CLIMATE CHANGE ADAPTATION AND RESILIENT DEVELOPMENT PATHWAY

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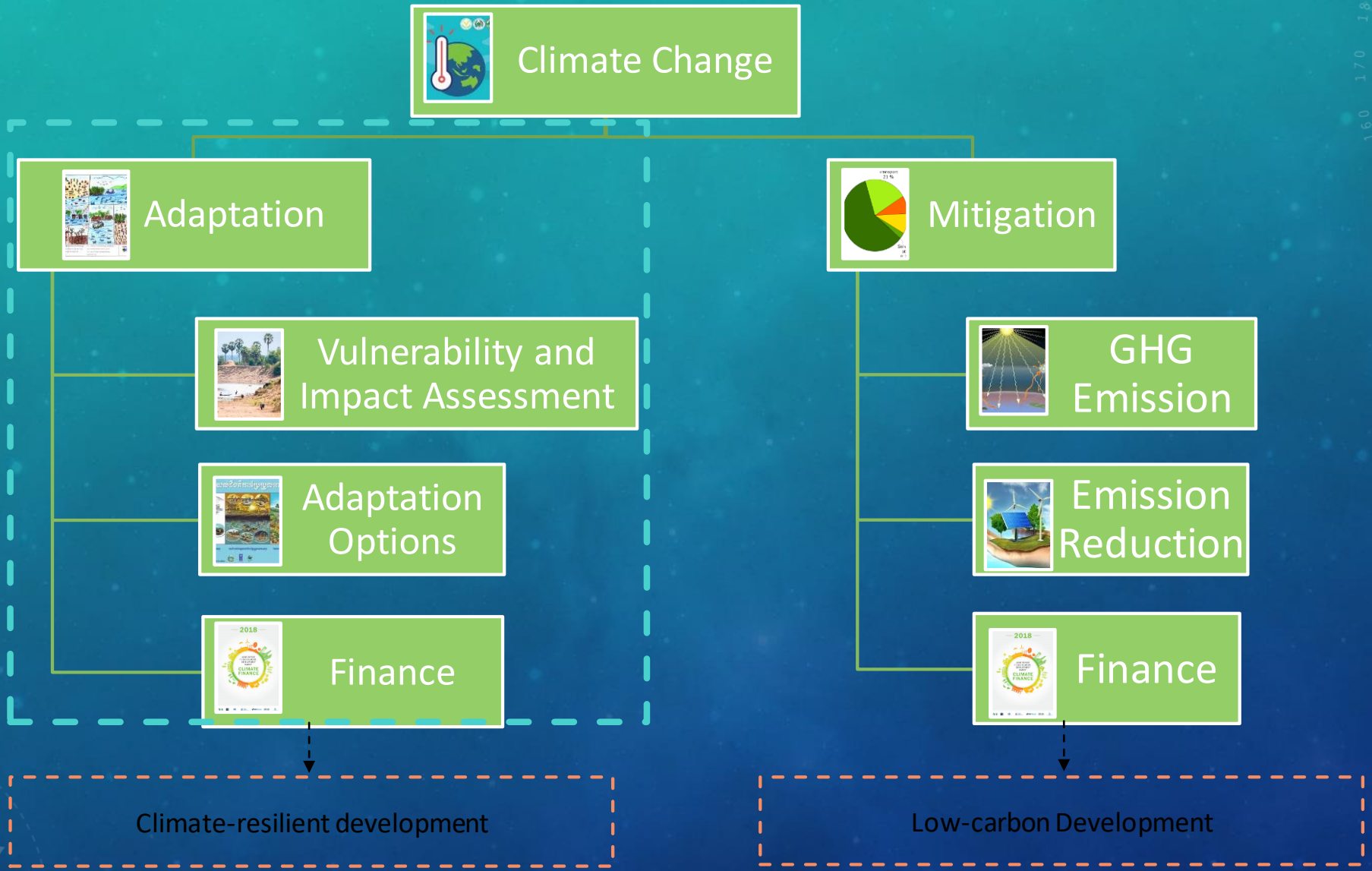
CAMBODIA CLIMATE CHANGE ALLIANCE

CONTENT

- Introduction
- Basic science of climate change
- Why do we need to adapt?
- Group discussion
- Sectoral Impact
- Adaptation options
- Resilient development pathway
- Exercise

GCF AND CLIMATE CHANGE



INTRODUCTION

- What is climate change adaptation?

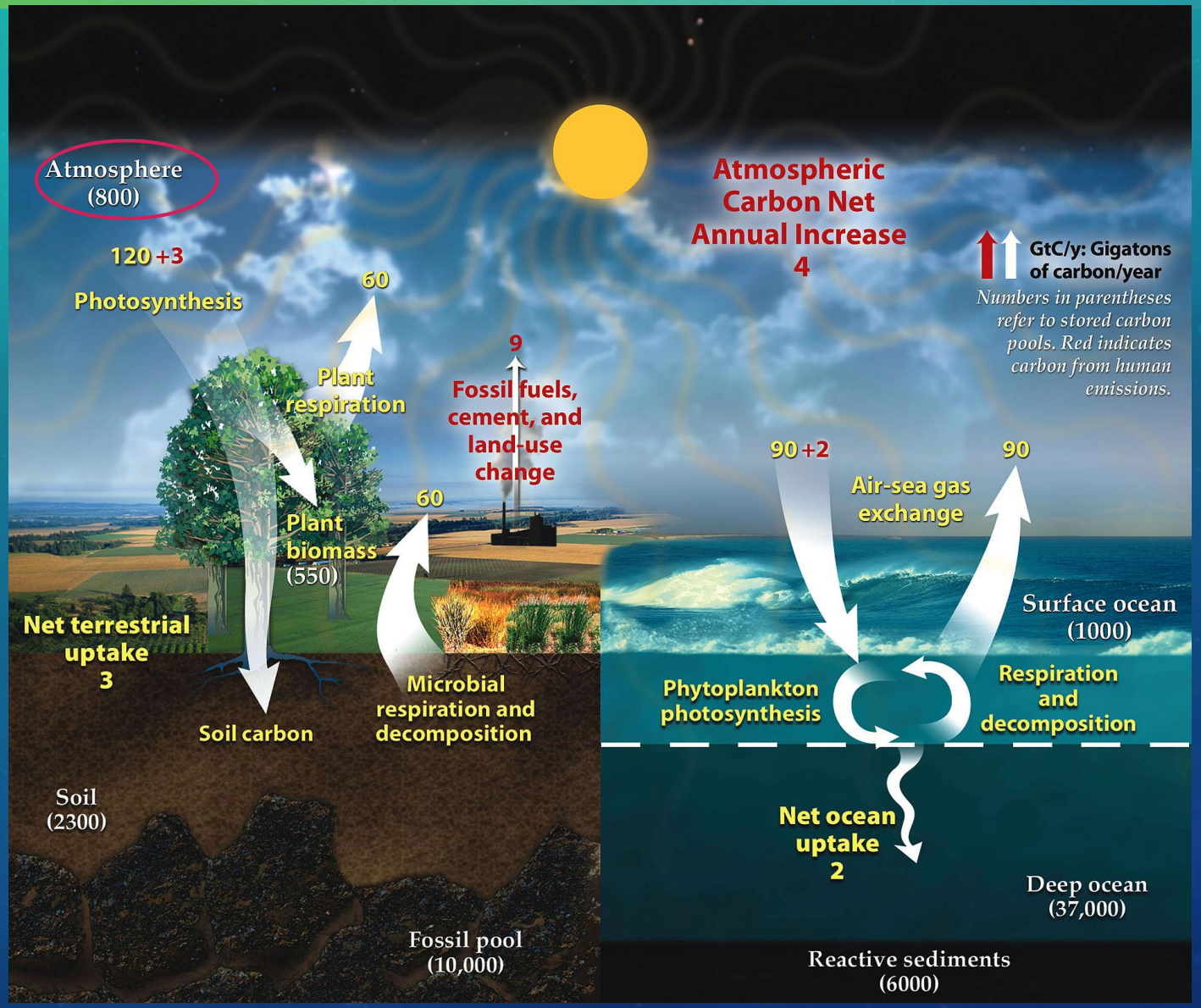
INTRODUCTION

- IPCC: Adaptation is adjustment in ecological, social, or economic systems in response to actual or expected climatic stimuli and their effects or impacts.

INTRODUCTION

- Please give example from your own strategies to adapt to climate change

BASIC SCIENCE OF CLIMATE CHANGE: CARBON CYCLE



BASIC SCIENCE OF CLIMATE CHANGE: CORRELATION BETWEEN CO_2 AND TEMPERATURE

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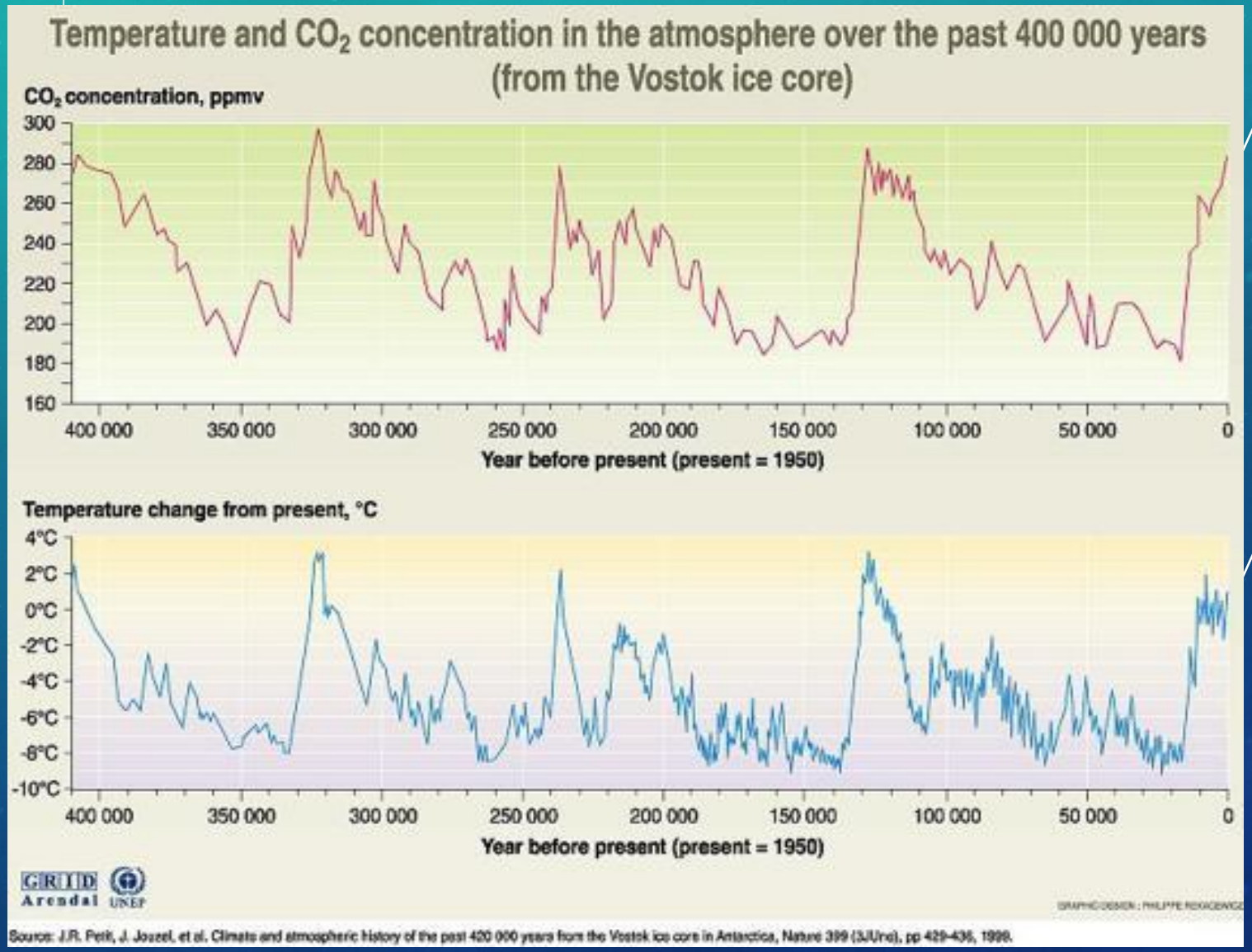

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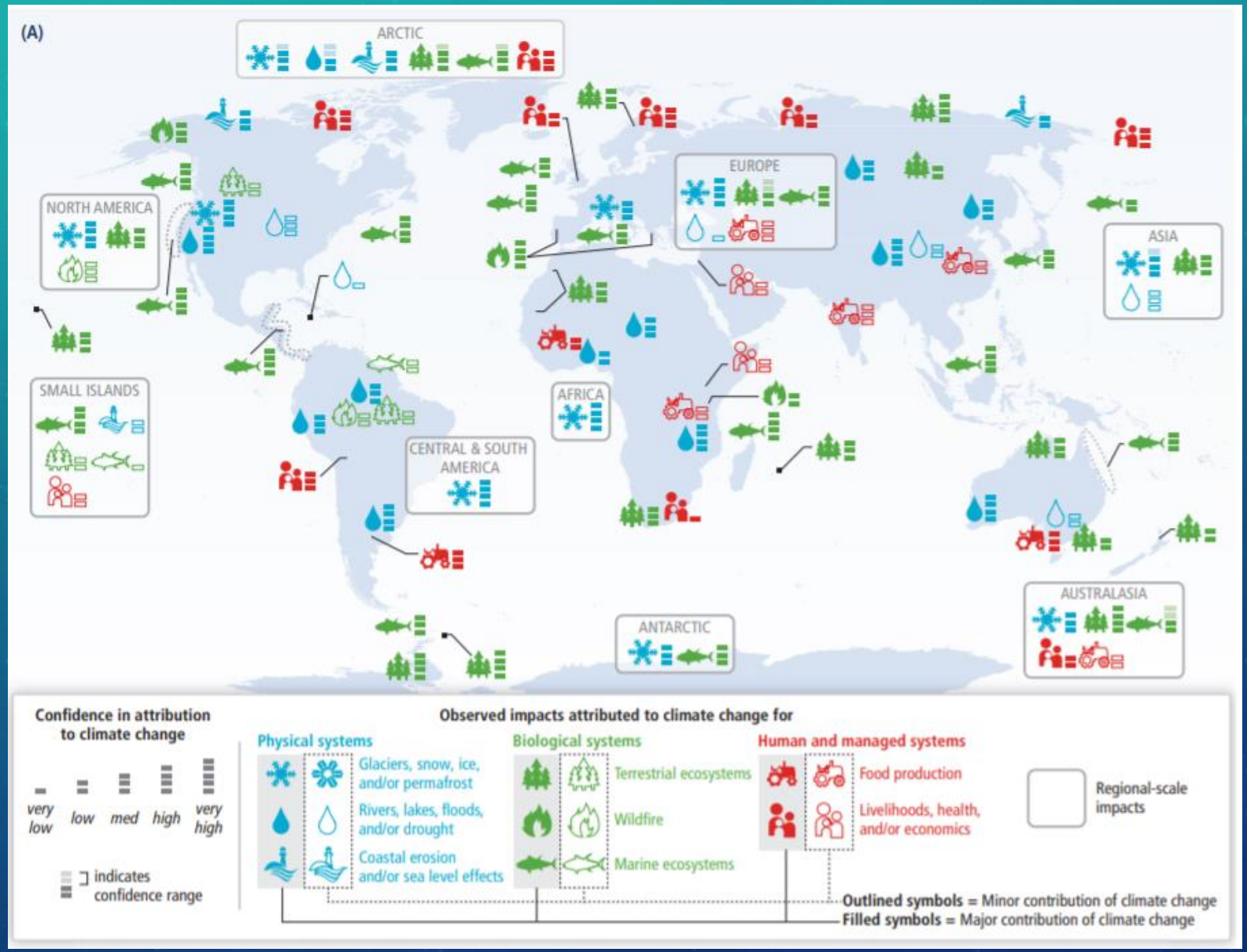
BASIC SCIENCE OF CLIMATE CHANGE



Source: IPCC, AR5

BASIC SCIENCE OF CLIMATE CHANGE

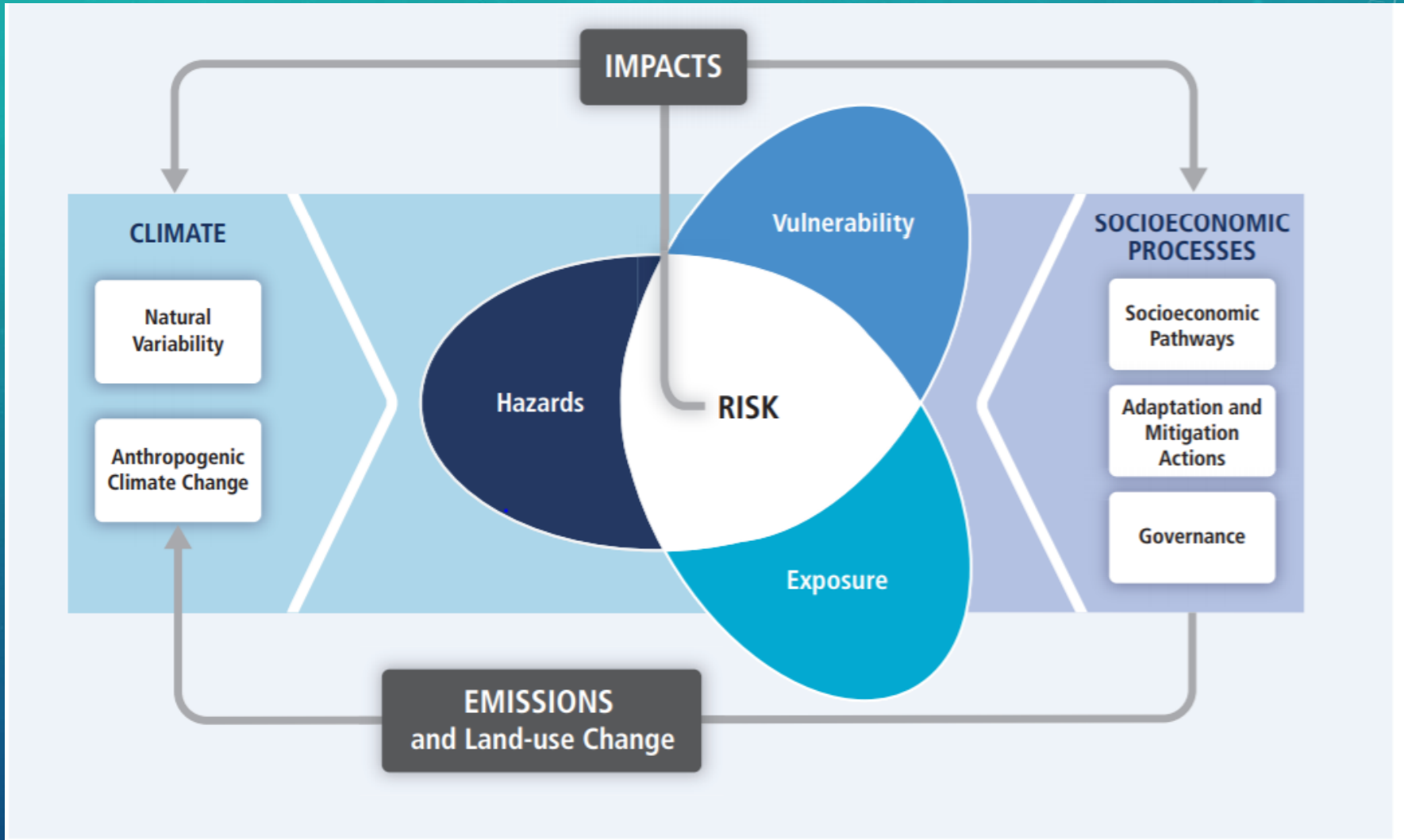
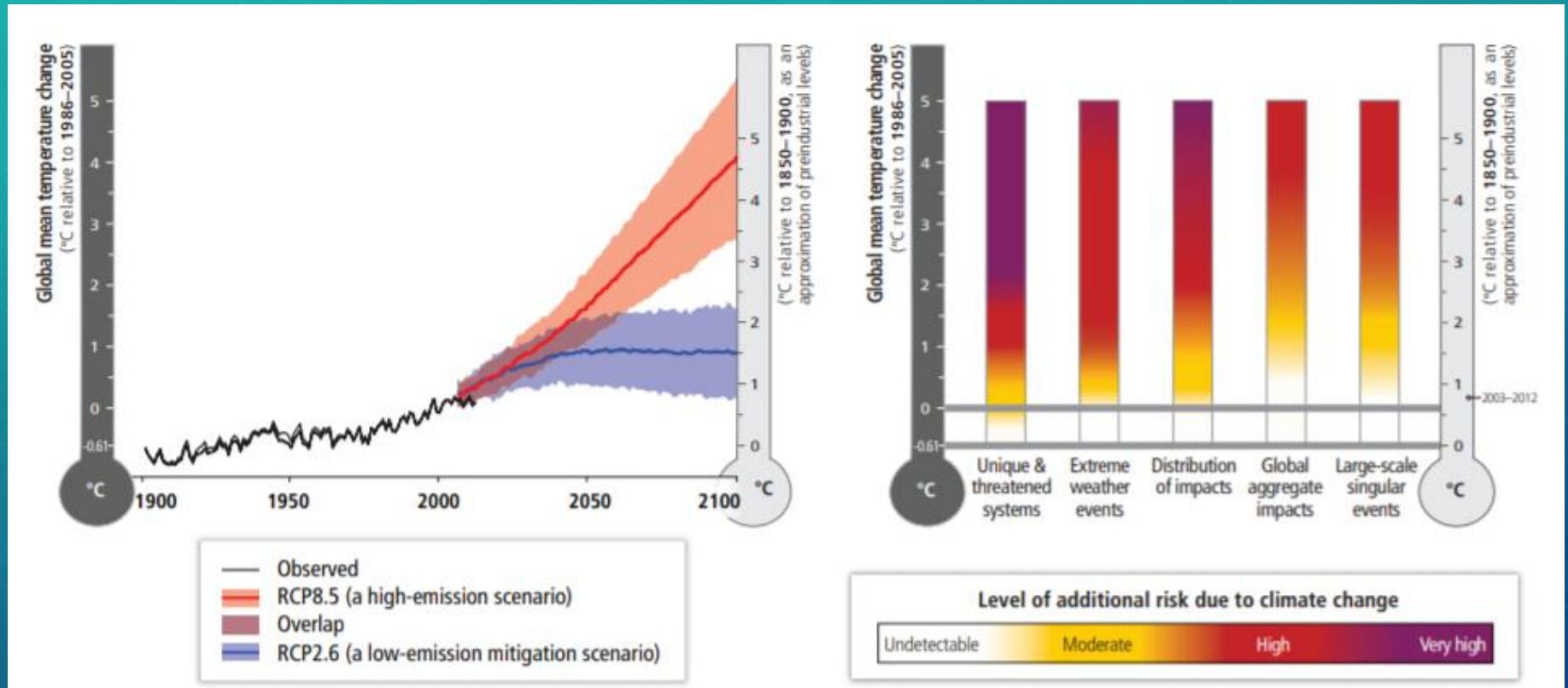


Figure SPM.1 | Illustration of the core concepts of the WGII AR5. Risk of climate-related impacts results from the interaction of climate-related hazards (including hazardous events and trends) with the vulnerability and exposure of human and natural systems. Changes in both the climate system (left) and socioeconomic processes including adaptation and mitigation (right) are drivers of hazards, exposure, and vulnerability. [19.2, Figure 19-1]

Source: IPCC, AR5

- Why do we need to adapt?

WHY DO WE NEED TO ADAPT

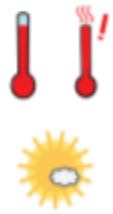


Assessment Box SPM.1 Figure 1 | A global perspective on climate-related risks. Risks associated with reasons for concern are shown at right for increasing levels of climate change. The color shading indicates the additional risk due to climate change when a temperature level is reached and then sustained or exceeded. Undetectable risk (white) indicates no associated impacts are detectable and attributable to climate change. Moderate risk (yellow) indicates that associated impacts are both detectable and attributable to climate change with at least *medium confidence*, also accounting for the other specific criteria for key risks. High risk (red) indicates severe and widespread impacts, also accounting for the other specific criteria for key risks. Purple, introduced in this assessment, shows that very high risk is indicated by all specific criteria for key risks. [Figure 19-4] For reference, past and projected global annual average surface temperature is shown at left, as in Figure SPM.4. [Figure RC-1, Box CC-RC; WGI AR5 Figures SPM.1 and SPM.7] Based on the longest global surface temperature dataset available, the observed change between the average of the period 1850–1900 and of the AR5 reference period (1986–2005) is 0.61°C (5–95% confidence interval: 0.55 to 0.67°C) [WGI AR5 SPM, 2.4], which is used here as an approximation of the change in global mean surface temperature since preindustrial times, referred to as the period before 1750. [WGI and WGII AR5 glossaries]

Source: IPCC, AR5

WHY DO WE NEED TO ADAPT

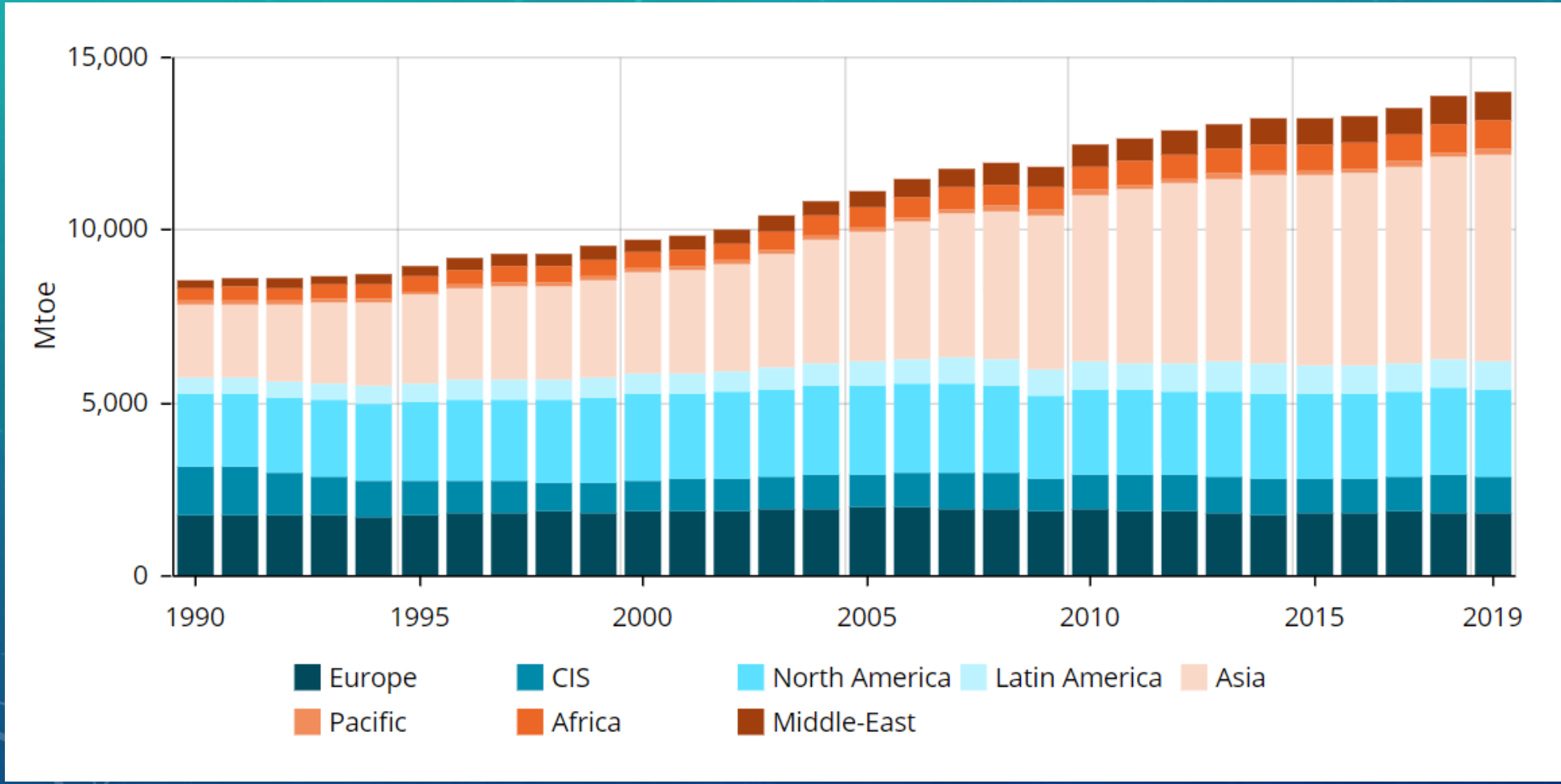
Asia

Key risk	Adaptation issues & prospects	Climatic drivers	Timeframe	Risk & potential for adaptation
Increased riverine, coastal, and urban flooding leading to widespread damage to infrastructure, livelihoods, and settlements in Asia (*medium confidence*) [24.4]	• Exposure reduction via structural and non-structural measures, effective land-use planning, and selective relocation • Reduction in the vulnerability of lifeline infrastructure and services (e.g., water, energy, waste management, food, biomass, mobility, local ecosystems, telecommunications) • Construction of monitoring and early warning systems; Measures to identify exposed areas, assist vulnerable areas and households, and diversify livelihoods • Economic diversification		Present Near term (2030–2040) Long term (2080–2100) 2°C 4°C	Very low / Medium / Very high
Increased risk of heat-related mortality (*high confidence*) [24.4]	• Heat health warning systems • Urban planning to reduce heat islands; Improvement of the built environment; Development of sustainable cities • New work practices to avoid heat stress among outdoor workers		Present Near term (2030–2040) Long term (2080–2100) 2°C 4°C	Very low / Medium / Very high
Increased risk of drought-related water and food shortage causing malnutrition (*high confidence*) [24.4]	• Disaster preparedness including early-warning systems and local coping strategies • Adaptive/integrated water resource management • Water infrastructure and reservoir development • Diversification of water sources including water re-use • More efficient use of water (e.g., improved agricultural practices, irrigation management, and resilient agriculture)		Present Near term (2030–2040) Long term (2080–2100) 2°C 4°C	Very low / Medium / Very high

Source: IPCC, AR5

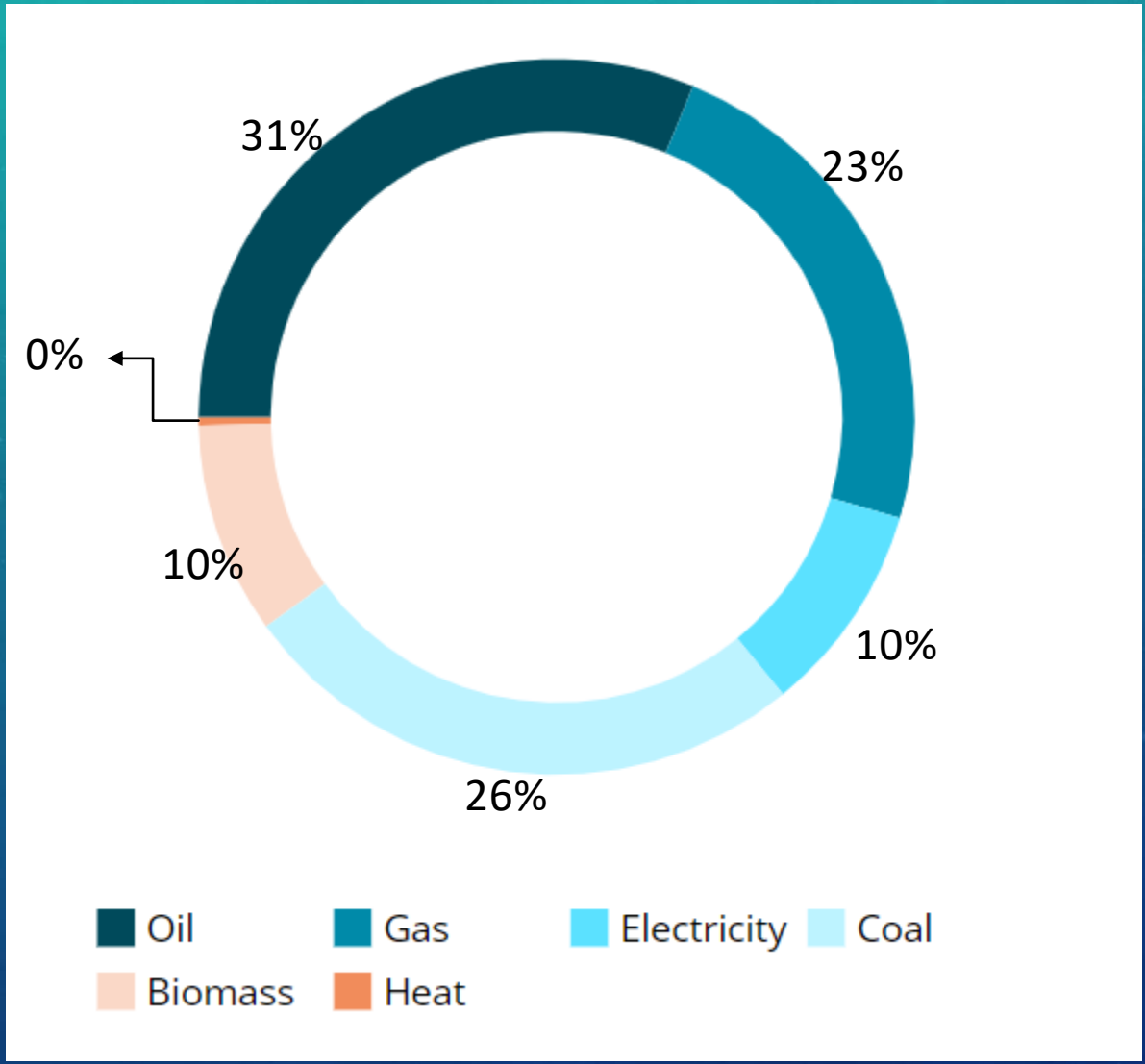
WHY DO WE NEED TO ADAPT:

Total Energy Consumption



Source: IPCC, Global Energy Statistical Yearbook 2020

WHY DO WE NEED TO ADAPT: TOTAL ENERGY CONSUMPTION



Source: IPCC, Global Energy Statistical Yearbook 2020

VULNERABILITY

- Which house structure are more vulnerable to storm?

A

B

VULNERABILITY

- Why?

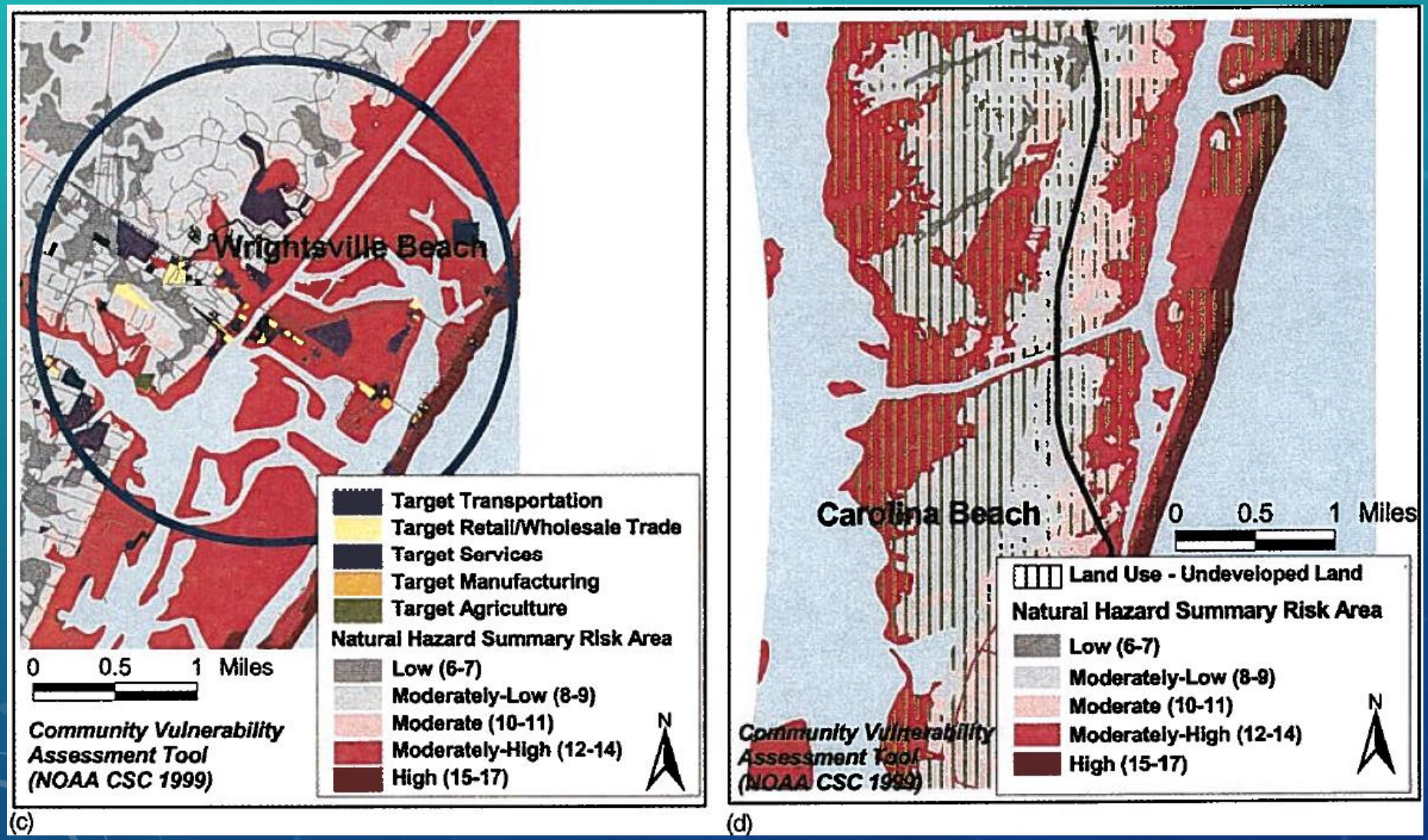
✓ A

B

VULNERABILITY

- How do we know if the area is exposed to the storm? How often it has been occurred? What would be the future condition?

VULNERABILITY



- Community Vulnerability Assessment Tool Methodology by Lisa et al, 2002

IMPACT

IMPACT

- How many houses have been destroyed by the storm? How much has it cost?
- How many family/population affected?

GROUP DISCUSSION

- Identify the impacts of climate change in your country or area (your project idea) and provide the reference/evidence to support your argument with specific location and type of climate hazards (flood, storm, drought, landslide, thunders etc…).

REFERENCE:

- ncsd.moe.gov.kh→ data portal, resources
- sciencedirect.com
- researchgate.com

Baseline data?

- Future condition?

SECTORAL IMPACT

- IPCC-AR5
  - -Freshwater resources
  - -Terrestrial and inland water systems
  - -Coastal systems and low-lying areas
  - -Ocean systems
  - -Food security and food production systems
  - -Urban areas
  - -Rural areas
  - -Key economic sector and services
  - -Human health
  - -Human Security
  - -Livelihood and poverty

ADAPTATION OPTION

-Structural/physical: engineered and built environment, technological, ecosystem-based, services

-Social: educational, informational, behavioral

-Institutional: economic, law and regulations, government policies and programs

ADAPTATION OPTIONS

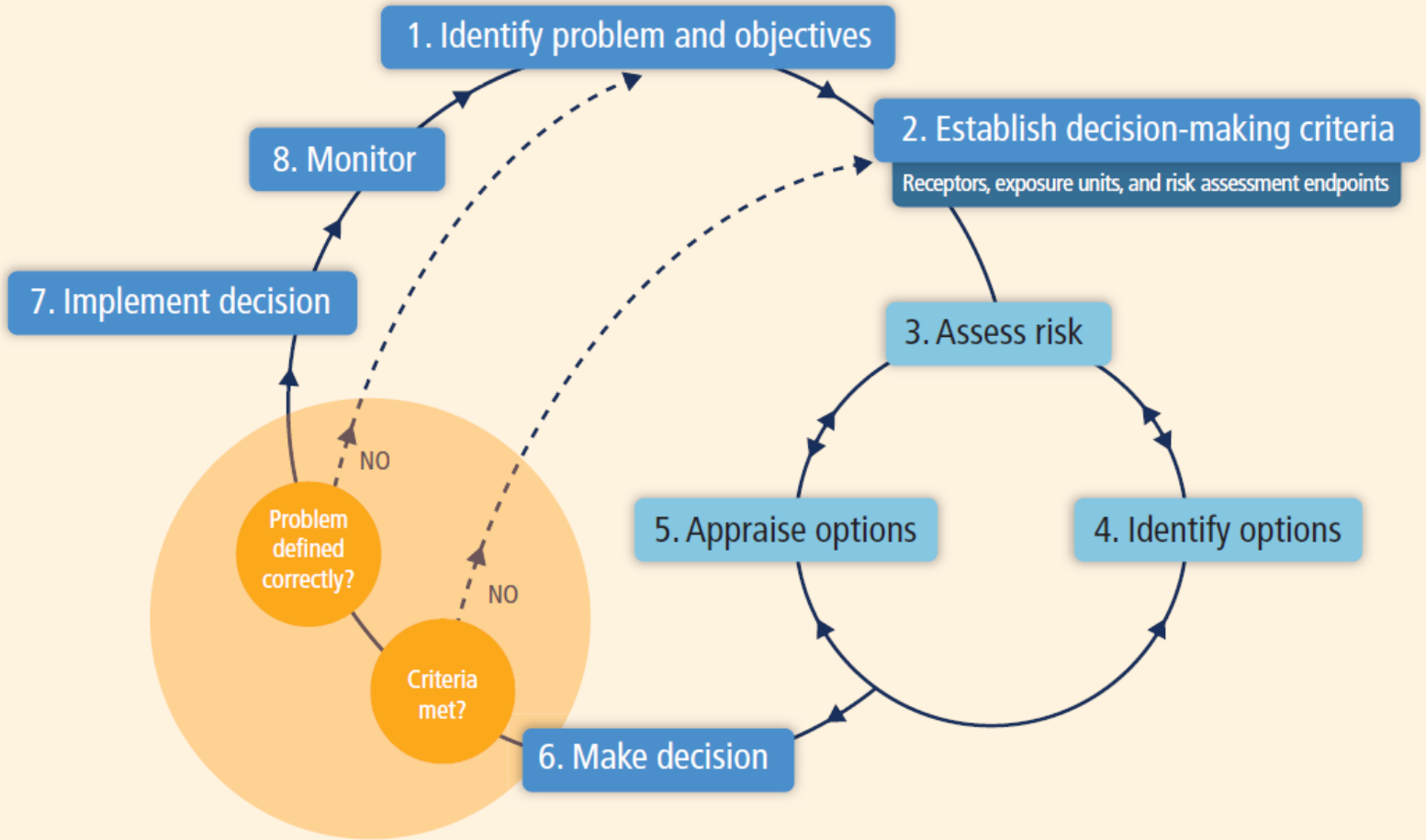


Figure 14-2 | A generic framework for vulnerability and adaptation assessments (UKCIP, 2011).

ADAPTATION OPTION

-Avoid maladaptation

-Economic of adaptation

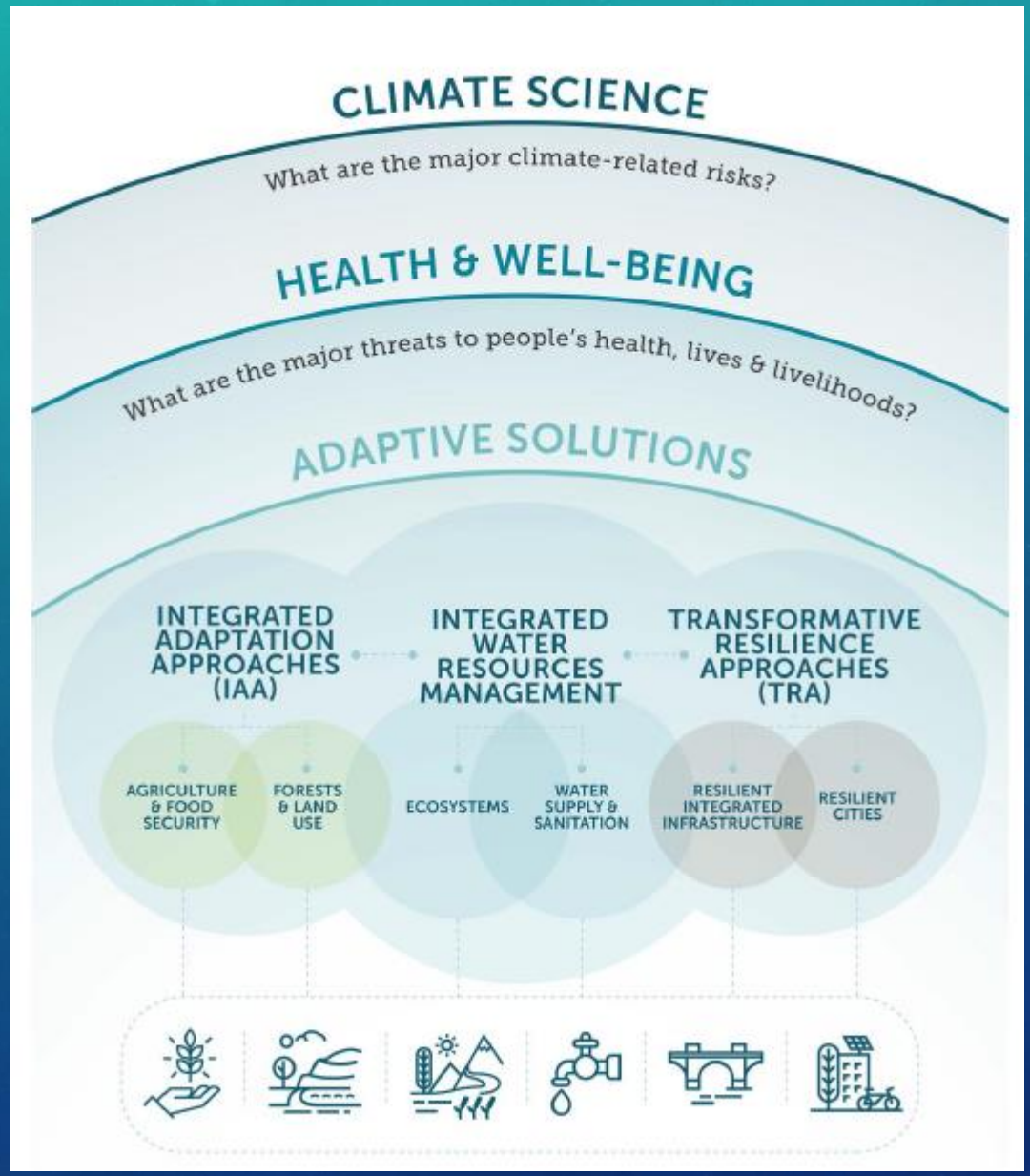
CLIMATE-RESILIENT PATHWAY

-Identify vulnerabilities to climate change impacts

-Assess opportunities for reducing risks

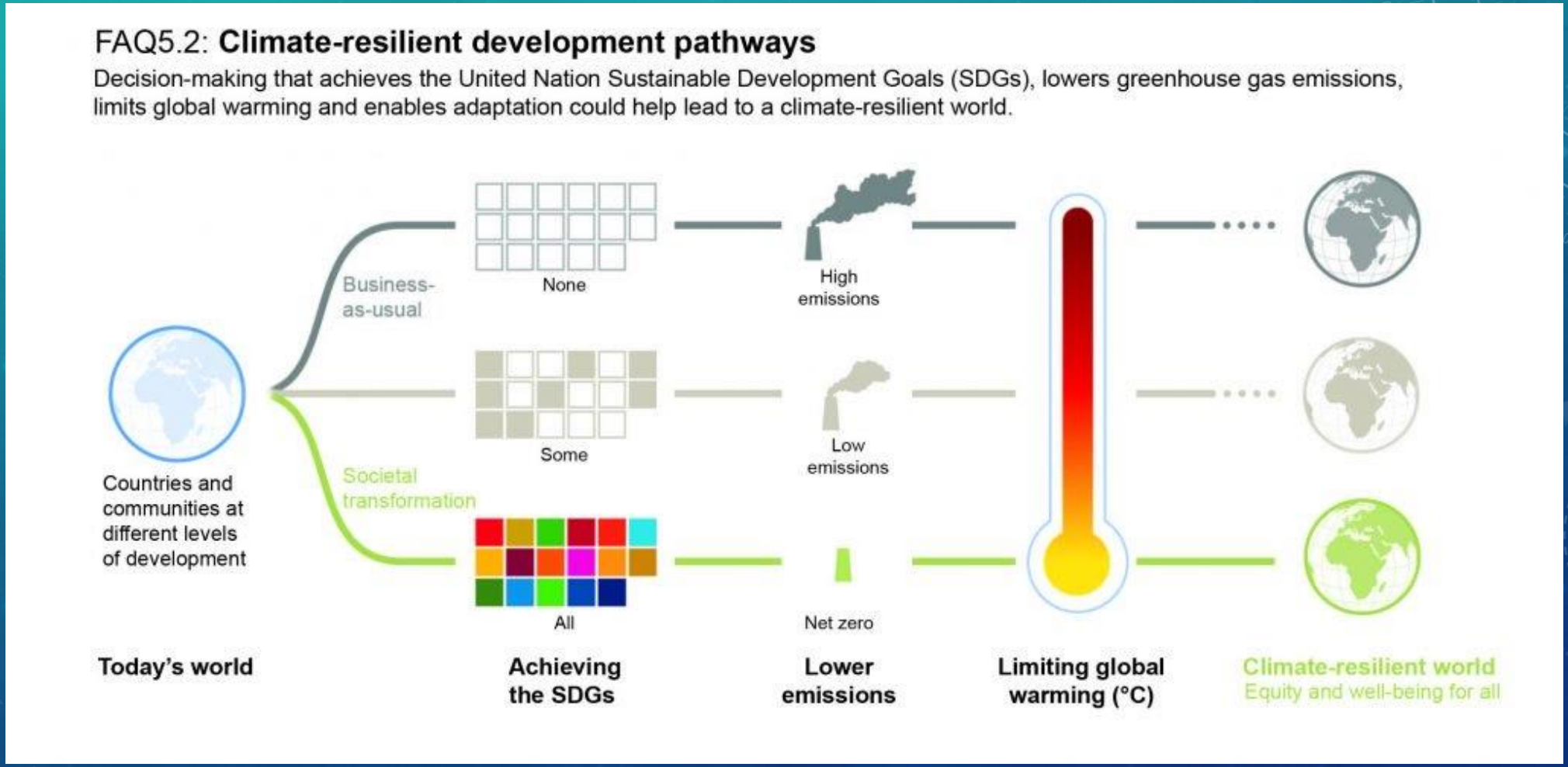
-Take actions that are consistent with the goals of sustainable development

CLIMATE-RESILIENT PATHWAY



Source: GCF Working Paper

CLIMATE-RESILIENT PATHWAY



CLIMATE-RESILIENT PATHWAY

CLIMATE-RESILIENT PATHWAY

- SAP project title: Multi-Hazard Impact-Based Forecasting and Early Warning System (MH-IBF-EWS) for the Philippines

  Paradigm shift object: Increased climate-resilient development

This project will address the urgent need for a more proactive and inclusive climate risk management in the Philippines anchored on a people-centered multi-hazard impact based forecasting and early warning systems (MH-IBF-EWS) for flood, landslide, severe wind and storm surge. A MH-IBF-EWS that is people-centered will increase the availability of, access to, and understanding of early warning, enabling end-users, particularly in the last mile, to reduce their exposure to climate risks, and strengthen their absorptive and adaptive capacities to better manage or adjust to impacts brought about by climate shocks and climate change, and increase capacities to develop long-term climate risk reduction and adaptation measures

CLIMATE-RESILIENT PATHWAY

- The project will thus catalyze a paradigm shift from the traditional weather forecasts to multi-hazard impact-based forecasting and early warning. The project innovation includes combining best available science and local knowledge on probabilistic hazard mapping, modelling and forecasting and risk assessment. Capacity development on climate risk management, including preparedness, forecast-based early actions and financing and response will ensure that impact-based early warning services will be usable down to the last mile. Probabilistic risk assessment, mapping, and technologies will be developed to provide risk information that will inform development policies, investment programs, and resilience plans at national and local levels.

CLIMATE-RESILIENT PATHWAY

- The project will enable timely and actionable warning information to end-users, particularly the communities at-risk. By improving people's understanding of potential impacts of extreme hydrometeorological events, communities can take early mitigating actions and minimize or prevent adverse impacts on lives, livelihoods, property and economy. Improving the EWS through people's meaningful participation and communication, dissemination and information system that supports decision-making and planning by all end-users will redound to a reduction of loss of life and assets, mitigation of anticipated negative impacts of climate-induced hazards before, during and after extreme weather events, and development of a diverse range of proactive and inclusive climate risk management and adaptation strategies.

GROUP WORK

- From the project idea that you select, develop a paragraph which will indicate how your idea will contribute to climate-resilient pathway in sustainable development context.

REFERENCE

- IPCC AR5: Working Group 2 reports
- IPCC global energy statistic year book
- USAID Low Emission Land Use Planning
- GCF: Philippines’s submission for SAP