Project Name Bangladesh-Arsenic Public Health Project
Region South Asia Regional Office
Sector Health (100%)
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Borrower(s) GOVERNMENT OF BANGLADESH
Implementing Agency
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1. Country and Sector Background
Bangladesh is facing widespread arsenic contamination of drinking water
obtained from shallow tube-wells, to an extent unprecedented anywhere else
in the world. Millions of shallow tube-wells were installed throughout
Bangladesh beginning in the 1970s, when testing new wells for arsenic was
not routine practice. At present, approximately 97% of the rural
population rely on shallow tube-wells for drinking water, and an estimated
25% of such well water is contaminated with "hazardous" levels of arsenic
from geological sources [based on a 1998-99 British Geological Survey
study; "hazardous" is defined as >50 parts per billion (ppb) and
Bangladesh levels ranged from 0 ppb to 1660 ppb]. Wells with "excessive"
levels of arsenic (variably defined as >50 ppb or >100 ppb depending on
the test method used) have been identified in at least 59 of Bangladesh’s
64 districts, and 249 of the nation’s 463 sub-districts. It is
anticipated that these numbers will rise as more testing is done. In
districts with data, the proportion of contaminated wells ranges from 2
percent to 90 percent, with more contamination in southern districts than
northern. While studies provide a wide range exists for the number of
people exposed (compounded by the different standards of safety used), but
at least 25 million people are said to be exposed to unsafe levels of
arsenic in their drinking water. Chronic arsenic exposure leads to a number of illnesses, including skin lesions, neurological problems, diabetes, and both skin and internal cancers, with the estimated lifetime risk of cancer equal to 1 case per 100 exposed individuals. If this estimate holds true for Bangladesh, then 250,000 people could be at the risk of developing arsenic-related cancers, and many more will experience other health effects. However, because the cancer risk estimate is based on experience in other countries where contamination levels were much higher, the problem affected much smaller sub-populations and the populations differed in terms of genetics, lifestyles, nutrition and health status, the risk for Bangladeshis may be either higher or lower. To date, case-finding has been limited to examinations of skin lesions performed by non-medical personnel in conjunction with well-water testing in some local areas, with only around 10,000 individuals identified in 41 sub-districts (i.e., in an estimated population of 8.2 million), with a prevalence rate of a little over 1/1,000. This figure is not representative of the country, it only relates to skin lesions identified by partly trained non-medical workers and does not reflect prevalence of all arsenic-related diseases. No reliable information exists about the proportion of people already affected, and there is little information about incidence rates which could be used to make reliable projections for the other health outcomes. In addition to the health consequences of arsenic exposure, there are social consequences of arsenicosis, e.g., discrimination against those with skin lesions, loss of self-confidence, perhaps due to unwarranted fears of contagiousness or to mistaking skin lesions for diseases such as leprosy. While no rigorous studies have been conducted on this aspect, there are reports of wives being abandoned by husbands, men losing jobs, and children being turned away from their schools. The strategy to address the health impact of arsenic contamination comprises two elements: prevention of the occurrence of new cases and treatment/care of those who have already been affected (current and future patients). For both prevention and treatment, the single most effective and important step is the stoppage and/or avoidance of drinking arsenic contaminated water. Prevention can be accomplished by education of the general public about the hazards of arsenic in drinking water, in conjunction with ensuring the availability of water testing and suitable options for safe water. Of the 249 sub-districts in which arsenic contamination has been found, comprehensive screening of all tubewells has been completed for only about 60. A concerted effort is now planned by BAMWSF to complete the initial round of screening in all 249 sub-districts by end-2002. Rigorous research into the effectiveness and sustainability of various home-based and community-based safe water mechanisms is underway. A recent short-term study identified three technologies that consistently reduce arsenic to below 50 ppb, and two other technologies that were effective in more than 80% of trials cases, and the longer-term effectiveness of these and other technologies is currently being evaluated. Results are expected in mid-2003. While efforts are underway to evaluate safe water options and some public education has been carried out in local areas, the public education efforts must be scaled up to the whole country and strengthened particularly on the health aspects of the problem. Further, because many Bangladeshis have been using shallow tube wells for 20 - 30 years, arsenic-related health effects may continue to appear even if contaminated water usage were to be ended immediately. Thus, any comprehensive effort to address the problem needs to take care of persons already suffering from arsenicosis and the future cases that are likely to appear, in
addition to efforts aimed at preventing new cases. There is no treatment that is proven to be effective against chronic arsenic poisoning except the stoppage of drinking the contaminated water, though specific cancers, or other conditions arising from arsenicosis could be treated on their own merit. On an experimental basis, patients with non-cancerous skin lesions are being advised to use anti-oxidant vitamins (vitamins A, E, and C) at an estimated cost of 1,500 Taka (nearly US $30) per patient per year. Spirulina (a sea-weed based protein supplement) has also been suggested, at an estimated cost of 6,600 Taka (a little over US $100) per patient per year. The degree to which these treatments may be beneficial has not yet been rigorously evaluated. Some epidemiological data suggest that underweight increases susceptibility to arsenicosis, but the susceptibility is not yet shown to be definitively related to deficits of any particular nutrients. Thus, while recognizing the need to manage the thousands of patients afflicted by arsenicosis, the first pre-requisite is to agree on a standard protocol of diagnosis and management based on an efficacious, safe, affordable and feasible treatment regimen. Such a standard protocol is being developed based on the current level of knowledge about arsenicosis; further studies and field tests will be needed to develop a really robust diagnostic and treatment protocol for all manifestations of arsenics. Experimental approaches need to be scientifically evaluated before general application. Treatments for serious health effects such as diabetes and cancer range from simple out-patient excision of localized skin cancers to much more expensive and/or ongoing therapies such as insulin injections, amputations, chemotherapy, and radiotherapy. For appropriate management and counseling of patients to occur, health care providers must be educated about the causes, signs, symptoms, and management of arsenicosis and its consequences based on currently available evidence. The current lack of critical information extends beyond patient management. Other aspects on which more definitive evidence is needed include: the magnitude, distribution and epidemiology of the health impact in Bangladesh, the clinical progression of arsenicosis (e.g., whether pigmentation and keratosis are good markers of more serious health effects), determinants and risk factors that make for variations in health outcomes among those with similar levels of exposure, most suitable water-testing methods for field use, the most feasible safe water alternatives available to poor rural households, and the food safety issues related to crops irrigated with water containing arsenic. Such lack of information is impeding a full-fledged attack on the public health aspects of the crisis. There is an urgent need for additional well-designed research activities on those aspects and for the development of effective surveillance systems. The potential for widespread arsenicosis is just one of many health challenges faced by Bangladesh. The main causes of disease and death in the country continue to be malnutrition (which may contribute to susceptibility to arsenic poisoning), acute respiratory infections (ARI), tuberculosis, and gastrointestinal (diarrheal) infections. Among children under five years of age, the main cause of death is ARI. Bangladesh has among the highest levels of malnutrition and the fourth largest concentration of tuberculosis cases in the world. Contributing to Bangladesh’s health challenges are marked gender disparities in health status, low levels of education, poor sanitation, and inadequate health care services. The high levels of morbidity and mortality, coupled with rapid population growth, are placing high demands on the health care system. The delivery of services, however, is impaired by low expenditure, inefficient use of existing
resources, and weak institutional and management capacity. This results in the duplication of service delivery; poor quality of care and lack of client-oriented service delivery; underutilization of many public health facilities; a dysfunctional referral system; and inadequate cooperation between the public, private, and non-governmental sectors. The Government of Bangladesh is addressing most of those health issues through the Health and Population Sector Program (HPSP). This program includes sectoral reform to ensure that services are sustainable and can be delivered in a cost-effective and client-focused manner. It involves reorganization, improved sector management, and decentralization. Priority in allocation of public sector resources is given to the Essential Services Package that benefits vulnerable groups, especially women and children. In addition, the government is working through NGOs in the National Nutrition Program and the Bangladesh Integrated Nutrition Project, to enhance community mobilization and community-based nutrition services, and in the HIV/AIDS program to target groups at high risk of contracting and spreading AIDS. Though the present HPSP does not have adequate resources to fully address the arsenic crisis, the Ministry of Health and Family Welfare (MOHFW) has the infrastructure from national to community level, which can help in dealing with the problem. There is a workforce of over 50,000 field workers at various levels who have direct contact with rural people, institutional facilities are available at all levels, viz. district, sub-district, union and community levels. For addressing the critical gender dimension of the arsenic issue, there are designated officials in the MOHFW and its Directorates. Also several examples of collaborative partnership between the Government and NGOs exist. Thus the public health aspects of the arsenic crisis could appropriately be addressed within the framework of the MOHFW’s work program. The response of Bangladesh to the arsenic crisis has been slow to gather momentum. The single largest effort to address the problems caused by arsenic contamination of water has been through the Bangladesh Arsenic Mitigation and Water Supply Project (BAMWSP), jointly financed by the Government, the Swiss Development Cooperation (SDC) and IDA. The $44 million project includes activities to address the immediate problem of identifying affected tubewells and providing alternative sources of arsenic-safe water, and also aims to build capacity at the national and local levels to address the challenge in the longer term. Under BAMWSP, screening of tubewells and preliminary identification of arsenic-affected patients has been completed in 41 sub-districts, and in these areas activities are underway to provide arsenic-safe water supplies. Similar activities supported by other development partners and NGOs cover an additional 61 sub-districts, so that with the next phase of screening under BAMWSP covering 147 sub-districts, it is anticipated that initial tubewell testing and preliminary patient identification will be completed by end-2002 in all sub-districts known to be affected. In addition to the screening and mitigation supported by the project, BAMWSP also provides resources for research, awareness-raising and training. This has included support for the Bangladesh Medical Association to provide training in arsenic patient management to health professionals in six district centers, and 59 sub-district headquarters. In mid-2001 an Inter-Ministerial Task Force was convened to restructure the national arsenic mitigation effort. As a result, a Secretaries’ Committee has been formed to coordinate activities between nine of the most directly involved ministries, and a Groundwater Task Force has been established to develop policy regarding the use of the predominantly uncontaminated deeper aquifer. Arsenic mitigation roles...
have been assigned to a number of agencies, including the identification of the Bangladesh Council of Scientific and Industrial Research as the appropriate authority for validation of arsenic-removal technologies. The need to reinforce the role of MOHFW has also been recognised. Although MOHFW has conducted a few activities to address the arsenic crisis, including the development of some IEC materials and some training of health professionals, there has been no strategic plan to comprehensively address the public health issues related to arsenic at the national level. In fall, 2000, MOHFW requested the World Bank’s assistance in outlining the appropriate public health response to the arsenic crisis. This request was fulfilled in a June, 2001 analytic report entitled "Addressing the Public Health Crisis Caused by Arsenic Contamination of Drinking Water". In addition, MOHFW had previously prepared a document titled "Programme for Reduction of Arsenicosis Due to Drinking Arsenic Polluted Tube Well Water (2000-2004). These documents informed discussions held at a workshop with various stakeholders in July, 2001 to develop a strategy for addressing the public health aspects of the arsenic calamity.

2. Objectives
Bangladesh is said to be facing what has been described as "the largest mass poisoning of a population in history" because more than 25 million persons are estimated to be drinking water that contains hazardous levels of arsenic. Without intervention, approximately 250,000 individuals may eventually develop cancer from the exposure and many more may develop diabetes, neurological problems, debilitating skin lesions, and other health conditions. At this time, the majority of the population is unaware of the hazard and ways to deal with it, their water sources have not been tested; the majority of health care providers have not been trained to recognize and counsel/treat affected patients; and crucial epidemiologic questions about incidence, prevalence, and effective treatments of arsenical diseases remain unanswered. The objective of the Arsenic Public Health Project (APHP) is to assist Bangladesh in reducing the incidence and prevalence of arsenic-related diseases caused by arsenic contamination of drinking water and strengthen national capacity to address public health aspects of arsenic in the long term, including the capacity for surveillance, monitoring and evaluation. The strategies through which the project seeks to prevent new cases of arsenicosis and to improve the management of those already affected are: (1) behavior change communication to educate the general public about arsenic contamination of drinking water, its health effects, how to avoid exposure and the facts about realistic treatment options; (2) enhancing health sector capacity for the surveillance, prevention, diagnosis, and treatment of arsenic-related diseases, including counseling of patients; (3) promoting research on prevalence, incidence, and treatment to enable sound public health planning and intervention; (4) developing patient management tools and techniques for individuals already affected by arsenic. Each of the above four strategies would be developed into a project component - discussed in more detail in section C. The project will be managed as an integral part of the Health and Population Sector Program (HPSP), and will complement arsenic mitigation activities underway within the IDA-financed Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP).

3. Rationale for Bank’s Involvement
While several other development partners are already supporting arsenic
mitigation activities in Bangladesh, the response so far has been limited, localized to selected sub-districts and mostly focused on water supply aspects, with little attention to health issues. Both Government and non-governmental partners have been working on the problem in small pockets, without a comprehensive national strategy. The Bank support to this project is expected to enhance the response both quantitatively and qualitatively, by mounting a more complete, national program within the framework of the MOHFW’s program of activities, in coordination with the consortium of donors who support that program. Bank support will bring additional advantages in areas of economic analysis, capacity-building and inter-sectoral coordination. Close cooperation between the Bank task-teams that work on BAMWSP and APHP (exemplified by considerable overlap of team members and joint participation in missions of both projects) will help ensure coordination between the two projects on the Government’s part as well; further, the BAMWSP experience adds significant value in terms of lessons learnt. The Bank’s access to international experience can help bring a wider knowledge base to bear on the design and implementation of the project. During preparation of the analytical paper preceding project preparation, an internationally recognized expert on the epidemiology of arsenicosis was included as a peer reviewer. Such access to international expertise is particularly important for this project, because so little is known about the epidemiology of arsenicosis and the vast majority of relevant research has been performed in other countries (e.g. Taiwan, India, Chile). International expertise will be utilized in the committee overseeing research under the project. Such international assistance would be obtained through individuals of repute as well as institutions such as the U.S. Centers for Disease Control and Prevention and the U.S. Environmental Protection Agency. Finally, the project strategy of supporting both epidemiological surveillance and cost-effective public health interventions will be in line with the new role of the MOHFW discussed during preparatory activities for the sector’s program beyond June 2003.

4. Description

The project has four components: (a) behavior change communication (BCC) focusing on risk reduction strategies and individual responsibility (to complement the information campaigns carried out by the water sector); (b) capacity-strengthening, including training programs for all health care personnel on identifying arsenicosis and counseling patients and diagnostic facilities; (c) research on the epidemiology, prevention and management of arsenicosis, including pilot activities that could yield scientific data on efficacy, safety, feasibility and costs of treatment options; (d) management of patients, suffering from the consequences of arsenic poisoning. This last component will only be initiated as pilots to field test the feasibility of present treatment options within the public health system. The project will not include water testing or provision of drinking water alternatives, as these activities are under the responsibility of Ministry of Local Government and are being covered under BAMWSP and numerous local NGO programs. The BCC component will focus on risk reduction strategies and individual responsibility. Development of a BCC strategy with participation by important stakeholders will be necessary. BCC will educate about arsenic and arsenicosis, including messages about the non-communicability of the disease, and will urge prevention through the use of safe water, while ensuring that public expectations about patient treatment are realistic (in terms of available
technology, costs, etc.) This activity will coordinate with and complement the information campaigns carried out by the water sector describing water testing and safe water alternatives and will be reinforced by the personal interaction by the field health workers. The campaign can utilize all avenues for public communication, including television, radio, newspapers, banners, signs, pamphlets, school programs, dramas, song, and dance. In view of capacity constraints in the MOHFW to launch effective communication campaigns and organizational issues lingering from the restructuring of the "Unified" BCC unit, most of the BCC activities will need to be contracted out to appropriate firms or organizations in the non-governmental sector; but the coordination of the activities may rest with the UBCC unit of MOHFW. This component will begin immediately and will be nationwide in scope, with local activities timed to coincide with campaigns for water testing and provision of safe alternatives whenever possible. Combined with these campaigns follow up sessions through interpersonal communications by field workers will be organized.

Capacity-strengthening includes human resources, non-human resources (equipment, supplies and facilities), and systems. Based on assessments of in-country capacity on various aspects, including laboratory facilities, behavior change communication, conduct of training, information systems, procurement and logistics and financial management, this component would finance the necessary training, system development (including quality assurance) and minimal infrastructure development where essential. The scope and phasing of capacity-building activities will vary depending on the specific capacity in question and still need to be detailed. The initial training program for health care providers will focus on what is currently known about the epidemiology of arsenicosis, the identification of patients with arsenicosis and those with sequelae requiring referral to treatment facilities, and counseling patients for risk reduction, i.e. by using safe water. A need assessment of training will be worked out. Awareness of responsibilities of MOHFW staff in addressing the arsenic crisis needs to be ensured at all levels. All training will include interpersonal communication skills, and separate technical content will be prepared for health workers of different categories at the primary, secondary and tertiary levels of health care. The training will be conducted by department(s) or institution(s) under MOHFW or contract agencies (to be decided during project preparation based on assessment of institutional capacity). This component will begin immediately and will be nationwide in scope, with providers in areas where no training has been conducted to be reached first. A module will also be developed for pre-service training of health staff so that future generations of health care providers will also be able to manage and counsel their patients. Since training in Essential Services for Health Assistants/Family Welfare Assistants has not been completed yet, there may be an opportunity to include a module on arsenic in this training. The research component would focus on questions that must be answered for informed decision-making within the project and will not encompass issues that are primarily of academic interest. The agenda will be set by a committee of national and international epidemiologists with expertise in arsenic. This committee will be formed under the umbrella of the Bangladesh Medical Research Council (BMRC), which is the primary organization for overseeing health research in Bangladesh. The agenda will, at a minimum, include scientific assessments and monitoring of the percentage of the population exposed to unsafe water and the incidence and prevalence of arsenicosis and its sequelae, using active case finding.
methods, so that estimates can be made of the number of patients who may require treatment as well as clinical trials of proposed treatments to assess their effectiveness. As part of this component, a database of relevant past and ongoing research in Bangladesh and around the world will be maintained and publicly disseminated by BMRC to avoid duplication of effort and to inform research priorities. It is expected that some studies may be sponsored or commissioned under the APHP, while others will be sponsored by external institutions such as multilateral aid organizations and foreign governments. The database will be constructed during project preparation so that the committee will be able to begin decision-making immediately. Also during project preparation, a workshop will be held with World Health Organization co-sponsorship that will bring together local, regional, and international medical experts on arsenic to develop consensus guidelines for the diagnosis and staging of arsenicosis patients. The applicability of findings will be nationwide in scope. Pilot treatment activities, however, will be located in "hot-spot" areas to help those in greatest need. The scope of the patient management component would depend upon results from the research component, which would include well-designed clinical trials and pilot activities. This component will likely include additional training of health care providers on identification and management of arsenicosis and its consequences, and may include supplies and equipment to the health sector. Which specific treatment regimens might be financed from the project will depend on their efficacy, safety, operational feasibility, and costs. Also, once a realistic estimate of case-load exists, an assessment will be made of the need for arsenicosis patient management facilities across the country, with a view to strengthening existing health service facilities (public and non-public) at the appropriate level(s). Because activities under APHP are to be part of the overall program of MOHFW, all activities under this component must be of a cost and scope that is concordant with overall health sector priorities and policies. (For example, it may be feasible to provide simple outpatient excisions of localized skin cancers but perhaps not to provide lengthy courses of treatment with expensive drugs for internal cancers) Ultimately patient management will be national in scope, but activities will begin in districts that have been the hardest hit and then phased in around the country. Some evaluation/assessment of BCC and training components will be needed; such assessments will be carried out as part of preparatory activities. Another area which needs to be considered during preparation phase is an assessment of NGO capacity, and how far they will be able to function within the Bank's procurement guidelines, selection criteria etc. since it is proposed to utilize their services substantially. A logical framework (log-frame) exercise was initiated as part of the identification mission, in a workshop which brought together all major stakeholders (e.g. government officials, researchers, NGOs, and potential co-funders), and the rough output is attached (Annex 1). The further development of the log-frame will be continued in a broad-based participatory manner during project preparation, so as to ensure both a wide ownership and a superior product. 

a) Behavior Change Communication 
b) Capacity Strengthening 
c) Research 
d) Patient Management 

5. Financing

Total (US$m)
6. Implementation

MOHFW will be the focal line ministry for the project, which will be implemented under the existing sector-wide framework, without the creation of a separate unit or cell for project management. The project will be implemented by a combination of governmental and non-governmental agencies under the overall coordination of a Steering Committee to be chaired by the Director-General of Health Services (DGHS) with members from both within and outside the Health Ministry (i.e. Ministry of Local Government and others), while the day-to-day management will be under the Line Director for Environmental Health and the Deputy Program Manager (Arsenic) - with the help of working committees as appropriate. Effective mechanisms need to be established to ensure coordination between MOHFW and MLGRD (such mechanisms yet to be specified); this will be a major challenge, considering the experience of BAMWSP, where a small allocation meant to be used by MOHFW has not been used at all. The experience of cooperation with other sectors is similar. An inter-ministerial committee, headed by the Secretary for MLGRD has been established with the participation of nine Secretaries and it has set up several technical expert committees (of which health is one). But the vision of a coordinated inter-sectoral program on arsenic is still in its early stages and whether the mechanism will be effective in ensuring such coordination remains to be seen. Further details of implementation arrangements still need to be worked out, but certain activities will need to be contracted out to non-governmental implementers based on the forthcoming assessment of capacity in both the public and the non-public sector. For example, the private sector has demonstrated its capacity for designing and executing effective BCC campaigns and capacity building, whereas the government may not at present have the capacity to implement such large scale training within a short timeframe. Research activities will also be contracted out to appropriate institutions, coordinated by BMRC. Thus most of the project activities (BCC, training and research) will indeed be contracted out through a competitive bidding process. Monitoring and evaluation (M&E) will measure the indicators identified in the log-frame at regular predetermined intervals. An effective M&E system requires more than the identification of indicators; critical ingredients include: baseline data collection, a robust information system, reporting instruments, and review mechanisms. The M&E information system from this project will be linked to the Health Management Information System (HMIS) being developed under the Health and Population Sector Program (HPSP) as soon as feasible; in the interim, arsenic surveillance systems may need to be developed separately to provide timely information needed for the program. Detailed development of monitoring instruments would follow the full development of the logical framework, but would essentially follow internationally accepted standards, while keeping the instruments simple; they would compare the actual performance with specified targets in terms of inputs, process, outputs, outcomes and impact, with a view to (a) assessing how well the project is progressing towards the development objectives; (b) identifying and solving problem areas of implementation so that M&E is also a problem-solving tool; (c) planning and redesigning future interventions beyond the life of the project. The frequency of
measurement of indicators would vary from one indicator to another, but it is envisaged that at a minimum there would be semi-annual review meetings between the Government, the Bank and other potential cofinanciers. More importantly, the Country Office staff would participate in more frequent interactions with Government officials and non-governmental partners to help in monitoring and evaluation to assist in problem-solving. Auditing Arrangements: MOHFW would be responsible for preparing project financial statements to be audited by Comptroller and Auditor General (C&AG) within six months from the close of the fiscal year. Disbursements: IDA’s share of the project cost will be disbursed under traditional disbursement procedures initially, and could be converted to PMR based disbursement at the option of MOHFW and satisfaction of IDA as regard to the adequacy of the Financial Management System. To facilitate smooth payments of IDA’s share of eligible expenditures, a Special Account (SA) would be opened in the name of the project and the designated official of the MOHFW will have access to the SA.

7. Sustainability
A main objective of the project is to build national capacity to deal with the public health aspects of the arsenic contamination, so that Bangladesh would be able to sustain her own programs in the long run. This objective includes the national capacity to conduct behavior change communication campaigns, extensive training programs, sound operational research activities and adequate patient management activities. Arsenic-related public health activities will be conducted within the framework of the MOHFW’s regular program activities. Such an approach is expected to enhance the sustainability of arsenic-related public health activities in the long run. The project proposes to employ behavior change strategies that aim for a more permanent solution to the problem, by emphasizing prevention over treatment. Ultimately the sustainability of project benefits would also depend on the success of efforts of the water supply sector, in ensuring adequate access to arsenic-free water. As the project does not seek to finance any civil works or major capital investments, concerns about related maintenance costs are not applicable. Most of the proposed activities, i.e., behavior change communication, training and research activities, if successful, will have low maintenance costs beyond the life of the project (once nationwide coverage of BCC and training is achieved and once the initial critical research issues are answered, further expenditures on these three areas will be much less).

8. Lessons learned from past operations in the country/sector
Though this is the first project of its kind being supported by the Bank, the proposed project design will take account of lessons learned from previous HNP operations in Bangladesh, from the ongoing BAMWSP, and from arsenic projects in other countries. Of these, one of the most important is the need to go forward despite uncertainty over some key epidemiological questions - indeed, the existence of these questions make the need to go forward more pressing. The initial response to the arsenic crisis in Bangladesh was extremely slow because little was known about the extent of the problem, about how to test and treat water, and about how to treat patients. As a result, during its first two years of operation, BAMWSP tested water in only 6 upazilas and spent only 6% of its available funds. To avoid any further delays in dealing with the public health issues, and to ensure that health sector activities and plans are based upon accurate information, this project includes a major component
supporting research into basic questions of prevalence, incidence, and treatment. Second, the widespread nature of the arsenic problem and the present lack of known treatments makes it clear that the primary approach must be prevention. Therefore, the project emphasizes education of the general population as well as training of providers in patient counseling techniques, to help motivate the public to have their wells tested and use safe alternatives. Third, educating the public about the hazards of arsenic when water tests and safe alternatives are unavailable will be ineffective in preventing further exposure. Therefore, there is a need for close inter-sectoral coordination of this project with BAMWSP and similar programs. On the Bank side, including staff from each project in planning and supervision meetings of the other project. The exact mechanism on the Government side will be worked out during project preparation, but the goal will be to foster joint decision-making and ownership or coordinated activities. Fourth, for the project to be truly effective, its impacts must be sustainable. This issue is being addressed by integrating the APHP into the HPSP and by training health care providers to build critical institutional capacity that will remain after the project is completed. Further, a module on arsenic education for pre-service training of health staff will be developed so that future generations of providers will also be able to manage their patients correctly.

9. Program of Targeted Intervention (PTI)  N

10. Environment Aspects (including any public consultation)

   Issues: The project is not expected to require an environmental assessment. This project is assigned category C, because the proposed activities have no potential for negative environmental consequences; rather they seek to mitigate the public health impact of an environmental problem that already exists in Bangladesh. The project will not support any civil works, installation of tube-wells, or arsenic removal systems. The patient management component will not generate significant amounts of medical waste; rather, it would seek to equip existing facilities to diagnose, counsel and treat patients of arsenicosis.

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Note: This is information on an evolving project. Certain components may not be necessarily included in the final project.

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