Resilience by Design for Mexico City

2017 StockholmWorld Water Week

Session: “Building Freshwater Resilience for All”

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Water Anchor

WATER PARTNERSHIP PROGRAM

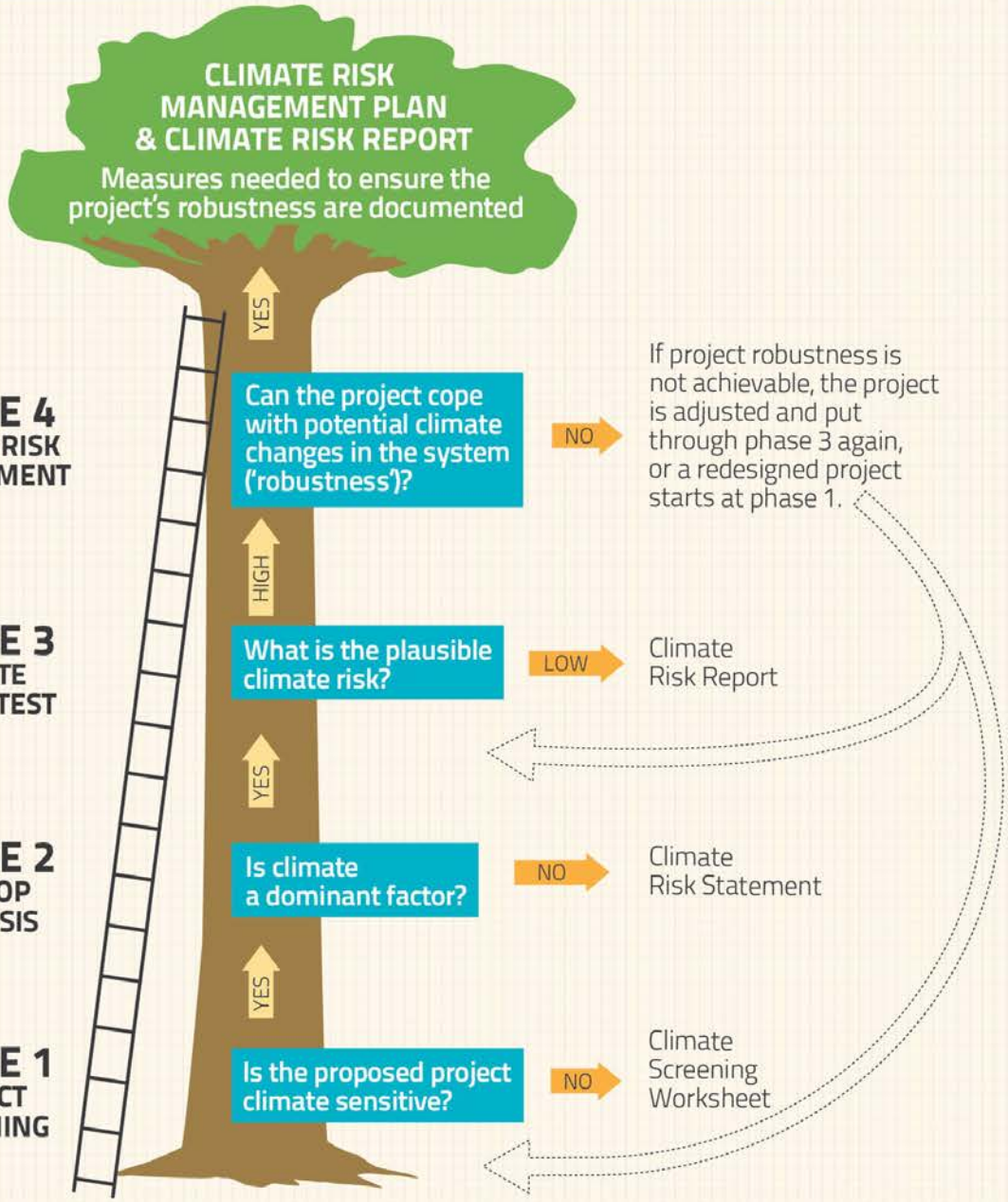
WET THE WATER EXPERT TEAM

THE WORLD BANK

IDENTIFYING AND MANAGING CLIMATE RISKS

THE CLIMATE CHANGE DECISION TREE

- A scientifically defensible, flexible, cost-efficient tool on climate risks
- A bottom-up approach taking into account local realities and climate sensitivity



WORLD BANK GROUP
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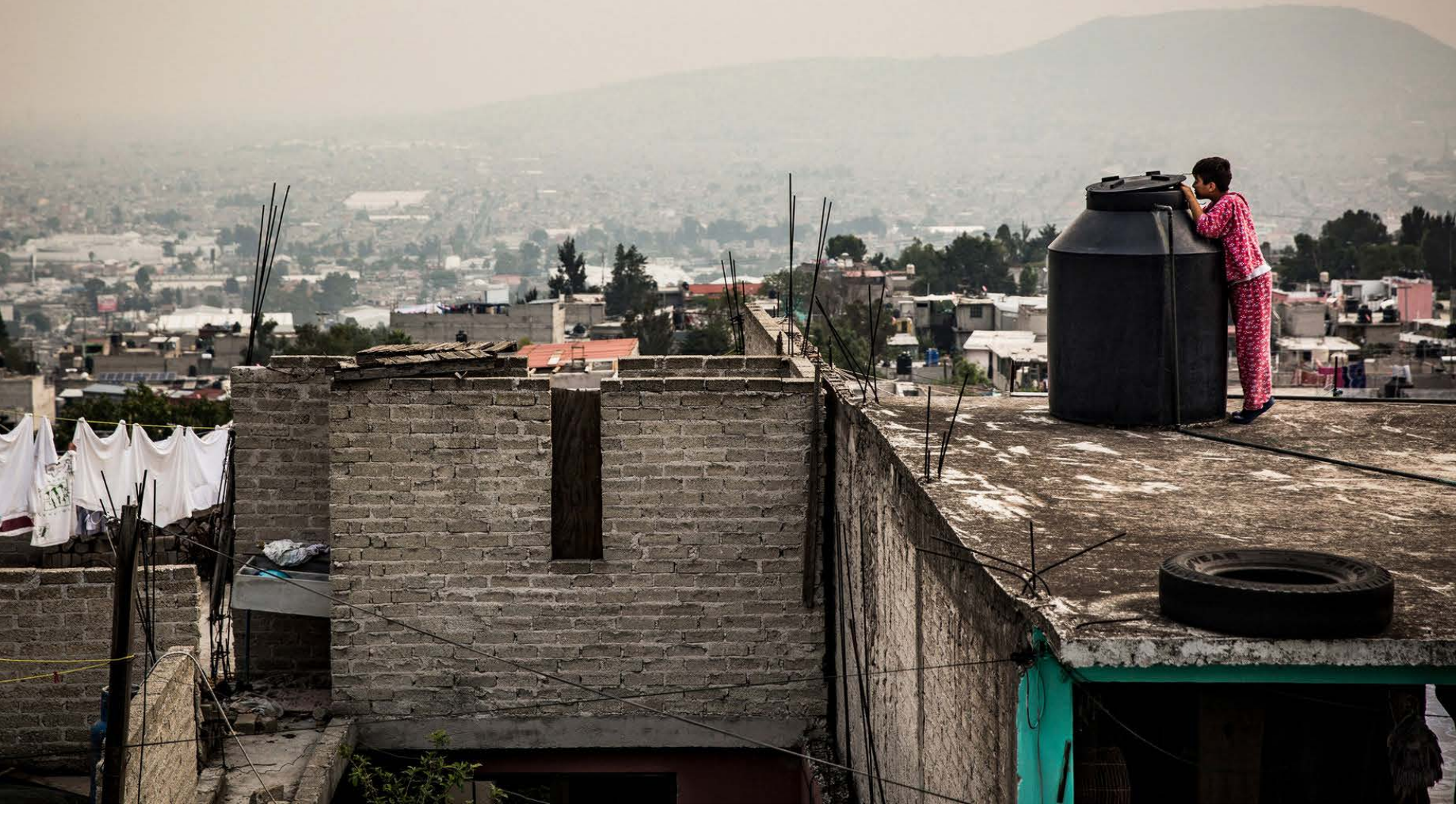
Mexico City, Parched and Sinking, Faces a Water Crisis

(NY Times, 7 Feb 2017)



Mexico City, Parched and Sinking, Faces a Water Crisis

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percent of the 22M population receiving acceptable quality of water services will be decrease from 82% to 28% by 2025

Overexploitation of the aquifer is currently estimated at **double** the recharge rate

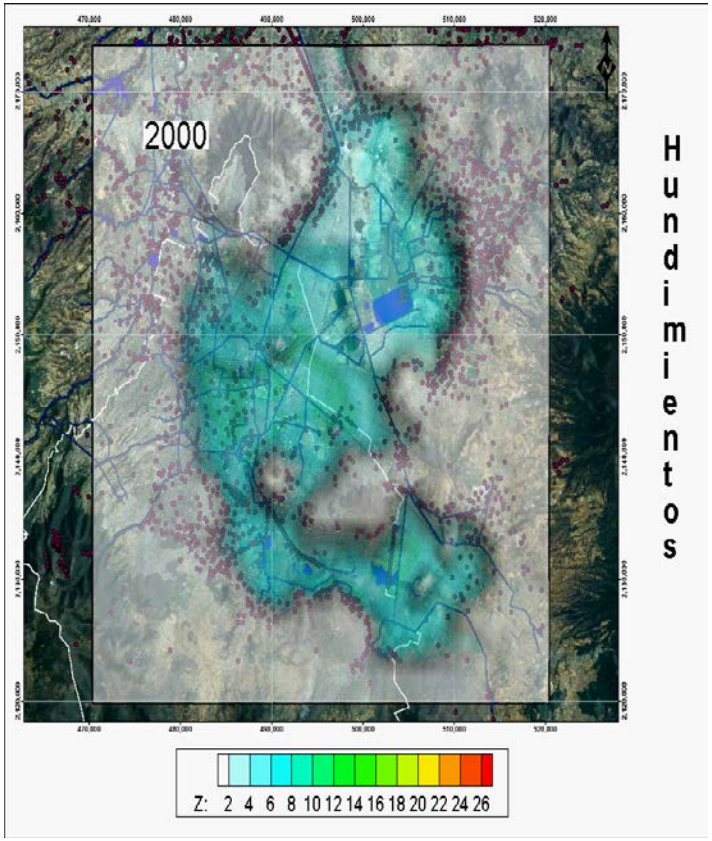
Subsidence in the city ranges from **4 to 26 cm** per year, depending on part of city

Losses in the distribution system are estimated to be **42%** of the total water supplied to the city (this includes water not accounted for, illegal capture and leakages).

Equity and inclusivity are major issues; water scarcity and shortages are borne **disproportionately by the poor**.

Urban flooding and storm water management are a **chronic** problem.

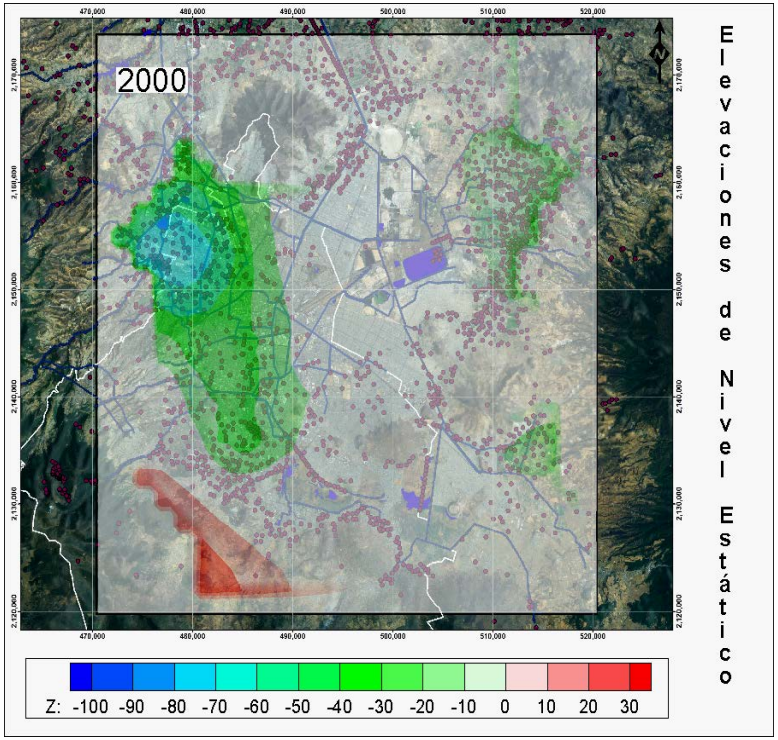
Continued **deforestation** and expansion of the agricultural frontier with **unsustainable management practices** in the watershed compromise the ecosystem services which sustain the city's demand.



IF pumping was stopped now, 32 years to recover

In 50 years the groundwater may drop 50 to 70 m

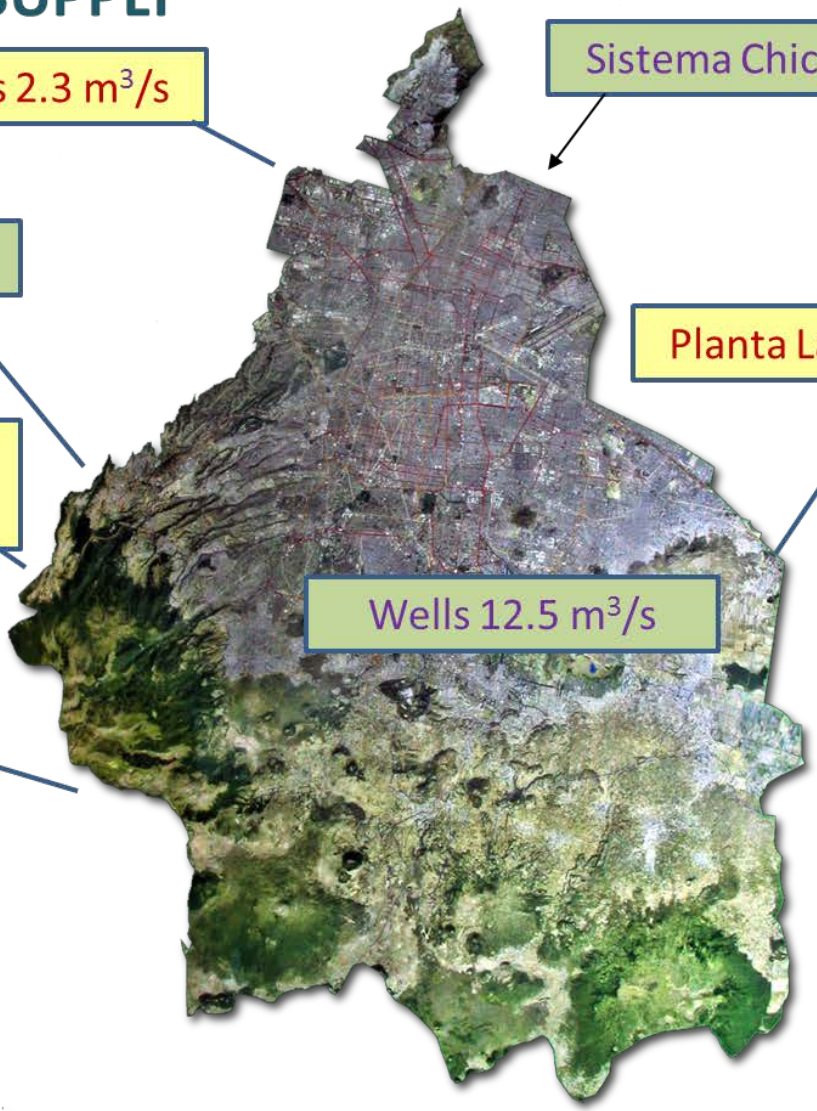
Remaining life of the aquifer is 50-60 years



However, investments possible to capture stormwater, wastewater and recharge

MEXICO CITY WATER SUPPLY

POTABLE WATER SUPPLY



Imported from CNA
11.9 m³/s

From Internal Sources
18.5m³/s

Total Supply 30.4m³/s

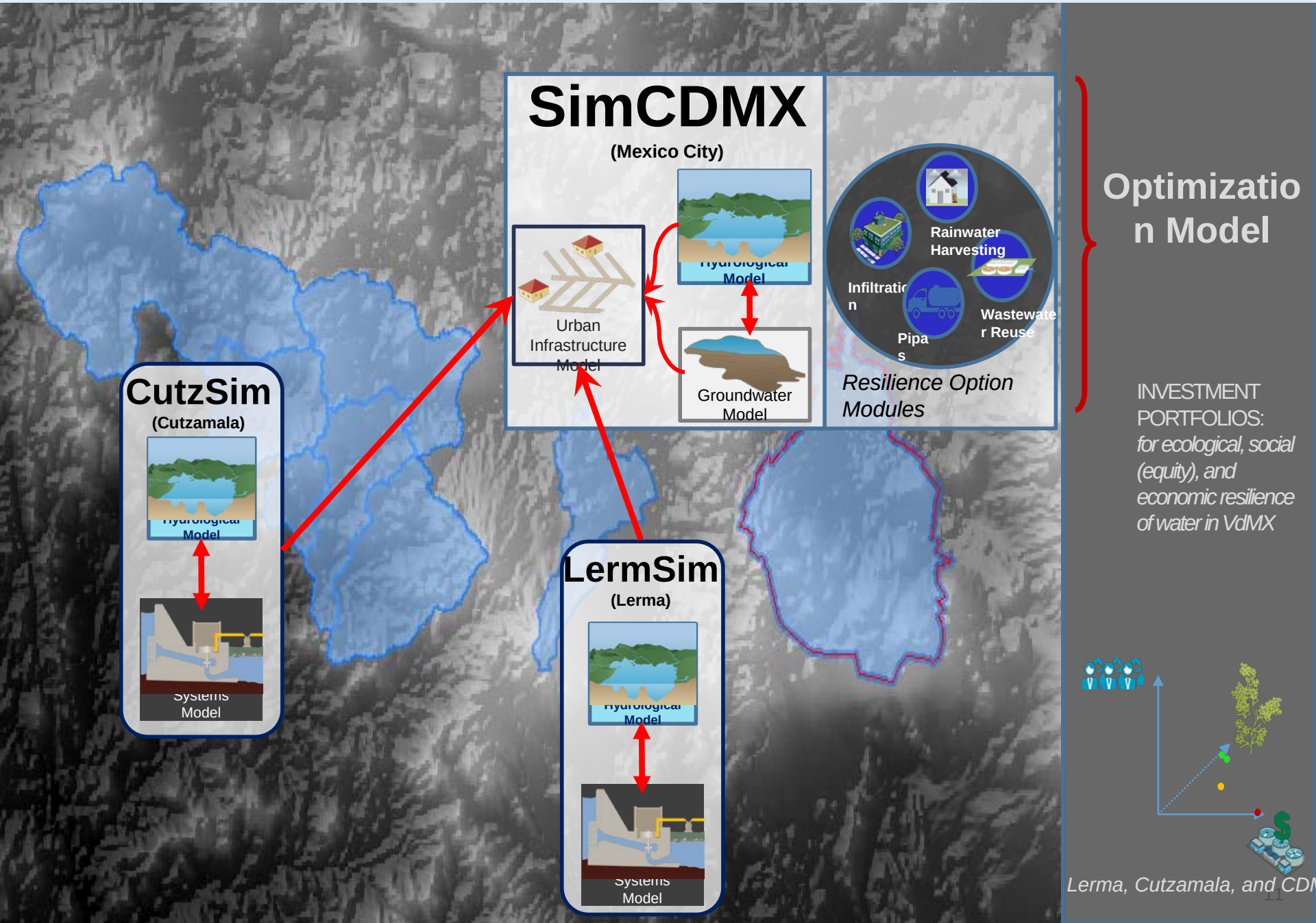
Fuente: CONAGUA, 2016

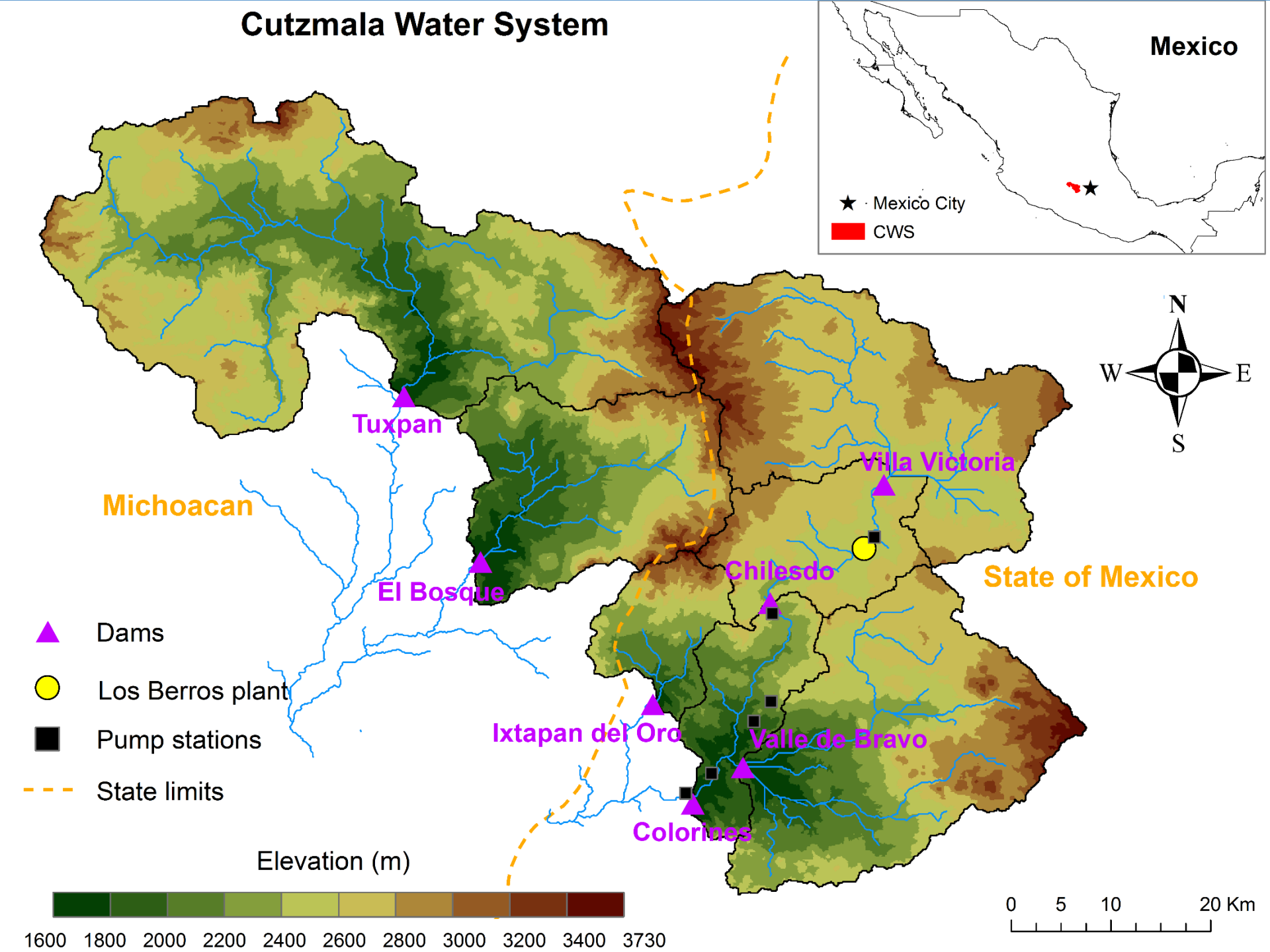
Lerma Basin Council, Toluca, Mexico

Cutzamala: Local Agriculture

When not farming … protesting new dams

OpenAGUA – Cloud, Collaborative, decision system




Cutzmala Water System
Mexico
Mexico City
CWS
N
W
E
S
Tuxpan
Michoacan
El Bosque
Villa Victoria
Chilesdo
State of Mexico
Ixtapan del Oro
Valle de Bravo
Colorines
Dams
Los Berros plant
Pump stations
State limits
Elevation (m)
1600 1800 2000 2200 2400 2600 2800 3000 3200 3400 3730
0 5 10 20 Km

performance-based resilience

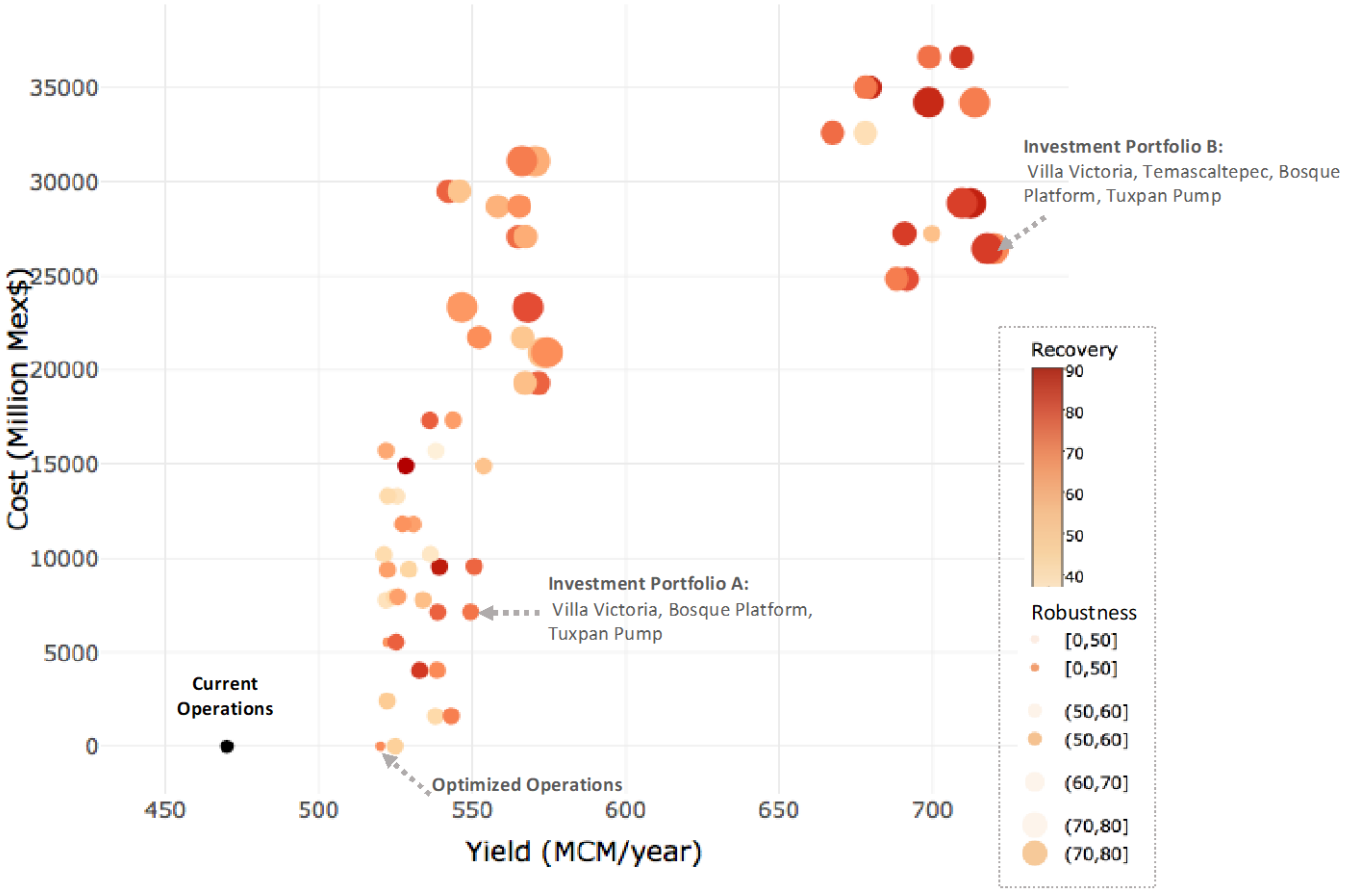
- Perform well over a wide range of futures
- Recover after failure
- Transform to new configuration if needed

Resilience of:

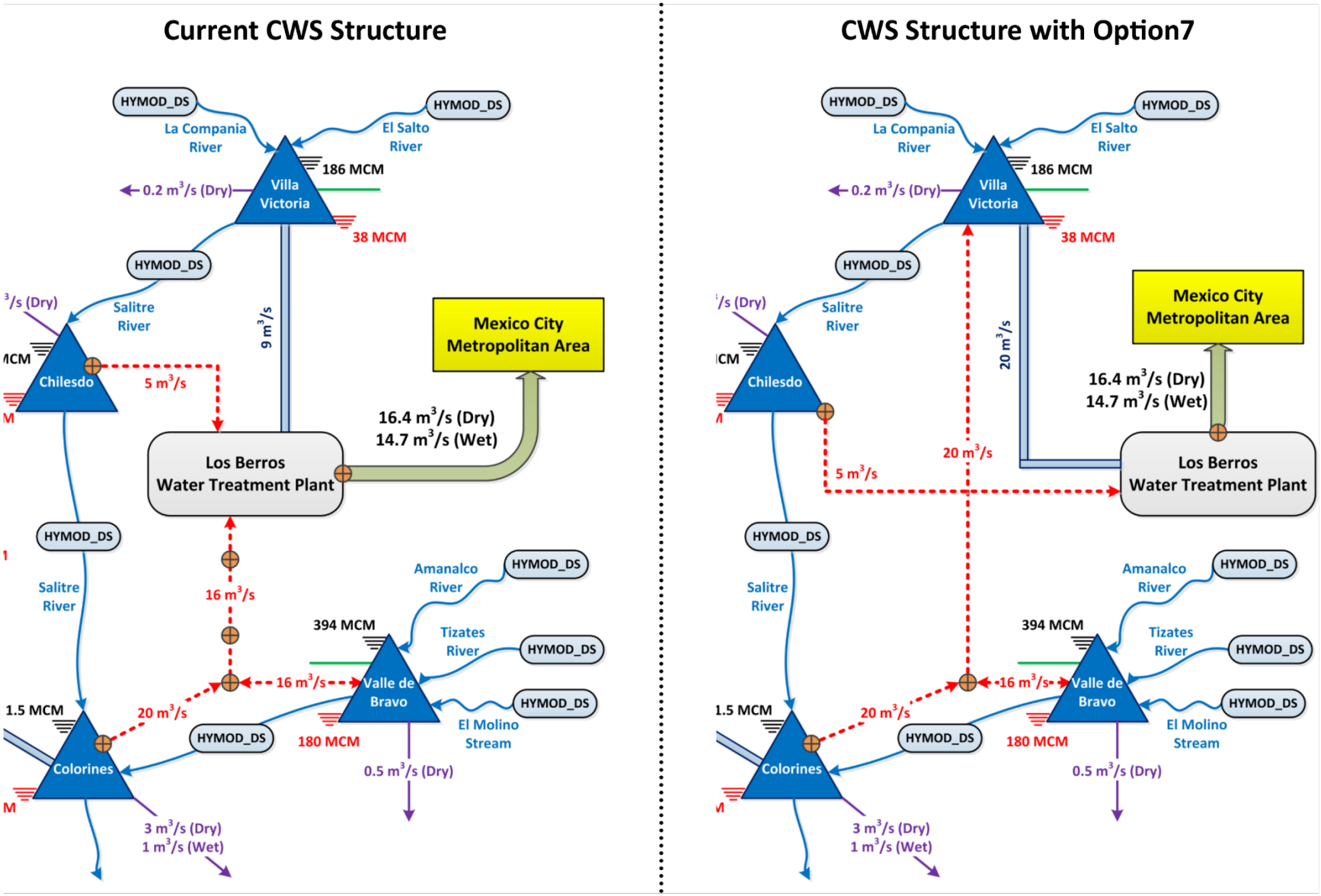
- Economic/Service objectives
- Social/Equity objectives
- Environmental objectives

http://people.umass.edu/swi/CWS_InvestPortfolio.html

Evaluation: More than Cost!



Resilience through Connectivity



Conclusion

- Mexico City requires major water investments to avoid permanent crisis
- Opportunity for transformative change for the city and for the water sector generally
- Resilience of water services, ecological flows and equitable distribution are specific design objectives
- We’re already learning new sources of resilience

Thank You

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