Introduction to Disaster Risk Financing and CCRIF Parametric Insurance

Prepared by: CCRIF SPC

Ice-breaker

The words we choose to define ourselves can be really telling. Using the chat, use an adjective to describe yourself that starts with your first name…

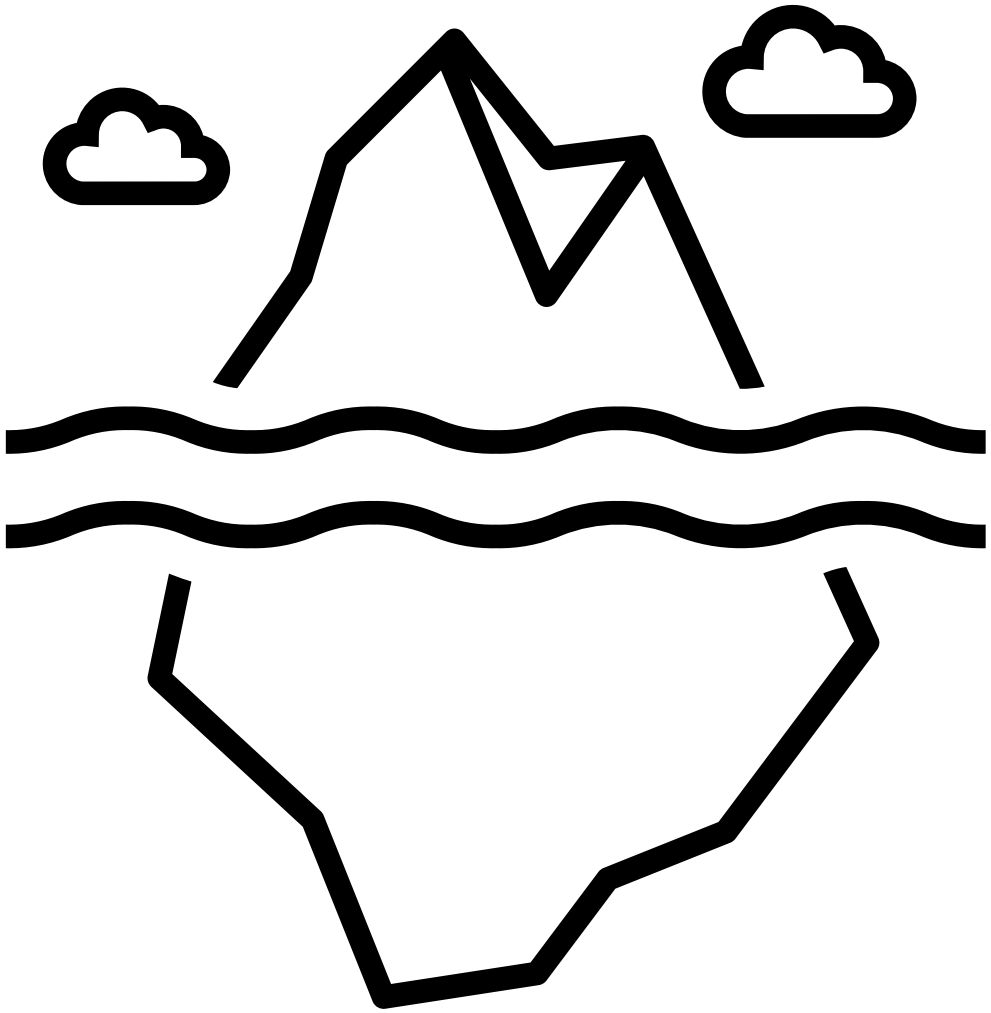
Lively Liz

Genuine Gina

Zesty Zachary

Trustworthy Travis

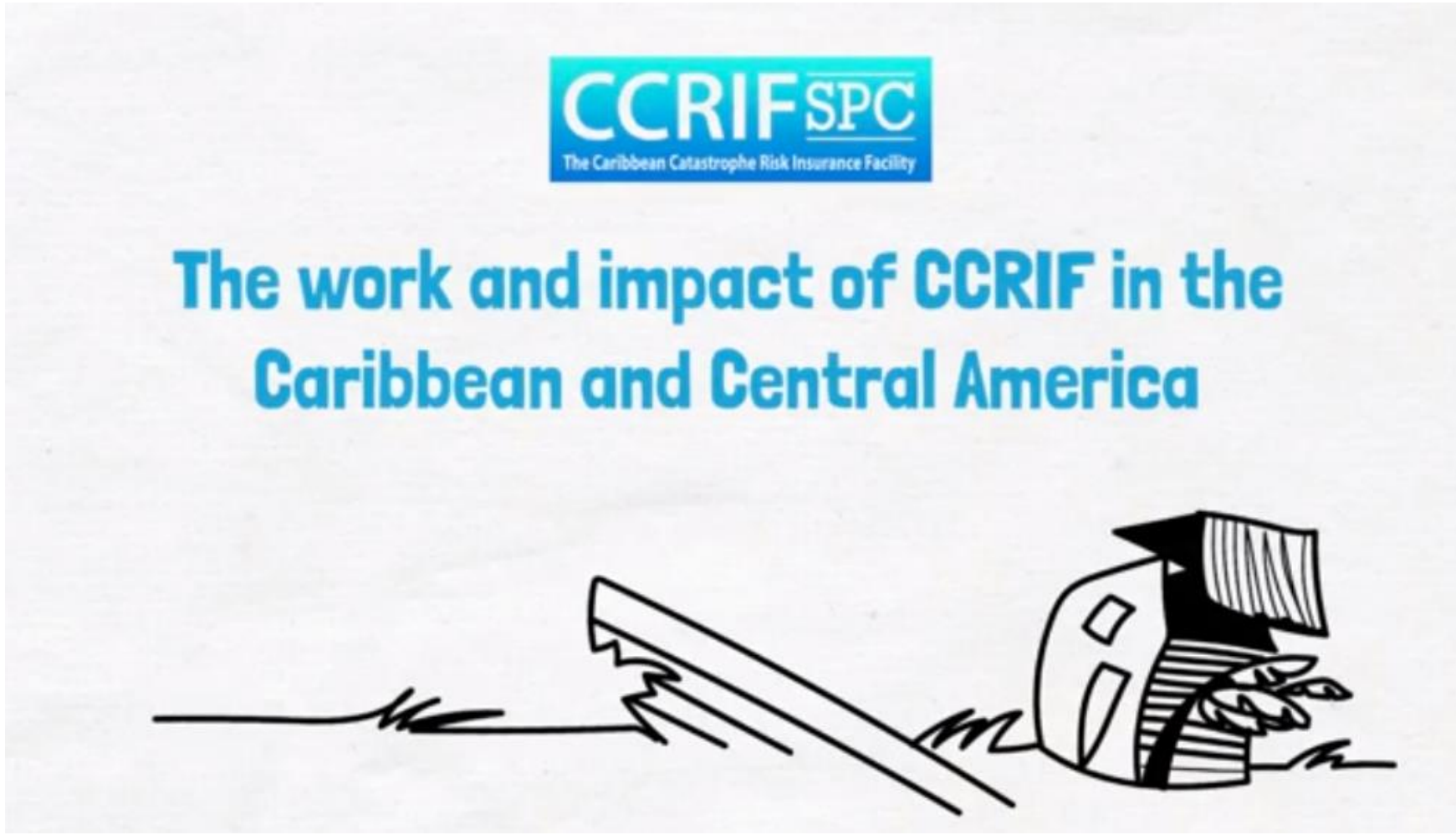
Jolly Jamala



Introduction to CCRIF SPC

- Have you heard of CCRIF SPC?

  Menti.com CODE: 3733 6425
- Why do you think we are offering this course?
- Is there a gap?
- What is in it for us?
- Why are we interested in building your capacity in DRF?



https://www.youtube.com/watch?v=boY4isB5RkY&t=181s

Structure of Course

Caribbean Hazard Risk Landscape, Economic Policy and Disaster Risk Management

Introduction to Disaster Risk Financing

Introduction to CCRIF SPC, CCRIF's Parametric Insurance Policies, Models, Tools and Country Risk Profiles

Shock Responsive Social Protection and DRM and Insurance

Introduction to Integrated Risk Management

Course Topics

This course covers the following topics:

- Natural Disasters and the Caribbean Hazard Landscape
- Introduction to Economic Theory – Microeconomics and Macroeconomics
- The Impact of Natural Disasters on the Economy
- The Relationship between Disaster Risk Management and Disaster Risk Financing
- Understanding Disaster Risk Financing
- Disaster Risk Financing Tools
- The Linkages between Insurance and Social Protection Strategy – Case Study on the Climate Risk Adaptation and Insurance in the Caribbean Project (CRAIC)
- Parametric Insurance Policies and Models
- Overview of CCRIF's Country Risk Profiles and Applicability to Development Planning
- Introduction to Integrated Risk Management

DRF ABC

A: Attachment Point	B: Budget Reallocation	C: CCRIF	D: Disaster Risk Reduction
E: Exogenous Events	F: Fiscal Policy	G: Government	H: Hydrometeorological Events
I: Insurance	J: Jeopardy	K: Knowledge	L: Liquidity
M: Multi-Hazard Environment	N: Night Lights	O: Open Street Maps	P: Parametric Insurance
Q: EQ	R: Risk Profiles	S: Shock Responsive Social Protection	T: Triggering Event
U: Use of Payouts	V: Vulnerability	W: WeMAp	X: XSR
Y: Year-to-Date	Z: Zoning		

Some Learning Outcomes

On successful completion of the course, learners will be able to Understand:

- How economic theory and disaster risks are related
- The linkages between disaster risk management and disaster risk financing
- Ex-ante and ex-post disaster risk financing instruments
- The importance of risk transfer and risk mitigation in comprehensive disaster risk management
- What the protection gap is
- How social protection and DRM is related
- Shock responsive social protection
- The main differences between parametric and indemnity insurance
- The role of microinsurance in reducing vulnerabilities
- CCRIF's parametric models that underlie its policies
- The elements of CCRIF policies
- How to use the WeMAp Tool for monitoring hazards
- Concepts related to integrated risk management

Natural Hazards and the Caribbean Landscape

At the end of this Unit, learners should be able to:

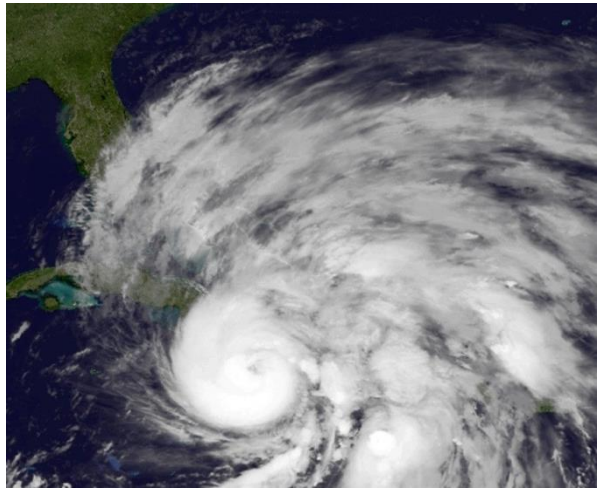
Describe	Describe the region's risk profile with respect to natural hazards
Examine	Examine worldwide trends in disaster occurrence, regional distribution, and damages and losses
Define	Define key concepts in disaster management
Examine	Examine Risk Mitigation, Risk Management and the Importance of Financing Risks and Disasters
Be	Be able to address how disasters affect economies

The Multi-Hazard Environment

1. What of these hazard types affect your country?
2. Rank each hazard that affects your country according to (economic impact, fiscal indicators), social impact (# of persons affected per 100,000, loss of lives etc.), environmental impacts (loss of ecosystem services
3. Share the top 5

Natural Hazards	Manmade Hazards	Biological/Health Related Hazards
Meteorological and Hydrological: • Tropical cyclones (tropical storms and hurricanes) • Rainfall, including severe rainfall events • Lightning • Extreme heat and increasing temperatures • Floods • Drought • Sea-Level rise **Geohazards:** • Earthquakes • Mud Volcanoes • Tsunamis • Submarine volcanic eruptions **Environmental:** • Land degradation • Coastal erosion/Coastal inundation • Soil erosion • Landslides • Sahara dust • Sargassum • Coral reef degradation	**Chemical:** • Oil spills • Transboundary movement of hazardous materials/ wastes **Technological** • Road, aviation, and nautical accidents • Industrial accidents • Infrastructure Failures • Fires (bush and forest fires) **Societal:** • Fires • Terrorism • Cybercrimes/cyber security • Societal unrest	**Biological:** • Human disease outbreaks, epidemics, pandemics • Animal (livestock) and plant (agricultural) epidemics • Other biological/physical hazards such as poisoning, eutrophication, air pollution

Natural Hazard vs Natural Disaster



Natural hazards are geographical events which occur naturally such as earthquakes, tropical cyclones, volcanoes, as well as periods of excess rainfall (potentially leading to floods) and lack of rainfall (drought)

When a natural hazard leads to a significant loss of human life and/or damage to property and/or – environmental damage, then it becomes a natural disaster

The Natural Hazard Landscape in the Caribbean

- Vulnerable to storms, cyclones, flooding and landslides, earthquakes, tsunami
- Intrinsic economic, environmental and social vulnerability, limited natural resource base, significant competition between different kinds of land use, a high level of dependence on major economic sectors that rely on the natural environment, fragile ecosystems, limited institutional capacity and low levels of insurance coverage
- High concentration of people and infrastructure located in the coastal zones, further increasing vulnerabilities to hydro-meteorological events and climate change

What are your risks as a country? Defining Risks

- **Risk is a function of three components—hazard, exposure, and vulnerability.**

- ***Hazard:*** the likelihood and intensity of a potentially destructive natural phenomenon, such as ground shaking induced by an earthquake, wind speed associated with a tropical cyclone or rainfall volume for a rainfall event.

- ***Exposure:*** the location, attributes and value of assets that are important to the various communities, such as people, buildings, factories, farmland and infrastructure that are exposed to the hazard.

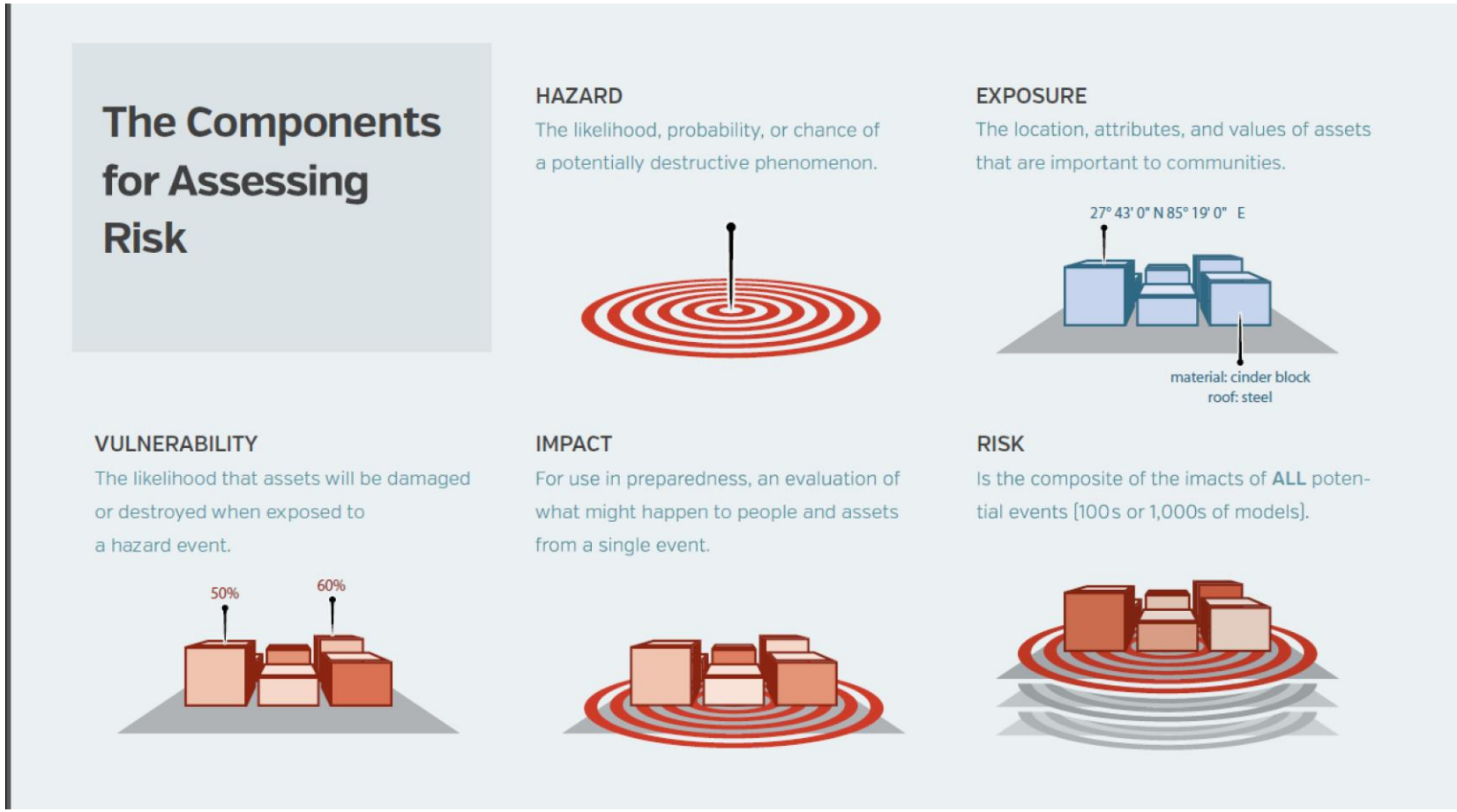
- ***Vulnerability:*** the reaction of the assets when exposed to the forces produced by a hazard event. For example, a building's vulnerability to an earthquake increases with the intensity of ground shaking and decreases with improved conformity to seismic design standards.

Examining the Concept of Vulnerability

- Vulnerability is
  - the condition of the system before it encounters the hazard event
  - the reaction of the assets when exposed to the forces produced by a hazard event

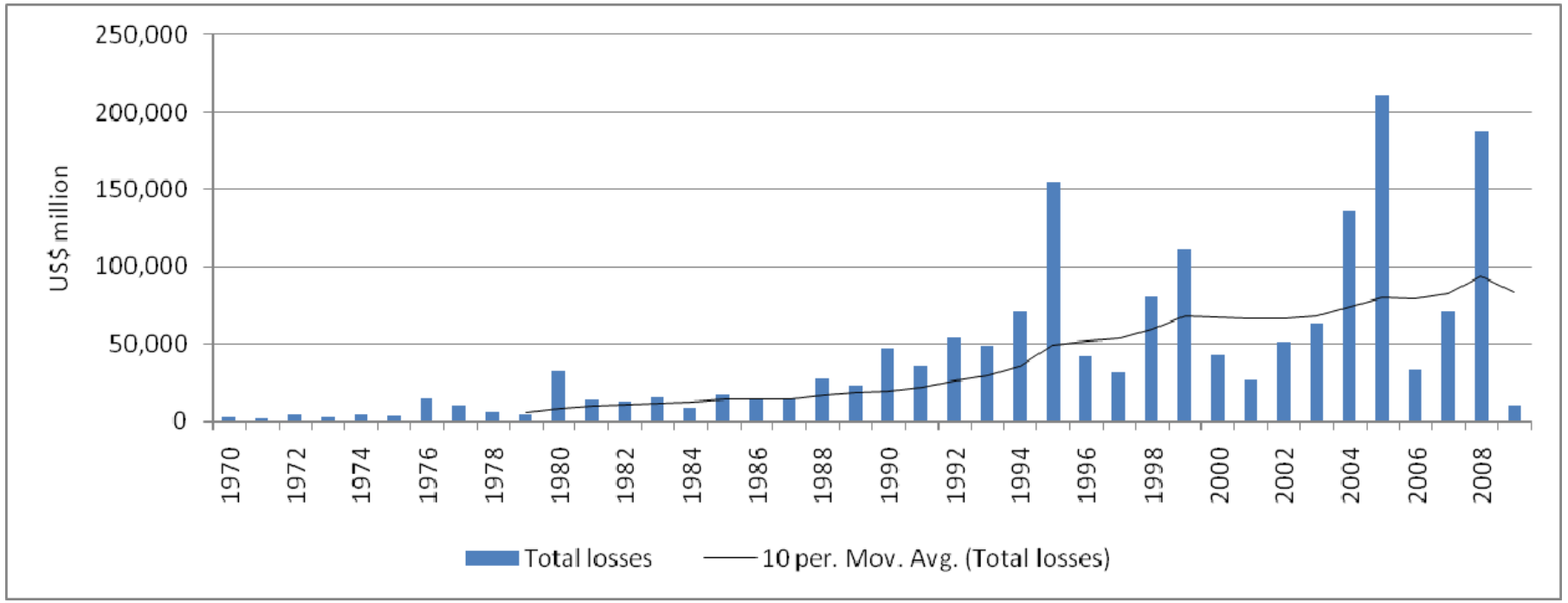
Assessing the Impact of Hazards

- **It is important to emphasize that exposure and vulnerability, not just hazard levels, drive the scale and impacts of any hazard or a hazard becoming a disaster**
- **Based on the assessment of risk, has your responses to the top 5 hazards changed?**



Disaster Losses are Increasing…

- Disaster losses are increasing all over the world.
- The figure presents estimates of damage from natural disasters. This upward trend is principally due to increases in population and assets exposed to adverse natural events, a trend likely to worsen with growing urbanization, environmental degradation and expected increase in the number and intensity of hydro-meteorological events resulting from climate change.



Vulnerability

Low DRF Coverage

Liquidity

Debt Burden

- According to Moody's, the average annual damage from natural disasters over 1980-2015 was 1.5% of GDP in emerging markets vs. 0.3% of GDP in developed economies. The average share of affected population over the same period was 3.0% in emerging markets vs. 0.4% in developed economies.

- Among the 20 most vulnerable countries globally, more than half represent small island states across the Caribbean and Pacific Regions. These 20 countries bear average losses between 20.1% and 2.1% of their respective GDP every year. The countries in the Caribbean that are referenced include Belize, Jamaica, The Bahamas, St. Vincent and the Grenadines.
- A recent study found that with ocean temperatures rising, hurricanes in the Atlantic have become likelier to grow from a weak storm into a major one of Category 3 or higher within just 24 hours.

- Immediate access to liquidity is critical for governments and individuals post disaster

Case Example: Hurricane Beryl – 2024

- First hurricane of the 2024 Atlantic Hurricane Season.
- Power lines brought down, homes flattened, and streets flooded across multiple southeastern Caribbean islands.
- Death toll of at least seven people.
- Direct hit on Carriacou (Grenada) as a strong Category 4 hurricane with sustained winds of 150 mph.
- Carriacou and Petite Martinique in Grenada were particularly ravaged. Nearly all of the buildings on the islands, where 9,000 to 10,000 people live, had been damaged or destroyed, including Carriacou's main health facility, its airport and marinas
- Widespread building, roof, tree, and electrical damage across the Windward Islands.
- 3 deaths in Grenada, 3 in St. Vincent and the Grenadines, 3 in Venezuela, 2 in Jamaica.
- Catastrophic damage on Grenada's northern islands and several of Saint Vincent and the Grenadines' southern islands.

The Impacts of Hurricane Irma and Maria

- Hurricane Maria devastated Dominica in 2017
- Estimated damages totaled approximately US$931 million and losses another US$380 million. This amounts to almost 225% of their 2016 Gross Domestic Product (GDP).
- But the impact is more than the US$1.31 billion in damage and loss. 93% of the population was affected including the 30 persons who lost their lives and the 34 who went missing.
- Damage to the country's housing stock — 15% totally destroyed, 75% partially damaged — at an estimated cost of US$382million.
- Damage to critical infrastructure — roads, bridges, water systems, electricity, telecommunications.
- Impact on the agriculture and tourism sectors which are critical for supporting food security, economic activity and providing a livelihood for thousands.
- Also the uncalculated loss of ecosystem services provided by watersheds, wetlands and coral reefs.

Natural Disasters have crippled Caribbean economies and budgets….

$156

billion

Total damages to the Caribbean
(1970 – 2017)

- Higher fiscal deficits and **public debt** ratios
- Challenges in key **industries**
- Larger **trade deficits**
- Population **migration**

2004 **Ivan**

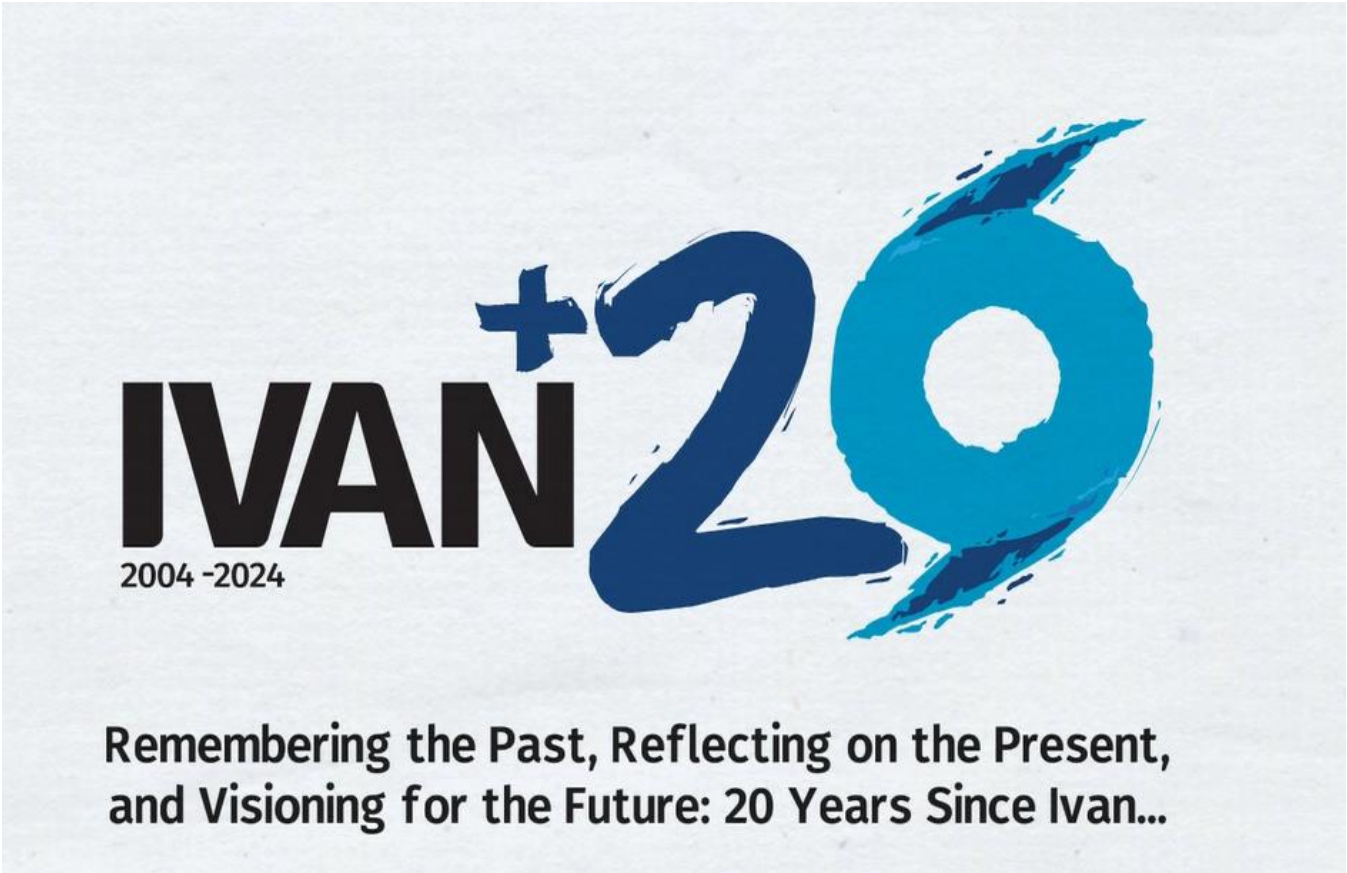
200%
of Grenada's GDP

2015 **Erika**

96%
of Dominica's GDP

2017 **Maria**

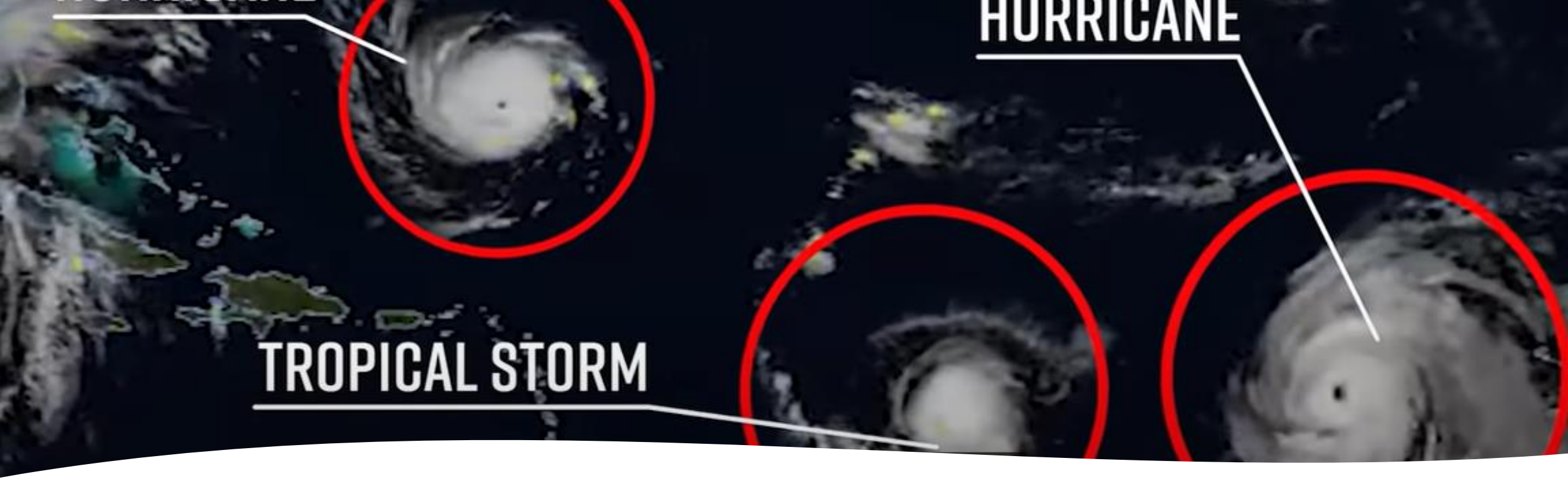
226%
of Dominica's GDP



https://www.ccrif.org/ivan20

Understanding the True Nature of Climate Change

- Climate change changes the magnitude and frequency of extreme weather events
- Climate change changes average climatic conditions and climate variability, affecting underlying risk factors
- Climate change generates new threats, which a region may have no experience in dealing with
- Climate-related risk is unique in character and irreversible, in that no technology that currently exists can prevent or end climate change
- The Caribbean experience has shown that climate change is systemic, in that its materialization transforms the functioning of the entire economy



How Hurricanes Form and Why are they Getting Stronger?

- https://www.youtube.com/watch?v=5m68_07Sav4

Discussion Activity

- **Question 1**
- What has your country done and is doing to adapt to climate change?

- **Question 2**
- What are you doing?

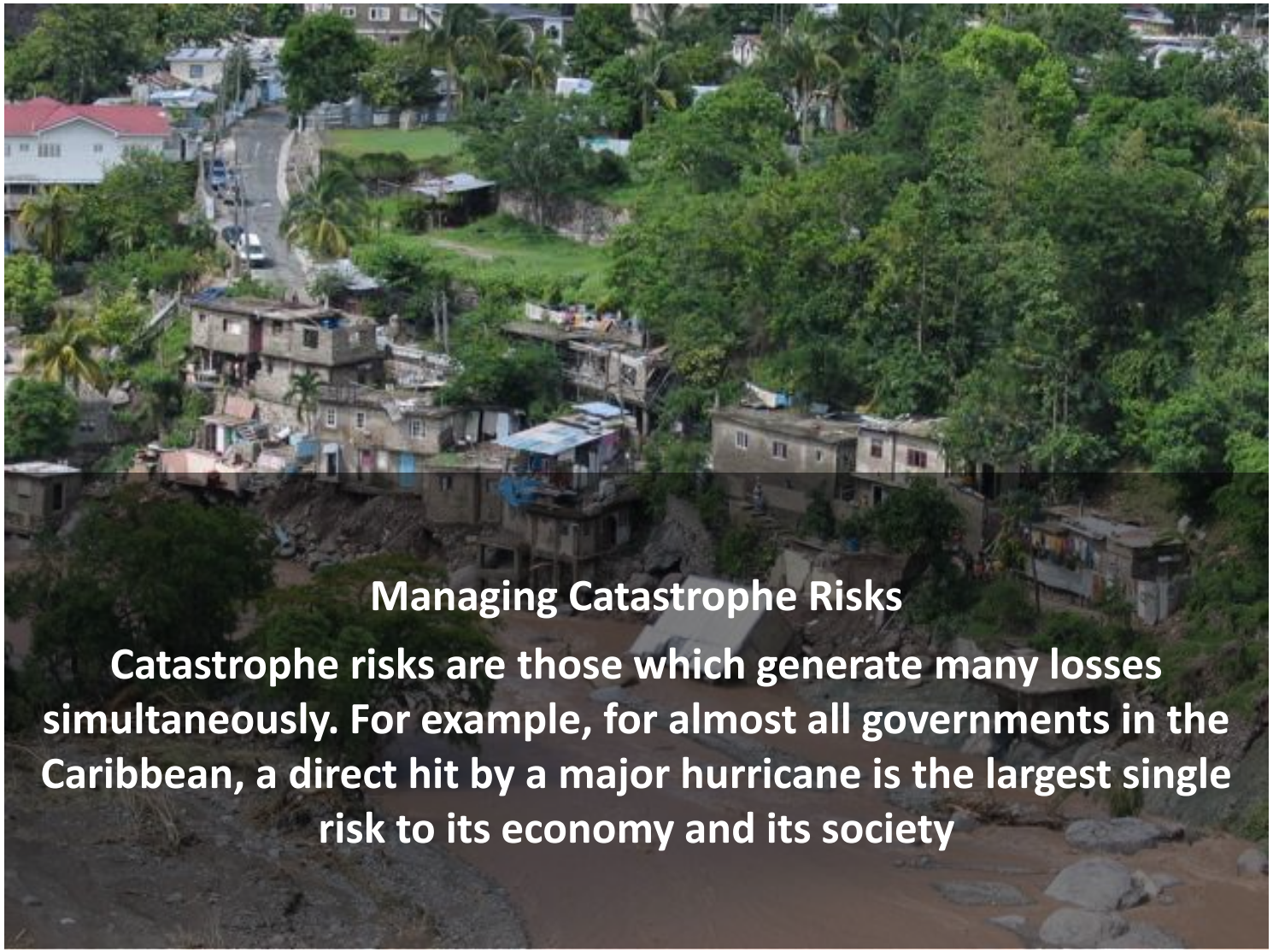
Group Exercise

Prepare a presentation on the impacts of a recent natural hazard event in your country.

Provide 4 factors, natural or man-made that could have contributed to the outcomes caused by the natural hazard. Provide 3 possible solutions that would mitigate against future similar hazards.

Some events:

- Hurricane Beryl
- La Soufrière Volcanic Eruption
- Haiti earthquake 2021
- Hurricane Maria
- Heavy rainfall



Managing Catastrophe Risks

Catastrophe risks are those which generate many losses simultaneously. For example, for almost all governments in the Caribbean, a direct hit by a major hurricane is the largest single risk to its economy and its society

Comprehensive Disaster Risk Management (CDRM)

CDRM is an all hazards approach to disaster risk management that focuses on all phases of the DRM cycle (preparedness, response, risk reduction, recovery, and financial protection). CRDM emphasizes taking a holistic, integrated and participatory approach to addressing disaster risk, by the public and private sectors, all segments of civil society and the general population for the purpose of building resilient, safer societies.

International and Regional Frameworks

- 2030 Agenda for Sustainable Development and the Sustainable Development Goals
- Sendai Framework for Disaster Risk Reduction 2015 – 2030
- Hyogo Framework for Action 2005 – 2015
- Paris Agreement on Climate Change 2015
- Addis Ababa Action Agenda of the Third International Conference on Financing for Development (Addis Ababa Action Agenda)
- Caribbean Comprehensive Disaster Management Strategy and Programming Framework 2014-2024
- Regional Framework for Achieving Development Resilient to Climate
- Change

Comprehensive Disaster Risk Management (CDRM)

Risk Identification	• Hazard mapping, risk modelling
Risk Reduction	• Spatial and sectoral planning, sector-specific standards • Risk mitigation works, infrastructural retrofitting, ecosystems management • Education and creating a culture of prevention
Financial Protection	• Budget planning, risk transfer, risk financing instruments (e.g. insurance, contingent credit, cat bonds etc.), budget appropriation
Preparedness	• Alerts and early earning systems, response planning, training, equipment, logistics simulations, response systems management
Recovery and Redevelopment	• Institutional planning, strengthening; recovery, planning, reconstruction policies; rehabilitation plans

Disaster Preparedness *= Disaster risk mitigation + ecosystem management + risk transfer and risk financing + social protection strategies*
(including addressing psychological impact of disasters)

Linking Fiscal Policies with DRM

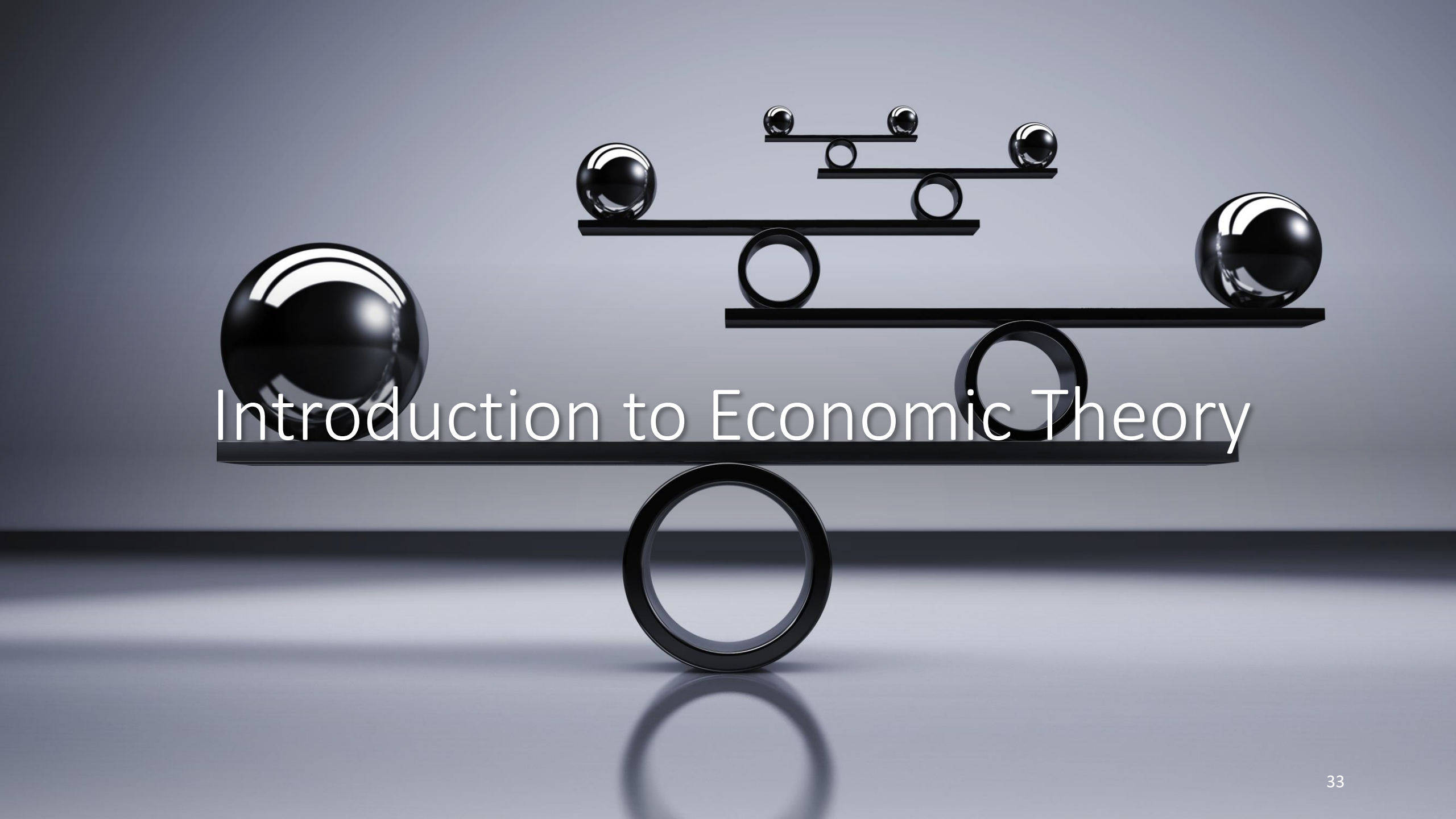
- Natural disasters and financial crises are typically exogenous events that represent covariate shocks across a country and households
- Economic damages from natural hazards can jeopardize the health of national economies at a level comparable to or greater than that of financial crises
- Natural disasters also destroy human and physical capital stocks of countries – something that financial crises do not

It is becoming increasingly commonplace for governments to consider the inclusion of disaster risk in fiscal policy as this provides an efficient way for countries to financially protect themselves against events that cannot be prevented.

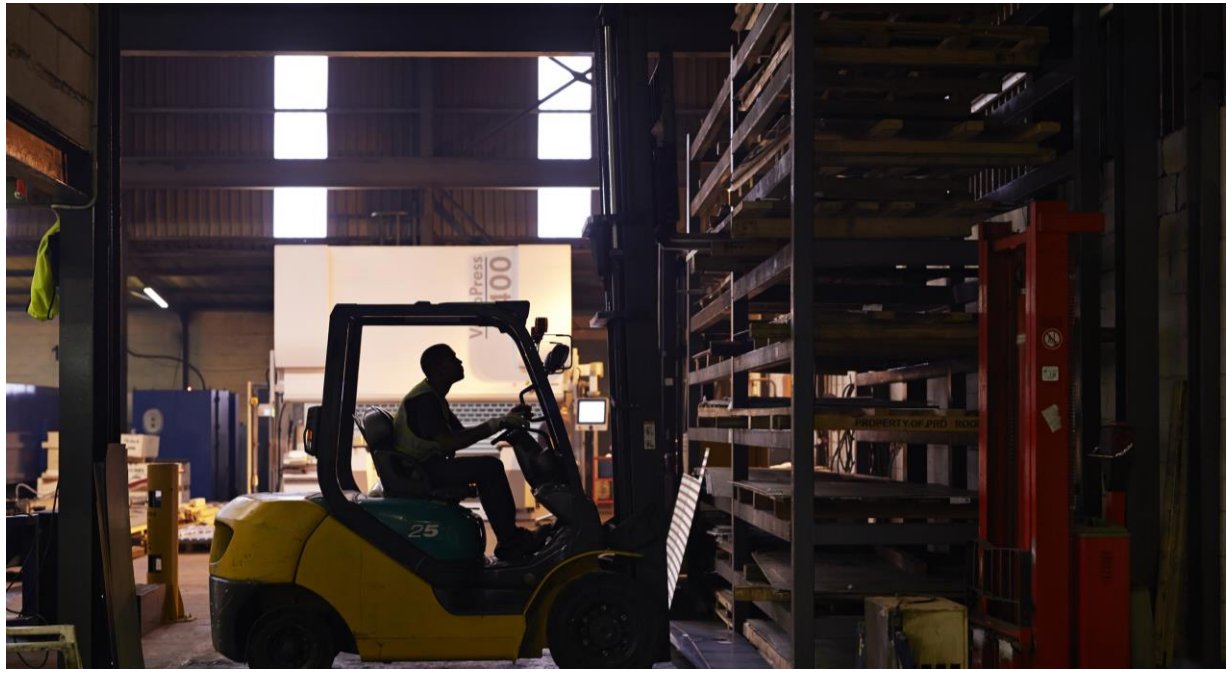
- The increasing frequency and severity of climate extremes has forced governments to consider new ways of meeting the financial consequences of natural disasters, and there is a growing interest in implementing sovereign Disaster Risk Financing and Insurance (DRFI) programmes in an attempt by

How do Natural Disasters Affect Economic Growth?

- https://youtu.be/XkVuzz-W3yE



Introduction to Economic Theory



Economics

The study of how people make choices under conditions of scarcity and the results of those choices for society

A social science concerned with the production, distribution, and consumption of goods and services.

Economics evolved from the need to address the problem of scarcity.
Scarcity is a fundamental fact of life

Never enough time, money or energy to do everything we want to do or have everything we would like

Economic Systems

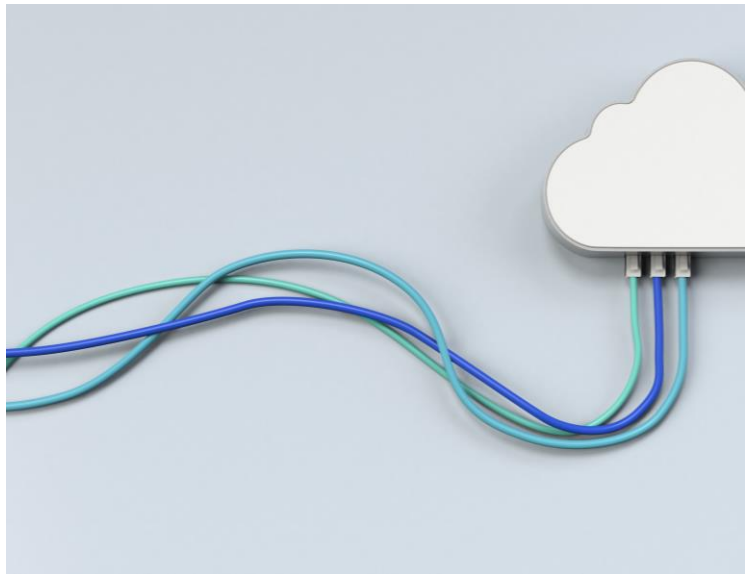
- An economic system is the decision-making structure of a nation's economy, characterized by the entities and policies that shape it.
- An economic system may involve production, allocation of economic inputs, distribution of economic outputs, firms, and the government to answer the economic problem of resource allocation.
- There are two general subtypes of economic systems: **free market systems** and **planned systems**.
- A country may have some elements of both systems, and this type of economy is known as a **mixed economy**.

Advancements in technology and innovation has increased the pace and development trajectory of countries across the world

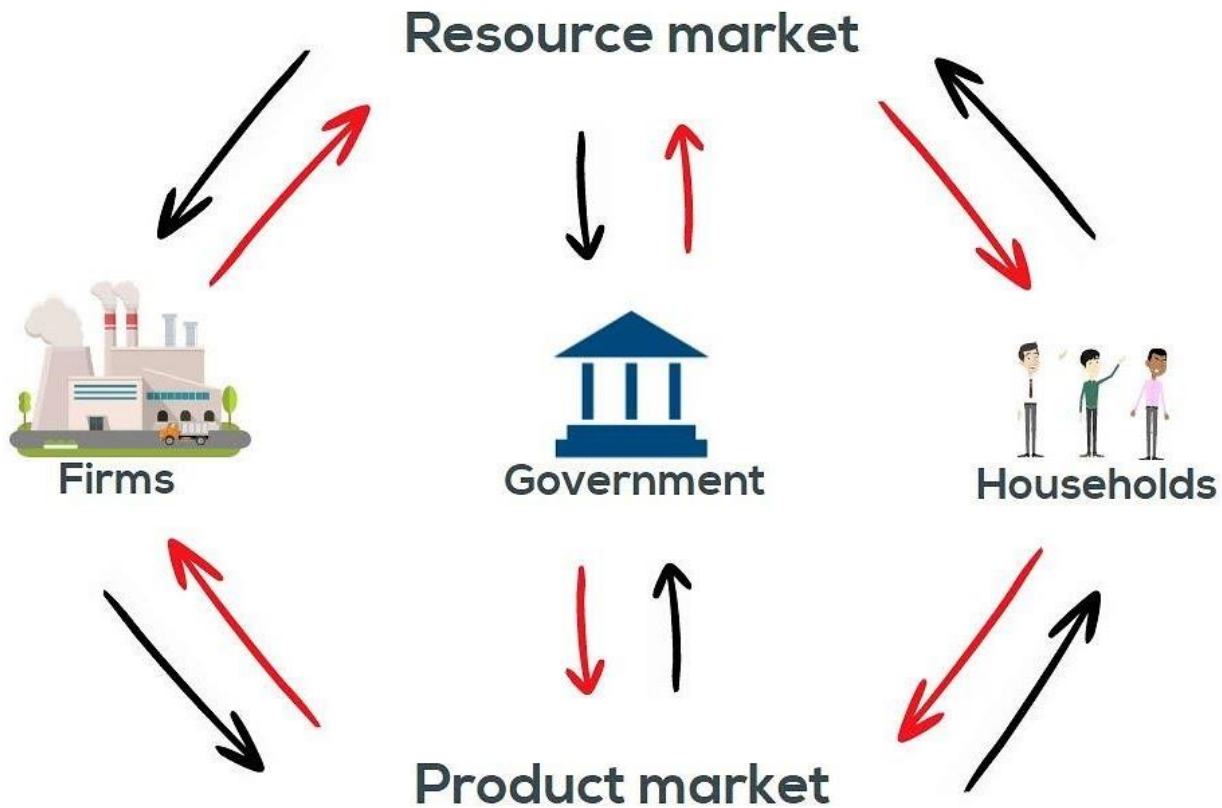
This has fueled economic transformations which seek to sustainably meet the needs and wants of societies and its inhabitants.

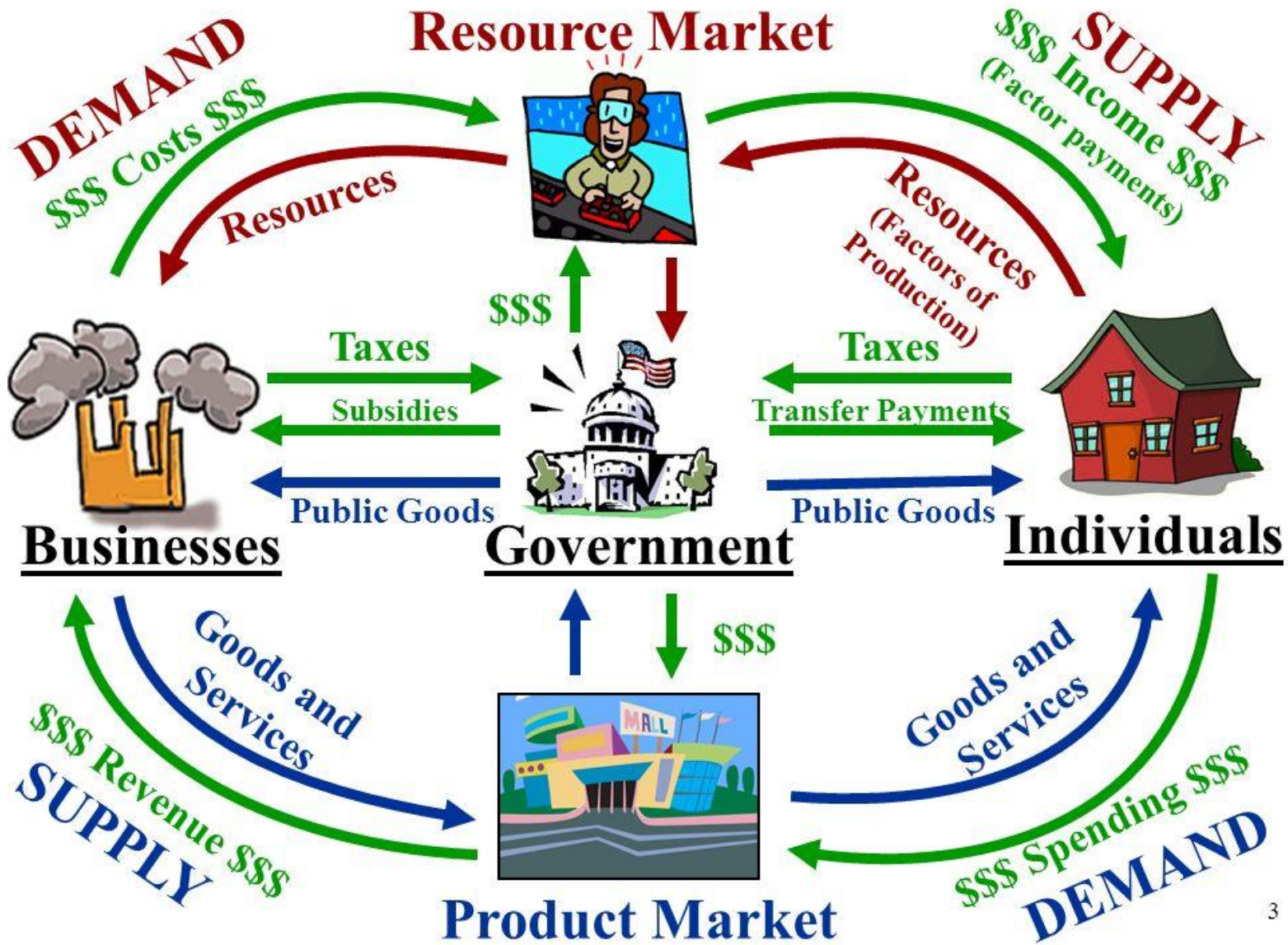
Today, discussions about economic resources now include:

- data and supporting the infrastructure
- Unexplored areas with untapped economic value such as the oceans

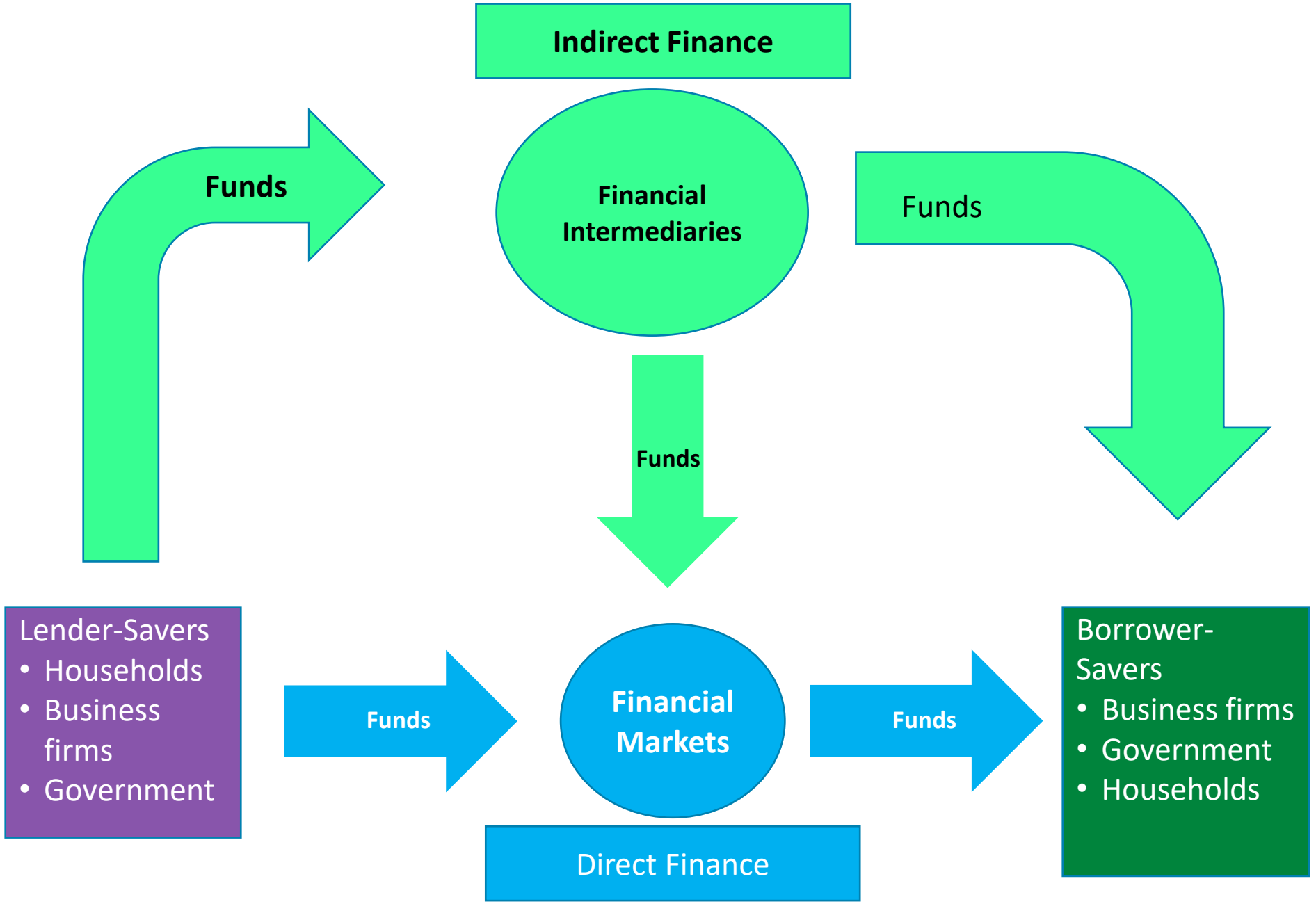


Circular flow model



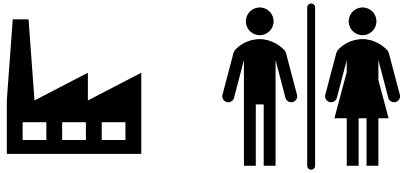

Resource Market
DEMAND
$$$ Costs $$$
Resources
SUPPLY
$$$ Income $$$
(Factor payments)
Resources
(Factors of Production)
$$$
Taxes
Subsidies
Public Goods
Taxes
Transfer Payments
Public Goods
Businesses
Government
Individuals
Goods and Services
$$$ Revenue $$$
SUPPLY
$$$
Goods and Services
$$$ Spending $$$
DEMAND
MALL
Product Market

Financial Markets and Institutions



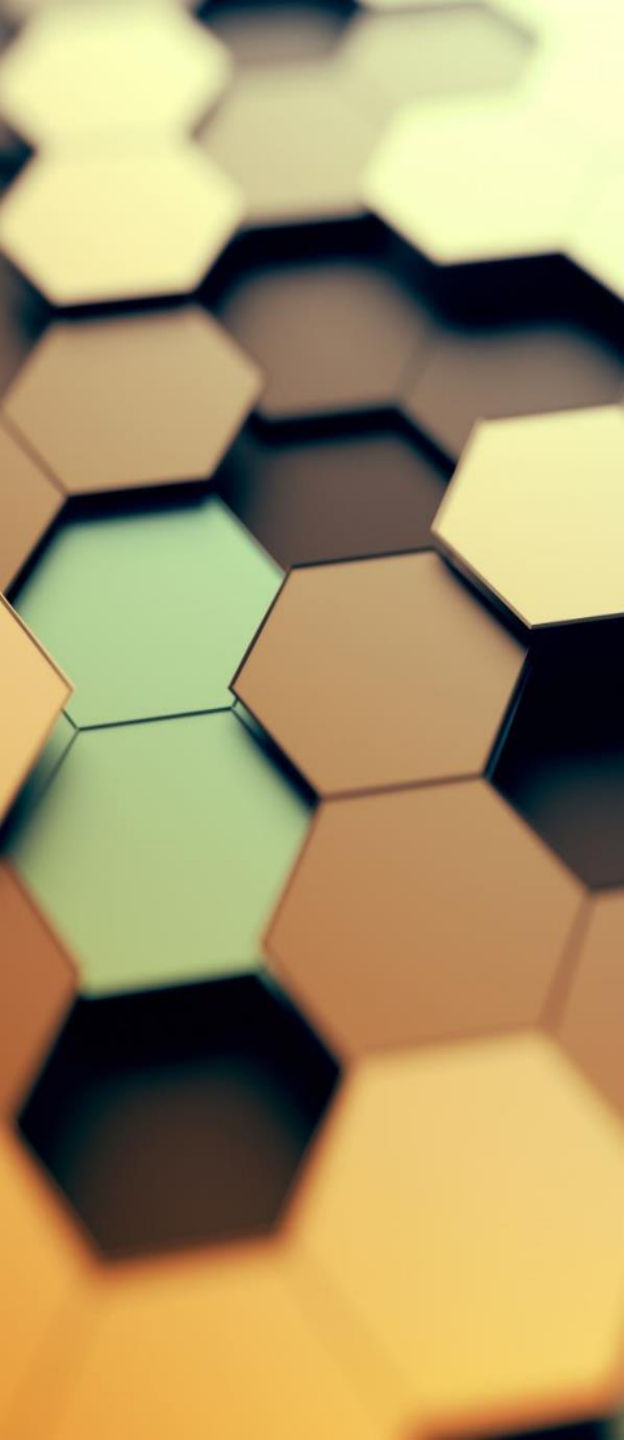
Macro/Micro

Economics can be split between analysis of how the overall economy works (Macro) and how single markets function (Micro)



- **Microeconomics** is the study of individual choice under scarcity and its iplications for the behavior of prices and quantities in individual markets.
- It is concerned with how supply and demand interact in individual markets for goods and services. For example, microeconomic looks at whether price rises in the automobile industry.

- **Macroeconomics** is the study of the performance of national economies and the policies that governments use to try to improve the performance.
- It is concerned with the overall economy/the big picture/aggregate economy**.** It focuses on areas such as employment, GDP growth and inflation.



Defining Key Terms and Concepts

- **Gross Domestic Product (GDP)**: the total monetary or market value of all the finished goods and services produced within a country's borders in a specific time period. Considered as a broad measure of overall domestic production
- **Economic growth**: an increase in the production of goods and services in an economy
- **Recession:** two consecutive quarters of economic decline

Defining Key Terms and Concepts

- **Fiscal Policy**: the use of government spending and taxation to influence the economy. Governments typically use fiscal policy to promote strong and sustainable growth and reduce poverty.
- **Public Debt**: outstanding financial liabilities arising from past borrowing. Debt may be owed to external or domestic creditors and typically, debt financing is in the form of loans or bonds. The debtor may be either a public (government) or private sector entity.
- **Debt-to-GDP Ratio:** the ratio of the money a country owes to the money it earns – dictates how strong a country's economy is and how likely it is that it will pay off its debt

Defining Key Terms and Concepts

Monetary Policy: the actions undertaken by a nation's central bank to control money supply to achieve sustainable economic growth

Inflation: a quantitative measure of the rate at which the average price level of a basket of selected goods and services in an economy increases over some period.

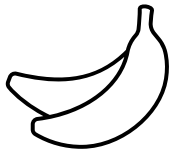
Interest Rate: the rate charged by a lender of money or credit to a borrower

National Budgeting: Resilient Financing for Development

National Budget: A Breakdown

Education

Health



Food Security

Public Service

Industry

Roads

Transportation

Security and Justice

Economic Performance

- **GDP**
- **Inflation**
- **Public Debt**
- **Fiscal Balance**
- **Poverty Rate**