Drought Risk Management: Where are We and What are the Next Steps?

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Economic losses from disasters worldwide since 2000 are in the range of $2.5 trillion (UN, 2013)

- Considerably higher than previous estimates
- “Economic losses from disasters are out of control”

“Losses from floods, earthquakes and drought will continue to escalate” unless action is taken to reduce disaster risks
Context: Why Plan Ahead and Prepare for Natural Disasters?
Past drought management efforts have been \textit{reactive} (costly, untimely, ineffective & poorly coordinated).

\textbf{Impacts are increasing} and becoming \textit{increasingly complex} across sectors, demonstrating increasing vulnerabilities...yet, impact assessments are lacking and/or no consistent methodology is present, therefore the \textit{costs/losses of drought are not well documented}.

How do we tie together (e.g., \textit{“triggers”}) the 3 pillars of Drought Risk Management elements?

Climate change is and will continue to alter the frequency, severity and duration of droughts for many regions— \textit{increasing costs} and \textit{reducing recovery} times.

Given increased drought incidence and upward spiraling impacts, \textit{how can we convince policy makers that drought preparedness and the application of the principles of risk management are worthy of upfront investments?}
Strategic Risk-based Approach for Building Drought Resilience

Determining the right balance of measures:
A portfolio approach

A focus on emergency response and recovery alone is unlikely to reduce risks significantly.

before drought: Acting to improve preparedness

During drought: Providing a better response

After drought: Aiding timely recovery

Before drought: Acting to improve preparedness

During drought: Providing a better response

After drought: Aiding timely recovery

Risks tend to be best based managed through a portfolio that is bias towards preparedness and reducing the vulnerability to drought.

Sayers et al., 2015
## Crisis vs. Risk Management: Characteristics, costs and benefits

<table>
<thead>
<tr>
<th>Crisis Management</th>
<th>Risk Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Expensive</strong></td>
<td><strong>Investment</strong></td>
</tr>
<tr>
<td>◦ Costs + costs of inaction</td>
<td>◦ Short-term—EWS, building networks,</td>
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<tr>
<td>◦ Repeats past mistakes</td>
<td>collaborations, institutional</td>
</tr>
<tr>
<td><strong>Post-impact</strong></td>
<td>capacity</td>
</tr>
<tr>
<td>◦ Drought relief/emergency assistance</td>
<td>◦ Long-term—structural adjustments,</td>
</tr>
<tr>
<td><strong>Rewards poor resource management</strong></td>
<td>policy shifts</td>
</tr>
<tr>
<td><strong>Treats the symptoms of vulnerability, i.e., impacts</strong></td>
<td><strong>Pre-impact</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td>◦ Risk assessments, mitigation</td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>Identifies and addresses the root</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>causes of vulnerability</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>Promotes improved stewardship of</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>natural resources</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>Reduces vulnerability, builds</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>self-reliance, reduces need for</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>gov’t. &amp; donor interventions</strong></td>
</tr>
<tr>
<td><strong>Increases vulnerability, reliance on assistance from government &amp; donors</strong></td>
<td><strong>Assists climate change adaptation</strong></td>
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</table>
National Drought Policy

Preparedness Plans developed and implemented based on the principles of risk reduction
Drought Risk Management: The Three Pillars

Successful Drought Policy

Monitoring & Early Warning
Vulnerability & Impact Assessment
Mitigation & Response

Overall purpose: preparedness planning based on these pillars of risk reduction.
IDMP: 3 Key “Pillars” of a National Drought Policy

1. **Monitoring/Early Warning and Information Delivery**
   - Drought status (Met., Agric., Hydro. and Socio-economic)

2. **Mitigation and Response**
   - Actions and measures to mitigate drought impacts and respond to drought emergencies (short-, medium- and long-term)

3. **Vulnerability and Impact Assessment**
   - Who/What is at RISK and Why?
     - Prioritization/Ranking
HIGH-LEVEL MEETING ON NATIONAL DROUGHT POLICY

(HMNDP)
TOWARDS MORE DROUGHT RESILIENT SOCIETIES

11-15 March 2013
CICG, Geneva

Final Report
Available in Arabic, Chinese, English, French, Russian and Spanish

http://www.droughtmanagement.info/about-idmp/guidelines/
IDMP Outcome: National Drought Management Policy Guidelines

3 Pillars

Response to need articulated at the High Level Meeting on National Drought Policy

Template that *can be adapted to national realities and needs*

Building on existing risk management capacities
10-Step Process for Preparing Drought Policies

1. Appoint a national drought management policy commission
2. State the goals and objectives
3. Establish stakeholder participation & resolve conflicts
4. Inventory resources & identify vulnerabilities
5. Implement the 3 key pillars
6. Identify research needs and fill institutional gaps
7. Integrate science and policy
8. Publicize the policy and build awareness and consensus
9. Develop education programs
10. Evaluate and revise the policy
Timeline for the Regional Capacity Building Workshops

Six regional workshops have engaged 75 developing countries.

WMO, FAO, UNCCD, UN-Water and CBD
Moving from crisis to risk management

Capacity Development to Support National Drought Management Policies

Find out more on the initiative: www.ais.unwater.org/droughtmanagement
Regional Capacity Building Workshops
Key Lessons

Deficiencies in data networks, data sharing, understanding of indicators and indices

Impact assessment/risk assessment methodology and no archive of impact data

Lack of collaboration between critical ministries on all aspects of the 3 Pillar approach

**Benefits of action vs. costs of inaction**

Political will is lacking
### IDMP Outcome

<table>
<thead>
<tr>
<th>Costs of Action include costs of:</th>
<th>Costs of Inaction include costs of:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preparedness and risk management</td>
<td>Crisis management</td>
</tr>
<tr>
<td>• Drought impacts (low)</td>
<td>• Drought impacts (substantial)</td>
</tr>
<tr>
<td>• Relief actions (low)</td>
<td>• Relief actions (high)</td>
</tr>
<tr>
<td>• Preparedness actions</td>
<td></td>
</tr>
<tr>
<td>• Risk mitigation actions</td>
<td></td>
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</table>

N. Gerber, 2016
## Monitoring, Early Warning & Information Delivery Systems

<table>
<thead>
<tr>
<th>INDICATORS/INDICES</th>
<th>AGENCIES/MINISTRIES/ORGANIZATIONS</th>
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<tbody>
<tr>
<td>Precipitation</td>
<td>Water</td>
</tr>
<tr>
<td>Temperature</td>
<td>Meteorological &amp; Hydrological Services</td>
</tr>
<tr>
<td>Surface water supplies</td>
<td>Agriculture, Forestry &amp; Fisheries</td>
</tr>
<tr>
<td>• Stream flow</td>
<td>Environment</td>
</tr>
<tr>
<td>• Soil Moisture</td>
<td>Health</td>
</tr>
<tr>
<td>• Reservoir levels</td>
<td>Energy</td>
</tr>
<tr>
<td>• Snow pack</td>
<td>Transportation</td>
</tr>
<tr>
<td>• Water use</td>
<td>Commerce</td>
</tr>
<tr>
<td>Ground water</td>
<td>Social Services</td>
</tr>
<tr>
<td>Remotely-sensed data (e.g., plant water stress)</td>
<td>NGOs</td>
</tr>
<tr>
<td><strong>Impacts</strong></td>
<td>Others</td>
</tr>
<tr>
<td>• By sector, area</td>
<td></td>
</tr>
</tbody>
</table>
### Vulnerability/Impact Assessment, Mitigation and Response

#### Who and What is at RISK and WHY?

<table>
<thead>
<tr>
<th>BY SECTOR</th>
<th>AGENCIES, ORGANIZATIONS &amp; STAKEHOLDER GROUPS</th>
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</thead>
<tbody>
<tr>
<td>Agriculture</td>
<td>Reps from Ministries and non-governmental organizations</td>
</tr>
<tr>
<td>Energy</td>
<td>Communities &amp; regional organizations</td>
</tr>
<tr>
<td>Environment, Recreation &amp; Tourism</td>
<td>Stakeholder groups representing all impact sectors</td>
</tr>
<tr>
<td>Transportation</td>
<td>Others</td>
</tr>
<tr>
<td>Health</td>
<td></td>
</tr>
<tr>
<td>Commerce</td>
<td></td>
</tr>
<tr>
<td>Others</td>
<td></td>
</tr>
</tbody>
</table>

By Area/Region

- Drought management areas (provinces, river basins)
- Communities (rural, urban)
- Indigenous population
Why is a Vulnerability Assessment Needed?

Assuming that a drought occurs, *vulnerability is the key determinant of drought risk and the main driver of drought impacts and economic losses.*

An outstanding *knowledge of drought monitoring and vulnerability itself does little to reduce drought impacts and economic losses unless the knowledge is implemented into practice* (Ismail-Zadeh et al. 2017).
Another DRM Resource...

The Disaster Risk Management Knowledge Centre has produced this flagship science report as a *contribution to the Science and Technology Roadmap of the Sendai Framework for Disaster Risk Reduction*.

This report is the result of the multi-sectorial and multi-disciplinary networking process and represents the combined effort of *more than two hundred experts*.

It will support the integration of science into informed decision making through synthesizing and translating evidence for disaster risk management and *strengthening the science—policy and science-operation interface*.

The reviews of the scientific evidence base are *summaries of (1) recent advances/outcomes of EU research projects, (2) relevant national work and (3) relevant international work*.

NDMC International Activities

MENA

Composite Drought Index for January 2016

Caribbean

Brazil

Czech Republic

Greater Horn of Africa
Takeaway Messages

* Drought is a *normal* part of climate *BUT* . . . . .
* Changing precipitation amounts, seasonal distribution, form
* Increasing temperatures will increase ET and demand for water resources → drought severity, frequency and duration.

* Past drought management efforts have been *reactive*—ineffective, untimely, poorly coordinated & poorly targeted (*crisis management*). *It’s time for a paradigm shift focused on integrated drought management!*

* Managing sector impacts— *increase resilience* to drought.
  * Impact collection sorely lacking

* Start *SIMPLE*...the process is a journey...and the process is *not prescriptive*
  * Build momentum off of early, visible success (e.g. DEWS?)
Takeaway Messages

*Integrated drought management* requires a *collaborative approach within and between levels* of government and with the private sector.

*Complex and interdisciplinary nature of drought*.....*no one can go it alone*! Must leverage expertise, resources, program with credit/attribution for all who participate

*To be successful, we must develop methodologies and produce case studies that address the *benefits of action vs. costs of inaction*!

*Build political will for a *paradigm shift* to risk management.....drought needs to be very much a part of any water, food and national security conversation*
Thank You!
Questions?

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