CARICOM SIDS background

Adrian Trotman

Caribbean Institute for Meteorology and Hydrology

CARICOM: 15 Nations

Five Associate States

CARICOM – physical and socio-economic background and Food Production issues

CARICOM in CONTEXT

- 15 Member States and 5 Associate States
- Mainly developing small island states
- Extensive coastlines relative to land area – coastal and marine based activities important
- Significant amounts of their economic wealth and infrastructure in coastal regions
- Small climate sensitive interlocking economies (e.g., agricultural and tourism based, also industry and services fairly dominant) that often lack significant diversity at the national level thereby making them particularly vulnerable to economic shocks.
- Agriculture's contribution to GDP is declining, but still very important for employment
- …Fisheries also important to food contribution and livelihoods
- Only about 8 % of farmed land under irrigation
- Limited or no natural resources, with Trinidad and Tobago (oil and gas), Jamaica (bauxite) and Guyana (bauxite and precious metals) being exceptions.
- Expanding populations that are dominated by youth
- CARICOM has 6 of the top ten highest ranked countries with losses as a percentage of GDP from Climate (Climate Risk Index 1993 to 2012 Global Climate Risk Index 2014)
- The Caribbean can account for seven of the world's top 36 water stressed countries
- At risk to natural disasters, particularly weather and climate related

Size and Population of CARICOM Countries		
Countries	Size (Sq. Mi.)	Population
Antigua/ Barbuda	170	90,801 (2010)
The Bahamas	5358	372,380 (2014)
Barbados	166	277,668 (2012)
Belize	8867	358,899 (2014)
Dominica	290	69,623 (2012)
Grenada	133	108,580 (2013)
Guyana	83000	746,900 (2013)
Haiti	10714	10,413,211 (2012)
Jamaica	4244	2,714,734 (2013)
St. Kitts/ Nevis	104	46,398 (2013)
St. Lucia	238	169,115 (2012)
St. Vincent/ Grenadines	150	109,903 (2011)
Suriname	63251	541,638 (2012)
Trinidad/ Tobago	1981	1,340,557 (2013)
Source: www.caricomstats.org		

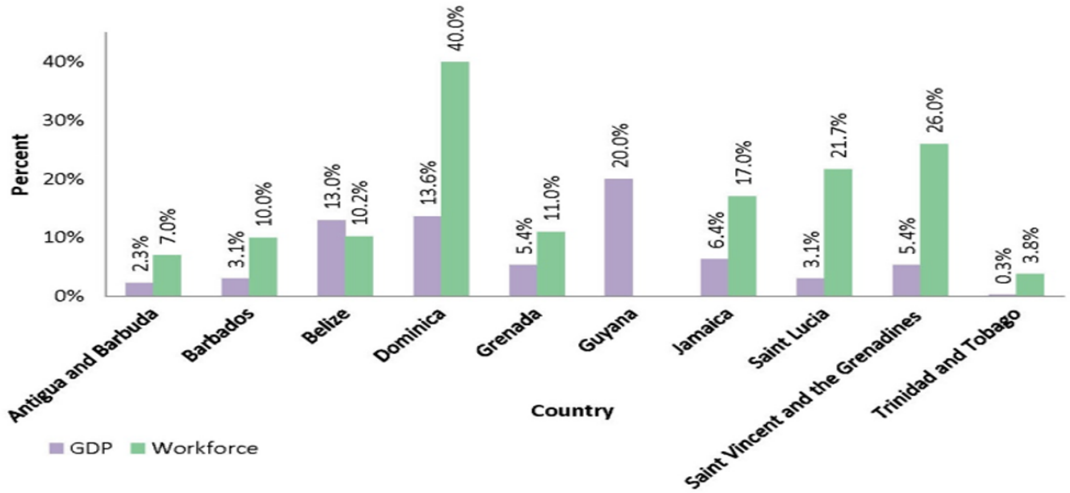
CARICOM countries selected economic and agricultural indicators, 2012.

Countries	Economy output related to GDP			
	Total (Constant 2005 million US$)	Agriculture (%)	Industry (%)	Services (%)
Antigua/ Barbuda	1024.72	2.12	18.50	79.40
The Bahamas	7842.27	2.09	17.92	79.90
Barbados	4064.09	1.47	15.67	82.86
Dominica	448.11	14.86	15.32	69.82
Grenada	657.44	5.41	11.10	83.48
Haiti	4682.07	N/A	N/A	N/A
Jamaica	N/A	6.72	20.82	72.45
St. Kitts/ Nevis	557.62	1.55	23.70	74.75
St. Lucia	1084.89	3.60	14.90	81.50
St. Vincent/ Grenadines	597.04	7.48	20.49	72.02
Trinidad/ Tobago	18969.12	0.62	57.39	41.99

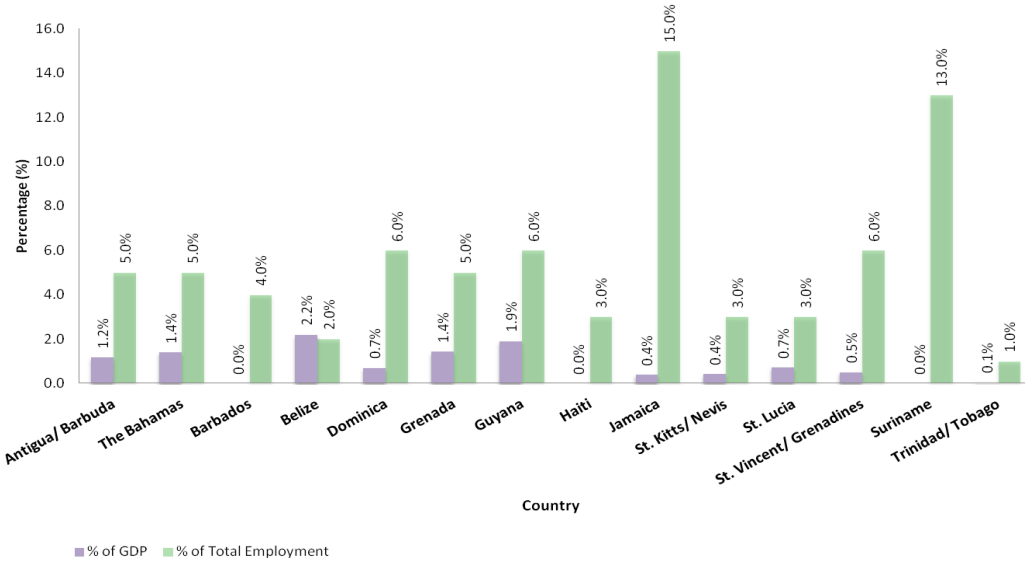
Source: World Bank Indicators Online, 2012

Selected economic performance indicators for CARICOM countries, Most Recent Value (YR2011)					
Countries	Employment indicators			Human Development Indicator, 2013	
	Agriculture (%)	Industry (%)	Services (%)	HDI Value	HDI Rank
Antigua/ Barbuda	2.8	15.6	81.6	0.774	61st
The Bahamas	3.7	12.9	83	0.789	51st
Barbados	3.3	20.3	76.4	0.776	59th
Dominica	21	19.8	58.8	0.717	93rd
Grenada	13.8	23.9	58.6	0.744	79th
Haiti	50.5	10.8	38.7	0.471	168th
Jamaica	17.6	16.1	66.3	0.715	96th
St. Kitts/ Nevis	0.2	48.9	42.1	0.75	73rd
St. Lucia	14.8	16.1	59.4	0.714	97th
St. Vincent/ Grenadines	15.4	19.6	60.6	0.719	91st
Trinidad/ Tobago	3.8	32.2	63.8	0.766	64th
Source: World Bank Indicators Online, Most recent value (YR2011)					
Source: UNDP Human Development Reports, 2013, hdr.undp.org					

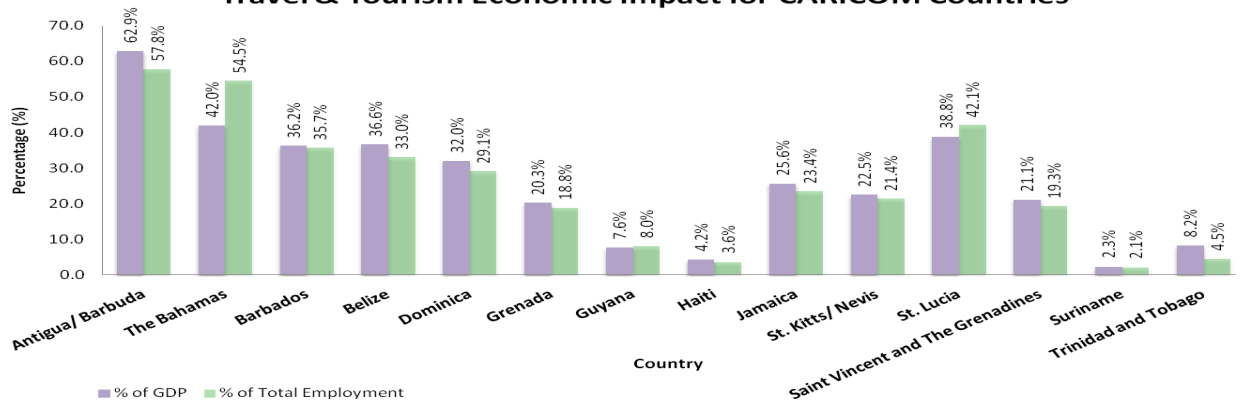
Agriculture Economic Impact for CARICOM Countries



Fisheries Economic Impact for CARICOM Countries



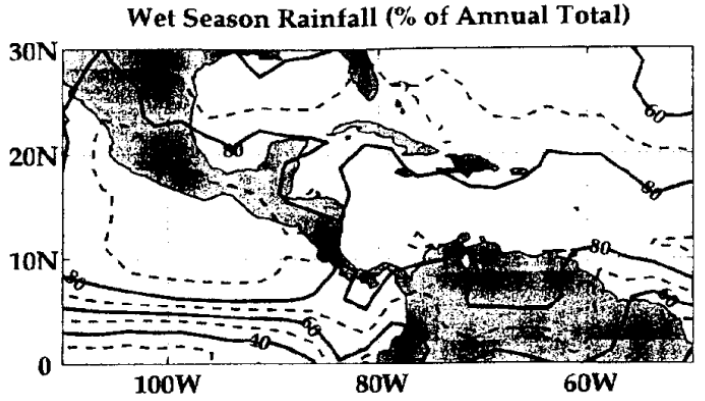
Travel & Tourism Economic Impact for CARICOM Countries



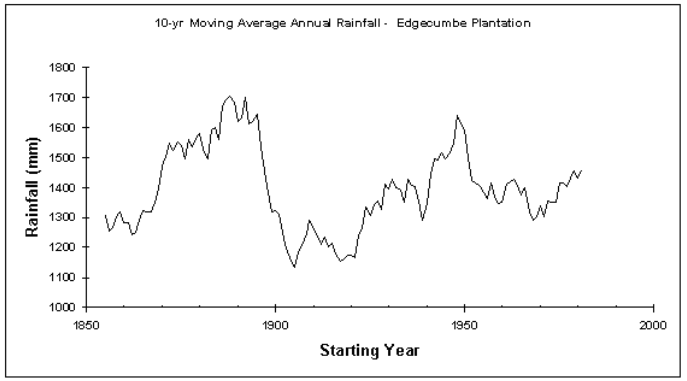
Caribbean Weather and Climate

RAINFALL (most limiting and variable)

- Characterized by a wet and a dry season…
- …except northern Guyana with two wet and two dry seasons associated with ITCZ – extended dry seasons cause water availability concerns
- At least 70 to over 80 % of the rainfall occurs during the wet season
- Large seasonal, interannual and inter-decadal variability…
- …associated with ENSO, Pacific-Atlantic, SST and SLP anomalies and gradients, NAO and CLLJ
- Tropical systems such as Tropical waves, tropical Cyclones, Frontals Systems, localized convection
- Rainfall also cyclical – 50 to 60 years



Enfield and Alfaro, 1999



Caribbean Weather and Climate

Temperature

- relatively constant
- annual range 2 to 5^{o}C
- diurnal range larger and influenced by…
- …prevailing wind, topography, altitude, nature of the underlying surface, and cloudiness

Wind

- predominantly easterly
- strongest during the dry season
- Highest gusts associated with tropical cyclones

Concerns over Climate Change – increasing temperatures, increasing drought threat, stronger cyclones, sea-level rise

Weather and Climate Related Impacts Examples from Agriculture and Food Sector

Country	Year	Impact (million US $)
Jamaica	1997–1998	Major losses in sugar sector. Government offered $100 in assistance.
Jamaica	1999-2000	Crop losses of approximately $6.
Antigua and Barbuda	2009-2010	25% of onion crop los. Approximately 30% of the Tomato crop, estimated to total 250,000kg was lost.
Dominica	2009-2010	Banana production declined approximately 43% by March 2010 compared to the previous year.
Grenada	2009-2010	Total economic loss to the entire cropping sector amounted to $645,261.
Trinidad and Tobago	2009-2010	Food prices increased 6.9% in March 2010 compared with 6.3% in February and 2.7% in January.
Jamaica	2013	1606 hectares of the 4564 hectares under cultivation in select parishes adversely affected, with crop yield reductions from 2 to 70 %

Drought

Country	Year	Impact (million US $)
Bahamas	2007	Flooding associated with the passage of tropical cyclone Noel
Haiti	2008	Flooding associated with the passage of four tropical cyclones in less than 1 month. Over 600 dead with major losses in agriculture and further spiraling of food prices.
St. Lucia	2013	Flooding associated with a tropical trough system resulted in $3.71 in losses in the agricultural sector.

Flood

Tropical Cyclones

Country	Year	Impact (million US $)
Jamaica	2001	Hurricane Michelle 0.8% losses in GDP. Agriculture losses $11.5, mainly due to flooding.
Bahamas	2004	Hurricanes Frances and Jeanne, 7.3% of total GDP. Agriculture losses $45.
Grenada	2004	Hurricane Ivan 200% GDP in total losses. Agriculture losses $40.91% of forests and watersheds stripped of vegetation .
Jamaica	2004	Hurricane Ivan 8% GDP in total losses. Agriculture losses $138.
Dominica	2007	Hurricane Deane. Agriculture losses $17.
St. Lucia	2007	Hurricane Deane, 2.5% of total GDP. Agriculture losses $8.7 with banana accounting for 80.3% .
Antigua and Barbuda	2008	Hurricane Omar, approximately $18 in damages.
Antigua and Barbuda	2010	Hurricane Earl, total damage over $12.5.
St. Lucia	2010	Hurricane Tomas, Agriculture losses $56.21 which is 16.7% of the total impact.
Jamaica	2012	Hurricane Sandy, Agriculture losses $12.9. 2,930 hectares of crops damaged.

Damages to Fishing Sector

	Country	Year	Impact (million US $)
Coral Bleaching	Bahamas	1998	Death of Acropora cervicornis reefs and severe damage to A. palmate associated with elevated sea temperatures.
	Barbados	2005	70.6% of all coral bleached. Associated with elevated sea temperatures. Experienced across the region.
	Tobago	2010	Elevated temperatures, as high as 30.5°C, during the summer months of 2010 triggered a mass bleaching event in Tobago .
Fish Mortality	SE Caribbean	1999	Loss of reef fish due to bacteria emanating from the Orinoco river after heavy rain in the Amazon .
Fishing Infrastructure	Grenada	2004	The damages to the fisheries sector is estimated at $2.1(EC$5,732,500)
	Antigua and Barbuda	2010	Hurricane Earl caused an estimated EC $80,090 in damages to fishing vessels and equipment. EC$21,586 estimated as damages at Point Wharf Fisheries Complex.
	St. Lucia	2010	Total damage estimated at EC$1.616 million. Damage incurred by the marine fishing industry was the loss and /or destruction of fish pots (2,255 pots). There were minor damages to boats and engines.