Title: Water Supply Management for Sustaining the Operational Efficiency in Dhaka

Subtitle: TA on Promoting Smart Drinking Water Management in South Asian Cities

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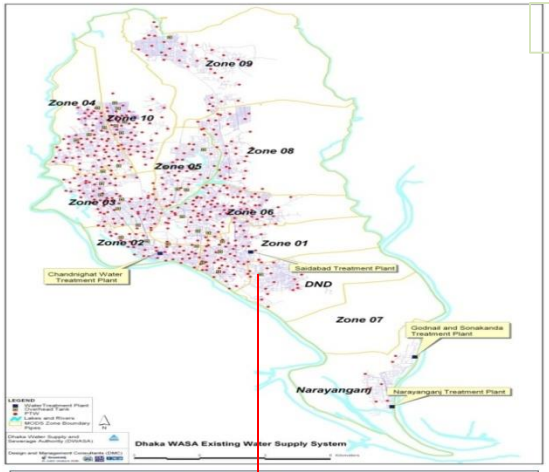
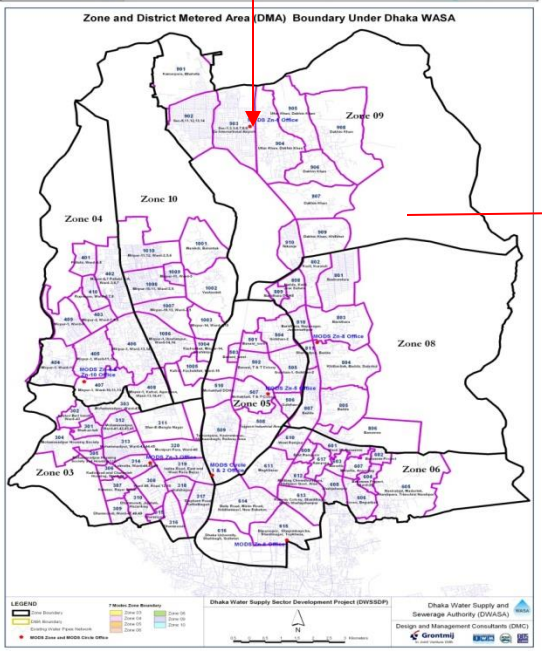
Water Supply Status in Dhaka before DMA Establishment

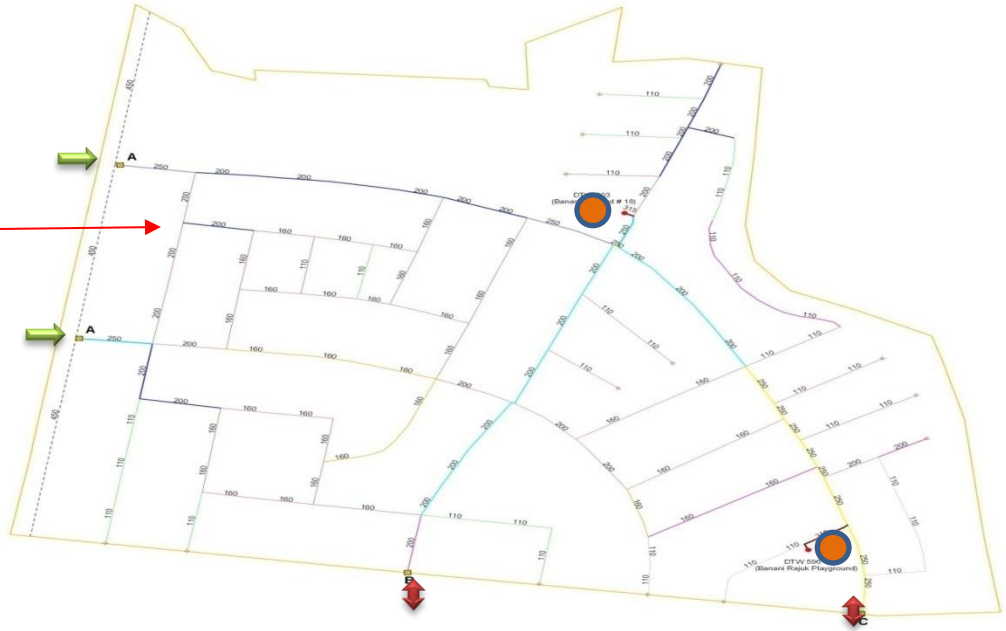
- **Piped water Supply started in Dhaka from 1874**
- **Network built of AC/MS/ GI /DI/ uPVC**
- **Supply pattern intermittent & low efficient network**
- **Poor Interconnection and water quality**
- **System is not pressurised, people need to use suction pumps**
- **Plenty of unidentified leakages and illegal connections**
- **Inadequate metering & high revenue loss**
- **Existing NRW/ system loss 30% to 40%**
- **Dhaka WASA is not economically sustainable**

Picture: DWASA Existing Network and Present DMA Network Pattern:



- Existing NRW 30%-40%.
- Plenty of Undetected Leakages and Illegal Connections.
- System is not Pressurized; People Need to Use Suction Pumps
- Water Quality is Very Poor
- DWASA is not Economically Sustainable





Sources:

- **Groundwater**
- **Surface-water**
- **Inter-DMA**
- **Conjunctive**

Introducing DMA

Existing Production Well (Source)

DMA Boundary (Say)

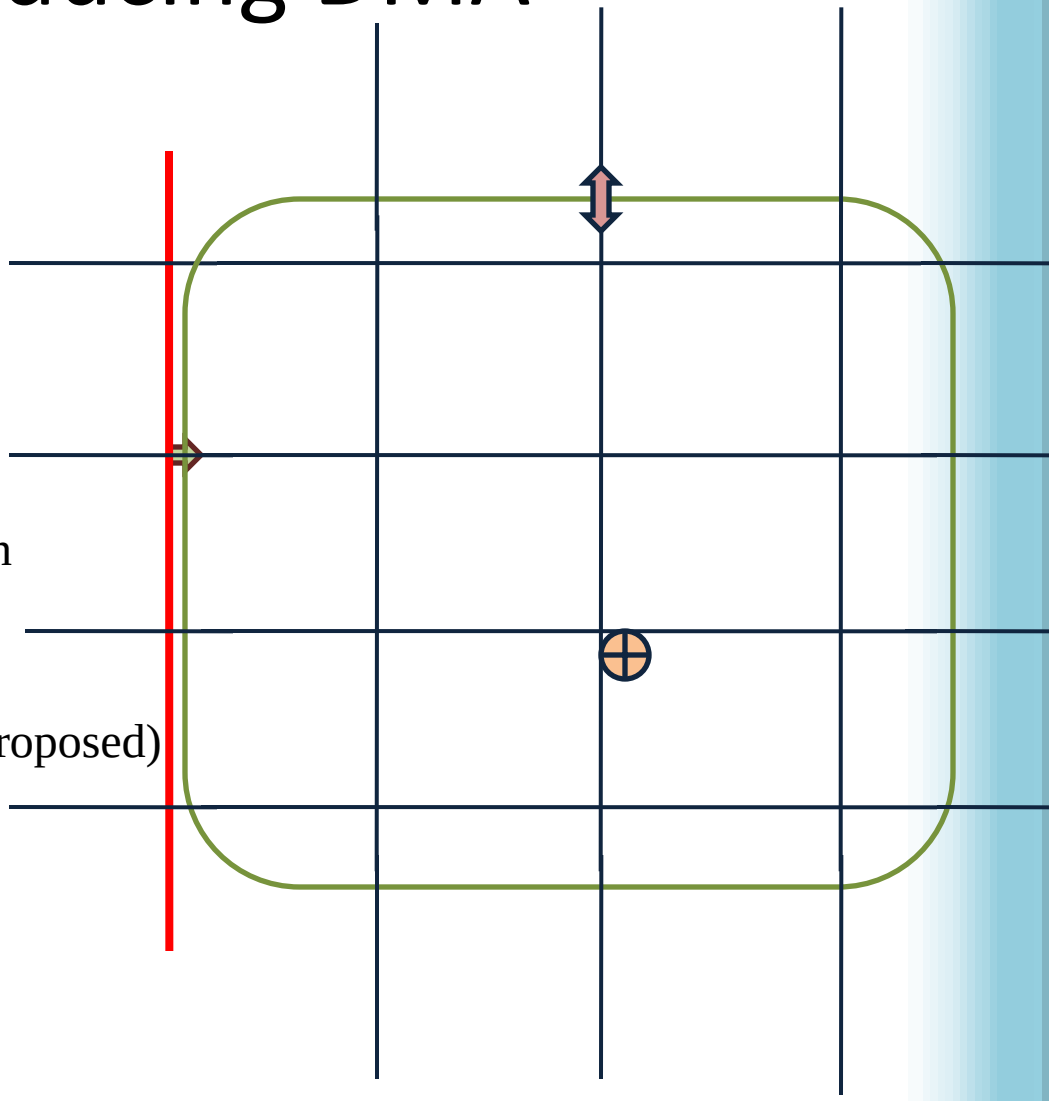
Pressurized system for 24/7 hrs

Cutoff the Network within Boundary

Existing and Proposed Export/Import Option

Transmission Main (Existing or Proposed)

Surface Water Injection Point (Existing or Proposed)



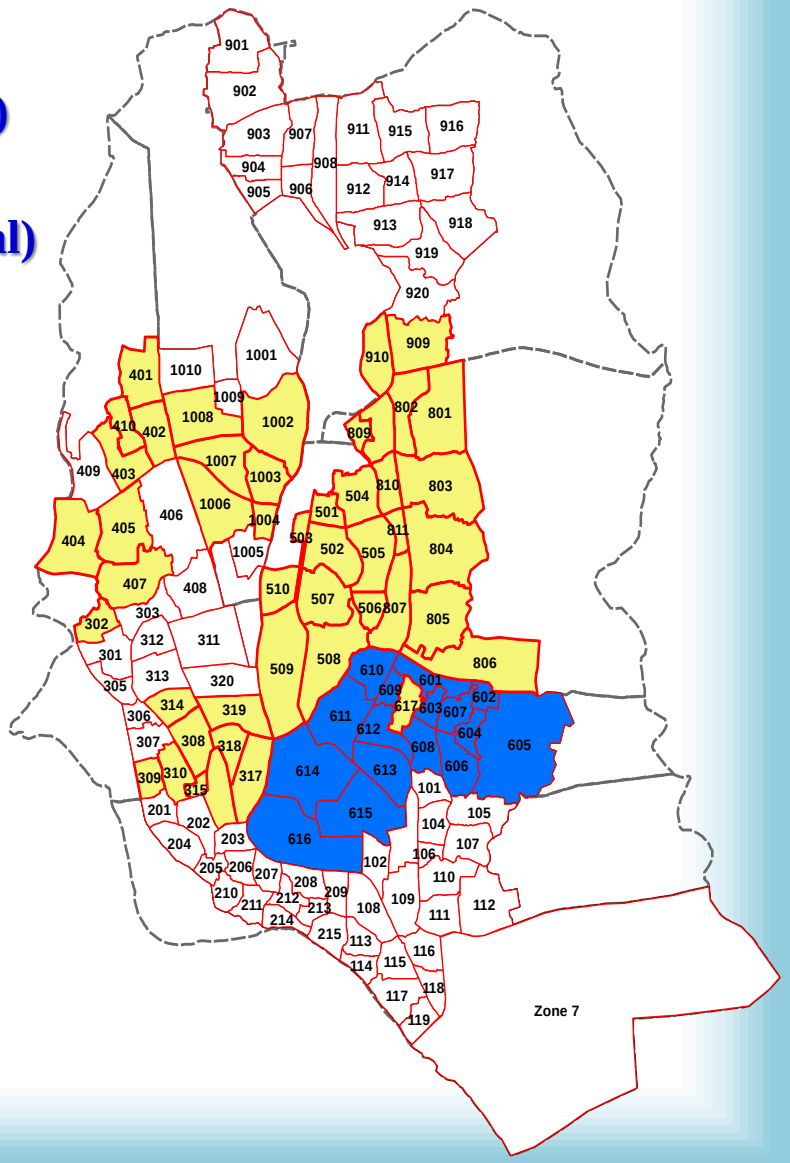
Dhaka WASA Projects for DMA

Projects on water distribution systems

DWSSDP: MODS Zone 5,8 & 3,4,9,10 (partial)
DESWSP: MODS Zone 6
DWSNIP: MODS Zone 2,1,7 & 3,4,9,10 (partial)

Projects on PTW & SWTP

PJWTPP	**: 450 mld**
TBWFP	**: 150 mld**
SWTPP	
(Phase-I,II, III)	**: 900 mld**
GWTPP	**: 500 mld**
IWSP	**: 400 mld**



DMA projects in Dhaka

- **Project Sponsoring Ministry/Division: Ministry of LGRD&C**
- **Project Implementing /Executing Agency : Dhaka WASA**
- **Project financing: GoB-ADB (Nr. of DMA)**

DWSSDP (Completed)	**:**	**47**
DESWSP (on going)	**:**	**16**
DWSNIP (Upcoming)	**:**	**82**
Total	**:**	**145**

Implementation of Trencless Technology under DWSSDP

(TT Works at various sites)

How did we establish DMA?

- Surveyed and Model designed for selected DMA
- Used Trenchless Technology (TT) method
- Rehabilitated the existing whole network by HDPE pipe
- Replaced all House Connection (HC)
- All illegal HC were legalized
- DMA under full pressure & Flow control
- GIS database

Achievements of DMA establishment in Dhaka WASA:

- Achieved pressurized Water Supply in 24/7.
- 5% to 40% illegal house connections getting regularized
- Average water loss becomes **4.95%** in established DMAs
- Assured potable water
- No further use of suction pumps
- Rehabilitation of Water Supply Network using HDPE pipe and Trenchless Technology
- Reduced electricity cost by DWASA as well as consumers
- Improved Social Life
- Decreased Health Cost
- Increased Dhaka WASA Revenue
- Water Supply in Slum Area

Challenges for Sustainable DMA management

- Maintain NRW below 10%.
- Maintain a pressurized network of minimum 1bar pressure
- Achieve potable drinking water.
- Optimization of Electricity consumption.
- Maintain a minimum illegal HC.
- Leak detection and control
- Maintain water balance management in DMA area
- Spontaneous source of water supply
- Huge population
- Minimum classification of area

TA project for Sustainability of DMA

- **Financing:**

  -ADB's Technical Assistance Special Fund

  -Republic of Korea e-Asia and Knowledge Partnership Fund

- **Key Activities**

  -To develop an Operational Efficiency Improvement Plan

  -To introduce Knowledge-building and skills-development programs on smart drinking water management and technologies

  -To prepare Financial Sustainability Improvement Plan.

  -To introduce new drinking water Public Private Partnership (PPP) contract modalities

Steps taken under the TA :

- Conduct a Diagnosis Work in 2 DMA & Diagnostic Report on SWM by K-water.
- Develop an Operational Efficiency Improvement Plan by K-water.
- Capacity Enhancement of DWASA employee in Local and Foreign on SWM by K-water.
- Financial Sustainability Improvement Plan for DWASA.
- Public Private Partnership (PPP) options on Sustainable DMA Management.

Diagnostic on Sustainability

Non Revenue water:

DMA 804: 5.2%

DMA 807: 4.0%

Average Pressure:

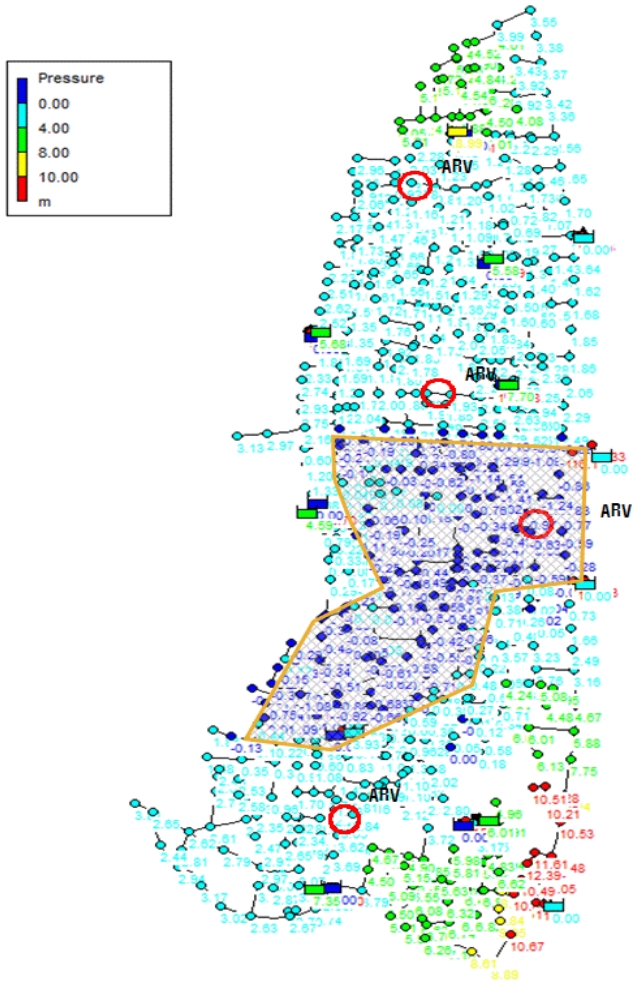
DMA 804: 0.1~1.2 bar

DMA 807: 1.0~3.0 bar

Average Consumption:

DMA 804: 199.13 LPCD

DMA 807: 212.60 LPCD



DMA 807

Operational efficiency improvement plan for Sustainability of DMA

- Water Balance Management
- Active Leakage Control
- DMA Management Approach
- Pressure Management
- Demand Management
- Pump Head and Energy Management
- Water Quality Management
- Facility Management
- Institutional Strengthening Management
- Smart Water Management
- Public Awareness

Financial efficiency improvement plan (Major Components):

- Reforming Tariff structure
- Cost Analysis to balance income and Expenditure
- Minimization of Operational and Maintenance Cost
- Outsourcing of revenue collection
- Automation of operation/ Use of ICT based water technology in DWASA
- Decentralization
- Capacity building of employees
- Institutional capacity building
- Increase repair and maintenance cost
- Alternative use of excess capacity to increase revenue
- Increase coverage area

Capacity Enhancement under this TA:

- Local training conducted by K-water on SWM for 84 officials (ToT and Training for field operators)
- Study visit of 7 DWASA official at South Korea and Philippines.

Way Forward to

- SCADA
- Smart Meter
- No Physical visit
- Web base GIS for Water, Sewerage & Drainage Network
- Online water connection
- Water Dispenser
- Different revenue zone for LIC
- Capacity Enhancement
- e-tendering, e-filing, e-recruitment, e-billing
- Minimization of Electricity

Thank You