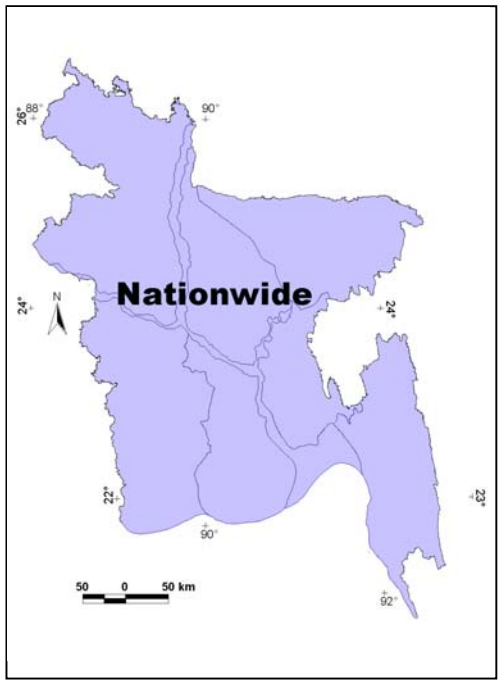
Urban Arsenic Mitigation Ref: **TR 001**

Basic Data

NWMP Sub-sector **Towns and Rural Areas**

Region(s) **Nationwide significance**



Relevance to NWPo

Water allocation for domestic and municipal use is the first priority under the NWPo, and issues of public health and safety are paramount. Therefore, a programme to address the serious problem of high levels of arsenic in shallow groundwater which is used for drinking is a national imperative. The NWPo clearly states that the Plan must provide "….safe and affordable drinking water supplies through various means.…" for all inhabitants, especially the urban poor. This commitment is also endorsed by the National Policy for Safe Water Supply and Sanitation (NPSWSS). With regard to the arsenic issue, policy also mandates that full stakeholder consultation and participation should be an integral part of the programme to raise public awareness and ensure full dissemination of information and choices, especially among women and the poor.

Purpose of Programme

There are 522 towns (1991 Census) throughout the country: 44 large towns (more than 50,000 people) with a total population of 9.8 million in 2000; and 478 small towns (less than 50,000 people) with a combined population of 4.2 million. The total population of all towns (large and small) is expected to increase five-fold in the next 50 years, from nearly 14 million in 2000 to 36 million in 2025 and 67 million by 2050. Current estimates indicate that 35% of town populations are classified as living in poverty.

The arsenic issue is a serious water problem which potentially affects the health and well being of millions. Estimates of the numbers at risk depend on the permissible level of arsenic in drinking water. The Bangladesh standard is less than 0.05 mg/l and the WHO standard is less than 0.01 mg/l. Based on current available data, the numbers at risk are estimated as follows:
(a) Bangladesh standard - about 25% or 30 million of the total population; and
(b) WHO standard - about 46% or 54 million.

The majority of those at risk are poor and live in the small towns and rural areas where there is greater dependence on shallow HTWs where high levels of arsenic occur. A wide range of investigations and initiatives, supported by GoB and the international donor community, are underway to find and implement practical solutions which meet the needs of the people, in terms of:
(a) short term temporary solutions which alleviate the immediate problem; and
(b) longer term solutions which offer a permanent source of arsenic free water.

In the Large and Small Towns, NWMP estimates indicate that about 3 to 3.5million or 20% to 25% of the urban population are at risk from high levels of naturally occurring arsenic in groundwater - based on the Bangladesh standard. The programme aims to provide a range of short-term solutions which will be available on demand to communities and households at risk. The options include:

(a) arsenic filters fitted to HTWs and mini Tara pumps;
(b) arsenic removal kits which can be used in the household;
(c) pond sand filters; and
(d) re-excavation of wells.

Longer term solutions (e.g. DTWs and surface water development) are included in the main water supply programme for Large and Small Towns (TR 003).

It is important to emphasise that the proposed NWMP programme should be integrated with other ongoing projects and programmes which are already actively addressing the arsenic issue. These include, among others the Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP) supported by the World Bank.

Finally, the programme should also highlight the need to raise public awareness, health education, basic training in arsenic mitigation techniques, and the importance of choice among the available solutions. The poor and women, as the main domestic water managers, will be the main targets of the programme.

Programme Outline

Levels of risk due to naturally occurring arsenic in shallow groundwater are as follows:

High	Medium	Low
South West Region	North East Region	North Central Region
South Central Region	North West Region	Eastern Hills Region
South East Region	Rivers and Estuary Region	

The programme consists of short-term solutions for the provision of safe drinking water in arsenic affected areas will be implemented over the next three to five years. The general targets for the installation of arsenic filters on HTWs or Tara pumps, arsenic removal kits for use in households, and other options are summarised as follows:

Component	Year			
	2000	2005	2010	2025
Large Towns (population greater than or equal to 50,000)				
Population (million)	9.8	12.2	14.9	25
Water supply coverage (%)				
Arsenic filter on HTW/Tara pumps	0	10	5	0
Other non-contaminated supplies and systems	75	83	95	100
Total	75	93	100	100
Small Towns (population less than 50,000)				
Population (million)	4.2	5.2	6.4	10.7
Water supply coverage (%)				
Arsenic filter on deep HTW/Tara pumps	1	30	5	0
Arsenic removal in households	1	10	0	0
Other non-contaminated supplies and systems	81	60	95	100
Total	83	100	100	100

Financing Arrangements

The proposed short term programme for arsenic mitigation in the Large and Small Towns is suitable for GoB funding with the support of the international donor community. It is also suggested that direct beneficiaries should be encouraged to contribute between 10% and 20% of the costs for the solutions selected by individual communities and households.

GoB and the implementing agencies will also be required to provide technical support and education campaigns to ensure that the target populations are fully aware of the arsenic problem and the available short term solutions, especially the poor and women. The programme should also provide a direct link with the longer-term permanent solutions under Programme TR 003.

Objectives and Indicators

Objective	Suffix	Indicators/Means of Verification	Due
• Procurement and installation programmes prepared	I1	• Signed programme/project documents	2002
• Procurement and installation programmes complete	I2	• Programme/Project completion reports • Household surveys	2010
• Arsenic free potable water available to 100% of large and small town populations	K	• Water quality • Community health records	2025
• Demand for safe and reliable drinking water supplies satisfied in towns and rural areas	D	• % service coverage verified by surveys	2025

Institutional Arrangements

The institutional arrangements for programme implementation are expected to comprise three components as defined by the NWPo and NPSWSS:

(a) Public sector - under the policy of decentralisation, the local municipal authorities (e.g. Paurashavas and Upazilas) will have prime responsibility, with the technical support of DPHE and LGED.
(b) Private sector participation - In partnership with community based organisations, the private sector will be expected to play a leading role in the development and operation of arsenic treatment options.
(c) Community-based and NGO participation - in the peri-urban and disadvantaged areas, community-based water supply schemes will be encouraged with investment funds from GoB, and the collaboration of NGOs and the private sector. Prominence should also be give to the active participation of women.

The implementation of these institutional developments will need to be carefully formulated and programmed with the full political commitment of GoB and interested stakeholders. In the short to medium term, the Government will also establish an appropriate independent Regulatory Framework to supervise and monitor public and private sector performance in the provision of technical advice.

References and Documentation

(a) Chapters 3 and 7, Development Strategy Report, March 2001
(b) Main references:
    - Bangladesh Arsenic Mitigation Water Supply Project (BAMWSP)
    - Ground Water Studies for Arsenic Contamination in Bangladesh, January 1999
(c) National Water Resources Database in WARPO

Linkages

The programme to address the problem of arsenic in groundwater used for drinking water in Large and Small Towns should be closely linked and co-ordinated with other NWMP programmes, namely:
(a) Raising Public Awareness in the Wise Use and Management of Water (EE 010);
(b) Private Sector Participation in Water Management (EE 011);
(c) Alternative Financing Methods for Water Management (EE 013);
(d) Large and Small Towns Water Supply and Distribution Systems (TR 003);
(e) National Water Quality Monitoring (EA 003); and
(f) Public Awareness Raising and Empowerment in respect of Environmental Issues (EA 010).

Planning and implementation should be closely co-ordinated with other national and international arsenic mitigation programmes. Under the auspices of NWMP, appropriate collaboration should also take place with the respective Local Government authorities (District towns, Paurashavas (municipalities), Upazila headquarters and urban growth centres), Ministry of Local Government, Rural Development and Co-operatives (MoLGRDC), Department of Public Health Engineering (DPHE), Local Government Engineering Department (LGED), Ministry of Health (MoH), Department of Environment (DoE), WARPO, NGOs and other interested parties.

Risks and Assumptions

Risks:

The risks associated with the programme are mainly technical, institutional and environmental.

The technical risks concern the suitability and robustness of the identified short term solutions, some of which are still in the development stage while others have not been in operation for long. This situation may be compounded by operating and maintenance difficulties. To reduce these risks, the implementing agencies will need to monitor the performance of the short term solutions, react swiftly where difficulties arise, and ensure that adequate basic operational training is provided.

The institutional risks relate to the capacity of the executing agencies to implement the programme effectively and integrate constructively with other arsenic mitigation programmes which are already ongoing. However, because of the seriousness of the arsenic situation, GoB must ensure that these risks are minimised.

The environmental risks concern the longer term impact of remaining arsenic contamination in abandoned water sources. These will need to be monitored over time to assess whether any further remedial actions are required. The disposal of waste from treatment processes such as sludge is a potential hazard.

Assumptions:

- Long-term monitoring is achievable, reliable and consistent
- A solution to the potential environmental problems can be found