

# **CLIMATE CHANGE ADAPTATION: ROLE FOR DIGITAL PAYMENTS**

**Dr. Lisa Dale**

**Columbia Climate School**

# OVERVIEW

- Introduction to climate change policy: mitigation & adaptation
- Key terms for adaptation: **hazard, exposure, vulnerability, risk**
- Nationally Determined Contributions & National Adaptation Plans
- How do **digital payments** contribute to improved adaptation outcomes?
- Questions?

# CLIMATE CHANGE POLICY

## MITIGATION

Actions taken to reduce greenhouse gas emissions and slow or reverse the pace of climate change.



*Credit: National Geographic Society*

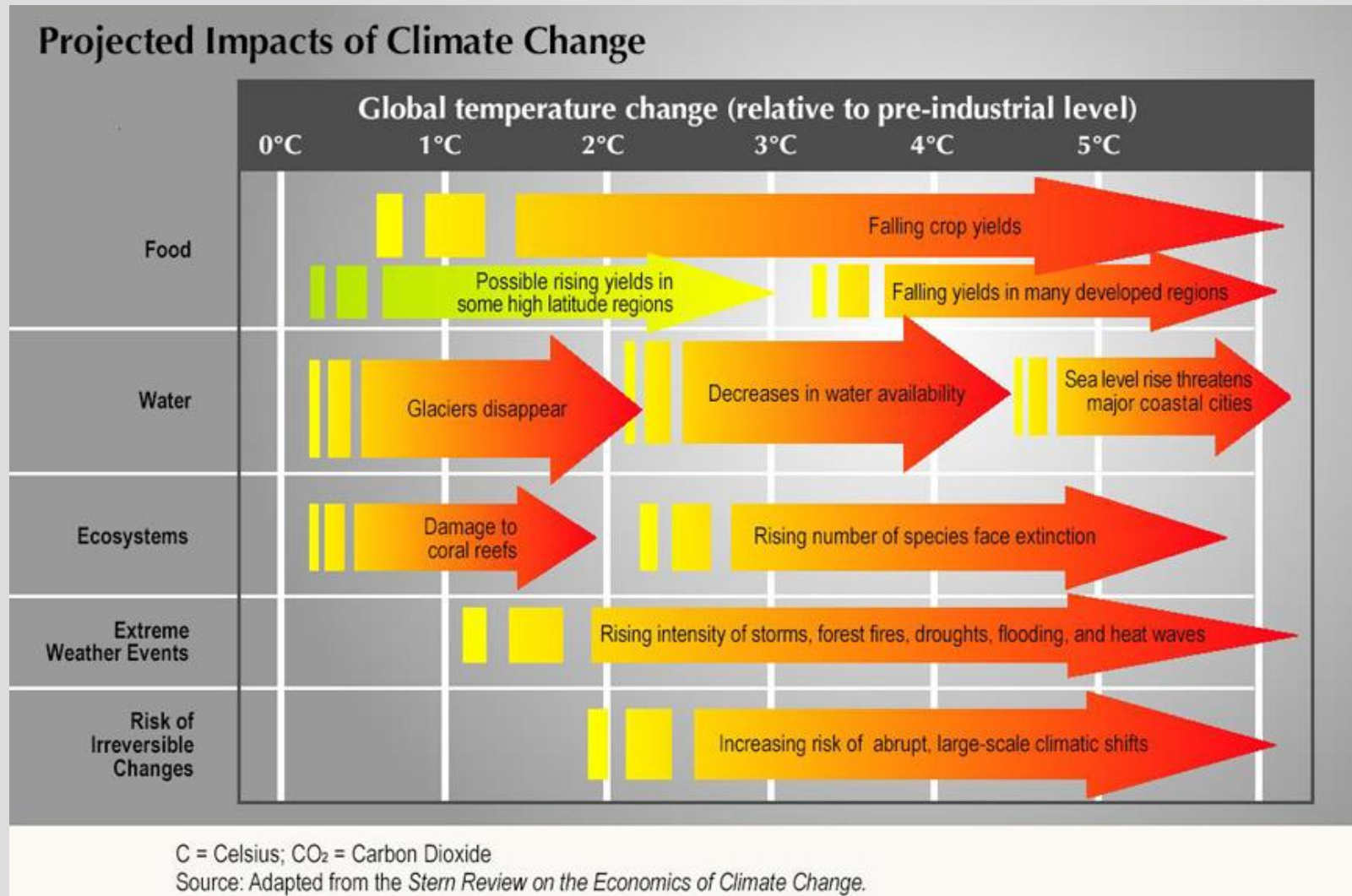
## ADAPTATION

Actions taken to build resilience and respond to current and projected impacts from climate change.



*Credit: NY Post*

# ADAPTING TO WHAT?



# A Calamitous Flood Shows the Dangers Lurking in Melting Glaciers

A glacial lake's overflow swept away more than 100 people in the Himalayan state of Sikkim in India. Climate change is aggravating the threat of such phenomena.



By **Hari Kumar** and **Alex Travelli**  
Reporting from New Delhi

Oct. 6, 2023 Updated 10:25 a.m. ET



Germany, 2021



# STATE OF EMERGENCY DECLARED FOR NEW YORK CITY



LANDSLIDES AND FLASH FLOODS HIT MYANMAR 2023

Turkey, 2021



## WILDFIRES RAGE IN SOUTHERN TURKEY

# Droughts Take Widening Toll On World's Largest Economies

Severe droughts across the Northern Hemisphere—from the farms of California to waterways in Europe and China—are further snarling supply chains and driving up the prices of food and energy, adding pressure to a global trade system already under stress. Parts of China are experiencing their longest sustained heat wave since record-keeping began in 1961, according to China's National Climate Center, leading to manufacturing shutdowns owing to lack of hydropower. The drought affecting Spain, Portugal, France and Italy is on track to be the worst in 500 years, according to Andrea Toreti, a climate scientist at the European Commission's Joint Research Center. In the American West, a drought that began two decades ago now appears to be the worst in 1,200 years, according to a study led by the University of California, Los Angeles. Researchers compare droughts by measuring the growth of annual tree rings that reflect rainfall and temperature from year to year in specific areas. Climate scientists said this year's dry spells are partly due to La Niña, a cyclical pattern of cooler water in the eastern Pacific Ocean that pushes the atmospheric jet stream northward, leaving parts of Europe, the U.S. and Asia with less rain. The United Nations said the number of droughts worldwide has risen 29% since 2000 due to land degradation and climate change. For some of the world's biggest economies, this summer's droughts are hurting industries including electricity generation, agriculture, manufacturing and tourism. That is

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By **Matthew Dalton**, **Jim Carlton** and **Sha Hua**

## Severe cyclones in Arabian Sea up by 150% from 2001-19. Study

**Mumbai:** In findings that have implications for the climate vulnerability of the west coast, a new study has shown that the frequency, duration, and intensity of cyclones in the Arabian Sea increased between 2001 and 2019, compared to the previous two decades. Cyclone frequency in the Arabian Sea increased by 52% between 2001 and 2019 compared to the 1999-2000 period, while the intensity of cyclones in the Arabian Sea increased by 150% in the same period, according to a study by the Institute of Tropical Meteorology in Pune who conducted the study. While the Bay of Bengal is also warming, it is not warming as much as the Arabian Sea and has a deficit in moisture supply, said study co-author and IITM scientist Roxy Mathew Koll. It's not just the frequency of cyclones that has increased in the Arabian Sea. The same period saw a 20% increase in the intensity of cyclones in the Arabian Sea.



The Wall Street Journal (Front Page – August 22, 2022).



# Recent fatal landslides in Papua New Guinea

News reports indicate that at least 21 people have been killed in landslides triggered by heavy rainfall.

# VOCABULARY OF ADAPTATION

**Hazard\***: A potentially damaging **physical event**, phenomenon or human activity that may cause the loss of life or injury, property damage, social and economic disruption or environmental degradation.



*\*Terms defined by United Nations International Strategy for Disaster Reduction (UNISDR)*

# VOCABULARY OF ADAPTATION

**Exposure**: People, property systems, or other elements present in hazard zones that are thereby **subject to potential losses**.



Coastal properties in Rhode Island, U.S. are highly exposed to sea level rise and storm surge

*Image: Rhode Island Monthly*

# VOCABULARY OF ADAPTATION

**Vulnerability**: The conditions determined by physical, social, economic and environmental factors or processes which increase the **susceptibility** of an individual, a community, assets or systems to the impacts of hazards.

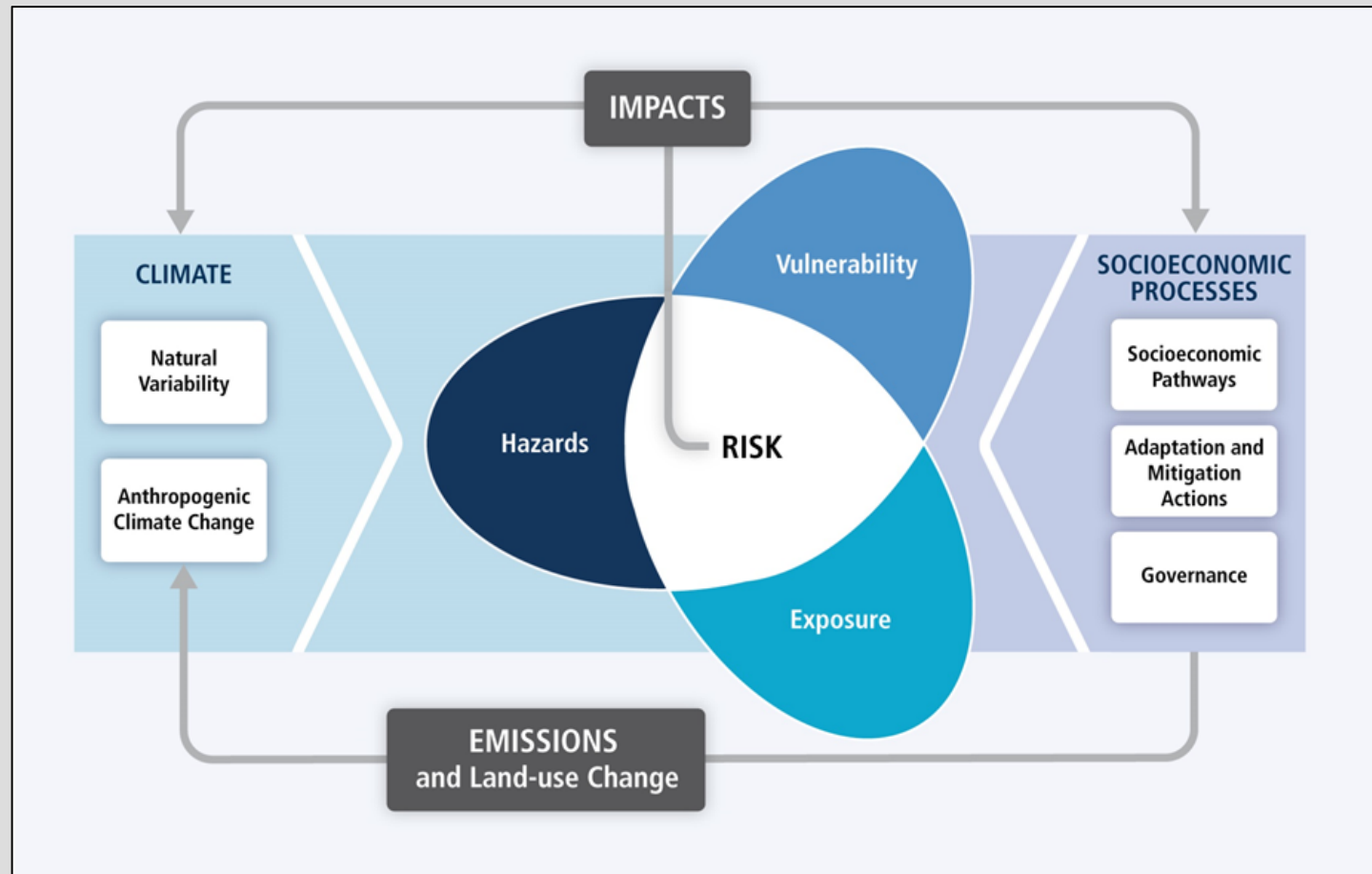


Images from  
Bangladesh, 2022



# VOCABULARY OF ADAPTATION

Risk: hazard x exposure x vulnerability



Inter-governmental Panel  
on Climate Change (IPCC)

# CLIMATE CHANGE ADAPTATION

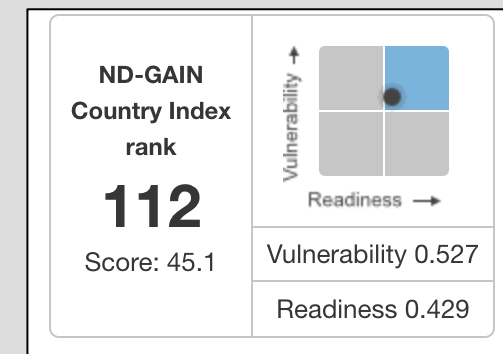
## Adaptation Planning

- **Nationally Determined Contributions (NDC)**: mitigation + adaptation
- **National Adaptation Plans (NAP)**
- Domestic adaptation planning (NAS)

## Status

- Uneven progress toward building **adaptive capacity**
- ND-GAIN annually ranks countries' climate risk by assessing: **level of vulnerability and readiness to respond**

Rwanda, the 32<sup>nd</sup> most vulnerable country and the 88<sup>th</sup> most ready



# RESEARCH: ROLE FOR DIGITAL PAYMENTS?

- **NDCs / NAPs**: No mention of digital payments
- **ND-GAIN**: reducing vulnerability / increasing readiness
- How can **digital payments** contribute to both pathways, improving adaptation outcomes?
- Synthesis research, building on ND-GAIN framework. Deep dive for five selected countries: Bangladesh, Colombia, Ghana, the Philippines, Rwanda



# HOW DO DIGITAL PAYMENTS CONTRIBUTE TO IMPROVED ADAPTATION?

1. **Strengthening anticipatory action**, as digital transfers empower governments and humanitarian aid providers to reach vulnerable populations before, during, and after a climate shock.
2. **Expanding access to financial institutions and insurance**, building adaptive capacity for vulnerable groups.
3. **Reducing the gender gap**, as more women gain access to social protection through their own accounts.
4. **Improving data sharing**, especially for G2G transfers of climate service information to guide more informed decision-making

# SECTORAL PRIORITIES FOR ADAPTATION ACTION

<b><u>SECTORS</u></b>	<b>Mechanisms for Digital Payments to Improve Adaptation Outcomes</b>
<b>Agriculture &amp; Land Use</b>	Stabilized consumption, expanded reach for crop insurance, improved access to credit and off-farm jobs
<b>Disaster Risk Reduction, Climate Services, &amp; Early Warning Systems</b>	Strengthened anticipatory action, improved decision-making
<b>Social Protection</b>	Strengthened welfare, expanded reach for services
<b>Governance and Institutions</b>	Increased national economic growth, good governance

# EXAMPLES

## COLOMBIA

The new **Early Warning System of Medellin** pulls from 1200 data sensors to deliver timely forecasts to residents. But without digital payment capacity, the system misses opportunities for strengthened **anticipatory action**.

**Digital payments  
increase readiness**

## RWANDA

The **ubudehe social protection program** identifies poor households for health insurance, education support, and other government services. But without digital payment capacity, recipients face long delays.

**Digital payments  
reduce vulnerability**

# CONCLUSIONS

- **Risk** from impacts associated with climate change is increasing
- Modifying **exposure** and **vulnerability** are pathways to improved **adaptive capacity**
- **Digital payments** contribute to reduced **vulnerability** and improved **readiness**

**QUESTIONS??**