



RISK AND RESILIENCE OF WATER NETWORKS IN CHILE

Yolanda Alberto, Ph. D.
University of Chile
yalberto@uchile.cl

DATA COLLECTION: EMERGENCY + RECONSTRUCTION



Chile
Maule 2010



New Zealand
Christchurch
2011



Japan
Tohoku 2011

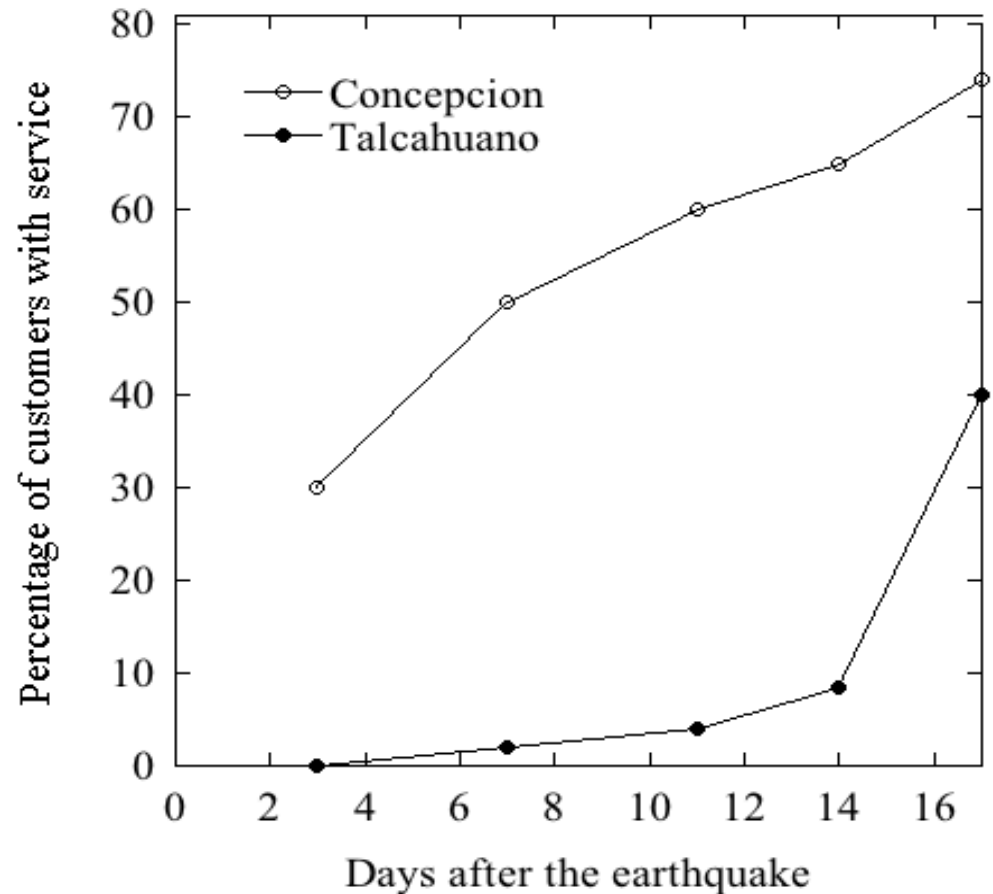


Mexico
Puebla 2017

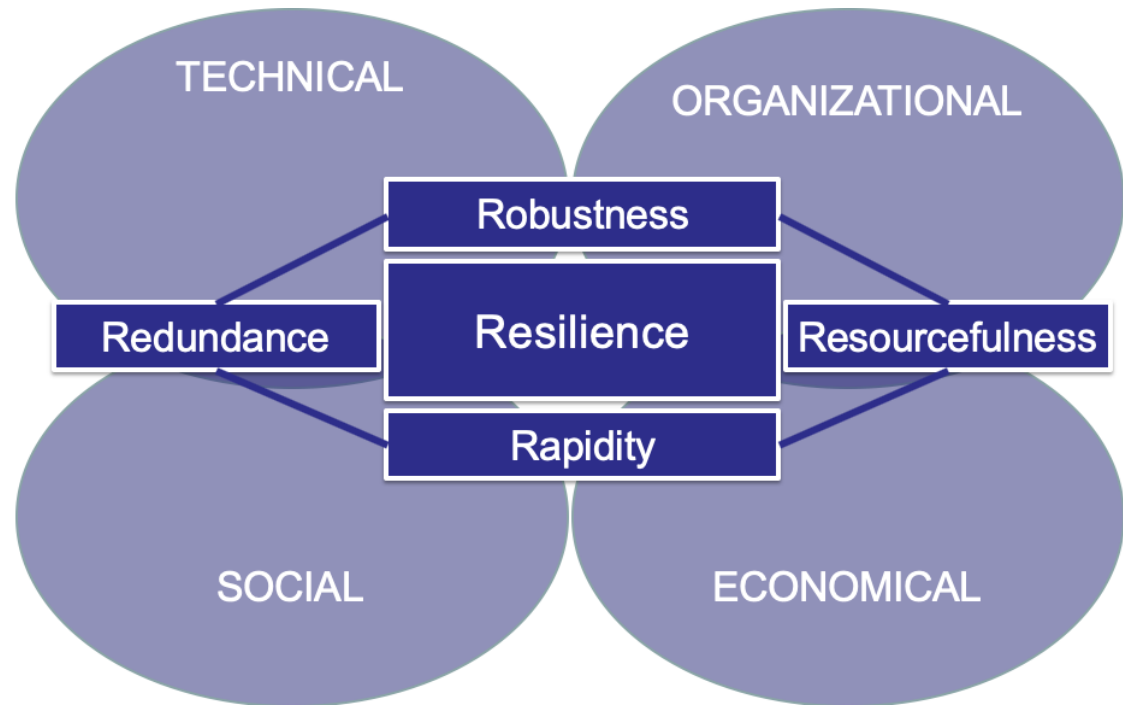


SEISMIC EVENTS IN CHILE: 2010 MAULE EARTHQUAKE

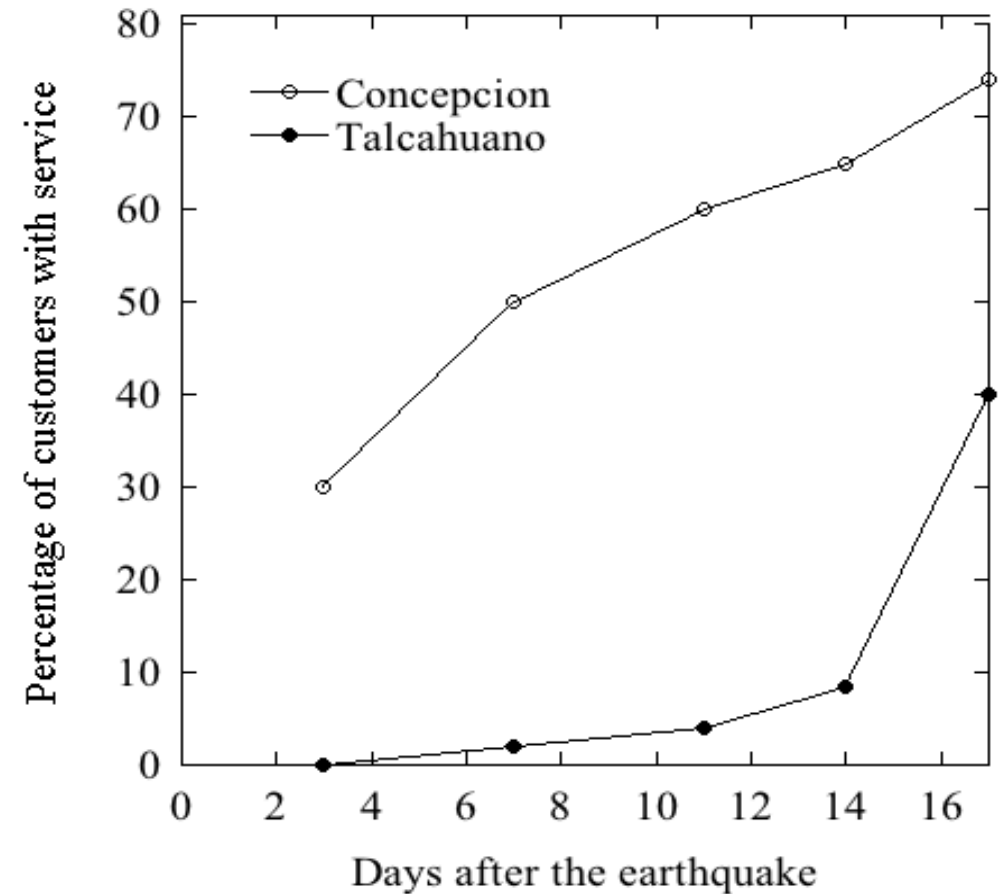
- Two private water companies
- 4 millions of users
- 7000 km of pipelines, 1200 km just in Concepcion
- Steel, cast iron, asbestos-cement
- Replacement of pipes with HDPE in the previous decade



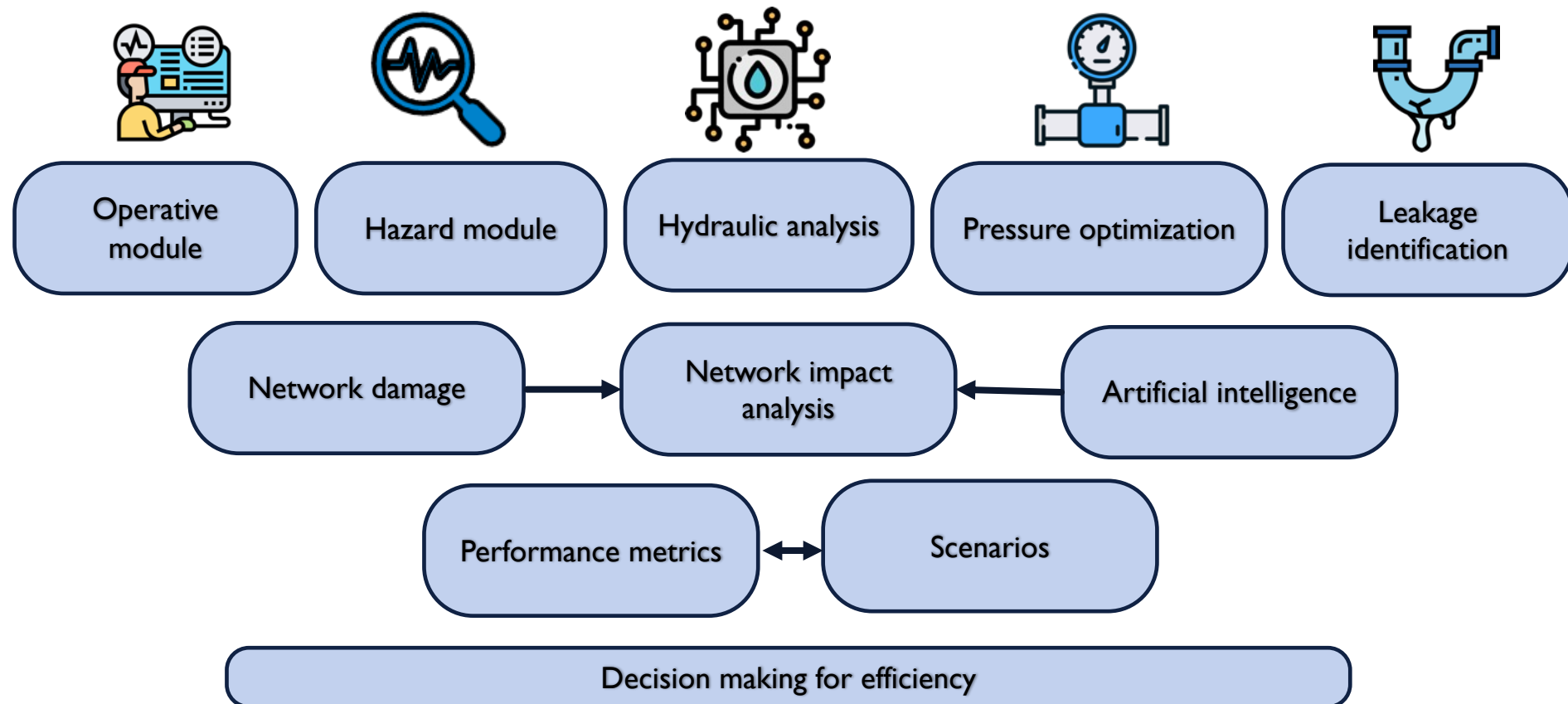
WATER SYSTEM RESILIENCE



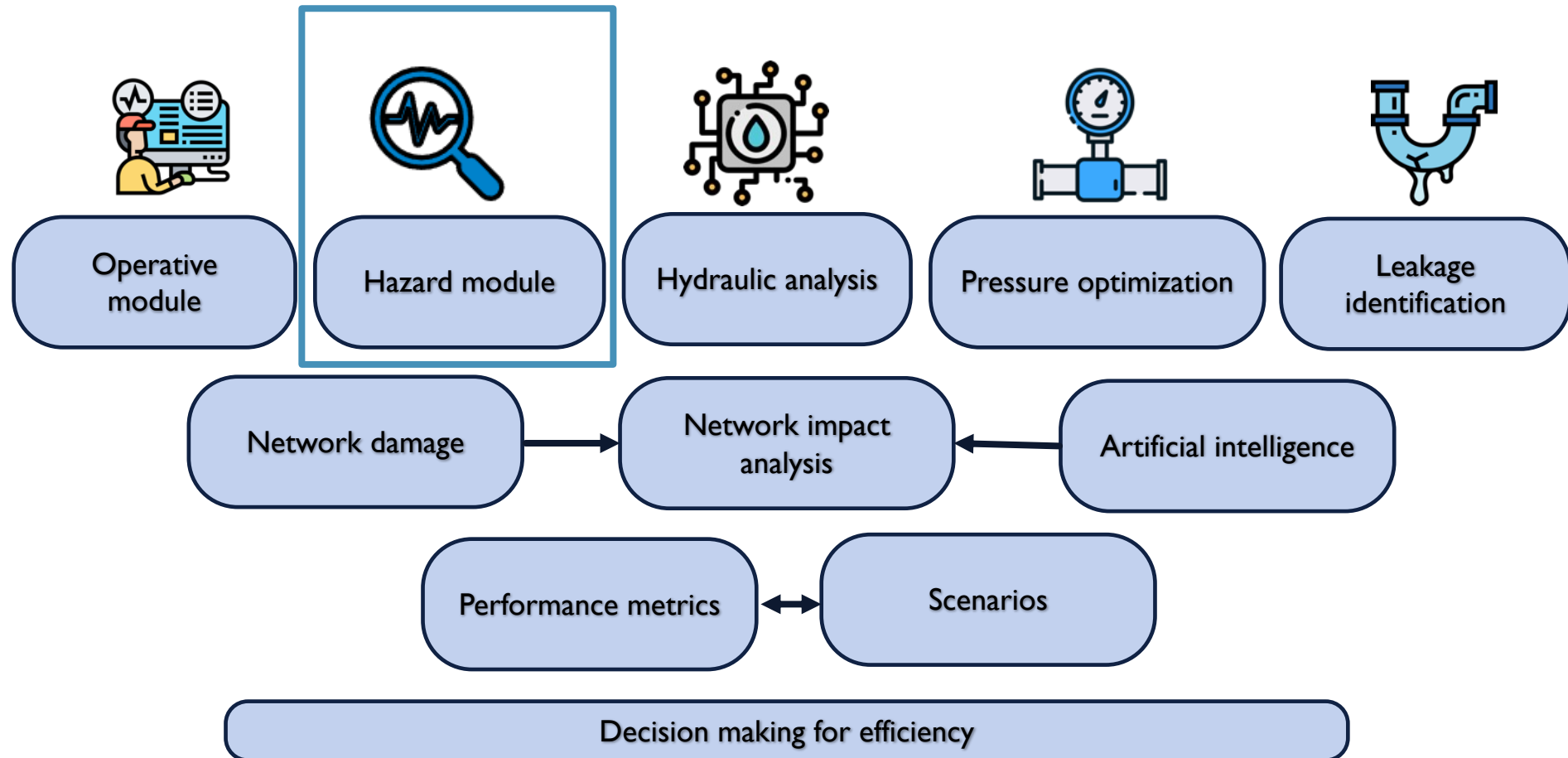
- 70% of service lost
- 110 days to regain operability



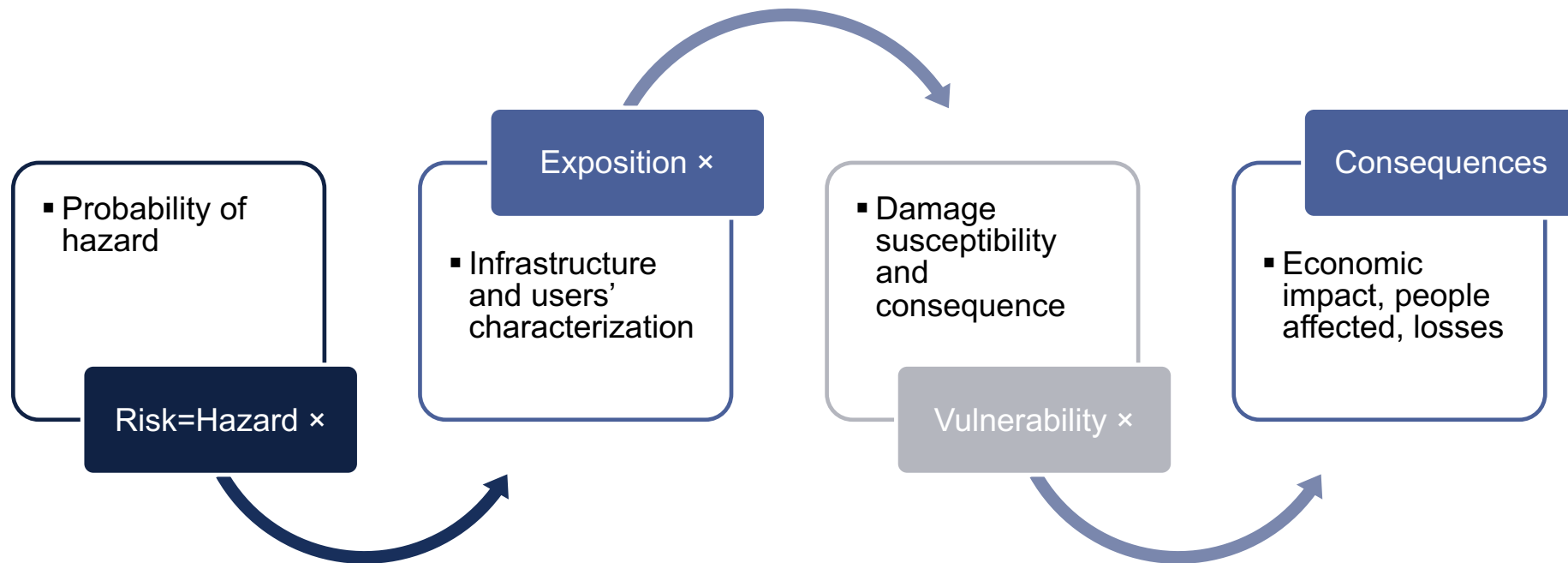
LOSS RISK IN WATER DISTRIBUTION SYSTEMS



RISK IN WATER SYSTEMS



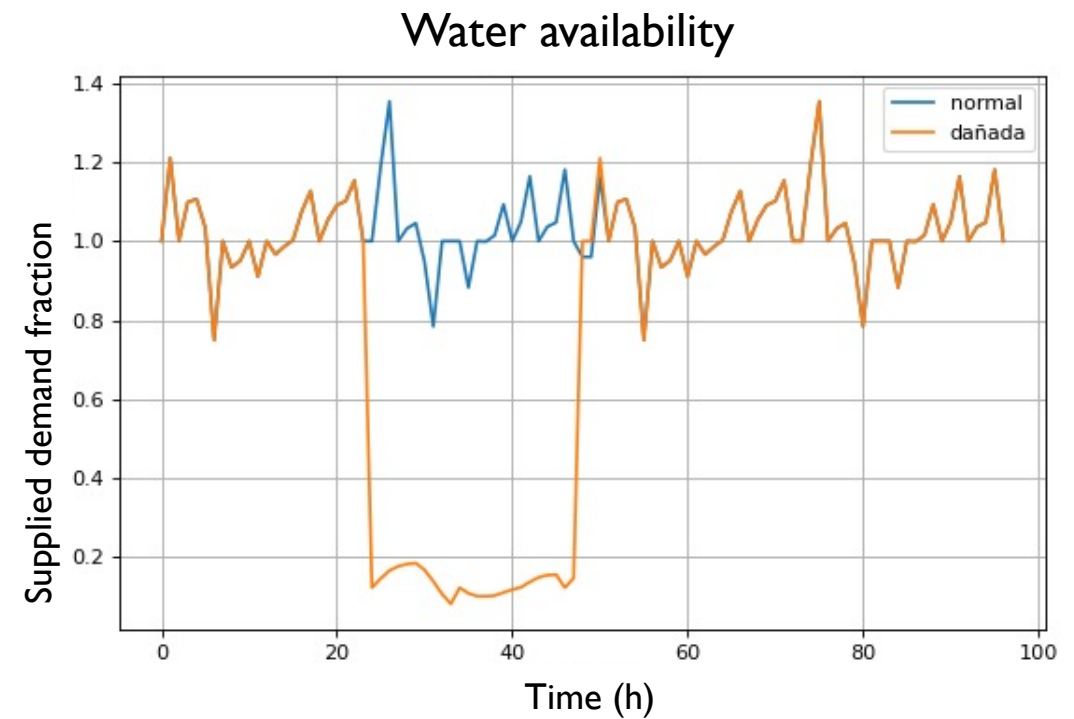
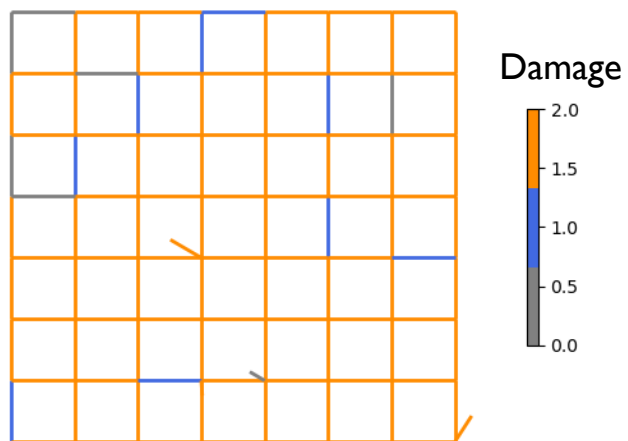
RISK ANALYSIS



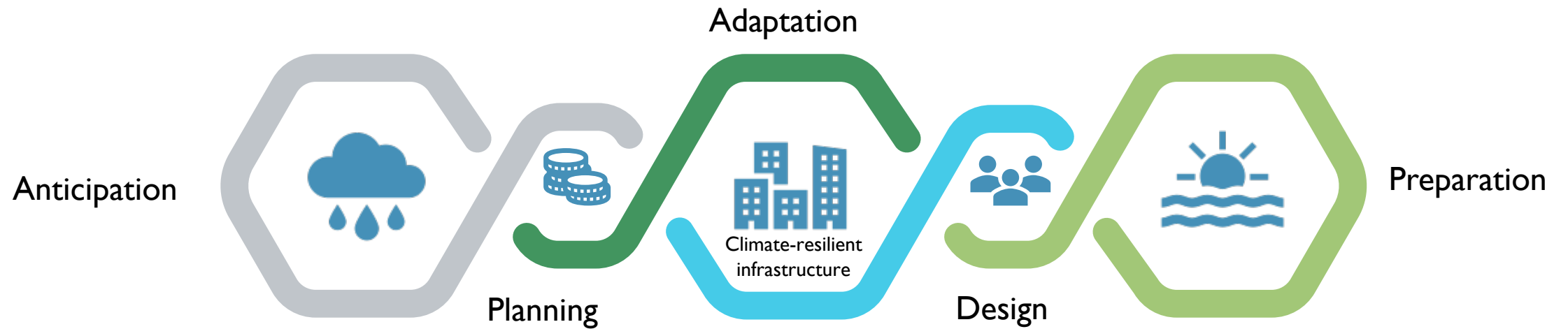
WATER NETWORK DAMAGE

- Risk analysis in toy and real networks
- Dynamic analysis

Damage: orange (severe), blue (moderate, blue (minor)



CLIMATE CHANGE DISASTERS



- Administrative adaptation measures
- Structural adaptation measures

CHALLENGES

- Available information
- Asset management
- Emergency plans
- Prevention and reconstruction