Community Vulnerability in Special Area 2

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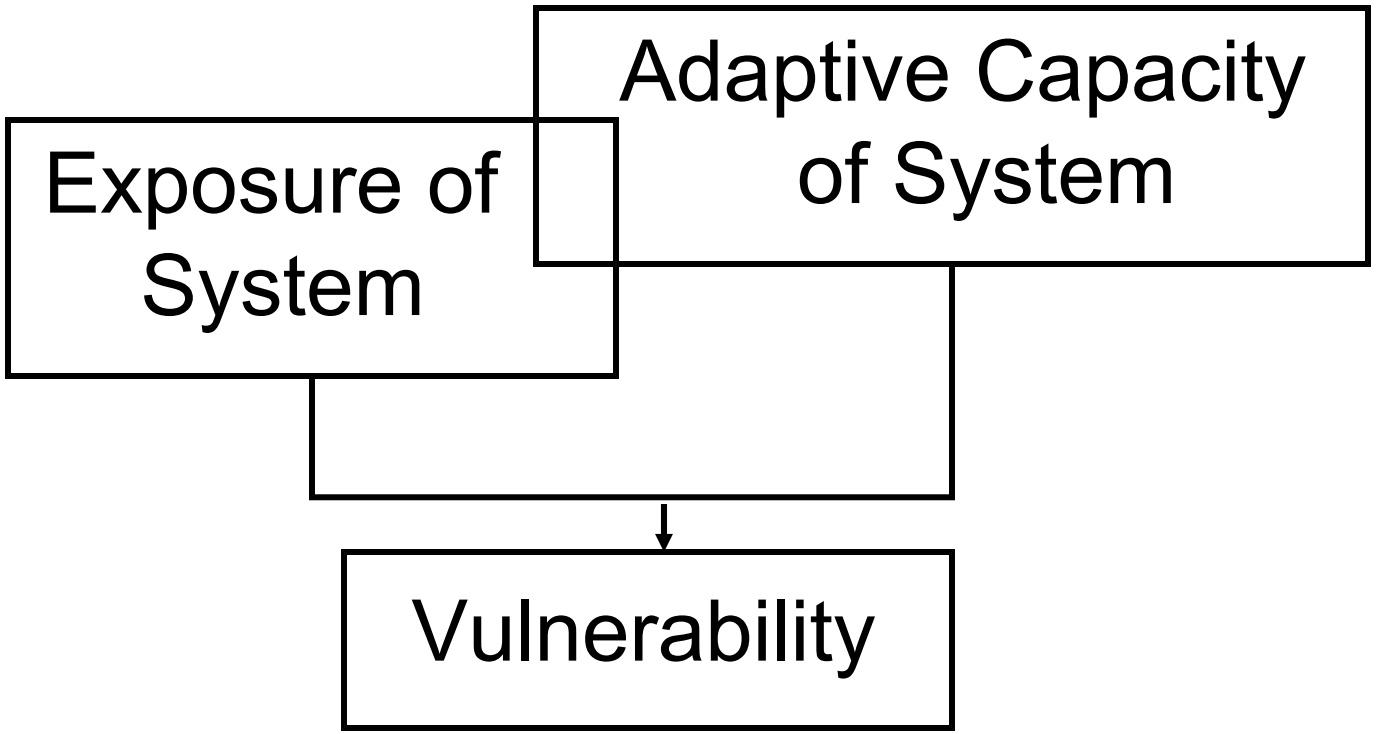
Vulnerability to Climate



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/sever 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)
- Variety of jurisdictions


Mackenzie
Northern Lights
17
16
Wood
Buffalo
Clear Hills
East Peace
Opportunity
Fairview
Peace
Saddle
Hills
19
Birch
Hills
Smoky
River
Grande
Prairie
Spirit
River
Big
Lakes
Lesser
Slave
Lake
Lakeland
12
Greenview
18
Athabasca
Thorhild
Woodlands
13
Bonnyville
St. Paul
14 Yellowhead
Parkland
Two
Hills
10
Vermilion
Minburn
Brazeau
Leduc 11
Wetaskiwin
Ponoka
Lacombe
Clearwater
9
8
Red Deer
Provost
Flagstaff
7
Wainwright
Special
Area No. 4
4
Special
Area No. 3
Special
Area No. 2
15
5
Wheatland
6
Rocky View
Foothills
Vulcan
Newell
Cypress
1
Taber
2
Forty
Mile
Warner
Cardston
Pincher
Creek
Census
Divisions
Improvement Districts
Calgary and Edmonton

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

“Probably our snowmelt is one of the biggest things for stock. If you don’t get some snowmelt in lots of cases you don’t have water, and then you’re pumping water from dams and wells and everything else to get you through the summer”

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

"Well I guess the problem I've had with canola is the hot July. And if you don't get any moisture in July and it turns real hot it really cuts your yield and this area is subject to that once in a while."

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 crow rate, low crop prices, disappearance of elevators, grasshoppers]

“Farming practices have changed a lot since the 30s and moisture, rainfall is probably the same it’s probably the farming practices that are a lot better”

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

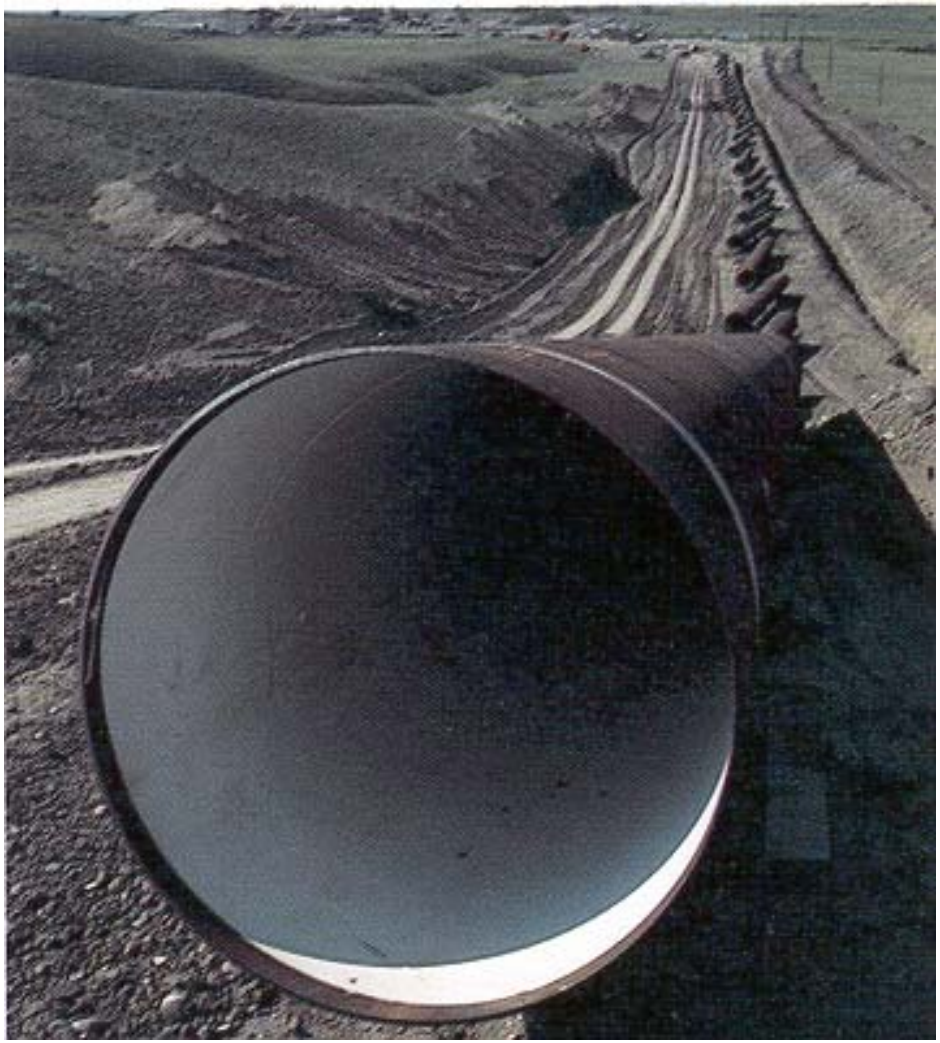
[Compounding stresses: BSE, low calf prices, high feed prices]

“I stock at a low density and I carry way more grass than I need to and I’ll graze until, if the snow stays away, probably February…I do that because of 2003 and because you never know what you are going to get here”

Adaptive Strategies in SA 2: Institutional

ATCO Pipeline

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



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

THANK YOU HANNA AND SPECIAL AREA 2!