



# Integrating Climate Change into Livelihoods Support Part 2

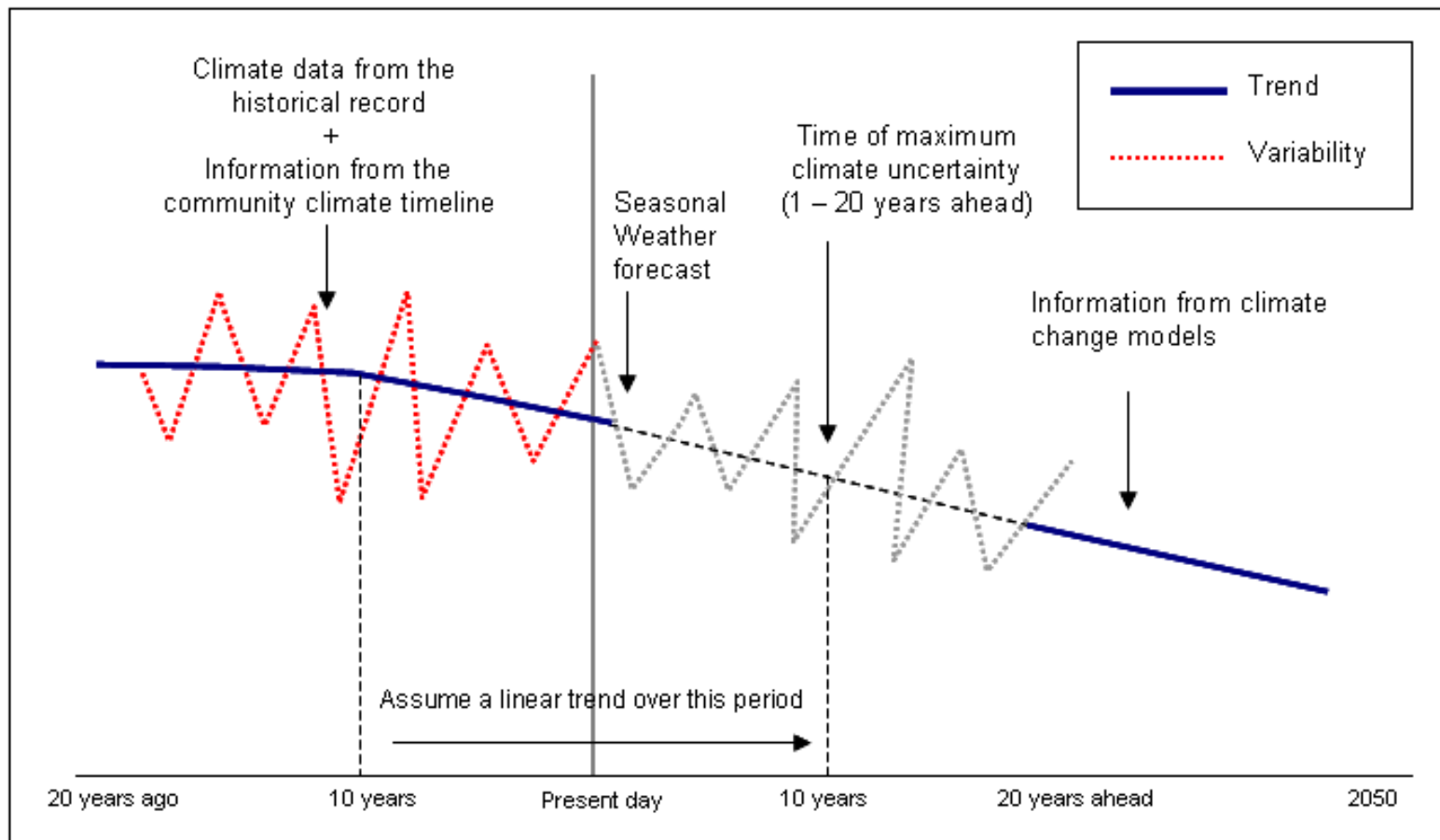
# Key features of effective adaptation

- **Integrated Approaches:** To be most effective, climate adaptation programs and policies should be integrated with day to day economic development activities, such as water and forestry management and agricultural policy.
- **Multi-Level:** Adaptation needs planning and action at multiple levels — national, state, local and project-level.
- **Top-Down:** Policy changes at national, state and provincial levels can enable behavioral change at the household and community levels. For example, extension service personnel need to know about climate change in order to help farmers adapt agricultural practices.
- **Bottom-Up:** Communities' priorities and innovations need to inform national decisions, and their adaptation successes should be replicated and scaled up.
- **Citizen-Centered:** Local communities, especially those who will be most affected by climate impacts, must be involved in adaptation planning and decision-making at all levels, and their rights respected by the global community and national governments.
- **Flexible:** Adaptation itself must also be flexible and adaptive. We don't know exactly how the changing climate will affect us. Having policies and systems in place that can adjust is very important. So are monitoring systems to track climate impacts on ecosystem services (such as drinking water and soil) on which people depend.

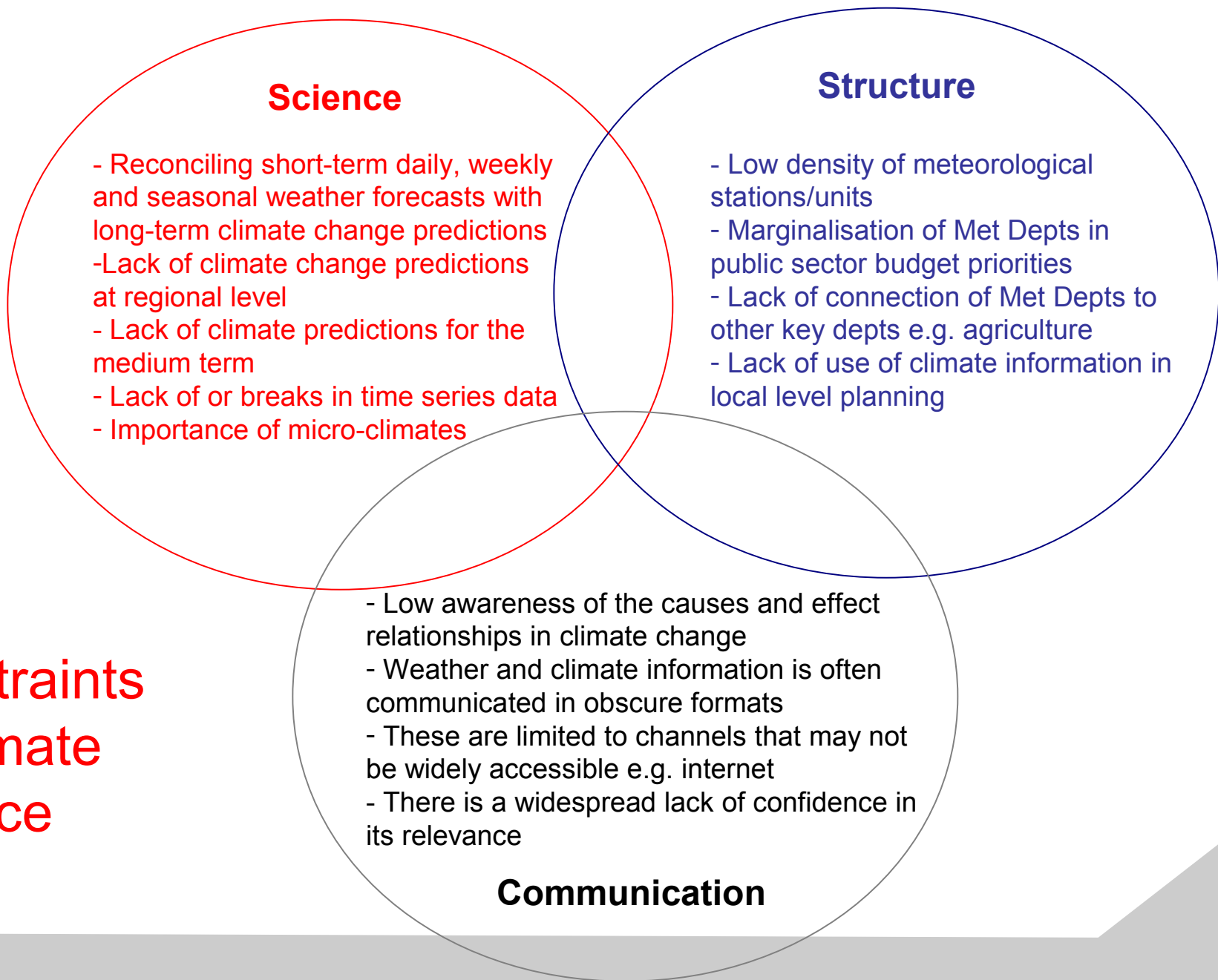
## The focus will therefore be on combining

- Historical data from meteorological departments, academic institutions, weather stations, etc
- Seasonal forecasts and early warning system information for the next year
- Community knowledge of past changes
- With what longer-term climate science can say about future climate change

to develop a “most-likely scenario” of where climate trends are emerging and how these might develop in future

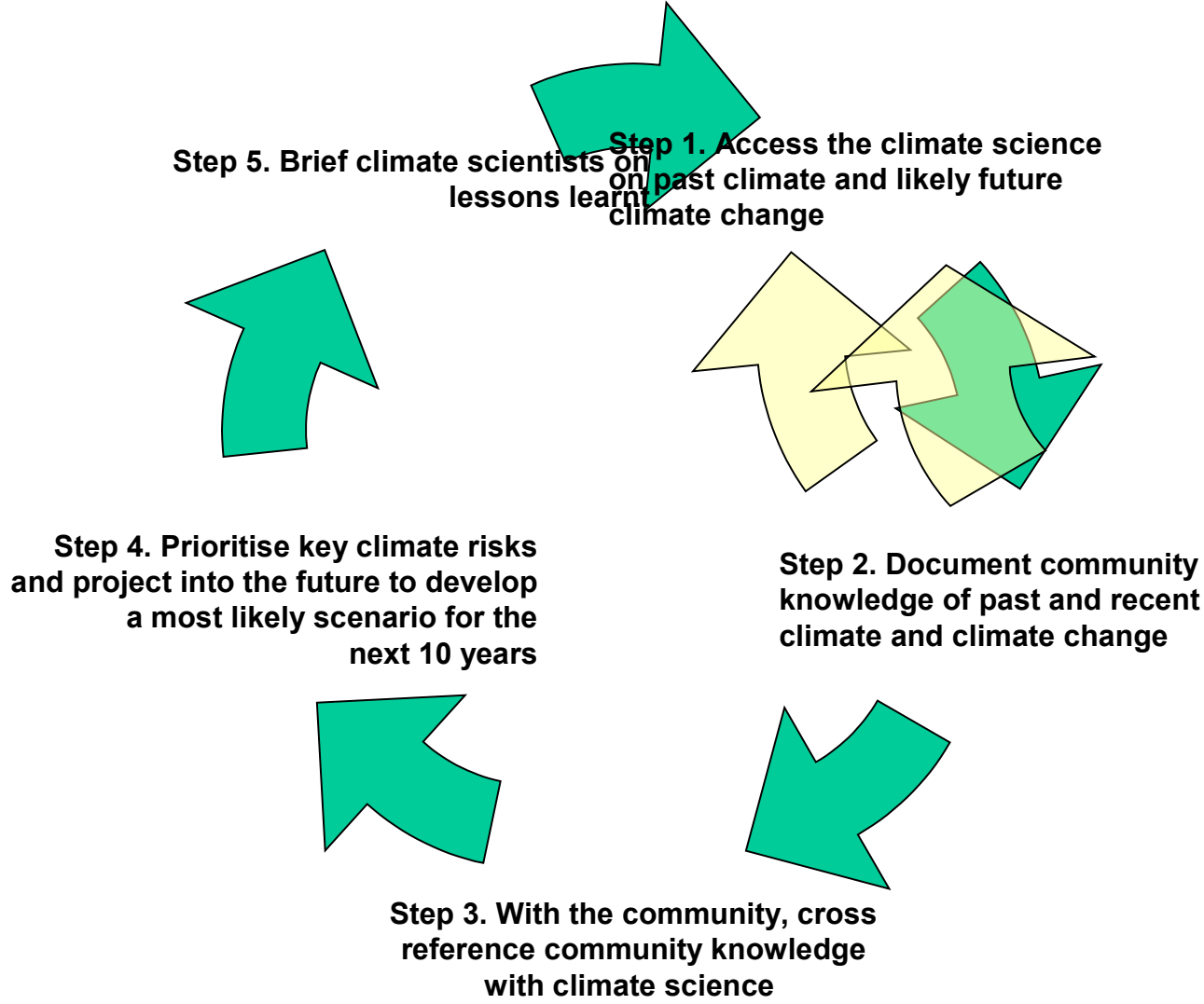


# Constraints to climate science



# Constraints to community knowledge

- ▶ Limited understanding of cause and effect relationships
- ▶ Tends to focus on variability rather than slowly emerging trends
- ▶ Susceptible to biases
- ▶ Limited to a small local area
- ▶ Likely to miss decadal cycles (although older community members have knowledge)



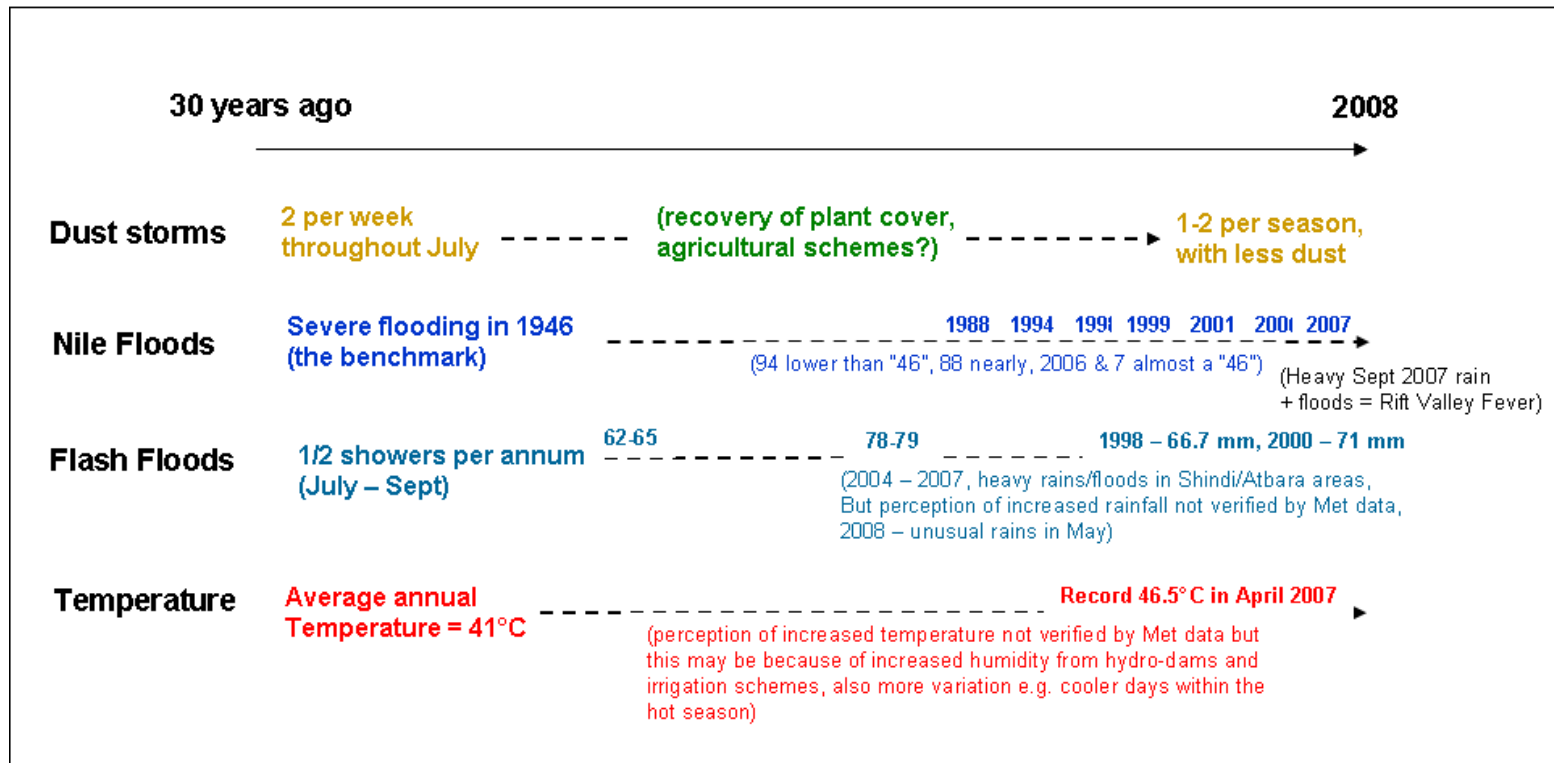
## Speed of onset is critical:

<p><b>Extremely fast onset (days/weeks),</b> including:</p> <ul style="list-style-type: none"><li>Cyclones</li><li>Storm surges</li><li>Dust storms</li><li>Flash floods</li><li>Hail storms</li><li>Lightning</li><li>Extreme temperature</li></ul>	<p><b>Fast onset (weeks/months),</b> including:</p> <ul style="list-style-type: none"><li>Drought</li><li>Rainfall-related floods</li><li>Water table fluctuation</li><li>Duration of seasonal streams and rivers</li><li>Glacier meltwater flooding</li></ul>	<p><b>Slow onset (months/years),</b> including:</p> <ul style="list-style-type: none"><li>Seasonal changes</li><li>Rainfall patterns</li><li>Average temperatures</li><li>Sea level rise</li><li>Desertification</li><li>Cyclone frequency and strength</li><li>Water resources from glacial sources</li></ul>
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## As well as the speed of onset, other issues include:

- Magnitude: such as the intensity of past cyclones or droughts and therefore their likely intensity in future
- Area affected: the geographic area covered by the disturbance
- Frequency: whether climate variations are becoming more volatile, such as more frequent droughts
- Duration: the length of each disturbance and how this may be changing

# Climate Timeline, Sudan



# Seasonal Analysis, India

Season	Timing	Typical conditions	Emerging conditions
Summer	April/May	Hot and dry, 30 - 40°C	<b>Summer</b> tending to hotter temperatures (high rather than low 30s), curtailed abruptly by early rains in May
Early rains	June	Early planting rains which break the heat of the summer	When <b>Rains</b> arrive, they arrive earlier (April/May) and tend to be constant over 6/7 days with little respite, followed by hot, humid dry spells
Main monsoon and	July – September	30 - 35°C, increased humidity, main growing season	
harvest rains	October/ November	Mainly showers, cloudy weather with vivid blue skies, lower humidity and temperature – a "happy time"	Harvest rains seem to have diminished
Dew	November	Cooling temperatures, dry but with morning dew on plants	Dew season seems to be disappearing
Winter	December – March	Cold dry weather, 10°C or lower	<b>Winter</b> tends to be shorter and warmer, rarely dropping below 10°C
Spring	March	Warming, dry weather	Spring seems to be disappearing as winter passes rapidly into summer