

# Water Ethics and Sustainable Development

## *The Soft Path and its Implications*

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*Red River Basin Commission – “The Power of a Dream”*

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**Vision:**

Better living for all — *sustainably*

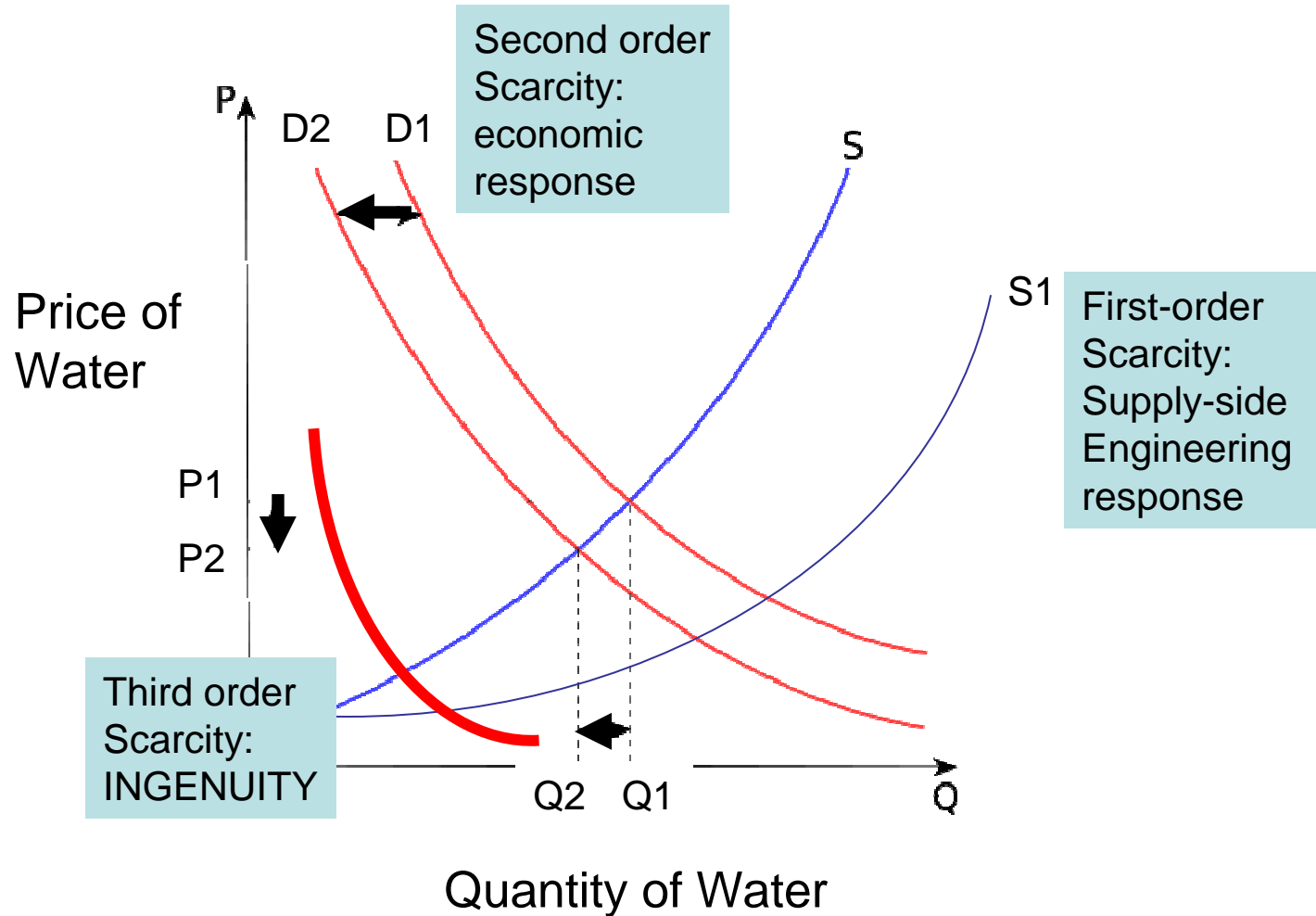
**Mission:**

To champion innovation, enabling societies to live sustainably

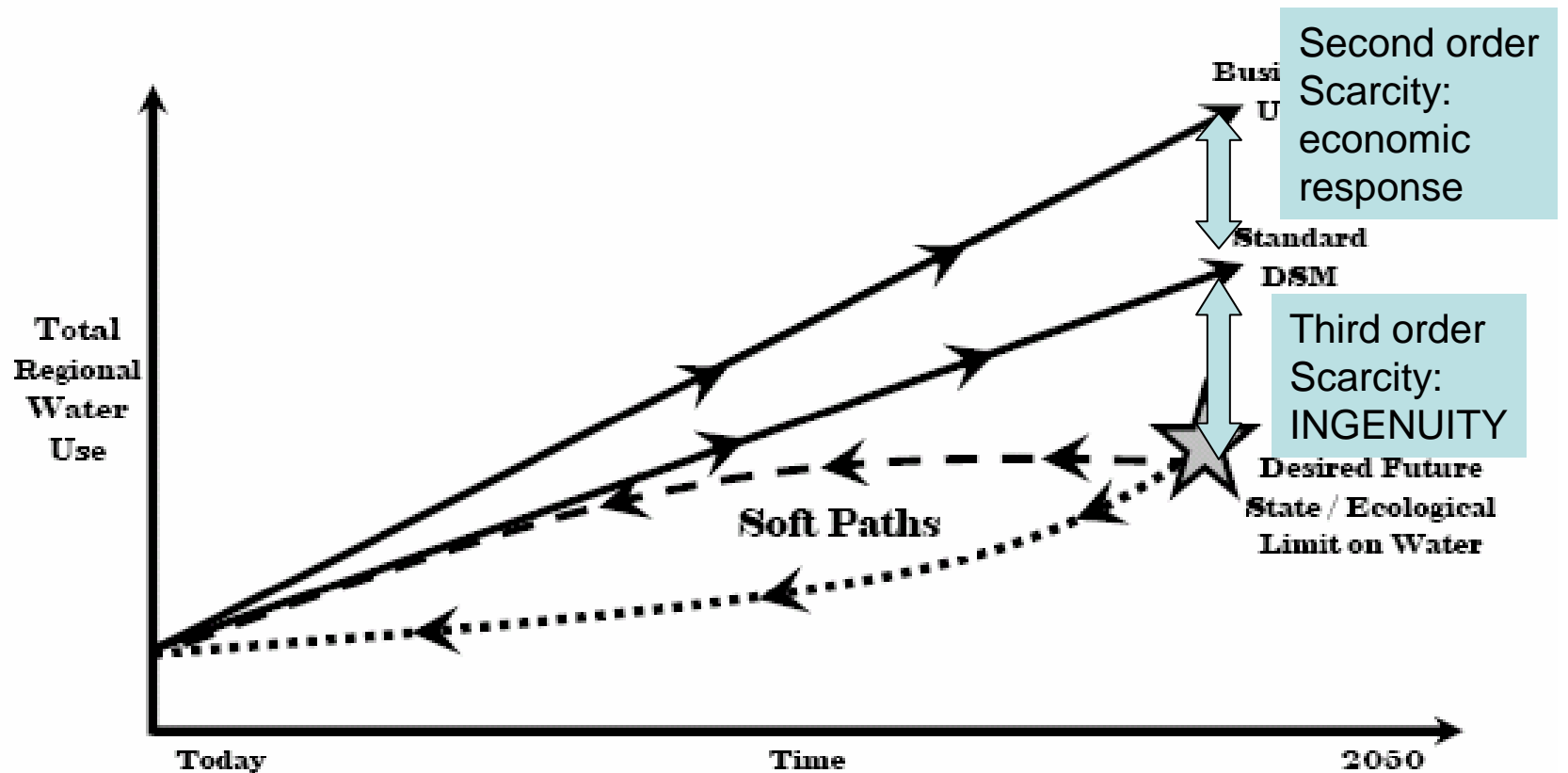
# Ethics and Scarcity

- Ethics: *motivation based on ideas of right and wrong*
- Environmental Ethics: *A new discipline that analyzes the issues regarding our moral obligations to future generations with respect to the environment.*
- Ethics are tested in periods of stress, crisis, scarcity.
- Water ethics are expressed as the societal water allocation decisions we make in the face of scarcity
- We can identify three types of scarcity (Brookes, Homer-Dixon):
  - First-order scarcity (Engineering Response)
  - Second-order scarcity (Economic Response)
  - Third-order scarcity (structural socio-political response – “changing the paradigm” ) - requires the social adaptive capacity to think differently about the problem.

# Ethics and Scarcity



# Third-order Scarcity and the Soft Path Approach

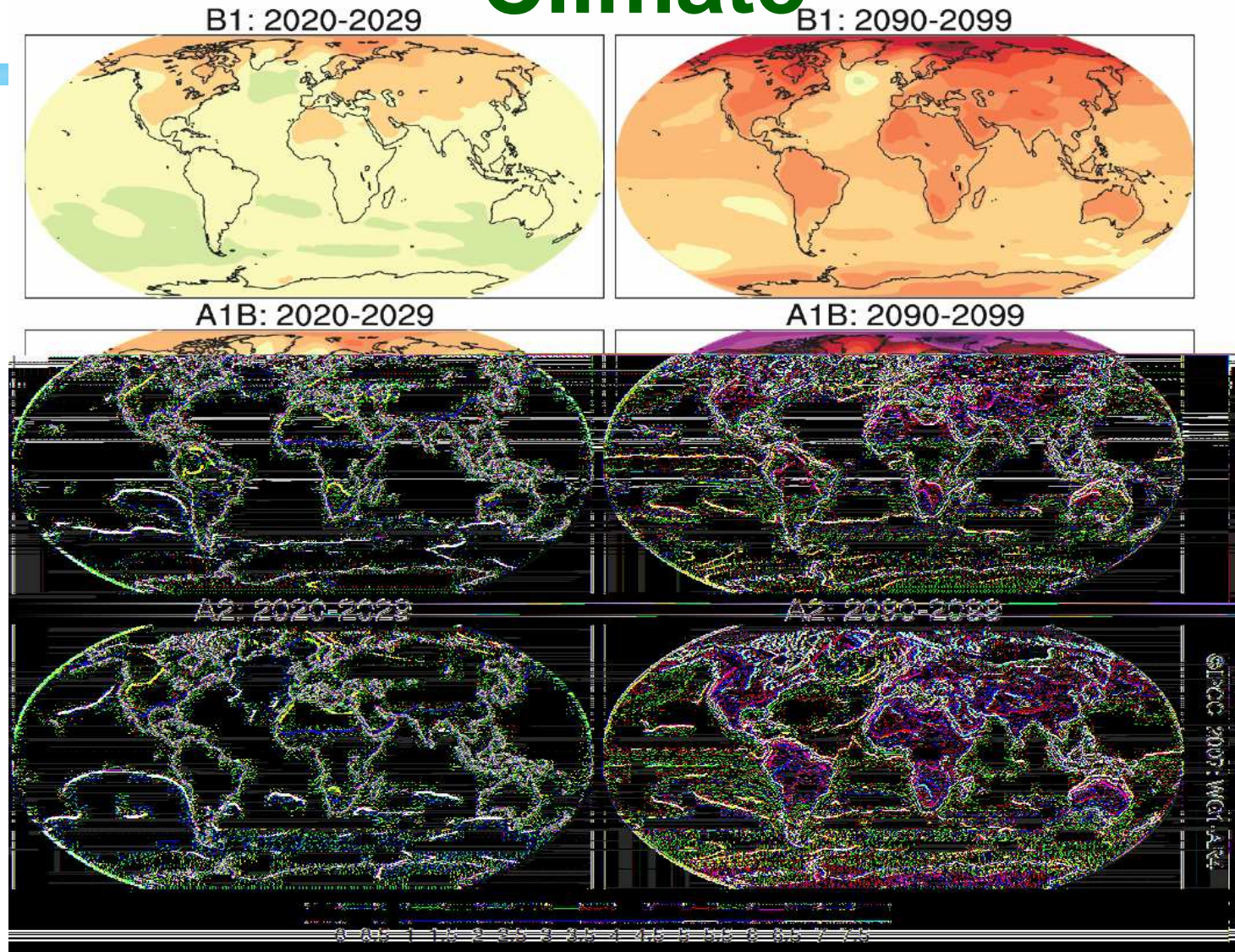


# Why Bother?

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- The Sustainable Development Ethic  
*'development which meets the needs of the present without compromising the ability of future generations to meet their own needs'*
- Climate Change imposes an enormous risk burden on water supply for future generations.
- What is the ethical response?

# Projections of Future Changes in Climate



Source: IPCC, 2007

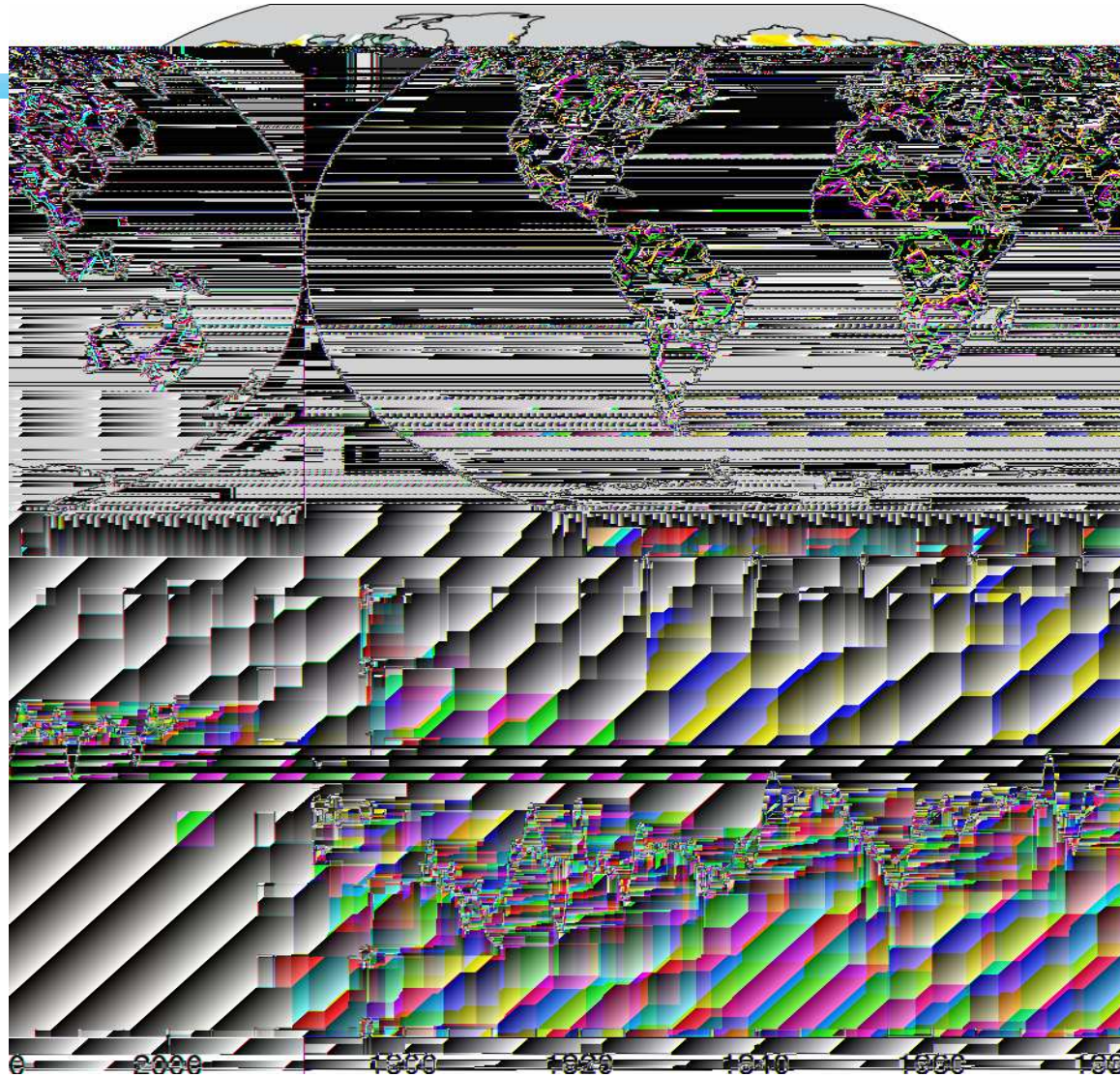
# Spatial Distribution of Temperature Increases

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Surface

***Source: IPCC, 2007***

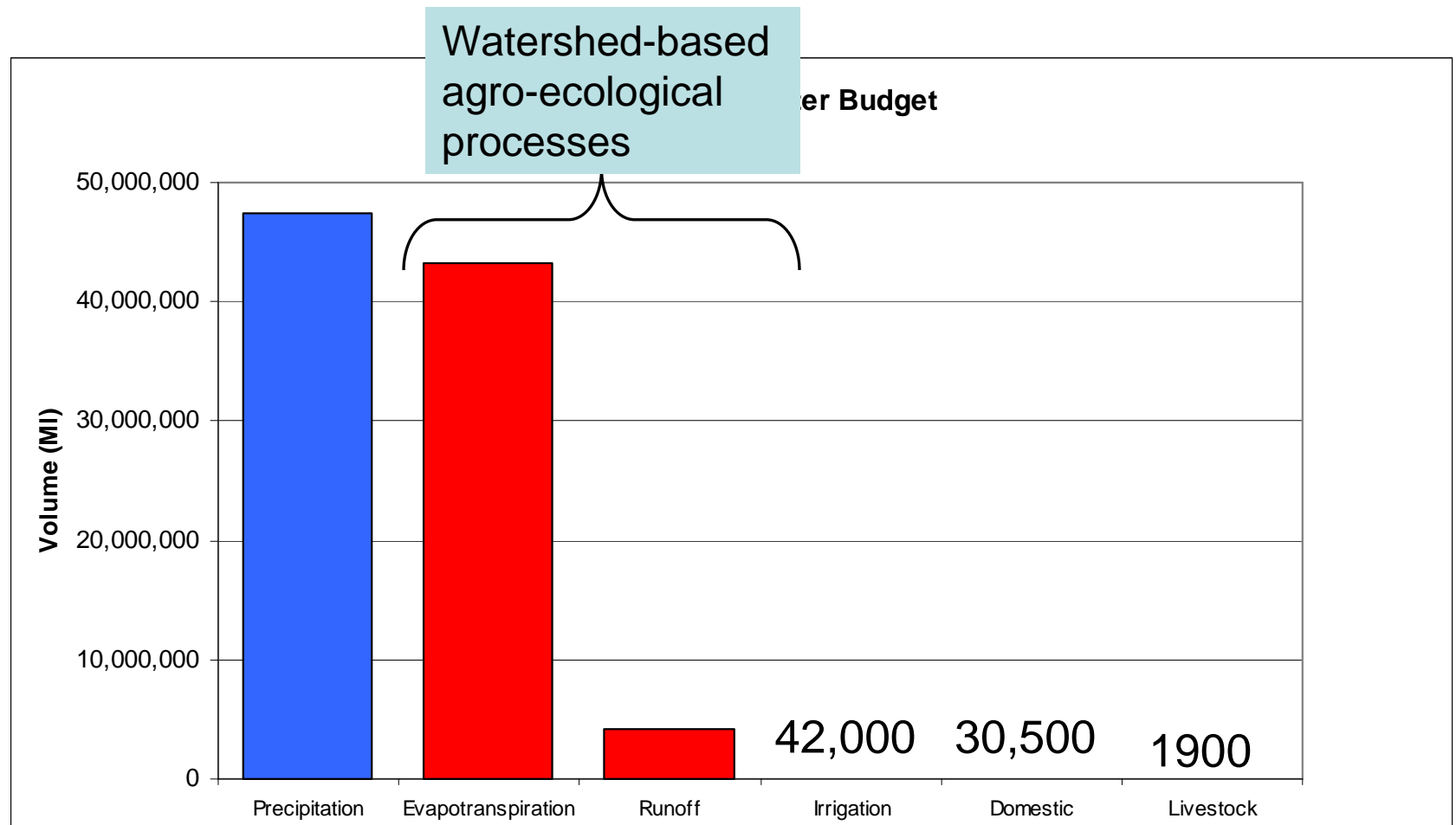
# The Palmer Drought Severity Index Spatial and temporal trends (1900-2002)



**Source: IPCC, 2007**



# Regional Context: Manitoba Water Soft Paths



# Adaptation: Learning and Planning

## Examples of Planned Adaptation

Sector	Adaptation option/strategy	Underlying policy framework
Water	Expanded rainwater harvesting; Watershed-based IWRM critical “will reduce vulnerabilities” (IPCC, 2007) irrigation efficiency	National water policies and es ted
Agriculture	Adjustment of planting dates and crop variety; crop relocation; improved land management, e.g. erosion control and soil protection through tree planting	R&D policies; institutional reform; land tenure and land reform; training; capacity building; crop insurance; financial incentives, e.g. subsidies and tax credits

Source: Environment Canada, 2007/ IPCC AR4 SPM

# The Soft Path and Adaptation Agenda

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- Decentralized Agro-ecological Watershed Management
  - Scenarios and collaborative processes to clarify objectives.
  - Designing and implementing economic instruments for nutrient management, peak flow reduction, water conservation, adaptive management capacity
- The Ethical Issue – will we make the choice to resource such a process of socio-political transformation
  - “Numerous examples in the world of well-designed strategic plans that have failed because of inadequate organizational and fiscal support - particularly long cycle budgetary commitments”
    - Rosenberg International Forum on Water Policy:

# What we don't spend money on

	Manitoba	Saskatchewan	Alberta
Total Provincial Budget (2006-07)	10.35 billion	9.29 billion	29.6 billion
Agri-Environmental and Municipal Expenditures	453 million (4.4%)	455 million (4.9%)	1.21 billion (4.1%)
Integrated Water Resources Management	5.19 million (0.05%)	23.0 million (0.25%)	29.4 million (0.1%)

# What We Do Spend Money On



Biofuels: At What Cost?

Government support for ethanol and biodiesel in the United States

- (US) corn-based ethanol/biodiesel
- \$1.40-2.30 US/gallon in federal and state subsidies
- Environmental Policy? equates to \$500/ tonne CO<sub>2</sub>. could purchase >30/100 tonnes of CO<sub>2</sub> credits on European/Chicago exchanges

Source: [www.globalsubsidies.org](http://www.globalsubsidies.org) (IISD)

# Water Implications of Biofuels Production in the United States

Committee on Water Implications of Biofuels Production  
in the United States, National Research Council

ISBN: 0-309-11360-1, 86 pages, 7 x 10, (2007)

- ***significant acceleration of biofuels production could cause much greater water quantity problems*** depending on where the crops are grown. Growing biofuel crops in areas requiring additional irrigation water from already depleted aquifers is a major concern.
- ***The growth of biofuels in the United States has probably already affected water quality because of the large amount of N and P required to produce corn.***
- ***If projected future increases in the use of corn for ethanol production do occur, the increase in harm to water quality could be considerable. Expansion of corn on marginal lands or soils that do not hold nutrients can increase loads of both nutrients and sediments. To avoid deleterious effects, future expansions of biofuels may need to look to perennial crops, like switchgrass, poplars/willows, or prairie polyculture, which will hold the soil and nutrients in place.***

# A cautionary tale from the Aral Sea *40 years of high input, heavily subsidized agriculture*



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