousness of the contamination of the well water, the poor health status, and the populations' vulnerability.

Commitment to the remedial measures, as measured by willingness-to-pay. The communities/villages, assisted by SOs, will set up an organizational structure capable of implementing, operating and maintaining the measures and the (comparatively simple) infrastructure. Contribution to the capital investment will be across the board 40% of the capital value of the physical works; however, under conditions of below-average income levels combined with above-average expense of the required technical solution, this contribution may be lowered by the PMU to 20-40%. The community/village will bear the O&M costs.

The proposal endorsed by the community/village will seek the least-cost technical option appropriate for that locality. If the community/village proposes a solution that is deemed more expensive, then the community/village will bear the incremental cost.

The proposal meets generic World Bank requirements regarding social acceptability of the technology and institutional arrangements and environmental soundness.

Attachment 2 to Annex 2

Action Plan (as per Negotiations)

1. By August 31, 1998, LGD to finalize the Project Implementation Plan, reflecting the results of negotiations.

2. By October 31, 1998, LGD to finalize the implementation plans for emergency activities that are to be covered under this project and initiate implementation;

3. By October 31, 1999, LGD to finalize agreement with the entity selected for NGO screening and monitoring in their role as SOs;

4. By November 1, 1998, LGD to agree with IDA on the first batch of studies to be carried out this year;

5. By April 30, 1999, LGD to complete negotiations with the entity recruited internationally for technical assistance;

6. By January 31, 1999, LGD to contract out third-party supervision responsibility, subject to mutual agreement between LGD and IDA on the first batch of studies:

a) By March 1, 1999, LGD to initiate a study on the poverty dimension of the project and on cost-sharing arrangements on the poor's livelihood and capacity to benefit from the project;

b) By July 1, 1999, LGD to share with IDA the results of initial studies on field test kits for arsenic and emergency treatment processes and include these lessons in LGD's emergency interventions under the Project;

c) By July 1, 1999, LGD to initiate a study on safe disposal of arsenic-rich by-products with IDA and to agree on follow-up actions with IDA;

7. By January 1, 2003, LGD to complete a study on the evaluation of this Phase I project and the rationale and scope for a follow-up project, building, in particular, on estimates of people's willingness to pay for project outputs.

8. During the first annual review, the Borrower shall share with the Association the finalized water supply and sanitation sector policy.

Attachment 3 to Annex 2

Policy/Institutional Reform Matrix

ISSUES	ACTIONS	INDICATORS
1. Institutional reforms in the water supply and sanitation sector	Set up arrangements that facilitate communities' participation in planning, implementation, financing and O&M	
	- *Sector policy review, emphasizing new larger roles for local governments, communities, NGOs and private sector*	Review initiated by Jan. 15, 1999. Review endorsed by Parliament, Governmental agencies, and NGOs; and supported by donors by 2000.
	- *Financial analysis of sector, preparing for a larger role in planning and investment for local governments, communities and private sector*	Supportive of policy review. In accordance with concepts developed in the Arsenic Mitigation Project. Commitment to be sought by Dec. 31, 1999.
	- *Sector policy reform*	Started in 1999. Consistent with concepts and lessons developed in Arsenic Mitigation Project.
	- *Development of a capacity building support plan for local governments and communities*	Completed in 1999. Consistent with Policy Review and concepts and lessons from Arsenic Mitigation Project. Support acquired by 1999 to implement the plan. Plan implemented by 2005.
	Reformulate the mandates, functions, goals, structures and skills of technical sector agencies	
	- *Institutional study of Sector agencies*	Study initiated by Jan. 31, 1999, endorsed by GOB and supported by donors.
	- *Development of a capacity building support plan for DPHE*	To be decided based on the institutional study. Consistent with Policy Review and concepts and lessons from Arsenic Mitigation Project.

ISSUES	ACTIONS	INDICATORS
	- Legal and administrative steps to implement the above	Decided after the above reviews and before the follow-up phase to this Project.
2. Cost sharing	Implement cost sharing in all GOB WS investment projects	On all subprojects under this Project from 1998. On all GOB water supply investments after adoption of the National Policy.
	- Study on willingness-to-pay and demand responsive approaches *- Structured learning about effective demand-responsive mechanisms through field pilots*	Completed and endorsed 1999. Started 1998. Ongoing thereafter.
3. Devolution of decision making in planning and operation	Project works are implemented by CBOs according to standard PMU-CBO agreements, developed with IDA, and prior to starting on-site mitigation activities. Technical agencies are reorganized with main capacity at local (Thana) level. Technical agencies adjust skills mix by hiring substantial numbers of community development specialists, accounting and financial experts, and training and communication experts.	Started in pilot areas, and in Arsenic Mitigation Project in 1998. Decentralization process initiated in 1999, consistent with Policy review, capacity building, and concepts and lessons from Arsenic Mitigation Project. Completion of reorganization expected by 2003.

Attachment 4 to Annex 2

Proposed Framework for Donor Collaboration

Background:

The Government of Bangladesh and other local stakeholders in the current arsenic crisis have rightly requested the assistance of different external assistance agencies to address the various aspects of understanding and combating the problem. During preparation of the present Project, and as reflected in the different mission aide-memoires, consultations were made, under GOB's guidance, with the donor community inside Bangladesh. The Local Consultative Group for Water and Sanitation (LCG) provided the forum for such consultations that resulted in a number of concrete actions including: (i) launching of a GOB/UNDP emergency operation that covered tens of highly contaminated villages; (ii) launching of a GOB/British Geological Survey study for the understanding of the causes and extent of arsenic release into the groundwater; and (iii) participation in local, regional and international consultations on the subject of arsenic contamination. Other initiatives, unrelated to the preparation of this project, were also initiated by entities such as UNICEF, WHO, ADB and a number of bilateral agencies involved in the water supply sector.

The Issue:

There is an emerging consensus on the fact that, even more than other emergencies, this particular arsenic situation, to be manageable in the long run, needs to merge very explicitly the short-term "relief" requirements with long-term development needs. For example, one-time testing of all wells, even if achievable, would not be enough. Wells that test negative one day could become contaminated a month, a year or 10 years later. It is therefore very important to design a cost-effective and financially and socially sustainable water quality monitoring system. Because of the linkages between such a system and numerous investments in Bangladesh, GOB has an interest in having donors coordinate their strategy and actions in controlling the arsenic situation. Other issues that necessitate consultation between GOB and among donors include, for example, policies for cost-sharing by communities, overall institutional change for participatory water supply, etc. This addendum to IDA's Project Appraisal Document identifies the key components of a framework to facilitate donor coordination during Project implementation.

Elements of the Framework:

It is suggested that, with GOB's approval, external support agencies endorse a collaborative framework that would have the following elements:

a) **Information sharing:** covering (i) progress achieved by GOB in carrying out projects/studies related to arsenic/water supply issues; (ii) effectiveness of financial arrangement in respective projects; (iii) change in the level of funding of related activities; (iv) the LCG as having the responsibility of assisting GOB's PMU and donors with

channeling of information regarding external support to arsenic mitigation; (v) subject to GOB's consent, the organization of regular joint reviews of related activities; and (vi) annual joint meetings to evaluate GOB's and donors' overall progress in addressing the arsenic emergency within the context of policy and institutional reform adopted by GOB.

b) **Financing Plan:** as a result of the annual joint meetings, external donors would consider GOB's funding requirements and would indicate their respective levels of funding and whether this funding will be joint or on a parallel basis. (Note that the Arsenic Mitigation-Water Supply Project is being arranged with co-financing between IDA and SDC but that consultations are ongoing for parallel financing of activities, not covered under the Project, with DfID, UNDP, DANIDA, Dutch NMDC and others. The proposed framework would formalize these consultations and make them responsive to changes in the arsenic situation and GOB's needs.)

c) **Procurement and Administration:** modalities and responsibilities will be determined depending on the type of financing arrangement (co- or parallel financing).

d) **Remedies:** At the time of the annual meeting, each participating donor will be able to incorporate, in its agreement with GOB, a cross-default clause in respect to the financing provided by other donors.

e) **Supervision:** To assist GOB and donors in the above work, GOB and a number of donors have already indicated their preference for the use of existing collaborative mechanisms. It is therefore suggested to have the current LCG coordinator, the Dhaka unit of the UNDP/World Bank Water Supply and Sanitation Program (the UNDP/WB Program) supplemented with 2-3 persons who will supervise the above framework and report back to GOB and the donor community on all aspects of implementation of the collaborative framework. The UNDP/WB Program would consult with GOB and donors and estimate the level of support needed for supervision of this collaborative framework.

Implementation:

Immediately after Project negotiations, and with GOB's concurrence, IDA will intensify its contacts with other external support agencies to discuss and finalize a collaborative framework that could be along the above lines and could be managed in partnership between the LCG and the PMU. It is recognized that the present Arsenic Mitigation-Water Supply Project is only the first phase in a longer program of support to the sector as arsenic problems are being addressed. Therefore, at the end of this phase I project, and in addition to the annual review meetings, there will be an in-depth review of overall Project achievements and agreement on co-financing of subsequent phases of this support program.

Annex 3

Bangladesh - Arsenic Mitigation - Water Supply Project

Estimated Project Costs

Estimated Projects Costs
(in million US$)

	Local	Foreign	Total
A. On-Site Mitigation			
1. Provide emergency/temporary water supply	7.3	0.1	7.4
2. Participatory appraisal of subprojects	1.7	-	1.7
3. Establish sustainable rural systems			
Community development	5.2	-	5.2
Design & Construction	6.5	-	6.5
Subtotal Establish sustainable rural systems	11.7	-	11.7
4. Establish sustainable urban systems			
Institutional Development	0.6	-	0.6
Design & Construction	4.3	-	4.3
Subtotal Establish sustainable urban systems	4.9	-	4.9
5. Provide limited health relief for arsenic-affected patients	0.2	0.2	0.4
Subtotal On-Site Mitigation	25.8	0.3	26.1
B. Understanding of the Arsenic Problem			
1. Undertake well screening & community understanding	2.5	-	2.5
2. Studies			
Causes & Impacts	0.2	0.2	0.4
Social & economic approaches	0.1	0.1	0.1
Groundwater prospecting	0.3	0.4	0.7
Subtotal Studies	0.6	0.6	1.2
Subtotal Understanding of the Arsenic Problem	3.1	0.6	3.7
C. Institutional Strengthening			
1 Support project management	3.3	2.3	5.6
2 Establish capacity for data collection, management & dissemination	2.4	1.6	4.0
3 Establish capacity for technical & social assessment of options	0.4	0.4	0.8
4 Training of NGOs	-	0.2	0.2
5 Capacity building for central & local government officials	1.5	0.5	2.0
6 Strengthen policy & institutional reform	0.5	0.4	0.9
7 Enhance community development	0.5	0.5	1.0
Subtotal Institutional Strengthening	8.6	5.9	14.5
Total	37.5	6.8	44.4

Annex 4

Economic Analysis

1. Benefits

The benefits from the project will be primarily health related such as reduced incidence of arsenicosis, reduced mortality and reductions in other arsenic-related diseases. Other benefits include time savings in bringing clean water from nearby sources, and better overall water use (e.g., of arsenic-rich irrigation water). Due to inadequate dose-response relationships between current arsenic levels and ingestion, the health benefits accruing to current arsenicosis alleviated and future cases foregone could not be estimated at appraisal. Interventions will be undertaken in approximately 4,000 villages and 64 urban areas with between 3 to 5 million beneficiaries. The PMU will develop detailed selection and eligibility criteria for SOs and subprojects to be financed under the project. These eligibility criteria will help ensure that project resources are targeted toward beneficiaries most likely to attain high arsenic-related health benefits. The framework for the eligibility criteria was agreed at negotiations and is included in Annex 2.

Health awareness activities and testing of wells will be conducted across the whole country, commencing in those areas where large numbers of water sources have already been identified as being heavily contaminated with arsenic. Potentially upward of 40 - 50 million people are likely to benefit in some way from these activities.

2. Costs

The total project cost is US$44.4 million, of which the cost of water supply subprojects are US$26.6 million. For subprojects this includes community development activities such as health and hygiene awareness as well as the planning, design and construction of physical works. This figure also includes US$7.5 million for emergency activities, which includes mass awareness campaigns, emergency water supply works and equipment and limited health interventions.

The investment component of the project is a line of credit for predominantly village- level subprojects, to be identified and appraised during project implementation. The project also provides substantial funds for emergency activities and for institutional strengthening.

For individual subprojects, guidelines have been developed for cost sharing. The guidelines were developed after substantial consultation with NGOs, villages and GOB staff.

3. Evaluation Methodology

Subprojects will be based on least-cost analysis. SOs will identify the least-cost technical solution acceptable to the community to provide the minimum quantity of water for drinking and cooking that meets acceptable arsenic and other water quality standards.

4. Least-Cost Analysis During Project Implementation

Detailed manuals will be developed by the PMU to cover all aspects of SO activities to be undertaken as part of the project.

SOs will receive training in how to undertake social/environmental and economic surveys in villages and urban areas. These surveys will help SOs prepare the proposals to be submitted to the PMU for project funding. SOs will show that there is sufficient demand for facilities to be provided under the project. This is fundamental to the demand responsive concept being implemented in this project. The SOs will also show that the least-cost solution is being followed. The process of identifying the least-cost technical solution will be done in close consultation with the community to ensure that facilities meet their expectations, to build a sense of ownership and to develop long-term sustainability. Each subproject, however, will be judged on its own merits from eligibility criteria to be established by the PMU. Some possible technology options are shown in Table 1 below.

The overriding aim will be to deliver clean water to people, which, while focusing on the volume and quality of water, may have other important impacts, especially health. These will be identified. The surveys to be undertaken by SOs will generate a substantial amount of baseline data. Other research being undertaken and the role of NAMIC, acting as a central repository of all arsenic-related data, should permit a mid-term or ex-post evaluation including benefit cost analysis (BCA) of the whole project.

Table 1: Average Incremental Cost per Person Served (in Taka in constant prices)

Technology Option	Population Served	AIC 1/ B Schemes	AIC 1/ C Schemes
a. Iron Removal Plant	200	65.42	52.58
b. No 6 Handpump	150	65.76	52.92
c. Tara Pump	150	67.64	54.80
d. Ring Well	200	76.65	63.81
e. Deep Tubewell	200	84.83	71.99
f. Rain Harvesting	24	91.79	78.95
g. Pond Filtration	500	104.97	92.13
h. Urban B 2/	20,000	141.02	
i. Urban C	50,000		157.37

1/ Average incremental cost per person served at discount rate of 12%.

2/ Urban B is assumed to be areas of relatively light arsenic contamination whereas Urban C is assumed to be heavily contaminated. In this analysis, urban schemes are assumed to be piped; however, they could utilize simple technologies for rural schemes as shown in a. to g. above.

During appraisal a number of different technology options were examined for their appropriateness or otherwise for inclusion in the project. The list of options is not exhaustive and TAG will assess other technology options as they become available. The costs were estimated in terms of the likely number of people that could be served. As data from the project becomes available, it may be possible to compare the cost of each technology option with other impacts such as reduced incidence of arsenicosis or time savings.

Attachment to Annex 4

COST-SHARING GUIDELINES

Rural Schemes

1. Capital Costs: Up-Front Payment: Prior to any construction, the community will make a non-refundable cash payment of 1% of the capital cost as evidence of commitment to the project. The payment will be made into a special Community bank account established for the purposes of the project. Any interest on funds deposited will be transferred to an O&M Fund.

2. Remainder of Capital Cost: Unskilled labor: the community will provide all unskilled labor for construction. Skilled labor and materials: the cost of these items, minus the cash contribution made by the community, will be borne by the project (60%) and the community (39%).

3. Operation and Maintenance Costs: Immediately prior to the operation of project facilities, the community will establish an O&M Fund. The community will make a cash payment, the sum of which will equal 6 months expected O&M expenditure. Each household using the facilities, will be required to pay a fee each month equal to its proportionate use (based on the number of people in the household) of the facilities. The total of such fees will be equal to that particular months actual O&M expenditure.

4. Sinking Fund: At the commencement of operations, the community will establish a Sinking Fund to enable future replacement of capital equipment. The community will decide on the level of contribution to the Sinking Fund and how it should be collected. The agreement by the community to establish such a fund and a decision on the level of contribution to be made, must be approved by the PMU before any construction can commence. Up to 50% of any funds in the Sinking Fund in any one year may be used for developing and planning sanitation programs, which may include construction of sanitation facilities for the community.

NOTE:

The above guidelines will apply to all schemes that do not require an extensive reticulated network that is comprised mainly of individual household connections. Should the community request a scheme that provides for an extensive reticulated network with individual household connections, the guidelines that apply to Urban Schemes should be used.

COST-SHARING GUIDELINES

Urban Schemes

1. Cost Recovery: The concept of "cost recovery" will apply to all urban schemes constructed. Cost recovery means that sufficient funds will be generated to recover 100% of O&M costs (which include replacement costs of minor capital items) and depreciation. Depreciation will be based on revalued fixed assets and estimated on a straight line basis at 5% pa.

A study will be undertaken to determine the optimum strategy to implement the schemes in the urban areas. This will include an examination of the cost recovery guidelines to apply to urban areas.

2. Capital Costs: Up-Front Payment: Prior to any construction, the community will make a non-refundable cash payment of 5% of the capital cost, plus Tk.500 for those households intending to make an individual connection, as evidence of commitment to the project. The payment will be made into a special Community/SO joint bank account established for the purposes of the project. Any interest on funds deposited will be transferred to the O&M Fund.

3. Remainder of the Capital Cost: Unskilled labor: the community will provide all unskilled labor for construction. Skilled labor and materials: the cost of these items, minus the cash contribution made by the community, will be borne by the project (50%) and the community (45%).

4. Operation and Maintenance Costs: Immediately prior to the operation of project facilities, the community will establish an O&M Fund. The community will make a cash payment, the sum of which will equal 2 months expected O&M expenditure.

5. Tariffs: The SO in consultation with the community will establish an equitable tariff structure that meets the objectives of cost recovery, as defined in Section 1 above. This should be designed to ensure that the very poorest members of the community will still be able to obtain water and sanitation services from the facilities constructed by the project.

6. Sinking Fund: All surplus revenues will be deposited into a Sinking Fund, except that up to 50% of any surplus funds in any one year may be used for developing and planning sanitation programs, which may include construction of sanitation facilities for the community. The Sinking Fund will be used to fund future replacement of capital equipment. The agreement by the community to establish such a fund and a decision on the level of contribution to be made, must be approved by the PMU before any construction can commence.

Annex 5

Bangladesh - Arsenic Mitigation - Water Supply Project

Financial Summary

US$ million Base Year = 1998

	98/99	99/00	00/01	01/02	02/03	TOTAL
Project Costs						
Investment	8.3	10.9	17.3	4.9		41.4
Recurrent	0.7	0.7	0.8	0.8		3.0
Total	9.0	11.7	18.0	5.7	0.0	44.4
Financing Sources						
Government of Bangladesh	5.0	2.4	4.6	-5.2	-1.9	4.9
IDA	3.5	7.9	10.8	8.3	1.9	32.4
Switzerland	0.5	0.9	0.8	0.9		3.0
Community	0.0	0.5	1.8	1.7		4.1
Total	9.0	11.7	18.0	5.7	-0.0	44.4

*Negative amounts represent inflows into GOB since IDA reimburses half yearly in arrears.

Annex 6

Bangladesh - Arsenic Mitigation-Water Supply Project

Procurement and Disbursement Arrangements

Procurement

Table A: Project Costs by Procurement Methods
(in US$ million equivalent)

	Procurement Method				
	ICB	NCB	OTHER	NBF	Total Cost
1. Works		1.6	8.6		10.2
Construction		(1.4)	(3.7)		(5.1)
					50.0%
2. Goods		2.8	2.4		5.2
Vehicles, Equipment, Health, Furniture, Emergency Program		(1.8)	(1.6)		(3.4)
					65.4%
3. Services			22.9	3.0	25.9
			(21.0)		(21.0)
					81.1%
A. Consulting Services			4.2		
			(4.2)		
B. Training			3.5	3.0	
			(3.5)		
C. Subproject Services			15.2		
			(13.3)		
4. Miscellaneous			2.9	0.2	3.1
Operating Costs, Salaries & Allowances			(2.9)		(2.9)
					95.5%
TOTAL		4.4	36.8	3.2	44.4
% IDA Financed		(3.2)	(29.2)		(32.4)
		72.7%	79.3%		73.0%

(IDA financed in brackets)

Note: NBF = Not Bank-financed (includes SDC cofinancing of US$3 million equivalent)

In a project of this nature, individual site-specific subprojects are developed during the course of implementation, and it is, therefore, difficult to assess with precision the total amount of procurement at the outset and to categorize it into civil works, goods and services. In this annex, more emphasis is given to the processing aspects of procurement (such as review thresholds) than to the definition of exact quantities. Training and technical assistance needs are also identified, with a view to increasing the procurement processing capacity of implementing entities. Procurement schedules including contract packages will be prepared as part of the yearly preparation of work plans by the PMU and agreed by IDA. All figures provided in this PAD, therefore, are indicative. When a contract for goods or works is financed in part or in whole from IDA funds, the Bank's *Guidelines for Procurement under IBRD Loans and IDA Credits (January 1995, Revised January and August 1996, and September 1997)* shall apply. Consultant services financed in part or in whole from IDA funds will be procured in accordance with the Bank's *Guidelines: Selection and Employment of Consultants by World Bank Borrowers (January 1977, Revised September 1997).*

Procurement of goods and works (including related services) will be undertaken in accordance with the following procedures.

(a) **Works (US$10.2 million):** All works are widely dispersed and geographically scattered, and the amount of each such contract will be small (except for one large contract of US$1.6 million in an urban area), are unlikely to attract the interest of foreign bidders and, therefore, will be procured through National Competitive Bidding (NCB) or other procedures. All rural works are of small size, such as sinking of tubewells, installation of handpumps and construction of small-scale water treatment ponds or rainwater harvesting systems and other alternative water supply systems, ranging typically from US$10,000 to US$30,000 for each individual contract. For such contracts, procurement may be made by obtaining quotations from at least three qualified national contractors up to an aggregate amount of US$5.0 million. Where obtaining three quotations is not possible, with IDA's prior concurrence, Direct Contracting (DC) procedure may be followed up to an aggregate amount of US$500,000.

(b) **Goods (US$5.2 million):** Goods procured will consist mostly of vehicles, computers, furniture, and pharmaceuticals. The individual contracts for such goods are expected to be small, costing less than US$200,000. They will not be suitable for procurement under ICB procedure and would, therefore, be procured following NCB procedure up to an aggregate amount of US$2.8 million. Any contract estimated to cost US$200,000 and above will be procured following ICB procedure. Goods required as part of the emergency program and miscellaneous goods estimated to cost the equivalent to US$20,000 or less per contract, up to US$2.4 million in aggregate, may be procured following International or National Shopping procedure (i.e., by obtaining at least three quotations from reputed suppliers). Goods that are suitable for procurement through open competition but are procured from one or more specific firms or enterprises will be considered as Reserved Procurement and will not be eligible for financing under the Credit.

(c) **Services (US$22.9 million):** Services will include Consulting Services (US$4.2 million), Training (US$3.5 million) and Subproject Services (US$15.2 million). Sub-Project Services include Community Development (US$8.9 million), Impact, Site Appraisal & Testing (US$1.7 million), Audit (US$0.8 million) and Emergency Program Services (US$3.8 million) such as the contracting out for promotional campaigns and the training of staff and volunteers on the use of water quality testing equipment. Consulting services for about US$4.2 million will be procured from the international market using the Quality- and Cost-Based Selection (QCBS) method, where international expertise is required to provide support to the project. Other technical assistance and services (e.g., in NGO selection for social mobilization and emergency program activities) are of a nature that would not attract external interest, are also available locally and will be procured from amongst NGOs, national consulting firms and institutions, using the QCBS method as the values of individual contracts are likely to be less than the equivalent of US$200,000. Studies and other sector development activities, estimated to cost less than US$200,000 will be procured from specialized organizations (academic or NGOs) on the basis of Fixed Budget. For such activities if the estimated cost is less than US$100,000, Least-Cost or, with the IDA's prior approval, Single-Source Selection method may be followed. Individual consultants may also be employed on assignments for which (i) the experience and qualifications of the individual are of paramount importance and (ii) teams of personnel and additional professional support are not required.

(d) **Miscellaneous (US$2.9 million):** Miscellaneous procurement covers incremental operational costs. On an exceptional basis, the Bank will fund these operational costs, including incremental salaries for professional project staff.

Procurement Responsibilities

Procurement responsibilities for works, goods and services will primarily be carried out by PMU through an established Evaluation Committee with terms of reference and composition agreed with IDA.

List of Likely Consulting Services Contracts

(Note: only some of the following contracts will be covered within the present project. Others will be financed by additional sources of funding to be identified during project implementation)

Component 1 - On-Site Mitigation and Emergency Relief Works

Media Communication Support & Public Information	US$950,000
Grants to Support Private Rural Initiatives	US$26,000
PMU Training & Evaluation Services	US$250,000
PMU - Short-Term Consultants	US$500,000
PMU - Short-Term Consultants (International)	US$200,000
PMU - Long-Term (Internationally Recruited Consult.)	US$1,300,000

Component 2 - Improved Understanding of the Arsenic Problem

Technical Advisory Group	US$830,000
R&D Impact of Arsenic on Agriculture	US$200,000
R&D Impact of Irrigation on Arsenic	US$200,000
Ground Water Investigations	US$700,000
NAMIC - Short-Term Consultants	US$500,000
NAMIC - Long-term (International Consultants)	US$1,500,000

Component 3 - Strengthening of Implementation Capacity

Urban WS & Sanitation Institutional Strategy	US$500,000
Rural WS & Sanitation Institutional Strategy	US$500,000
Strategy Workshops	US$500,000

Prior Review Thresholds (Table B)

Thresholds for Procurement Methods and Prior Review

Expenditure Category	Contract Value	Procurement Method	Contracts Subject to Prior Review
Works	≤US$30,000	DC (aggregate of US$500,000)	All contracts irrespective of value.
	≤US$30,000	three quotations(aggregate of US$5.0 million)	First two contracts irrespective of value for each year.
	>US$30,000	NCB	First two contracts irrespective of value for each year and all contracts above US$200,000
Goods (including Pharmaceuticals)	<US$20,000	Shopping (aggregate of US$2.4 million)	First two contracts irrespective of value for each year.
	<US$200,000	NCB (aggregate of US$2.8 million)	First two contracts irrespective of value for each year.
	≥US$200,000	ICB	All
Consulting Firms/NGOs (Technical Assistance), Survey, Research and Training	<US$200,000	Fixed Budget	All TORs and contracts above US$100,000.
	<US$100,000	Least-Cost or Single-Source	Single-Source contracts and all TORs.
		QCBS	All TORs and contracts above US$100,000.
Individual Consultants	<US$50,000	Qualifications, References	TORs
	≥US$50,000	Qualifications, References	All

DC: Direct Contracting
NS: National Shopping
NCB: National Competitive Bidding
ICB:International Competitive Bidding
QCBS: Quality and Cost-Based Selection

Prior Review

Prior review by IDA for procurement of goods and works will be limited to the first two contracts for each fiscal year irrespective of value, all direct contracts for works and all contracts estimated to cost the equivalent of US$200,000 or above. All other contracts will be subject to selective post-review by IDA. Such selective post-review of contracts below the thresholds will be carried out for up to approximately 10% of the contracts awarded. The procurement, disbursement and audit team (PDAT) of the Bank's Dhaka Office in Bangladesh or firms hired for the purpose and/or supervision missions will undertake such reviews of sample contracts on an ongoing basis.

IDA's prior review will be required for all Services contracts estimated to cost more than US$100,000 equivalent for firms and US$50,000 for individuals. Other procurement arrangements subject to prior review by IDA will include: all Single-Source contracts with consulting firms, amendments to consulting firms' contracts raising the contract value to the equivalent of US$100,000 or more, amendments to contracts of individual consultants raising the contract value to the equivalent of US$50,000 or more and terms of reference for technical assistance, including studies and training.

Prior to the issuance of any invitation to pre-qualify for bidding or to bid; or the issuance of any request for proposals to consultants, the proposed draft Annual Procurement Plan and the draft Annual Plan for Selection of Consultants for the first year of project implementation will be submitted to IDA for its approval. For subsequent years, these Plans will be submitted by May 31 each year. During the Annual Review, agreement on the procurement plan for items to be procured in the following year will be reached. The progress of procurement will be reviewed as part of the mid-term review of the project. Compliance with procurement requirements and performance standards will be closely assessed.

Disbursement

Allocation of Credit Proceeds (Table C)*

Expenditure Category	Amount in US$ million	Financing Percentage
1. Works	4.60	80% of expenditures
2. Goods	3.10	100% of foreign expenditure, 100% of ex-factory expenditure, and 80% for items procured locally
3. Consultant services	3.54	100%
4. Training/Studies	3.20	51%
5. Subproject Services	12.00	100%
6. Incremental Staff Salaries **	2.10	100%
7. Incremental Administrative Costs **	0.50	80%
Subtotal	29.04	
Unallocated	3.36	
Total	32.40	

* Excludes US$3 million cofinancing from SDC (Switzerland).

** Funding of incremental salaries and recurrent expenditures, on an exceptional basis, due to the urgency of staff mobilization and project implementation.

Disbursement under the proposed Credit will be made as indicated in Table C, which indicates the percentages of financing for different categories of expenditures under the project.

Use of Statement of Expenditures (SOEs)

The following limits will apply to the use of SOEs:

Works: US$200,000
Goods: US$200,000
Consultant: - Firms: US$100,000
- Individuals: US$50,000

Full documentation for all contracts requiring Bank's prior review will be sent to IDA in support of withdrawal applications. Expenditures for individual contracts for works, goods and services, for which prior review by Bank is not required, will be disbursed on the basis of SOEs; all expenditures under categories 4,5, 6 and 7 will also be made under SOEs; all records evidencing such information shall be retained by DPHE/PMU until at

least one year after the Bank has received the audit report for the fiscal year in which the last withdrawal from the Credit is made. For claims submitted on SOE basis all supporting documents evidencing contract awards procedures, bills/invoices and such other information shall be kept at PMU, in an orderly manner, for review by IDA supervision missions.

Special Account

A Special Account in Convertible Taka with authorized allocation of Tk.94,000,000, to meet anticipated expenditures of about four months, may be opened in a commercial bank on terms and conditions satisfactory to IDA. Eligible individual payments greater than one-fourth of the authorized allocation in the Special Account may be paid by the Bank directly to the suppliers/contractors and/or consultants at the specific request of GOB. At the start of the project the authorized allocation shall be limited to Tk.47,000,000.00. The remaining portion (Tk.47,000,000) of the authorized allocation may be requested only after cumulative disbursements reach SDR 5.0 million. The Special Account will be replenished on the basis of reimbursement claims for eligible expenditures received by IDA. Flow of funds from the Special Account to the beneficiary account, especially for the procurement of works through community, will be determined upon review of the staffing of the PMU and RMPU, and will follow the agreed procedures to be finalized by December 03, 1998 (PAD Section 5).

Attachment 1

Procurement Capacity Development

Institutional Capability

DPHE is perhaps the most skilled in handling procurement matters. The Bank reviewed these procedures and found them adequate for the PMU. However, we are faced with new procurement setup because the PMU is outside of DPHE administratively, and because of the deliberate decentralization sought by the project, there is a need to support all project implementing entities with training and technical assistance to raise their capability in procurement processing. The procurement training program will be agreed at negotiations.

Procurement capacity of PMU, being newly formed, is weak. Although some of the Government staff have become aware of the Bank's procurement procedures, further training will be required for key procurement staff. To improve the procurement processing capability, the project would support implementing entities with training and technical assistance.

Acceptability of NCB

To address the shortcomings experienced in earlier IDA-funded projects, NCB procedures will ensure that:

(a) no numerical limitation is placed on qualified firms. Prior registration of local firms may be made a condition of qualification to bid, but unregistered eligible foreign bidders will be permitted to participate in the bidding. Any foreign bidder who is recommended for award of a contract, however, may be required to register before the award is made;

(b) all bidders/contractors shall provide Bid/Performance Security as indicated in the bidding/contract documents;

(c) a bidder's Bid Security will apply only to a specific Bid, and a contractor's Performance Security will apply only to the specific contract under which it was furnished and not to any other losses unrelated to the contract;

(d) receiving and opening of bids at more than one place is discouraged. If this is unavoidable, the bids must be opened at the same time in public immediately after receipt of bids, and the opening statement shall be shared with the bidders;

(e) notice inviting bids should be advertised at least in one widely circulated national daily newspaper. Bidders must have at least 21 days time from the date of publication of

the invitation in the newspaper or the date of availability of the Bidding Documents, whichever is later, to prepare their bids unless specifically agreed otherwise with IDA;

(f) no bid should be rejected on the ground of pre-established percentage (greater or less) of the estimated cost. If, in response to a properly advertised invitation to bid, a single bid is received, it is found to be technically responsive and the price is reasonable, such a bid should be considered for contract award;

(g) re-bidding and/or negotiations of bid prices shall not be carried out without IDA's prior concurrence; and

(h) split award or lottery in awarding of contracts will not be acceptable to IDA. However, in case bidders quote the same price, the contract shall be awarded on the basis of the last three years of satisfactory performance of the responsive bidders.

Annex 7

Bangladesh Arsenic Mitigation - Water Supply Project

Project Processing Budget and Schedule

A. Project Budget (US$000)	Planned (At final PCD stage)	Actual
	240	207
B. Project Schedule	Planned (At final PCD stage)	Actual
Time taken to prepare the project (months)	12	8
First Bank mission (identification)	4/7/97	4/7/97
Appraisal Mission departure	12/05/97	12/05/97
Negotiations	4/27/98	6/29/98
Planned Date of Effectiveness	10/15/98	11/15/98
Prepared by:	Ministry of Local Government	
Preparation assistance: through the help of Dutch and Australian Trust funds and the collaboration of IHE, Delft.		140,000

Bank staff who worked on the project include: T. Ahsan; N. Alam; A. Banerjee; G. Burnett; P. Da Silva; P. Gowers, A, Haque; M. Hoque; B. Kabir (co-Task Leader-Field); Z. Khan; M. Sayeed; K. Scholz, Y. Masuyama, M. Virdy and N. Khouri (Task Leader)
Consultants who worked on the project include: G. Alaerts (co-Task Leader); S. Amin; G. Dent; D. McDonnell; S. Omar-Chowdhury, C. Williams;
Peer Reviewers: R. Boydell; C. Brandon; A. Macoun.

Annex 8

Bangladesh - Arsenic Mitigation Water Supply Project

Documents in the Project File*

A. Project Implementation Plan:

1. GOB's Project Implementation Plan

B. Bank Staff Assessments:

1. Description of the hydrogeological situation and technical options (Situation as of September 1997)
2. Issues and Interventions
3. Linking Relief Interventions with Sustainable Development
4. Institutional Assessment and Strengthening Needs
5. Terms of Reference of Key Project Entities
6. Studies
7. Accounting, Financial Reporting, Auditing and Budgeting Arrangements
8. Potential Future Plans of the Program
9. Training Needs
10. Social Assessment

C. Other:

1. Project Implementation Strategy
2. National Safe Drinking Water and Sanitation Policy
3. Environmental Review
4. Social/Environmental Assessment Framework

*Including electronic files.

Status of Bank Group Operations in Bangladesh
IBRD Loans and IDA Credits in the Operations Portfolio

Project ID	Loan or Credit No.	Fiscal Year	Borrower	Purpose	Original Amount in US$ Millions				Difference Between expected and actual disbursements a/	
					IBRD	IDA	Cancellations	Undisbursed	Orig	Frm Rev'd
Number of Closed Loans/credits: 166										
Active Loans										
BD-PE-37857	IDA31010	1998	GOB	POP AND HEALTH V	0.00	250.00	0.00	247.01	0.00	0.00
BD-PE-40713	IDA30040	1998	GOB	SILK DEV PILOT PROJ.	0.00	11.35	0.00	11.00	-.05	0.00
BD-PE-44789	IDA29950	1998	GOB	PRIV SEC INFR DEVT	0.00	235.00	0.00	224.50	9.88	0.00
BD-PE-9550	IDAN0380	1998	GOB	PRIMARY EDUC DEV	0.00	150.00	0.00	147.81	3.51	0.00
BD-PE-40985	IDA29220	1997	GOB	POVERTY ALLEVIATION	0.00	105.00	0.00	55.24	-6.41	0.00
BD-PE-9482	IDA29260	1997	GOB/DWASA	DHAKA WATER/SAN. IV	0.00	80.30	0.00	63.60	12.35	0.00
BD-PE-9518	IDA29270	1997	GOB	2ND RURAL RDS & MRKT	0.00	133.00	0.00	101.19	6.25	0.00
BD-PE-9484	IDA28150	1996	GOB	AG. RES. MANAGEMENT	0.00	50.00	0.00	39.00	25.50	0.00
BD-PE-9545	IDA27910	1996	GOB	RIVER BANK PROTECTIO	0.00	121.90	0.00	23.09	15.90	0.00
BD-PE-9549	IDA27830	1996	GOB	COASTAL EMBANKMENT R	0.00	53.00	0.00	21.17	20.20	0.00
BD-PE-9560	IDA28220	1996	GOB	NON-FORMAL EDUCATION	0.00	10.50	0.00	7.92	.95	0.00
BD-PE-9496	IDA27350	1995	GOB	NUTRITION	0.00	59.80	0.00	47.22	10.16	0.00
BD-PE-9533	IDA27200	1995	GOB	GAS INFRASTRUCTURE	0.00	120.80	0.00	69.48	45.96	17.59
BD-PE-9465	IDA26380	1994	GOB	2ND ROAD REHAB & MAI	0.00	146.80	0.00	9.96	-26.32	0.00
BD-PE-9509	IDA25690	1994	GOB	JAMUNA BRIDGE	0.00	200.00	0.00	13.27	-2.69	-2.86
BD-PE-9555	IDA24690	1993	GOB	FEMALE SECONDARY SCH	0.00	68.00	0.00	32.11	11.24	8.90
BD-PE-9470	IDA23970	1992	GOB	FOREST RESOURCES MGM	0.00	49.60	3.32	14.85	10.72	1.48
BD-PE-9559	IDA23930	1992	GOB	TECHNICAL ASSISTANCE	0.00	25.00	0.00	4.37	3.48	0.00
BD-PE-9540	IDA22320	1991	GOB	INLAND WATER TRANSP	0.00	45.00	0.00	23.81	23.56	0.00
BD-PE-9542	IDA21290	1990	GOB	RURAL ELECTRIF. III	0.00	105.00	0.00	19.20	11.63	0.00
Total					0.00	2,020.05	3.32	1,175.80	175.82	25.11

	Active Loans	Closed Loans	Total
Total Disbursed (IBRD and IDA):	767.03	5,288.20	6,055.23
of which has been repaid:	0.00	361.78	361.78
Total now held by IBRD and IDA:	2,016.73	4,675.82	6,692.55
Amount sold :	0.00	.37	.37
Of which repaid :	0.00	.37	.37
Total Undisbursed :	1,175.80	13.88	1,189.68

a. Intended disbursements to date minus actual disbursements to date as projected at appraisal.
b. Rating of 1-4: see OD 13.05. Annex D2. Preparation of Implementation Summary (Form 590). Following the FY94 Annual Review of Portfolio performance (ARPP), a letter based system will be used (HS = highly Satisfactory, S = satisfactory, U = unsatisfactory, HU = highly unsatisfactory): see proposed Improvements in Project and Portfolio Performance Rating Methodology (SecM94-901), August 23, 1994.

Note:
Disbursement data is updated at the end of the first week of the month.

Bangladesh
STATEMENT OF IFC's
Committed and Disbursed Portfolio
As of 30-Jun-98
(In US Dollar Millions)

		Committed				Disbursed			
		IFC				IFC			
FY Approval	Company	Loan	Equity	Quasi	Partic	Loan	Equity	Quasi	Partic
1980	IPDC	0.00	1.05	0.00	0.00	0.00	1.05	0.00	0.00
1985/95	IDLC	0.00	.15	0.00	0.00	0.00	.15	0.00	0.00
1991	Dynamic Textile	1.87	0.00	0.00	1.50	1.87	0.00	0.00	1.50
1996	ICT-B	15.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1996	ICT-W	0.00	.38	0.00	0.00	0.00	.01	0.00	0.00
1997	DBH	0.00	.65	0.00	0.00	0.00	.65	0.00	0.00
Total Portfolio:		16.87	2.23	0.00	1.50	1.87	1.86	0.00	1.50

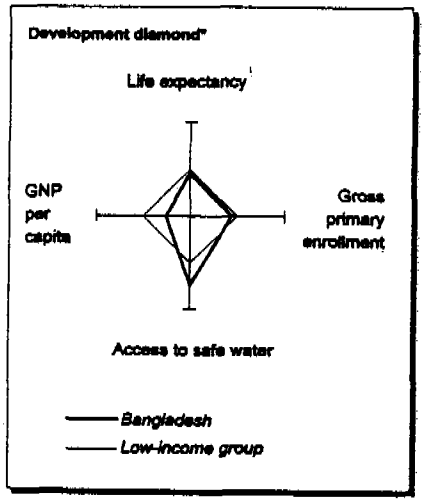
Approvals Pending Commitment

		Loan	Equity	Quasi	Partic
1997	BLCL	3.50	.46	0.00	3.50
1997	DBH	2.50	0.00	0.00	0.00
1998	GRAMEEN PHONE	20.00	2.50	0.00	0.00
1998	IPDC II	10.00	0.00	0.00	0.00
1997	JALALABAD	0.00	15.00	0.00	0.00
1998	KHULNA	22.50	3.30	0.00	29.40
1998	LAFARGE SURMA	35.00	10.00	0.00	0.00
1997	SCANCEM	11.00	1.25	0.00	0.00
1997	WATERGARDEN	6.00	0.00	0.00	0.00
Total Pending Commitment:		110.50	32.51	0.00	32.90

Bangladesh at a glance

1/9/98

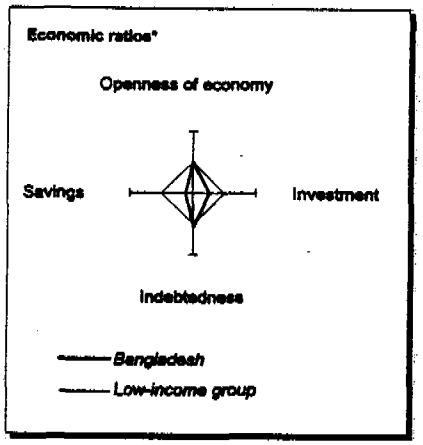
POVERTY and SOCIAL	Bangladesh	South Asia	Low-income
Population mid-1996 *(millions)*	121.7	1,264	3,229
GNP per capita 1996 *(US$)*	260	380	500
GNP 1996 *(billions US$)*	31.2	481	1,601
Average annual growth, 1990-96			
Population *(%)*	1.8	1.9	1.7
Labor force *(%)*	2.1	2.1	1.7
Most recent estimate *(latest year available since 1989)*			
Poverty: headcount index *(% of population)*	48	..	..
Urban population *(% of total population)*	19	26	29
Life expectancy at birth *(years)*	58	61	63
Infant mortality *(per 1,000 live births)*	77	75	69
Child malnutrition *(% of children under 5)*	67	..	..
Access to safe water *(% of population)*	79	63	53
Illiteracy *(% of population age 15+)*	62	50	34
Gross primary enrollment *(% of school-age population)*	92	96	105
Male	98	110	112
Female	86	87	98



KEY ECONOMIC RATIOS and LONG-TERM TRENDS

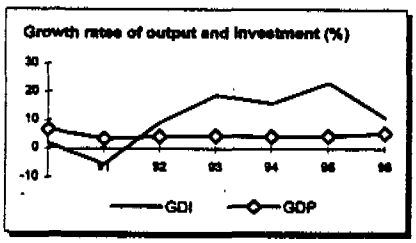
	1975	1985	1995	1996
GDP *(billions US$)*	14.3	15.7	29.1	31.8
Gross domestic investment/GDP	8.1	12.9	16.6	17.0
Exports of goods and services/GDP	2.9	7.4	14.2	14.2
Gross domestic savings/GDP	0.9	2.0	6.3	7.2
Gross national savings/GDP	4.9	9.6	13.1	12.0
Current account balance/GDP	-4.3	-3.9	-3.5	-5.1
Interest payments/GDP	0.1	0.6	0.6	0.6
Total debt/GDP	13.0	43.9	56.0	50.5
Total debt service/exports	23.4	22.4	14.6	11.7
Present value of debt/GDP	..	..	31.4	..
Present value of debt/exports	..	..	166.7	..

	1975-85	1986-96	1995	1996	1997-05
(average annual growth)					
GDP	5.0	4.2	4.4	5.4	6.0
GNP per capita	2.4	2.4	2.8	3.8	7.3
Exports of goods and services	6.0	15.0	34.2	10.6	7.7

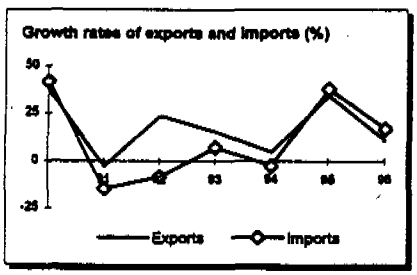


STRUCTURE of the ECONOMY

	1975	1985	1995	1996
(% of GDP)				
Agriculture	62.0	41.8	30.9	30.0
Industry	11.6	16.0	17.6	17.7
Manufacturing	7.0	9.9	9.6	9.6
Services	26.4	42.3	51.5	52.4
Private consumption	95.9	90.6	77.9	79.1
General government consumption	3.2	7.3	13.7	13.6
Imports of goods and services	8.1	18.3	22.5	23.9



	1975-85	1986-96	1995	1996
(average annual growth)				
Agriculture	3.5	1.9	-1.0	3.7
Industry	4.7	6.5	8.4	5.3
Manufacturing	2.9	5.9	8.6	5.3
Services	6.8	5.2	6.9	6.5
Private consumption	..	*0.8*	1.5	5.8
General government consumption	..	*4.8*	5.3	6.5
Gross domestic investment	8.4	8.0	23.4	10.9
Imports of goods and services	7.9	7.0	37.7	16.9
Gross national product	4.9	4.3	4.4	5.5

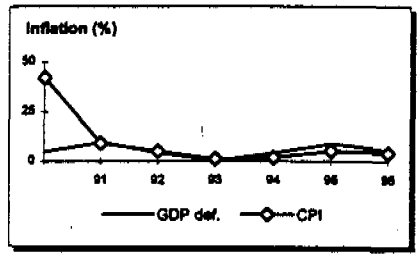


Note: 1996 data are preliminary estimates. Figures in italics are for years other than those specified.

* The diamonds show four key indicators in the country (in bold) compared with its income-group average. If data are missing, the diamond will be incomplete.

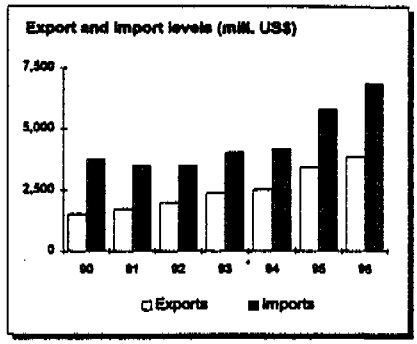
PRICES and GOVERNMENT FINANCE

	1975	1985	1995	1996
Domestic prices				
(% change)				
Consumer prices	21.9	10.9	5.2	4.0
Implicit GDP deflator	..	11.1	8.7	5.6
Government finance				
(% of GDP)				
Current revenue	..	8.5	12.1	11.5
Current budget balance	..	1.3	3.3	2.9
Overall surplus/deficit	..	-9.1	-6.8	-5.8



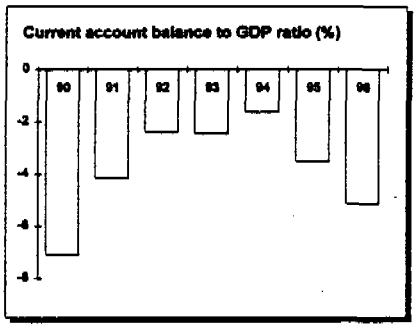
TRADE

	1975	1985	1995	1996
(millions US$)				
Total exports (fob)	..	940	3,473	3,882
Leather	..	70	202	213
Frozen food	..	87	299	315
Jute goods	..	358	319	330
Garments	..	116	1,980	2,548
Total imports (cif)	..	2,647	5,834	6,881
Food	..	607	499	570
Fuel and energy	..	359	209	274
Capital goods	..	691	1,480	1,918
Export price index *(1987=100)*	..	74	186	194
Import price index *(1987=100)*	..	104	127	131
Terms of trade *(1987=100)*	..	71	146	148



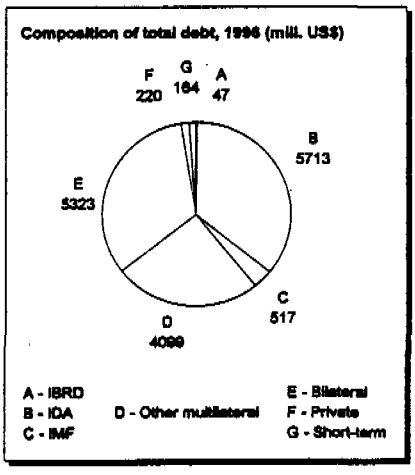
BALANCE of PAYMENTS

	1975	1985	1995	1996
(millions US$)				
Exports of goods and services	427	1,162	4,130	4,508
Imports of goods and services	1,459	2,864	6,545	7,614
Resource balance	-1,033	-1,702	-2,415	-3,106
Net income	-8	-90	-41	-6
Net current transfers	417	1,178	1,426	1,475
Current account balance, before official capital transfers	-621	-613	-1,030	-1,637
Financing items (net)	666	536	1,304	575
Changes in net reserves	-45	77	-274	1,062
Memo:				
Reserves including gold *(mill. US$)*	..	356	3,519	3,790
Conversion rate *(local/US$)*	8.9	26.0	40.2	40.9



EXTERNAL DEBT and RESOURCE FLOWS

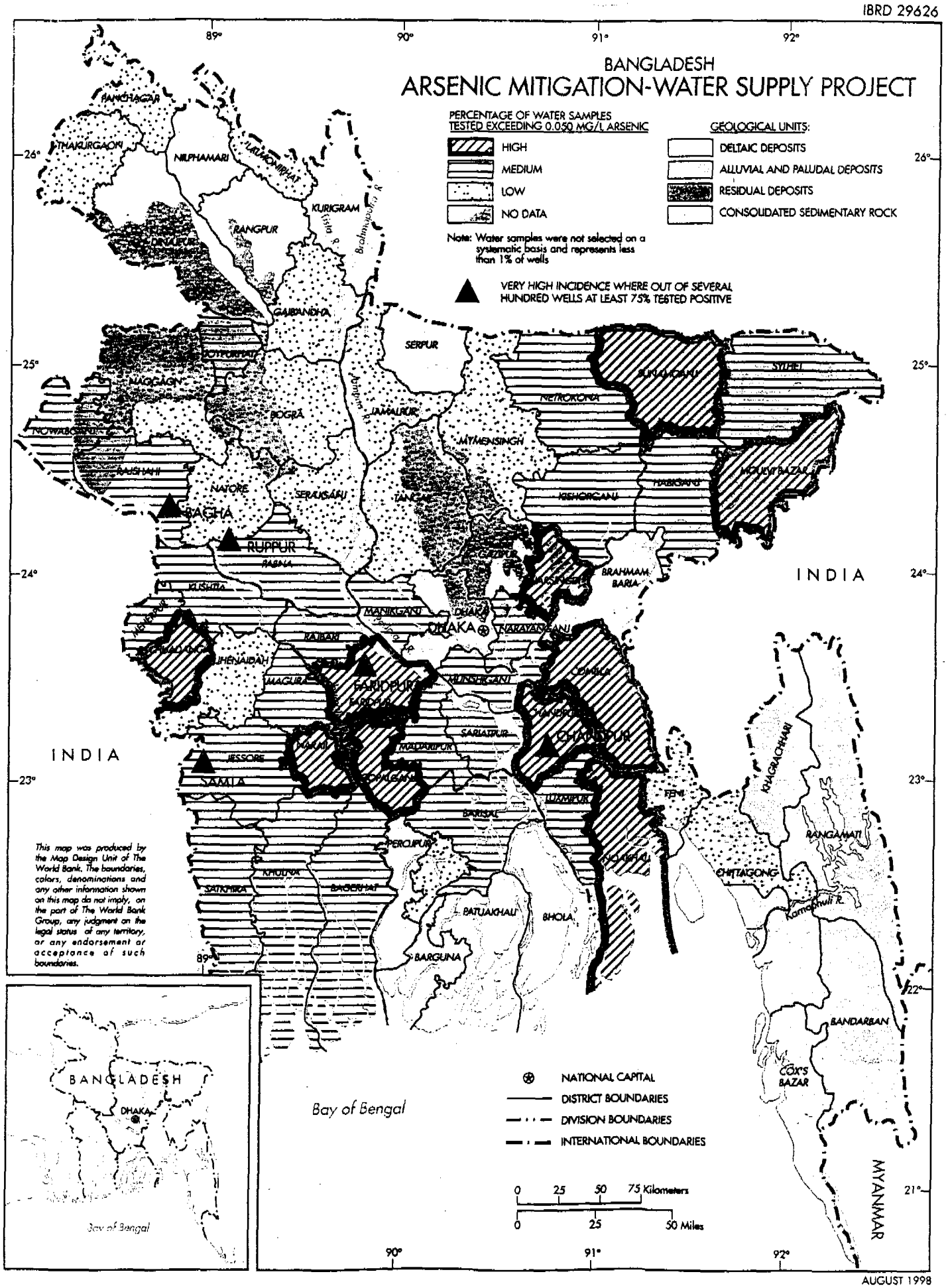
	1975	1985	1995	1996
(millions US$)				
Total debt outstanding and disbursed	1,860	6,870	16,296	16,083
IBRD	55	55	55	47
IDA	295	2,021	5,838	5,713
Total debt service	105	355	802	693
IBRD	0	3	8	8
IDA	2	22	83	92
Composition of net resource flows				
Official grants	315	472	890	619
Official creditors	576	563	218	805
Private creditors	-3	-3	-96	47
Foreign direct investment	0	0	2	..
Portfolio equity	0	0	67	30
World Bank program				
Commitments	205	398	356	168
Disbursements	91	288	197	279
Principal repayments	0	6	46	54
Net flows	91	282	151	225
Interest payments	1	20	46	45
Net transfers	90	262	105	180



MAP SECTION

IBRD 29626

BANGLADESH
ARSENIC MITIGATION-WATER SUPPLY PROJECT



AUGUST 1998