

# **UNCTAD National Workshop Jamaica**

30 May – 1 June 2017, Kingston, Jamaica

## **“Climate Change Impacts and Adaptation for Coastal Transport Infrastructure in Caribbean SIDS”**

### **Coastal Transportation Infrastructure in the Caribbean – An Economic Context**

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# COASTAL TRANSPORTATION INFRASTRUCTURE IN THE CARIBBEAN – AN ECONOMIC CONTEXT

UNCTAD National Workshop Jamaica

"Climate change impacts and adaptation for coastal  
transport infrastructure in Caribbean SIDS", May 30  
– June 01, 2017

Willard Phillips  
ECLAC

## INTRODUCTION

- ▶ Airport Infrastructure
- ▶ Sea transport Infrastructure
- ▶ Economics: Contribution, Costs and Markets
- ▶ Regional Context – Integration of systems and markets
- ▶ Risk and Resilience
- ▶ ECLAC's Efforts

# CARIBBEAN AIRPORT INFRASTRUCTURE





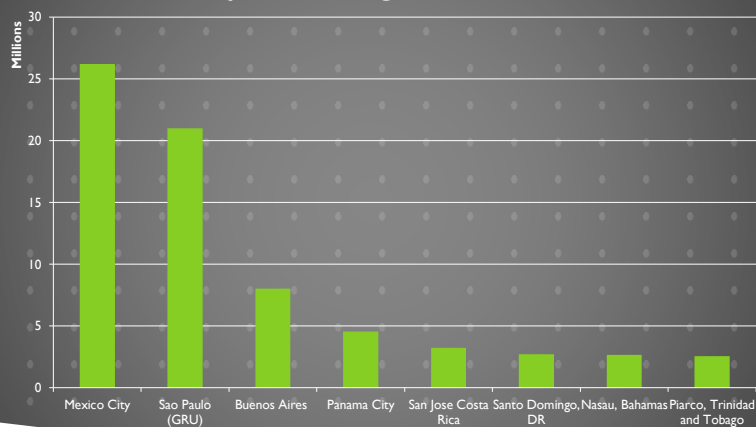
## ECONOMIC CONTEXT – GENERAL CHARACTERISTICS (LAC)

- ▶ In global terms, LAC airports are smaller
- ▶ Have fewer aircraft movements
- ▶ Handle smaller cargo volumes
- ▶ Have greater reliance on international passengers for financial viability
- ▶ Great heterogeneity among regional airports
- ▶ Situation is even more limiting in the Caribbean

Source: Serebrisky, 2012

## ECONOMIC CONTEXT

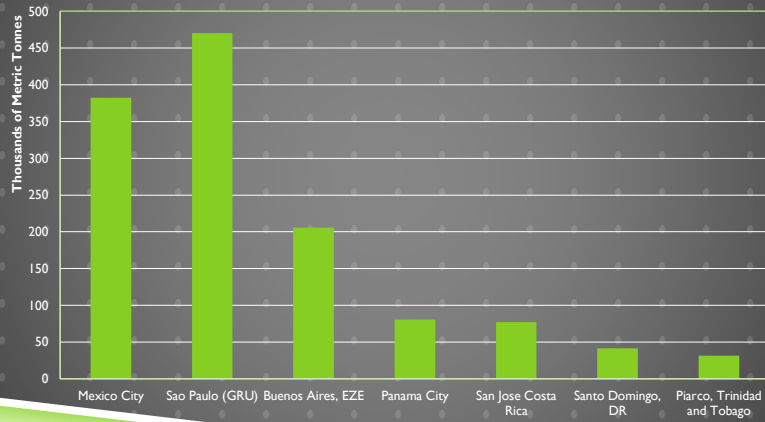
LAC Airports: Passenger Movements - 2008



Source: Serebrisky, 2012

# ECONOMIC CONTEXT

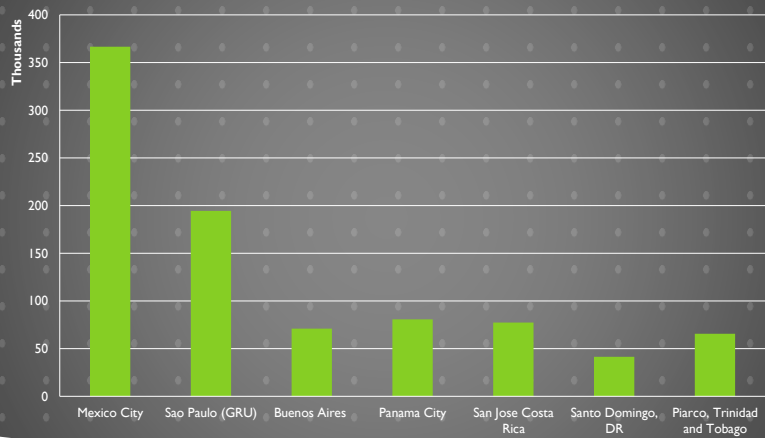
## LAC Airports: Cargo Movements - 2008



Source: Serebrisky, 2012

# ECONOMIC CONTEXT

## LAC Airports: Aircraft Movements - 2008



Source: Serebrisky, 2012

## ECONOMIC CONTEXT

- ▶ Airports are critical to tourism business in the Caribbean
- ▶ Tourism contributes between 10% and 75% of GDP for most destinations
- ▶ Tourism employment - 8% - 80%

Source: WTTC, 2015



## CARIBBEAN SEAPORTS

Typically three types –

- ▶ Cargo – commercial/industrial
- ▶ Cruise
- ▶ Marinas







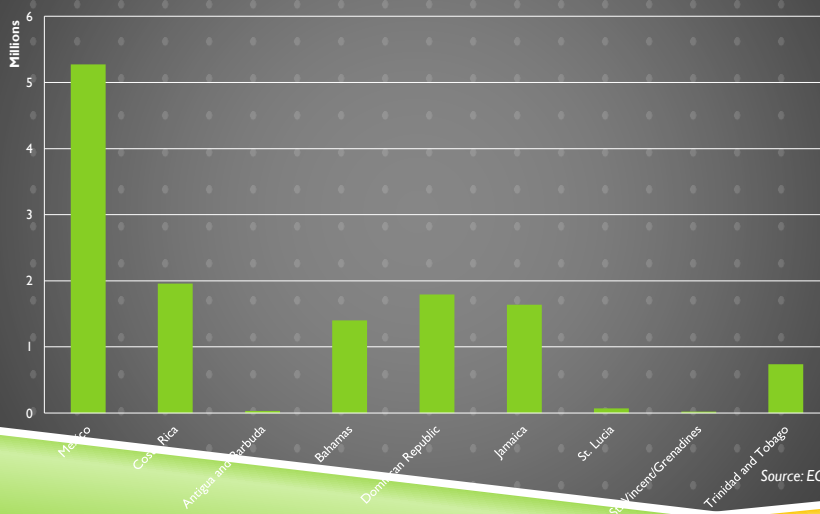


## ECONOMIC CONTEXT – SEA PORTS

- ▶ Seaports are critical to trade
- ▶ Also tourism business in the case of Cruise tourism
- ▶ Capital Investments include Commercial Ports, Cruise Terminals, and Marinas

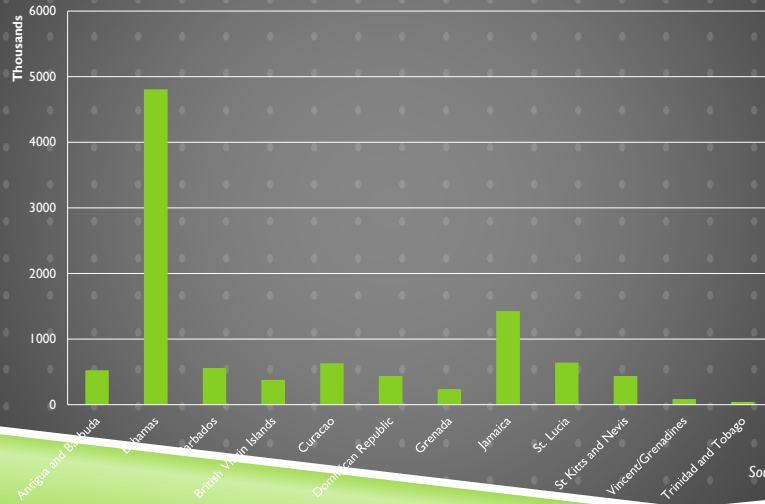
## ECONOMIC CONTEXT – SEA PORTS

Container Port Traffic TEU - Selected LAC, 2014



# ECONOMIC CONTEXT – SEA PORTS

Cruise Passenger Arrivals, 2014



Source: CTO, 2015

# REGIONAL CONTEXT



## REGIONAL CONTEXT

- ▶ Large number of very small markets imply high fixed cost per capita for transportation infrastructure
- ▶ Limited scope for economies of scale
- ▶ Limited opportunities for PPP in infrastructure developments
- ▶ Results in inefficient intra regional transportation systems in terms of costs and time

## RISK AND RESILIENCE

- ▶ Increased frequency and intensity of natural events means greater risks of infrastructure loss
- ▶ Higher risk coverage costs, and costs to invest
- ▶ Greater need for infrastructure redundancy investment
- ▶ Implications for integrating air and maritime transportation

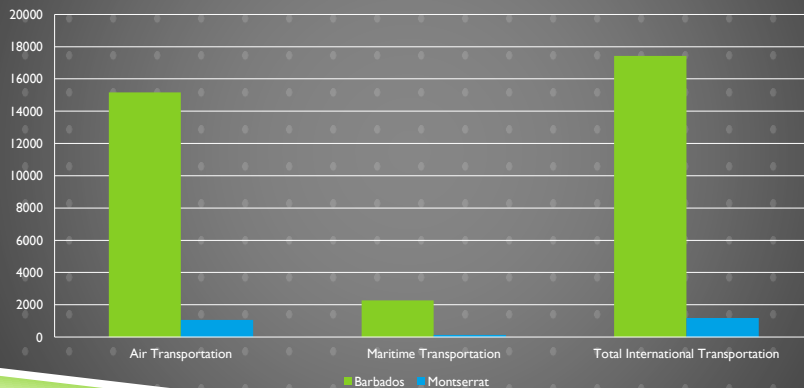
## ECLAC'S EFFORTS

- ▶ Assessment of Economic Impact of Climate Change on the transportation sector
- ▶ Demand Model for Maritime Passenger Transportation
- ▶ Recreational Demand for Yachting Services

## ECLAC'S EFFORTS

### IMPACT OF CLIMATE CHANGE ON TRANSPORTATION SECTOR

Projections - Impact of Temperature and Precipitation on Transport Expenditure in Barbados - B2 - US\$ Millions



Source: ECLAC, 2011

# ECLAC'S EFFORTS

## IMPACT OF CLIMATE CHANGE ON TRANSPORTATION SECTOR

### Barbados' Projected Expenditure Loss as % of 2008 GDP - B2: 2050

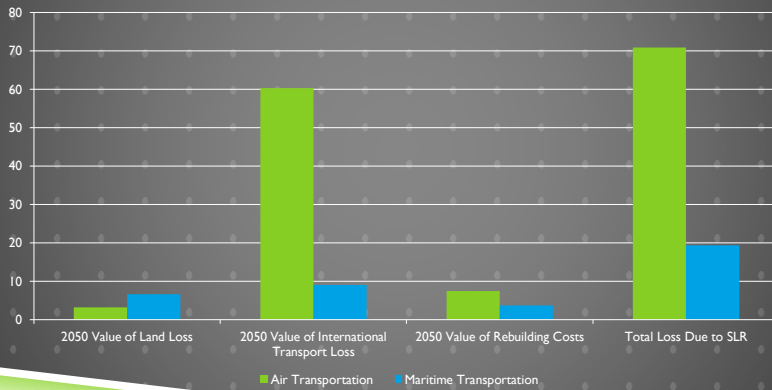


Source: ECLAC, 2011

# ECLAC'S EFFORTS

## IMPACT OF CLIMATE CHANGE ON TRANSPORTATION SECTOR

### Barbados' Projected SLR Impact as % of 2008 GDP - B2: 2050



Source: ECLAC, 2011

## ECLAC'S EFFORTS

### DEMAND MODEL FOR MARITIME PASSENGER TRANSPORTATION IN THE CARIBBEAN

- ▶ Demand Model estimated using unbalanced panel data set for 15 destinations for period 2000 - 2014
- ▶ Significant Variables:
  - ▶ Real fare of service (Elasticity: -1.17% to -0.91%)
  - ▶ International economic activity (Elasticity: 1.5%)
  - ▶ Number of Passengers arriving by Air (Elasticity 0.27% - 0.30%)

Source: ECLAC, 2013

## ECLAC'S EFFORTS

### DEMAND MODEL FOR YACHTING AND MARINA SERVICES IN THE CARIBBEAN

- ▶ Recreational Demand Model estimated for OECS countries
- ▶ Significant Variables:
  - ▶ Corporate Profits in source markets (Elasticity: -0.83)
  - ▶ Airline jet fuel price (Elasticity: -0.58)
  - ▶ Frequency of hurricanes (Elasticity -0.07)

Source: ECLAC, 2013





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