

The Dilemma of Water Management “Regionalization” in Mexico under Centralized Resource Allocation

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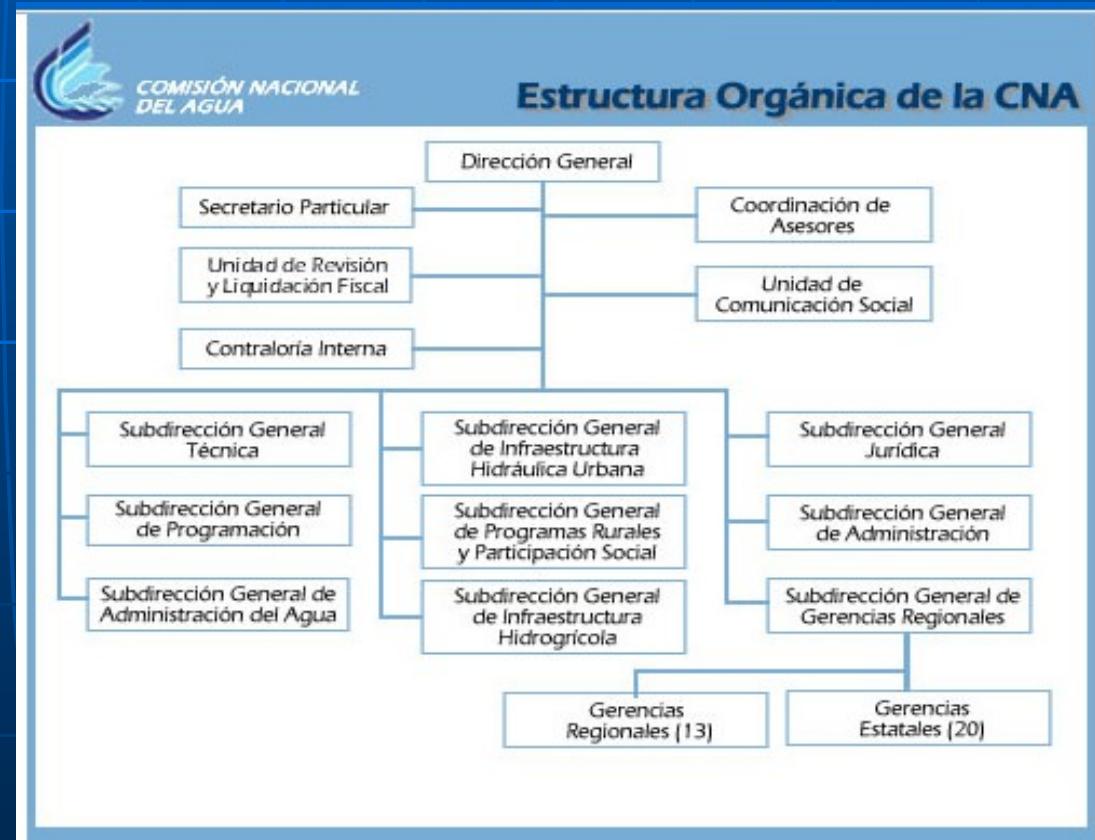
Background

- IWRM in Mexico has focused on IRBM
- 1940s – river basin commissions constituted for several important basins, with broad regional development mandates
- At that time, water was the jurisdiction of irrigation ministry, subsequently shifted to agriculture, water resources, and currently the environment portfolio of public administration

YEAR	MEXICO WATER MANAGEMENT INSTITUTIONAL MILESTONES
1921	Dirección de Irrigación
1937- 1946	Comisión Nacional de Irrigación
1947-	La Secretaría de Recursos Hídricos (SRH)
1976	1969 - Dirección de Operación de Pequeña Irrigación
1972	Ley Federal de Aguas
1977	Secretaría de Agricultura y Recursos Hídricos (SARH)
1970s	Plan Nacional Hídrico Descentralización del manejo de agua municipal
1989	Comisión Nacional de Agua (CNA)
1992	Ley de Aguas Nacionales
1992	Transferencia de los Distritos de Riego a los usuarios. Inicio de la creación de los Consejos de Cuenca
2003	Reforma a la Ley de Aguas Nacionales Regionalización de la CNA

Comisión Nacional del Agua

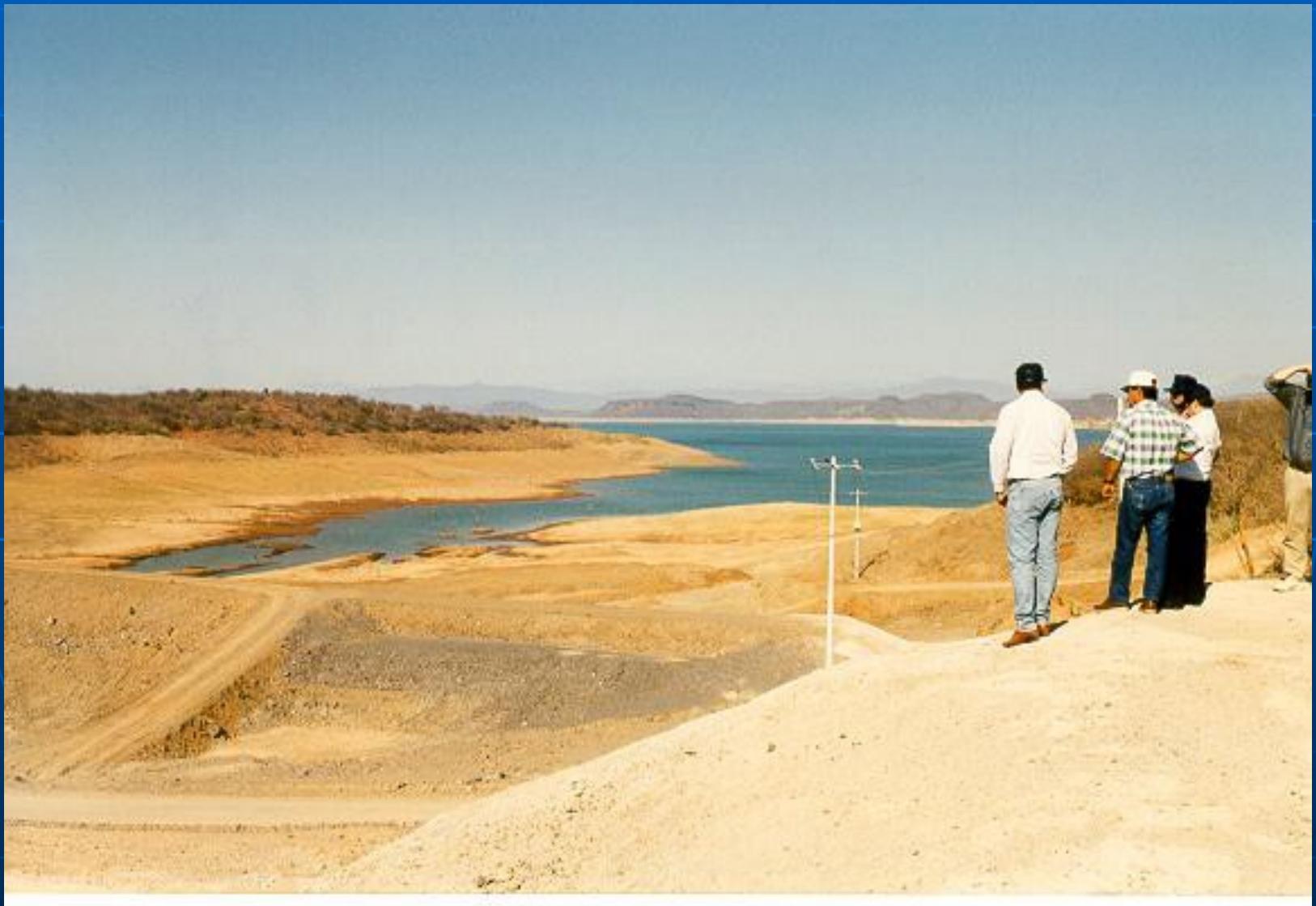
- Part of Dept. of Environment and Natural Resources (Secretaría de Medio Ambiente y Recursos Naturales, SEMARNAT)
- Annual budget > \$1 billion
- Increasing emphasis on water allocation and water quality
- Regional offices to become basin organizations.



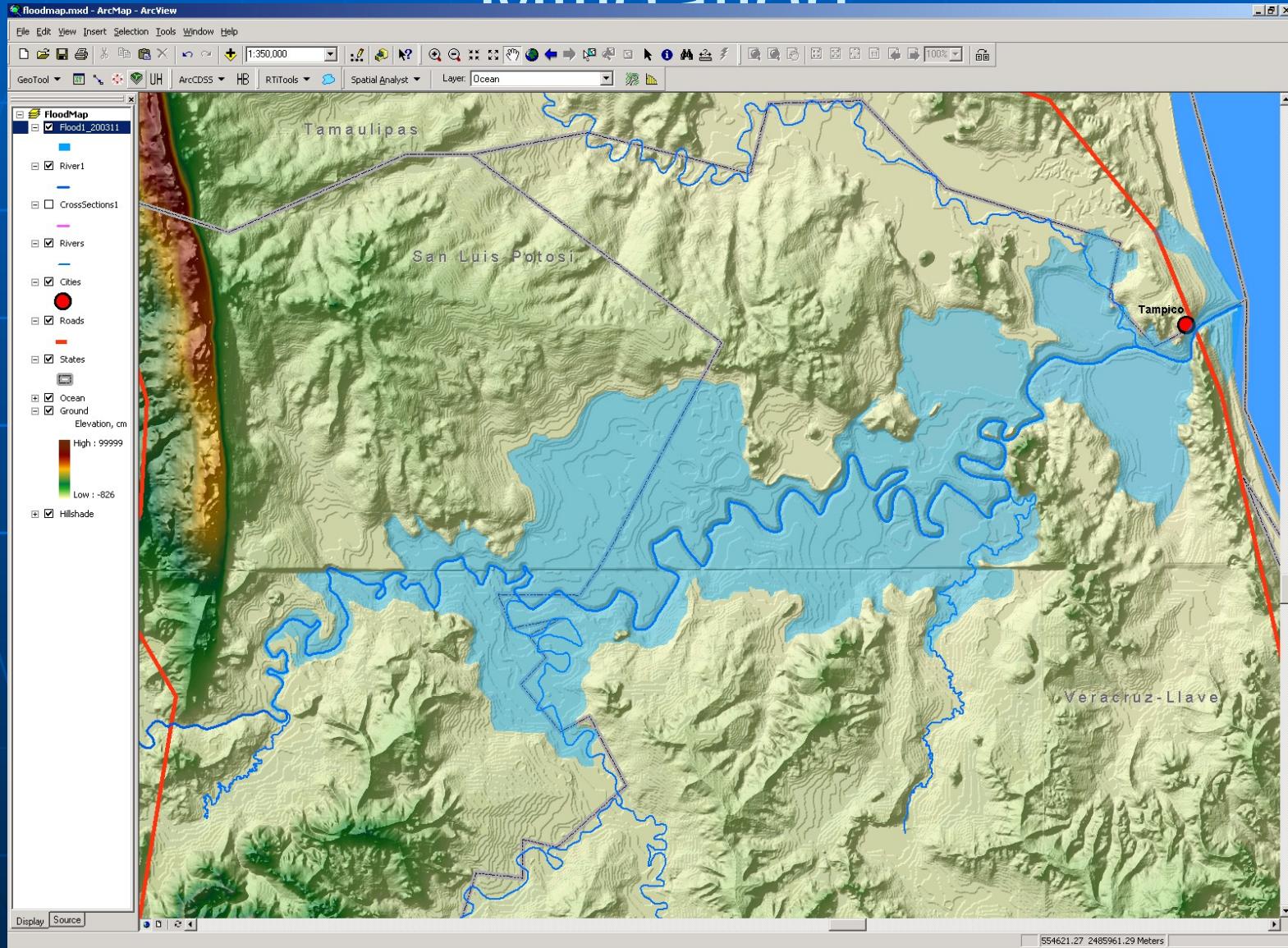
Water Allocation

- Particularly for northern and central Mexico, water scarcity is the driving constraint behind reservoir operation
- In some instances, flood risk mitigation is an important consideration
- Hydropower dams run by the CFE, informally implying basin water allocation

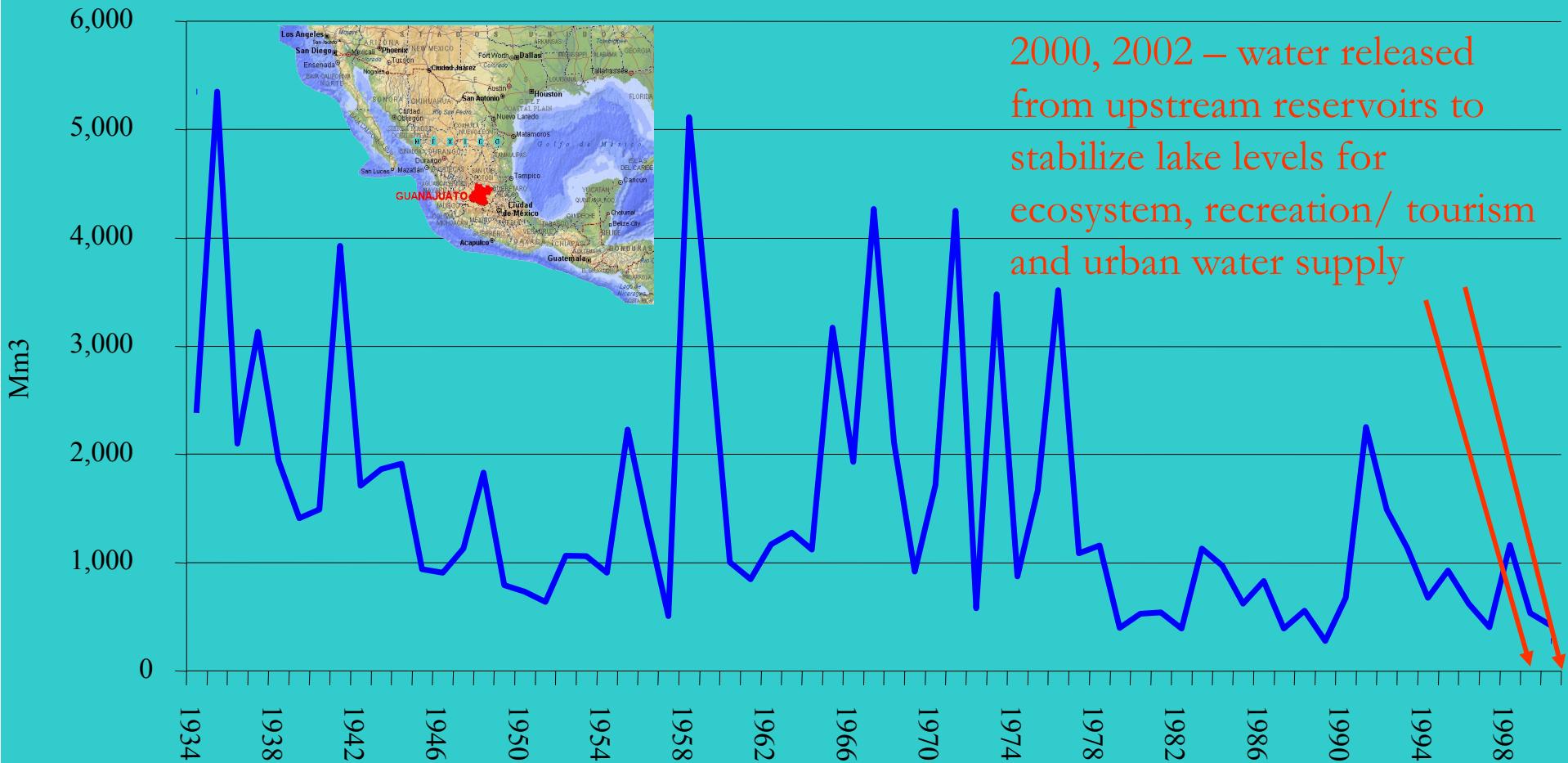
Water Resources & Scarcity



Reservoir Operation for Flood Risk Mitigation



Inflows to Lake Chapala, Mexico



2000, 2002 – water released from upstream reservoirs to stabilize lake levels for ecosystem, recreation/ tourism and urban water supply

Current Use = Water Deficit

YEAR	LERMA – CHAPALA BASIN INSTITUTIONAL MILESTONES
1950-76	Comision de Estudios del Sistema Lerma-Chapala-Santiago
1960-76	Plan Lerma (Banco Interamericano de Desarrollo, BID)
1989	Acuerdo de coordinacion Lerma-Chapala, 5 estados y gobierno federal
1991-2003	Acuerdos de distribucion de aguas superficiales Lerma-Chapala
1992	Consejo de Cuenca Lerma-Chapala
1998	Modificación al acuerdo de distribucion de aguas
2001 -04	Nuevo acuerdo, “plan maestro”
2004	Desarrollo de Modelo para la distribucion de aguas superficiales Lerma-Chapala, con base al volumen del Lago de Chapala
2005	<u>Convenio de Coordinación y Concertación</u>

Lerma-Chapala Basin Council

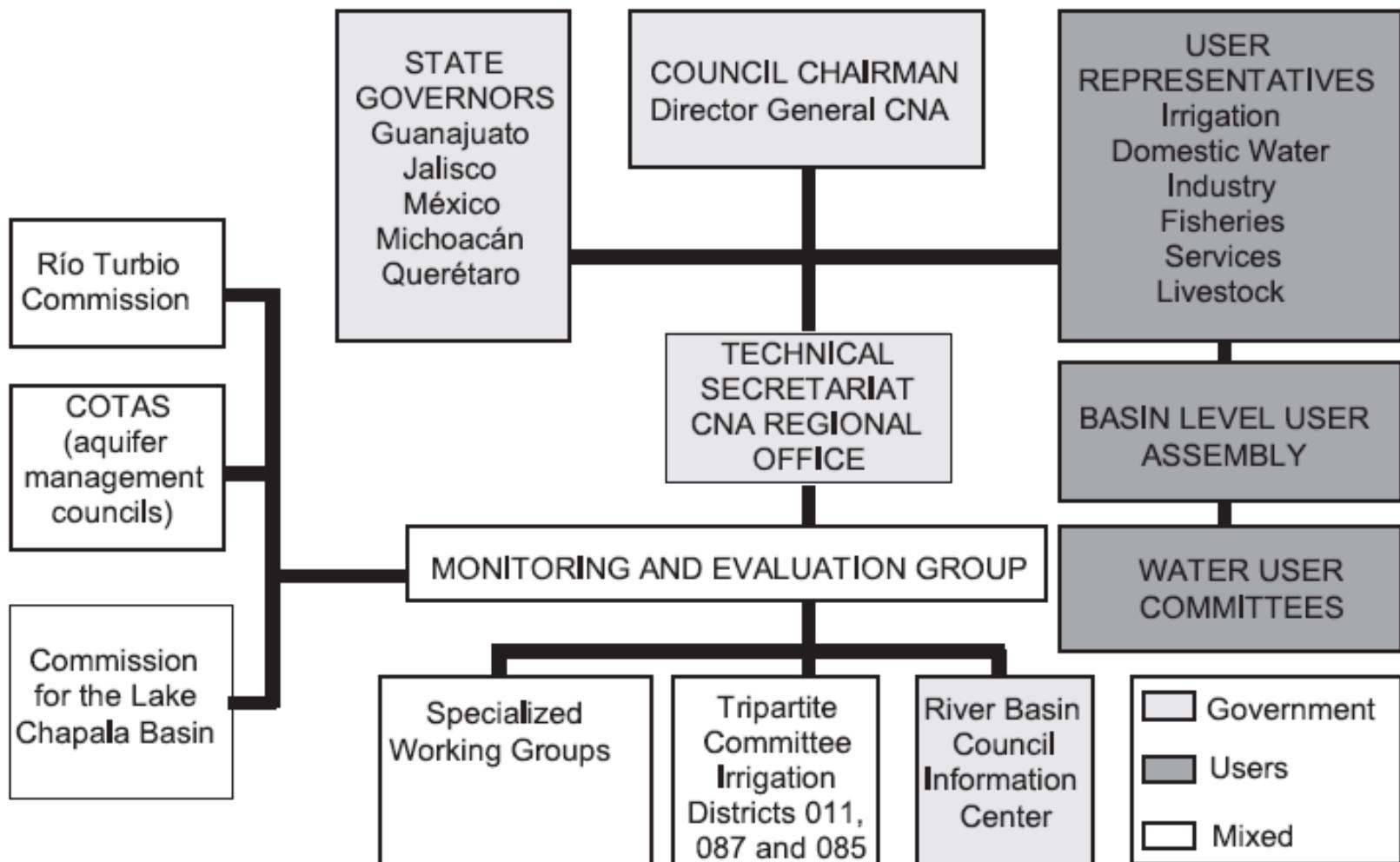


Fig. 8.3. Structure of the Lerma–Chapala River Basin Council.

Irrigation Development the Culprit?

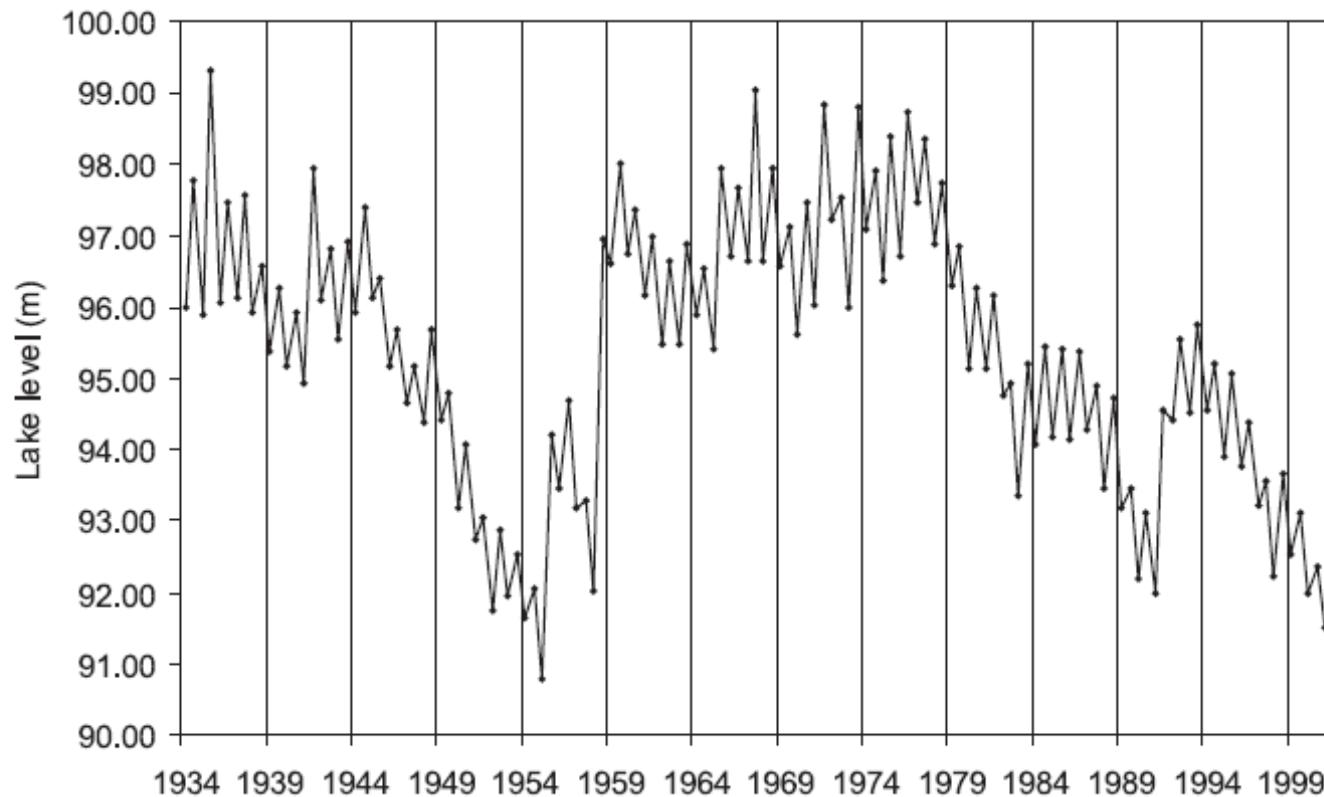
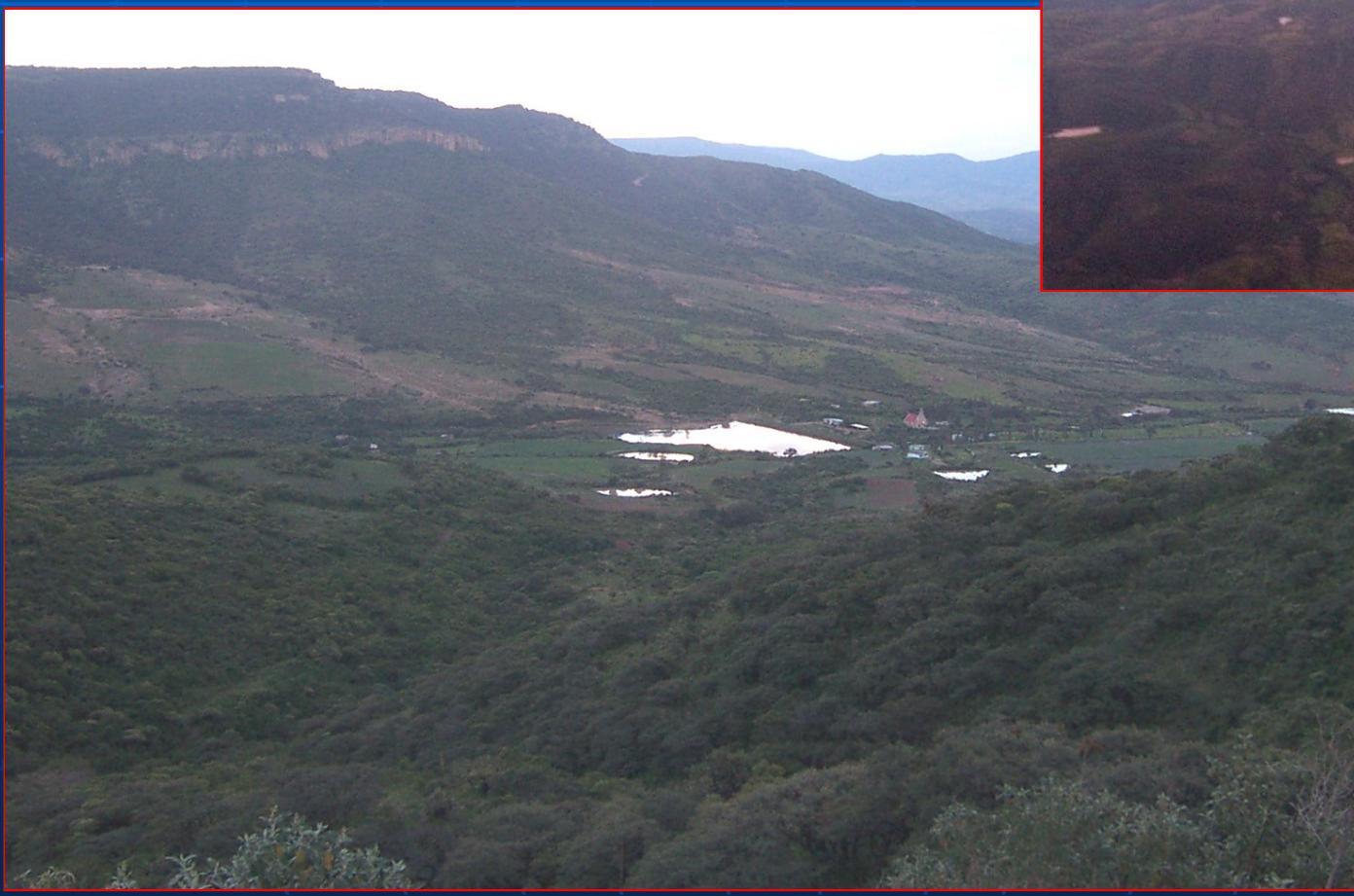


Fig. 8.2. Lake Chapala water levels and basin developments.

	1930s	1940s	1950s	1960s	1970s	1980s	1990s
Rainfall (mm) ^a	670	648	685	757	740	668	720
Population (millions) ^b	2.5	3.0	3.6	4.5	5.9	8.7	11.0
Storage capacity dams (MCM) ^c	747	1,628	1,817	3,269	3,840	4,499	4,499
Irrigation (ha) ^d	n.a.	175,843	250,500	408,746	681,668	657,734	689,743
Lake inflow from Lerma (MCM) ^e	2,864	1,652	1,692	1,773	1,931	590	n.a.
Lake extractions (MCM) ^e	2,638	1,049	674	1,350	1,817	308	293

“Bordos” in Mexico: A Solution or More Trouble?



Current Use = Water Deficit

Table 8.1. Water balance of the Lerma–Chapala Basin.

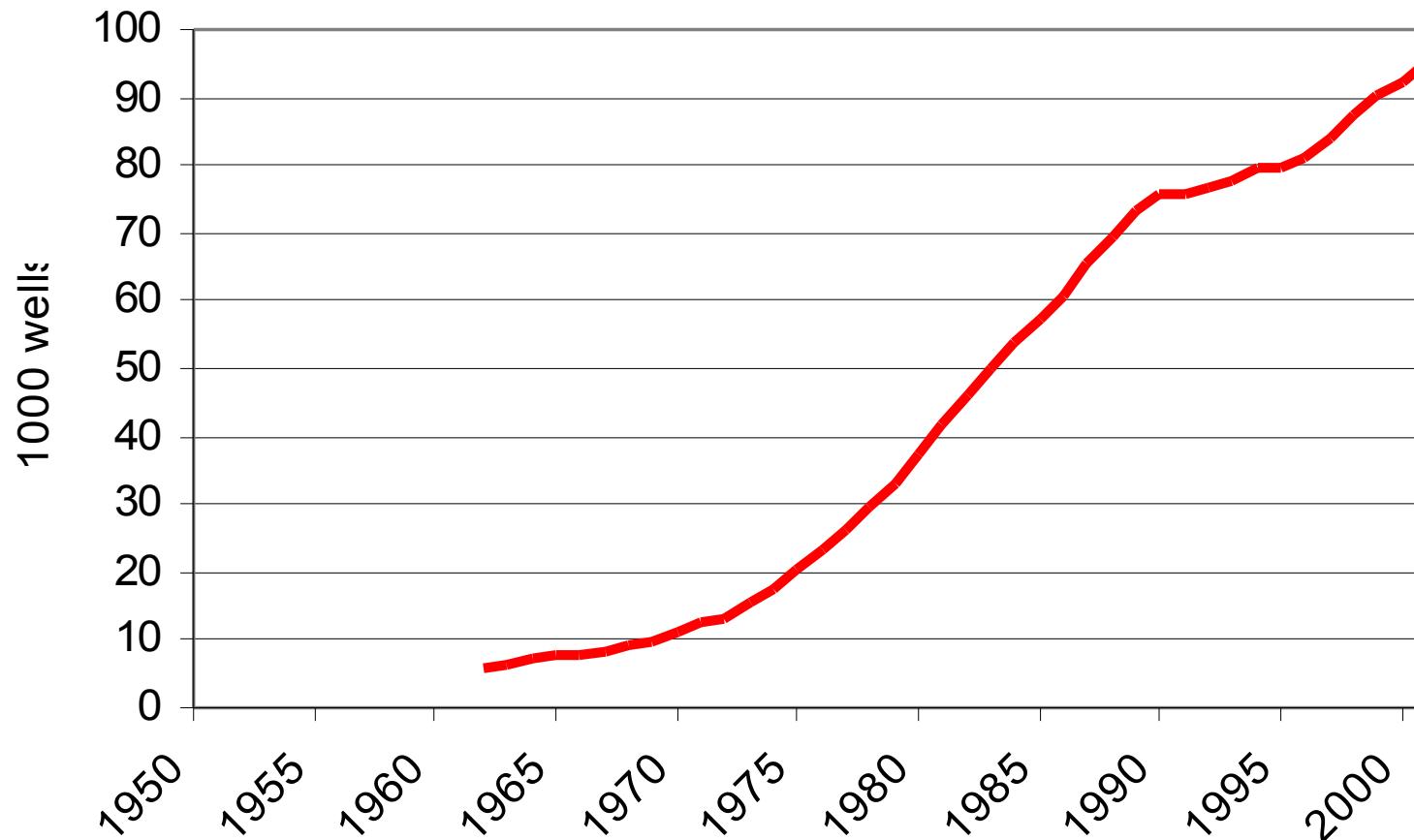
	Surface water		Groundwater		Total	
	MCM	%	MCM	%	MCM	%
Runoff/recharge	5,757	100	3,980	100	9,737	100
Total depletion	6,016	104	4,621	116	10,637	109
Irrigated agriculture	3,424	59	3,160	79	6,584	68
Urban	40	> 1	751	19	791	8
Out-of-basin transfer	237	4	323	8	560	6
Industry	39	> 1	239	6	278	3
Other	6	> 1	148	4	154	2
Total consumptive use	3,746	65	4,621	116	8,367	86
Evaporation from water bodies	2,270	39	–	–	2,270	23
Balance	–259	–4	–641	–16	–900	–9

Source: CNA (1999a).

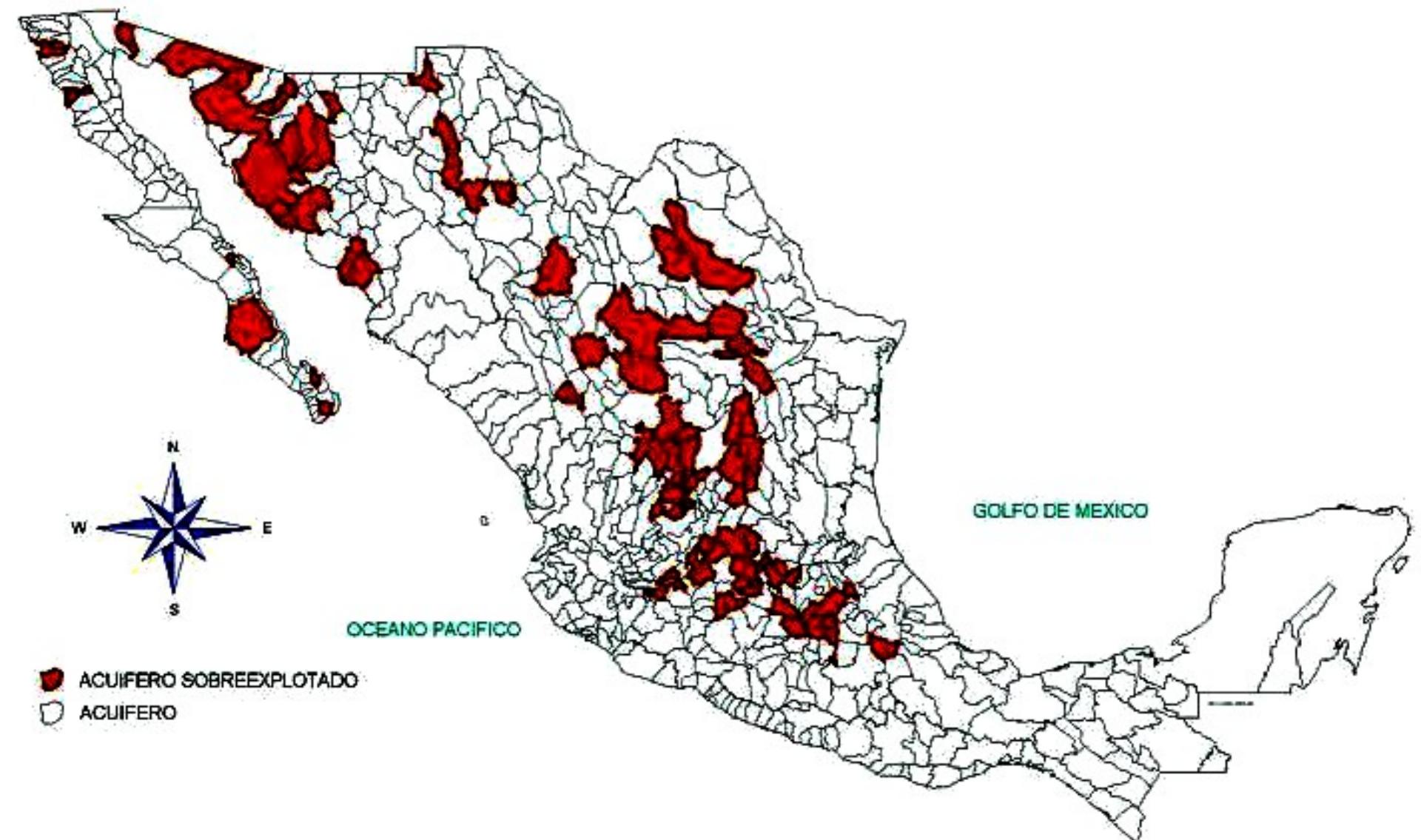
Groundwater Boom

Number of Wells in Mexico

Mexico, Number of Agricultural Wells



Aquifer Overdraft



Groundwater Management

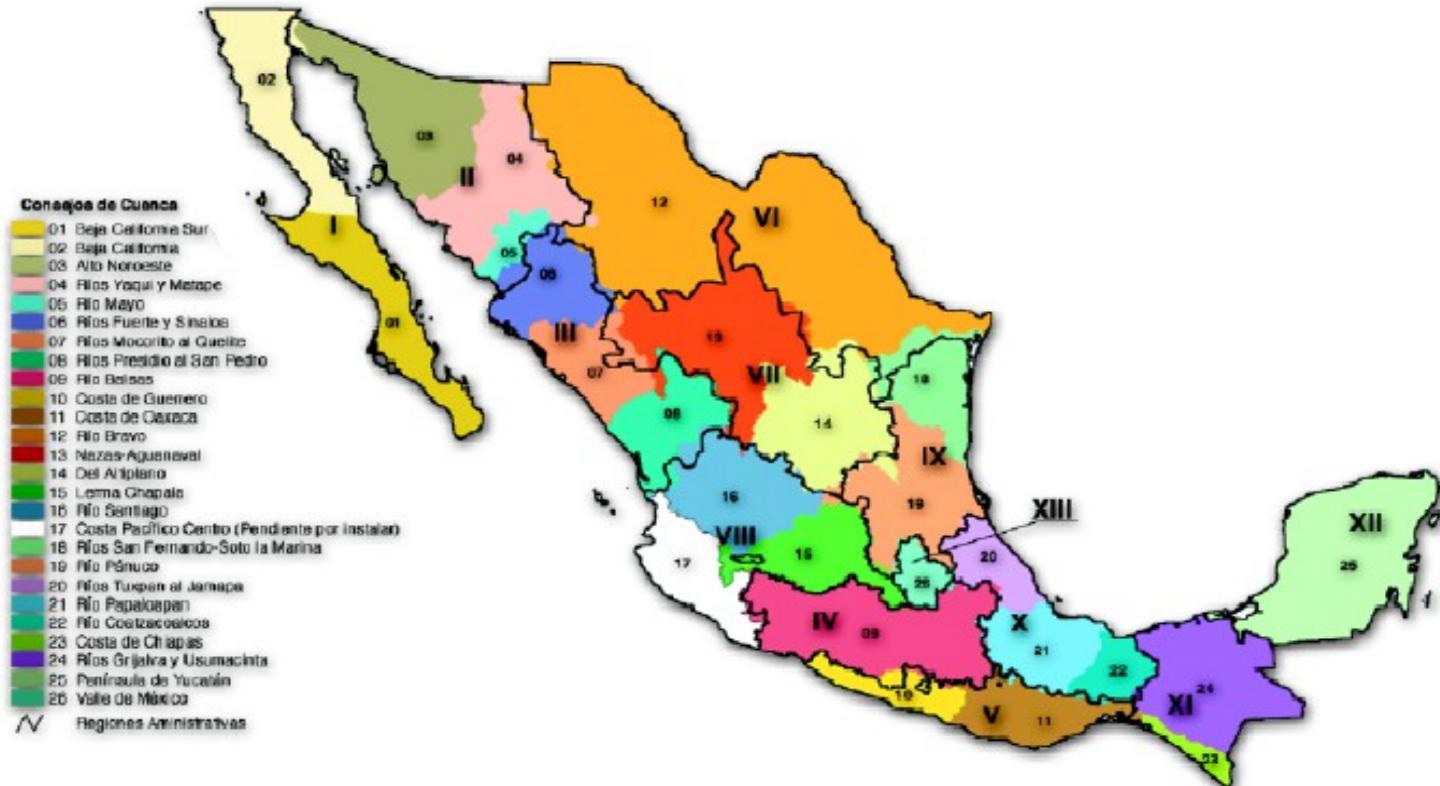
- Competing approaches to user participation:
 - CNA – Comites Tecnicos de Aguas Subterraneas
 - State of Guanajuato – Consejos Tecnicos de Aguas
- Energy Law (Ley de Energia para el Campo)

Confronting the Challenge

- IWRM in a river basin context = IRBM
- Agriculture (irrigation) invariably identified in the adversarial position
- Efficiency measures inadequate
- Broader allocation approach essential

River Basin Councils (through recognized as a leader, still a great deal of work to do)

Consejos de cuenca



Water Management Decentralization to 13 “Regions”

Relación entre Mesorregiones-Regiones Hidrológico-Administrativas de la CNA



2 Las regiones hidrológico-administrativas están conformadas por los municipios completos que en su mayor proporción quedan dentro de las cuencas que conforman a cada región. En mayo de 1998 fueron publicados en el Diario Oficial de la Federación (DOF) los municipios que conforman cada una de las 13 regiones hidrológico-administrativas y en octubre de 2000 fueron publicados en el DOF algunos ajustes a la regionalización en commento.

River Basin Organizations

- Revision to the LAN law published 29 April 2004 gave the CNA 18 months to decentralize the 13 regional offices as river basin organizations
- The end-October 2005 date has passed, yet no regulations to the LAN to create RBOs
- Unofficially, discussion on further revisions

Decentralization

- States increasingly calling for additional revenues and authority over resources
- State level functions in water management are being sidelined
 - Both State Water Commissions
 - And CNA state offices (federally funded)
- Are basin organizations the federal (CNA) gambit to neutralize rising state political power?

Conclusions

- IWRM in Mexico – well over a decade of implementation, interpretation and refinement
- Decentralization through IRBM is both an institutional and an operational choice that was made and has been (legally) committed to
- Major hurdles, while not insurmountable, require overcoming vested organizational interests
- What roadmap for river basin organizations in Mexico?