

Climate change adaptation (CCA): Needs and Planning



Binaya Raj Shivakoti

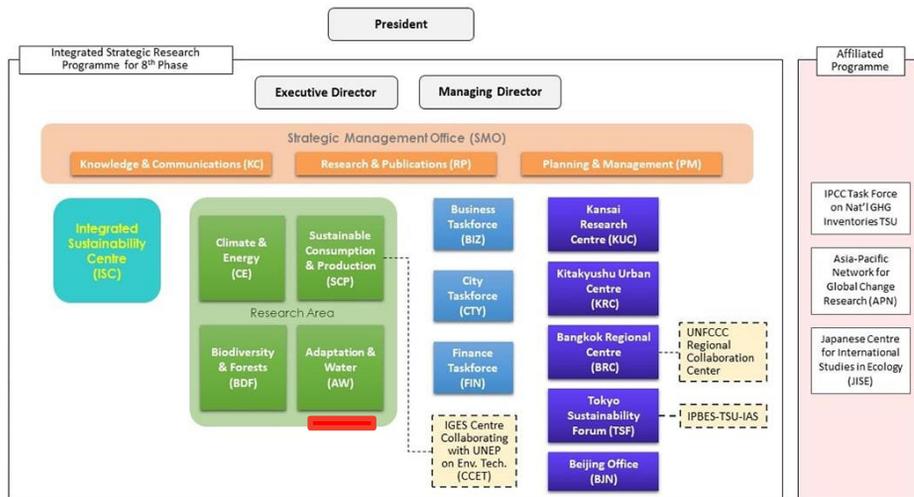
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About IGES



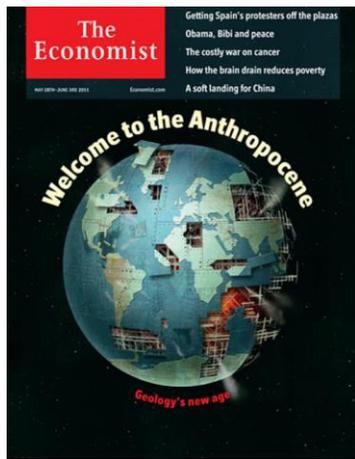
- Established under an initiative of the Japanese government in 1998 with the support of Kanagawa Prefecture where IGES Headquarters is located.
- Aims to bring about a transition to **a sustainable, resilient, shared, and inclusive Asia-Pacific region and the world.**



General Background

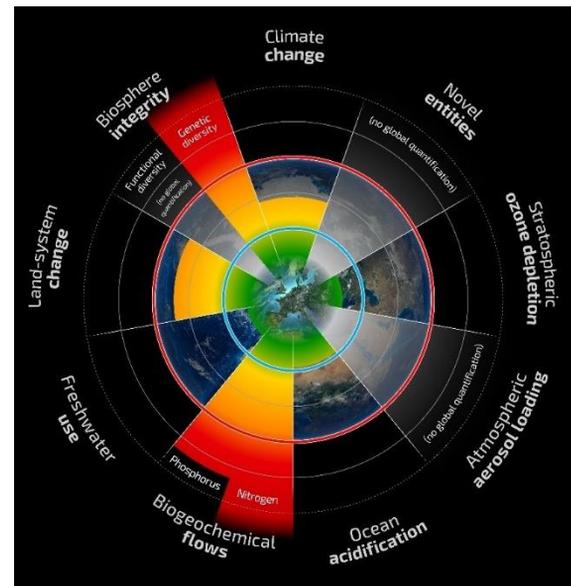
(Why are we concerned?)

Human's Power of Transformation?



Anthropocene, the new epoch in which human activities are profoundly altering geologically significant conditions and processes

Planetary boundaries:
A safe operating space for humanity



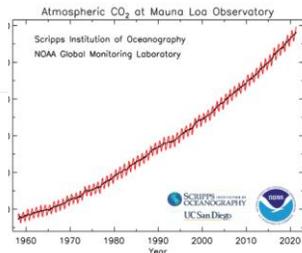
A Global Problem Never Seen in the Whole Human History

Climate change is a global collective-action problem in which “Think Globally but Act Locally” faces a dilemma as individuals lack of incentive to act - Ostrom

CO2.Earth
 426.21 ppm #CO2 in the atmosphere on Feb. 4 2024 Up 6.18 from 420.03 ppm one year ago
 NOAA Mauna Loa data: <https://gml.noaa.gov/ccgg/trends/monthly.html>
 CO2.Earth Daily: <https://www.co2.earth/daily-co2> Pls. help make this global sustainability # visible

Daily CO₂

A leading signal of environmental, economic and social changes ahead.

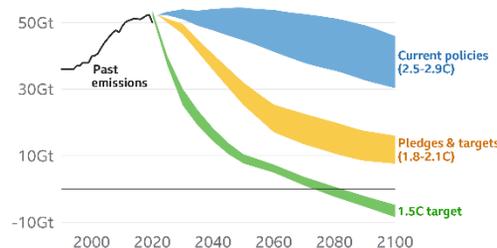


World will miss 1.5C warming limit - top UK expert



| | |
|---------------|-------------------|
| Feb. 4, 2024 | 426.21 ppm |
| Feb. 3, 2023 | 420.03 ppm |
| 1 Year Change | 6.18 ppm (1.47%) |

How close is the world to its 1.5C target?
 Projected greenhouse gas emissions and future warming levels vary by actions taken



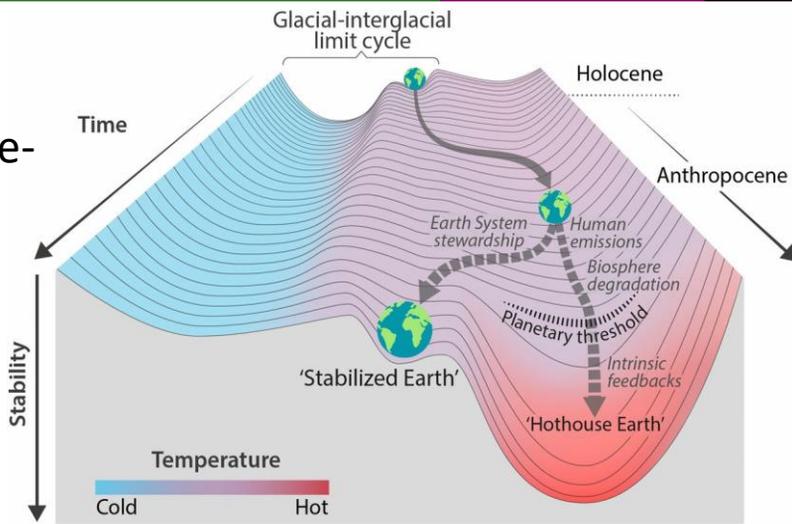
Last CO2 Earth update: 3:35:02 AM on Feb. 5, 2024, Hawaii local time (UTC -10)

Atmosphere Being Treated Like Open Sewer – Al Gore

Emissions measured in gigatonnes of carbon dioxide equivalent
 Source: Climate Action Tracker, Dec 2023. Broad lines show possible range

Consequences?

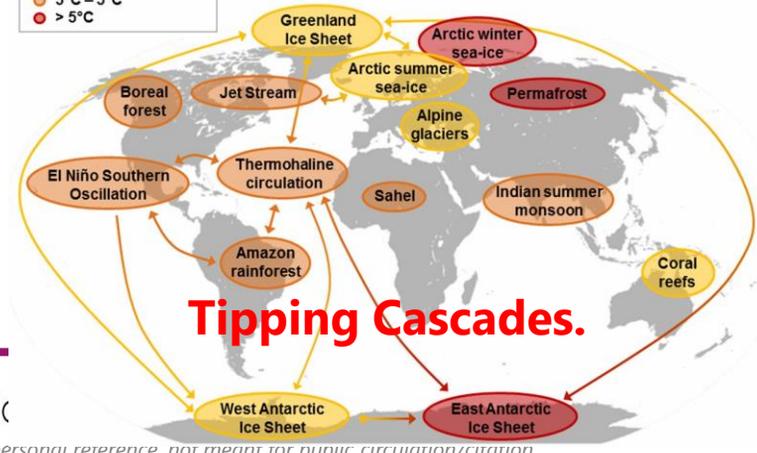
- Irreversible losses of polar ice-caps, glaciers, sea level rises
- Land/Oceans biodiversity/ecosystem damages
- Extreme hydrometeorological hazards
- Compound/cascading risks
- Uncertainty on what is lying ahead in the near future



Source: <https://doi.org/10.1073/pnas.1810141115>

Tipping elements at risk:

| | |
|---|-----------|
| ● | 1°C – 3°C |
| ● | 3°C – 5°C |
| ● | > 5°C |

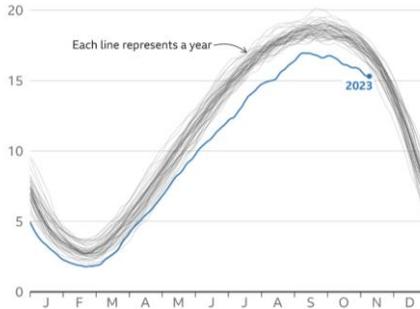


Tipping Cascades.

Year 2023!! Is it already too late?

Antarctic sea-ice far lower than usual in 2023

Daily sea-ice extent in million sq km, 1979-2023



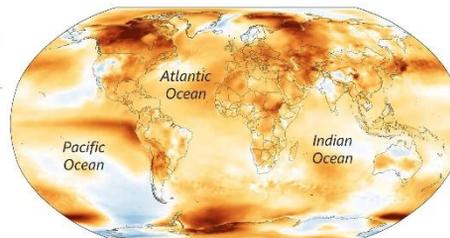
Five-day rolling average of sea-ice extent

Source: National Snow and Ice Data Center (NSIDC), data to 9 Nov 2023



Most of the world much hotter than normal

Average surface air temperature in 2023 compared with 1991-2020 average

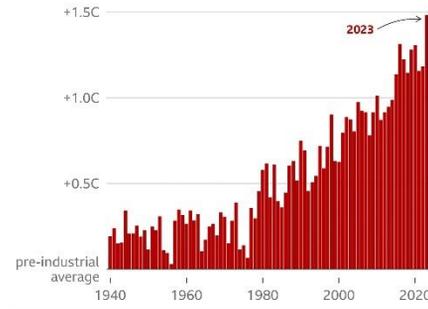


Source: ERA5, C3S/ECMWF



Hottest year on record

Global average temperature by year, compared with pre-industrial average (1850-1900)

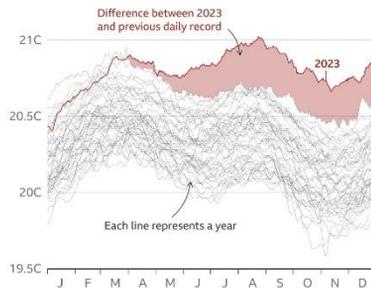


Source: ERA5, C3S/ECMWF



Ocean temperatures highest on record

Daily average sea surface temperature, 1979-2023



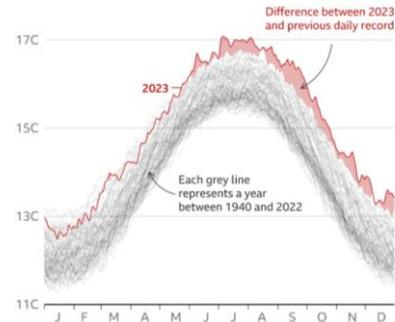
Note: Temperatures between latitudes 60° North and 60° South

Source: ERA5, C3S/ECMWF (data until 30 Dec 2023)



Global temperatures at record levels in 2023

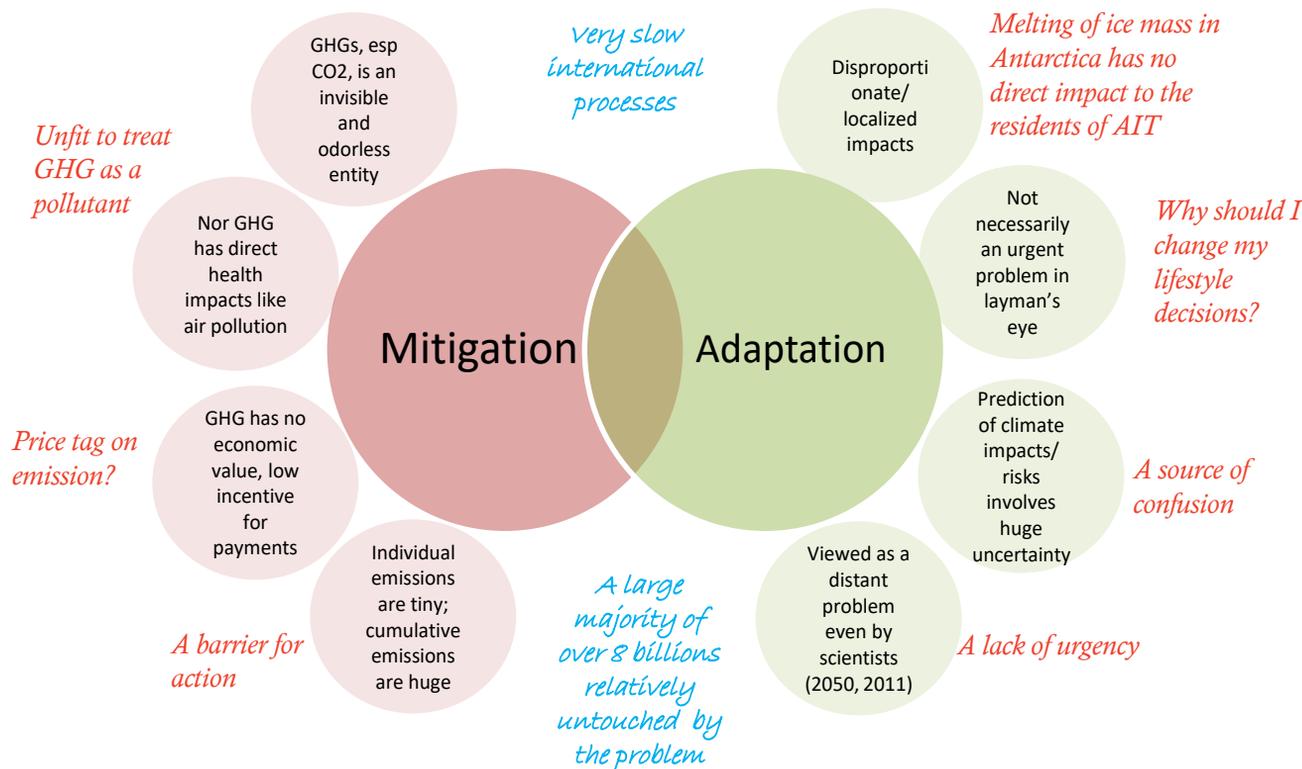
Daily global average air temperature, 1940-2023



Source: ERA5, C3S/ECMWF



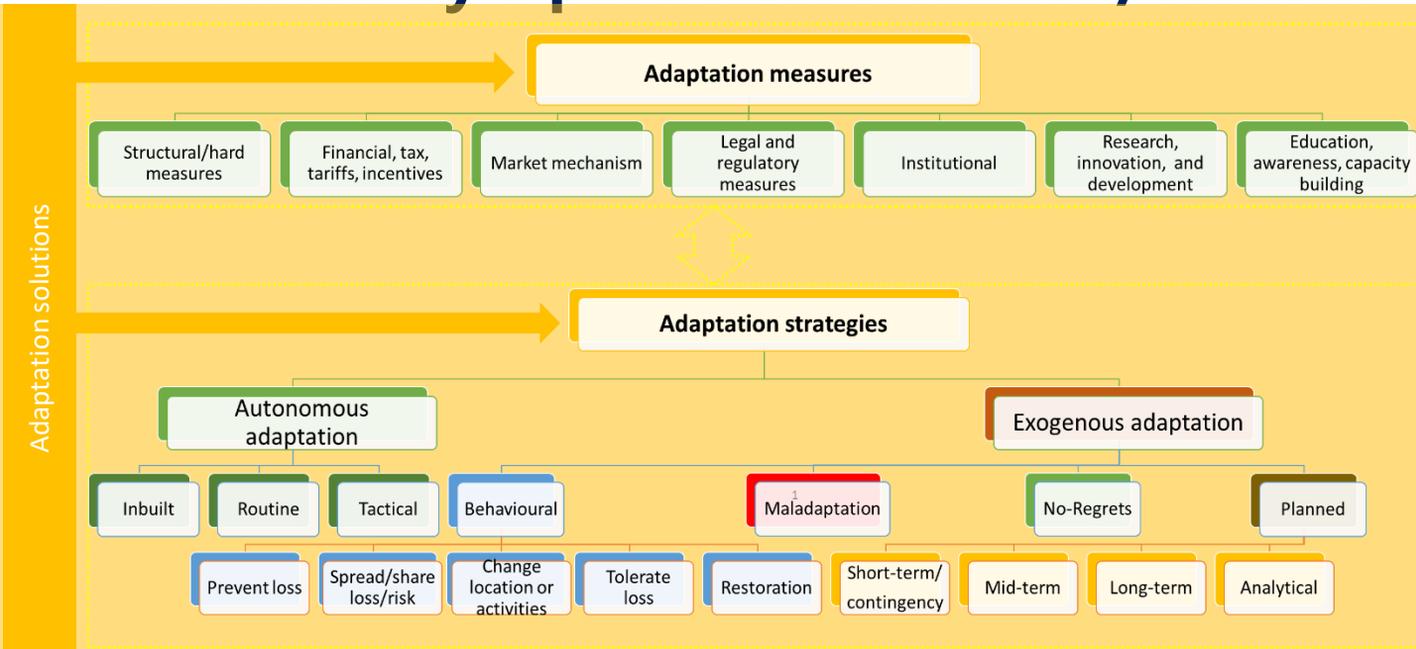
Why it is so difficult to tackle the risk situation? ~emergency without “emergency responses”~



Adaptation Needs and Priorities

(What are they?)

Multitude of measures/strategies in use that are dictated by a particular situation/context

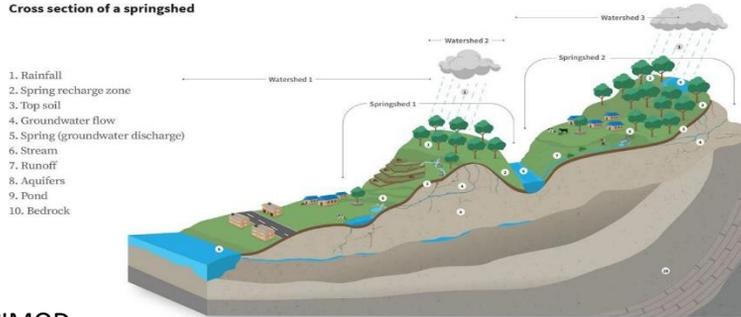


Source: based on IPCC Technical Guidelines for Assessing Climate Change Impacts and Adaptation, 1994

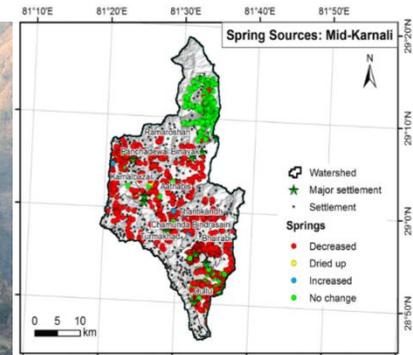
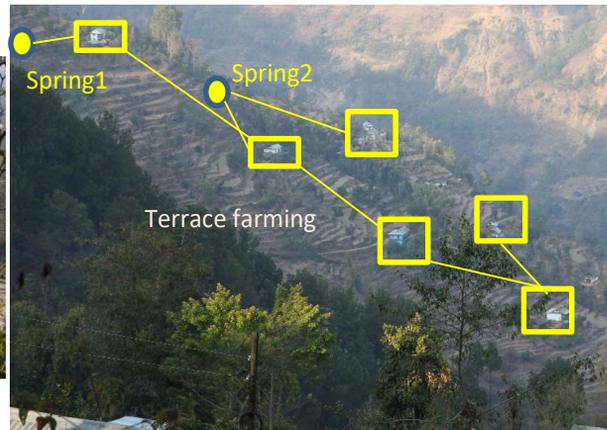
Large number of responses are in fact the coping strategies

Coping with water scarcity due to drying of springs across mountain landscapes in Himalayas

Cross section of a springshed

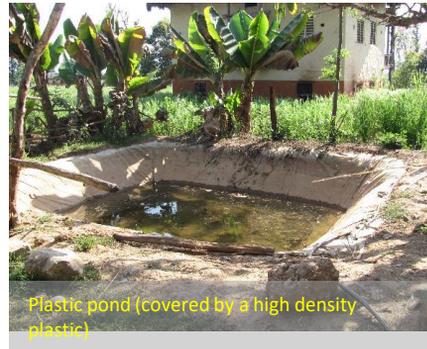


Source: ICIMOD



Source: Adhikari et al. 2021

Location specific coping strategies



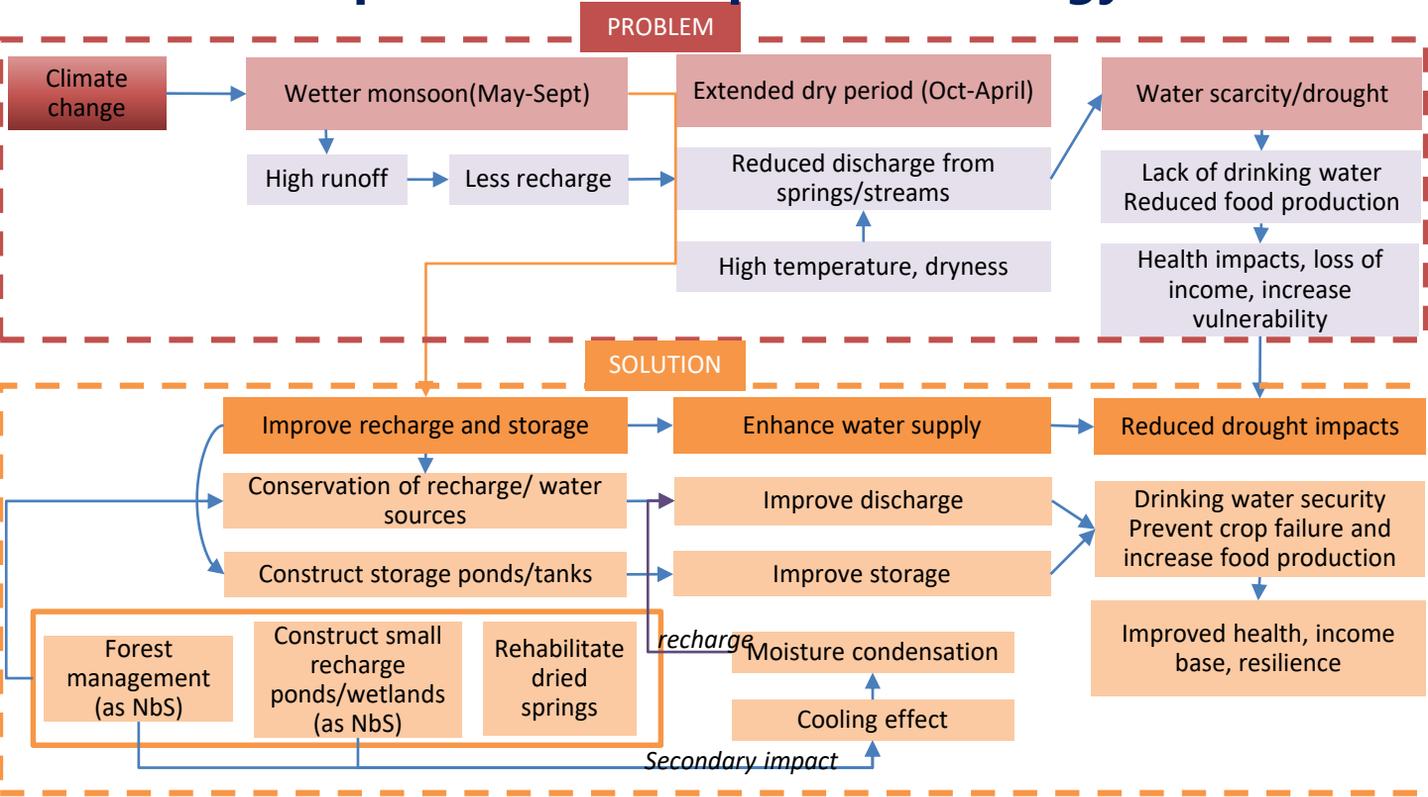
Location specific coping strategies: snow harvesting



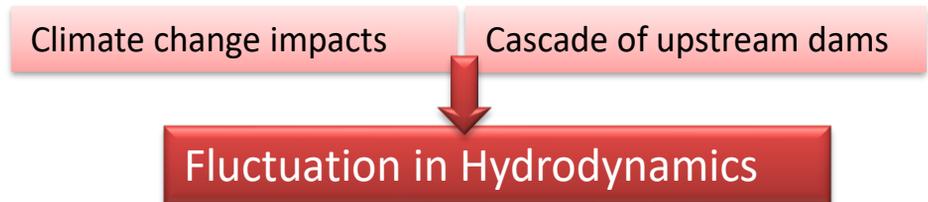
Source: Dhan Bahadur Kathayat, Agriculture Extension Officer, Karnali Province, Nepal

IGES Institute for Global Environmental Strategies

Coping strategies are incomplete without a comprehensive adaptation strategy

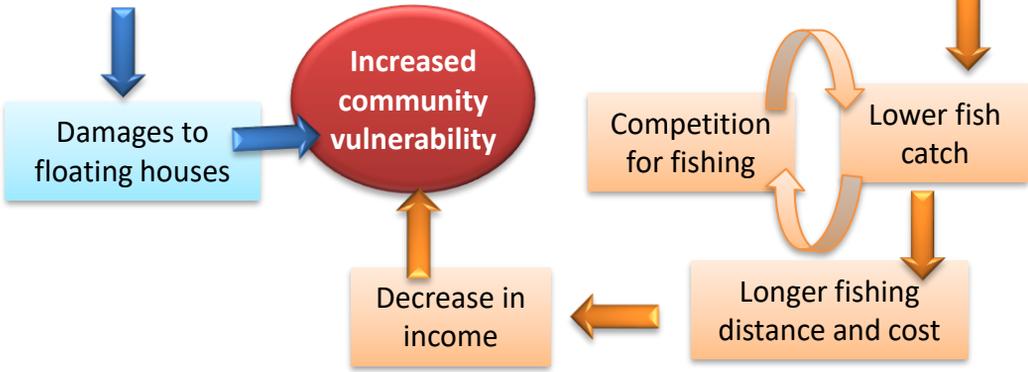


Coping by floating villages/communities due to changing hydrodynamics of Tonle Sap Lake



Wind, high tides

Inadequate flood pulse



- Coping measures has their limit (limits to adaptation)
- How to diversify livelihood options, other than, low income fishing or subsistence livelihood
- Migration, esp., youths

Coping to landslide risks in Phukoune, Lao PDR



- Coping measures are largely determined by available options rather than ideal scenarios
- Lack of information and poor decision making capacity about the risk scenario are barrier for adaptation
- Extreme events could hit harder exposing latent vulnerabilities

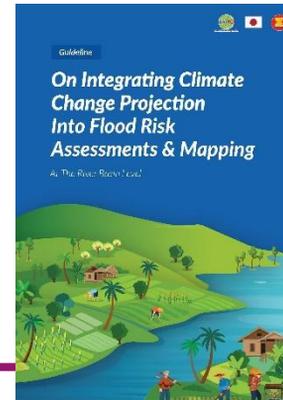
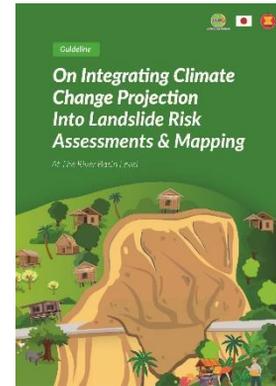
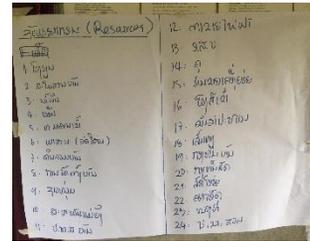
Living with floods in Bago, Myanmar



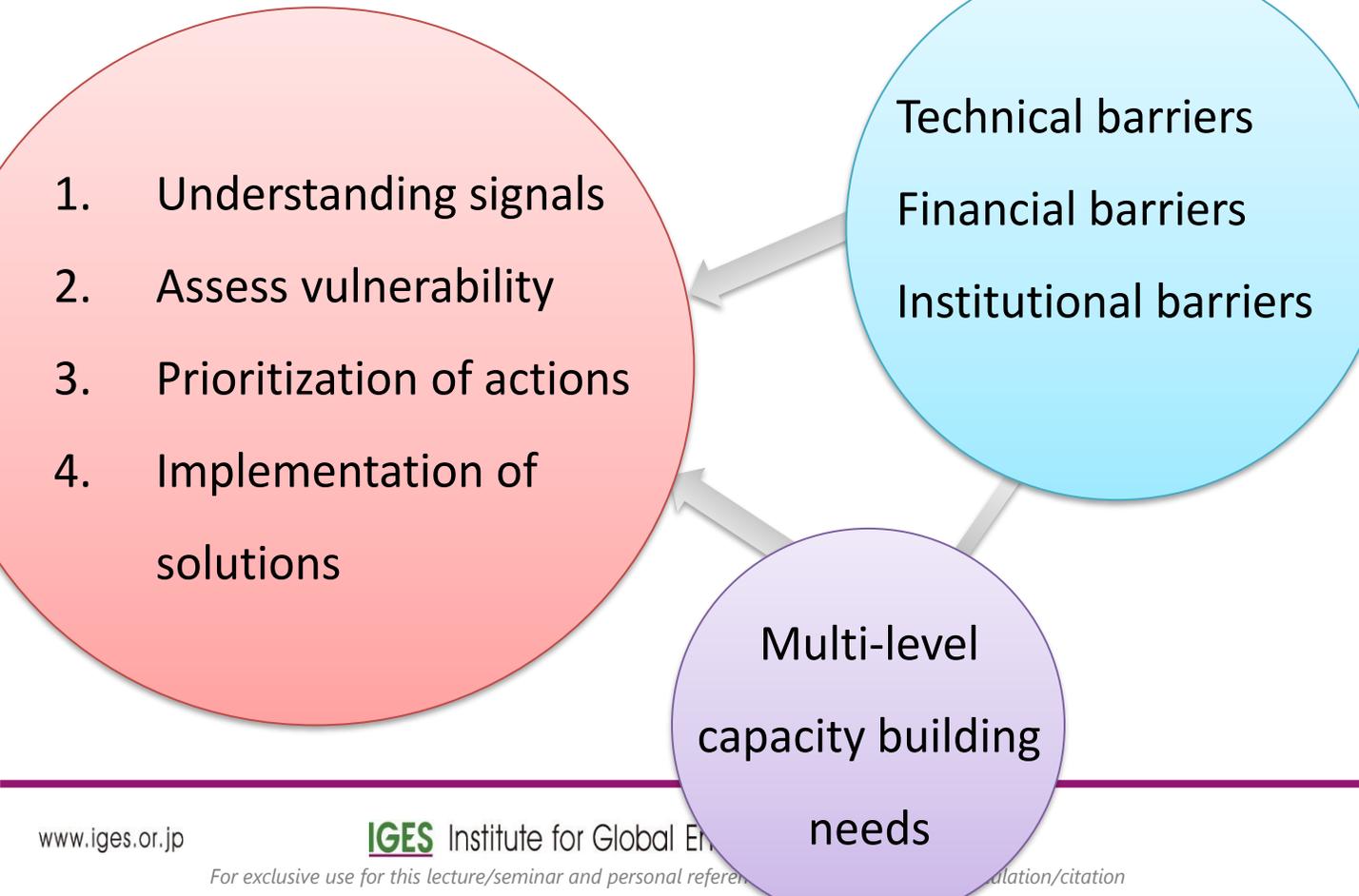
- In frequently flooded areas, people are following a lifestyle that is in sync with flood
- Damages are not always human casualties, but more of social and economic types
- Recent extreme events are challenging the existing coping strategies or co-existence with flood

Participatory flood and landslide risk mapping

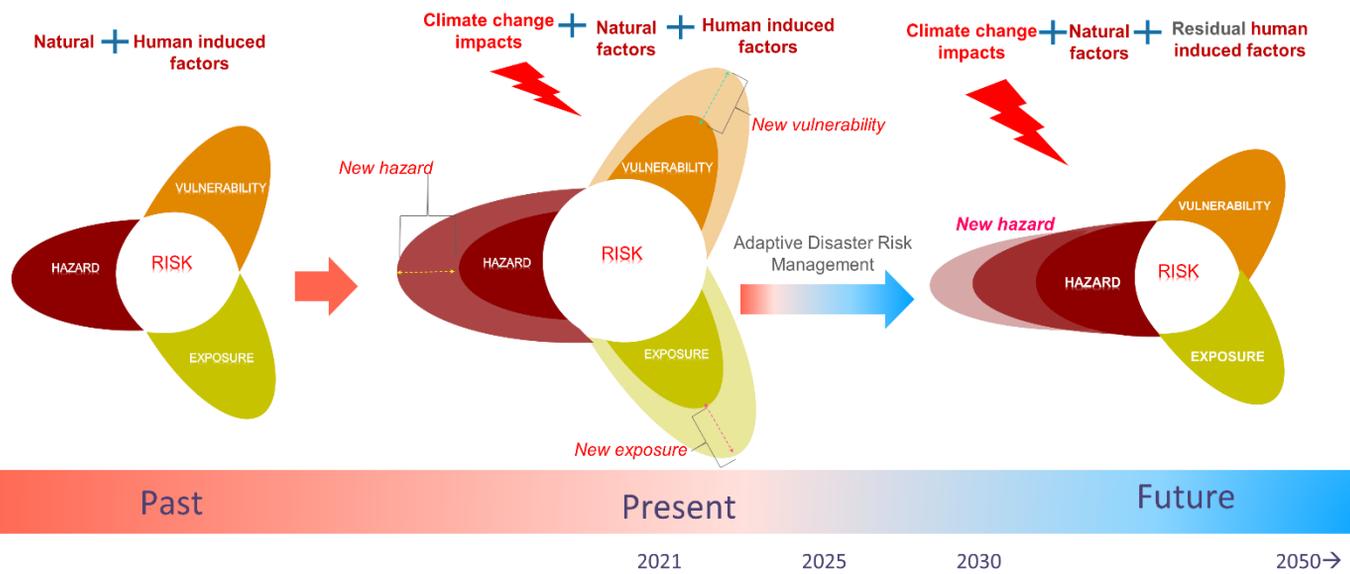
- Improving decision making capacity at the local level is essential
- Participatory approaches provide 'learning-by-doing' opportunities for capacity building



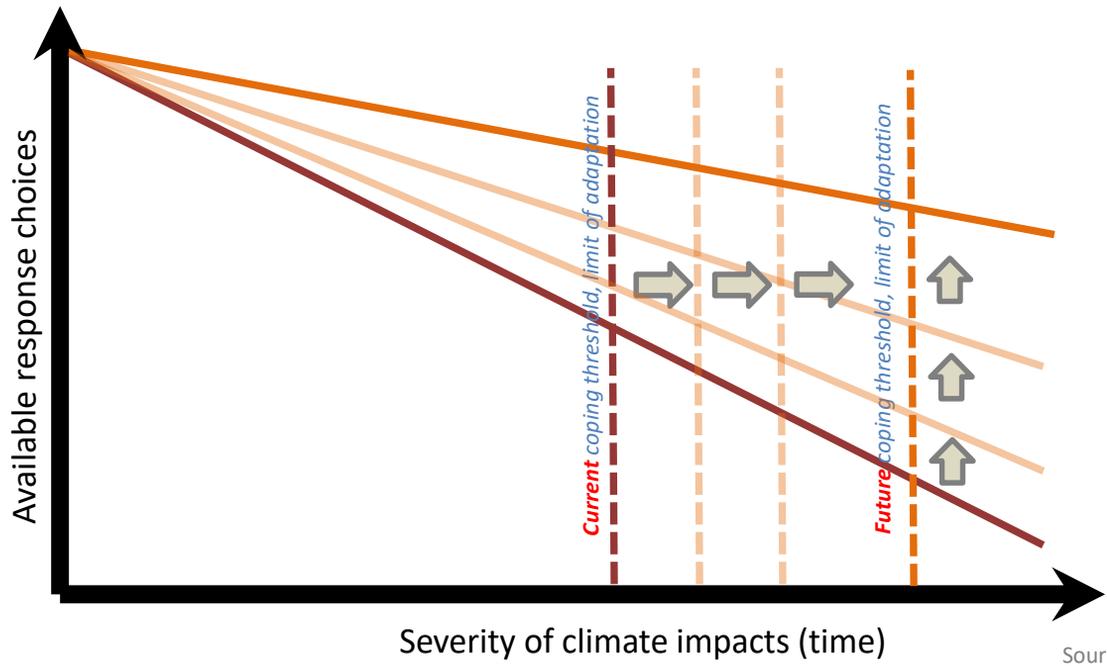
Diverse needs, priorities, and barriers



How to upgrade societal adaptive capacity (e.g., disaster)?

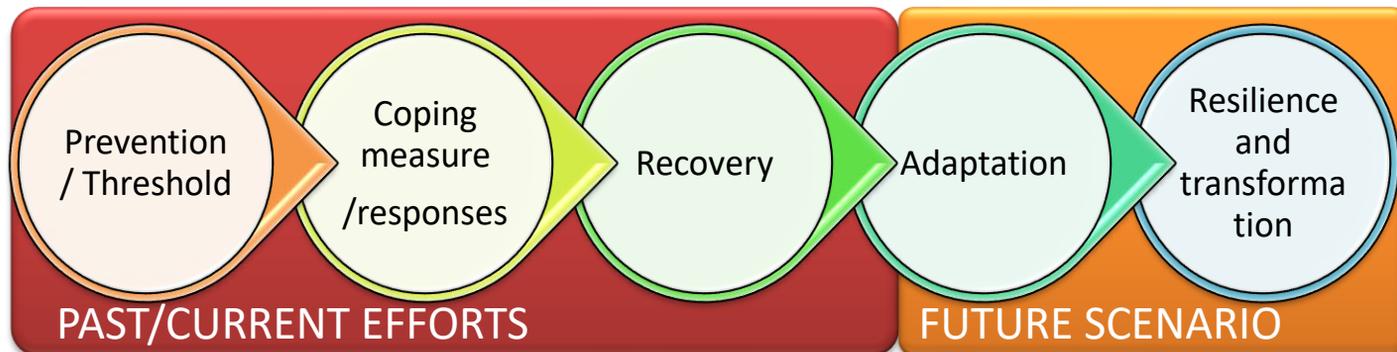


What we need to do?



Source: Binaya

Visualizing CCA process as a spectrum



Based on: Rutger de Graaf-van Dinther's Climate Resilient Urban Areas

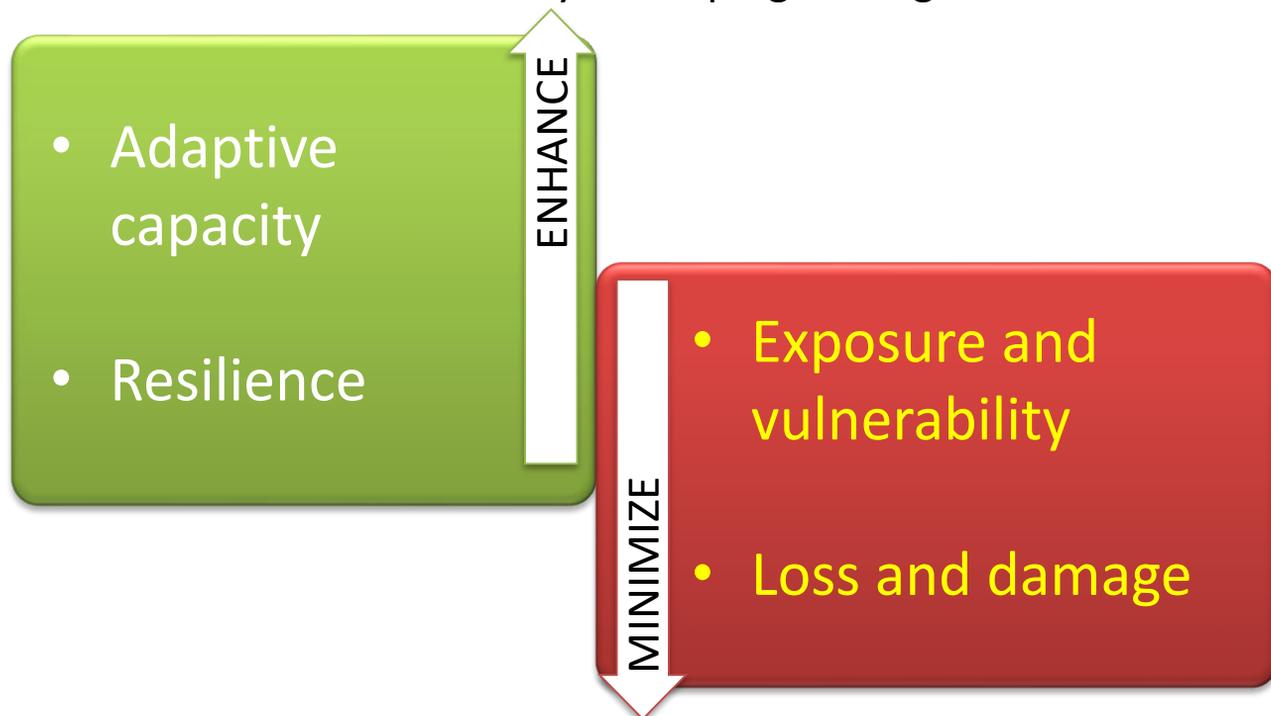
The goal is resilience, if necessary, through transformative adaptation

Adaptation Planning

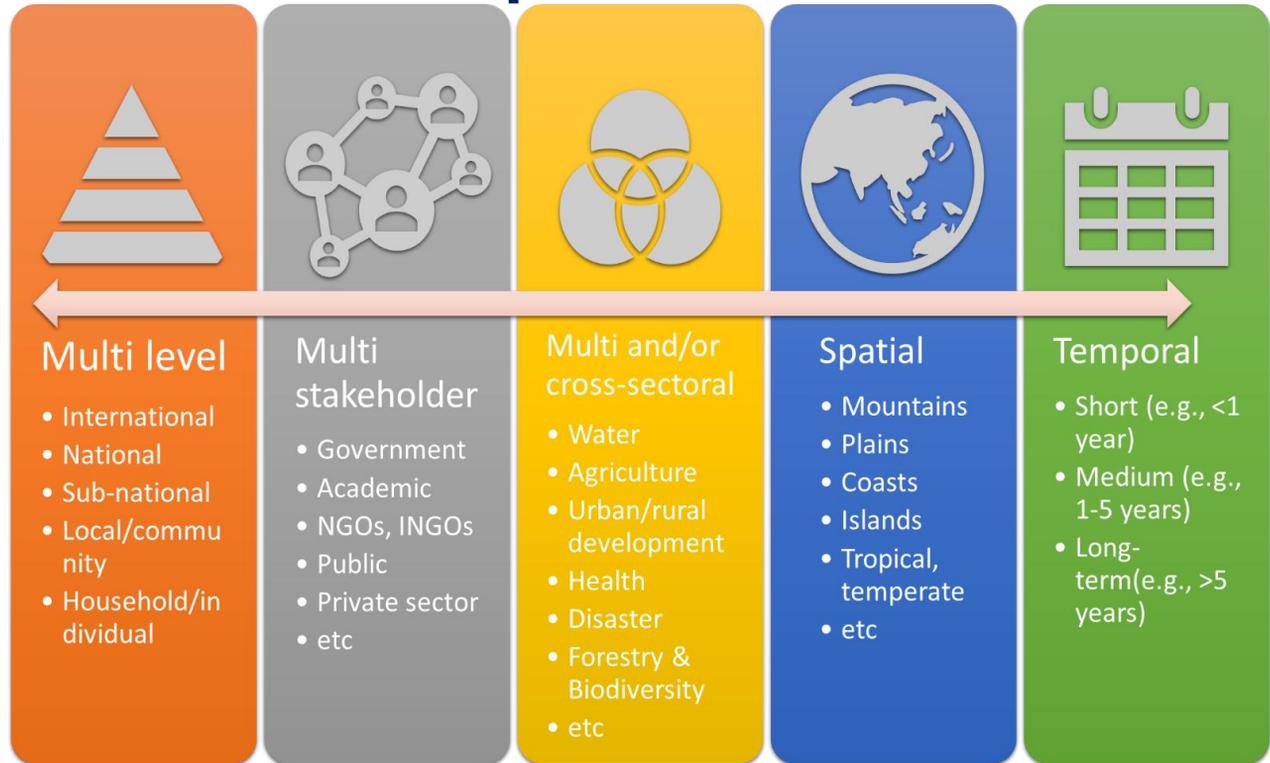
(How to trigger the process of transformative adaptation, both scale and speed ?)

Goal of adaptation planning

How to move beyond coping strategies?



CCA is not simple, it is a multi-dimensional process



Two key considerations for CCA

Dealing with 'soft-limits' to adaptation

Preparing for the 'hard-limits' to adaptation

Space for incremental adaptation Planning

Transition

Space for Transformative Adaptation

Tolerable loss and damages

Intolerable loss and damages

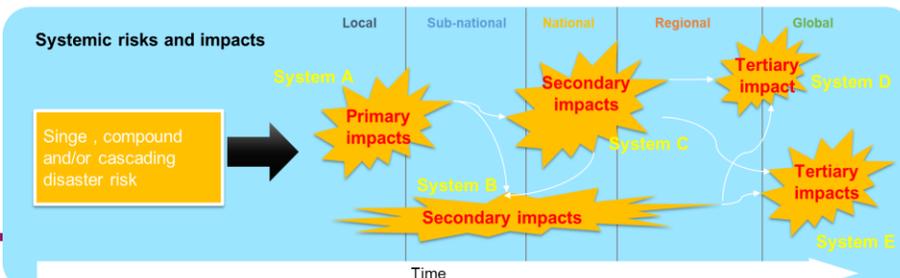
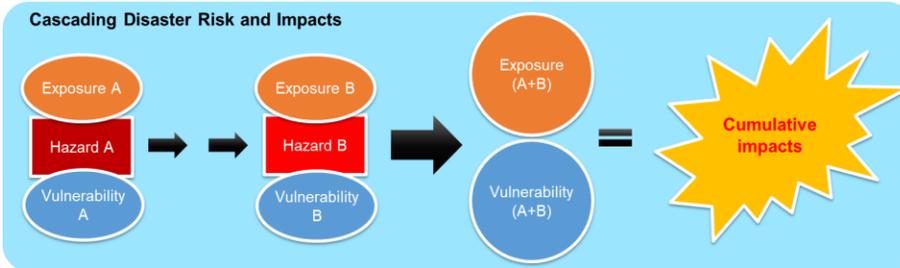
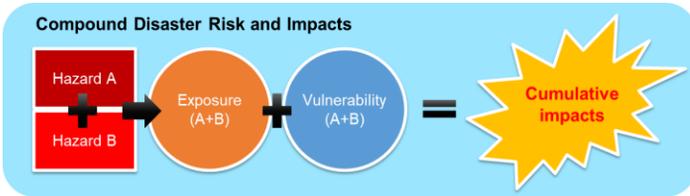
How to mobilize resources, institutions, and capacities?

How to trigger systemic changes

Evidences suggest that, including IPCC AR6 WGII, **transformative change is inevitable!!!**

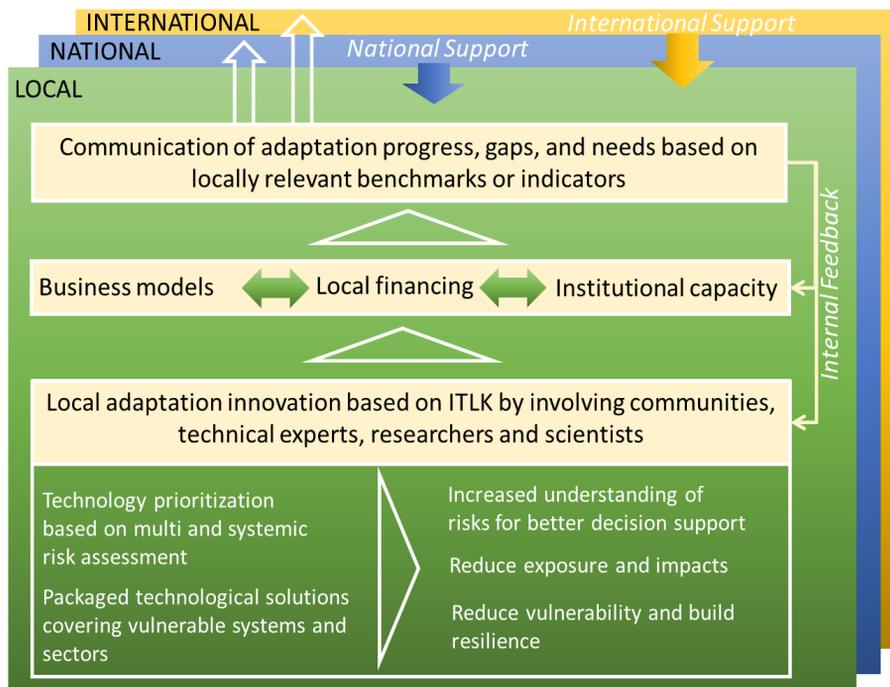
Our choice is to either engineer 'transformative adaptation' or face the 'forceful transformation'

Adaptation planning should consider evolving new normal



What is missing for triggering transformation?

SCALE, SPEED AND SUSTAINABILITY of adaptation actions



**Biggest challenge:
how to break the
gap between top-
down decisions
and bottom-up
needs/priorities**

Source: Binaya/ESCAP

LOCALLY LED ADAPATION (LLA)

8 Principles for Locally Led Adaptation (LLA)

- An approach to adaptation that emphasizes local priorities
- Tailored to context-specific adaptation solutions
- Participatory and inclusiveness in design and implementation
- Recognizes local's potentials for innovations

Devolving decision making to the lowest appropriate level

Providing patient and predictable funding that can be accessed more easily

Building a robust understanding of climate risk and uncertainty

Ensuring transparency and accountability

Addressing structural inequalities faced by women, youth, children, disabled and displaced people, Indigenous Peoples and marginalised ethnic groups

Investing in local capabilities to leave an institutional legacy

Flexible programming and learning

Collaborative action and investment

DEVELOPING BLUEPRINT OF LOCALLY LED ADAPATION (LLA)





Practical ACTION

As hubs for LLA innovation and learning
Regional cross-learning and collaboration
Blueprint for upscaling LLA actions
Led by local partners
Youth engagement
Focus on indigenous, traditional and local knowledge system
Build enduring capacity at the local level

Model Case Study Sites

FIJI: Vusama village, Viti Levu, Fiji



NEPAL: Dang & Rolpa districts



VIETNAM: Van Ho district, Son La province



- High vulnerability and low capacity
- Climate change impacts visible in the form of untimely, high, low, late rainfall, droughts, increasing sea tides in Fiji
- Awareness of the local communities on climate change is limited
- Using their in-built knowledge systems and experience to cope with changes and impacts
- Limited capacity to plan and address the impacts in a systemic manner

PROMOTING TRADITIONAL/ INDIGENOUS AND LOCAL KNOWLEDGE SYSTEMS (ILK or TLK



Promoting bottom-up innovation to integrate ILK into local adaptation planning



Community radios Training on effective modes of communication



University and youth involvement for blending of ILK and science and validation of ILK

CALL FOR SUBMISSIONS!
Cases and documents on indigenous and local knowledge systems and practices in the HKH



Conservation of traditional pond

Maladaptation



Location of a lost traditional pond

INTER-GENERATIONAL TRANSFER KNOWLEDGE

Attracting youths,
prevent outmigration

Effective uses of local
media and their
capacity building

Capacitating youths
for climate action



Need for local adaptation innovations

SO MANY ELEMENTS TO FIT INTO



Source: IGES

A vision for transformative adaptation – a climate resilient net-zero society

Future model of development should be primarily guided by societal needs and priorities dictated by the risk associated with an era of rapid climate change



Some takeaways

- By nature adaptation is about navigating uncertainty, which requires trial and errors or learning by doing.
- Adaptation decisions will continue to be made under uncertainty
- There are solutions but rapid upscaling is a challenge in the path of transformation
- Slow process of decision making at different levels are not keeping the rapid pace of changes towards a new normal
- Future transformation hinges on societal capacity to co-manage mitigation, adaptation, and loss and damages issues in an integrated manner



Thank you and welcome to IGES!!