Climate Smart & Ready

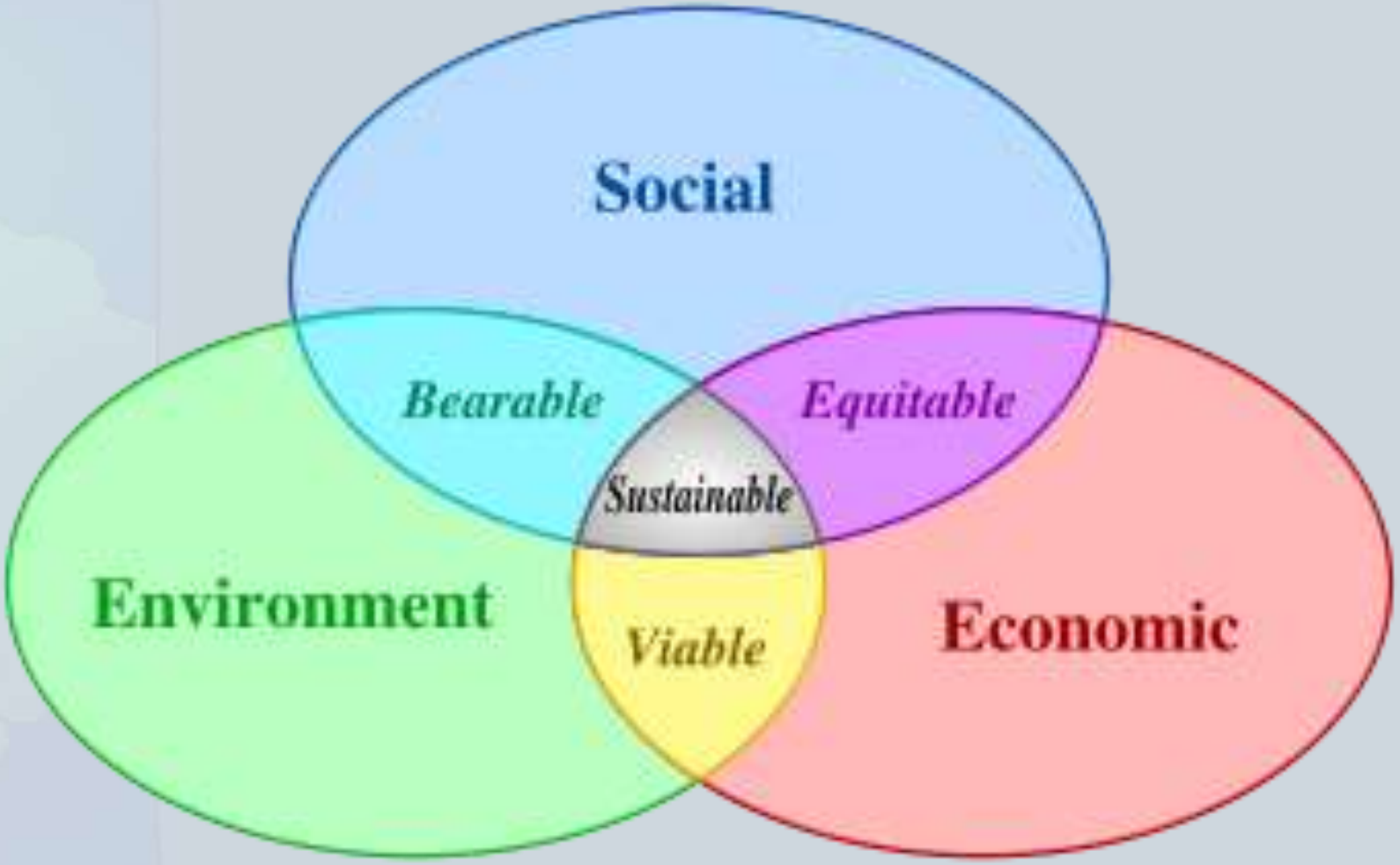
New Approaches:

Sustainable Building

@HeatherPinnock

Institute for Sustainable Development

- **What does SUSTAINABLE mean?**
  - Three (3) Standards



What is Sustainable Development?

Sustainable development has been defined in many ways, but the most frequently quoted definition is from *Our Common Future*, also known as the Brundtland Report:

"Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

What is Sustainable Development?

- Where? What? And How?

Praslin Bay, St. Lucia 2000 – 2010 *Future Needs?*

Why Build Sustainably + Climate Conscious?

The Caribbean is inherently climate sensitive –

Our life and livelihoods are inextricably linked to our environment and climate.

- Our reality is one of recurring, pervasive and growing vulnerability
- New ideas are needed to address the vulnerability Implementation of the new ideas will result in Resilient societies.

Vulnerability + Innovation = Resilience

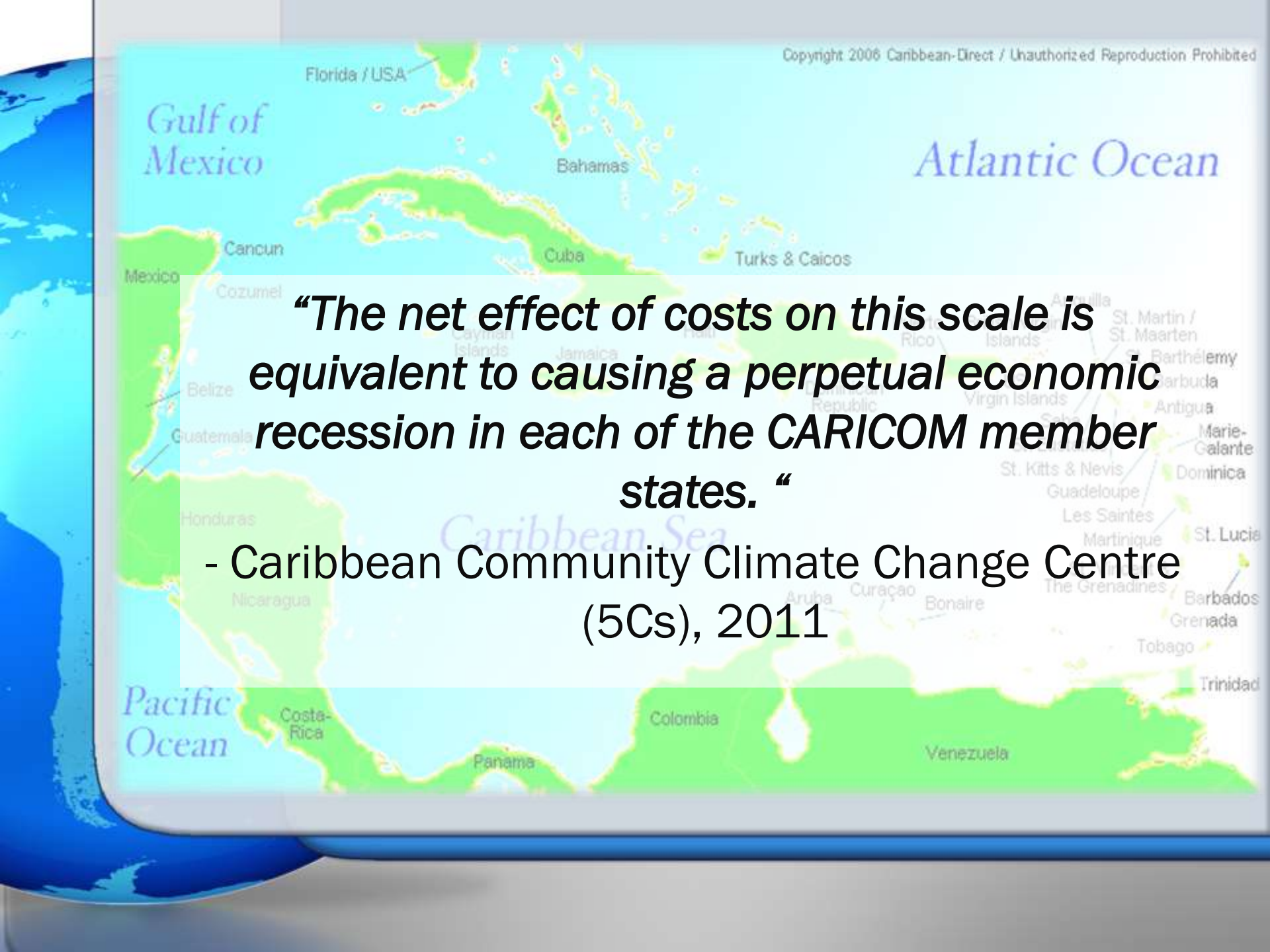
- **Effects of Climate Change**

•Effects of Climate Change

Hazard	Impact	Built Environment Implications
Sea level rise	Coastal flooding and erosion, land lost, seawater intrusion	Damage to coastal infrastructure and pollution of underground water resources
Category 4 and 5 hurricanes	Storm surge, inland flooding, wind related damage, coastal erosion	Damage to infrastructure including electricity and water
Torrential rainfall events	Inland flooding	Damage to infrastructure including electricity and water
Prolonged drought	Limited water resources	Water supply restrictions
Increased temperatures	Heat stress Coral bleaching Increased emergence of vector borne diseases	Increased energy and water use. Coastal erosion (damage to coastal infrastructure). Vector habitats

The Caribbean Context

- The region produces **less than 1%** of the global greenhouse gas emissions but is one of the most vulnerable to the effects of the resulting effects climate change.
- The cost of inaction in the areas of hurricane damage, loss of tourism revenue & infrastructural damage is projected to be US$22B by 2050 & US$46 B by 2100 – **10% and 20% of the current regional GDP.**



"The net effect of costs on this scale is equivalent to causing a perpetual economic recession in each of the CARICOM member states. "

- Caribbean Community Climate Change Centre (5Cs), 2011

•Jamaican Context

- Jamaica listed a having the **Second Highest economic risk e**xposure to 2 or more climate change related hazards.
- J$113 Billion - Storm damage estimates covering 2004-2012;
- Hurricane Ivan benchmark - Jamaica J$35 billion in 2004 from extensive damage to agriculture, housing, mining, electricity, transport, telecommunications and tourism.

New Approach

- Sustainability + Climate Change Resilience

climate change resilience is the ability to *survive, recover from, and even thrive* in changing climatic conditions.

It includes the ability to understand potential impacts and to take appropriate action before, during, and after a particular event, such as a storm, major flooding or prolonged drought, to minimize negative effects and maintain the ability to respond to changing unpredictable conditions

Examples?

- **New Approach**

  Learn from the past

  - Pitched Roof
  - Verandah
  - Fretwork
  - Louvers
  - Rainwater collection
  - Elevated Structure
  - Cross Ventilation

Bella Verde – Private Residence

Grand Cayman, Cayman Islands

- Aims to be 1st Caribbean LEED Gold Certified Building
- Designed with sun, wind and shade considerations
- Natural Mangrove Buffer
- Saline Infinity Pool
- Rainwater Harvesting
- Photovoltaic Array
- Indigenous Landscaping

•Hôspital Universitaire de Mirebalais

Mirebalais, Central Haiti

- 200,000 sq. Ft building
- 1,800 solar panels
- 100% of energy collected daily.
- Excess power sent to national grid.
- Saves 210 metric tons of carbon emissions annually
- Natural ventilation
- Motion sensor lights

The Barbados Boardwalk

Christchurch, South Coast, Barbados

- **Location:** *south coast from Accra Beach in Rockley 1.5KM to Needham's Point.*
- **Project**: *breakwater 6-12ft deep designed to connect beaches, prevent erosion and protect the coast from winds in excess of 170 km per hour.*
- *New project launched*

- **The Barbados Boardwalk**

"...shows that it is possible to achieve positive synergies between the disaster risk prevention and mitigation and a strategic sector such as tourism, to maximize the economic benefits for the country"

– Héctor Malarín, IDB

Build Better Jamaica

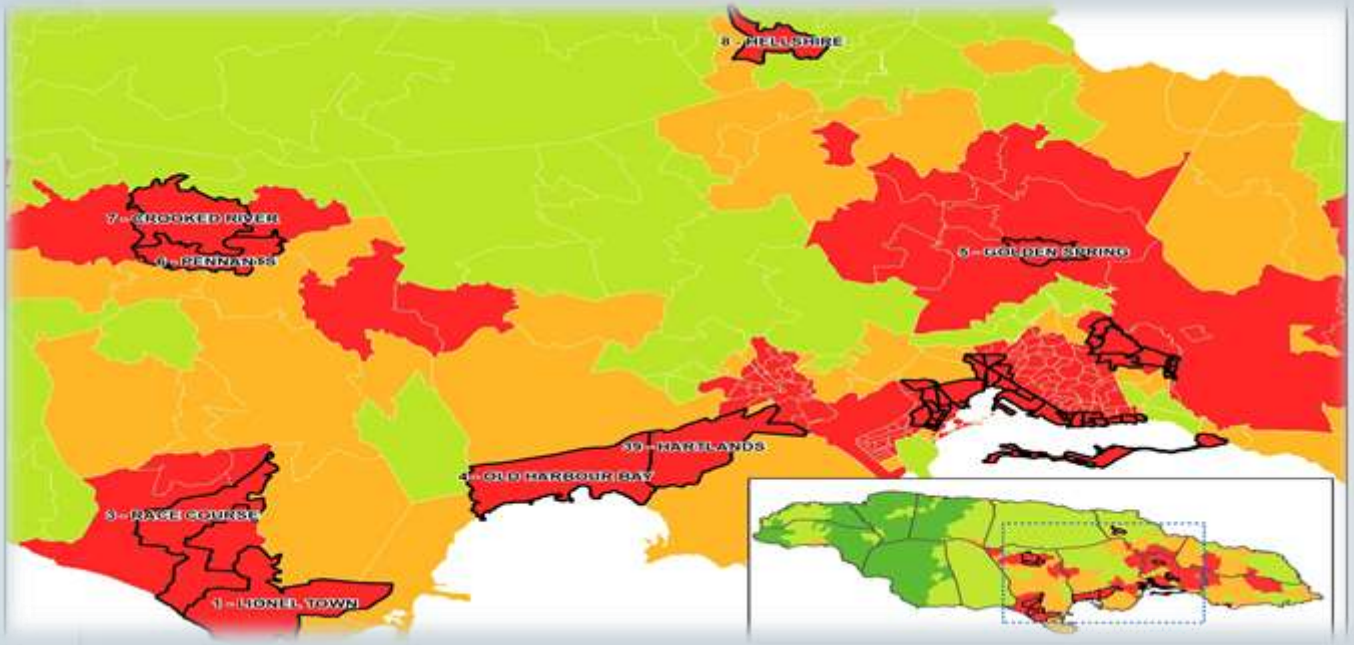
- Title: **'Developing Design Concepts for Climate Change Resilient Buildings'**

- Technical Cooperation: **IDB and UWI – ISD**
- Financing: **Inter American Development Bank**
- Duration: **April 2012 – September 2013**
- Value: **US $500,000**
- Focus: **The Built Environment in Jamaica and the Caribbean region**

BUILD BETTER
JAMAICA

Build Better Jamaica

Technical Components



- **Technical Assessment** - Technical, Legal & Economic Reviews, ERA Green Paper Review, Building Code Review
- **GIS Mapping** - Climate Change vulnerability mapping
- **Dissemination & Public Awareness**

Build Better Jamaica

Project Goals

- to improve the **assessment** of climate change related **risks** as it relates to infrastructure;
- to **increase knowledge** about climate resilient and resource efficient construction concepts, designs and materials in the building sector;
- to **increase awareness and information** about resilience to climate change in the general public – Jamaica and the Caribbean.

BUILD BETTER
JAMAICA

Developing Design Concepts For Climate Change Resilient Buildings

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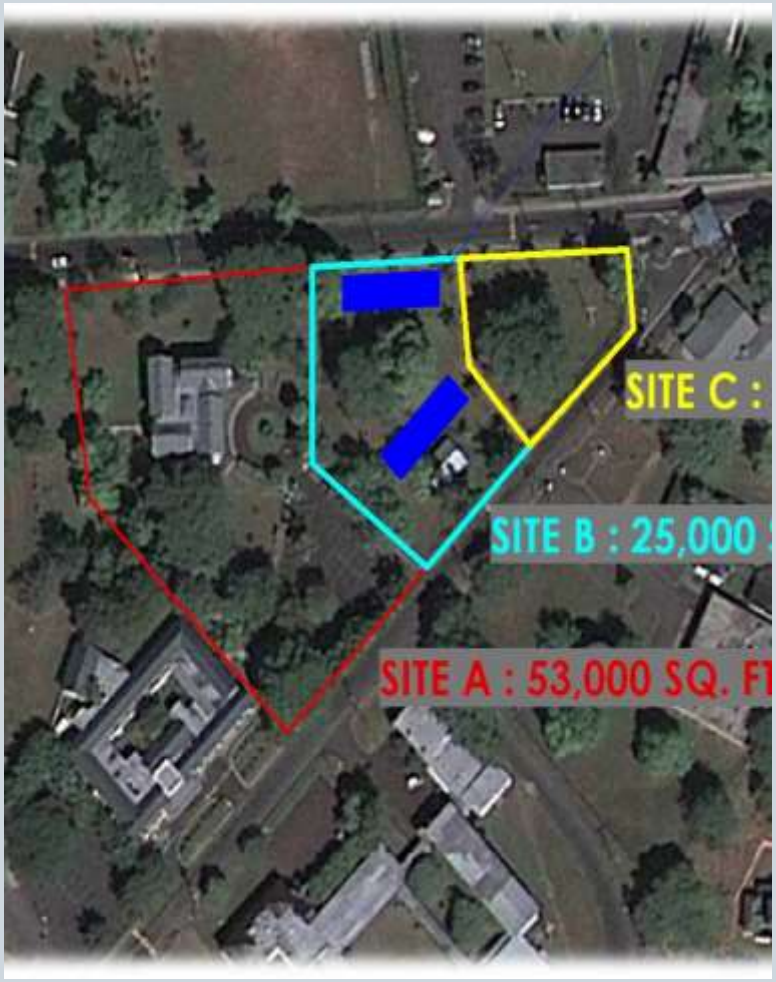
- **Can Jamaica Develop Sustainably?**

Build Better Jamaica

Phase 2

- *Promoting Energy Efficiency & Renewable Energy in Buildings in Jamaica*
- UNEP + GEF Trust Fund
- September **2013 – 2017**
- Financing: **US$2.3M**
- Total Value: **US$7.4M**
- UNEP Priority: Climate Change
- Prototype Building + Retrofit Elements



- **Build Better Jamaica**

  Phase 2

Learning from the past, preparing for the future…

- Conclusion


"Do the best you can
until you know better.
Then when you know
better, do better."
Maya Angelou

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