Access to water in Mumbai’s slums is inequitable, unreliable, expensive, and unable to meet growing demand.

Aging and wasteful infrastructure and the limited ability of governing body to supply water to unrecognized slums has prevented significant progress in improvement.

Any successful plan to address this problem will need to increase the reliability and quantity of per capita water, reduce the price, and increase quality.

Our proposed solution is decentralized and short-to-medium term supplementing of the existing system, rather than replacing it.
The stakeholders affected by Mumbai’s water supply issues are diverse and often have conflicting interests.

### Stakeholder map and key interests in relation to the BMC

- **State government**
  - Maximize quantity and quality of water supplied to residents of Mumbai under the constraint of long-term economic viability

- **BMC**
  - Fulfill mandate given by State government and judiciary

- **Industry**
  - Ensure continued supply of water at reasonable costs

- **Non-slum residents**
  - Ensure continued supply of water at reasonable costs

- **Slum dwellers**
  - Get increased access to reliable, safe and affordable drinking water

- **Water merchants**
  - Protect lucrative black water market

- **NGOs**
  - Improve living conditions of slum dwellers; fulfilling altruistic intentions of donors

### Potential conflicts of interest in Mumbai's slum water supply issue

- Potentially unwilling to shoulder price increases arising from extended service to slum dwellers
- May not be willing/able to pay full cost of supply and/or demand unreasonably high service quality
- May perceive extended service as threat to their business model
The problem has to be put in the context of the supply chain, which is characterized by significant leakages and illegal tapping.

Key pain points:
- A significant amount of water is lost on the way from the lakes to the city reservoirs, either due to leaks or illegal tapping.
- Old, unmapped infrastructure leads to high leakage rate and complicates maintenance.
- Water is taken out of the official supply chain, either through corruption or illegal tapping in order to be sold in unrecognized slums. This puts further strain on the infrastructure and increases the leakage in the system.
- Inefficient use of water and no significant re-use of water leads to high degree of waste.

30% total water leakage in system.
Several actors are already addressing the water access issue. However, major shortcomings limit the effectiveness of these efforts.

<table>
<thead>
<tr>
<th>Description of current efforts</th>
<th>Involved actors</th>
<th>Key shortcomings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Directive of High Court to BMC to supply all slum settlements, including those that are not officially recognized</td>
<td>Judiciary, BMC</td>
<td>No mandate for slums on central government lands, No in-home connections, High price for consumers</td>
</tr>
<tr>
<td>Workarounds to lack of access through illegal tapping and water black markets</td>
<td>BMC, Water merchants, Slum residents</td>
<td>Creates pain point, Price of water is very high when supplied through water merchants</td>
</tr>
<tr>
<td>Community based solutions such as waste water treatment, micro-financing for slum residents, awareness campaigns for clean water usage, local water storage facilities, etc</td>
<td>NGOs, Slum residents, BMC</td>
<td>Relies on goodwill of donors, Lacks scale and longevity as solutions are neighborhood specific</td>
</tr>
<tr>
<td>Pilot projects to identify leaks in pipes through helium injection</td>
<td>BMC</td>
<td>One-off pilots and no continuous improvement efforts</td>
</tr>
</tbody>
</table>

Design thinking approach: key features of life in Mumbai’s slums

**Economics**
- Volatile income stream
- Large share of income spent on water from merchants
- No access to formal financial services/credit
- Large opportunity cost through time spent on fetching water

**Housing**
- Slum community may or may not be officially recognized
- Control over house as either owned or rented
- Health issues caused by contaminated water

**Lifestyle**
- Access to mobile phone technology and phone credit
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Sources:
