Status-quo of China Water Shortage in Water Environmental

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## 2030 Year Water Limitation Problem in Estimation

<table>
<thead>
<tr>
<th>Year</th>
<th>2010</th>
<th>2020</th>
<th>2030</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population (10⁹)</td>
<td>1.39</td>
<td>1.50</td>
<td>1.60</td>
</tr>
<tr>
<td>GDP (10⁹ RMB)</td>
<td>17.44</td>
<td>34.89</td>
<td>52.33</td>
</tr>
<tr>
<td>Urbanization rate (%)</td>
<td>40</td>
<td>50</td>
<td>60</td>
</tr>
<tr>
<td>Urban city</td>
<td>1,200</td>
<td>1,800</td>
<td>1,900</td>
</tr>
<tr>
<td>Urban population (10⁹)</td>
<td>0.55</td>
<td>0.75</td>
<td>0.95</td>
</tr>
<tr>
<td>Waterway spread rate (%)</td>
<td>95</td>
<td>97</td>
<td>99</td>
</tr>
<tr>
<td>Waterway users (10⁹)</td>
<td>0.52</td>
<td>0.74</td>
<td>0.84</td>
</tr>
<tr>
<td>Water supply capacity (10⁵ m³/day)</td>
<td>211.5</td>
<td>255.5</td>
<td>295.5</td>
</tr>
</tbody>
</table>
The Actual Wastewater Treatment

- Total quantity
  \[>43.95 \times 10^9 \text{ m}^3/\text{Year}\]
  (Industrial: 47.1%, other: 52.9%)

- COD\textsubscript{Mn}: \(13.4 \times 10^5\) ton/Year,
  NH\textsubscript{3}-N: \(1.33 \times 10^5\) ton/Year

- Treatment rate: 29% only
7 big water resource system in a heavy pollution

BOD, NH$_3$-N, Phenol, KMnO$_4$, T-Mercury

The decrease of water level in the dam of Beijing
The Comparison of Cost Based on each Method

Seawater: 8.5 RMB/m³

Long distance water intake: 2.3 RMB/m³

Water reuse: 2.0 RMB/m³
The Future Development

- Wastewater Reuse Vision
  
  (omission)

- Data Objective
  
  The total wastewater reuse rate: 20% by 2030

- Projects
  
  The beginning of using MF Membrane in TainJin 2004
Thank you for your attention

御静聴ありがとうございました

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The Import of Technology Development

- Small installing area & low equipment investment
- High energy efficiency low operational cost
- Easy operation management
- High removal rate of BOD, COD, SS, N, P etc. with good quality of treated water
- Capable of treated water reuse
- Low remained sludge produced
The Small-scale wastewater treatment in the countryside

Membrane filtration for wastewater reuse
The New Technology for Wastewater Reuse in Application

1. Pin-rack Grit Remover
2. Screw Cutter
3. Hi-Rate Bio-Filter System
4. Oxidation Ditch Method
5. Ozone / BAC System
6. Helios Dewatering Machine