# Water and Governance Institutions in Canada and Chile

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Saskatoon, Saskatchewan, Canada

SSHRC MCRI – **Institutional Adaptations to Climate Change**

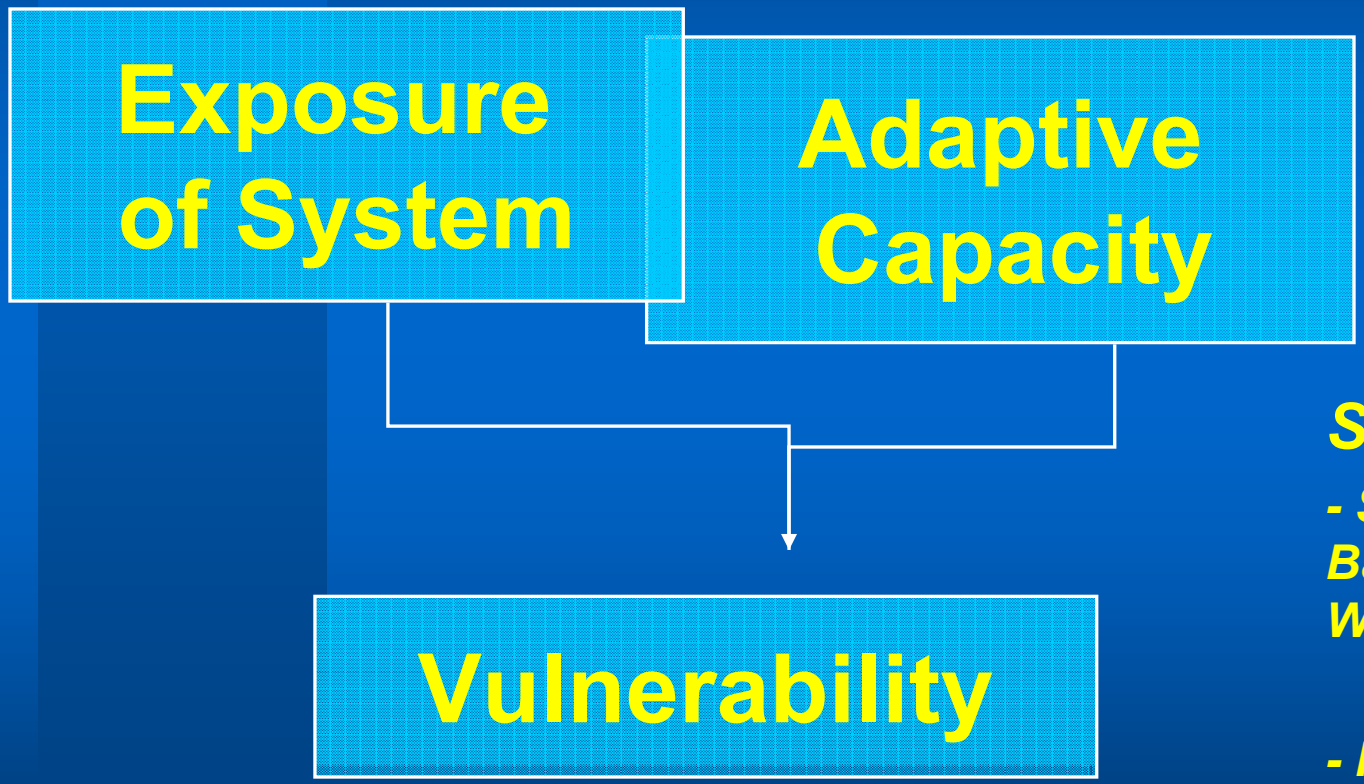
**CWRA National Conference**

**Science & Technology: Implications for Water Management**

**Saskatoon, SK June 25 – 28, 2007**

Agriculture and Agri-Food Canada
Agriculture et Agroalimentaire Canada
Prairie Farm Rehabilitation Administration
Administration du rétablissement agricole des Prairies
Canada

# What are the institutional capacities to help rural communities adapt to water stress?




***STUDY SITES:***

***- South Sask River Basin, AB & SK, Western Canada***

***- Rio Elqui Basin, Coquimbo Region, Northern Chile***

# What is unique about water?

- Water is an environmental resource
- It is essential for:
  - Society's survival and well-being
  - Economic Development
  - Environmental health and sustainability
- ***Water knows no boundaries***, be they political or jurisdictional boundaries
- ***Water is a cross-cutting resource*** that cannot be neglected by any aspect of society

# Integrated Water Resource Management, Dublin Principles, 1992

1. Water is a finite, vulnerable, essential resource
2. Water must be managed in a participatory manner involving all stakeholders
3. Women play a central part in water management
4. Water has economic value and should be recognized as an economic good

# Political & Legal Framework

- **CANADA**
  - House of Commons (308 elected representatives) and Senate (105 appointed) representing 32,800,000 people
  - Water Acts (federal & provincial)
  - Canadian Guidelines (not regulations)
  - Provincial governments retain ownership of natural resources, including water

- **CHILE**
  - Congress (120 elected representatives) and Senate (38 elected & 10 designated) representing 16,000,000 people
  - Water Acts are national
  - National regulations (norms) set for water
  - Regions have national government presence
  - Water rights privately held

# The Canadian Model: Who Owns the Water?

- Water is a public good
- Water rights are allocated by provincial governments
- Water rights are not privately held, nor are they marketable commodities
- Federal intervention is always possible in the interest of "*good governance*"

# The Chilean Model the Water Code's core (1981, rev'd 2005)

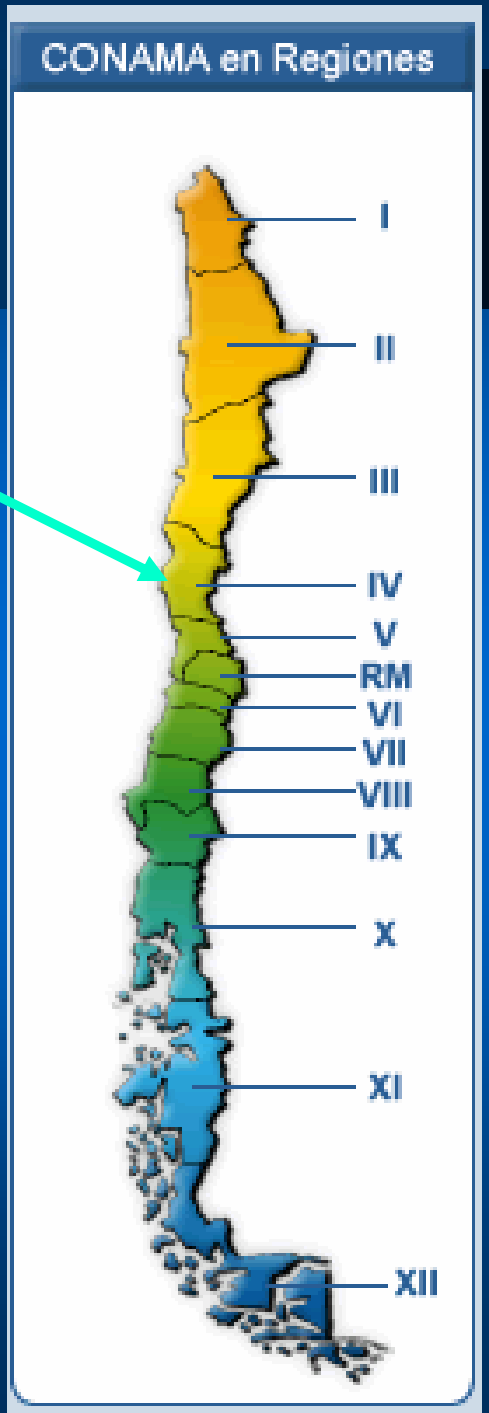
- **Water Market:** water rights privately held:
  - separated from land rights
  - can be freely transferred, sold, traded, bought.
- Allocated water rights:
  - Granted by the national government
  - Not conditional on the type of use
  - No priority list
  - Successful for aggressive Ag development
- Water conflict resolution:
  - Role of the state is very limited

Source: Galaz, V., *Privatizing the Commons, Natural Resources, Equity and the Chilean Water Market*, FLACSO, Santiago, 2003

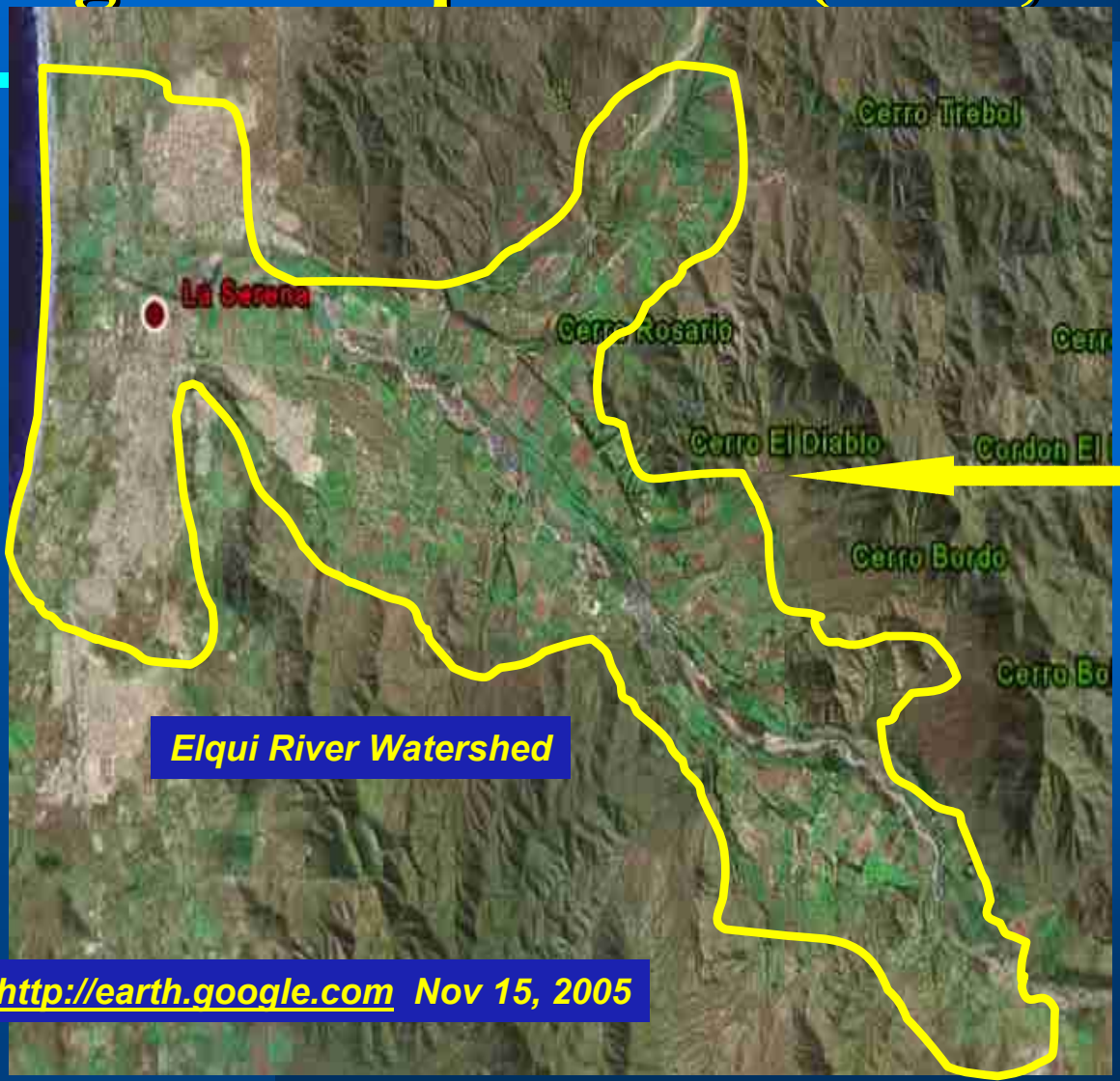
# Rio Equi Basin, Chile

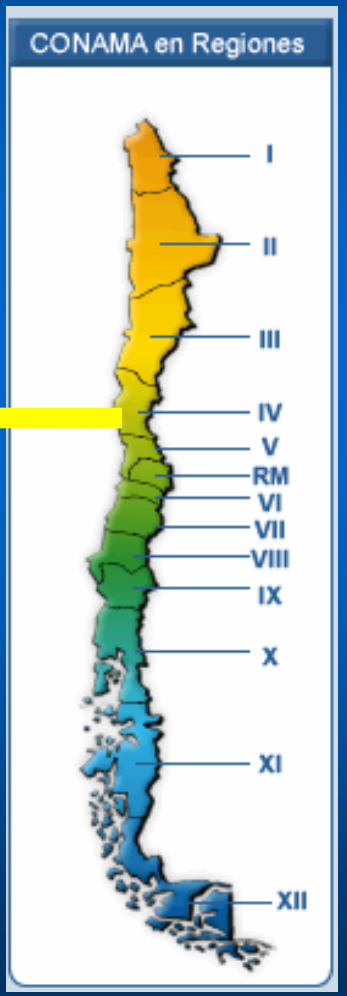
*Region IV*

- 41,000 km$^2$ (5.5 % of Chile)
- 605,000 people (4% of Chile)
- Three large urban centers
- Regional agencies; 15 local governments, many NGOs
- Major watersheds: Elqui
- Agriculture & mining
- Irrigation reliance for grape and brandy export
- Adjacent to Atacama Desert



# Rio Elqui Watershed - grapes, avocado, high value products (wine, brandy)



# Chile:
## Climate Change and Water Resources

- Decreases in yearly precipitation
- Increases in evapo-transpiration
- Increased aridity in the Norte Chico and the Central Valley.
- Increasing imbalance between supply and demand
- Increment of water conflicts

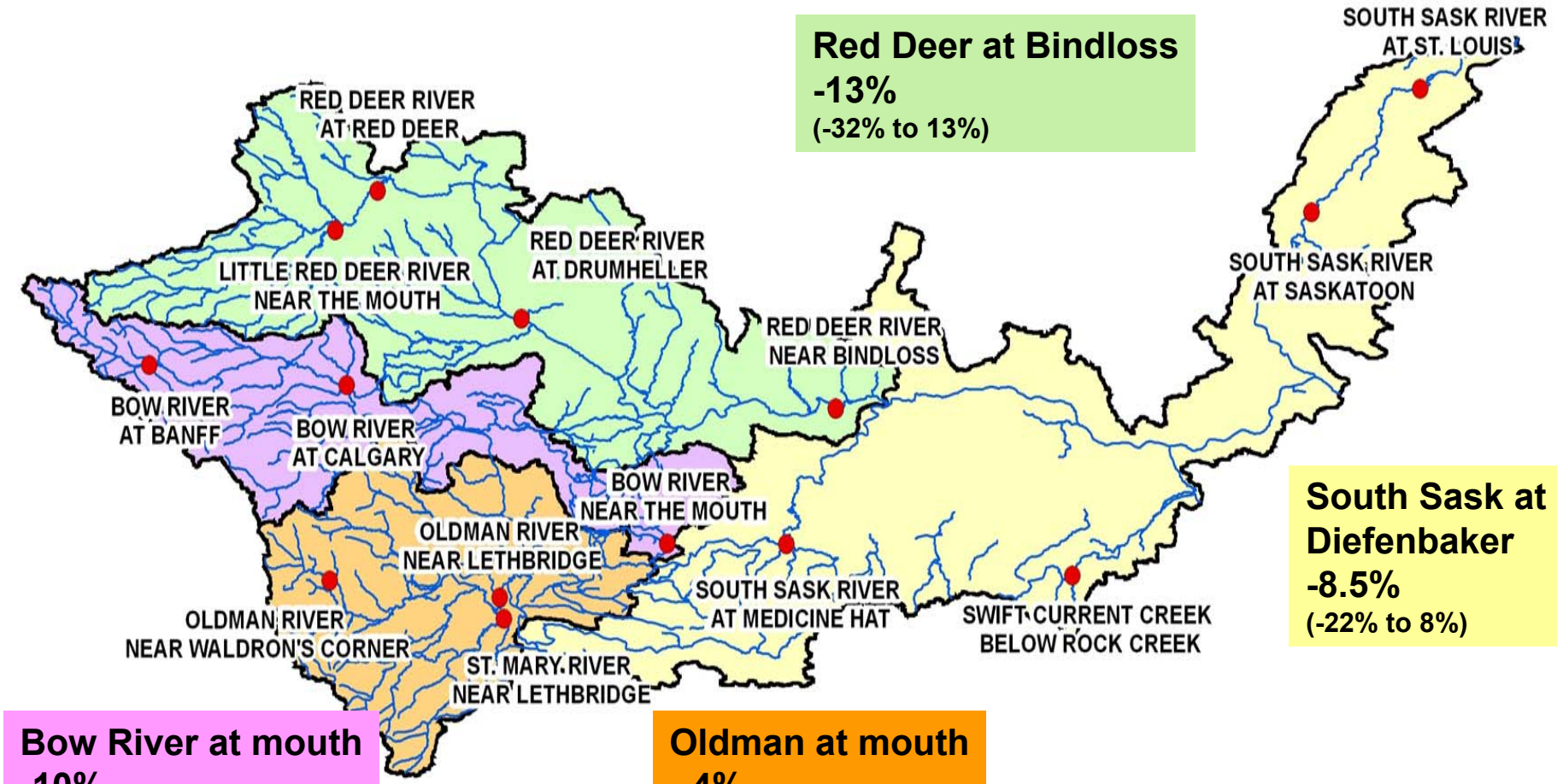
# Chile: concern over loss of glaciers

# South Sask River Basin, Canada

## dryland farming and irrigated grains, oilseeds, forage

- 420,000 $km^2$ (~ 4.2% of Canada)
- 1,500,000 people (~5% of Canada's population)
  - of which, 65% live in 5 major urban centers
- Alberta & Sask., 225 rural communities
- Five major watersheds
  - Bow, Oldman, Red Deer, South Sask (AB, SK)
- Major agricultural investment
- Significant irrigation reliance for field crops
  - 38 districts servicing over 600,000 ha

# SSRB Basin and GCM scenario results, 2039 – 2070, cumulative flows:




**Red Deer at Bindloss**
**-13%**
**(-32% to 13%)**

**South Sask at Diefenbaker**
**-8.5%**
**(-22% to 8%)**

**Bow River at mouth**
**-10%**
**(-19% to 1%)**

**Oldman at mouth**
**- 4%**
**(-13% to 8%)**

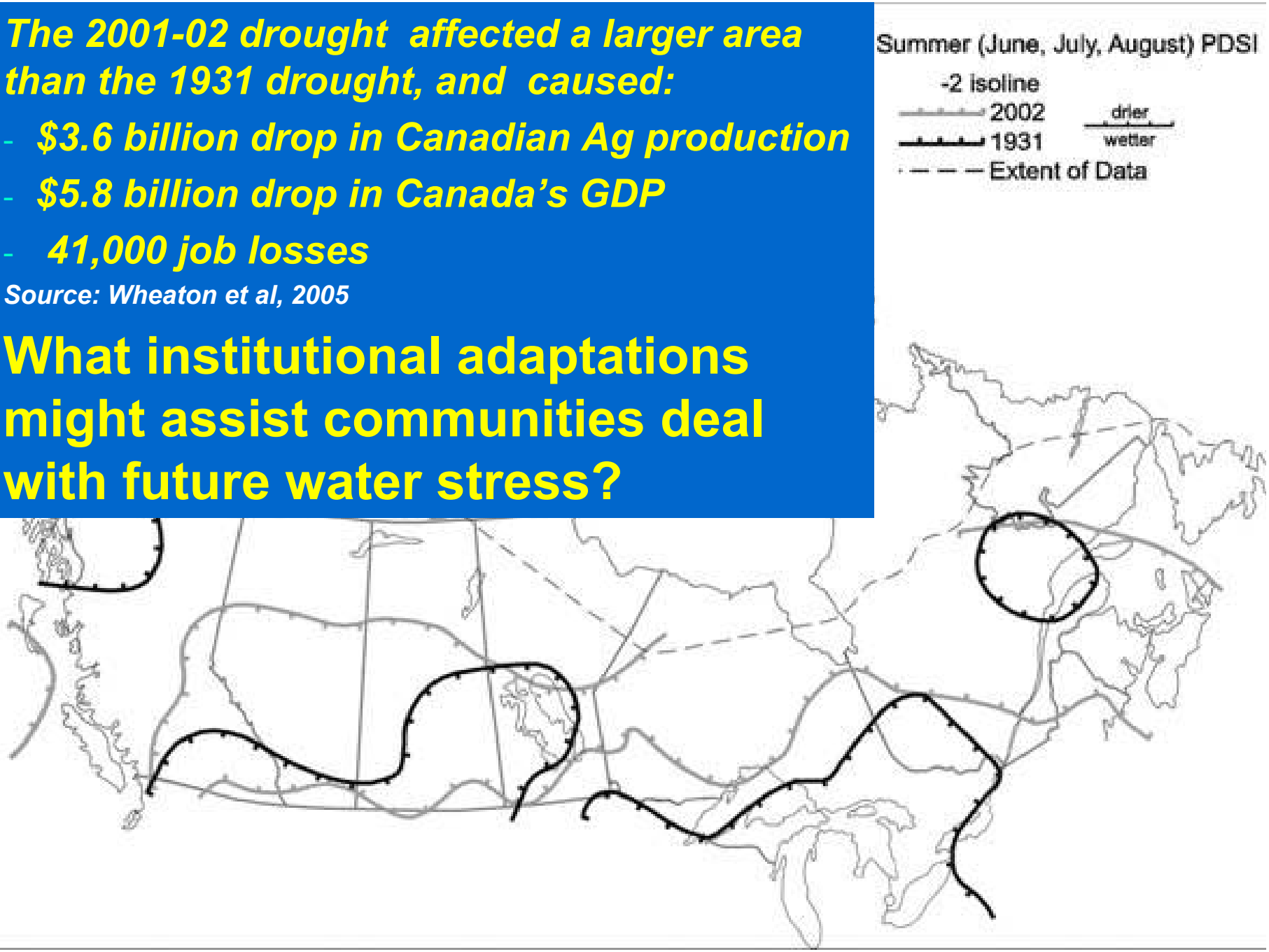
*Source: A. Pietroniro et al, 2006*

*The 2001-02 drought affected a larger area than the 1931 drought, and caused:*

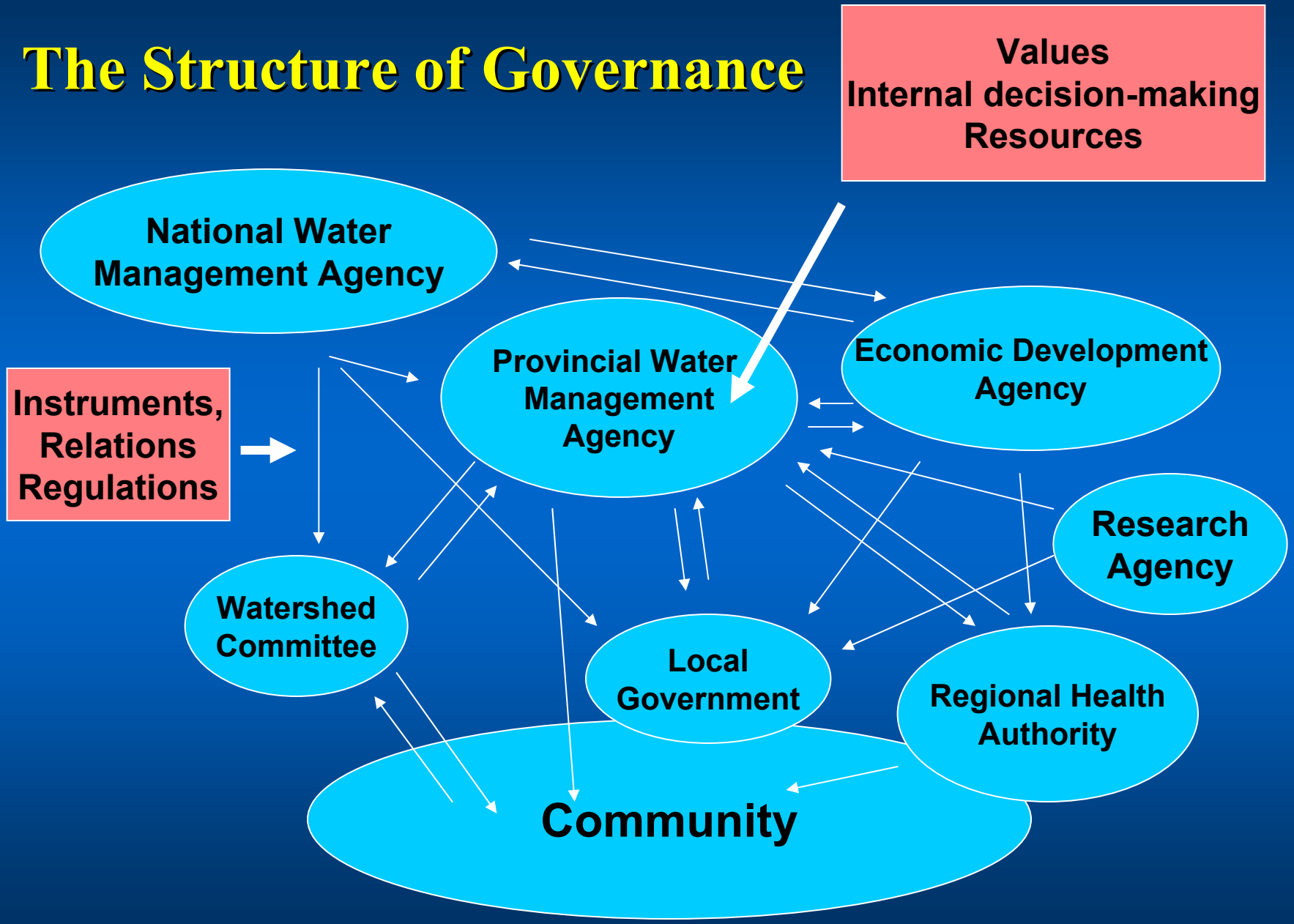
- *$3.6 billion drop in Canadian Ag production*
- *$5.8 billion drop in Canada's GDP*
- *41,000 job losses*

*Source: Wheaton et al, 2005*

**What institutional adaptations might assist communities deal with future water stress?**



# The Structure of Governance



# The Canadian Model

- **Provincial governments manage water resources**
  - Responsibilities shared by Dept's (Environment, Water/ Natural Resources, Agriculture, Health, others: e.g. hydro power)
- **Local government**
  - Municipalities, cities, towns, etc.; key responsibilities for management of water, waste water, environmental protection and land use
- **Federal government**
  - 1987 Federal Water Policy
  - 5NR (Natural Resources) Environment, Natural Resources, Health, Agriculture, Fisheries & Oceans
  - 19 dept's spend more than $750 million annually on water mgmt
- **Non-government organizations**
  - plethora of organizations from environmental protection to awareness to irrigation and water development proponents

# The Chilean Model

- **Chilean national government**
  - Centralized strength, regional reps
  - Water Directorate, Sanitary Services, Hydrology, Health, Environment, Irrigation, Agriculture, Forestry, Marine
- **Civil Society/ local government**
  - Municipalities, water co-ops, irrigators, drainage, potable water committees
- **For Profit Private Companies**
  - Water, Wastewater, large-scale distribution
  - Ag Industry (corporations, large irrigators, primary production & value-added)

# Water & Government

- **CANADA**
  - Water is not mentioned in the constitution
  - 1895 NW Irrigation Act was designed to settle Western Canada
  - Natural Resources Transfer Agreement (1930) grants ownership of resources to provinces
  - IWRM principles practiced
  - Significant gov't role but roles are not always clear & the many agencies resemble a patchwork approach
- **CHILE**
  - Water is constitutionally enshrined
  - Water Code, 1981 designed for expanded irrigation and agricultural development
  - Water Code, 2005 revisions for environmental protection and improved equity
  - IWRM principles are practiced
  - Marketplace retains a significant role in water mgmt
  - National roles are clearly established

# Water Rights

- **CANADA**
  - Provinces control
  - Rights are allocated
  - Rights *cannot* be bought or sold
  - Fully allocated in southern AB (but not in SK)
  - Shortages often managed by irrigation community agreement
  - Gov't involved in conflict resolution
- **CHILE**
  - National gov't controls
  - Rights privately-owned
  - Rights *can* be bought, sold, traded; market driven
  - Not fully allocated
  - Shortages may be managed by large operators purchasing the rights from small water consumers
  - Conflict resolution by the affected parties, courts

# The Chilean Water Market: an assessment

- **Positive:**
  - Infrastructure investments esp. Ag and Hydro
  - Increased Ag exports
  - Leasing of rights during drought
  - Transfer of rights
  - Improved water services
- **Negative**
  - Conflict between consumptive/ non-consumptive
  - Hoarding/speculation of unused rights
  - Concept of "stealing from poor"
  - Water Code has limited the state's power to regulate

Source: Galaz, V., *Privatizing the Commons, Natural Resources, Equity and the Chilean Water Market*, FLACSO, Santiago, 2003

# Water Markets favor large operators: "Stealing Water from the Poor"

- "The Chilean water market is characterized as the "law of the jungle", where the powerful can do what they want with the water rights of the small".
- The incapacity of public and private institutions to resolve these conflicts.
- The judicial system is too slow, too costly, and unpredictable.

Source: Galaz, V., *Privatizing the Commons, Natural Resources, Equity and the Chilean Water Market*, FLACSO, Santiago, 2003 O, Santiago, 2003

# Economic Aspects of Water

- **CANADA**
  - Government is heavily involved in water development
  - Water is not owned by users
  - Willingness to pay vs. right to water
  - Canadians often do not see full-cost pricing (e.g. municipal water)
- **CHILE**
  - Business is heavily involved in water development
  - Water is not owned by users
  - User-pay mentality has developed
  - Chileans are exposed to full-cost pricing in a water market

# Changes in water governance

- **CANADA**
  - Change is complex (many players)
  - Many governance changes have resulted from significant events:
    - 1985 Fed Water Inquiry
    - 2000 Walkerton Inquiry
    - 2001 NB Inquiry
    - 2005 Fed Auditor Gen. review of Kaseschewan
  - Canada's 1987 Federal Water Policy and the issues of implementation

- **CHILE**
  - Change is complex; however Water Code was established as unique in world
  - Water Code revisions for ecological protection was slow (~ 17 years) but were successfully achieved
  - Future changes will require constitutional amendments

***Improvements to water governance are complex, involve many players, and are very difficult to achieve.***

# Challenges in water governance

- **CANADA**
  - Use of market-based instruments
  - Ecological Value of water
  - Water as an Economic Good
  - Local empowerment
  - Clarity in Federal role
  - Myth of abundance is being shattered
- **CHILE**
  - Increased environmental monitoring and ecological protection
  - Ecological Value of water
  - Climate change and limitations to water development
  - Myth of unlimited growth is being shattered

# Our project seeks to understand:

**Adaptive capacity** of rural communities

**Roles played by governance institutional actors** in the development (or underdevelopment) of that adaptive capacity.

Focuses on **vulnerability in the context of an institutional system**.

# The Different Sciences:
## Integration and Adaptation is complex

- **PHYSICAL**
  - Biology
  - Chemistry
  - Physics
  - Natural Processes
  - Climate
  - Hydrology
  - Applied Sciences
- **SOCIAL**
  - Economics
  - Ethics/Values
  - Law and Politics
  - Sociology
  - Psychology
  - Education and adult learning
  - Participatory communications

# Stakeholder Interviews

- Sociologists, geographers
- The human dimension
- Direct contact with
  - Rural citizens
  - Ag and non-ag stakeholders
  - Formal gov't institutions
  - Institutional assessment

# Stakeholder Workshops

***Some comments from Canadian stakeholders:***

***"The government is the problem right now…we inherited a system by which politically 4 years is the horizon. And [with climate change] we're talking 10, 20, 30, 50 years. We don't have a political system that thinks that far ahead. And I don't know what we as a collective people can do to change it. But it needs to be changed in order for us to be sustainable."***

# Stakeholder Workshops

***Some comments from Canadian stakeholders:***

***"…kids coming out of high school think we have this abundant supply of water….there's no concept that that's ever going to end"***

***"you can't exclude government, but [the driving] force has to be the people"…"we're working either against government policy or lack of policy"***

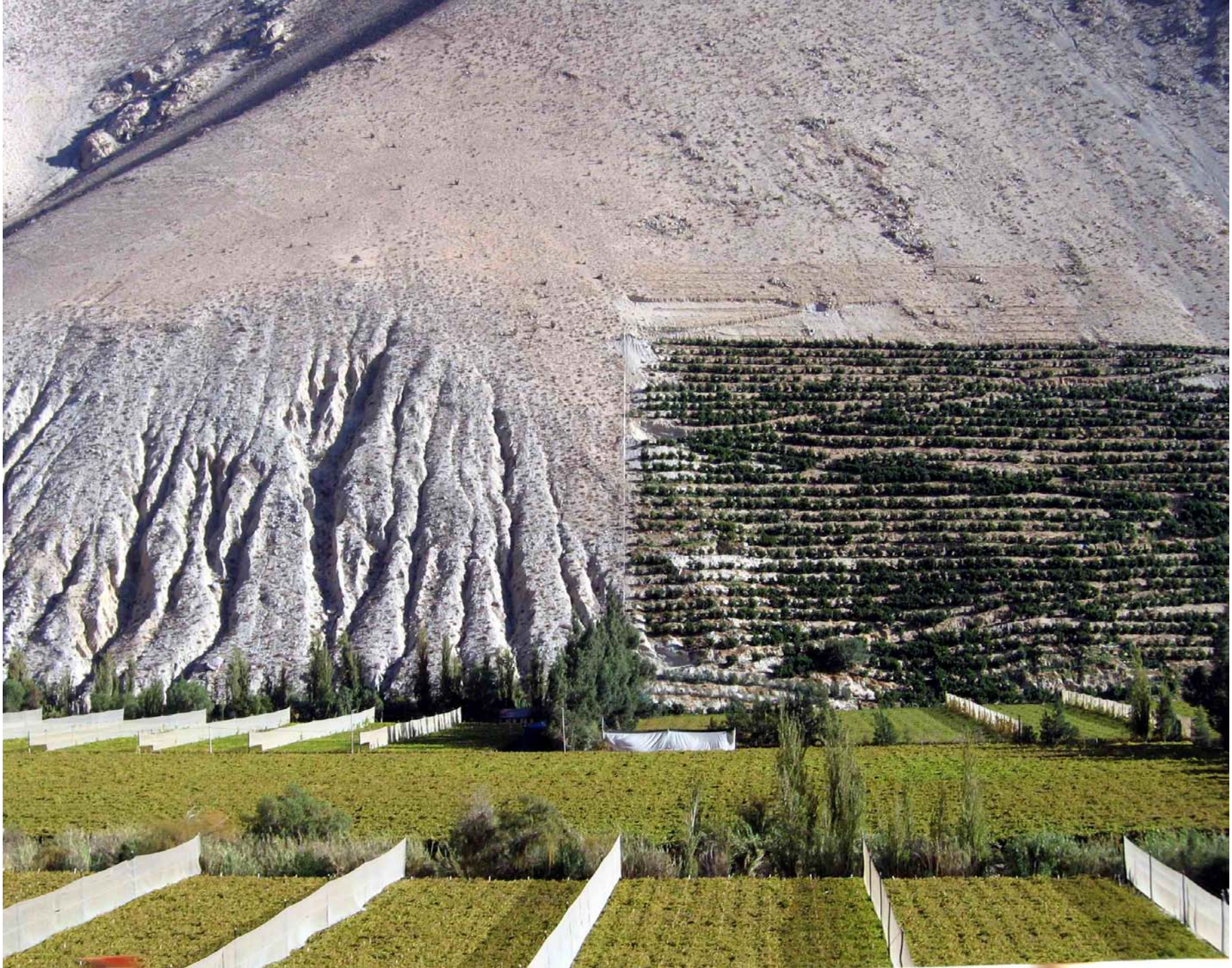
***"…we're all part of the problem but we're also part of the solution.***

# Canadian perceptions of water governance

- The Canadian public perceives water strategy
  - "as piecemeal, lacking coherence, and hence inadequate to ensure that water will be managed appropriately in the face of conflicting demands"
  - *Pearse, 1986, Author of the 1987 Federal Water Policy.*
- "…the current institutional governance of water leads to fragmentation of the issue between many federal departments and agencies…"
  - *Policy Research Initiative, 2005, reporting to Privy Council.*
- Canada needs a "national approach that transcends … …interjurisdictional boundaries"
  - *Senators Banks and Cochrane, 2005, Water in the West, Standing Senate Committee*
- *"Our water institutions aren't ready for the challenges ahead, including economic growth and changing climate."*
  - *Conference Board of Canada, 2007*
- The Prairie Provinces Water Board has been a very successful water management model for Fed/Prov collaboration in the prairies.

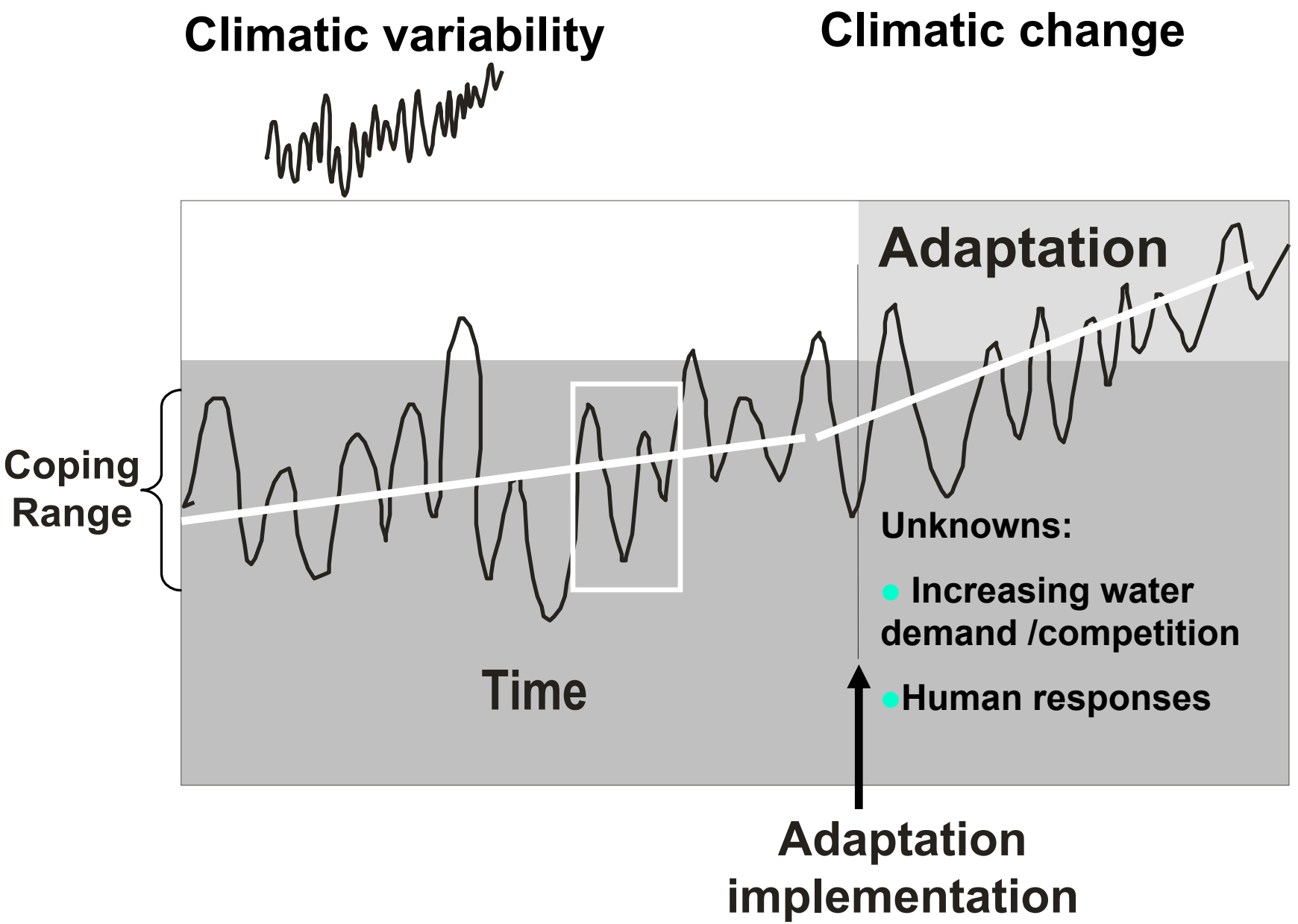
***Chilean stakeholders and irrigators express concern over access to water.***

***Climate impacts are occurring, but current issues largely relate to equity and potential water conflict.***



*"We use state of the art irrigation technology learned from Israel. Earth canals have been converted to concrete, and we now are promoting pipelines to conserve water loss. We have ready drought plans in place."* **Irrigation manager**

**Manager:** ***"People in the valley say we have made the rocks bloom…Buy we are very concerned that some water users have not planned for water supply shortages"***


Climatic variability
Climatic change
Adaptation
Coping Range
Unknowns:
Increasing water demand /competition
Human responses
Time
Adaptation implementation

# The governance puzzle:
## How will society's institutions help build local adaptive capacity to cope with water stress?


*Source: Atlas of Saskatchewan, 1999*

- Long-term planning?
- Flexibility to address local needs?
- Federal roles?
- IWRM?
- Stakeholder participation, integration?
- Transparency, Trust?
- Water Conflict?
- Water as an economic good?
- Environmental value?

# Acknowledgments

*Go to PARC website for more Project Information:*
*http://www.parc.ca/mcri/index.php*

**Reference: The Case of Canada – Institutions and Water in the South Saskatchewan River Basin**

**This work is funded by Social Sciences and Humanities Research Council, Major Collaborative Research Initiative**

**The authors are grateful to all members of our inter-disciplinary research team – it's not easy blending social & physical science!**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