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# RWANDA CLIMATE SCIENCE SYMPOSIUM 2025

## Advancing Research And Networking

# Climate Adaptation Knowledge Brokering in Rwanda

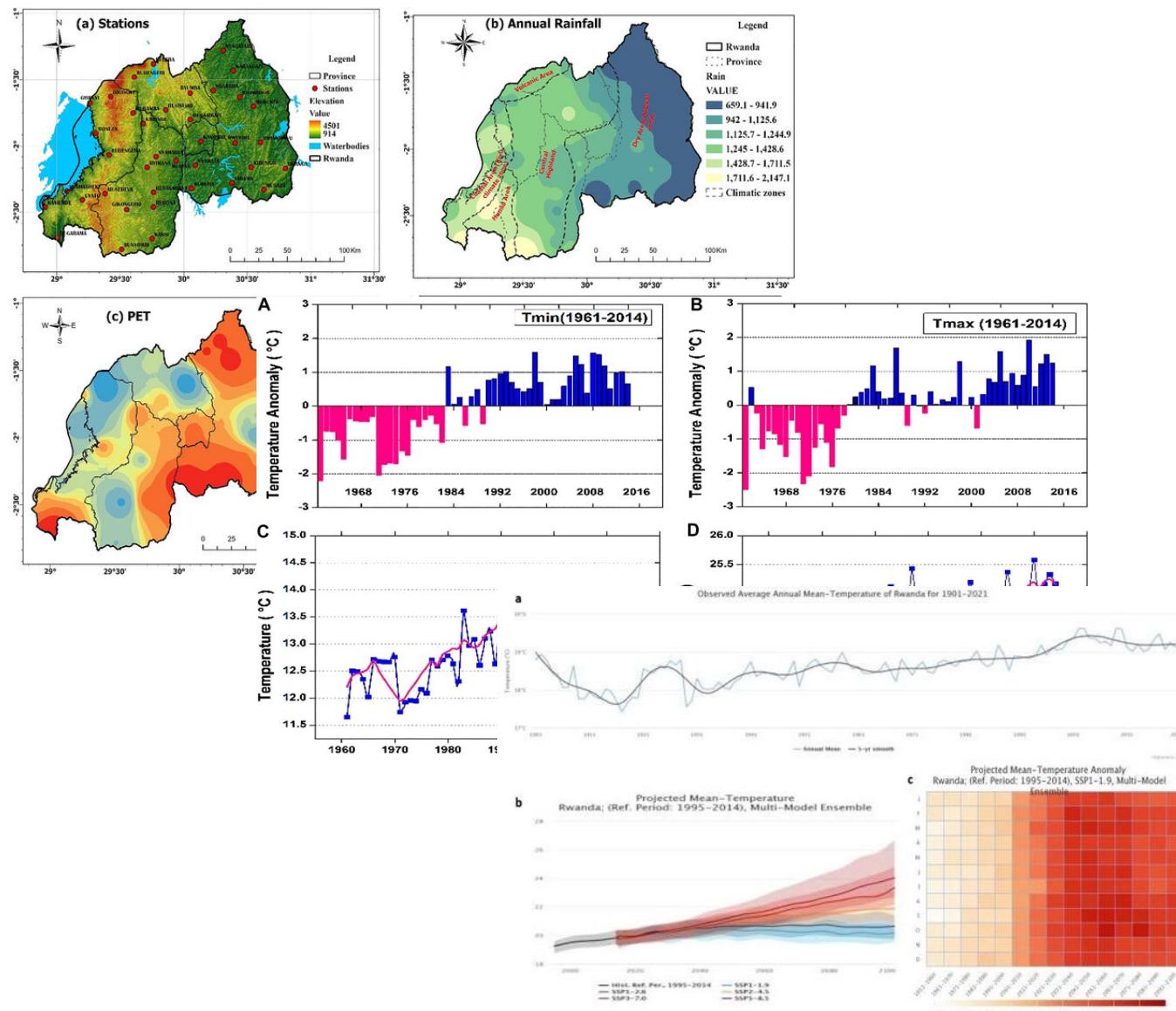
What Does it Take to  
Contextualise, Make Sense of,  
Visualise or Prepare Climate  
Information for Usage?

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Christian Muragijimana  
Swarna Selvarajhan



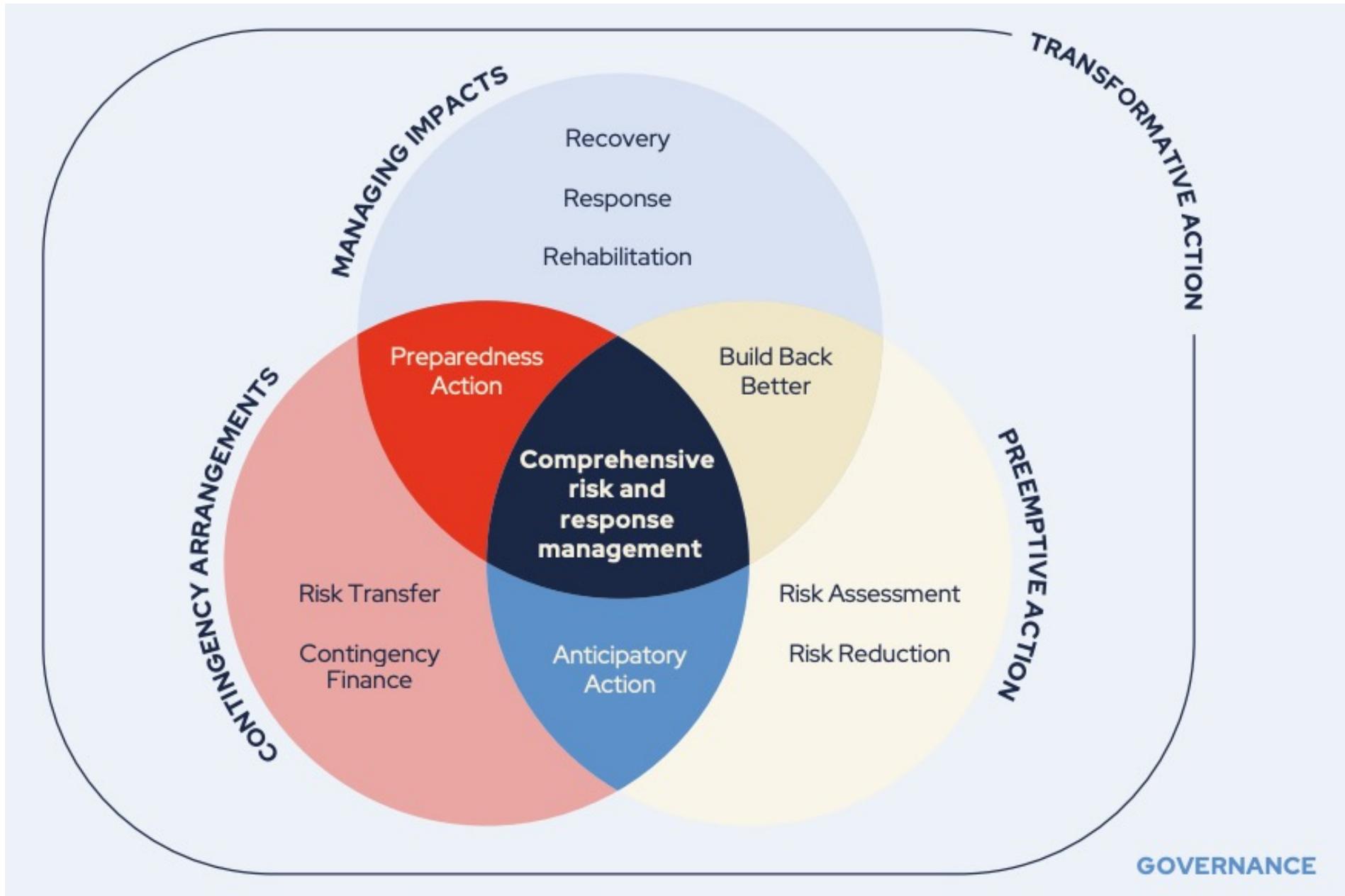
African Institute for  
Mathematical Sciences  
RESEARCH & INNOVATION

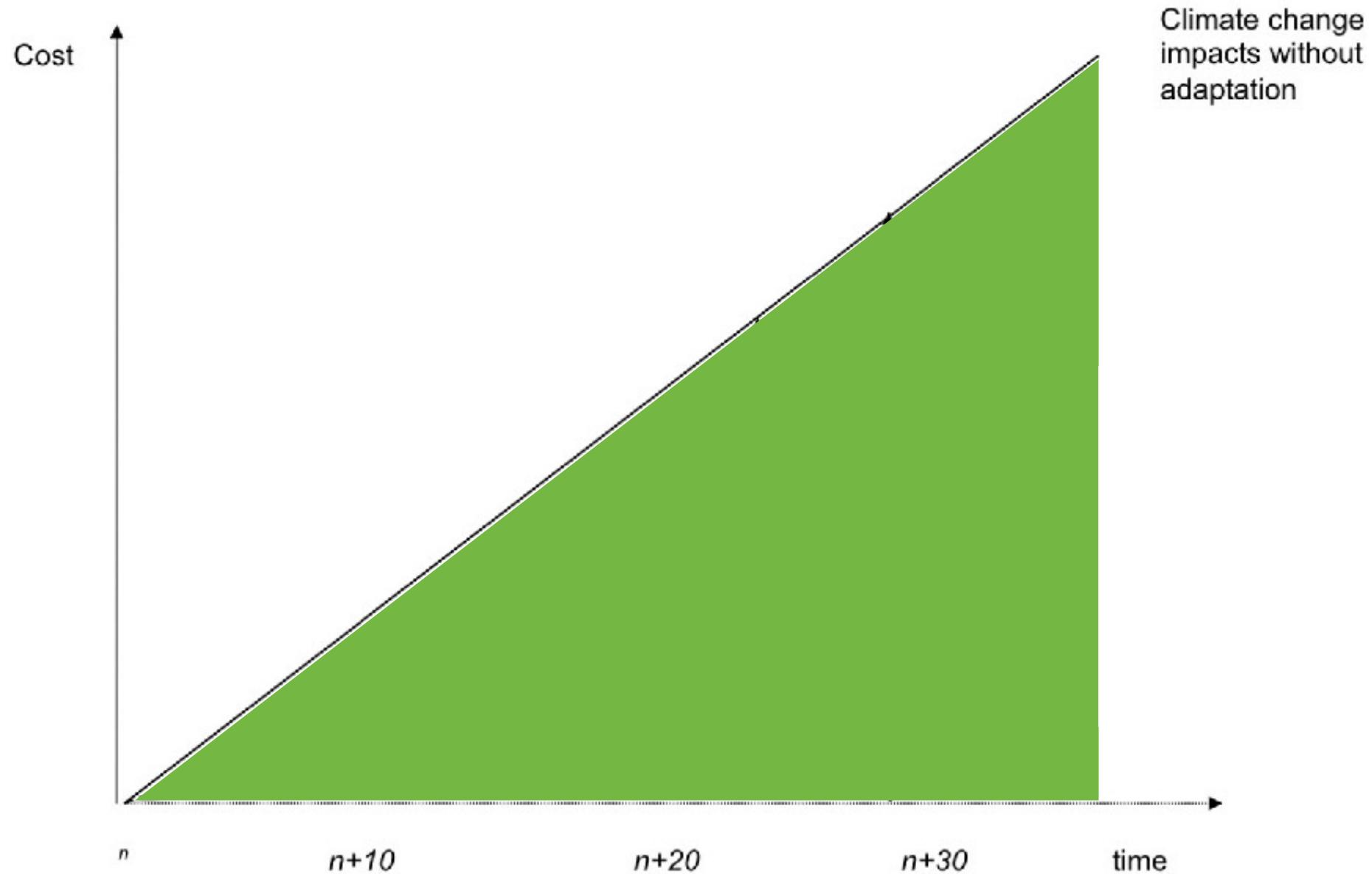


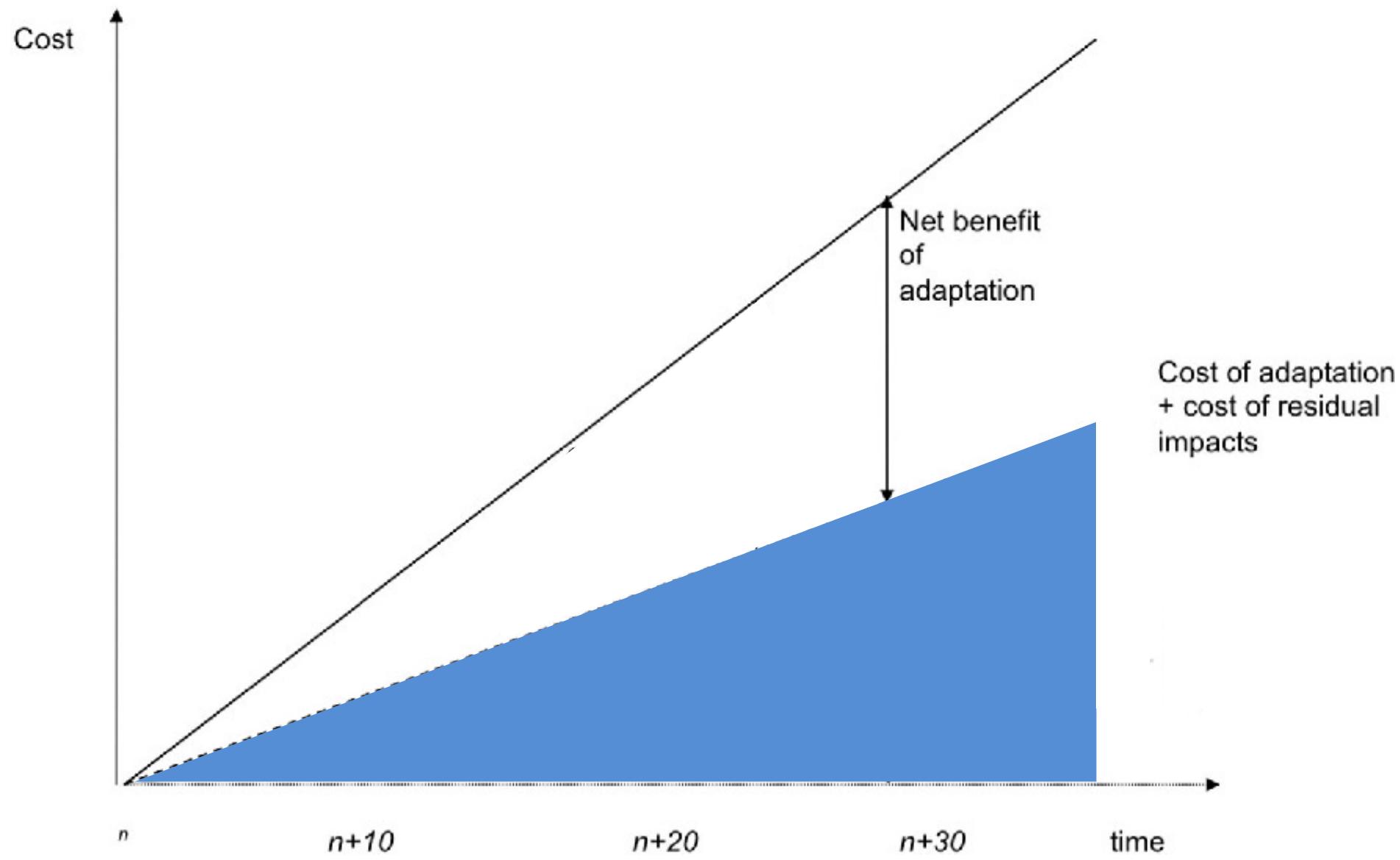


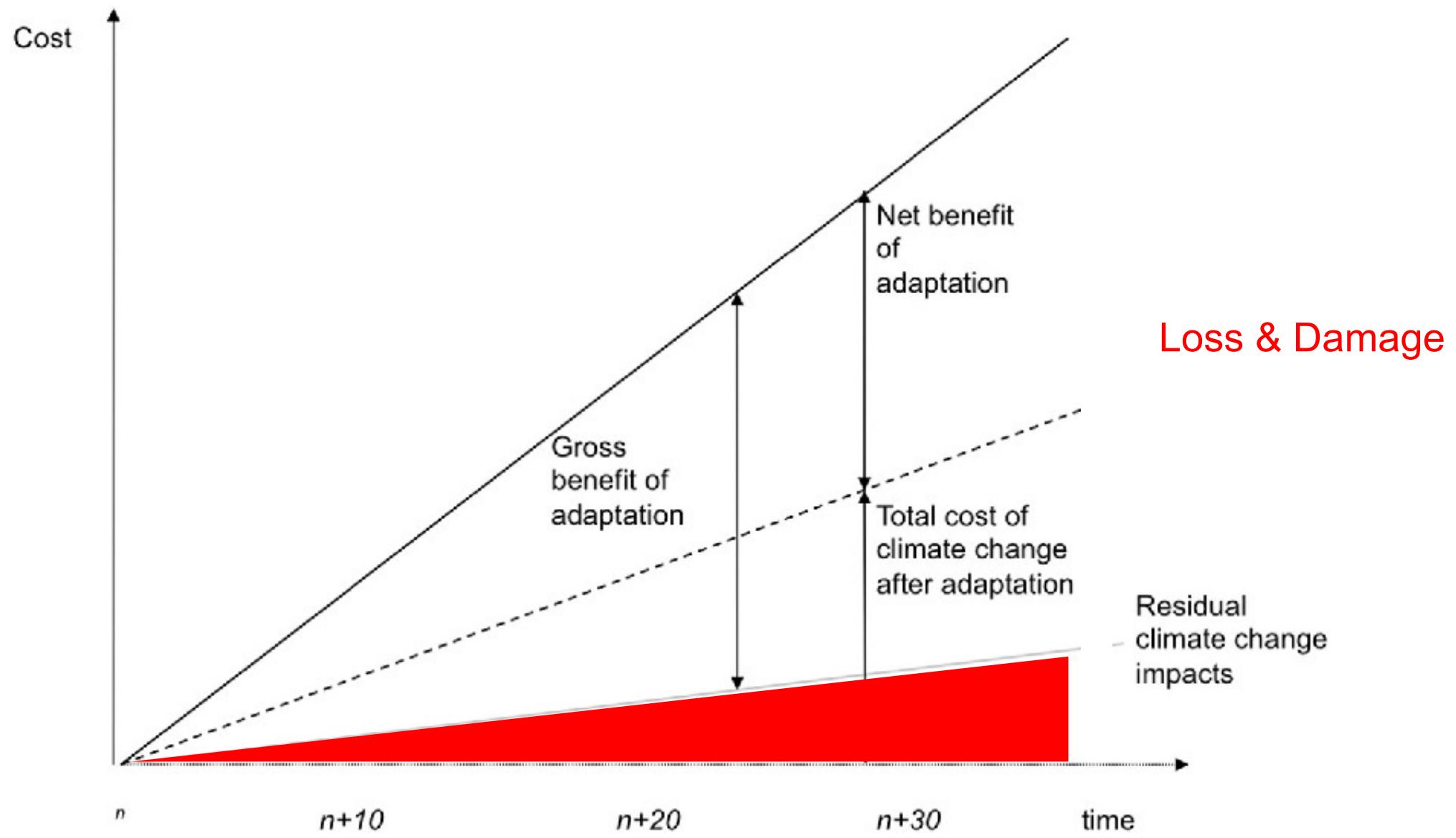
# Climate Risks and Impacts ...











# Adaptation Benefits

## Economic Benefits:

- avoid losses:
- minimize damage to infrastructure, assets, and livelihoods, leading to substantial economic savings.

## Enhanced Productivity:

- maintain or increase their productivity.

## Innovation and Growth:

- spur innovation and create new economic opportunities.

## Local Economic Benefits:

- improve local economies by creating jobs, supporting businesses, and boosting local investment.

# Adaptation Benefits

## Social Benefits/ Improved Well-being :

- protect vulnerable populations from the impacts of climate change, such as extreme heat, droughts, and floods.
- improve the quality of life for individuals and communities.

## Increased Resilience:

- develop the capacity to anticipate and respond to climate change effectively, strengthening their resilience.

## Enhanced Public Health:

- improved air quality, access to clean water, and reduced vulnerability to heat waves can lead to significant improvements in public health.

# Adaptation Benefits

## Environmental Benefits:

- reduced environmental damage, i.e. minimize the impact of climate change on ecosystems and biodiversity.

## Improved Ecosystem Services:

- enhance the vital services ecosystems provide, such as clean water, air, and soil.

# Which 'Adaptation' Questions Does Climate Information Help to Answer?

Which crop variety/ seeds to use/ select?

When to plant/ sow/ harvest?

How to avoid rain-induced soil erosion?

Transitioning to a new cultivar?



Agriculture

# Which 'Adaptation' Questions Does Climate Information Help to Answer?

To what extent will climate change impact food safety, for example through changes in exposure to aflatoxins?

How significantly may flooding affect the incidence of waterborne disease through decreases in water quality (e.g., via sewer overflows)?

To what extent will health monitoring, surveillance, and data collection activities be affected by extreme weather events?

Public Health



# Which 'Adaptation' Questions Does Climate Information Help to Answer?

Is flooding likely to inundate sanitation facilities?

Are higher temperatures likely to increase the risk of hazardous algal blooms?

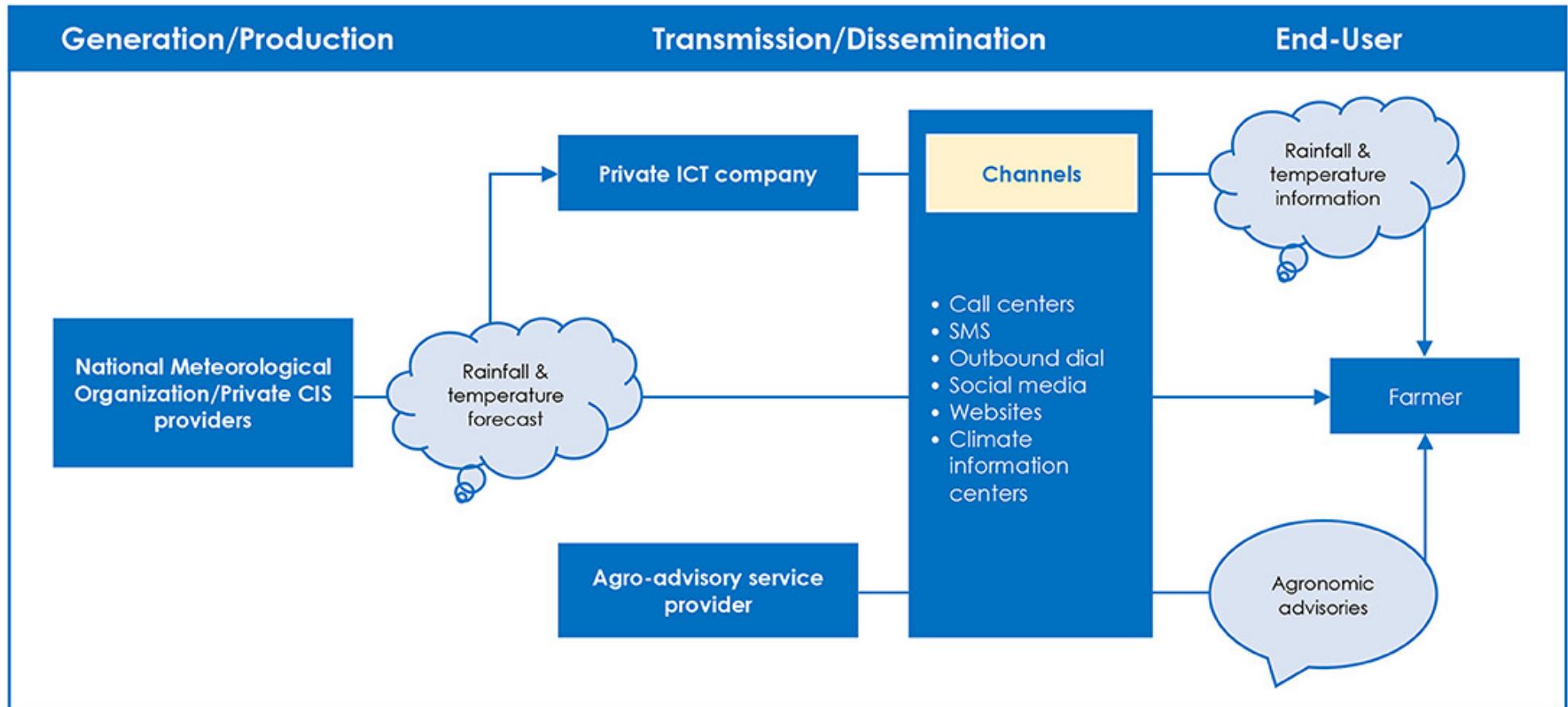
Is prolonged drought likely to increase water treatment costs?

Water & Sanitation



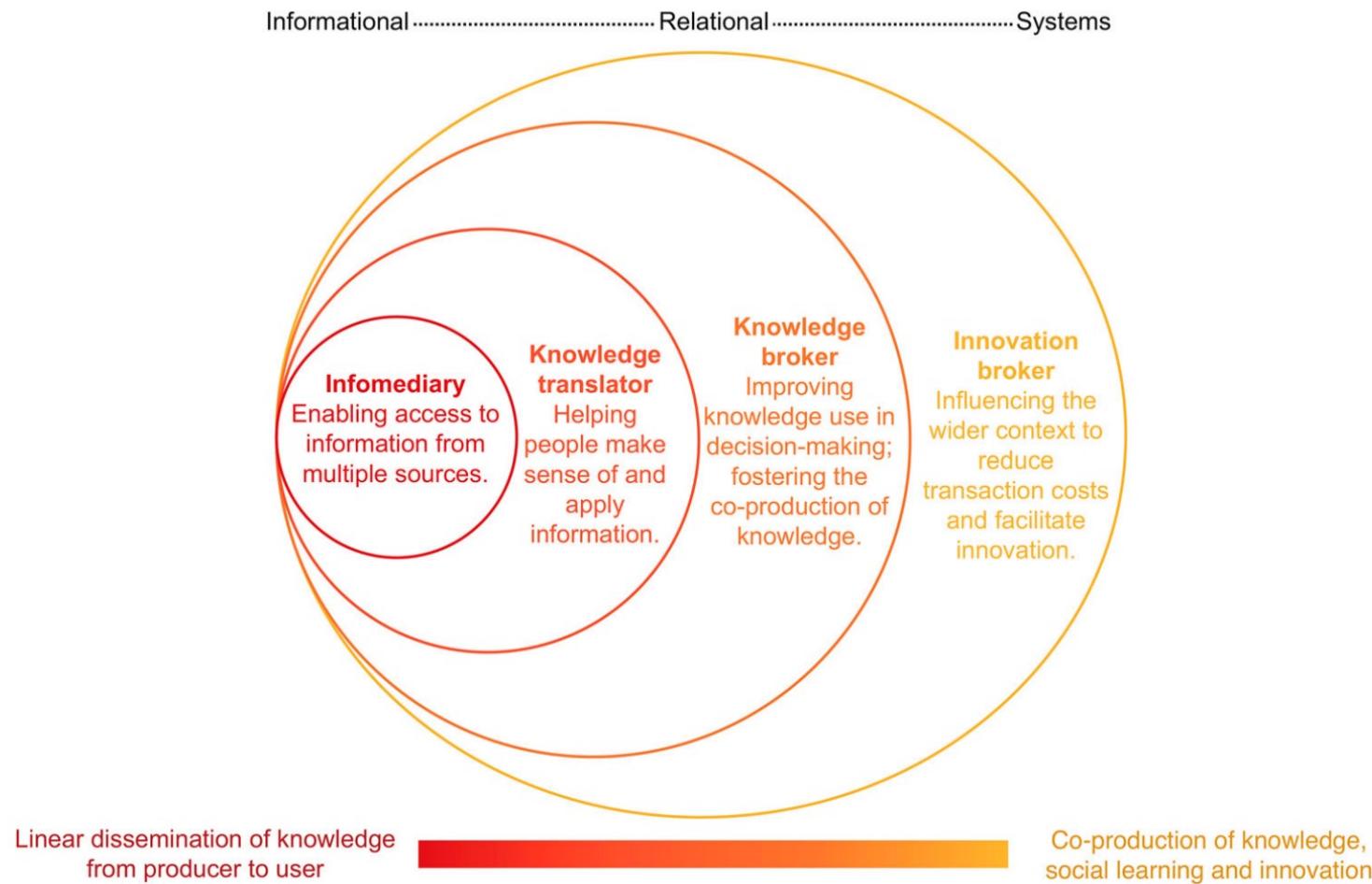
# **Climate Adaptation Knowledge Brokering in Rwanda**

**What Does it Take to Contextualise,  
Make Sense of, Visualise or Prepare  
Climate Information for Usage?**

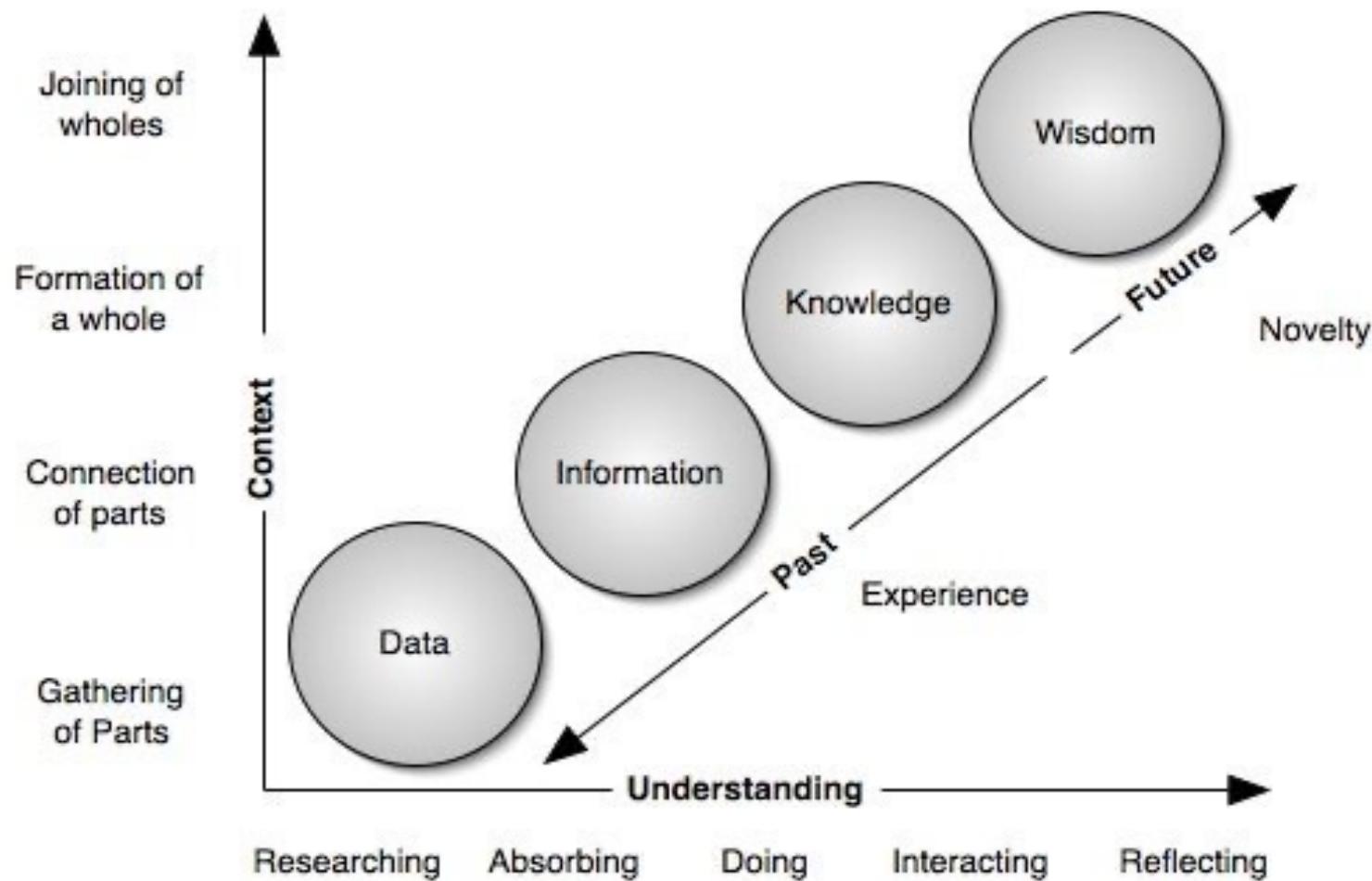


Existing linear model of CIS production in Ghana

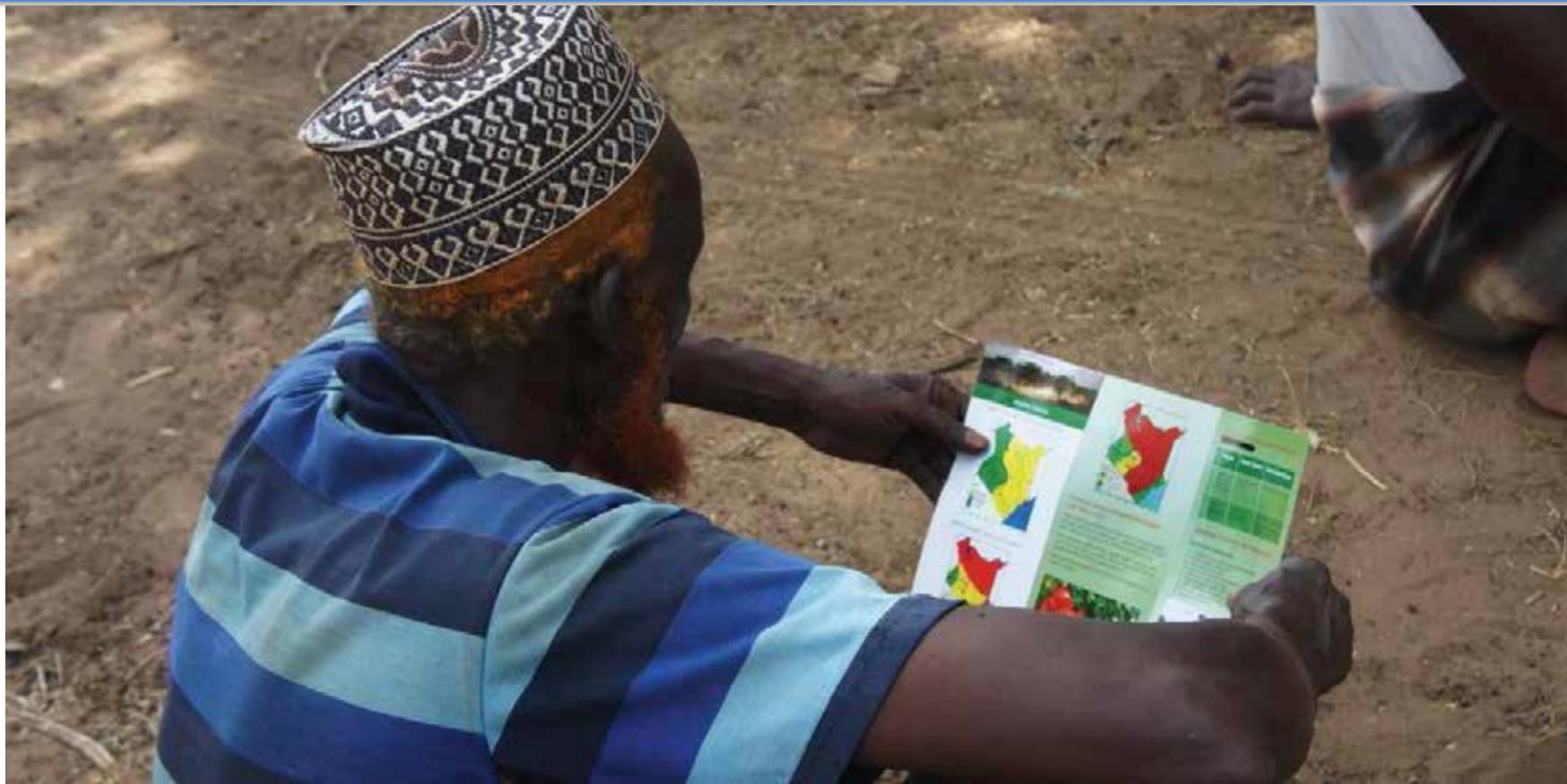
# Knowledge Brokering Spectrum



# Making sense of... climate data & information

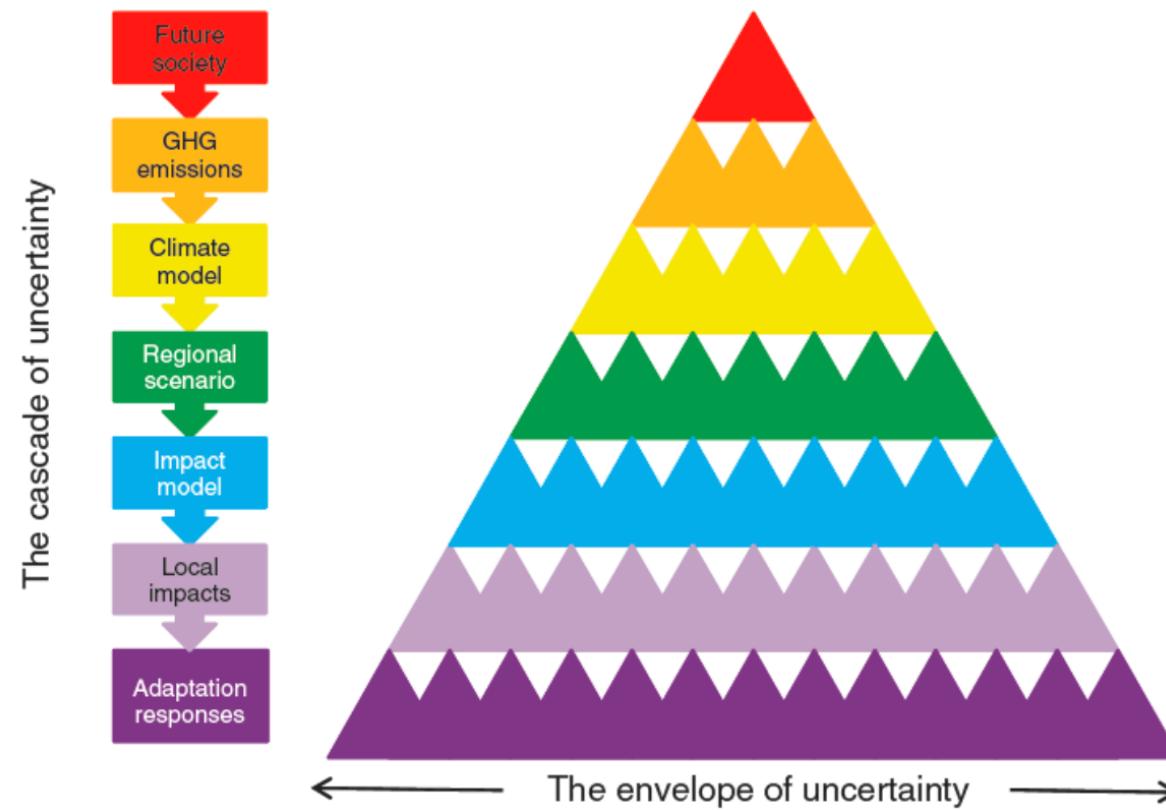


# Making sense of... climate information



**Participatory Scenario Planning for co producing  
user based climate services**

# Interpreting... climate information

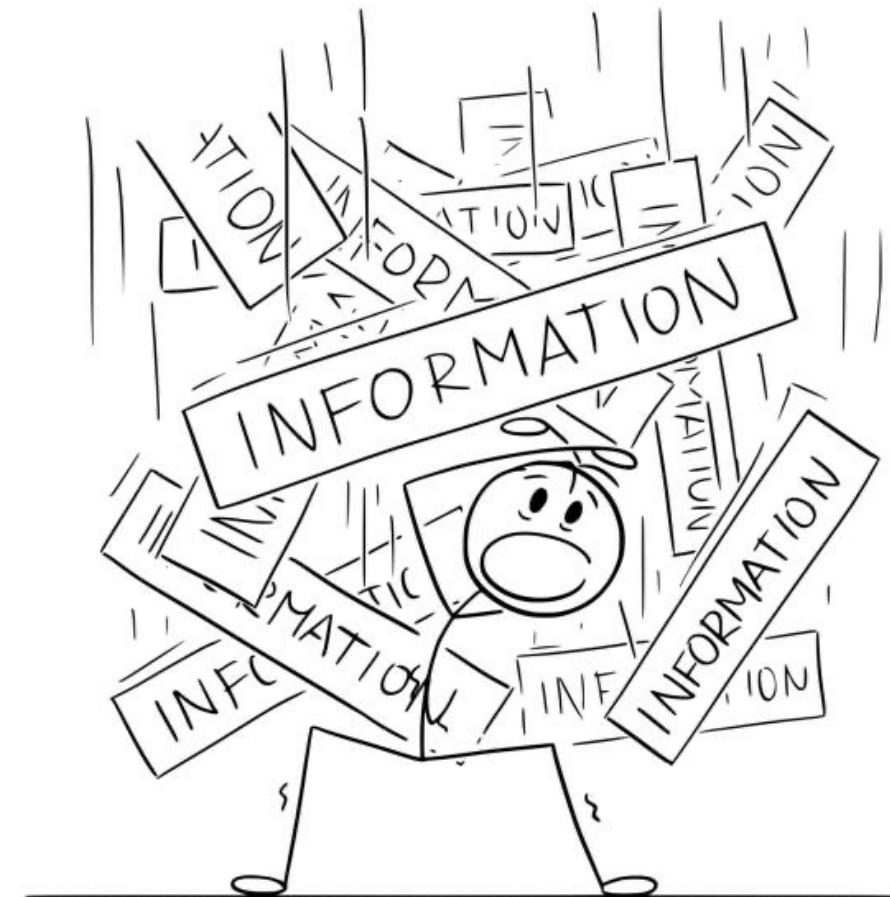
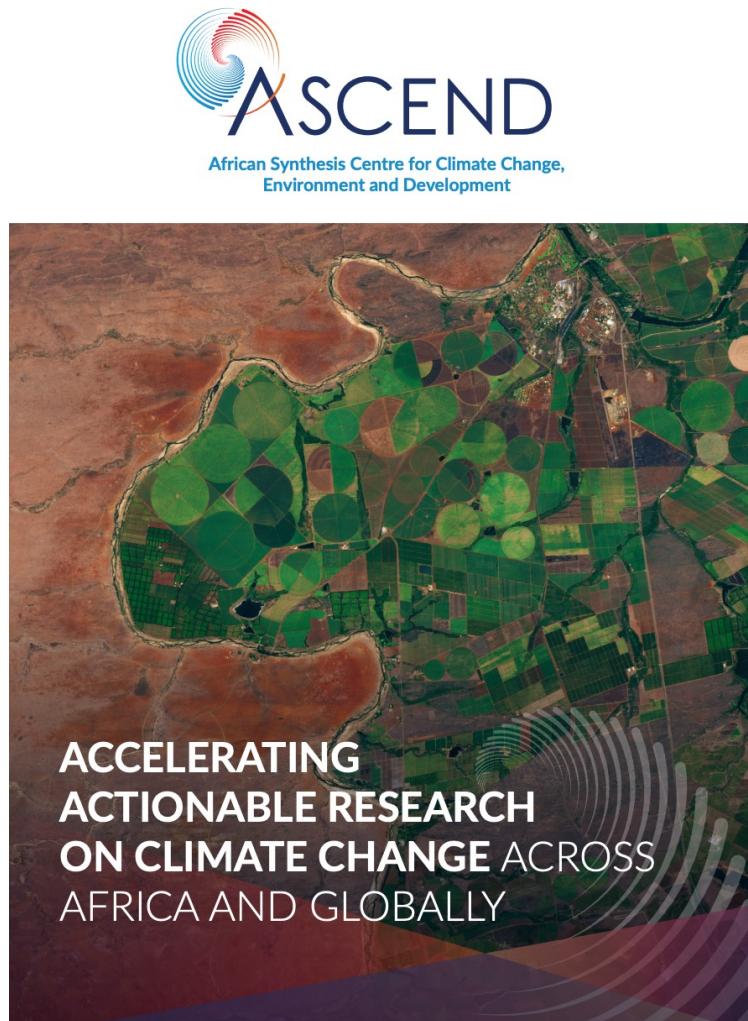


**Figure 1:** The cascade of uncertainty from [Wilby & Dessai \(2010, Weather\)](#), illustrating the growth of the envelope of uncertainty from various sources going from future society to adaptation response.

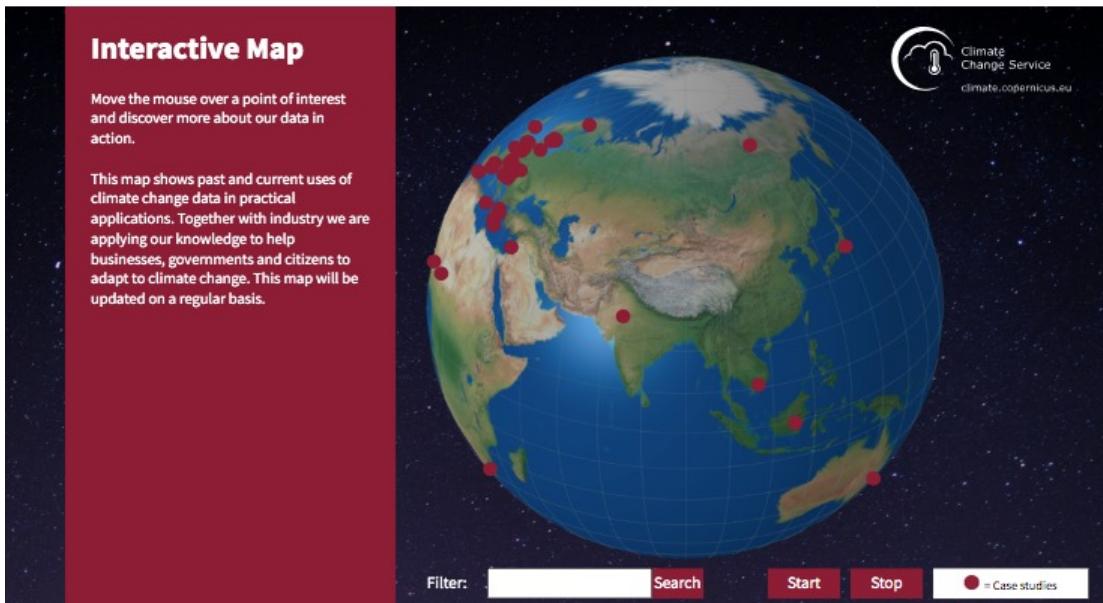
# Selecting ... climate information



# Synthesising ... climate information



# Filtering ... climate information



## Copernicus Climate Change Service (C3S) Case Studies

Climate Toolbox APPLICATIONS ▾ TOOLS ▾ DATA ▾ VIDEOS CASE STUDIES TOOL SUMMARIES GUIDANCE NEWS CONTACT

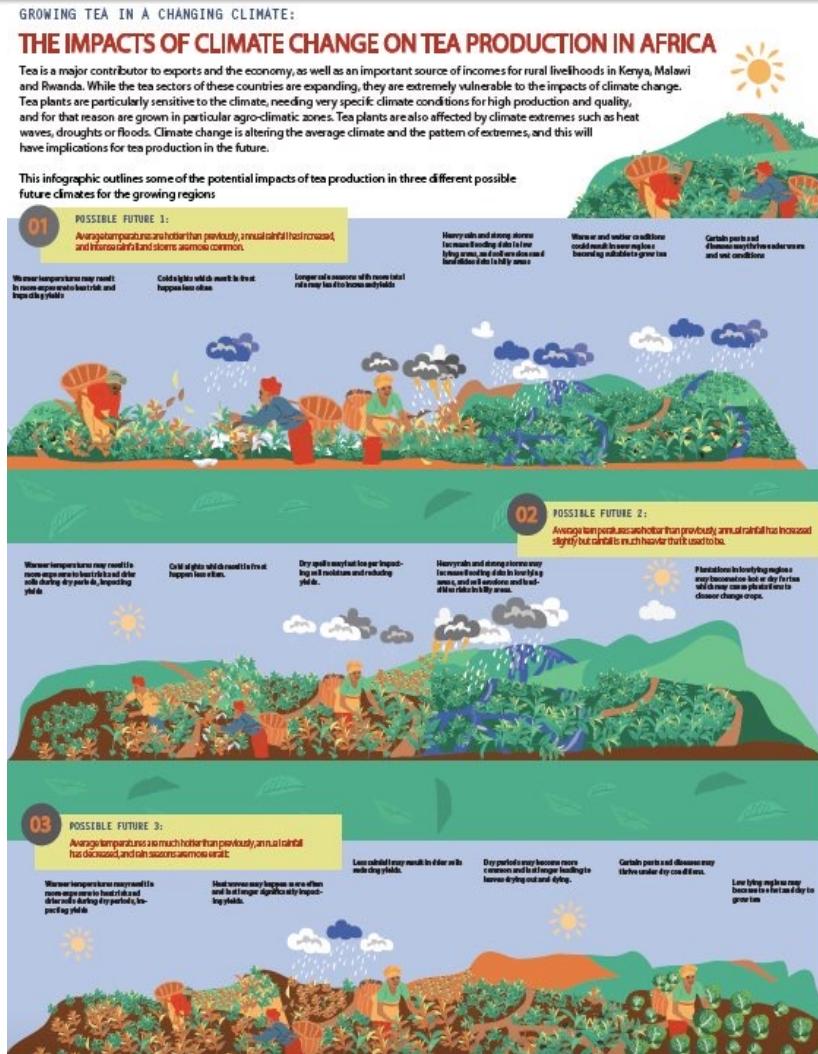
**The Climate Toolbox**  
A collection of web tools for visualizing past and projected climate and hydrology of the contiguous United States.

**Applications**  
A collection of tools for addressing questions relating to Agriculture, Climate, Fire Conditions, and Water.

**Tools**

<b>AGRICULTURE</b> Variable Lookup Find which tools in the Climate Toolbox have a certain variable <a href="#">Launch Tool</a>	<b>CLIMATE</b> Climate Mapper Maps of historical and future climate information across multiple sectors <a href="#">Launch Tool</a>	<b>FIRE</b> Historical Water Watcher Maps of real-time water monitoring over the contiguous US <a href="#">Launch Tool</a>	<b>WATER</b> Historical Climate Tracker Graphs and trend lines of historical climate variability for a location <a href="#">Launch Tool</a>	<b>Historical Drought Stripes</b> Stripes of past short and long term droughts as a timeseries for a location <a href="#">Launch Tool</a>
<b>Historical Climate Scatter</b> Scatterplot graphs of two climate variables for a location <a href="#">Launch Tool</a>	<b>Historical Climograph</b> Climographs of monthly average climate for a location <a href="#">Launch Tool</a>	<b>Historical Seasonal Progression</b> Graphs of daily weather and forecasts for a location <a href="#">Launch Tool</a>	<b>Historical Climate Dashboard</b> Dashboard of real-time climate for a location <a href="#">Launch Tool</a>	<b>Seasonal Forecast Graphs</b> Graphs of seasonal climate forecasts and statistics for a location <a href="#">Launch Tool</a>

# Visualising ... climate information



Infographic:  
**The Impacts Of Climate Change On Tea Production In Africa (FCFA)**

# Simplify → annotate → visualise ... climate information



## Climate Change and Cities

Cities Alliance  
Cities Without Slums

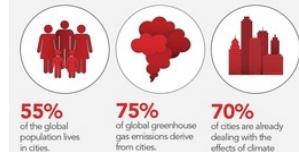
Hosted by: @UNOPS

### Cities and Resilience

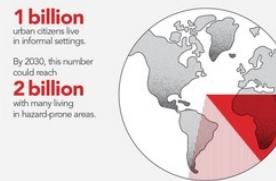
Together, we need to build sustainable cities by strengthening urban ecosystems, promoting investment in local resilience efforts, and advocating for people-centred approaches.



### Cities Are the Cause and the Solution



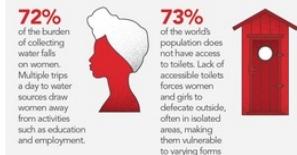
### Informality



### Vulnerable Informal Economies



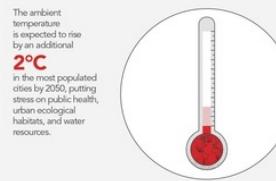
### Women and Water



### The Opportunities



### Cities Are Heating Up



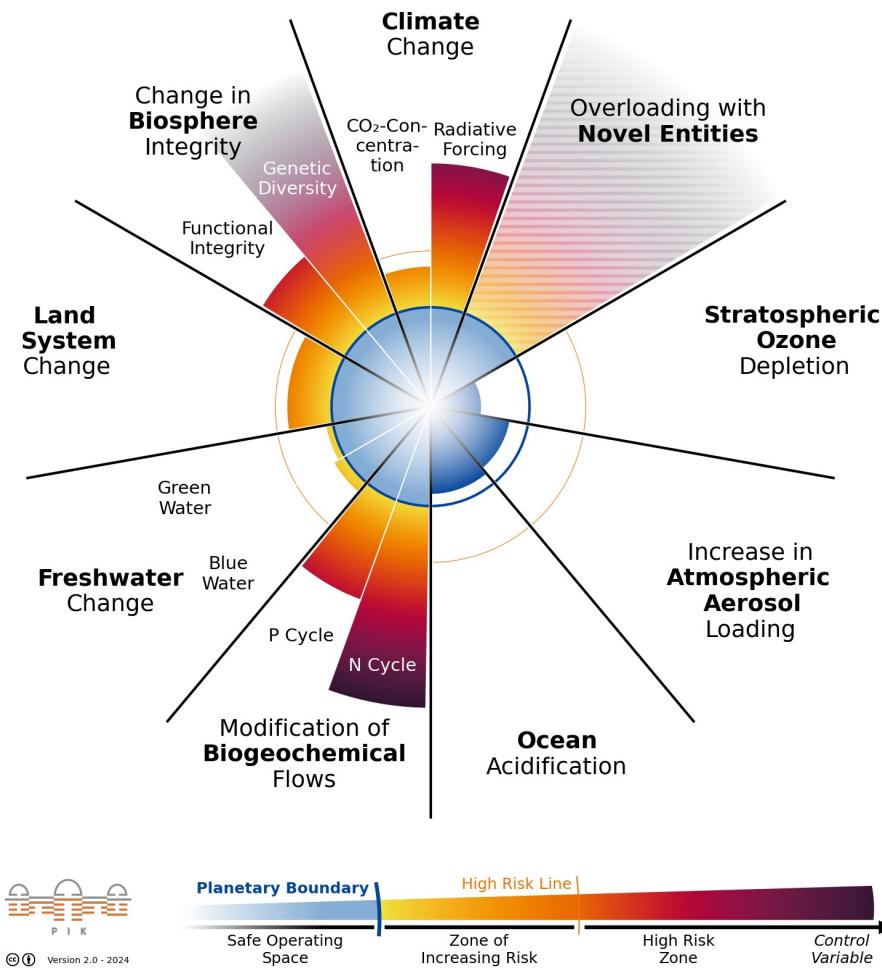
### Water Scarcity



### Sea Level Rise

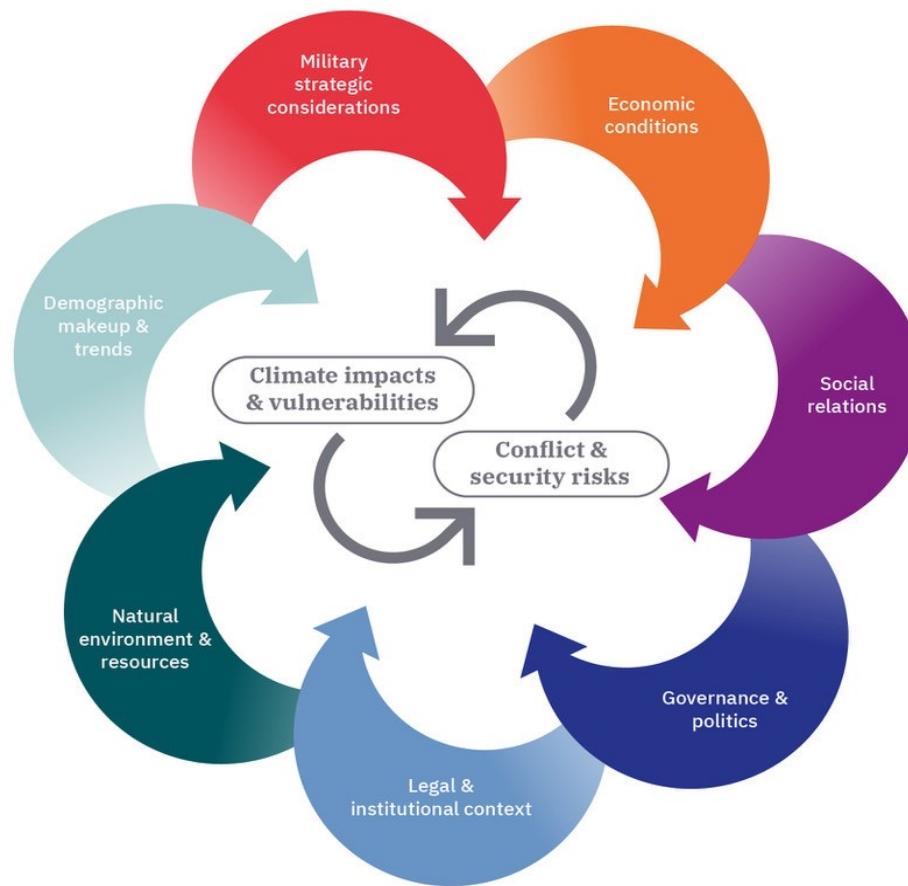


# Simplify → annotate → visualise ... climate information



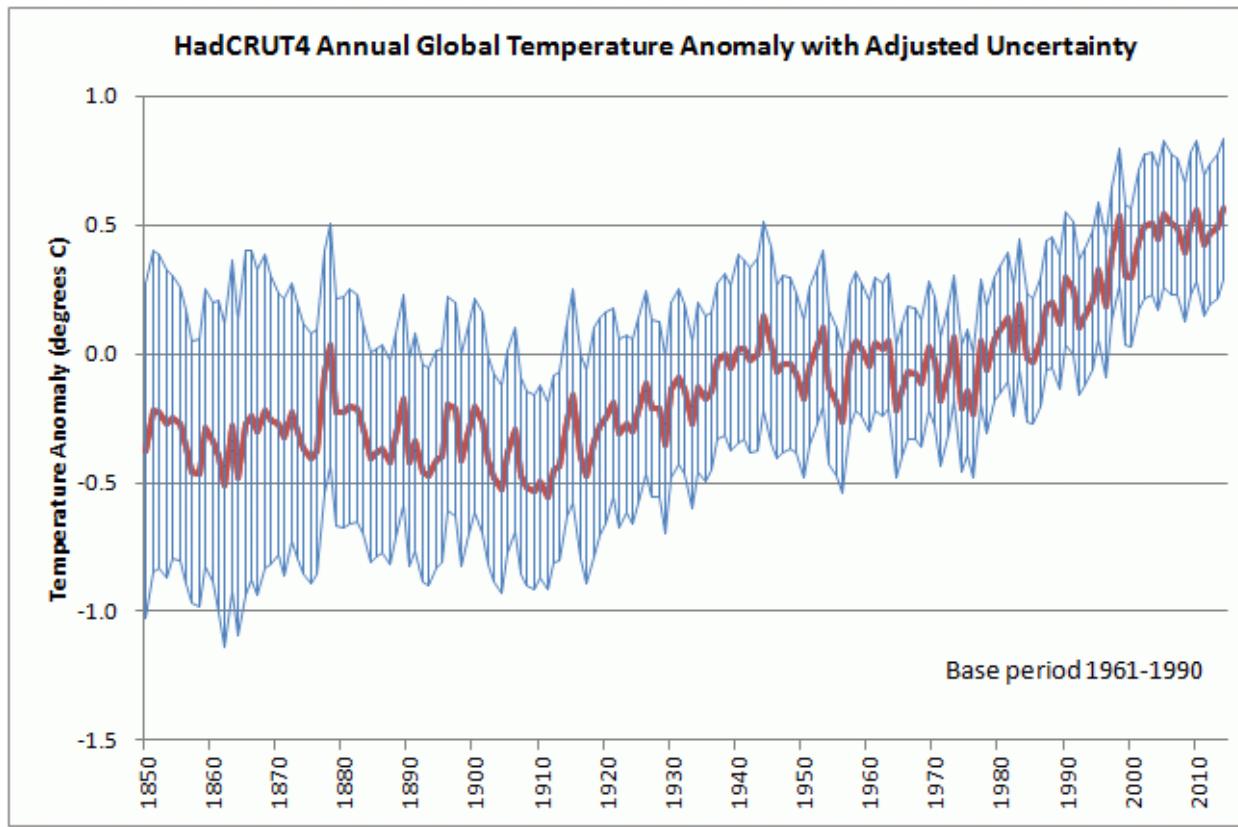
## Colourblind-friendly visualization

# Contextualizing ... climate information

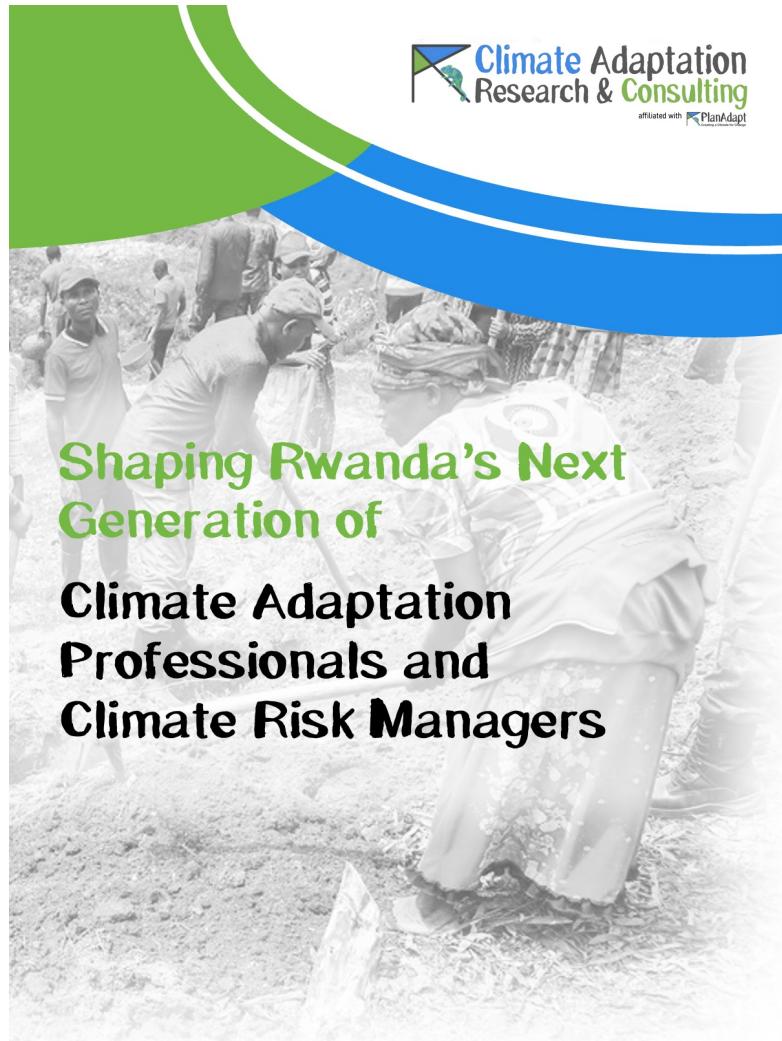


Context factors shape climate-security dynamics (Detges and Foong, 2023)

# Communicating ... climate information



uncertainty or confidence intervals



## Shaping Rwanda's Next Generation of Climate Adaptation Professionals and Climate Risk Managers

Climate Adaptation Research & Consulting Rwanda  
a PlanAdapt Affiliate



Please contact us at [info-carc@plan-adapt.org](mailto:info-carc@plan-adapt.org)

### Our Expertise



Framing the Decision Context, Engaging Stakeholders



Assessing, Valuating and Making Sense of Climate Risk



Shaping Planning and Business Processes



Monitoring, Evaluating and Learning From Adaptation Action



Knowledge Brokering, Bridging between Theory and Practice



GOOD PRACTICES FOR ADAPTATION ACTION RESEARCH

Researching New Frontiers for Effective Implementation



Training, Building Capacity, Shaping Mindsets



Assessing Financing Options and Mobilising Resources



Designing and Delivering Impactful Climate Services

### Climate Risk Can Be Managed!

Homegrown solutions by Rwandan climate adaptation knowledge brokers for Rwandans that struggle with the negative impacts of climate change and climate injustice

Based at Westerwelle Startup Haus Kigali  
4th floor Fairview Building KG 622 Street  
Rugando Kimihurura  
Kigali, Rwanda  
[www.plan-adapt.org/rwanda](http://www.plan-adapt.org/rwanda)

Organically growing and embedded in a global network of climate adaptation experts under the roof of PlanAdapt

Building and sustaining climate adaptation capacity and competencies in Rwanda!