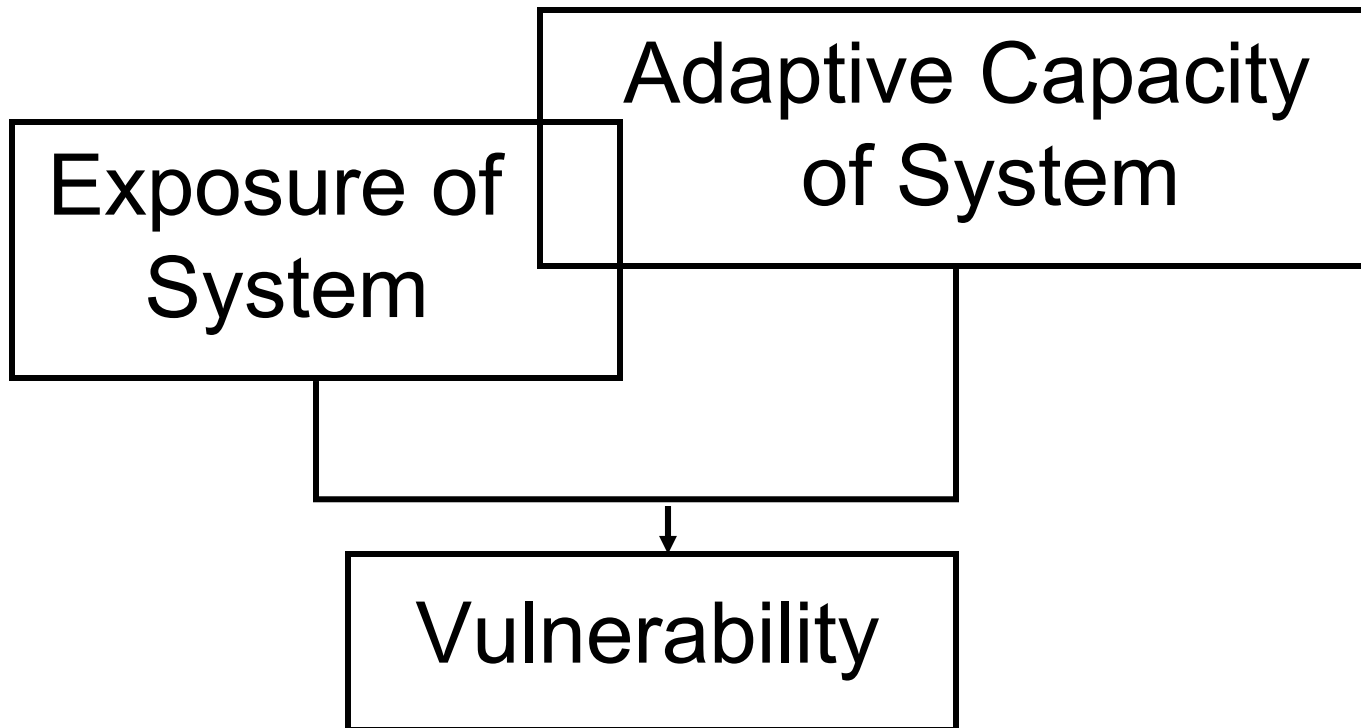


Community Vulnerability in the SSRB: Alberta Case Studies

Johanna Wandel, University of Guelph

Susana Prado, University of Regina

Vulnerability to Climate



Exposure

- Climate/weather conditions
- Nature of water use
- Livelihood reliance on water, weather

Adaptive Capacity

- Current management of water stress, weather
- Ability to cope with more frequent/severe stress
- Planning for future stress

Goal of IACC Case Studies

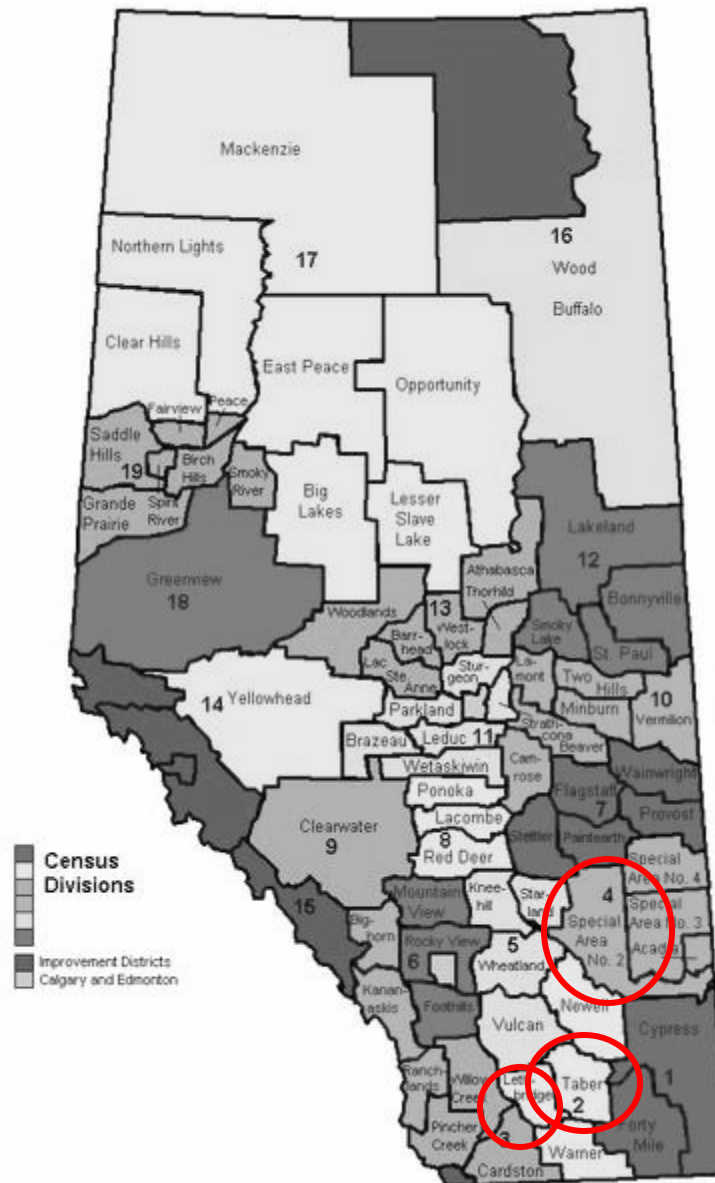
To assess the current vulnerability of six Canadian and four Chilean case study communities.

- Identify relevant conditions [**exposures**]
- Document strategies to deal with conditions [**adaptive strategies**]
- Constraints and opportunities to/for adaptive strategies (past, current, anticipated) [**Adaptive Capacity**]

Community Selection

Rural communities, based on:

- History of water stress
- Land use and economic base (ranching / crop farming)
- Type of reliance of water (irrigated / not irrigated, security of access)
- Conflict management w.r.t. water



Hanna/Special Area 2

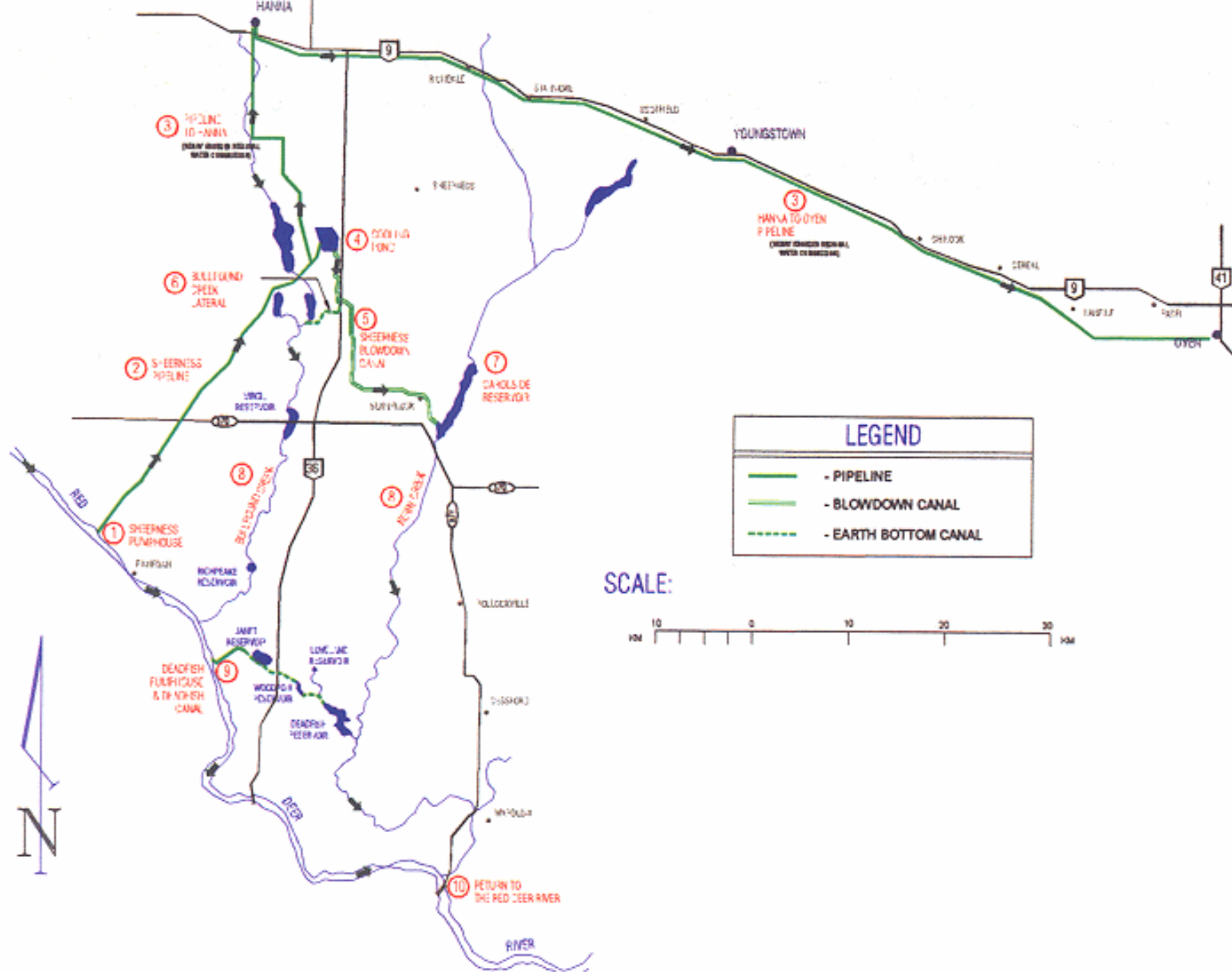














Preliminary Insights: Key Exposures and Implications

Households

- Insufficient/low quality potable water

Ranchers:

- Little snow/slow runoff = trouble filling dugouts for stock water
- Low soil/subsoil moisture = poor grass growth
- Low early season moisture = poor grass growth
- Freeze-thaw in winter = dries soil, not good for cattle
- Cold, wind = difficult for calves in early spring/late winter

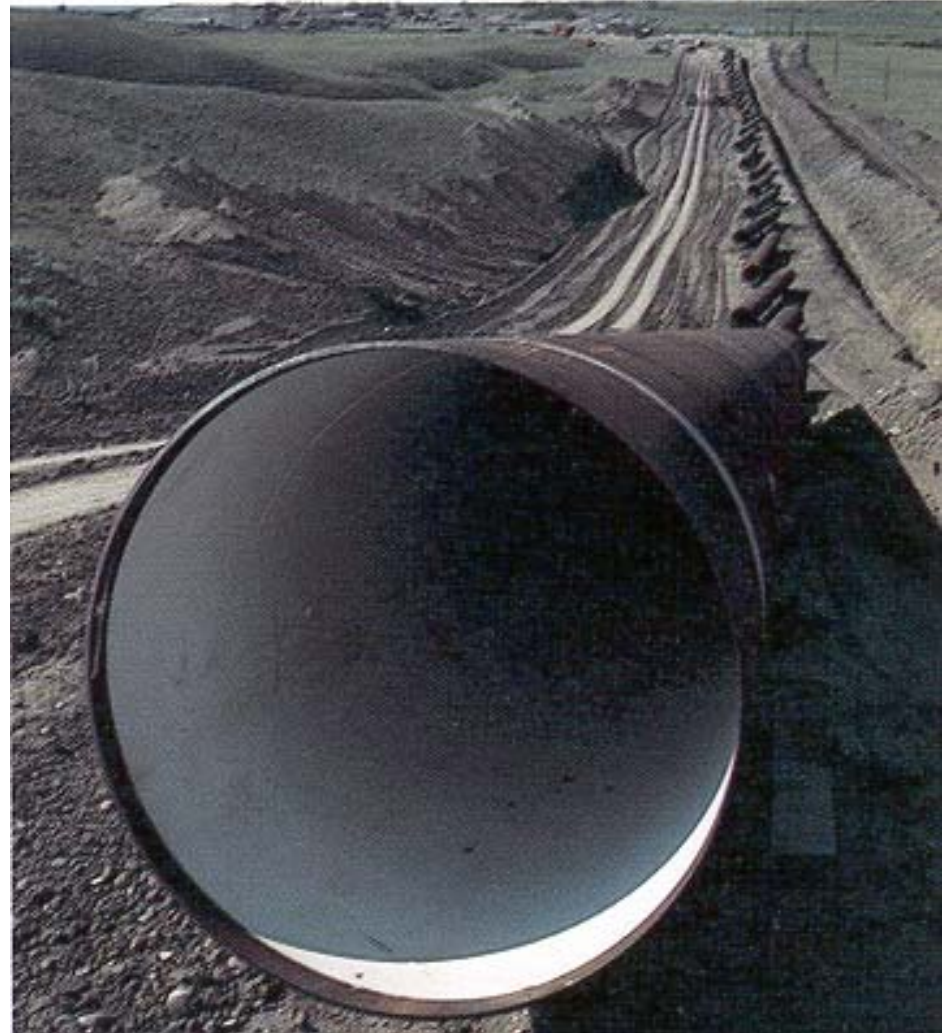
Dryland Farmers:

- Insufficient spring precipitation = poor germination, little early growth
- Open winter, chinooks, fast runoff = insufficient soil moisture
- Repeated dry years = low subsoil moisture, grasshoppers
- Low precipitation throughout growing season = low yields

Adaptive Strategies in SA 2: Institutional

ATCO Pipeline

- Employment
- Irrigation water
- Stock water, dugout recharge
- Input for Henry Kroeger water commission



Sheerness-Deadfish Irrigation Project

- Water inputs: runoff, Blowdown Canal, Red Deer River (via pumps into Deadfish Reservoir)
- Dugout recharge (more secure stock water)
- Irrigated farming, pasture = more secure growing conditions, feed supplies

Dryland farmers strategies

- Change crop mix
- No/minimum tillage
- Diversify operation (cattle)
- Use crop as feed during poor years
- Crop insurance
- Reduce cultivated areas, shift to more ranching
- Off-farm jobs
- Abandon farming altogether

[Compounding stresses: removal of crop rate, low crop prices, disappearance of elevators, grasshoppers]

Rancher strategies

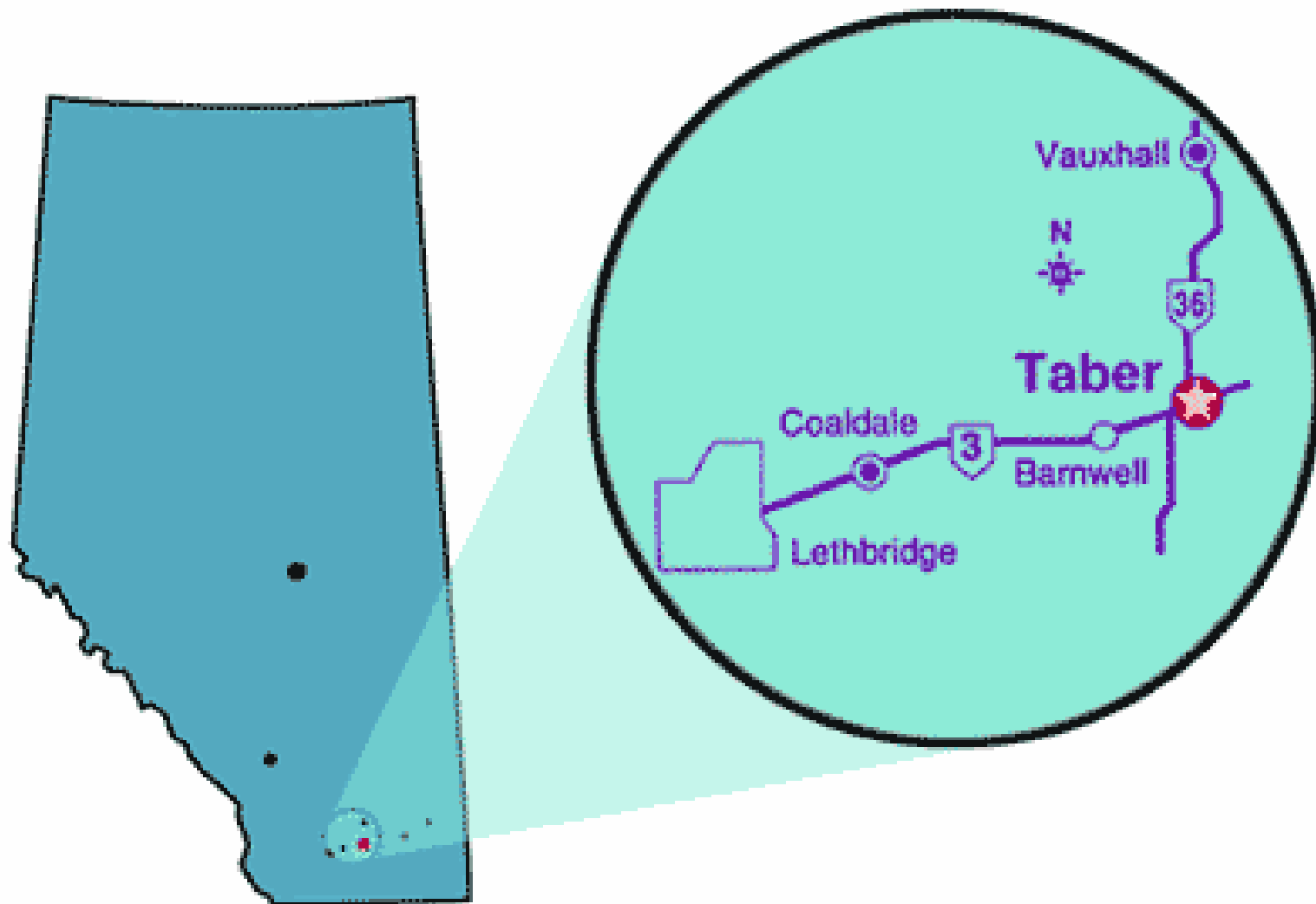
- Construct more/better dugouts
- Recharge dugouts from secure water sources via pumps, shallow pipelines
- Keep feed supplies
- Carry hay, pasture insurance
- Dry years: decrease herd size, lease additional land, buy feed
- Off-farm jobs
- Haul stock water

[Compounding stresses: BSE, low calf prices, high feed prices]



TABER

Summer 2006 / Town & Municipal District M.D.





Respondents' Profile

OCCUPATION

Farmer/Rancher	14
Oil worker	2
Business person	3
Local Authority	4
Organization/Association/Corporation	3
Senior	5
Service worker	2
Other	3

Preliminary Insights: Key Exposures related to water

Droughts, 2000-2001

Flooding

Hail storms

Crop lost, damage, or low growth.

Adaptive Strategies

Irrigation

Water rationing

Deciding not to grow crops or not to irrigate & sell water rights

Construction of storage facilities

Dugouts

Irrigating higher value crops

Dry land / Ranching

Crop insurance

Drainage systems

Provincial financial support in case of town flooding

Some Industries are opting not to use drinking water for their processing operations

The Future

Challenges:

Challenges for the water management plant

Conflicts related to water

Misuse of water by households in the townsite

No major concern about future droughts

Opportunities:

Construction of dams?

Technological solutions to water scarcity (e.g.
more efficient irrigation)

Conclusions

- Type of reliance of water determines exposure/sensitivity to dry conditions
- Institutional strategies have tremendous capacity to mediate water shortage
- Individual strategies involve technology, insurance, management, pluriactivity