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**“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 Saint Lucia

"Climate change impacts and adaptation for coastal
transport infrastructure in Caribbean SIDS", 24 – 26
May 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





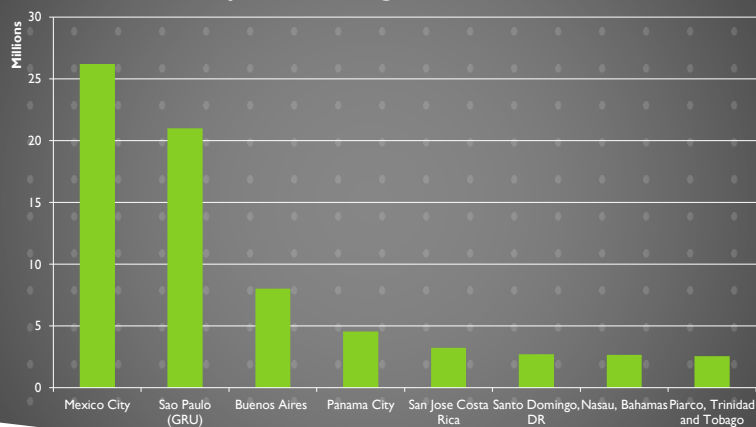
ECONOMIC CONTEXT – GENERAL CHARACTERISTICS (LAC)

- ▶ 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

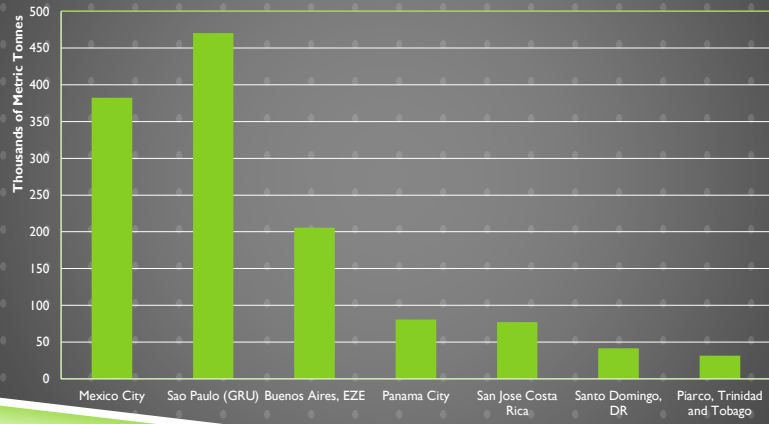
LAC Airports: Passenger Movements - 2008



Source: Serebrisky, 2012

ECONOMIC CONTEXT

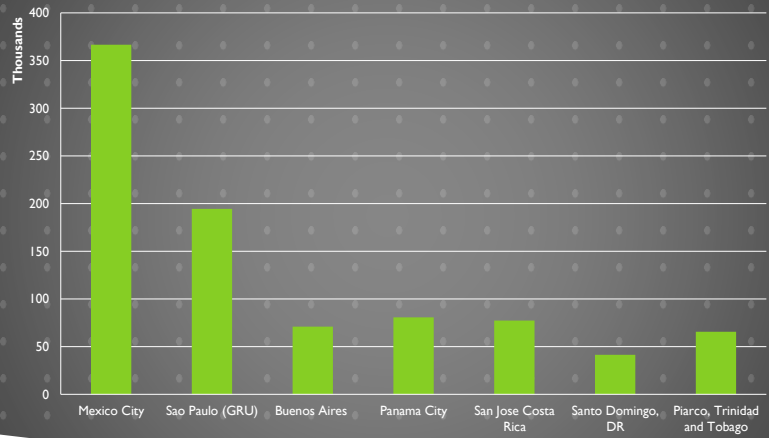
LAC Airports: Cargo Movements - 2008



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%



CARIBBEAN SEAPORTS

Typically three types –

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





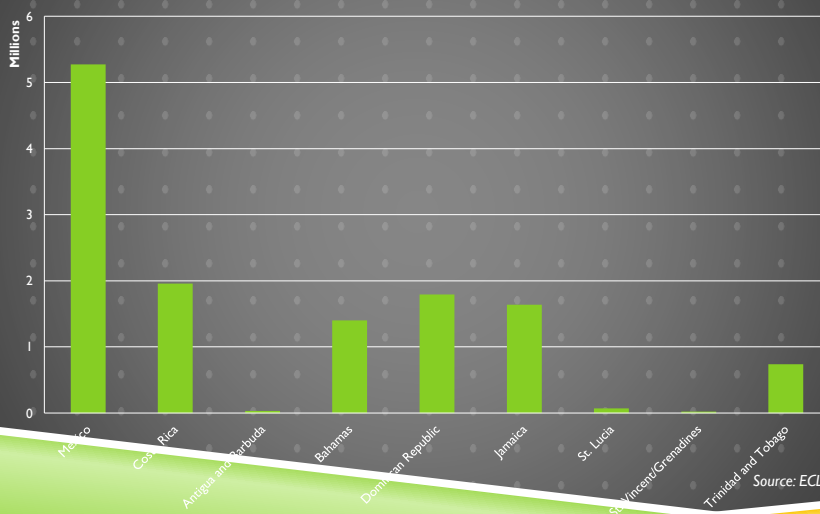


ECONOMIC CONTEXT – SEA PORTS

- ▶ 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

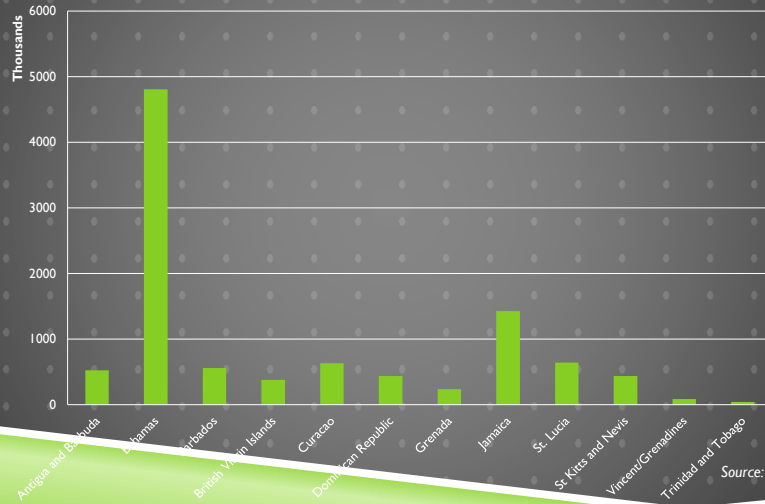
Container Port Traffic TEU - Selected LAC, 2014



Source: ECLAC, 2015

ECONOMIC CONTEXT – SEA PORTS

Cruise Passenger Arrivals, 2014



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

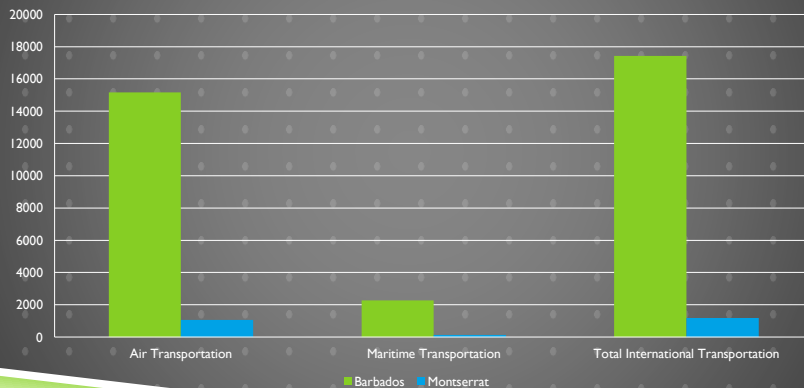
ECLAC'S EFFORTS

- ▶ 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

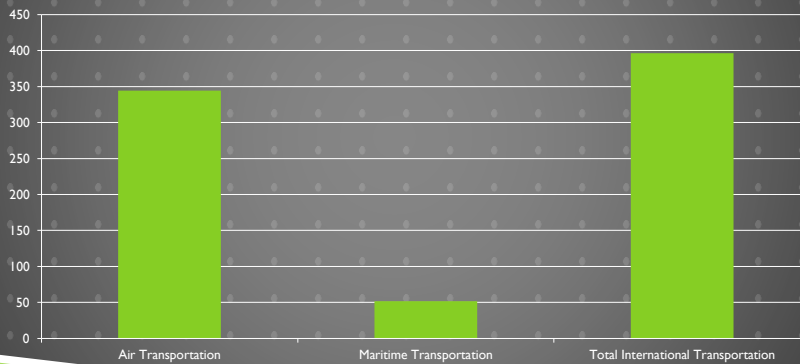


Source: ECLAC, 2011

ECLAC'S EFFORTS

IMPACT OF CLIMATE CHANGE ON TRANSPORTATION SECTOR

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

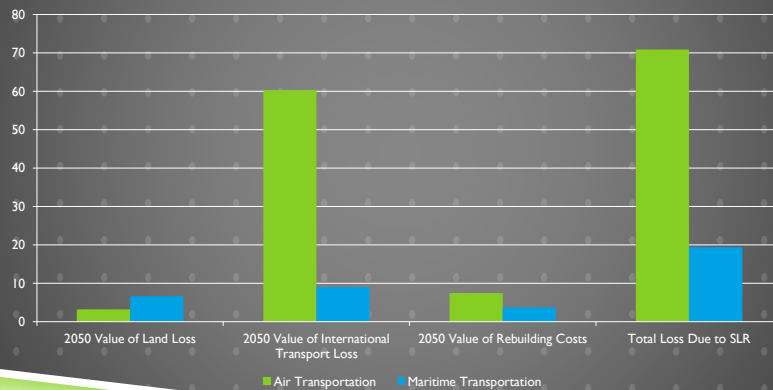


Source: ECLAC, 2011

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, 2012

