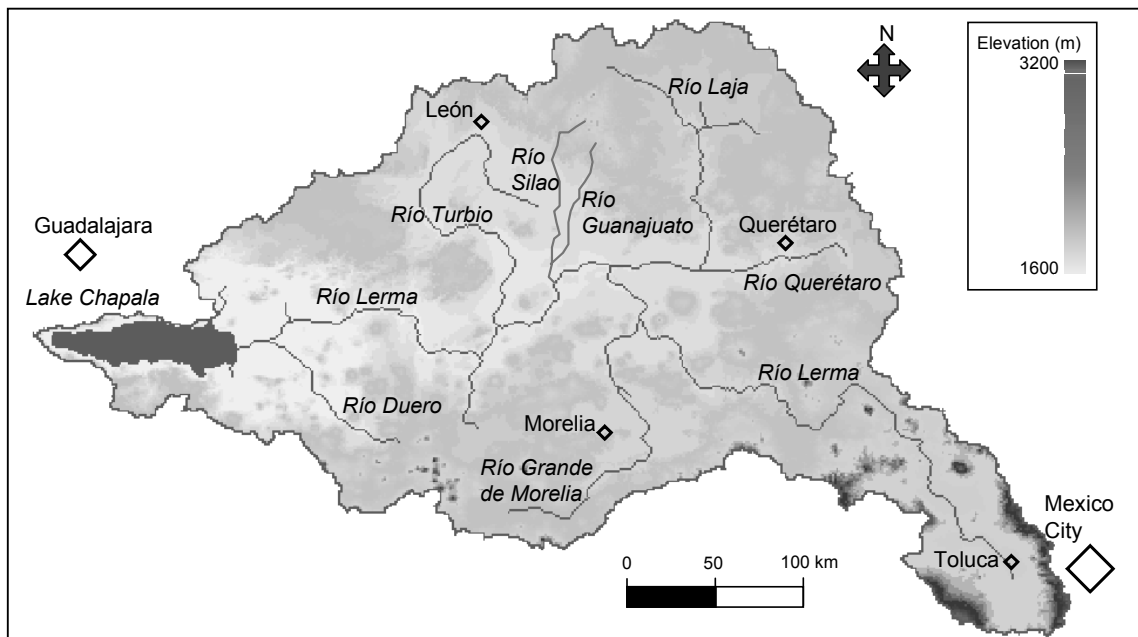


## Basin short profile

Name	<b>Lerma-Chapala</b>	Country	<b>Mexico</b>
Area	54,300 km <sup>2</sup>	Altitude	From 3,200 m to 1,500 m
Rainfall/Evapo	<p>Average rainfall: 736 mm            Max: 1,070 mm (1958)            Min: 494 mm (1999)            Modal/bimodal: modal            Crop reference ETo: 1,900 mm/year</p>		
Landuse (year)	Rainfed agriculture (45%); Irrigated agriculture (15%); Scrub (16%); Grassland (10%); Forest (10%); Other (4%)		
Irrigation	Total ≈ 795,000 ha (285,000 ha in 11 large-scale canal systems, 510,000 ha in farmer-managed and private irrigation systems). 27 large dams provide surface water to 235,000 ha; 1,500 smaller reservoirs serve 180,000 ha. Some 26,000 deep tubewells provide groundwater to 380,000 ha. Up to 40,000 ha also or solely using wastewater		
Water Indicators	<p>Runoff coefficient: 14.4%      Renewable water available: 882 m<sup>3</sup>/year/pers            Regulated water (% rainfall and % run-off): 14.4% and 100%            Beneficial (process) depleted fraction: 39%            Non-committed outflow to sink: -4% of total runoff            Water diverted per person: ≈ 2084 l/day/capita            Water use per sector (depletion): Agriculture 68%, Industry 3%, Human consumption 8%, Inter-basin transfer 6%, Other 2%, Environment (evap. from water bodies) 23% (Total 109%)</p>		
Drinking water	Nearly all (95%) from groundwater (deep wells), only Guanajuato City from surface water. Inter-basin transfer of 237 MCM surface water to Guadalajara and 323 MCM groundwater to Mexico City		
Main crop(s)	Maize (37%), Sorghum (21%); Wheat (9%); Barley (7%); Vegetables (7%); Grass (6%); Beans (3%)		
Population	11,000,000 people (2000); Pop. Density: 202 p/km <sup>2</sup> . Sex ratio: ? % Population under 18: ? / Religion: 91% Catholic / Population growth 1990-1995: 2.16 % per annum.		
Floods	The larger dams offer partial regulation, although flooding is common during the rainy season, mainly in agricultural areas		
Groundwater	Groundwater accounts for 53% of total consumptive use. Groundwater over-exploitation had lead to aquifer level declines of 1 to 5 m/year, with static levels from 100 to 300 m. Rivers infiltrate to aquifers, very little groundwater base flow.		
Environmental and health issues	Lake Chapala drying out; Most other lakes and wetlands in serious trouble Severe erosion in upper watersheds Severe water pollution, both biological and chemical		
Protected areas	Small nature reserves in parts of Guanajuato and Michoacan		
Land/labour	Average farm size (irrig): 4.7 ha (ejido), 10 ha commercial farmers	Rural daily wage: \$4	
Land tenure	Irrigated lands are either privately owned or communal land (ejidos). Ejido land is currently being titled on an individual basis, after which it can enter the market.		
Water	Highly complex and polycentric (see page 3 for overview). National Water		

Management	<p>Commission (CNA) custodian of the nation's water and responsible for water management in the basin. Irrigation districts managed by WUAs, under CNA supervision, irrigation units and private systems managed by farmer groups, commercial enterprises, WUAs, etc.</p> <p>River Basin Council (formed in 1993) comprising federal and state governments as well as user representatives active in river basin management.</p> <p>Aquifer management councils bringing together all users of an aquifer recently formed.</p>
Allocation rules	<p>Surface water is national property placed in the trust of the federal government. Federal government (through CNA) concedes surface water-use rights to users (individuals or WUAs) for periods ranging from 5 to 50 years, setting out the volumes of water concession holders are entitled to. CNA may adjust the quantity each receives annually to reflect water availability, with priority given to domestic water users. For surface water Mexico follows the proportional appropriation doctrine with concession holders sharing proportionally in any shortages or surpluses of water. In Lerma-Chapala CNA, through the River Basin Council, allocates surface water yearly based on surface water treaty of 1991.</p> <p>For groundwater federal government may intervene in aquifers in overdraft by issuing pump permits or declaring that new pumps may not be installed.</p> <p>Groundwater concessions in Mexico are granted on a volumetric basis, with a maximum extraction or pumping rate specified.</p>
Hydropower	192 GWh hydropower station under Tepuxtepec dam
Legal framework	Water Law of 1992 and Regulations of 1994. Amended on various occasions, with a thorough revision in 2003 accepted by Congress and Senate but vetoed by the President.
Politics, Civil Society	Stakeholders participation in natural resource management limited. Several NGOs are present in the basin, mainly defending Lake Chapala.
Future developments	<p>Reduction of irrigated areas and modernization of irrigation systems</p> <p>Ecological restoration plan for the basin</p> <p>Conflict between agriculture and government</p>



General basin layout map

### Key actors and essential basin management functions in the Lerma-Chapala Basin

Key Actors	Surface Water									Groundwater						Derivative Water						
	Plan (basin-level)	Allocate Water	Distribute Water	Construct Facilities	Maintain Facilities	Monitor Quality	Ensure Quality	Protect Against Flooding	Protect Ecology	Plan (basin-level)	Allocate Water	Withdraw/Distribute Water	Construct Facilities	Maintain Facilities	Monitor Quality	Ensure Quality	Plan (basin-level)	Allocate/Distribute	Construct Facilities	Operate/Maintain Facilities	Monitor Quality	Enforce Quality
Ministry of Environment	Reg			Reg			Reg		Reg		Reg									Reg	Reg	
CNA National Headquarters	Aut	Aut		Aut	S	S	S	S	S	S	Aut		Aut		S		S		Aut		S	S
CNA Regional Office	E	E/S	S	S	S	S/E	S/E	S	E	S	S		S		S		S		S/A	S	S/E	E
River Basin Council	Rep	Rep		Rep					A		Rep						Rep		Rep	A		
CNA State Office	A	E	S	E	S	E	E	E			E	S	S		E				E		E	E
State Water Commissions	E/A	A	A	E/A	S/A			S/A	A	A	A		E	A	E		A		S/A	A		
CNA Irrigation District Office			E	E	Aut																	
WUAs Irrigation Districts	Rep		E	Rep	E							E						Aut				
WUAs Irrigation Units			E		E							E										
Aquifer Management Councils (COTAS)	Rep								A	A	Rep		A									
Municipal Water Supply Utilities			E	E	E			E				E	E	E	E			Aut	E	E	E	
Industries												E	E	E					E	E		
NGOs	A								A													
Irrigators			E									E	E	E				E				

Execute (E), Supervise (S), Advise (A), Authorize (Aut), Regulate (Reg) and Represent (Rep)