The linking role of the state as an intermediate enabler of municipal operating capabilities under a federal normative structure.
General context

- The state, between the normative role of Federal Government and the operating responsibilities of Municipalities and water users
- Water management as a system of exchanges (information, resources, reactions…)
- The water threat and the strive for improved efficiency and efficacy
- Decentralization as a key
  - Coordination, not subordination
  - Cooperation, not competition
- A model of six “levers” towards IWRM
Geographical & hydrological context
### Water Balance

#### Surface Water
- Runoff: 1,364 Hm³/year
- Extraction: 1,557
- Deficit: -193 Hm³/year

#### Groundwater
- Recharge: 2,778 Hm³/year
- Extraction: 4,027
- Deficit: -1,249 Hm³/year

*(Sources: CNA 1996, CEAG, 2000)*
### Water and sewage coverage (y. 2000)

<table>
<thead>
<tr>
<th>Towns/cities</th>
<th>Water connections</th>
<th>Sewage connections</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 (&gt;50,000 inhab.)</td>
<td>97.37%</td>
<td>95.82%</td>
<td>2'213,569</td>
</tr>
<tr>
<td>99 (2,500 - 50,000 inhab.)</td>
<td>96.73%</td>
<td>85.89%</td>
<td>891,479</td>
</tr>
<tr>
<td>8,821 (&lt;2500 inhab.)</td>
<td>81.55%</td>
<td>39.30%</td>
<td>1'520,882</td>
</tr>
<tr>
<td>TOTAL</td>
<td>92.05</td>
<td>75.32</td>
<td>4'625,930</td>
</tr>
</tbody>
</table>
A six “levers” model for IWRM

- Physical assets
- Financial Capital
- Human Capital
- Institutions
- Culture
- Natural capital

Sustainable services
A six “levers” model for IWRM

- Natural capital: **water forever**
- Physical assets: **water for everyone**
- Financial capital:
- Human capital: **people for water**
- Institutions:
- Culture:
Water forever

- Gather and organize available information
- Improve knowledge of water behavior and quality
  - Hydrological and hydro geological research
  - Installation of weather and flow measuring stations
- Systematize data
- Set up models for planning
  - Groundwater models
  - Vulnerability maps
  - Hydrological models
  - Socioeconomic integrated models
- Continuously update data & information
  - Piezometric, hydrometric and quality monitoring
Estaciones de Monitorio
Hidroclimatológico
Operadas por la CEAG
Monitoring well in operation
Piezometric constructed well
Water for everyone

- Increase coverage and physical efficiency in public and productive water user systems
  - Water efficiency and leak detection in urban networks
  - Measurement
  - Water efficiency in agricultural wells
- Reclaim wastewater for allowing water exchange schemes
  - Increase from 35 to 90% urban wastewater treatment capacity
- Import water from neighboring basins
  - Paso de Vaqueros
  - Rio Verde (El Zapotillo)
  - Rio Santa Maria (El Realito)
  - State water distribution project (Bajío and Laja aqueducts)
- Improve flood protection
  - Ortega, Cepio and Mariches dams
  - Protection works
Water connections (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban coverage</th>
<th>Rural coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>90</td>
<td>64</td>
</tr>
<tr>
<td>1995</td>
<td>95</td>
<td>75</td>
</tr>
<tr>
<td>2000</td>
<td>94</td>
<td>78</td>
</tr>
</tbody>
</table>

Sewage connections (%)

<table>
<thead>
<tr>
<th>Year</th>
<th>Urban coverage</th>
<th>Rural coverage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>84</td>
<td>21</td>
</tr>
<tr>
<td>1995</td>
<td>92</td>
<td>35</td>
</tr>
<tr>
<td>2000</td>
<td>94</td>
<td>47</td>
</tr>
</tbody>
</table>
Increase in household connections (%)
People for water: finance

- Promote efficiency to reduce costs and increase revenues
- Improve budgetary allocation
  - Focus on reducing regional and urban-rural differences
  - Two-stage allocation process
    - Prioritize according to infrastructure needs
    - Allocate to those fulfilling the requirements
- Negotiate a tariff reform
  - Bill and collect for all that needs to be collected
  - Improve measuring, billing, collection
  - Reduce cross-subsidies
    - Bill superfluous consumption for total cost recovery
    - Ensure economic access to essential consumption
- Increase capture of external subsidies and funds
  - Federal programs
  - Private participation: PROMAGUA
Efficiency

Energy efficiency:
- 44 municipalities with efficiency programs implemented
- 263 deep wells
- 2,286,739 KW-h/month
- ~ 200,000 US dlls/month
- Time for investment recovery: 14 months on average
- Tariff adjustment for cost optimization

Water distribution efficiency
- 42 hidrometric circuits: 6 finished, 36 under way
- Since 1996, state water program for leak detection

Collection efficiency
- 90% of utilities have updated commercial systems
Energy efficiency

Energy expenses vs. Total expense
(average of 25 water utilities in Guanajuato)
Average tariff raise per cubic meter

<table>
<thead>
<tr>
<th></th>
<th>2002</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>Domestic</td>
<td>$4.22</td>
<td>$5.30</td>
</tr>
<tr>
<td>Commercial</td>
<td>$6.92</td>
<td>$9.98</td>
</tr>
<tr>
<td>Industrial</td>
<td>$7.14</td>
<td>$4.76</td>
</tr>
<tr>
<td>Government</td>
<td>$3.90</td>
<td>$4.76</td>
</tr>
<tr>
<td>Total</td>
<td>$11.90</td>
<td>$6.22</td>
</tr>
</tbody>
</table>
Total average tariff raise per year

- 2% in 1995
- 4% in 1996
- 5% in 1997
- 4% in 1998
- 3% in 1999
- 4% in 2000
- 4% in 2001
- 4% in 2002
- 6% in 2003
- 21% in 2004
- 24% in 2005
- 26% in 2005

32% in eight years
71% in three years
Billing efficiency

<table>
<thead>
<tr>
<th>Year</th>
<th>Volume billed</th>
<th>Unaccounted-for water</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>225,458,658</td>
<td>86,066,800</td>
</tr>
<tr>
<td>2002</td>
<td>165,730,890</td>
<td>126,510,665</td>
</tr>
</tbody>
</table>

Note: These figures refer to the billing efficiency of water volume.
Reduction in cross-subsidy

1995: 49%
1996: 48%
1997: 44%
1998: 40%
1999: 38%
2000: 37%
2001: 36%
2002: 35%
2003: 29%
2004: 21%
2005: 17%
People for water: human capital

- Improve coordination
  - Bimonthly meetings with municipal utilities
  - Network of communication areas

- Build and strengthen capacities
  - Training
    - Engineering, accounting, fiscal issues
  - Cooperation with State University
    - Master in Integrated Water Management
    - Training courses on project and construction
  - Certification: 429 water workers since 2000
    - Commercial areas
    - Plumbers
    - Meter readers
    - Rural promoters
    - Water communication specialists

- Support research & development
  - State water fund for research on water (2000-2005)
  - Researchers and students meetings ("aqueous space")
People for water: institutions

- Improve State Water Commission’s capacities
  - Internal reorganization
  - Institutional Development Program
    - ERP implementation for thorough control of public works and internal administration
    - Personnel selection by open competition since 2000

- Improve municipal utilities legal stand
  - Decentralize utilities
  - Improve municipal regulations
Legal stand

- Decentralized utilities: 36
- Urban localities besides municipal head-cities: 71
- Municipal urban head-cities with centralized utilities: 4

Yearly breakdown:
- 1991: 14
- 1995: 23
- 1999: 29
- 2002: 35
- 2005: 36
People for water: culture

Water at school
- Agreements and programs for primary schools reaching more than 420,000 kids and youngsters
- Materials

Events
- Expo Agua: 12 years
- World water day
- Children events

Exhibitions
- Supported “water hall” at Explora museum

Capacities
- Training
- 36 of 46 municipalities and 14 COTAS taking part of a State network for water culture
Concluding remarks

Stakeholders

- The State Water Commission (CEAG)
- 36 public water utilities
- 46 Municipalities
- The State Congress
- National Water Commission (CONAGUA)
- 14 COTAS
- The State Water Users Council and 14 COTAS

Key outcomes

- Water management, a shared responsibility
- Optimize exchange of information and resources
- Decentralization: a matter of coordination, not of competition
Long term targets

- Consolidate processes besides products
- Adjust the State Water Law
- Keep a good communication with Federal Government, Congress and Municipalities
- Widen and improve social participation
- Set up the State Water Planning Council
- Update the medium and long-term state water programs
- Get synergies from the Sector Wide Approach Loan from the World Bank for strengthening processes and institutions
- Promote state water sector professionals organization
- Reassess and redirect weak issues
Lessons learned

- Improve coordination and exchange of information and resources between the public and private actors dealing with water management.
- State level as a linking actor between the Federal normative role and the Municipal and water users’ operating responsibilities.
- Instead regulatory bodies, a coordination-oriented approach proves to yield good results, measurable in terms of financial and technical efficiency improvement.
- Achieving IWRM requires to be open to re-engineering and continuous learning, where an action leads to the transformation of processes and institutions.
- Deal consciously with the dynamic equilibrium in the development and use of the assets for sustainability: natural, infrastructure, financial, human, technological, institutional-legal and cultural resources.
- Investing in institutional strengthening is instrumental: better processes, institutions and methods can take the sector’s capacity to a higher and measurable level of performance.