Singapore Water Management Framework
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Section 2 – Case Studies

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Section 2 – Case Studies

Agenda

Overview of Singapore Water Management

- Overview of Water Management Framework
- Water Supply Management
- Water Demand Management
- Unique Features of Singapore Water Management

Case Study – Marina East Desalination Plant

Discussion on a Hypothetical Case - IndoCity
Overview of Water Management System in Singapore
Water scarcity used to be a key concern back in 1970s and Singapore was heavily relying on imported water from Malaysia

Despite its sufficient rainfall, Singapore suffers from water scarcity due to

- Limited land area for water storage
- Absence of aquifers

Providing clean water to residence and industries have been a major concern for government since its independence in 1965.

Since its independence in 1965, Singapore heavily relies on water imported from Malaysia, through agreements reached in 1961 and 1962. It has been threatening water security of Singapore.

Singapore has gone through several water rationing exercises during dry spell in 1960s and 1970s.

A 10-month water rationing during Apr 1963 – Feb 1964 in Singapore

Source: PUB, TODAY News, Mothership website
Discussion: Integrated water management framework in Singapore to address the water scarcity

What are the three aspects of Singapore’s integrated water management framework?
With an integrated water supply and demand management, Singapore becomes a world leader for water management

1. Supply Management
   Water supply is managed through 4 national taps
   - Imported water from Malaysia
   - Local catchment water
   - Desalinated water (meet up to 30% of demand)
   - NEWater (meet 40% of demand)

2. Demand Management
   Water demand is managed from 3 main aspects
   - Water pricing – reflect the strategic importance
   - Water conservation policies (mandatory)
   - Public education (voluntary)

3. Overall Governance
   - Public Utilities Board (“PUB”) is the dedicated agency in charge of all aspects of water management
   - A central governance allows it to take a holistic approach and brings in unique features
     - Global hydro centre initiatives
     - Integration of city and water facilities

Source: PUB
Evolution of Singapore’s major water management policies and tools since its independence (1/2)

1970s
- Studied to test flow-restriction thimbles for water savings
- Introduced an increasing block tariff structure

1990s
- Introduced an explicit tax for water conservation in 1991
- A major water price revision in 1997

2009
- Set max. allowable flow rate for taps
- Introduced a Water Efficiency Labelling Scheme (WELS)

1971
- Set up a water planning unit under Prime Minister’s office (drew up the 1st Water Master Plan)

2003
- First two NEWater plants commissioning (Bedok and Kranji)

2005
- 1st Desalination plant commissioning (SingSpring)

2007
- 3rd NEWater plant commissioning (Ulu Pandan)

Legend
- Water Conservation
- Water Pricing
- NEWater plant
- Desalination Plant
- Local Catchment

Source: PUB
**Evolution of Singapore’s major water management policies and tools since its independence (2/2)**

**Section 1 – Overview of Water Management System in Singapore**

**Legend**
- Water Conservation
- Water Pricing
- NEWater plant
- Desalination Plant
- Local Catchment

**Supply Management**
- **2010**
  - 4th NEWater plant commissioning (Changi)
- **2011**
  - Local water catchment area reached 50% of Singapore’s land surface
- **2013**
  - 2nd Desalination plant commissioning (Tuaspring)
- **2017**
  - 3rd Desalination plant commissioning (Tuas)
  - 5th NEWater plant commissioning (Changi 2)
  - Local water catchment area reached 2/3 of Singapore’s land surface
- **2020**
  - 4th & 5th Desalination plant estimated commissioning (Marina East & Jurong Island)

**Demand Management**
- **2010**
  - 4th NEWater plant commissioning (Changi)
- **2011**
  - Local water catchment area reached 50% of Singapore’s land surface
- **2013**
  - 2nd Desalination plant commissioning (Tuaspring)
- **2017**
  - Increase of water price by 30% over 2017 - 2018

Source: PUB

Singapore Water Management Framework • PwC
Understand the value chain of Singapore’s water industry

Section 1 – Overview of Water Management System in Singapore

Singapore Water Management Framework

- Water source
  - Water treatment plant
  - Desalination plant
  - NEWater plant
  - Water reclamation plant: Treat used water to International standards
  - Water Equipment / Technology Companies

- Water provision network
  - SP Services: Meter reading / billing / collection of water charges
  - User: Payment / cash flow

Governed by PUB
Contracted by PUB
Payment / cash flow
Provision of Services

Source: PUB

July 2018
Section 1 – Overview of Water Management System in Singapore

Get to know the key private players in Singapore’s water industry who partner with government on water plants

- The environmental technology arm of Keppel Corporation, a multinational conglomerate listed on the Singapore Exchange
- Provides environmental solutions in waste water and solid waste. Annual revenue of Keppel Corporation in 2017 was S$ 6.0 billion
- Keppel developed Singapore’s third NEWater plant (Ulu Pandan NEWater plant) and is building Singapore’s fourth desalination plant (Marina East Desalination plant)
- A utilities, marine and urban development group listed on the Singapore Exchange. Within its utilities business line, it develops, owns, and operates water and energy assets. Sembcorp Industries has capabilities for water treatment, desalination, and water reclamation. Its annual revenue in 2017 was S$ 8.3 billion
- Developed Singapore’s fourth NEWater plant (Sembcorp Changi NEWater plant)
- Wholly owned subsidiary of Chinese water utilities company Beijing Enterprises Water Group. It builds and operates water treatment plants, as well as provide EPC services for the water sector. Its annual revenue in 2017 is US$ 2.7 billion
- BEWG International developed Singapore’s fifth NEWater plant (BEWG-UESH NEWater plant) jointly with Singapore environmental engineering company UES Holdings
- A leading environmental engineering company in Singapore which undertakes projects in water treatment, renewable energy, air treatment and pollution control. It has been a member of the Singapore Water Association since 2004, which promotes Singapore as a one-stop center for water-related services and technology, as well as seeks to develop a vibrant water industry in the country
- UES Holdings jointly developed Singapore’s fifth NEWater plant with BEWG International
- Tuas Power is one of Singapore’s largest power generation companies. It provides energy solutions, as well as environmental and utilities services
- ST Engineering is an integrated defence and engineering group which specializes in the aerospace, marine, electronics and land systems sectors. It is listed on the Singapore Exchange, and has a revenue of S$ 6.6 billion in 2017
- The consortium of Tuas Power and ST Engineering has been selected to construct Singapore’s fifth desalination plant (Jurong Island Desalination plant)

1.1 Water Supply Management
3 key water management strategies form a water supply cycle

Water Supply Cycle

Three key strategies to water management

1. Collect every drop of water
   Local water catchment

2. Reuse water endlessly
   NEWater

3. Desalinate seawater
   Desalination plant

Imported water

Source: PUB

Note: DTSS refers to Deep Tunnel Sewerage System, which is a system for used water collection, treatment, reclamation and disposal
Discussion: Water sources for supply management

Three key strategies to water management

1. Collect every drop of water
   - Local water catchment

2. Reuse water endlessly
   - NEWater

3. Desalinate seawater
   - Desalination plant

+

Four national water sources

What are the water sources in your city and % of water demand met by respective water sources?

What are the challenges for your city to adopt the 4 water sources as Singapore?
Four National Taps in Singapore contribute to a robust and diversified water supply system (1/4)

1) Local Catchment

Local Catchment Demonstration

Local catchment system are divided into two systems:
1) Rainwater/storm-water collection – through a comprehensive network of drains, canals and rivers that lead to reservoirs;
2) Used water/ waste water collection – through a network of underground sewers and eventually channelled to water reclamation plants.

Two types of local catchments by location:
1) Protected catchment – left in their natural states;
2) Unprotected catchment – development limited to residential and non-pollutive industries

17 Local catchments across island;

Local catchment covers 2/3 of Singapore’s land space compared to 11% when it became independent;

Regular inspection and testing are in place to ensure the water quality;

Source: PUB, Channel Newsasia
Four National Taps in Singapore contribute to a robust and diversified water supply system (2/4)

2) Imported Water

Singapore has signed 2 Water Agreements with Malaysia for water importation,
1) Water Agreement signed in 1961 (expired in 2011 and not renewed)
2) Water Agreement signed in 1962 (expiring in 2061)

Under the Water Agreement signed in 1962

- Volume per day (SG draw from MY): 250 MGD
- % of treated water to return to MY: 2%
- % of demand met by imported water: c.40%

Note: MGD refers to millions of gallons per day

Potential issues with water importation from Malaysia

Growing water demand in Malaysia
- Water usage in Johor has been expanding due to the growing economy

Water pollution and drought
- Johor river water level reached historic lows due to drought, pollution and large discharge to combat salinity since early 2015

Source: PUB, TODAY News

Expected to strain Malaysia’s water export commitment to Singapore
Discussion: Challenge of water importation

What are the challenges of water importation?

- Increasing water demand in the source city/country
- Threat to water security
- Sustainability Concern
- Source water pollution
- Threat to foreign policy strategies
- Other challenges

Singapore Water Management Framework • PwC
Four National Taps in Singapore contribute to a robust and diversified water supply system (3/4)

3) NEWater

- **Recycled** used water into clean, high-grade reclaimed water
- Cheaper than desalinated water by more than **50%**
- **Economical** for industrial manufacturing processes given the higher water grade
- Also **used indirectly for domestic supply** by adding small amount of NEWater into reservoirs

**Timeline of NEWater in Singapore**

- **1970s**
  - Commissioned a feasibility study but not implemented due to high cost and unproven reliability
- **2000**
  - A full-scale demonstration plant with 10,000 cbm production daily
- **2003**
  - First two NEWater plants (Bedok and Kranji)
- **2007**
  - 3rd NEWater plant (Ulu Pandan)
- **2010 & 2017**
  - 4th and 5th NEWater plant (Changi)
- **2060**
  - Higher NEWater capacity (est.)

**Accumulative Capacity**

- **1970s**: 19 MGD
- **2000**: 72 MGD
- **2003**: 122 MGD
- **2010 & 2017**: ~ 400 MGD

**Water supply from NEWater**

- **Now**: 40% of demand met by NEWater
- **2060**: 55% of demand met by NEWater

Source: PUB

Singapore Water Management Framework • PwC

July 2018
Four National Taps in Singapore contribute to a robust and diversified water supply system (4/4)

4) Desalinated Water

Details of Singapore Desalination Plants

1. 2005 SingSpring Desalination Plant 30mgd
2. 2013 Tuaspring Desalination Plant 70mgd
3. 2018 Tuas Desalination Plant 30mgd
4. 2020 (est.) Marina East Desalination Plant 30mgd
5. 2020 (est.) Jurong Island Desalination Plant 30mgd

Energy Cost of Desalination Plant

- Desalination plant turns seawater to drinking water at a much higher cost than NEWater
- Current energy cost is c. 3.5kWh/cbm; there are plans to further reduce the cost by half with more advanced technology
- In 2015, PUB partnered with an U.S firm to explore a new desalination technology, which reduced the energy cost to 1.65kWh/cbm at a small scale (to be further validated at a commercial scale)

Water supply from Desalination plants

Now 25%

2060 30%

Source: PUB, Channel Newsasia
Discussion: Challenges of recycled water vs. desalinated water

What are the challenges of the two water sources?

<table>
<thead>
<tr>
<th>Recycled Water</th>
<th>Desalinated Water</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Public acceptance</strong></td>
<td><strong>Higher cost than recycled water</strong></td>
</tr>
<tr>
<td><strong>Water quality</strong></td>
<td><strong>Carbon footprint</strong> (related to the high energy consumption)</td>
</tr>
<tr>
<td>Other challenges</td>
<td>Other challenges</td>
</tr>
</tbody>
</table>

Why desalinated water is an important water source to Singapore given its higher cost compared to NEWater?

Source: PUB, Channel Newsasia
Learn from Singapore’s approach to water management

Government’s Principles at Play

- Capture every drop of rain that falls on Singapore
- Collect every drop of used water
- Recycle every drop of water more than once
- Desalinate more seawater

Key Factors to Water Recycle

- Circular water approach with focus on water recycling
- Multiplier effect of water recycling - recycled more than once
- Successful awareness-raising program achieved a high public acceptance of recycled water

Source: PUB, TODAY News
1.2 Water Demand Management
Discussion: Water demand management

What are the water demand management policies/tools in your city?

What are the challenges of managing water demand faced by your city?
Singapore places parallel emphasis on water demand management as on supply management (1/2)

- Water demand is projected to double by 2060.
- Water demand in Singapore is actively managed in order to achieve water self-sufficient by 2060.

### Water Pricing

- Water pricing has been a **central component of demand management**

<table>
<thead>
<tr>
<th>Component of water price</th>
</tr>
</thead>
<tbody>
<tr>
<td>Water tariff</td>
</tr>
<tr>
<td>Water conservation tax</td>
</tr>
<tr>
<td>Waterborne Fee</td>
</tr>
</tbody>
</table>

- **Effective water pricing promotes water conservation**

- **30%** increase in water price over 2017 – 2018*
- Encouraged a lower water consumption

<table>
<thead>
<tr>
<th>Year</th>
<th>Per capita household water consumption (Liter)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016</td>
<td>148</td>
</tr>
<tr>
<td>2017</td>
<td>143</td>
</tr>
</tbody>
</table>

*The first revision after 17 years since 2000, other than introducing a separate tariff for NEWater

Source: PUB, NUS, The Straittimes
Singapore places parallel emphasis on water demand management as on supply management (2/2)

### 2 Water Conservation Policy (Mandatory)
- Mandatory policy to **cut down on excessive flow and wastage of water**

**Examples**

#### Low Capacity Flushing Cisterns (LCFCs)
For both domestic and non-domestic sectors, a **maximum allowable flow rate** are stipulated for different fitting and appliance

#### Water Efficiency Labelling Scheme (WELS)
- Introduced in 2006 to help customers to **make informed decisions**;
- Extended to be **mandatory for certain appliance**, requiring only appliances with acceptable ratings can be sold in Singapore

**Non-domestic only – Water Efficiency Mgt Plan**
- Organisations in non-domestic sector considered large water users are **required to submit Water Efficiency Management Plans** to PUB

### 3 Public Education (Voluntary)
- PUB makes effort to **raise public awareness of water conservation** through educating the young generation, community campaign, and award to recognise top water efficiency performer.

**Examples**

- **At Home**
  - Water Saving Kits
- **At School**
  - Education to Students
- **Recognition**
  - Water Efficiency Awards

Source: PUB
1.3 Government Initiatives on Water Management
Section 1 – Overview of Water Management System in Singapore

Initiative 1 - Developing a global hydro centre to address future water challenges

To address the multi-faceted water challenges it faces, Singapore has continuously sought to foster a conducive environment to develop a thriving water industry ecosystem. It strives to continue being a Global Hydro Hub, where there is a hotbed of R&D, inbound/outbound investment activities, and application of the best technologies to drive sustainable growth in the water industry.

- Since 2006, S$670 million has been committed to develop leading water technologies
- Funding schemes are in place for R&D activities by both public and private sectors
- Attracts major intl. players to base R&D operations in Singapore
- Government offers post-graduate scholarships to develop research talents in the water sector (e.g. Environment and Water Industry Programme office)
- Local universities have set up water research institutes to bring together the best minds for exchange of ideas
- PUB facilities such as NEWater plants are widely available for test-beding opportunities of new technology products and services
- Government schemes to speed up the commercialisation (e.g. financial incentives, mentoring)
- Government works with intl. water players to base their operation/ headquarter in Singapore
- Assisted local water companies to expand operations overseas via branding / networking opportunities (e.g. Singapore International Water Week)

Source: PUB

Singapore Water Management Framework • PwC
Section 1 – Overview of Water Management System in Singapore

**Initiative 2 - Integrated water facilities with city to co-create a city of gardens and water**

**Active, Beautiful, Clean Water (ABC Waters)**

- Under the ABC Waters program, Singapore turns reservoirs, rivers and canals into recreational options for residences, beyond their conventional function of channelling and storing water.

**Marina Barrage**

Marina Barrage is the 15th reservoir and the first in the city centre. It has a catchment area of 10,000 hectares and commissioned in 2010.

**Threefold Benefit**

1. **Water Supply**
2. **Flood Control** - Tidal barrier to prevent flooding in low-lying city areas
3. **Lifestyle Attraction** – a venue for water-based activities

**Kallang River @ Bishan-Ang Mo Kio Park Project**

A collaboration between PUB and National Parks that turns a concrete canal into a naturalized river and a vibrant space for community bonding and recreation.

Source: PUB

Singapore Water Management Framework •

PwC
Marina East Desalination Plant (MEDP)

- Marina East Desalination Plant (MEDP) is the 4th desalination plant in Singapore and expected to be completed in 2020.
- The first desalination plant allows dual water source (i.e. seawater and fresh water). It has a dual flow chamber to switch between feeding the plant with 2 water sources.
- The first to open its facility to the public for recreational purpose. The grassy roof can take up to 700 people, while all water treatment equipment located underground.
**MEDP - Project Overview**

<table>
<thead>
<tr>
<th><strong>Key Information of Project</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Capacity</strong></td>
</tr>
<tr>
<td>30 mgd (Seawater RO) + 30 mgd (Reservoir Water RO)</td>
</tr>
<tr>
<td><strong>Project Scope</strong></td>
</tr>
<tr>
<td>• Seawater and Reservoir Water Intake System</td>
</tr>
<tr>
<td>• Brine Outfall System</td>
</tr>
<tr>
<td>• Pre-treatment System (Clarification/Micro-Strainers)</td>
</tr>
<tr>
<td>• MF/UF Systems</td>
</tr>
<tr>
<td>• Seawater RO and Brackish Water RO System</td>
</tr>
<tr>
<td>• Post Treatment</td>
</tr>
<tr>
<td>• Pumping Systems</td>
</tr>
<tr>
<td>• Product Water Tanks</td>
</tr>
<tr>
<td>• Chemical Dosing System</td>
</tr>
<tr>
<td>• Waste Treatment and Conveyance</td>
</tr>
<tr>
<td><strong>Concession</strong></td>
</tr>
<tr>
<td>Design-Build-Own-Operate (“DBOO”)</td>
</tr>
<tr>
<td><strong>Construction Phase</strong></td>
</tr>
<tr>
<td>Estimated 2.5 years</td>
</tr>
<tr>
<td><strong>Project Commercial Operation Date (PCOD)</strong></td>
</tr>
<tr>
<td>30 December 2019</td>
</tr>
<tr>
<td><strong>Operation Phase</strong></td>
</tr>
<tr>
<td>25 years</td>
</tr>
<tr>
<td><strong>Handover Facilities</strong></td>
</tr>
<tr>
<td>Pipework connections to Product Water Distribution System, Telemetry system, parkland green reserve, the CC maintained facilities, and certain other roads, road extension and associated facilities</td>
</tr>
</tbody>
</table>
Section 2 – Case Studies

MEDP - Proposed DBOO Structure

Investors
- Financier
- Equity Investor

Public Sector
- PUB

Step-in Agreement
(signed among PUB, Concession company and Financier)

Financing Agreement

Shareholder’s Agreement

Concession Company

Contractors
- O&M Contractor
- EPC Contractor
- Energy Supplier

Land Lease

Water Purchase Agreement

Energy Supply Agreement

Source: PUB Market Sounding documents
## MEDP – Technical Aspect

### Warranty Capacity
- Reservoir water, 30MIGD
- Sea water >= 30MIGD

### Obligation of PUB
- Not under any obligation to take or accept any product water

### Construction Scope
- Plant building, treatment units within enclosed building and basement
- Water pipeline through marina clay
- Offshore pipeline
- Architectural and landscaping work

### Power Supply
- Dedicated 66kV supply from Singapore Power with power back-up for essential services

### Public Access Facility
- Roof top with green features
- Architectural and landscape features on and around the plant building

Source: PUB Market Sounding documents
Section 2 – Case Studies

**MEDP – Financial Aspect (1/2)**

### Tariff Payments

1. **Availability Payments**
   - Capital Cost Recovery
   - Fixed Power
   - Fixed O&M

2. **Output Payments**
   - Variable O&M
   - Variable Power

3. **Deduction**
   - Reduced Availability
   - Reduced Quality
   - Reporting Failure

Source: PUB Market Sounding documents
## MEDP – Financial Aspect (2/2)

<table>
<thead>
<tr>
<th>Components</th>
<th>Key Drivers</th>
<th>Indexation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Availability Payment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Cost Recovery Payment (CCRP)</td>
<td>• CAPEX&lt;br&gt;• Debt service&lt;br&gt;• Equity returns&lt;br&gt;• Taxes</td>
<td>NA</td>
</tr>
<tr>
<td>Fixed Power Payment (FPP)</td>
<td>• Contracted / uncontracted capacity charges&lt;br&gt;• Reactive power charges</td>
<td>NA</td>
</tr>
<tr>
<td>Fixed O&amp;M Payment (FOMP)</td>
<td>• Manpower cost&lt;br&gt;• Routine maintenance cost</td>
<td>Singapore CPI (SCPI)</td>
</tr>
<tr>
<td><strong>Output Payment</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Variable Power Payment (VPP)</td>
<td>• Cost of fuel&lt;br&gt;• Cost of procuring power</td>
<td>HSFO 180 cST*</td>
</tr>
<tr>
<td>Variable O&amp;M Payment (VOMP)</td>
<td>• Chemical costs&lt;br&gt;• Spare parts costs&lt;br&gt;• Membrane replacement</td>
<td>Singapore CPI (SCPI)</td>
</tr>
<tr>
<td><strong>Deductions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduced Availability</td>
<td>• Loss of net water production due to:&lt;br&gt; - Declared unavailability&lt;br&gt;  - Deemed unavailability&lt;br&gt;  - No dispatch due to non-confirming product water quality</td>
<td>-</td>
</tr>
<tr>
<td>Reduced Quality</td>
<td>• Water supplied fails to meet the water quality specifications</td>
<td>-</td>
</tr>
<tr>
<td>Reporting Failure</td>
<td>• Misreporting of declared available capacity</td>
<td>-</td>
</tr>
</tbody>
</table>

Source: PUB Market Sounding documents

* cST refers to Singapore Fuel Oil 180 cst (Platts) contracts
**MEDP – Legal and Contractual Aspect**

**Water Purchase Agreement**
- **Dual water source** and follow PUB’s dispatch instruction
- **Termination compensation** specified for PUB’s fault/ Concession Company’s fault/ Force Majeure
- **Step-in rights** offered to financier and PUB
- **Equity transfer** restriction and requires PUB’s approval

**Land Lease Agreement**
- PUB sub-lease to Concession Company
- Pipeline rights of way
- PUB has rights to designate public areas

Source: PUB Market Sounding documents
**MEDP – Unique features**

1. **Dual Water Source**
   - Increase water security

   - **Sea Water**
   - **Reservoir Water**

2. **Fenceless Plant with Public Access**
   - Blend with the East Coast Park it locates in

   - **Allow Public Access**
   - **Underground Treatment Machinery**
   - **Above-ground Plant with green features**

Source: Asiaone, PUB Market Sounding documents

Singapore Water Management Framework • PwC
### Summary of recent water projects

<table>
<thead>
<tr>
<th></th>
<th>Marina East Desalination Plant</th>
<th>Jurong Island Desalination Plant</th>
<th>Changi NEWater Plant 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plant Type</strong></td>
<td>Desalination Plant</td>
<td>Desalination Plant</td>
<td>Wastewater treatment Plant</td>
</tr>
<tr>
<td><strong>Commercial Operation Start Year</strong></td>
<td>2020</td>
<td>2020</td>
<td>2017</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td>60 MGD</td>
<td>30 MGD</td>
<td>50 MGD</td>
</tr>
<tr>
<td><strong>Concession Model</strong></td>
<td>DBOO</td>
<td>DBOO</td>
<td>DBOO</td>
</tr>
<tr>
<td><strong>Operation Phase</strong></td>
<td>25 years</td>
<td>25 years</td>
<td>25 years</td>
</tr>
<tr>
<td><strong>Payment</strong></td>
<td>Availability Payment</td>
<td>Availability Payment</td>
<td>Availability Payment</td>
</tr>
<tr>
<td><strong>Unique Features</strong></td>
<td>• Dual water sources</td>
<td>• Co-located with an existing power plant to derive potential synergies and cost savings</td>
<td>• The first plant built by a foreign-local consortium</td>
</tr>
<tr>
<td></td>
<td>• Public access to plant facilities</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion: Public-Private Partnership model

What are the key issues in water sector of your city?

Do you think MEDP model can address those issues?

What are the challenges if were to build MEDP in your city?

Any governance body to oversee implementation in your city?
Thank you