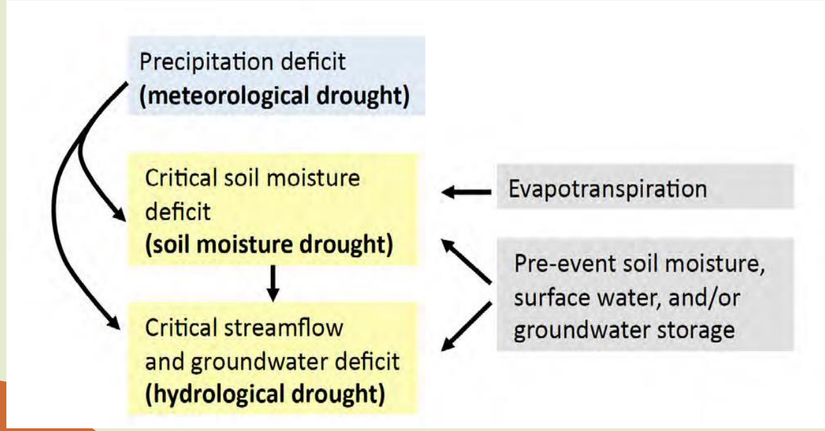
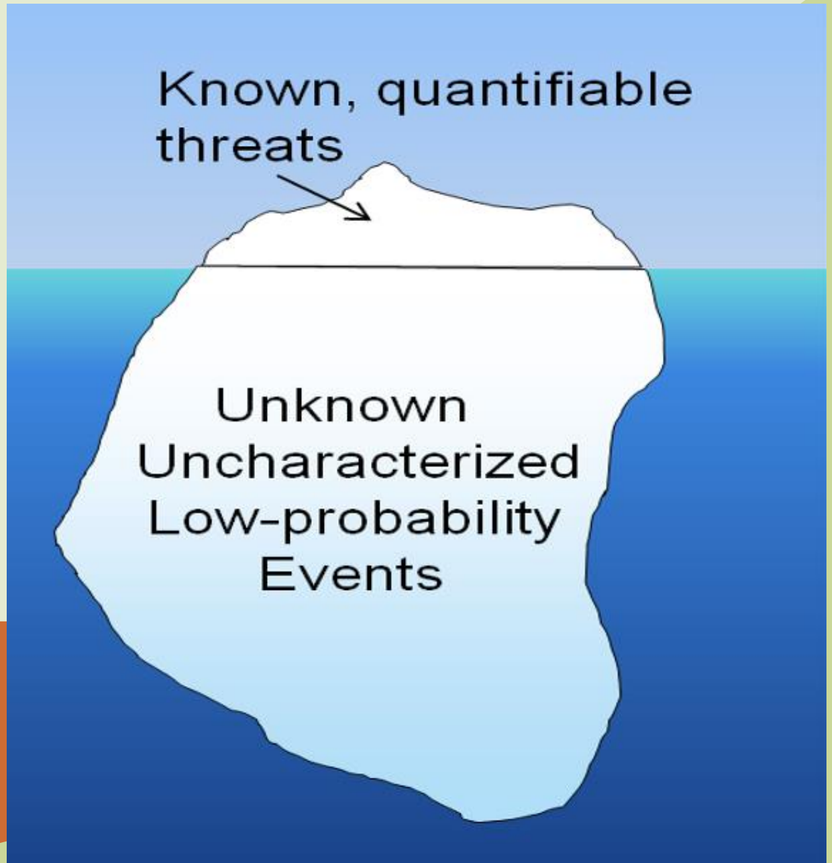
Drought Resilience +10
High-level Meeting on National Drought Policy

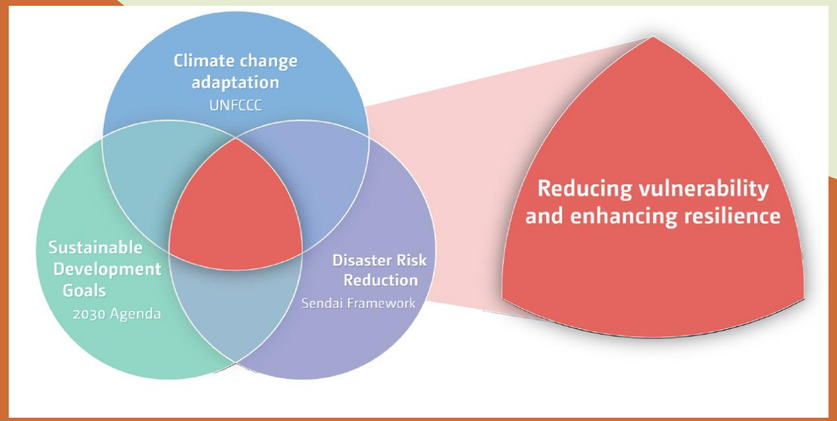
Governance: From drought risk to resilience

Roger S. Pulwarty
National Oceanic and Atmospheric Administration
WMO, UNDRR, UNCCD, NDMC, NIDIS, and many others



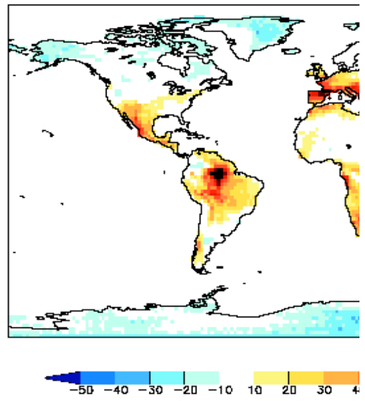
Managing Risk





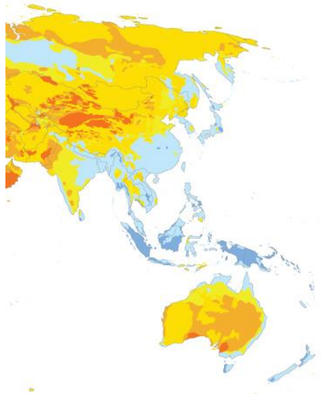
Managing for Resilience

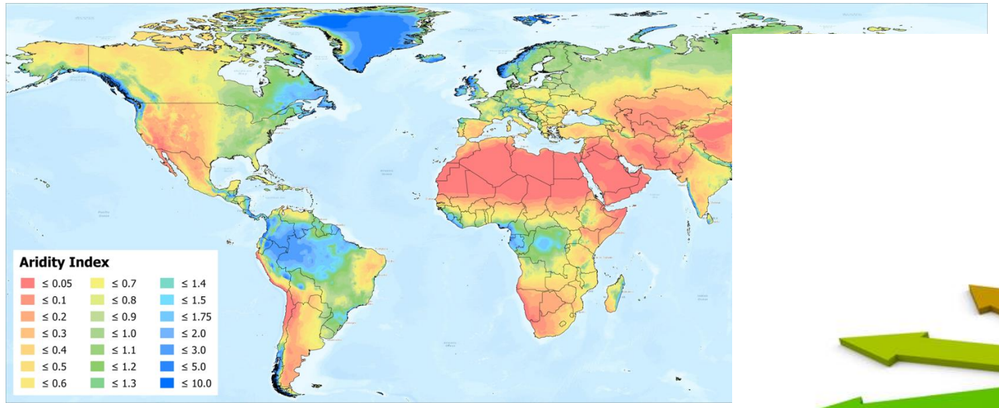
Challenges
Which pathway(s) should we take?
Based on what knowledge?
Who decides and how?
When should we change our assumptions?
What are the consequences and accountability?



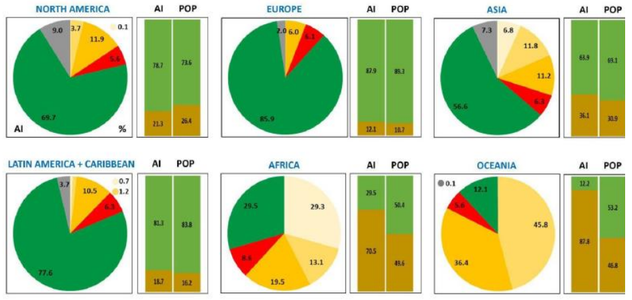
Model agreement on projected dry and wet conditions to 2100 (IPCC 2007)

nus recharge

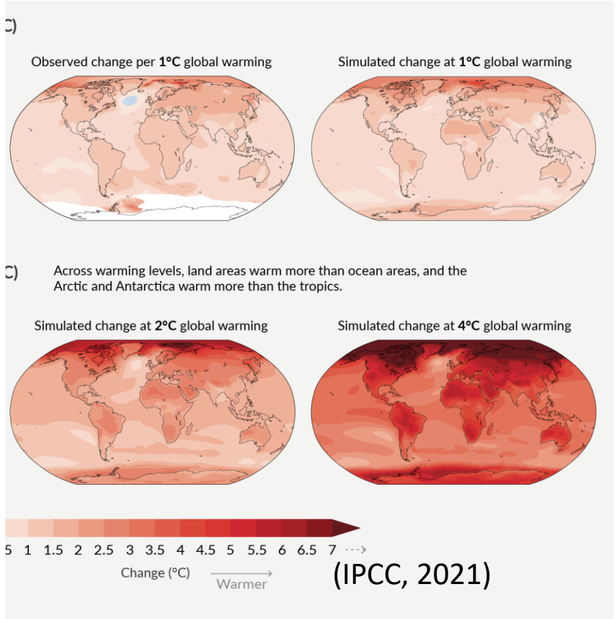




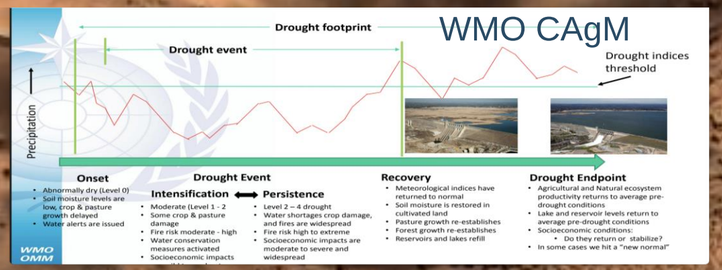
(ratio of precipitation to PET, Zomer et al 2022)

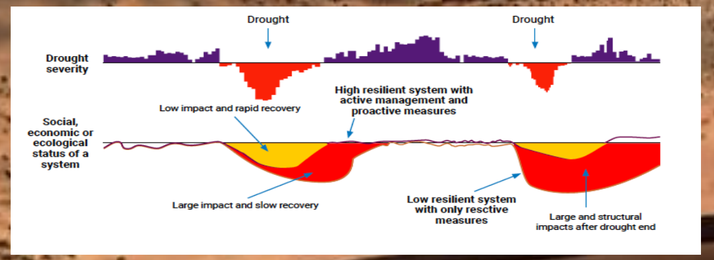


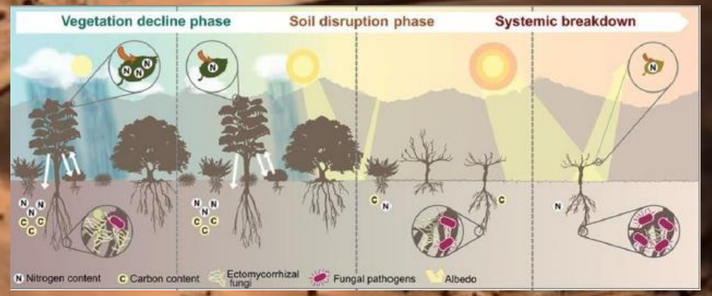
global warming, changes get larger
ıture, precipitation and soil moisture

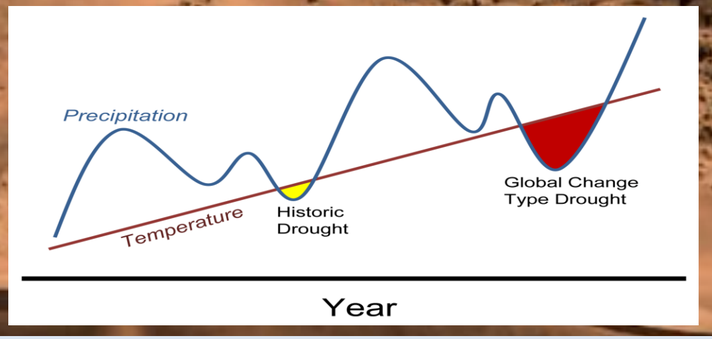


(IPCC, 2021)



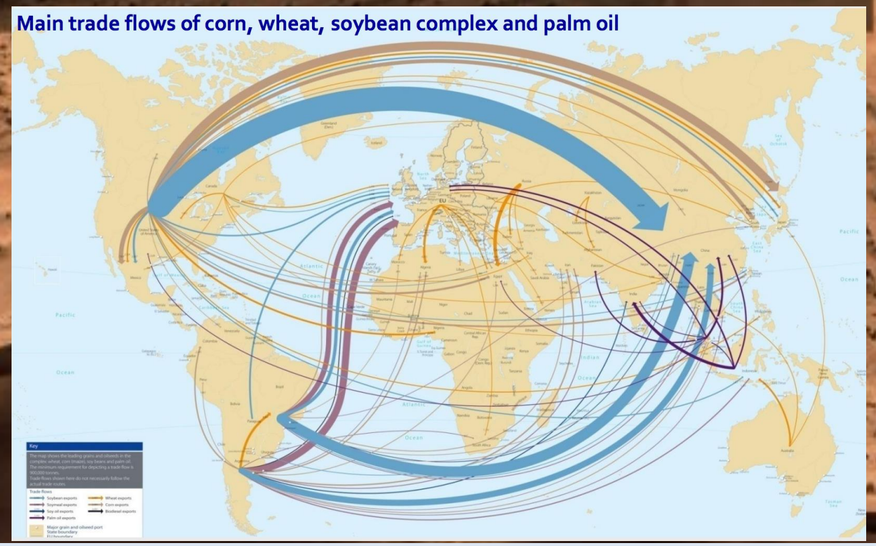






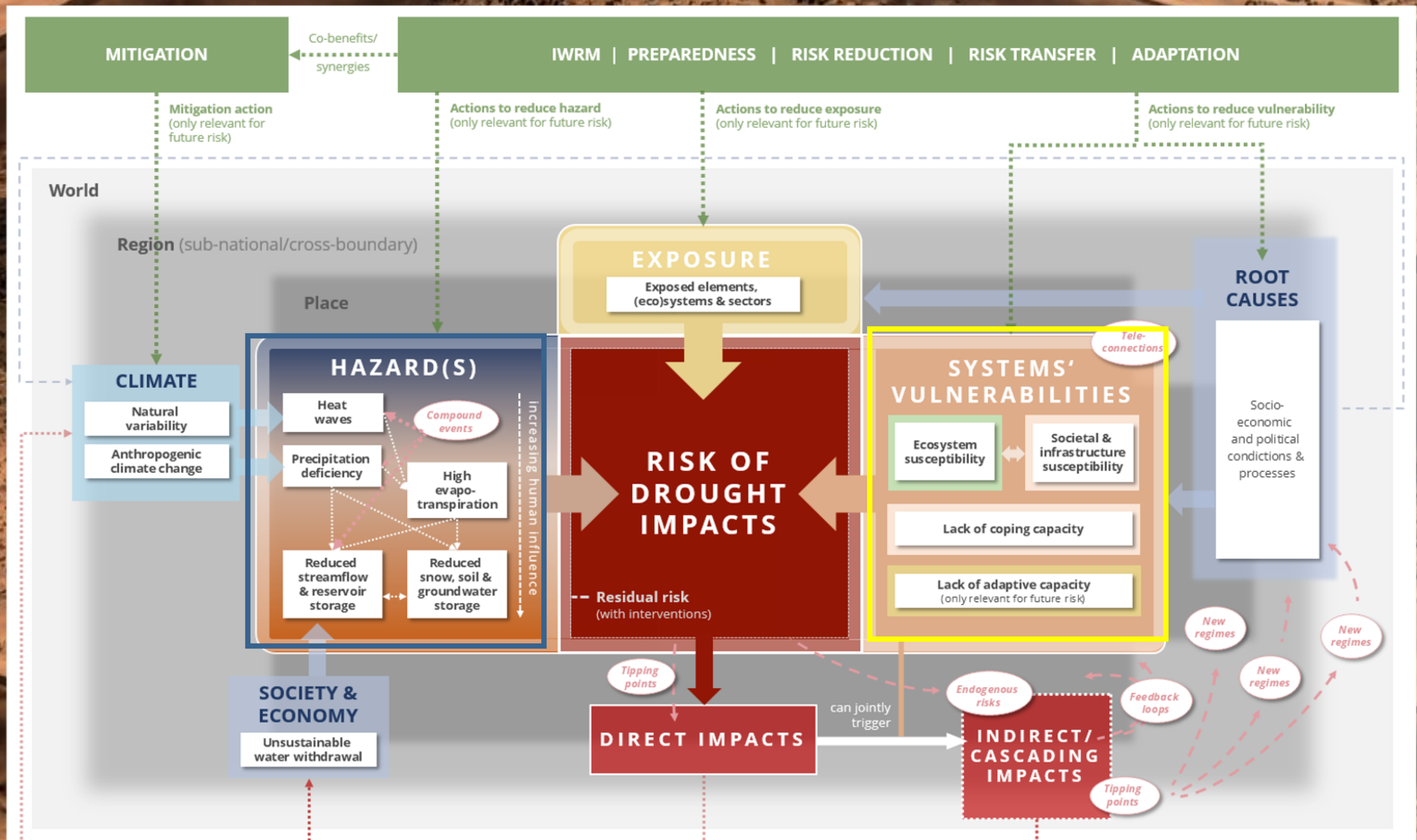
Increasingly

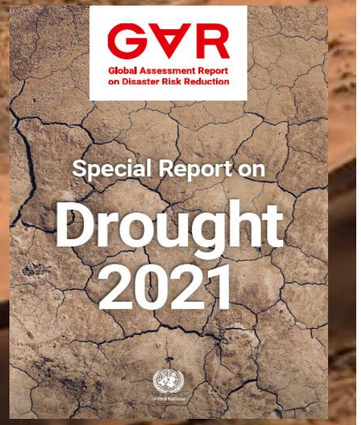
Drought is complex.



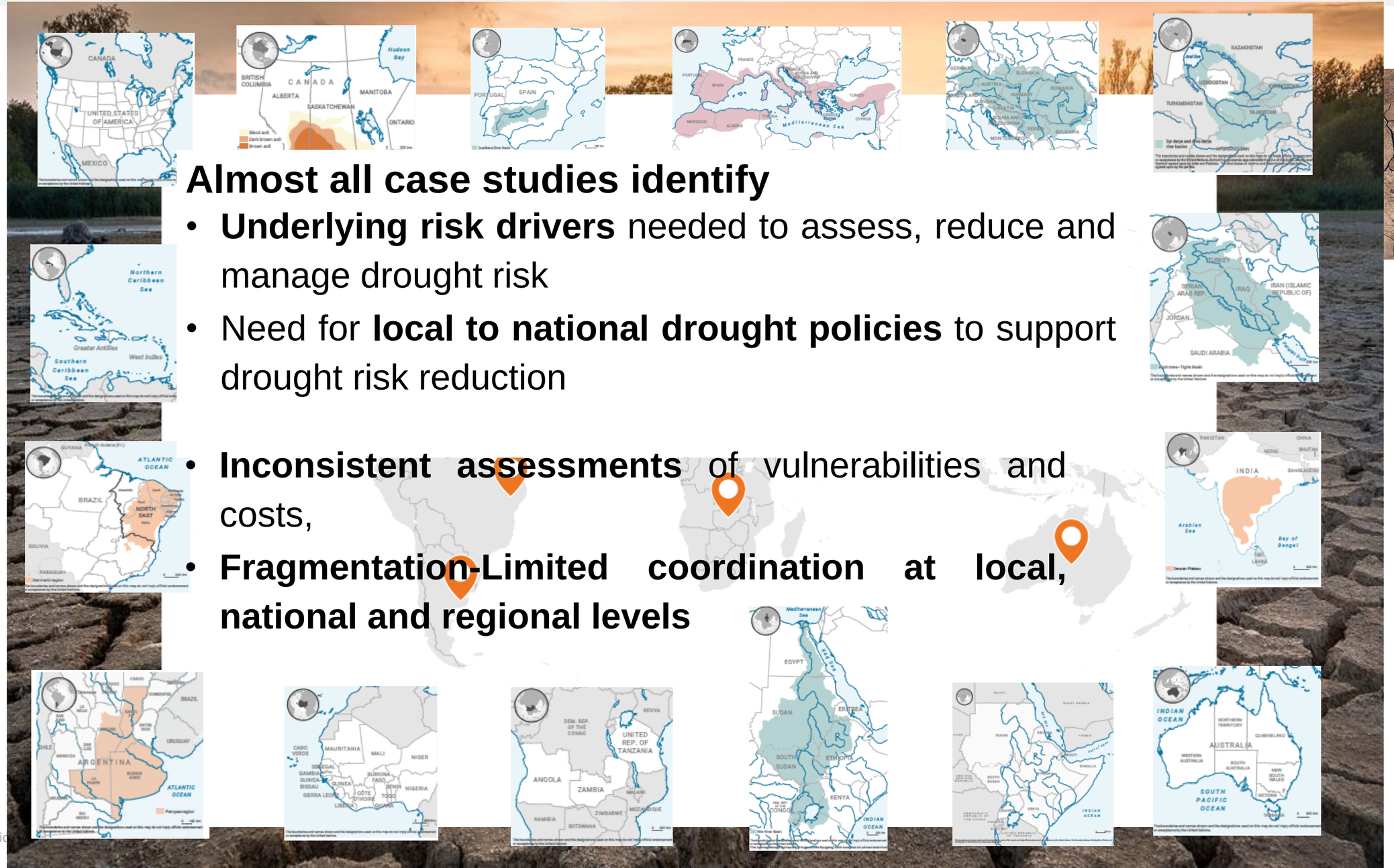
Systemic risks: Globally-networked, local imbalances, and compounding and cascading risks are overwhelming traditional risk management approaches

Vulnerability and Drought: Interactions





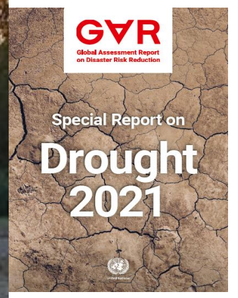
The Lived Experience: The challenges

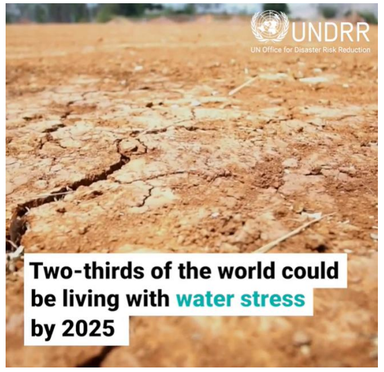


Almost all case studies identify

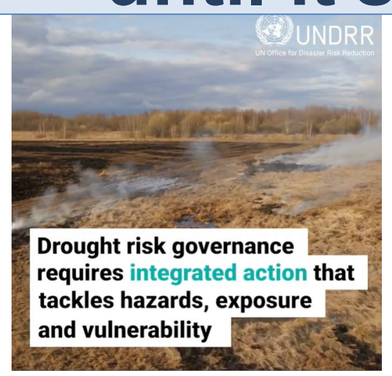
- **Underlying risk drivers** needed to assess, reduce and manage drought risk
- Need for **local to national drought policies** to support drought risk reduction

- **Inconsistent assessments** of vulnerabilities and costs,
- **Fragmentation-Limited coordination at local, national and regional levels**





For many parts of the world drought still remains a “hidden” risk until it’s too late

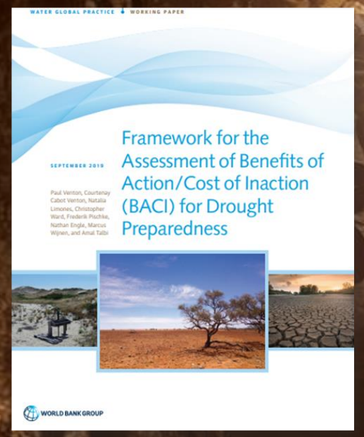


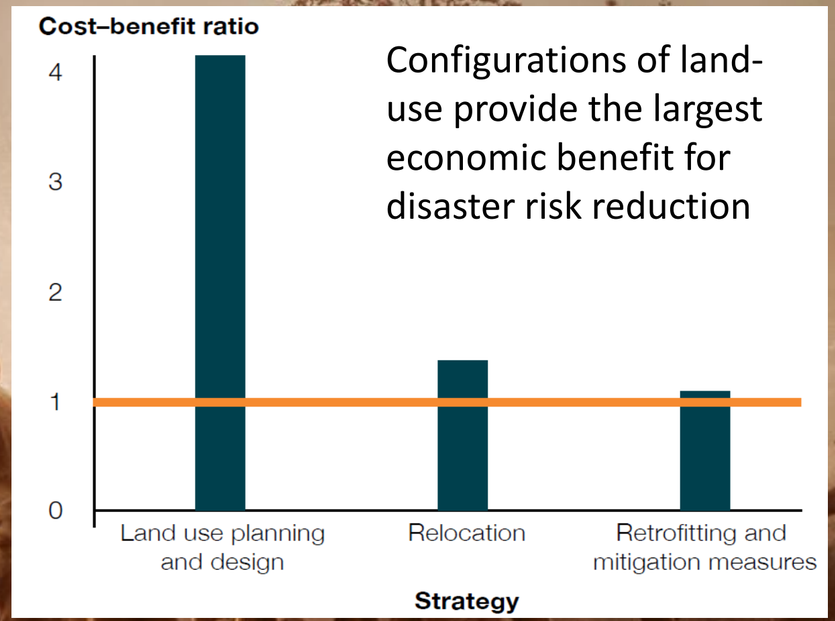
Global Assessment Report on Disaster Risk Reduction

UNDRR
UN Office for Disaster Risk Reduction

inaction

Drought is costly.





Configurations of land-use provide the largest economic benefit for disaster risk reduction

The damage and costs resulting from drought are usually “hidden” due to widespread and cascading impacts, cumulative between events, and

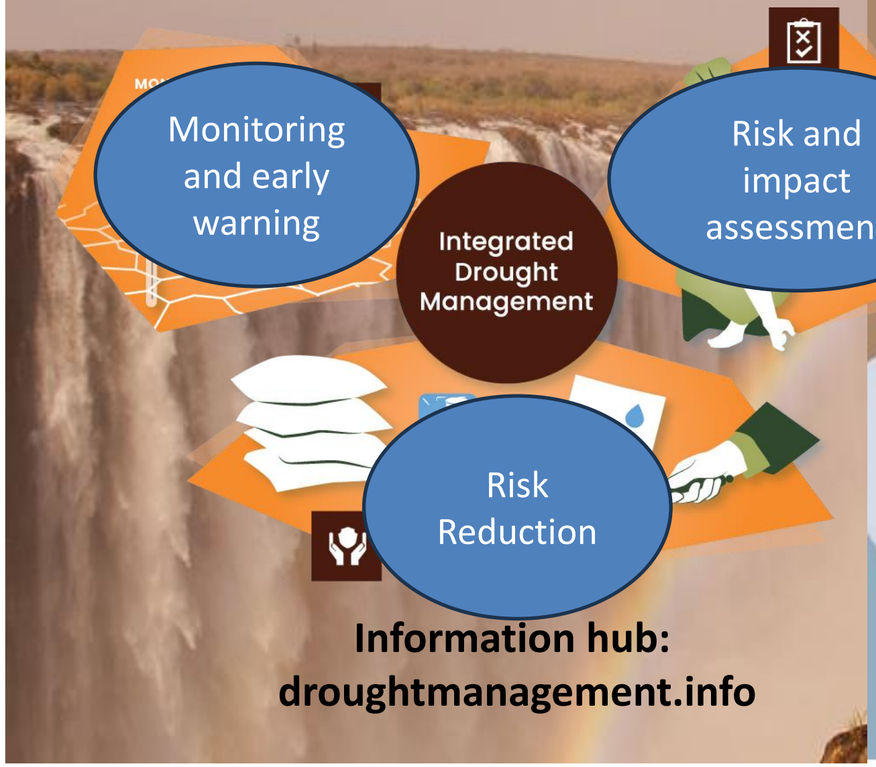
- often “invisible” affecting the everyday life of people, in ways not always attributed to the drought.

Global Assessment Report on Disaster Risk Reduction

UNDRR
UN Office for Disaster Risk Reduction

Drought demands innovation.

- **Reducing propagation and stocks of cumulative drought –aridification-desertification risks through proactive and prospective measures**



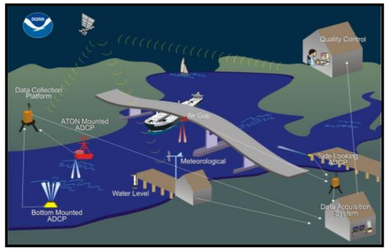
Information hub: droughtmanagement.info

Governance is “the system of values, policies and institutions by which a society manages its economic, political and social affairs (UNDP)

- **within and among the state, civil society and private sector**
- **the mechanisms by which it, and its people, are held to account**

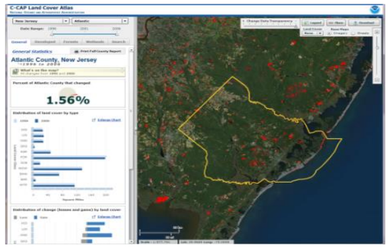
Economies

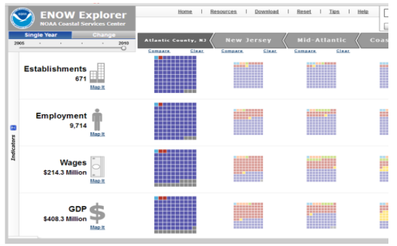
Ensuring Resilient Economies



Communities

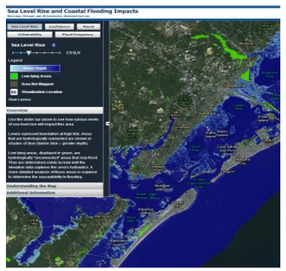
Supporting Community Livability





Environment

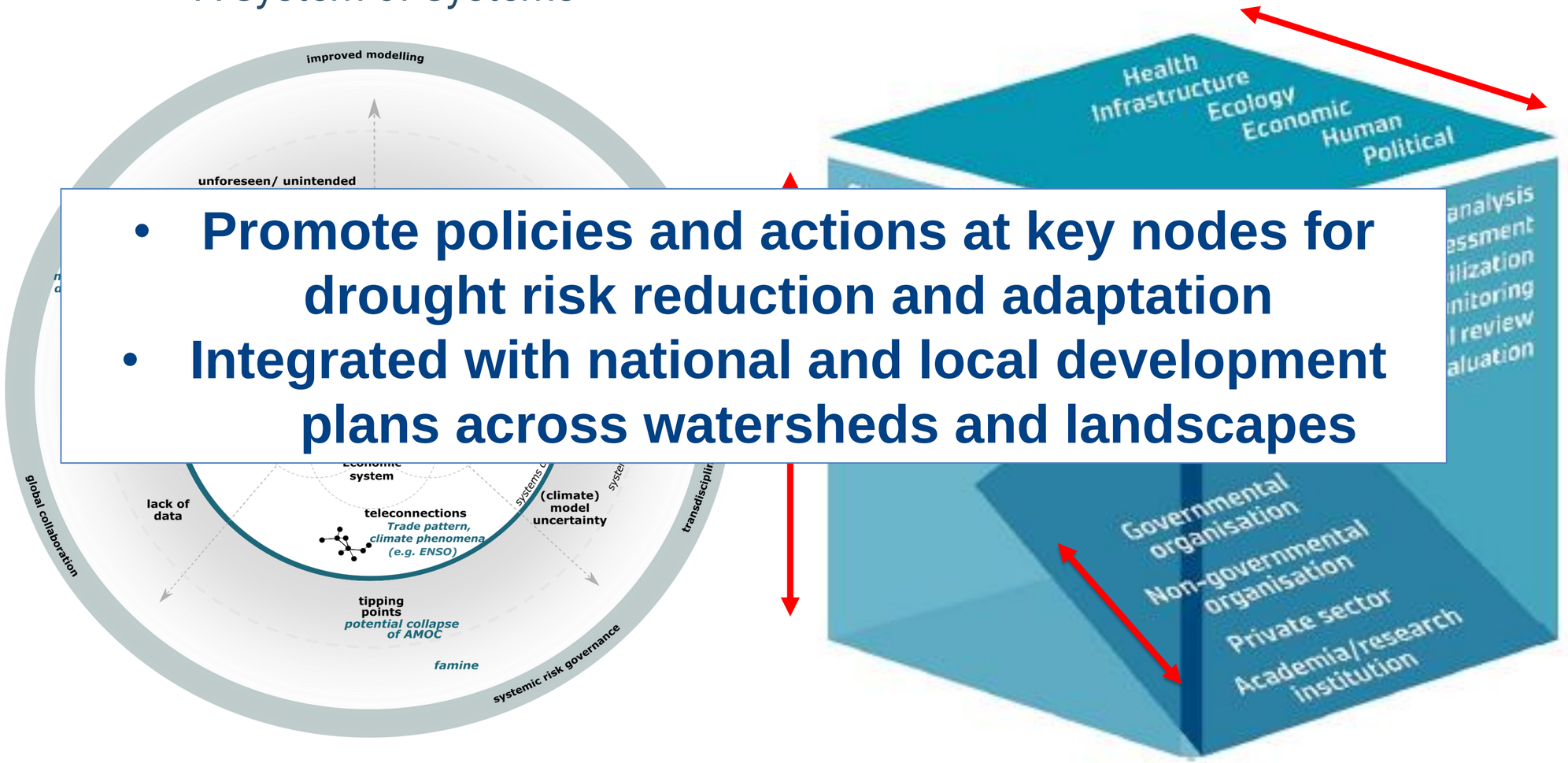
Promoting Environmental Resilience to Extremes & Climate Change



Putting the pieces together

Adaptive Governance- Vertical and Horizontal levers for actions within systems

The Food System
A System of Systems



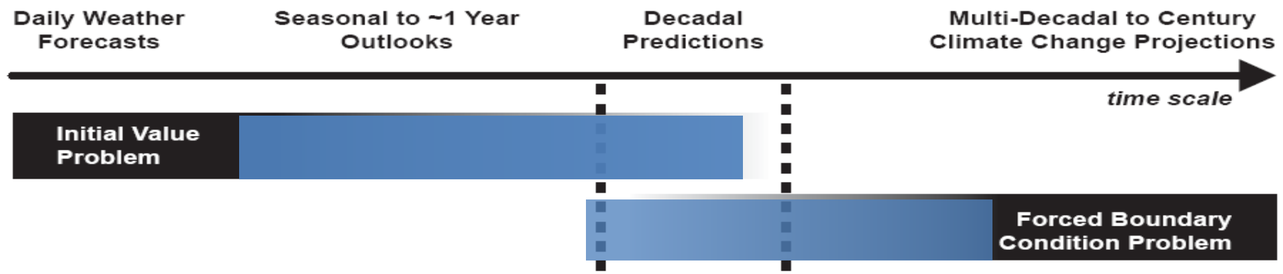
- **Promote policies and actions at key nodes for drought risk reduction and adaptation**
- **Integrated with national and local development plans across watersheds and landscapes**

The multi-scale nature of drivers and of institutions affecting food systems

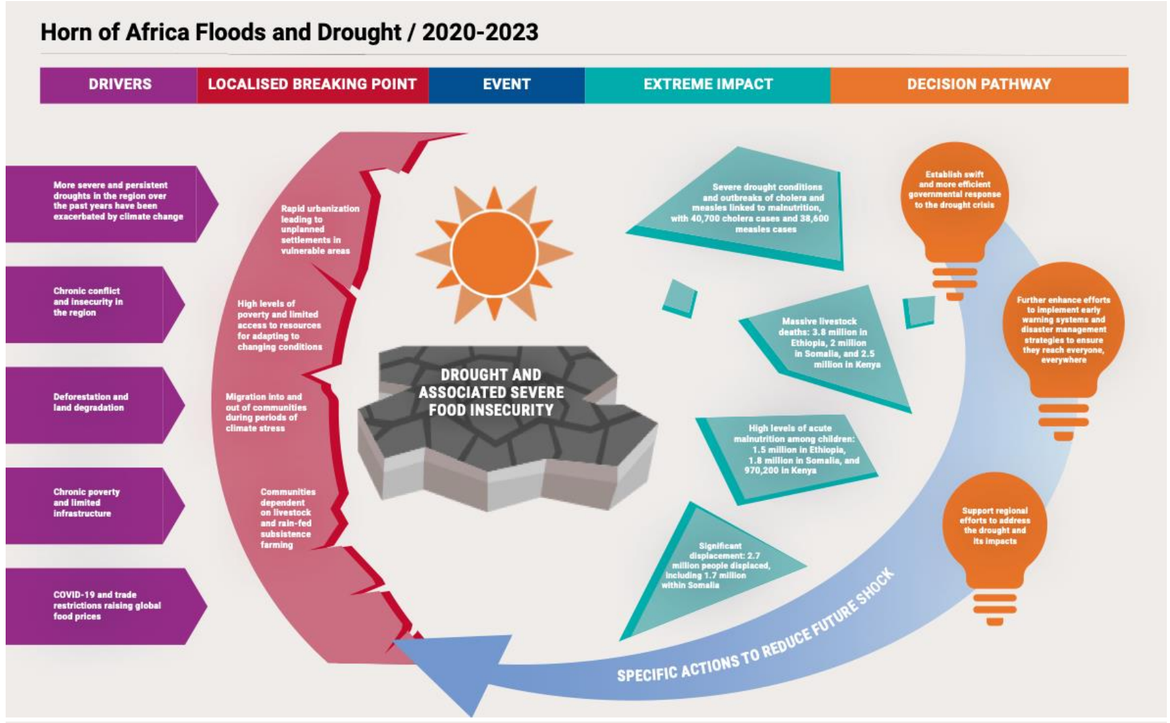
(Gaupp,Fakhruddin et al, UNDRR 2021, ISC 2023)

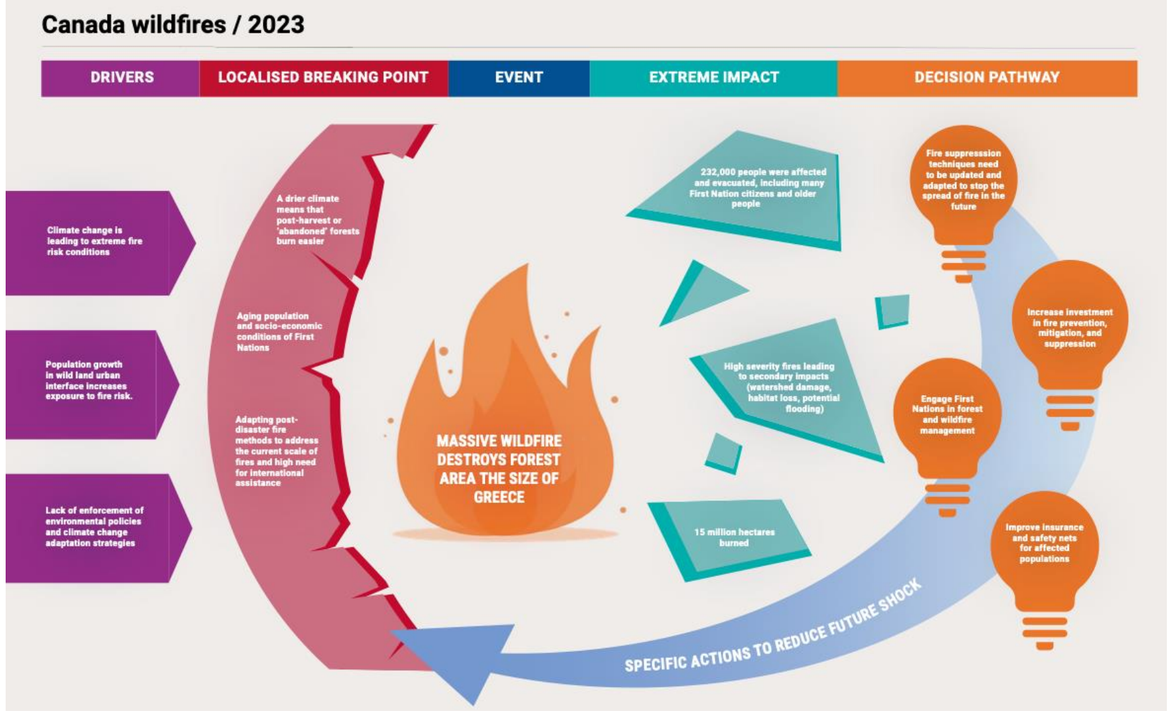
The risk to resilience continuum:
Navigating not just <u>for</u> but ‘through‘ a changing climate

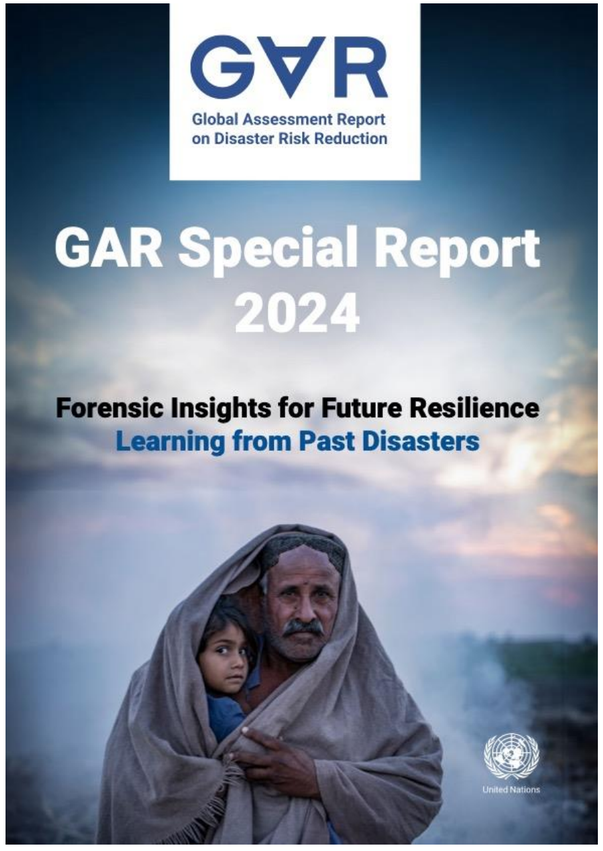
1. **Move beyond hazard by hazard approaches to manage risk as a cumulative process across temporal and spatial scales**



Adaptive governance prioritizes alignment, implementation, monitoring, evaluation, iterative learning, and collective decision-making



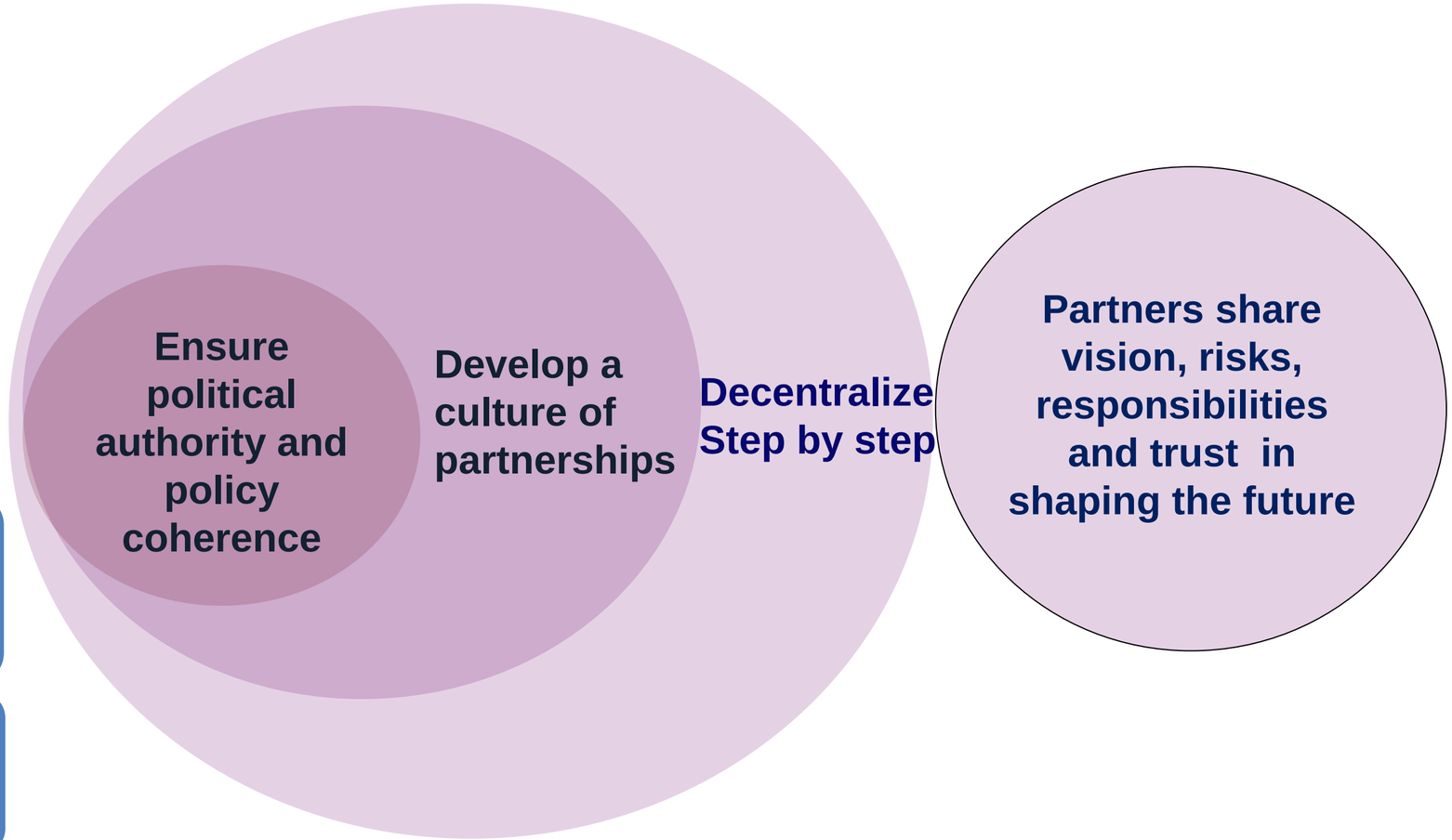




Linking event ecology and political ecology

2. Broaden the actor engagement and connectivity- centralized and de-centralized functions

- National and Sub-national Governments and communities
- Development Partners
- Research and Training Institutions Academic, Public
- Financial Institutions, Impact Investors and Insurance Companies
- Businesses and Individuals



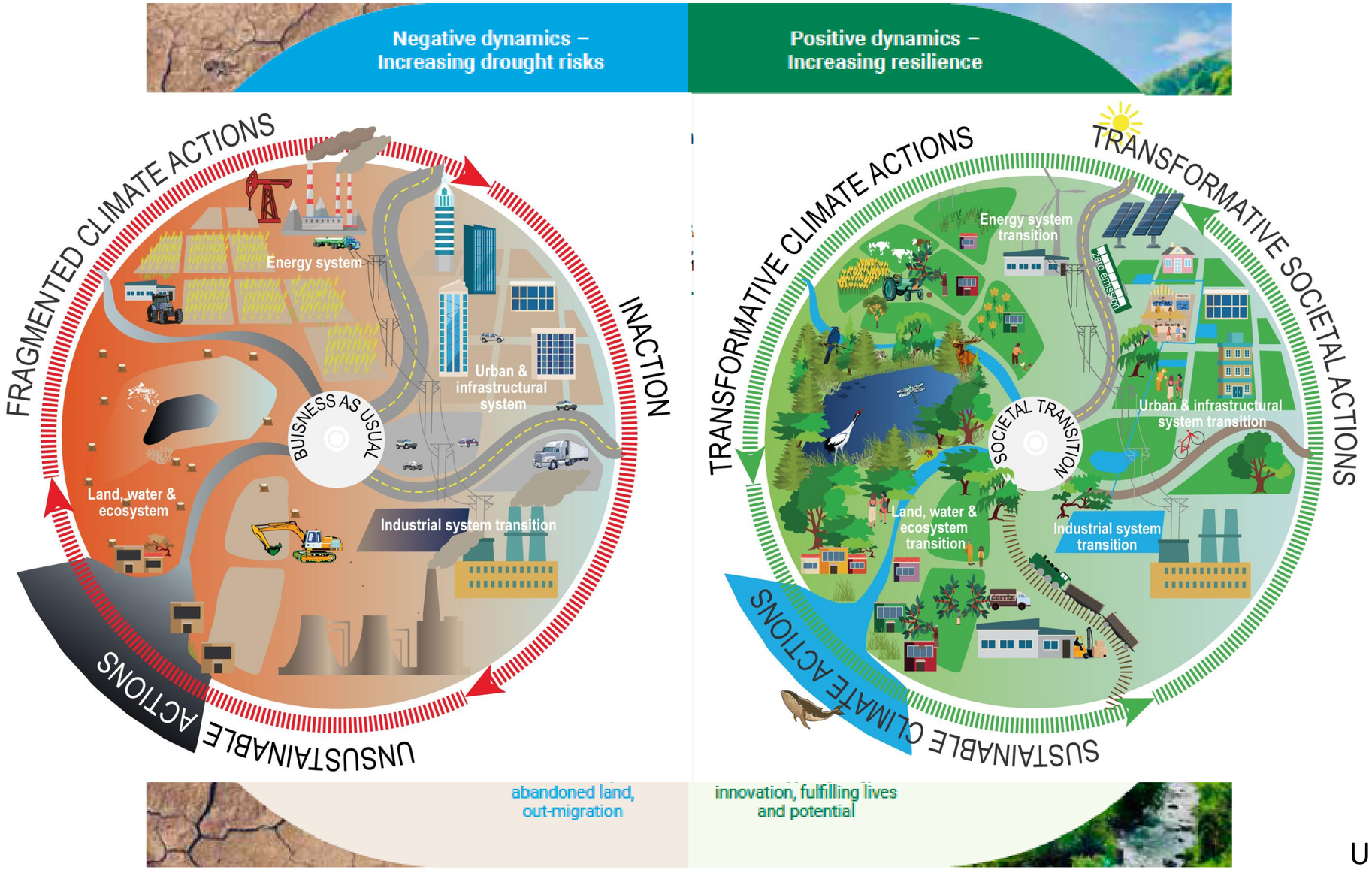
Accountability……..….Efficiency

Distribution of responsibilities and decision-making

System learning: Cascading decision, actions, and outcomes

Negative dynamics: increasing drought risks

Positive dynamics increasing drought risks



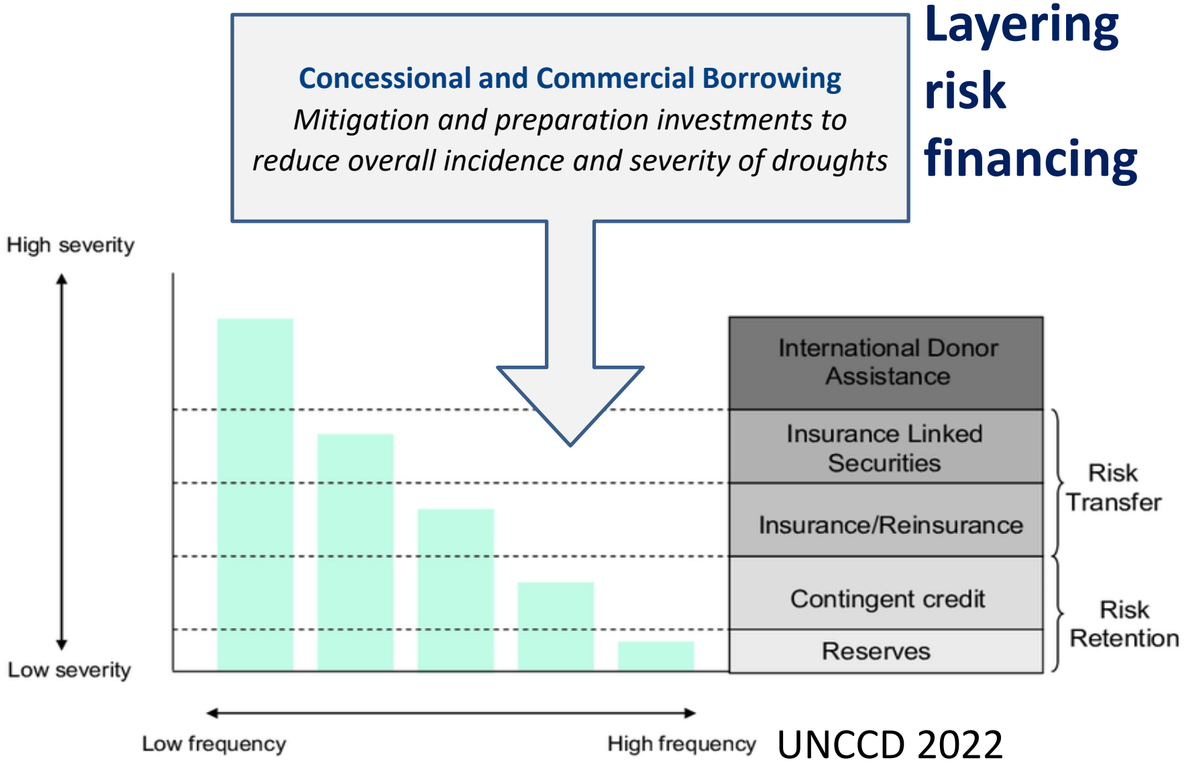
UNCCD 2021; IPCC 2023)

3. Financing adaptive risk governance: across scales and benefits

Creating a marketplace for resilience
De-fragmenting finance - financing adaptive systems not just drought adaptation “pilots”

Establishment of global, national, local coordination mechanisms for aligning innovative financing vertically and horizontally

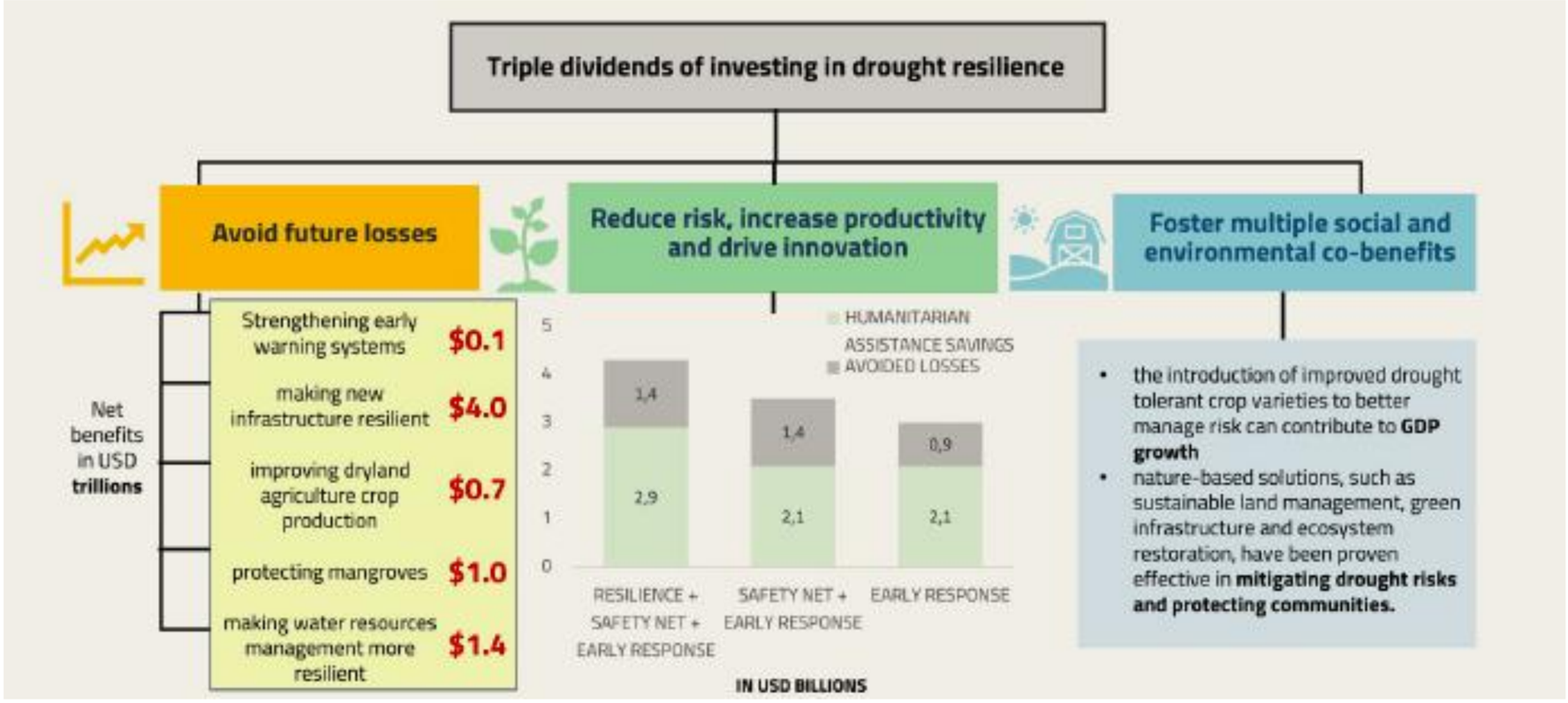
Layering risk financing



UNCCD 2022

Understanding and Awareness of the co-benefits of drought risk, water resources management, and desertification reduction (incl. Land Degradation Neutraility) finance:

Draws on multiple disciplines to support a comprehensive agile approach



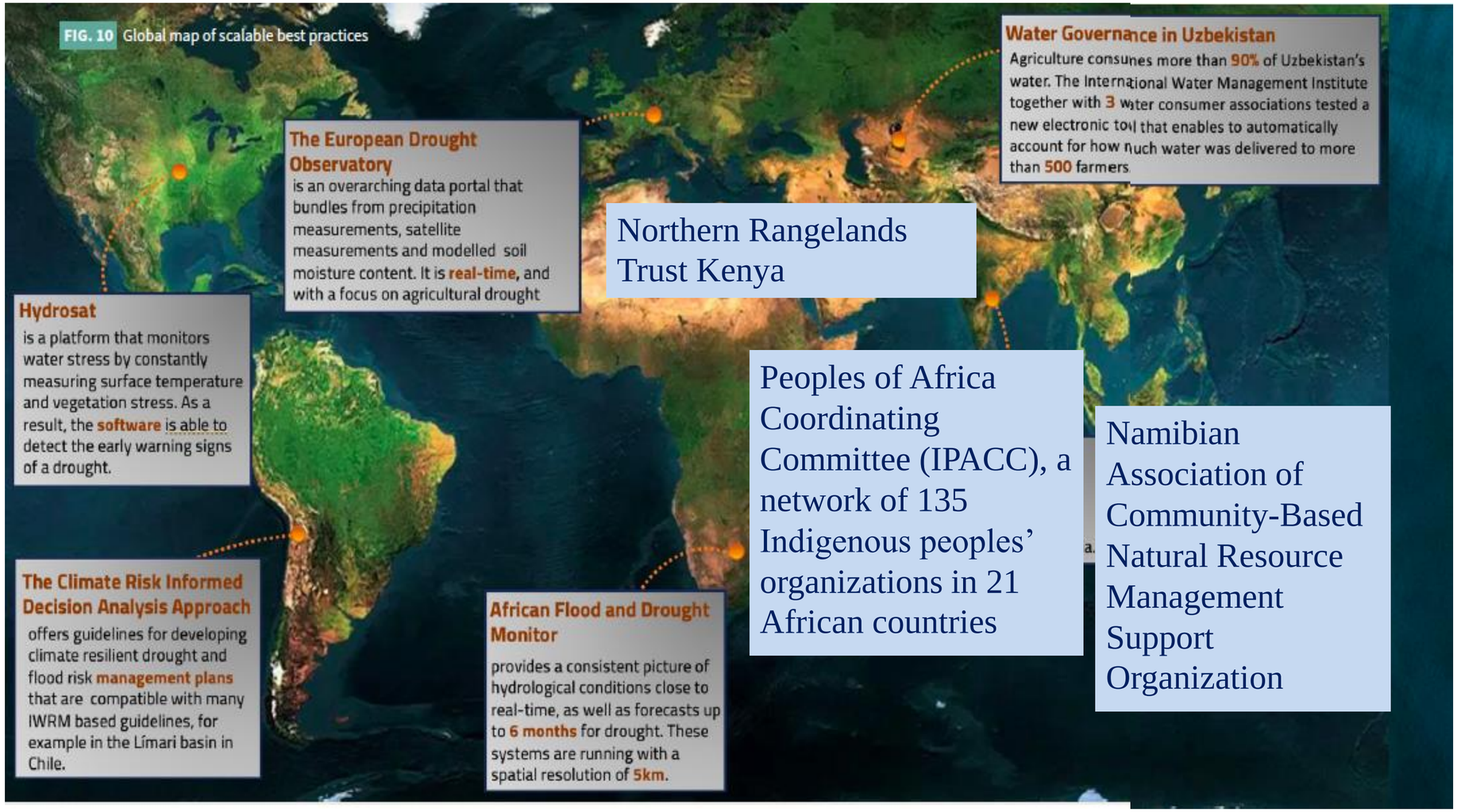
Investing in assets for mitigation and preparation

Ensuring resources are available for response and recovery

UNCCD Guidance Note on Drought Finance

United Nations
Convention to Combat Desertification

Many valuable examples around the world, from which much can be learned



(UNCCD 2023, FAO 2024)

Table 3.1. **Promoting vertical coordination of actions across global, regional, national, and local governance levels**

Scale	Opportunities for sustainability transitions
Global level	• Enabling a coordinated response to global collective problems, for instance those arising from distributed impacts on the environmental commons (e.g. multiple and synchronous breadbasket failures) or globalization (of trade, financial flows, food systems, etc.) • Addressing equity and redistribution issues (e.g. food production and food systems, drought and food relief, capacity-building) • Making impact and efficiency gains by aligning and converging global and regional efforts to reduce systemic drivers of drought risk and corollary cascading impacts
Regional level	• Setting visions and targets for leveraging regional strengths and advantages to reinforce national capabilities • Developing binding regulations and directives directly applicable to surface water and groundwater
	land protection – as buffers for major events • Developing a large toolbox of potential knowledge and communication instruments such as drought early warning across timescales to foster transitions available • Coordinating among sectors and across local–national disconnects through influence over local decision-making, for example, getting subnational regions on board (depending on national governance structures) and minimizing those slow to engage or opting out • Setting regulatory and market rules for many transition-relevant sectors (e.g. water and agriculture), in line with regional or transnational agreements • Shaping energy transitions and ensuring equity through targeted national infrastructure investments
Local level	• Providing space for experimentation and close collaboration with a broader network of local stakeholders, private sector and citizens • Building an appetite for novel inclusive partnerships allowing contextual information to inform problem framing and learning approaches to solution exploration • Building local political momentum and acceptance of needed actions • Providing governance of key local systems and issues • Implementing at local levels, for example, spatial planning (affecting habitats, industrial symbiosis, travel), buildings, public spaces, transport and waste

Limited knowledge of spatial dependencies and metadata on cumulative human influences watersheds, landscapes (e.g. channel morphology, wildfire and landslides)

Published on *Indian Country Today Media Network.com* (http://indiancountrytodaymedianetwork.com)

Home > Indigenous Knowledge Fighting Drought in South Africa

3/27/16

Indigenous Knowledge Fighting Drought in South Africa

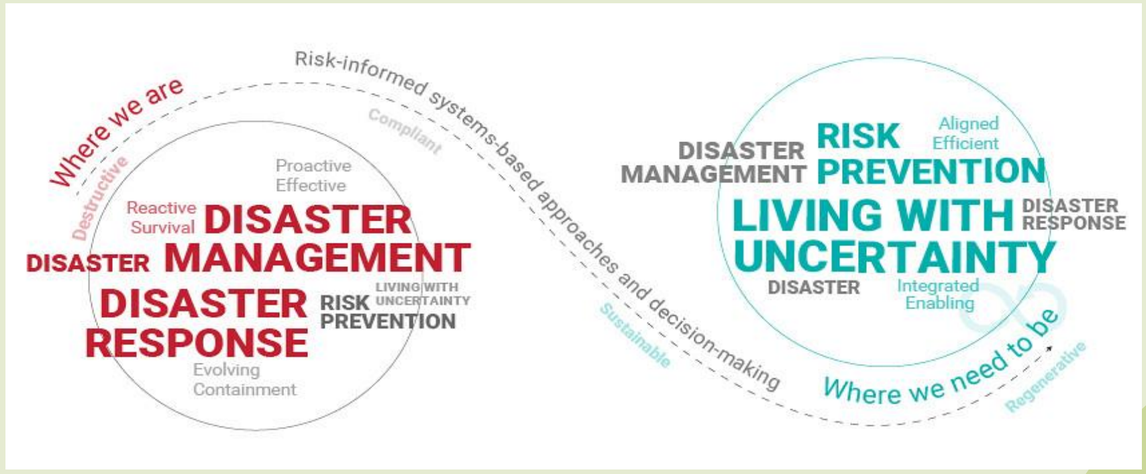
Indigenous knowledge and modern software have been brought together to mitigate the deva

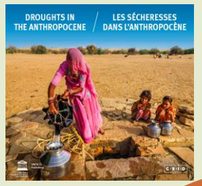
Engaging women and indigenous peoples not just as affected groups but as enablers of solutions:

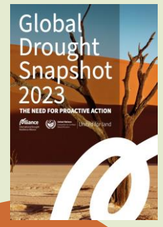
- They are not traditionally included in the discussions towards solutions
- “Solutions” are not always designed to fit their needs

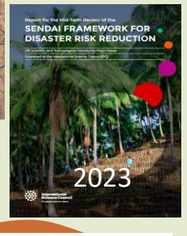
Drought Resilience +10

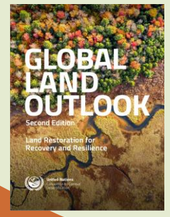
High-level Meeting on **National Drought Policy**

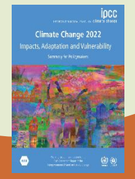


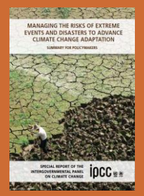


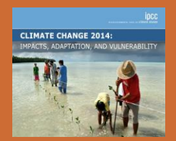


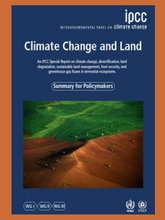


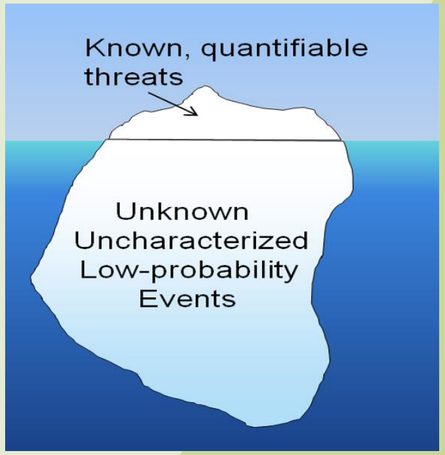












Thank you!
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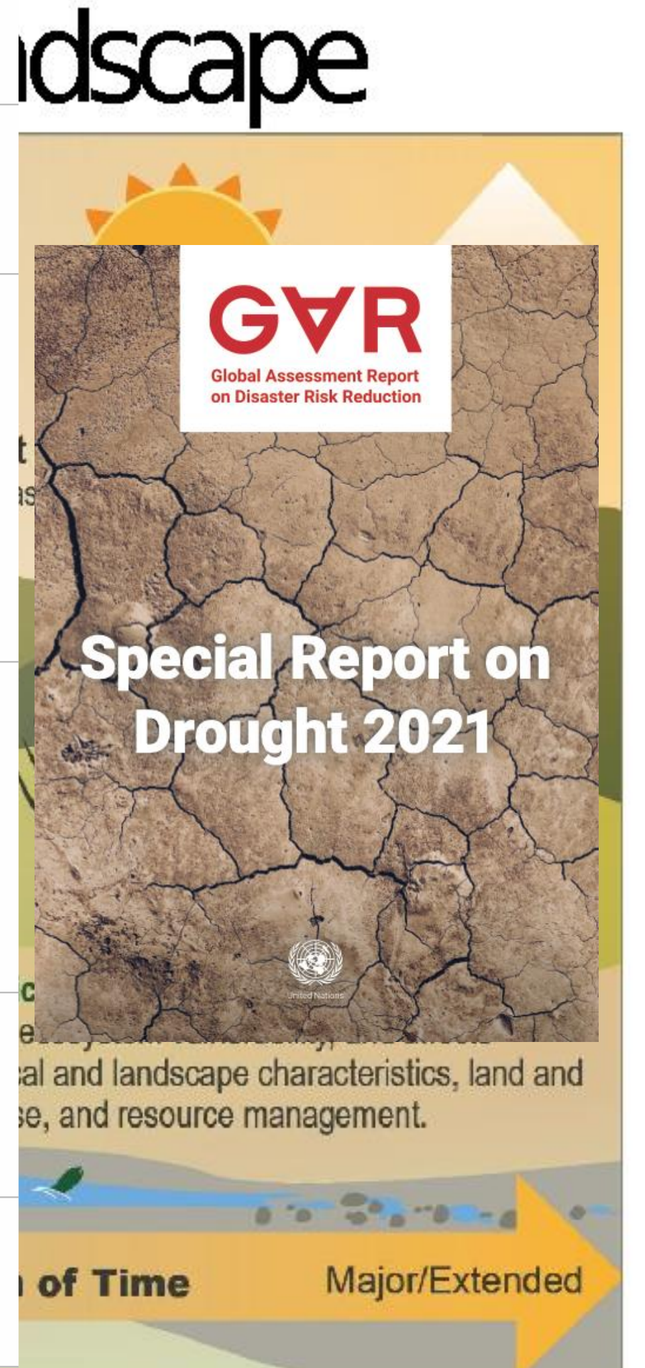
- Backups

Collaborative vision building around local and globally driven drought-related risks, and developed through scenarios of potential pathways	Provide a common vision that attracts a diversity of supporters upon which all can agree
Facilitating knowledge building and utilization through collaborative problem framing, risk assessments and capabilities development	Build / enhance knowledge of the people and resources, including ideas, viewpoints and solutions
Developing and sustaining networks and collaborative learning across the drought-related actor networks and their influencers	Bridge different and similar actors and stakeholders across and within organizational hierarchies and types; this could be divided into three subcategories: • Bonding (link with similar others) • Bridging (bring together similar and/or different groups to create momentum, gain support and react to various challenges) • Linking (communicate and engage with key individuals in different sectors, and link across scales)
Pursuing flexibility, openness and humility as a matter of respectful discourse	Numerous studies and implementation experience conclude that flexibility, transparency and respect should be built into the collaborative process Flexibility is important in the process to accommodate changing timetables, issues, data needs, interests and knowledge; building respect and openness involves accepting the diverse values, interests and knowledge – including local knowledge – of the parties involved
Facilitating / developing (social) innovations through an architecture of participation arising from multiple origins and venues – public, private and civil society institutions	Foster knowledge building and innovations by bringing together different kinds of thinking, processes, products and options, and new ways to conduct business
Systematically aligning financing targeted at key nodes can limit, slow or prevent system collapse, and allow opportunities presented by system change to be explored	Ensure sufficient (public and private) resources are available, costs are recovered from the users by public and private financial instruments (charges, prices, insurance, etc.) and decision-making and financing are under the same control



Typology of Decision-Making Venues to Address Institutional Collective Action (ICA) Dilemmas (Adapted From Felock, 2013; Garrick et al 2018)

Single issue Informal networks Contracts Special purpose districts	Policy network that emerges from local interactions Joint ventures and service contracts to address externalities Functionally specialized jurisdiction separate from local governments	Sharing shortages with neighbors Dry-year option contract Irrigation district board decisions
Multilateral Working groups Partnerships Multipurpose districts	Voluntary association of elected or public officials Voluntary multilateral agreement among local jurisdictions Consolidated set of public services within geographic territory	Weekly phone calls for reservoir operations working group Memorandum of understanding on shortage sharing between jurisdictions Drought response by watershed or regional organizations
Comprehensive Multiplex self-organizing systems Council of governments Regional authorities	Emergence of regional integration through embedded norms created by overlapping ventures, agreements and contracts Coordination across multiple policy domains governed by statutory framework Regional authorities have a comprehensive scope across a set of	Drought forum by river basin stakeholder groups Interstate task force on drought Drought planning by river basin authority