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A PLACE TO COME TOGETHER

Resilience and Polycentric Governance: Linking the Catchment and Urban Water Systems

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MONASH SOUTH AFRICA

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Purpose

- **Importance of linking the catchment and urban water systems to enhance resilience**
- **Role of polycentric governance as a mediating variable to prevent decoupling**
- **Using the Kafue River Basin and Lusaka City in Zambia as a developing country example**

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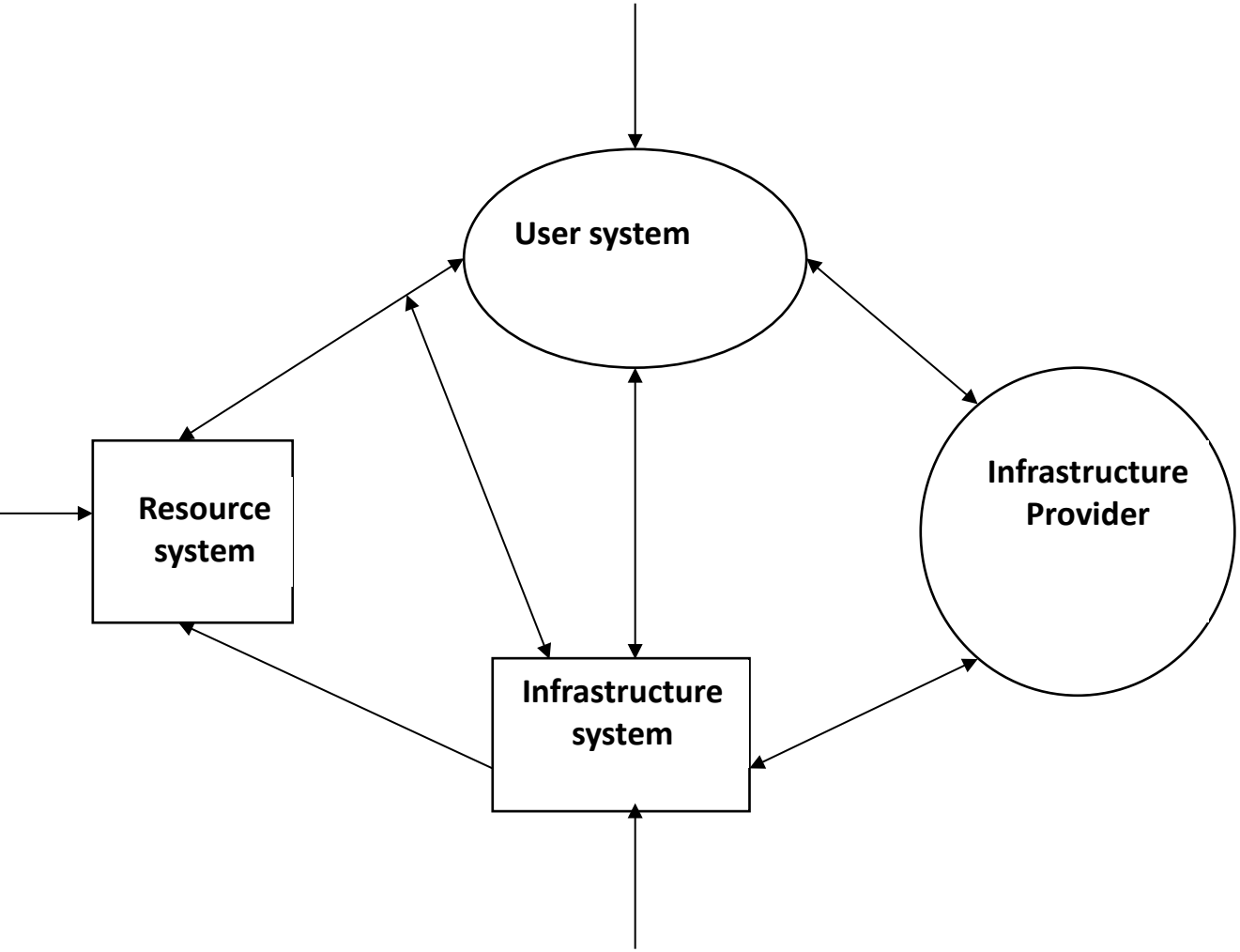
Social-Ecological System



Basic Assumptions

Catchment and urban water systems are social-ecological system

Resource (catchment) and user (urban) systems operate as a coupled system

Governance (infrastructure system/provider) provides means of coordination

Need a governance system that works across system boundaries to prevent decoupling

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Polycentric Governance

- **Definition: Many, usually smaller, centres of decision-making which are relatively independent of each other**
- **Polycentric governance works across institutional and geographical boundaries**
- **It enhances the responsiveness of society to uncertainty and change**
- **It provides a useful framework for responding to decoupling**
- **It provides opportunities for learning, flexibility and adaptation, and thus resilience**

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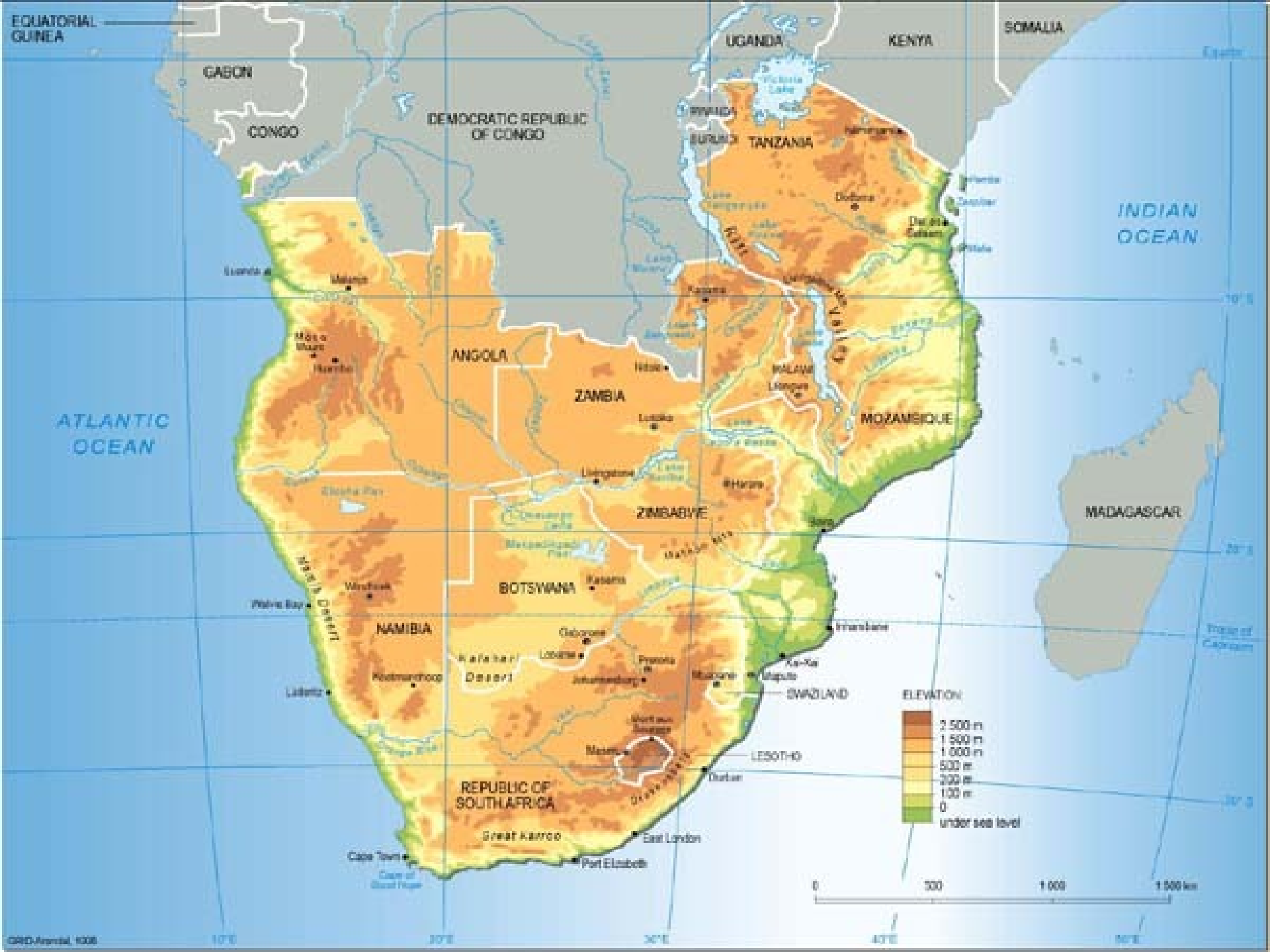
International River Basins of

AFRICA


EQUATORIAL GUINEA
GABON
CONGO
DEMOCRATIC REPUBLIC OF CONGO
UGANDA
KENYA
SOMALIA
RWANDA
BURUNDI
TANZANIA
INDIAN OCEAN
ATLANTIC OCEAN
ANGOLA
ZAMBIA
MALAWI
MOZAMBIQUE
ZIMBABWE
BOTSWANA
NAMIBIA
MADAGASCAR
SWAZILAND
LESOTHO
REPUBLIC OF SOUTH AFRICA
Luanda
Windhoek
Walvis Bay
Lusaka
Harare
Maputo
Durban
Cape Town
Port Elizabeth
East London
Great Karroo
Kalahari Desert
Namib Desert
ELEVATION
2 500 m
1 500 m
1 000 m
500 m
200 m
100 m
0
under sea level
0
500
1 000
1 500 km

Shared Resource Systems

- **Major shared river basins cover 70% Southern African land**
  - **INCOMATI:** South Africa, Swaziland, Mozambique
  - **LIMPOPO:** Botswana, South Africa, Zimbabwe, Mozambique
  - **OKAVANGO:** Angola, Namibia, Zimbabwe, Botswana
  - **ORANGE:** Lesotho, South Africa, Botswana, Namibia
  - **ZAMBEZI:** Angola, Zambia, Namibia, Botswana, Zimbabwe, Tanzania, Malawi, Mozambique

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Implications of Shared Resource Systems

- **Water governance has been shaped by regional historical, political, and economic conditions**
- **Rivers played major role in boundary marking and economic development**
- **Decoupling of catchment and urban water systems remains a major challenge**

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Causes of Decoupling

- **Changing patterns of settlements (forced removals)**
- **Conflicting interests of water governors and users (colonial and post-colonial)**
- **Institutional fragmentation (rural vs urban)**

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Effects of Decoupling

- **Mass rural-urban migration**
- **Water unevenly allocated**

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Kafue River Basin

- River drains a basin of 155,000 km²
- Home to 52% of the Zambian population
- Generates 50% of Zambia's national hydroelectricity
- Lusaka is dependent for over 50% of its water supply on Kafue River

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The City of Lusaka

- Lusaka is the capital city of Zambia
- Inaugurated as capital city in 1935
- Estimated population of two million people
- Population growth at 6 %, double national growth 3%
- 60-70 % population in informal or peri-urban areas

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Pre-Colonial Basin Governance

- **Polycentric governance system**
  - **Multiple traditional authorities with relative independence**
- **Flexible and adaptive settlement patterns**
  - **Riparian communities**
  - **user and resource systems were functionally linked**
  - **Institutional borders were fluid and porous**
  - **Customary agreements allowed free movements –promoting learning**
  - **Resilient livelihoods able to cope with environmental change**

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Colonial Basin Governance

- Centralized governance system
  - Single authority based in Lusaka
- Transformed the settlement patterns of the basin
  - Mass relocation exercises to establish sugar farms, dams and game parks
  - Domestic water users were decoupled from the catchment water system
- Vulnerable livelihoods
  - Persistent droughts
  - Poor water quality

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Post-Colonial Basin Governance

- **New independent Zambian government continued the colonial legacy**
  - **Centralized governance system**
  - **Conflicts and tensions over water resources**
  - **Crisis of decoupling (governance), not crisis of resources**
- **Complex water problems/vulnerabilities**
  - **Continuous water shortages**
  - **Extreme inequities and low access levels**
  - **Perpetual load shading**
  - **Demand has outstripped supply**

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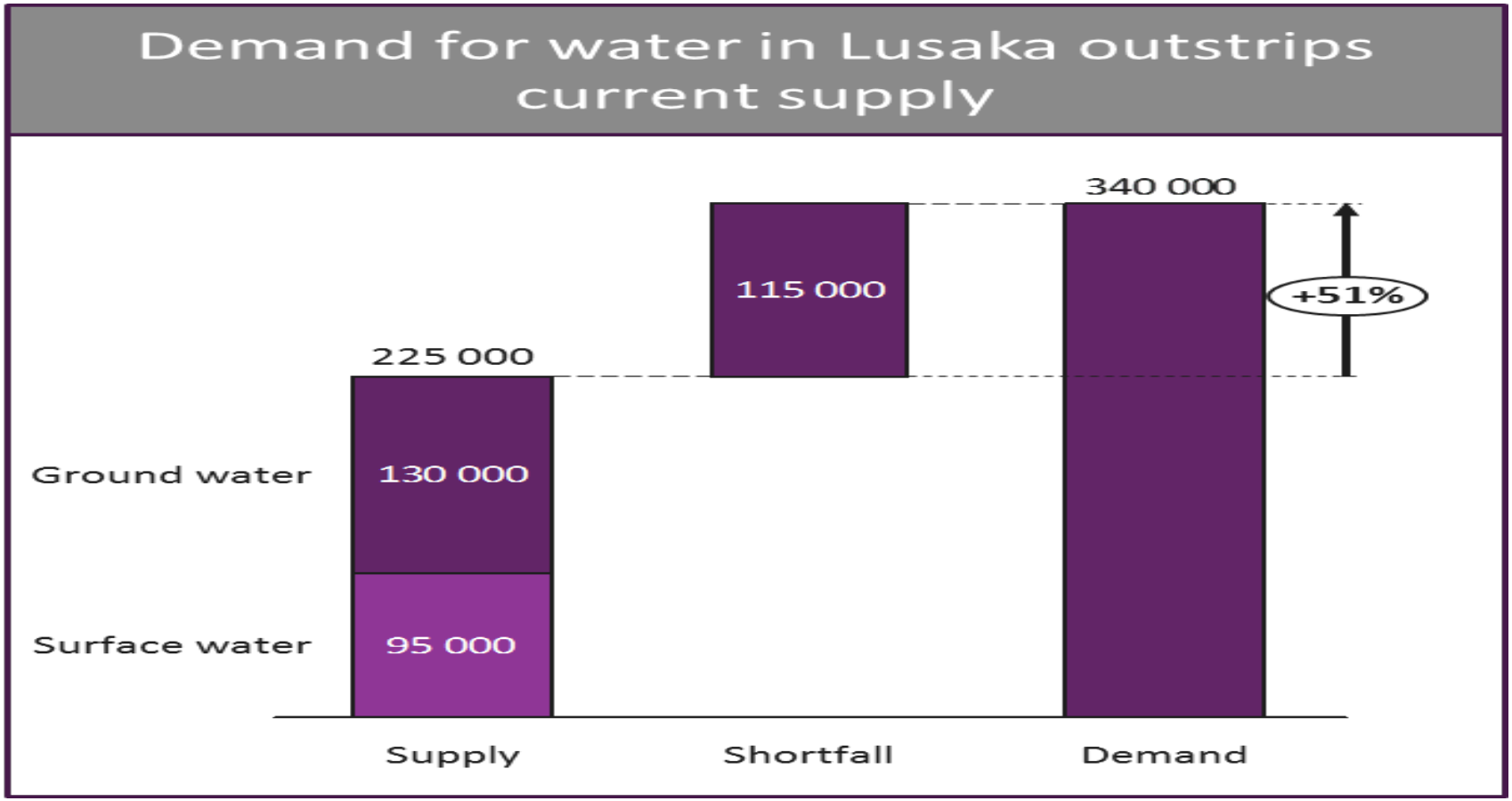
Lusaka Water Demand



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Systemic Failures

- **Appropriate and timely responses to supply/demand dynamics are diminished**
- **Feedback mechanisms are undermined, become ineffective, or simply don't exist**
- **Social discourse occurring at the catchment level is not be transferred to users**
- **User lessons on the ground do not make it back to the catchment level**

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Linking the Catchment and Urban Water Systems

- **Several efforts being put in place to link the catchment and urban water systems**
- **Challenge is to establish multiple decision-making centres that encourage learning and adaptation**
  - **UN Convention: Enhances global coordination of shared watercourse systems**
  - **SADC Protocol: Fosters cooperation for sustainable management and use of shared watercourse systems in Southern Africa**
  - **New national water law: Establishes multiple catchment management authorities in Zambia**
  - **Kafue Flats Action Plan: Promotes catchment-urban water systems linkages**

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Concluding Reflections

- **We need broader definitions and boundings of water systems, not restricted to cities**
- **Social-ecological systems cannot be captured in a single model**
- **Resilient cities are functionally coupled with catchment water systems**
- **Effective coupling of catchment and urban water systems requires polycentric systems of governance**

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Thank You

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