

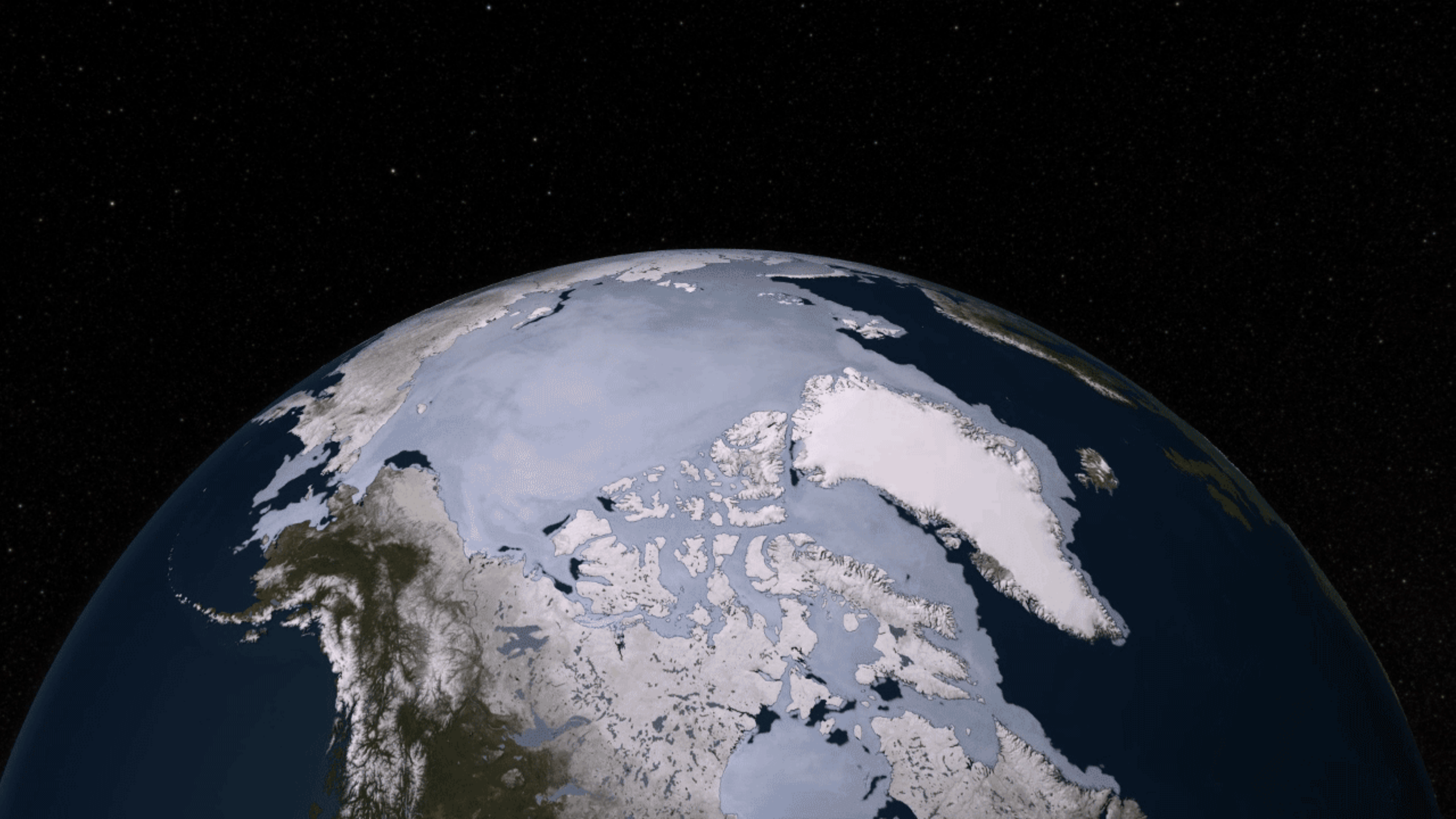
An aerial photograph of a river basin, likely the Colorado River, showing a winding river through a dry, brownish landscape. In the foreground, a large, gnarled, and leafless tree stands on a rocky outcrop. The background shows a vast, flat expanse of land with some distant structures and a hazy horizon. The overall tone is somber and desolate, reflecting the theme of river basin closure.

# THE DEVELOPMENT OF RIVER BASIN CLOSURE IN THE COLORADO RIVER

Linda-Estelí Méndez  
PhD student in Ecology

Picture: Environmental Defense Fund





An aerial photograph of a dry, winding river in a desert landscape. The river is a dark, narrow line of water or mud, snaking through a vast, arid, brownish-grey terrain. In the foreground, a dead, gnarled tree with bare branches stands prominently. The sky is a pale, hazy blue. The overall scene conveys a sense of environmental degradation and water scarcity.

# THE DEVELOPMENT OF BASIN CLOSURE IN THE COLORADO RIVER

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PhD student in Ecology

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# OUTLINE

- Goal of presentation
- Theory on the development of ‘hydraulic societies’
- The development of the Colorado River
- A second wave of water development you can’t see
- The challenge ahead
- Groundwater management in CA and AZ

# GOAL

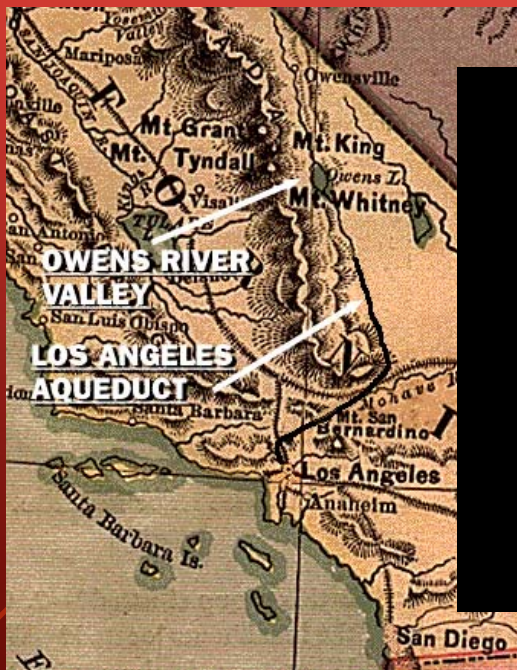
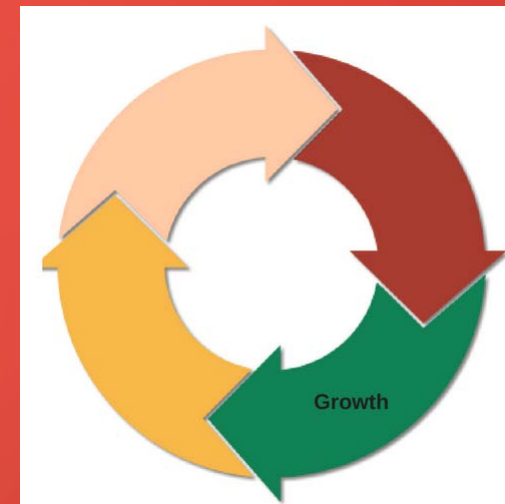
- To frame the hydraulic development of the Colorado River Basin to understand water policy solutions and management today.

# WORSTER'S HYDRAULIC SOCIETY

- Hydraulic Society in California: An Ecological Interpretation
  - “My own choice is to be deposited by the side of a concrete-lined irrigation canal in Kern County, by a stream that is not a stream, where no willows are allowed to grow or herons or blackbirds nest. That intensely managed piece of nature tells us a great deal about contemporary rural life and land use, some of it profound, some of it disturbing, all of it indicative of a world-wide momentum (p. 503).”

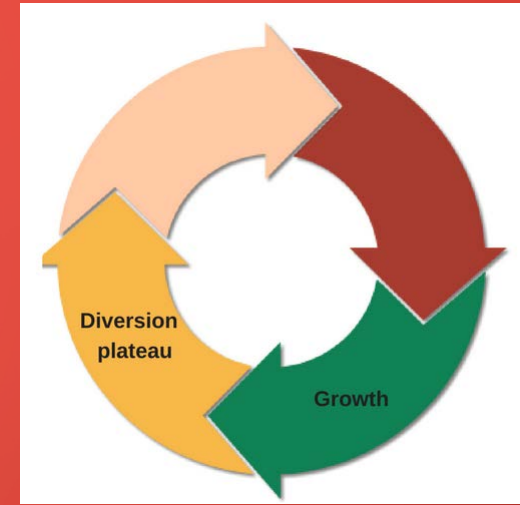
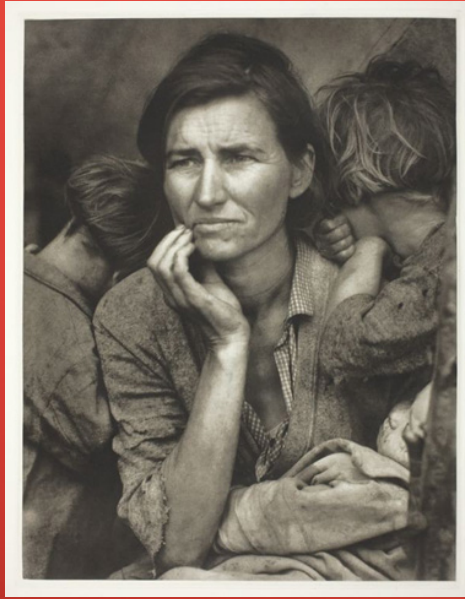


# THE FRAMEWORK

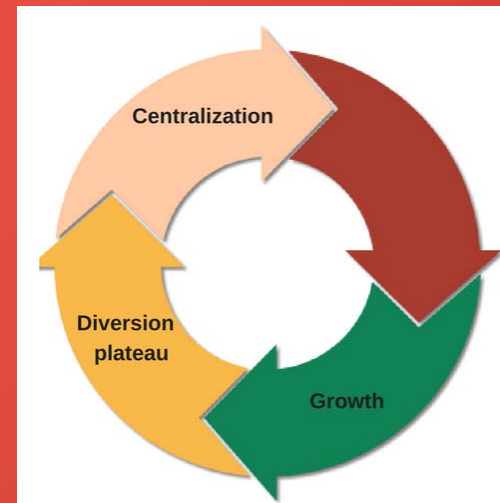




# THE FRAMEWORK



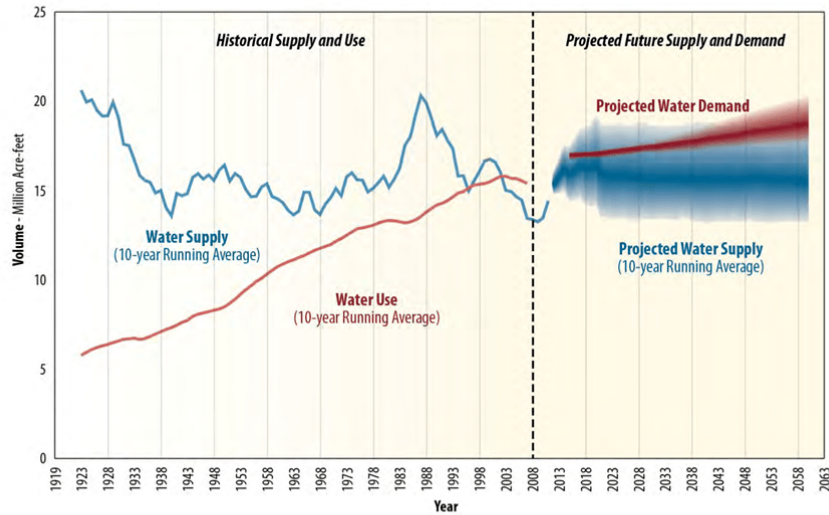
# THE FRAMEWORK



# THE FRAMEWORK

## Colorado River: rising demand, questionable supply

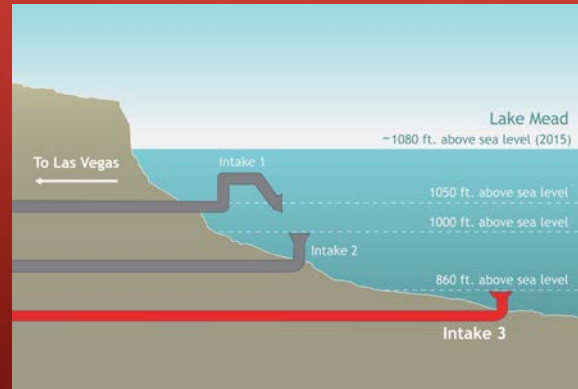
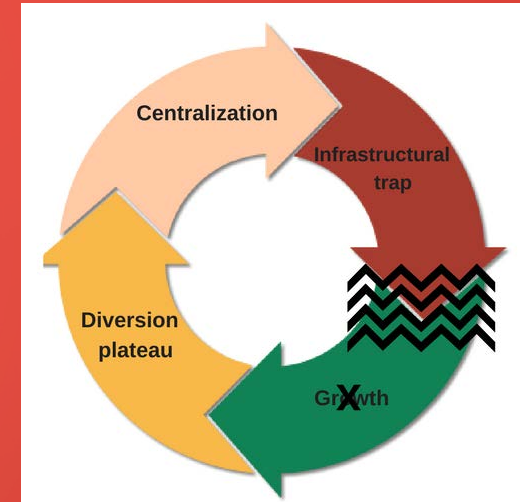
FIGURE 12  
Historical Supply and Use<sup>1</sup> and Projected Future Colorado River Basin Water Supply and Demand<sup>1</sup>



<sup>1</sup>Water use and demand include Mexico's allotment and losses such as those due to reservoir evaporation, native vegetation, and operational inefficiencies.

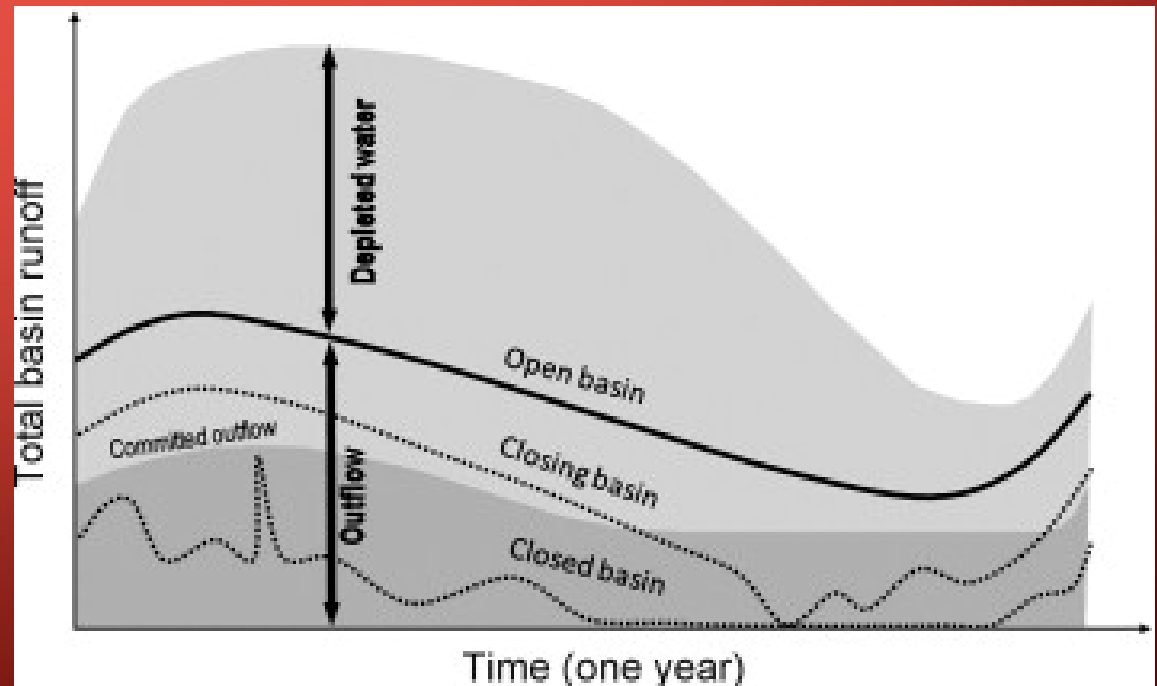
EcoWest.org

Source: Colorado River Basin Water Supply & Demand Study



# BASIN CLOSURE

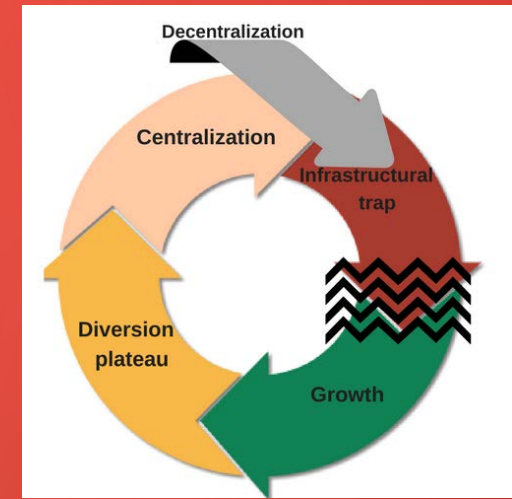
- Two waves of closure:
  1. Surface water – River basin closure
  2. Groundwater basin closure



# THE GROUNDWATER MANAGEMENT CHALLENGE

- Common-pool resource
- Invisible resource = difficult to quantify & monitor
- The individualization of extraction = less community
- Short-term economic maximization behavior
- “Wealth breeds wealth”

# NEW APPROACHES, SAME STORY



## ARIZONA

- Groundwater Management Act (1980)
- Definition of AMAs & INAs
- Local management per AMA & INAs
- Safe-yield by 2025

## CALIFORNIA

- Sustainable Groundwater Management Act (2014)
- Definition of high and medium priority groundwater basins
- Local management per basin
- Sustainability by 2040

Despite attempts to regulate groundwater use, water users continue to have nearly unconstrained control over their pumps (Shah, 2009; Giordano, 2009; De Stefano and Lopez-Gunn 2012; Frija et al., 2014)

Thank you!

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