



Impacts of Drought

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Advanced Integrated Water Resources Management course

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Drought impacts

- Drought should not be viewed as merely a physical phenomenon or natural event. Its impacts on society result from the interplay between a natural event (less precipitation than expected resulting from natural climatic variability) and the demand people place on water supply.



Drought impacts and vulnerability

- Drought risk is based on a combination of the frequency, severity, and spatial extent of drought and the degree to which a population or activity is vulnerable to the effects of drought.
- The degree of a region's vulnerability depends on the environmental and social characteristics of the region and is measured by their ability to anticipate, cope with, resist, and recover from drought.

Competition for water



- Drought impacts are devastating
- Impacts are becoming more complex
 - Agriculture, transport, tourism & recreation, urban water supply, forest and wildfires, environment, human health
- Conflicts are increasing
- Drought vulnerability is increasing

Meeting demands from different sectors

- The consequences of drought onset include sectors vying for water in the short term, causing potential conflicts (municipalities, tourism, agriculture) Even in regions where we may be perceived as being “water rich” (i.e. Canada), drought is a real threat, as we saw in 2001 when there was little water for agriculture, or other sectors.

Meeting demands from different sectors

- Several stakeholders have needs for water (e.g. agriculture, fisheries, tourism, ecosystems)
- During shortages, it is necessary to prioritize these needs
- Stakeholders coming together around the table to discuss needs is the sought after option. Can be led by Ministry or community groups
- Reactive solutions can be costly and are not always sustainable



Ex: Agricultural sector

The agro-climatic conditions that matter the most to the producer are:

- a lack of moisture
- and excessive heat

These impacts cause the most plant and animal-related difficulties and are the most challenging to cope with for direct and indirect reasons.



Agricultural sector

Direct consequences for agricultural producers of drought include

- low soil moisture availability
- lower crop stress (yields)
- increased livestock stress (death)

Indirect consequences of drought can include a host of impacts, such as:

- Changes in the availability and predictability of water resources
- Higher water demands for agriculture— leading to potential conflicts with other sectors
- increase risk of wildfire
- land degradation

A vertical decorative strip on the left side of the slide shows a close-up of parched, cracked brown soil. A single, small green leaf is visible near the bottom of this strip.

Stakeholder strategy to cope with low water for agriculture

Irrigation Advisory Committees

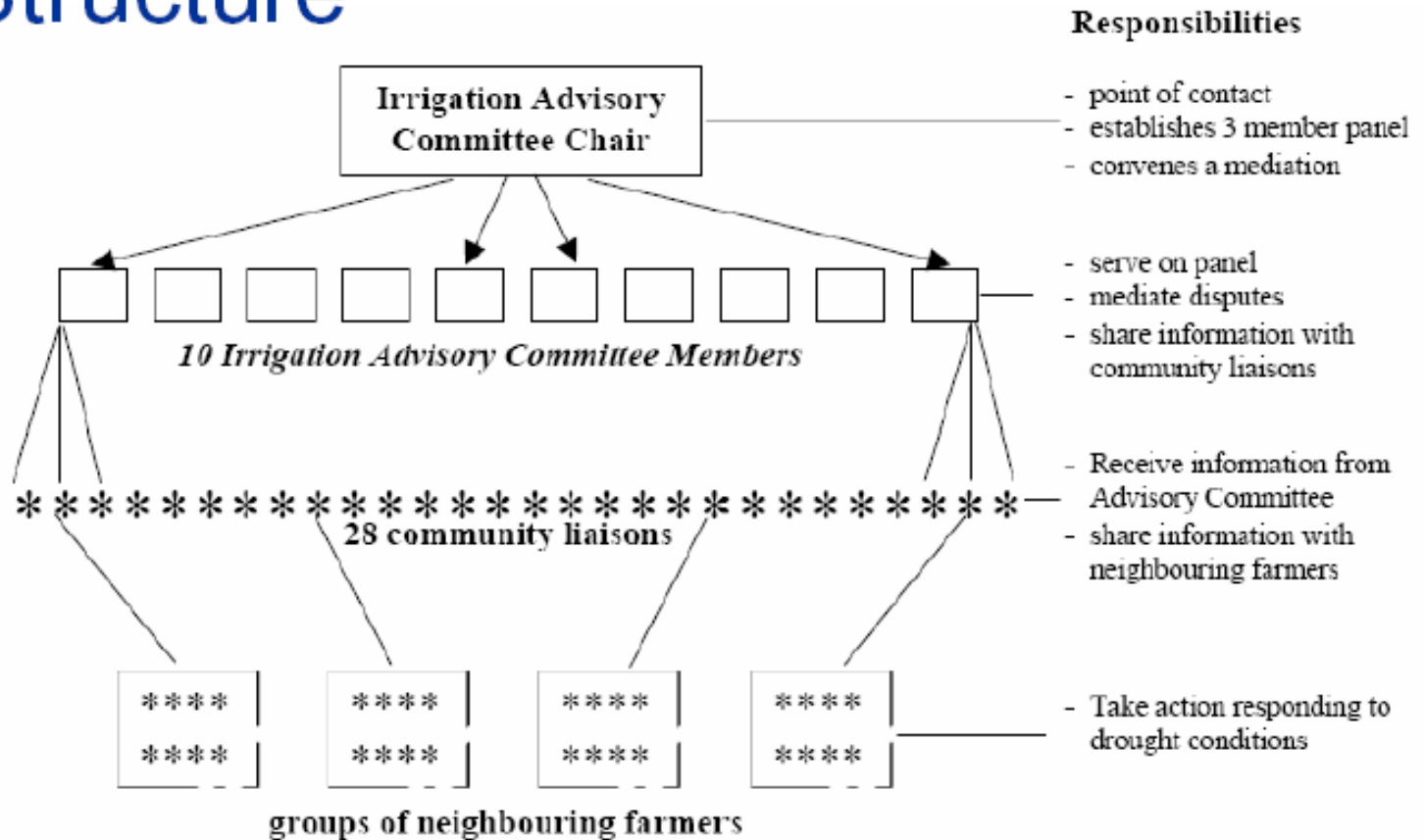
- Voluntary mechanism
- Committee to self manage agricultural water users within a water basin
- Manages the available water resources amongst themselves (farmers) without disrupting the natural functions of the streams



IAC Co-operation/Communication

- Each working group (tributary section) has the responsibility to manage the water in their section amongst themselves and ensure that the natural function of the stream is not disrupted
- Dispute resolution function among agricultural users

Big Creek IAC Organizational Structure





Co-operation/Communication

Techniques include:

- Scheduling their takings
- Developing off stream water sources (ponds, wells etc)
- Filling ponds slowly then irrigating from the pond at the high rate
- Implementing Best Management Practices
- Exchanging & implementing their own ideas



IACs A Successful Model

- Successful model in Southern Ontario since summer of 2001
 - An effective participatory, community based alternative to regulation
 - Locally developed and managed by farmers
 - Strong leadership from the farm community
 - Developed and maintained trust among water management stakeholders and organizations
 - Minimal recognition in issuing new permits – but improving
 - Key partners in Low Water Response Teams
 - Funding remains a constraint