

Generating climate change and disasters indicators for policy decision-making in Saint Vincent and The Grenadines



Regional work on environment statistics as a guiding force to improve availability of climate change and disasters statistics and indicators – CARICOM Secretariat –June, 2022

BACKGROUND

UNSD/CARICOM PROJECT:

- Introduction of Environment Statistics in the Caribbean Community (CARICOM) was in 1999 under a UNSD/CARICOM Project- "Strengthening Capacity in Social /Gender and Environment Statistics for Conference Follow-up". (First Development Account project).
- At that time, one country, **Belize**, had produced an Environment Statistics report in 1999 and **Jamaica** was also commencing work in this area of statistics;
- Project launch for ENV component took place in Belize and a **core set of statistics and indicators** were identified to be compiled by Member States based on **environmental issues** that were considered critical to CARICOM.

BACKGROUND

- UNSD/CARICOM PROJECT:
- The first regional publication, "The CARICOM Environment in Figures -2002" was published as a main project output.
- There was also technical assistance, training in IT, equipment provision and also support from international experts.
- Sustainability considerations led to the formation of a CARICOM Advisory Group on Statistics and the development of a CARICOM Programme in Environment and Social/Gender Statistics to encourage regional and national data compilation.

BACKGROUND

- The CARICOM core Environment Indicators have 12 Topics and 126 indicators including 21 CARICOM Core SDG indicators;
 - Population and Households (6)
 - Tourism (14)
 - Environment and Health (12; 6 CC SDG)
 - Hazardous events and disasters (8 indicators; 4 CC SDG);
 - Energy and Minerals (5)
 - Land use and Agriculture (4 indicators; I CC SDG)
 - Coastal and Marine Resources (3)
 - Biodiversity (8 indicators; 5 CC SDG)
 - Forest (6 indicators; I CC SDG)
 - Air (8 indicators; I CC SDG)
 - Waste (22 indicators; 3 CC SDG)
 - Water (30 indicators)

Topic	Sub-topic	Indicators	Framework						
Hazardou									
	Occurrence of hazardous events and disasters								
		Natural disasters by type and year Percentage of coral reefs destroyed by human activity and by natural	CARICOM Programme						
		disasters	CSMDG						
		Number of deaths, missing people, injured, relocated or evacuated due to disasters per 100,000 people	CC SDG						
		Social dislocation resulting from natural disasters	CSMDG						
		Economic losses resulting from natural disasters	CSMDG						
		Direct disaster economic loss in relation to global gross domestic product (GDP)	CC SDG						
		Direct disaster economic loss in relation to global GDP, including disaster damage to critical infrastructure and disruption of base services	CC SDG						
		Number of countries with national and local disaster risk reduction strategies	CC SDG						

Topic	Sub-topic	Indicators	Framework
Enviro			
	Water Quality		
		Level of Water Stress: freshwater withdrawal as a proportion of available freshwater resources	CC SDG
		Amount of water and sanitation related Official Development Assistance that is part of a government coordinated spending plan	CC SDG
	Human health		
		Number of Reported Cases of Environmentally Related Diseases	CARICOM Programme
	Vulnerable pop	ulation	
		Number of Households by Type of Water Supply	CARICOM Programme
		Number of Households by Type of Sanitation Facilities	CARICOM Programme
		Number of Households by Size of Household	CARICOM Programme
		Proportion of population using safely managed sanitation services including a hand washing facility with soap and water.	CC SDG
		Proportion of population using safely managed drinking water services	CC SDG
		Proportion of population with access to electricity	CC SDG
		Number of Households by Type of Fuel Used for Lighting	CARICOM Programme
		Number of families in coastal areas	CARICOM Programme
		Proportion of urban population living in slums, informal settlement or inadequate housing .	CC SDG

Topic	Sub-topic	Indicators	Framework
Waste			
	Solid Waste		
		Percentage of urban solid waste regularly collected and with adequate final discharge with regards to the total waste generated by cities	CC SDG
		Annual mean levels of fine particulate matter (e.g. PM2.5 and PM 10) in cities population weighted	CC SDG
		Number of Parties to international multilateral environmental agreements on hazardous and other chemicals and waste that meet their commitments and obligations in transmitting information as required by	
		each relevant agreement	CC SDG
Biodive	ersity		
	Protected Spe	cies	
		Proportion of fish stocks within biologically sustainable levels	CC SDG
		Red List Index	CC SDG
	Protected Are	as	
		Coverage of protected areas in relation to marine areas	CC SDG
		Proportion of important sites for terrestrial and freshwater Biodiversity	
		that are covered by protected areas by ecosystem type	CC SDG
		Official development assistance and public expenditure on conservation and sustainable use of biodiversity and ecosystems,	CC SDG
Popula	tion and House		
•		nfrastructure vulnerable to Climate Change	
		Number of Households by Type of Dwelling	CARICOM Programme
		Number of Households by Type of Tenure	CARICOM Programme
		Proportion of Households with Own Dwelling	CSMDGs
		Number of Households by Type of Material of Outer Walls	CARICOM Programme
		Number of Households by Type of Material Used for Roofing	CARICOM Programme
		Number of Households by Number of Bedrooms	CARICOM Programme

Topic	Sub-topic	Indicators	Framework
Tourisn	n		
	Tourist arrivals	Same-day visitor (or excursionist)	CARICOM Programme
		Tourist (or overnight visitor)	CARICOM Programme
		Cruise passengers	CARICOM Programme
		Number of tourist nights spent	CARICOM Programme
		Tourist Intensity Ratio	CARICOM Programme
		Tourism Penetration Ratio	CARICOM Programme
		Tourist Arrivals by Country of Origin	CARICOM Programme
		Tourist Arrivals by Type of Accommodation	CARICOM Programme
	Hotels	Number of Hotels Classified by Size	CARICOM Programme
		Total number of beds	CARICOM Programme
		Total number of rooms occupied	CARICOM Programme
		Room occupancy rate	CARICOM Programme
		Visitor expenditure (in US\$)	CARICOM Programme
		Total directly employed in tourism (total, women, men)	CARICOM Programme
Energy	and Minerals		
	Energy Product	tion and Consumption	
		Energy Consumption by Type and Year	CARICOM Programme
		Number of Households by Type of Fuel Used for Cooking	CARICOM Programme
	Minerals		
		Mineral Production by Type	CARICOM Programme
		Mineral Reserves by Type	CARICOM Programme
Land U	se and Agricultu	ure	
	Land Use		
		Land Use by type and year	CARICOM Programme, FDES
		Ratio of land consumption rate to population growth rate	CC SDG
	Agricultural Cr	ops	
		Use of Fertilizers by Type and Year	CARICOM Programme, FDES
		Use of Pesticides by Type and Year	CARICOM Programme, FDES

Topic	Sub-topic	Indicators	Framework						
Coasta	Coastal and Marine resources								
Marine resources									
		Total marine area	CARICOM Programme, FDES						
		Fish landings by type	CARICOM Programme, FDES						
		Protected marine area	CARICOM Programme, FDES						
Forest									
		Protected Area as a Percentage of Total Territorial Area							
		Forest area as a proportion of total land area	FDES, CC SDG						
		Total Territorial Area	CARICOM Programme, FDES						
		Total Protected Area (terrestrial and marine)	CARICOM Programme, FDES						
		Total forest area	CARICOM Programme, FDES						
		Protected forest area	CARICOM Programme, FDES						
		Total land area	CARICOM Programme, FDES						
		Protected Forest Area as a percentage of Total Forest Area	CARICOM Programme, FDES						
		Protected Forest Area as a percentage of Total Land Area	CARICOM Programme, FDES						
Air									
	GHG emissio	ns							
		CO2 emission per unit of value added.	CC SDG						
		Emissions of Sulfur Dioxide (SO2)	CARICOM Programme, FDES						
		Emissions of Nitrogen Oxides (NOx)	CARICOM Programme, FDES						
		Emissions of Non-Methane Volatile Organic Compounds (NM-VOCs)							
		Emissions of Carbon Dioxide (CO2)	CARICOM Programme, FDES						
		Emissions of Methane (CH4)	CARICOM Programme, FDES						
		Emissions of Nitrous Oxide (N2O)	CARICOM Programme, FDES						
		Emissions of Lead (Pb) and Consumption of Leaded Petrol	CARICOM Programme, FDES						

CAPACITY BUILDING ACTIVITIES

 A series of capacity-building activities have been undertaken in the Region with the support of IDPs to strengthen capacity in the production of Environment Statistics.

- These take various forms including:
 - Capacity Building and Training: in-country technical support;
 - Regional capacity building workshops/meetings; and
 - Technical Working Group (TWG)

CAPACITY BUILDING ACTIVITIES

Date	Location	Source of Funds
September 12- 13, 2005	The Bahamas	World Bank
July 20-24, 2009	Antigua and Barbuda	The World Bank in collaboration with United Nations Economic Commission for Latin American and the Caribbean (UNECLAC) and the United Nations Statistical Division (UNSD)
September 13- 17, 2010	Suriname	9th EDF and Caribbean Integration Support Programme (CISP)
September 12-16, 2011	St. Kitts and Nevis	9th EDF and Caribbean Integration Support Programme (CISP)
April 7-8, 2014	St. Vincent and the Grenadines	10th EDF CSME and Regional and Economic Integration Programme
	September 12- 13, 2005 July 20-24, 2009 September 13- 17, 2010 September 12- 16, 2011	September 12- 13, 2005 July 20-24, 2009 Antigua and Barbuda September 13- 17, 2010 September 12- 16, 2011 April 7-8, 2014 St. Vincent and the

CAPACITY BUILDING ACTIVITIES

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	Activity	Date	Country(ies)	Source of Funds
	Capacity Building and Training: incountry technical support	July 2005	Trinidad and Tobago, St. Vincent and the Grenadines, Dominica	World Bank
	Meeting on CARICOM Support for the Compilation and Dissemination of Environment Statistics Focusing on Biodiversity	November 2012	Dominica, Antigua and Barbuda, Jamaica	European Commission funded Capacity Building related to MEAs in ACP countries - Caribbean Hub sub-component
	Support for the compilation of Environment Statistics in the CARICOM Region	2015-2017	Grenada, St. Kitts and Nevis, St. Vincent and the Grenadines, Barbados and Montserrat	Tenth European Development Fund (10th EDF)
	"Capacity Building in Statistics" – Assessment Mission implemented by the Italian National Institute of Statistics (Istat)	2019-2022	Jamaica and Suriname for Environment Component	AICS – Italian Agency for Development Cooperation
	Reinforcement of Capacity Building Statistics through support for the reduction of data gaps in environment statistics	2020- (ongoing)	All Member States and Associate Members	Eleventh European Development Fund (11th EDF)

STATUS - CURRENT WORK

ITALIAN PROJECT:

- "Capacity Building in Statistics" project funded by the Italian Agency for Development Cooperation (AICS) and implemented by the Italian National Institute of Statistics (Istat). Jointly with the CARICOM Secretariat.
- The Italian project is complimented by the "Support to Statistical Capacity in CARICOM Countries" initiative funded by the Inter-American Development Bank (IDB)
- Both projects are aimed at providing the RSP of the CARICOM Secretariat and NSOs with being able to compile a range of complete and reliable information concerning 3 fields – Agriculture, Gender and Environment

STATUS - CURRENT WORK

ITALIAN PROJECT:

- Outputs for both projects:
- Training Workshop on Environment Statistics, Climate Change Framework and Sendai Framework
- Training Workshop on SDGs Framework
- TA (advice and sharing experience) to enhance the NSO role within the NSS
- Integrated database system developed and training undertaken to enable access to administrative data within the NSS., including on Agriculture, Environment and Gender Statistics
- Protocols for the exchange of data on Environment and the other areas developed
- Contribution to the CARICOM online knowledge base of these areas of statistics facilitated;

STATUS-CURRENT WORK

Project recommendations:

- Organise the metadata mapping of methodology, definitions, data sources and quality checks, on Environment Statistics and connecting these to the SDGs, Climate Change and Hazardous Events;
- Strengthening the knowledge on SDGs' definitions and metadata and the linkages between environmental indicators, climate change indicators, Sendai indicators and SDGs metadata, data and indicators.
- Stronger MOUs between NSOs and agencies
- Better use of data already available from the existing administrative sources
- Encourage countries to produce the minimum set of core environmental indicators

From Environment to Climate Change Statistics

- The Secretariat has now produced a total of four (4) CARICOM Environment in Figures publication plus its first Climate Change Statistics Publication.
- The CARICOM Climate Change Statistics Publicationswhich is largely exploratory. Is based on the fact that Climate Change is of high importance to CARICOM Small Island Developing States and it is hoped that this first publication can lay the groundwork for future work in this area.
- The approach to the production of Climate Change Statistics utilised the framework of the FDES 2013 and specifically the IPCC schematic framework;

From Environment to Climate Change Statistics

- The tables previously published under environment statistics were rearranged under the five (5) components- Drivers, Impacts, Adaptation, Mitigation and Vulnerability;
- New tables were identified where required and the series in the existing tables were updated (up to 2019 for some tables).
- Key Lesson learnt: Strengthening Environment Statistics can lead to the production of Climate Change Statistics

- DRIVERS (Selected Tables)
- Sub-component 1.1: Emissions to Air
- Topic 1.1.1: Emissions of greenhouse gases
- 1.1.1.a: Total emissions of direct greenhouse gases (GHGs), by gas:
- 1.1.1.a.1: Carbon dioxide (CO₂)
- Table 1.1.1.a.1: Carbon dioxide emissions (CO2): 2000-2014

Topic 1.1.1: Emissions of greenhouse gases

Table 1.1.1.a.1: Carbon dioxide emissions (CO₂): 2000-2014

							(Gg)
Country	2000	2001	2002	2003	2004	2005	2006
Antigua and Barbuda							945.54
Barbados	1134.00	1152.00	1152.00	1138.00	1166.00	1208.00	1225.00
Belize	11950.00			18168.00			17375.00
Dominica	106.00	118.00	113.00	111.00	111.00	119.00	
Grenada	207.50	216.70	226.40	238.70	232.20	243.40	251.40
Guyana	1734.00	1713.00	1684.00	1675.00	1731.00		
Haiti	2595.81						
Jamaica							11205.00
Saint Lucia							
St. Vincent and the Grenadines	155.15				217.41		

Topic 1.1.1: Emissions of greenhouse gases

Table 1.1.1.a.1: Carbon dioxide emissions (CO₂): 2000-2014

								(Gg)
Country	2007	2008	2009	2010	2011	2012	2013	2014
Antigua and Barbuda								
Barbados	1305.00	1380.00	1427.00	1491.00				
Belize			13449.00					
Dominica								
Grenada	264.90	280.10	277.80	289.00	275.00	295.90	335.00	278.90
Guyana								
Haiti								
Jamaica	9857.00	10658.00	7918.00	7285.00	7870.00	7387.00		
Saint Lucia				493.00				
St. Vincent and the Grenadines								

- DRIVERS (Selected Tables)
- Sub-component 1.1: Emissions to Air
- 1.1.1.a.2: Nitrous oxide (N2O)
- Table 1.1.1.a.2: Nitrous Oxide (N2O) emissions: 2000-2014
- 1.1.1.a.3: Methane (CH4)
- Table 1.1.1.a.3: Methane (CH4) emissions: 2000-2014
- 1.1.1.a.4: Hydrofluorocarbons (HFCs)
- Table 1.1.1.a.4: Hydroflurocarbon (HFC) Emissions: 2000-2014

- DRIVERS (Selected Tables)
- Sub-component 1.1: Emissions to Air
- 1.1.1.b: Total emissions of indirect greenhouse gases (GHGs), by gas:
- 1.1.1.b.1: Non-methane volatile organic compounds (NM-VOCs)
- Table 1.1.1.b.1: Non-Methane Volatile Organic compounds (NMVOCs) emissions: 2000-2014



- DRIVERS (Selected Tables)
- Sub-component 1.2: Energy Resources
- Topic 1.2.1: Energy production, supply and consumption

- 1.2.1: Energy supply
- Table 1.2.1.1: CARICOM's Imports of Fossil Fuels:1995-2018
- Chart 1.2.1.1: Value of CARICOM's Imports of Fossil Fuels:1995-2018



- IMPACTS (Selected Tables)
- Subcomponent 2.1: Areas impacted by climate change
- Topic 2.1.1: Forests
- 2.1.1: Forest area
- Table 2.1.1.1: Total and Protected Forest Area: 2009-2013
- Table 2.1.1.2: Forest Area (% of land area)
- Chart 2.1.1.1: Forest Area (% of land area): 1990, 2000, 2010 and 2016
- http://statistics.caricom.org/climatepub.html

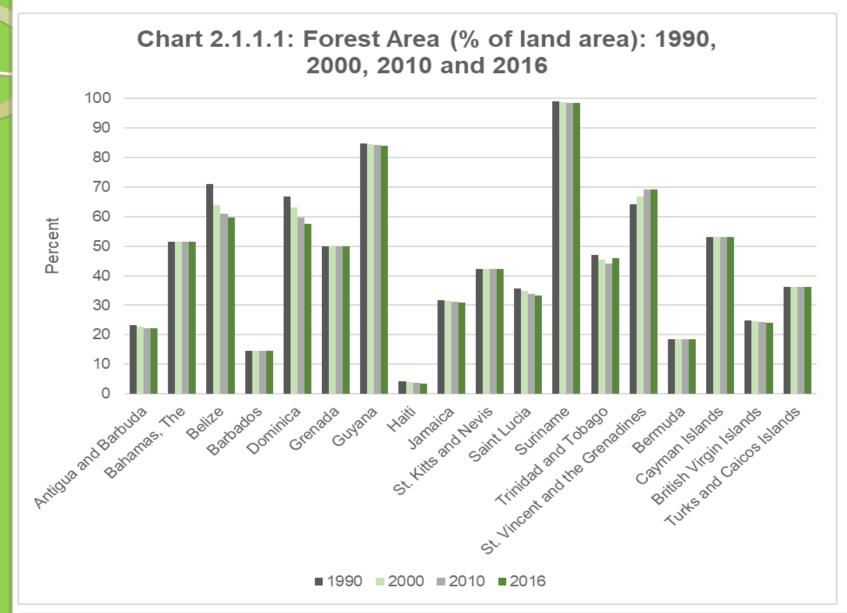
Topic 2.1.1: Forests

Table 2.1.1.2: Forest Area (% of land area): 1990, 2000, 2010 and 2016

				Percent
Country	1990	2000	2010	2016
Antigua and Barbuda	23.4	22.7	22.3	22.3
The Bahamas	51.4	51.4	51.4	51.4
Belize	70.8	64.0	61.0	59.7
Barbados	14.7	14.7	14.7	14.7
Dominica	66.7	63.1	59.5	57.4
Grenada	50.0	50.0	50.0	50.0
Guyana	84.6	84.4	84.2	83.9
Haiti	4.2	4.0	3.7	3.5
Jamaica	31.8	31.5	31.1	30.9
St. Kitts and Nevis	42.3	42.3	42.3	42.3
Saint Lucia	35.7	34.8	33.8	33.2
Suriname	98.9	98.7	98.4	98.3
Trinidad and Tobago	46.9	45.5	44.1	46.0
St. Vincent and the Grenadines	64.1	66.7	69.2	69.2
Bermuda	18.5	18.5	18.5	18.5
Cayman Islands	52.9	52.9	52.9	52.9
British Virgin Islands	24.7	24.5	24.3	24.1
Turks and Caicos Islands	36.2	36.2	36.2	36.2

Source:

Food and Agriculture Organization, electronic files and web site.



- IMPACTS (Selected Tables)
- Sub-component 2.2: Freshwater resources
- Topic 2.2.1: Freshwater resources
- Table 2.2.1.1: Renewable Freshwater Resources: 2009-2012
- Topic 2.2.2: Freshwater abstraction, supply and use
- Table 2.2.2.1: Freshwater Abstraction and Use: 2009-2012
- Table 2.2.2.1A: Freshwater Abstraction by Industry: 2009-2012
- Table 2.2.2.1B: Total Freshwater Use by Industry: 2009-2012
- Table 2.2.2.2: Water Supply Industry (ISIC 36): 2009-2012
- Table 2.2.2.3: Population with Wastewater Treatment: 2009-2012



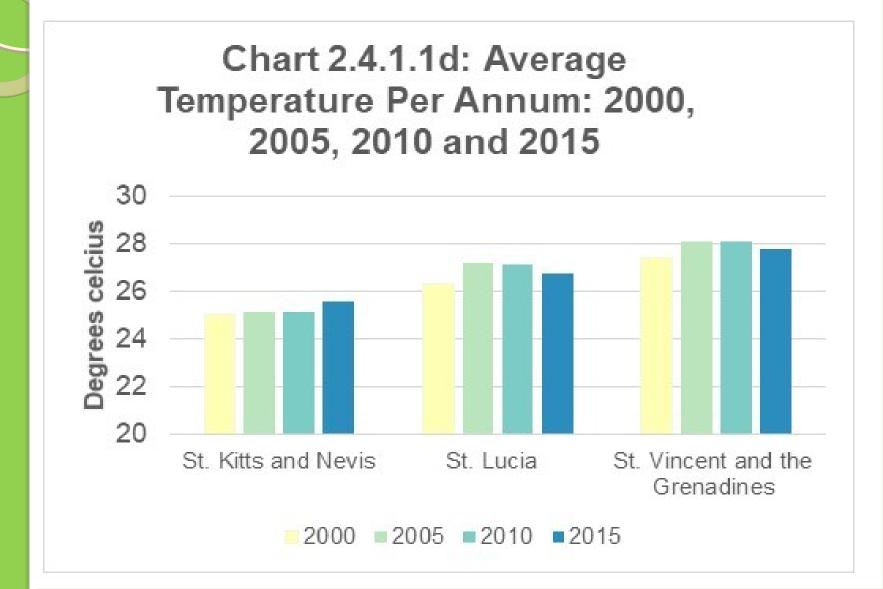
- IMPACTS (Selected Tables)
- Sub-component 2.3: Hazardous events and disasters
- Topic 2.3.1: Occurrence of hazardous events and disasters
- 2.3.1: People affected and Economic losses due to natural extreme events and disasters
- Table 2.3.1.1: Hazardous Events and Disasters by Year:
 2009-2019
 - COUNTRY, TYPE OF DISASTER, NAME OF DISASTER, DATE STARTED, TOTAL CASUALTIES of which killed, Injured
 - Data for Several Countries as far back as 1989 to 2019.

Table 2.3.1.1: Hazardous Events and Disasters by Year: 2009-2019

		Dis	Total Casualties				
Country Ye		Type of Disaster	Name of Disaster	Date Started	Total	Dead /Killed	Injured
DM	2004 2007 2008 2010 2010 2011 2013 2015 2017	Hurricane Hurricane Hurricane Landslide Flooding Flooding	Dean Omar Tomas Erika Maria	21-Nov 17-Aug 16-Oct 28-Aug 18-Sep	 29 0 0 	0 3 0 3 0 0 30 64	 26 20 100
		Hurricane		07-Sep 14-Jul 12-Apr		28 1 	
GY	2005 2006	•		18-Jan 28-Jan	5,034 	34 	

Table 2.3.1.1: Hazardous Events and Disasters by Year: 2009-2019

		Total Casualties		Total	Affected persons	_
Country	Year	Missing	Homeless	Population Affected (Number)	by flooding, power outage, or general inconvenience	Damage (US\$ Million)
DM	2004 2007 2008 2010 2010 2011 2013 2015 2017	0 0 0 	 50 574	19,527 253* 28,594 71,393	 28,000	90.00 64.3 1.7 482.8 1,456.0
GD	2002 2004 2005 2011			81,553 3,905 60		815.0 51.9 0.2
GY	2005 2006		*5000 	***629492 **31807		465.0 30.0





- ADAPTATION (Selected Tables)
- Sub-component 3.1: Environmental Governance and Regulation
- Topic 3.1.1: Participation in MEAs and other global environmental conventions
- 3.1.1: Participation in MEAs and other global environmental conventions
- Table 3.1.1.1: CARICOM's Participation in Multilateral Environmental Agreements related to Climate Change
- Subcomponent 3.2: Waste Management
- Topic 3.2.1: Generation of waste
- Table 3.2.1.1: Generation of Waste by Source: 2009-2012

Table 3.1.1.1: CARICOM's Participation in Multilateral Environmental Agreements related to Climate Change

Country	Convention For The Protection Of The Ozone Layer		CITES (the Convention on International Trade in Endangered Species of Wild Fauna	United Nations Convention to Combat Desertification (UNCCD)	
Antigua and Barbuda	✓	✓	✓	✓	✓
Bahamas	✓	✓	✓	✓	✓
Barbados	✓	✓	✓	✓	✓
Belize	✓	✓	✓	✓	✓
Dominica	✓	✓	✓	✓	✓
Grenada	✓	✓	✓	✓	✓
Guyana	✓	✓	✓	✓	✓
Haiti	✓	✓		✓	✓
Jamaica	✓	✓	✓	✓	✓
Montserrat				✓	
Saint Kitts and Nevis	✓	✓	✓	✓	✓
Saint Lucia	✓	✓	✓	✓	✓
Suriname	✓	✓	✓	✓	✓
Trinidad and Tobago	✓	✓	✓	✓	✓
Saint Vincent and the Grenadines	✓	✓	✓	✓	✓



- MITIGATION (Selected Tables)
- **Sub-component 4.1: Renewable energy**
- Topic 4.1.1: Clean fuels and technology

Table 4.1.1.1: Proportion of population with primary reliance on clean fuels and technology: 2000-2017

		i 1 1			1	(%)
Country	2000	2005	2010	2015	2016	2017
Antigua and Barbuda	95	95	95	95	95	95
Bahamas	95	95	95	95	95	95
Barbados	95	95	95	95	95	95
Belize	78	81	84	86	86	87
Dominica	78	83	87	91	91	91
Grenada	94	95	95	95	95	95
Guyana	36	49	62	73	75	77
Haiti	5	5	5	5	5	5
Jamaica	72	80	86	90	91	92
Saint Kitts and Nevis	95	95	95	95	95	95
Saint Lucia	87	91	95	95	95	95
Saint Vincent and the Grenadines	95	95	95	95	95	95
Suriname	80	84	87	90	90	91
Trinidad and Tobago	95	95	95	95	95	95
Note: Estimated data					i † !	i
Course Clabal Haalth Observatory (C			: /\^	/LIO)		

- VULNERABILITY
- Sub-component 5.1: Vulnerable population

- Topic 5.1.1: Generation of waste
- Table 5.1.1.1: Percentage of total population served by municipal waste collection: 2009-2012

Challenges and Best Practices

- Major Data Gaps Data we have
 - Drivers Almost all topics covered except AFOLU drivers (IPCC) such as deforestation
 - Impacts 4 out of 13 topics only
 - Mitigation I out of 3 topics (3 indicators)
 - Vulnerability I out of 5 topics (I indicator)
 - Adaptation 2 out of 7 topics (waste and water management indicators)
- Use of data in the National Communications to the UNFCCC
- Use of Proxy data Energy Statistics, Trade data
- Use of data from international sources -Disaster Statistics
- There is also a Technical Work Group on Environment
 Statistics that continue to operate to sustain the production of these statistics
- Strengthening Inter-agency collaboration within the NSS



Thank you!