

Water Security in Dhaka City

-An initiative of Government of Bangladesh

Engr. (Ms) Reba Paul
Executive Secretary
Bangladesh Water Partnership

6th Governing Council Meeting of
Asia Pacific Water Forum (APWF)
Place: Orchard Hotel, Singapore, Date: 30 Nov, 2009

Present Population of Dhaka City – About 12 million
Projected Population by 2025 – About 22 million

Dhaka is now the 7th largest city in the world and by 2020 it will be the 2nd largest city in the world

Dhaka city: 258.78 sq km

DND : 56.79 sq km

Narayanganj: 33 sq. km

Possible expanded area in Dhaka is 1000 sq. km



Water Supply Situation In Dhaka City

June 2009

Water Demand: 2470 MLD

Water Supply: 1930 MLD

Supply from Surface water: 292.5 MLD (13%)

Supply from Ground Water: 1679 MLD (87%)

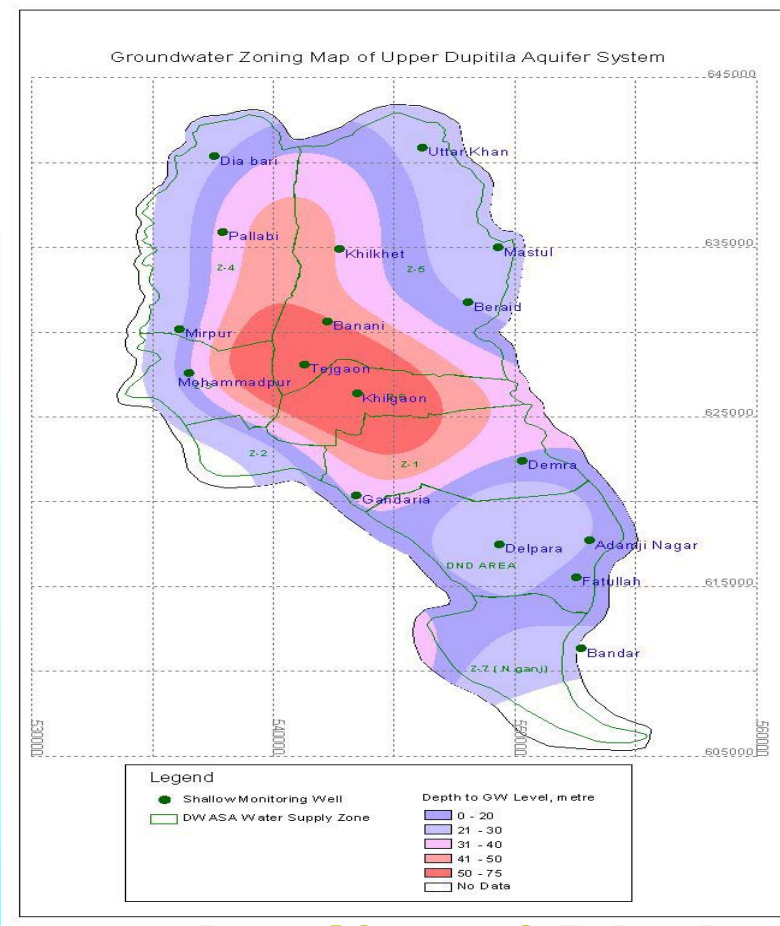
Water supply in Dhaka city is heavily depended on ground water.

Water demand in 2030: 4990 MLD

Problem of ground water source:

Groundwater depletion
(alarming) : **2-3m/year at most places**

- **No further abstraction** from upper aquifer (100-200m) is viable.
- 45 DTWs in deeper aquifer are in operation and another 50 DTWs have been planned.
- **Impact of abstraction from deeper aquifer (>200m) is now being monitored.**



Upper Aquifer of Dhaka
< 200 m depth

Ref: DWASA + IWM

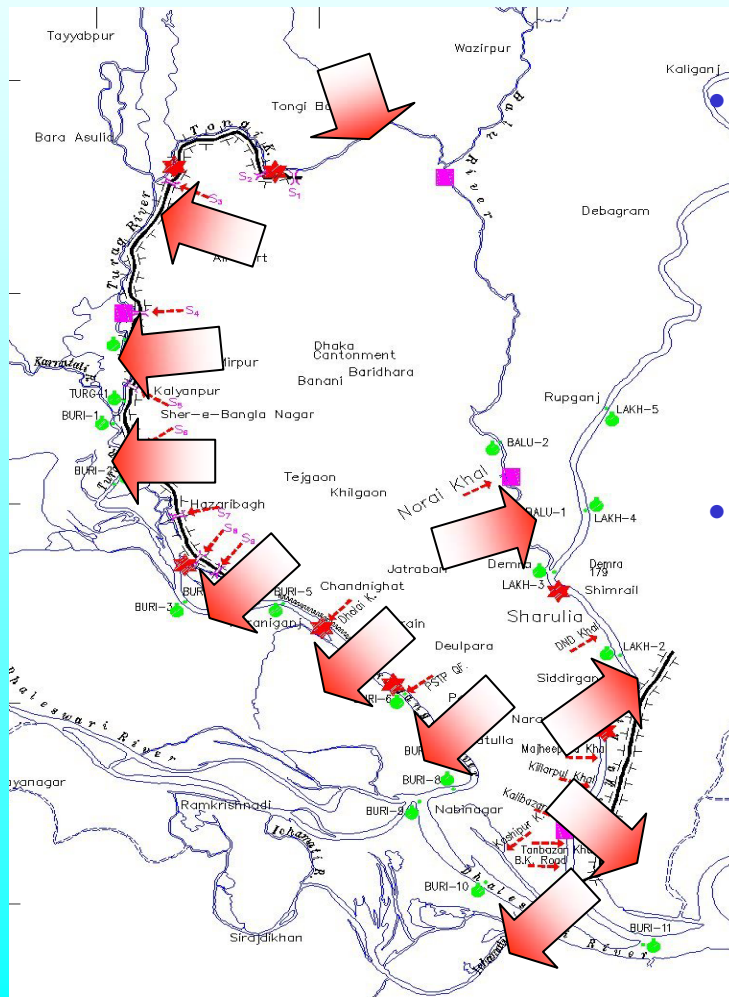
The marked areas are already in mining conditions. New DTWs in the mining zone should be avoided.

Water Quality is very poor in peripheral rivers

- ☐ **Quality in the system network**
- ☐ **Quality at source**

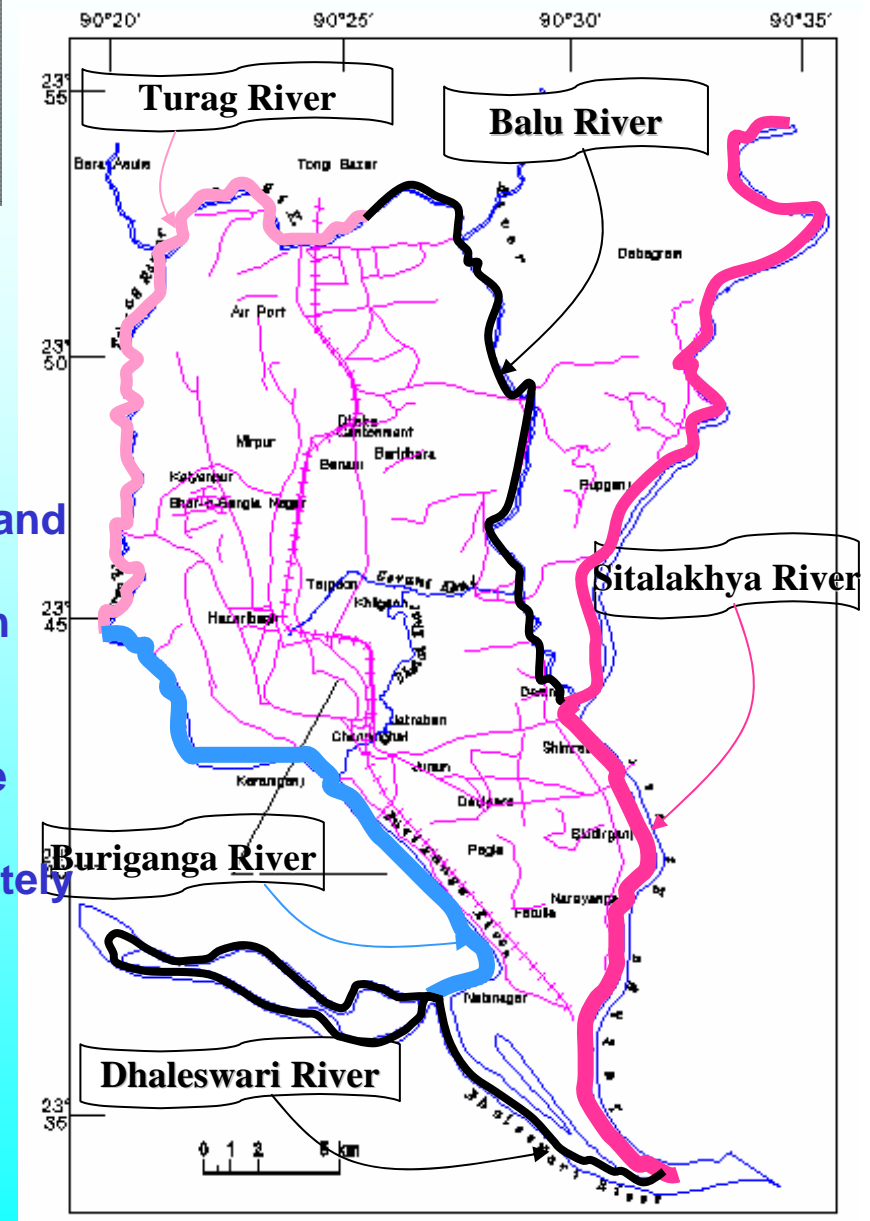
Peripheral Rivers of Dhaka City

These rivers act as the receivers of stormwater, municipal, and industrial wastewater from Dhaka City



Over 300 outfalls of domestic wastewater and industrial effluent from Dhaka city.

Effluents are discharged indiscriminately without any discharge.





Water Pollution



River encroachment

Water of Buriganga in Dry Season
(main river of Dhaka city)

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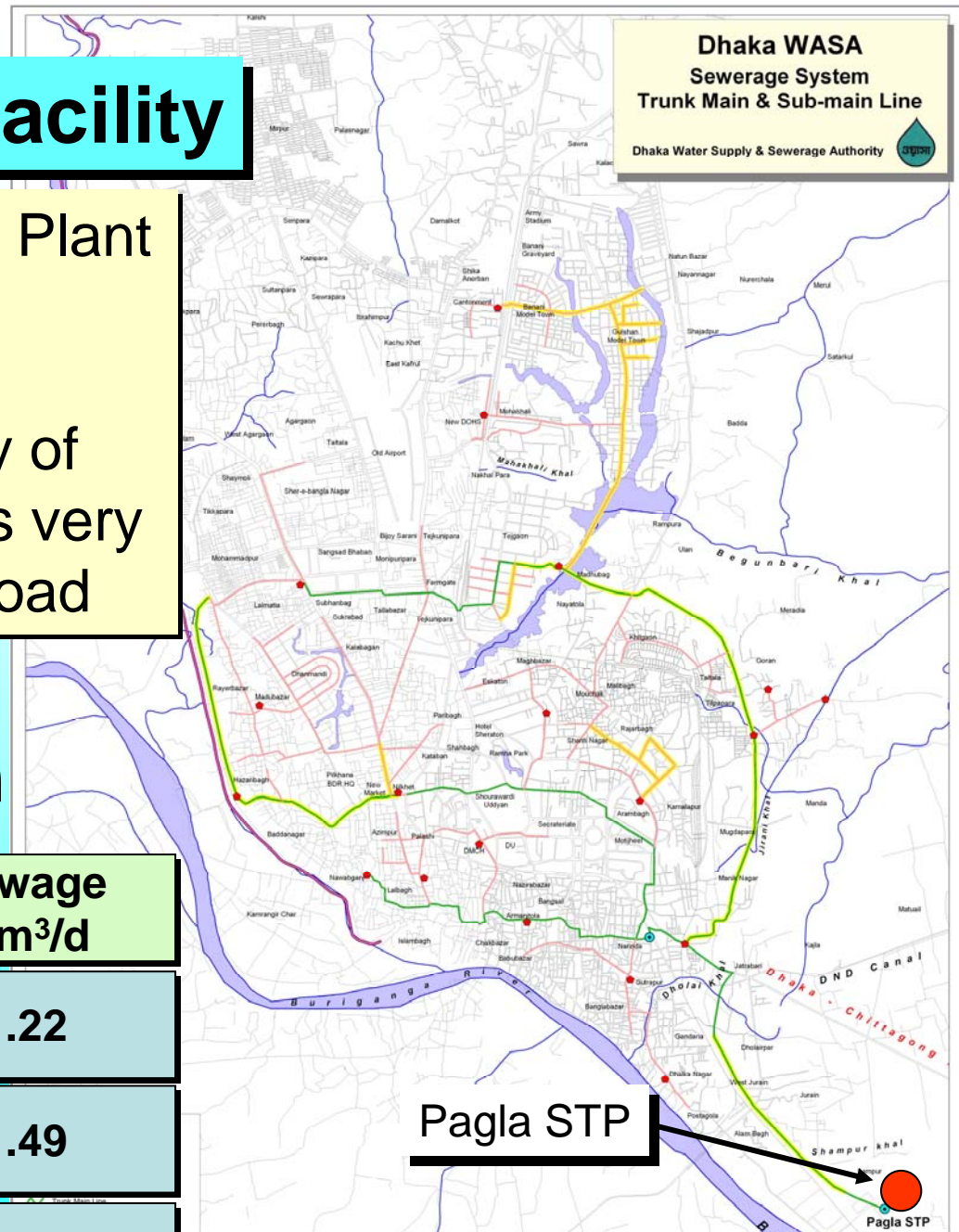
Present Treatment Facility

Only one Sewage Treatment Plant located at Pagla.

It has an installed capacity of treating 0.12 Mm³/d, which is very less than the present city load

Load Projection

Year	Population Million	Sewage Mm ³ /d
2010	12.27	1.22
2015	14.93	1.49
2025	21.63	2.16



Ref: Dr. Liakat Ali, DWASA

Providing water supply to every citizen in Dhaka city in future is a big question????

What should be the Water sources??

Ground water is at mining position,

Surface water is highly polluted.

Alternatives?

Upper aquifer of Dhaka

Deeper aquifer of Dhaka

Aquifer of nearby areas

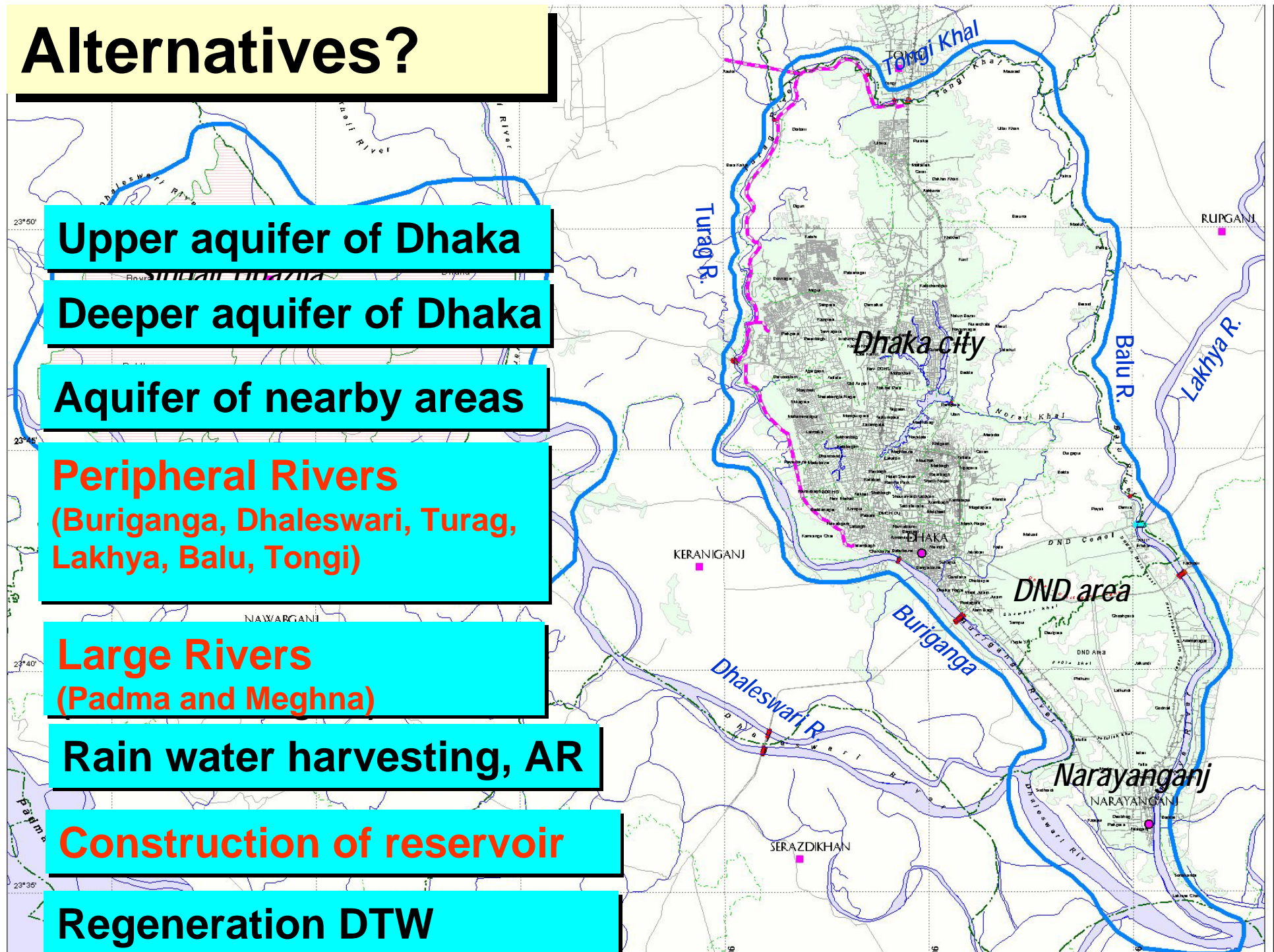
Peripheral Rivers
(Buriganga, Dhaleswari, Turag, Lakhya, Balu, Tongi)

Large Rivers
(Padma and Meghna)

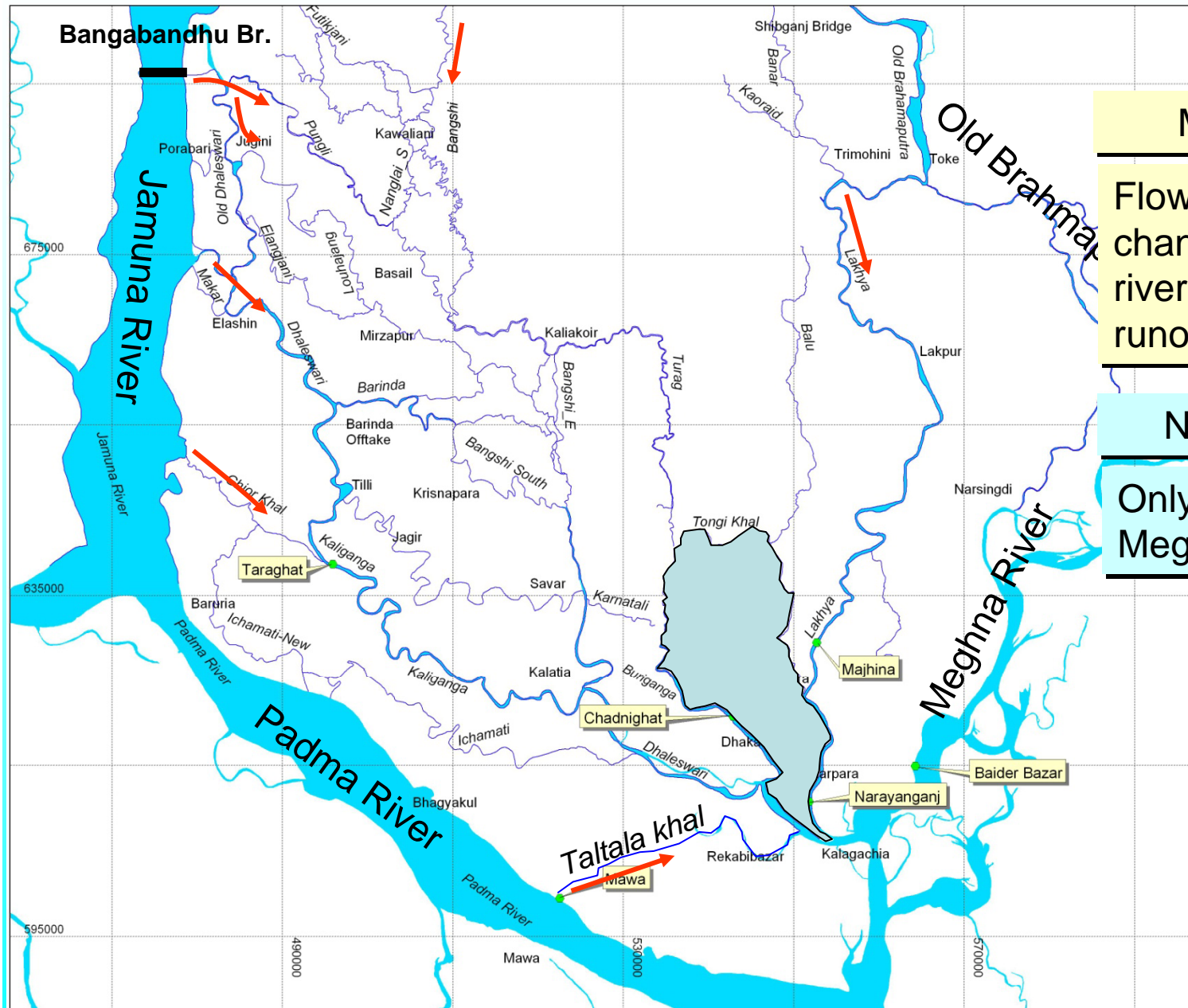
Rain water harvesting, AR

Construction of reservoir

Regeneration DTW



Big rivers around Dhaka Watershed



May – October

Flow from spill channels of large rivers and rainfall runoff

November - April

Only tidal flow from Meghna

DWASA Strategy



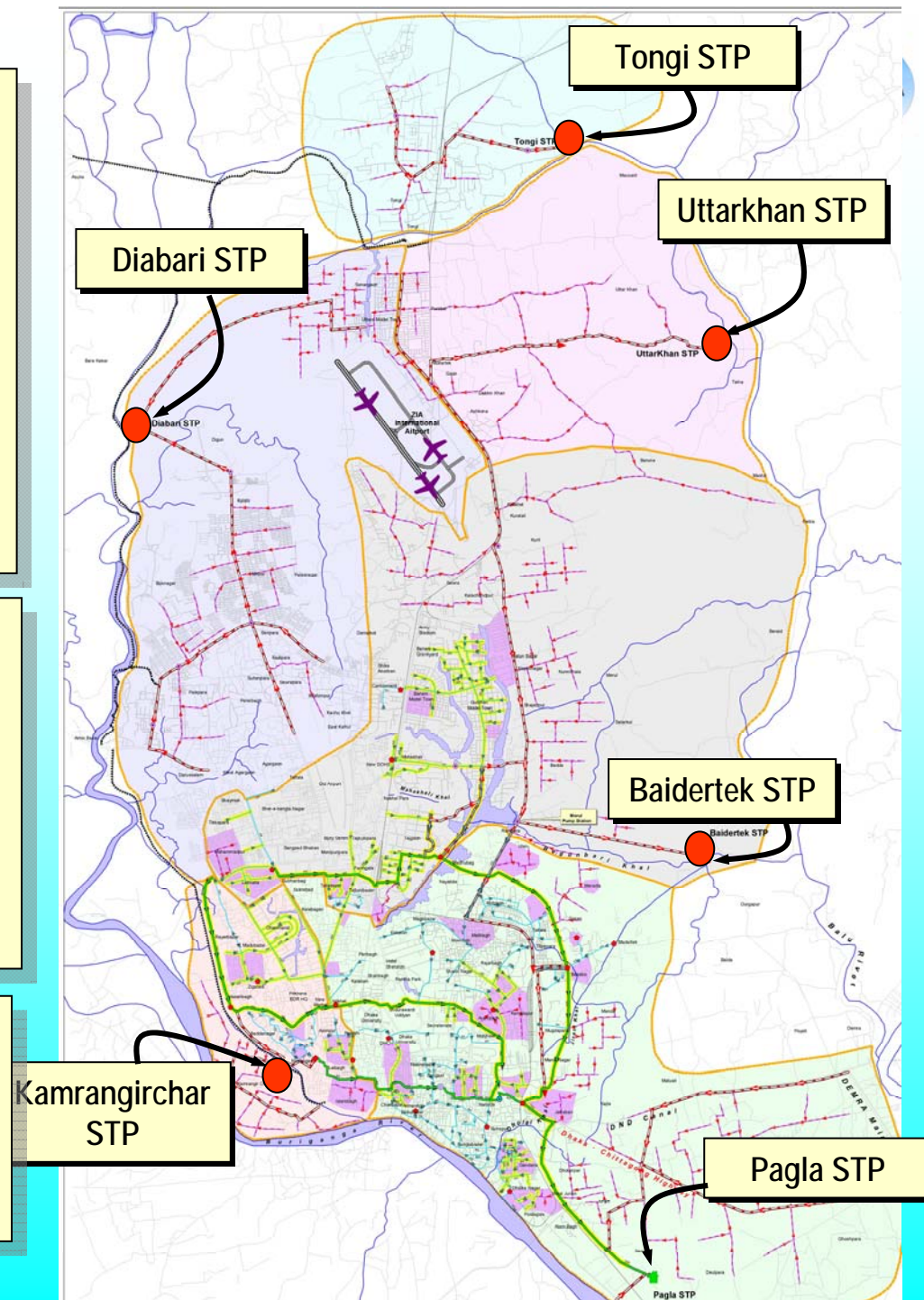
- The DWASA strategy needs to be implemented
- Any delay in processing projects and arranging funds might bring havoc to Dhaka city
- Demand management is a crucial issue – this requires immediate attention

			2009	2010	2015	2020
Population in DWASA area			12,000,000	12,456,000	14,903,000	17,682,000
Served by DWASA (90%)			10,800,000	11,210,000	13,413,000	15,914,000
Slum population (15%)			1,620,000	1,682,000	2,012,000	2,387,000
Served by DWASA excl slum			9,180,000	9,529,000	11,401,000	13,527,000
Water demand						
Residential		l/c/d	150	150	150	150
Slum		l/c/d	35	35	40	45
Total domestic		ML/d	1,434	1,488	1,791	2,136
Commercial/ industrial		%	12	12	15	17
Total		ML/d	1,606	1,667	2,059	2,500
Unaccounted for water		%	35	35	25	25
Total per capita water demand		l/c/d	229	229	205	209
Total water demand		ML/d	2,470	2,564	2,746	3,333
Water availability						
Groundwater DTWs in N. Ganj & Dh		ML/d	1648	1648	824	618
Singair well field		ML/d	-	-	300	300
Total Groundwater production		ML/d	1648	1648	1124	918
Percentage groundwater abstraction			87%	85%	41%	31%
Surface water sources						
Saidabad SWTP I		ML/d	215	215	225	225
Saidabad SWTP II		ML/d			225	225
Chandnighat SWTP		ML/d	10.2	10.2	39	39
Godnail & Sonakanda SWTP (Naraya		ML/d	15.9	15.9	45	45
Narayanganj new SWTP		ML/d	-	58	58	58
Khilkhet SWTP (from Meghna)		ML/d	-	-	500	500
Pagla SWTP I (from Padma)		ML/d	-	-	500	500
Pagla SWTP II (from Padma)		ML/d	-	-		500
Total Surface Water production			241.1	299.1	1592	2092
Total Production			1889	1947	2716	3010
Total Shortfall			581	617	30	323

5 new sewage treatment plants along with pipelines and ancillary structures in Dhaka and Tongi are required

People in areas outside DWASA coverage are using septic tanks in most cases

**Cost at least
Tk 4200 crore**



Towards Water Security in Dhaka city

A Dialogue on 'Surface Water: the Most Potential Future Alternative for Water Supply in Dhaka City' held on 19th July, 2009 organised jointly organized by Bangladesh Water Partnership (BWP), Dhaka Water Supply and Sewerage Authority (DWASA) and Policy Supply Unit (PSU), Local Government Division, Ministry of Local Government, Rural Development and Cooperatives.

Over 300 participants from various water and environment related government and non-government organizations, ministries, member of parliament (MPs) , international organizations, private agencies, academic institutions, media and TV channels and individual water experts attended the dialogue.

- Three Ministers - **Dr. Md. Afsarul Ameen**, Minister, **Ministry of Shipping**; **Mr. Ramesh Chandra Sen**, Minister, **Ministry of Water Resources**; and **Mr. Dilip Barua**, Minister, **Ministry of Industry** were present as the special guests in the dialogue.
- The Dialogue was chaired by **Mr. Md. Shahjahan Ali Mollah**, Joint Secretary (Water Supply) Local Government Division, and Ministry of LGRD&C.



Mr. S M Mahbubur Rahman, Head, Water Resources Planning Division, IWM presenting the Keynote Paper on 'Surface Water: the Most Potential Future Alternative for Water Supply in Dhaka City' in the Dialogue



**Dr. Liakath Ali, Deputy Managing Director,
DWASA presenting a paper on 'Water
Supply Situation in Dhaka City' in the
Dialogue**



Mr. Ramesh Chandra Sen, Minister, Ministry of Water Resources speaking at the dialogue



Mr. Dilip Barua, Minister, Ministry of Industry speaking at the dialogue.



Mr. Dilip Barua, Minister, Ministry of Industry speaking at the dialogue.



Mr. Md. Shahjahan Ali Mollah, Joint Secretary (Water Supply), Local Government Division, Ministry of LGRD&C & MD, DWASA Speaking at the dialogue.

Experts Dialogue



From left Dr. Kh. Azharul Haq, former Managing Director, DWASA and EC Member, BWP; Mr. K. Minnathullah, Sr. Specialist for Environment, Water Supply and Sanitation, The World Bank; Mr. Md. Shahjahan Ali Mollah, Joint Secretary (Water Supply) Local Government Division, Ministry of LGRD&C and Managing Director, Dhaka WASA; Mr. Muhammad Zamir, Vice President, Bangladesh Water Partnership; Mr. Saidur Rahaman, Chief Engineer, BWDB; Mr. Emaduddin Ahmad, Executive Director, Institute of Water Modeling (IWM); Prof. Dr. M Feroze Ahmed, Department of Civil/Environmental Engineering, BUET and Mr. Md. Billal Hossain, Director, Department of Environment.

Outcomes of the Dialogue/Recommendations

Year 2009 - 2012

- Installation of CETPs at identified locations in Tongi, Tarabo and Gazipur industrial Clusters.
- Medium and large industries are persuaded to install ETPs; small industries shifted to industrial clusters and provided with common effluent treatment plants
- All industries adopt cleaner production technologies to reduce generation of pollutants
- The river bottoms are dredged to remove polluted soil and sludge. The problem of disposal of sludge and soil is critical and should be addressed . (10 m polithene layer at the bottom of main Buriganga river)

Year 2009 - 2012

- River encroachment are removed immediately
- Shifting of Hazaribagh tanneries to Hemayetpur
- Rehabilitation and extension of the existing sewerage network
- Rehabilitation of the Pagla STP
- The Singair wellfield is implemented by 2011 to supplement northern areas, particularly Mirpur, by around 300 MLD
- Buriganga augmentation

Year 2009 - 2012

- Rainwater is used to artificially recharge groundwater
- Reservoirs are constructed at Ashulia to store water for the critical months of March-May
- The present EQS needs to be revised in view of the generate pollution load and capacity of the rivers for assimilation, dilution and flushing

Year 2009 - 2025

- Installation of CETPs at identified locations in Narayanganj, DEPZ and Ghorasal industrial Clusters.
- Demand management is made to reduce overuse or wastage of water
- The Saidbad SWTP Phase II, Keraniganj SWTP and Khilkhet SWTP are implemented to increase supply of 850 MLD and 1350 MLD by 2015 and 2020 respectively.
- Implementation of new Sewage Treatment Plants according to DWASA Master Plan

Commitment

DWASA has committed to reduce dependency on ground water from 87% to 50% by 2015 and in this respect DWASA needs implementation of its projects as planned and discussed in the dialogue.

An inclusive and well planed coordination body has planned to be formed involving all related Ministries as mentioned to solve water problems in Dhaka city.

- Ministry of Local Government Rural Development & Cooperatives
- Ministry of Water resources
- Ministry of Environment and Forest
- Ministry of Industry
- Ministry of Shipping
- Ministry of Law
- Ministry of Labour
- Related organizational representative e.g DWASA, BWDB, DCC, LGD, DOE, BIWTA, RAJUK, DPHE
- Representative from Industrial Association.

Bangladesh Water Partnership will monitor the action plan and will hold follow up meeting with DWASA every year.

DWASA Strategy



- The DWASA strategy needs to be implemented
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