Statistical Institute of Jamaica

Climate Change Statistics in Jamaica

Workshop on Environment Statistics and Climate Change Statistics
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Janet Geoghagen-Martin
Director, Censuses, Demographic & Social Statistics Division
Statistical Institute of Jamaica

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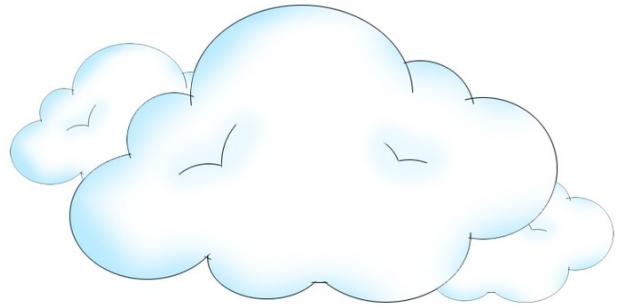
Contents

- What is climate change?
- Climate change and its impact on SIDS
- Sectors in Jamaica likely to be affected by climate change
- Using the FDES for a climate change statistics report

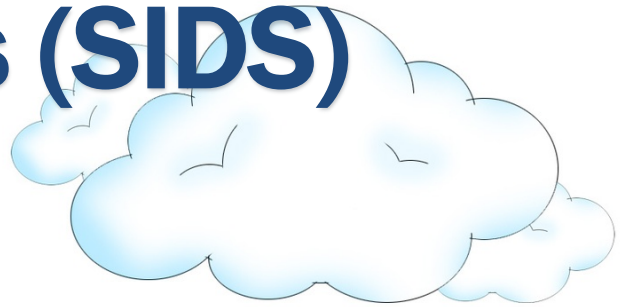
What is climate change?



- **Weather** – a day-to-day phenomenon.

- **Climate change** - distinct changes in measures of climate lasting over a long period of time mainly due to:
  - natural variations and
  - human-induced activities such as burning of fossil fuels and deforestation.

Small island developing states (SIDS)



Many SIDS are:

- low-lying with development centred along the coast;
- the majority are in the tropics; and
- depend on natural resources for economic development.

That means that climate change is a major threat to SIDS overall development —in the built and natural environment.

It is projected that SIDS will suffer from the following effects, due to global warming:

- rising sea levels
- increasing temperatures
- more frequent droughts and longer dry periods; and
- more intense rainfall episodes/changing rainfall patterns.

Sectors likely to be affected by climate change

The sectors/areas in Jamaica that will be most affected by climate change are:

- Marine & terrestrial resources
- Human settlements and infrastructure
- Freshwater resources
- Agriculture and food security
- Tourism
- Human health
- Energy
- Poverty
- Gender

Marine & Terrestrial Resources

The following are likely to occur:

- beaches, including coastal lands, may be eroded;
- degradation of marine life and reduction in fish production reduced;
- destruction of coastal ecosystems, marine habitats, spawning grounds;
- reefs and calcareous species reduced, coral bleaching;
- acidification of the sea;
- changes in terrestrial and marine biodiversity;

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Beach Erosion in Jamaica: 2018

FDES Topic 1.2.2. Ecosystems and biodiversity

Cumulative Summary of Beach Erosion in Jamaica 2017 – 2018				
Parish/Location	Number of Sites	Cumulative Mean Beach Width (m)		% Change 2017–18
		2017	2018	
Kingston	9	48.35	48.76	0.8
Portland	5	25.36	23.30	-8.1
Trelawny	2	19.04	21.00	10.3
St James	4		23.76	
Negril (Hanover/Westmoreland)	14	32.57	34.88	7.1
Westmoreland	2	15.24	14.21	-6.8
Clarendon	2	28.90	25.00	-13.5
St Catherine	5	41.20	36.65	-11.0
Average		**30.10**	**29.11**	**-3.3**

Source: National Environment and Planning Agency

Human Settlements and Infrastructure

Increased development activities that take place within the coastal zone, poses a risk to human settlements from natural events.

- The most threatened settlements are those that have been created outside the formal physical planning system, and do not meet the required planning and building standards.
- The impacts of climate change will increase the vulnerability of human settlements to floods, storm surges, sea level rise and hurricanes.
- Climate change will also adversely affect airports.

Estimated Economic Cost of Recent Extreme Climate Events

Estimated Economic Impact of Recent Extreme Climate Events on Jamaica, 2001–2016

Event	Year	Category	Cost (J$ billions)	Impact (% of GDP)
Hurricane Michelle	2001	4	2.5	0.8
May/June Flood Rains	2002		2.5	0.7
Hurricane Charley	2004	4	0.4	0.0
Hurricane Ivan	2004	3	36.9	8.0
Hurricanes Dennis & Emily	2005	4	6.0	1.2
Hurricane Wilma	2005	5	3.6	0.7
Hurricane Dean	2007	4	23.8	3.4
Tropical Storm Gustav	2008		15.5	2.0
Tropical Storm Nicole	2010		20.6	1.9
Hurricane Sandy	2012	1	9.7	0.8
Hurricane Matthew	2016	4	n.a.	n.a.

Source: Planning Institute of Jamaica and Office of Disaster Preparedness and Emergency Management

n.a. = not available

FDES Topic 4.1.2. Impact of natural extreme events and disasters

4.1.2.b: Economic losses due to natural extreme events and disasters

Other Sectors (1)

- **Freshwater resources** – sea water intrusion; sedimentation in reservoirs and coastal areas; degradation of watersheds; water shortages.
- **Agriculture and food security** – decreased precipitation and effect on agricultural production; increase in pests and diseases; soil erosion; soil salinization; increase in imports of food.
- **Human health** – increase in respiratory diseases, heat-related illnesses; increased incidence of vector- and water-borne diseases.
- **Tourism** – damage to hotels and attractions; beach erosion; increase in demand for water and food; greater cooling costs from heat stress.

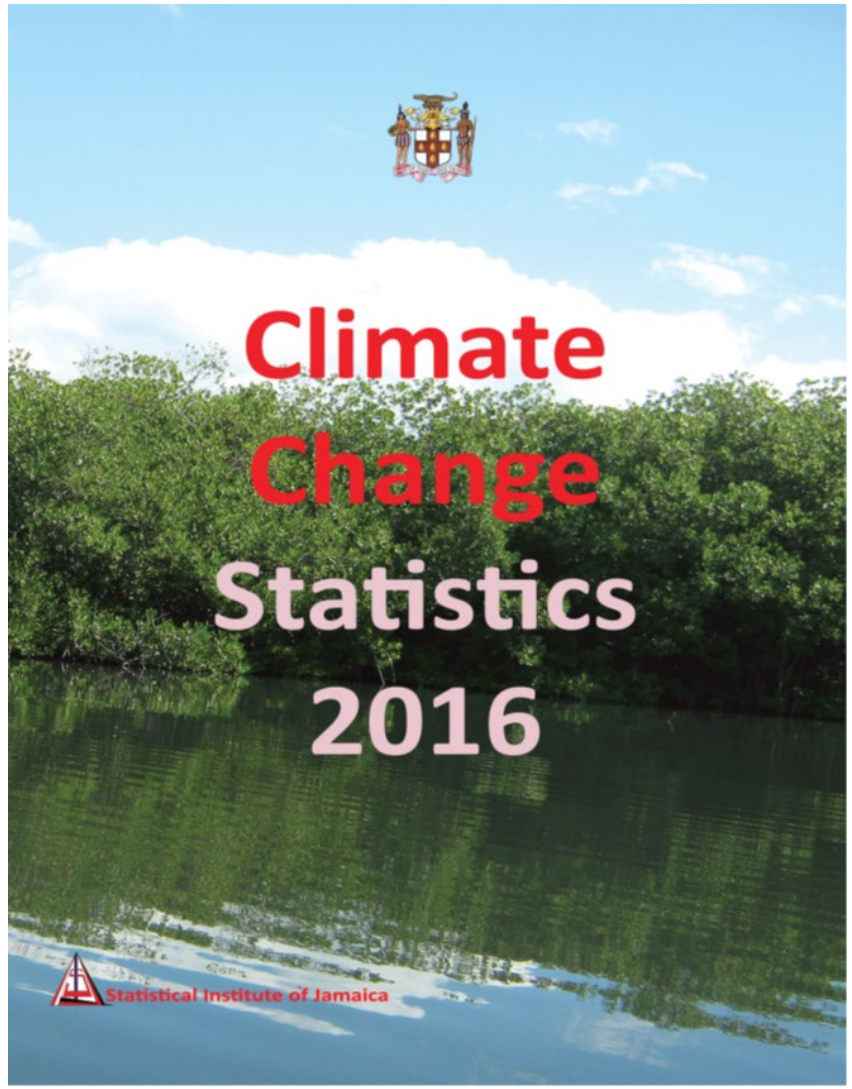
Other Sectors (2)

- Energy – increased temperatures likely to cause an increase in energy needs; extreme weather events affect the sector, causing damage to infrastructure and the distribution of energy.
- Poverty – the poor will be affected more than others due to their living conditions, lack of access to potable water and proper health care.
- Gender – women are more vulnerable due to their lack of skills and employment opportunities; men who depend on fishing and agriculture will find their employment opportunities affected.

Climate Change Statistics in Jamaica

In 2017, STATIN produced its first report on climate change statistics *Climate Change Statistics 2016*.

The tables and graphs presented in the publication are mainly based on the statistics and indicators included in the FDES and includes other data relevant to Jamaica.



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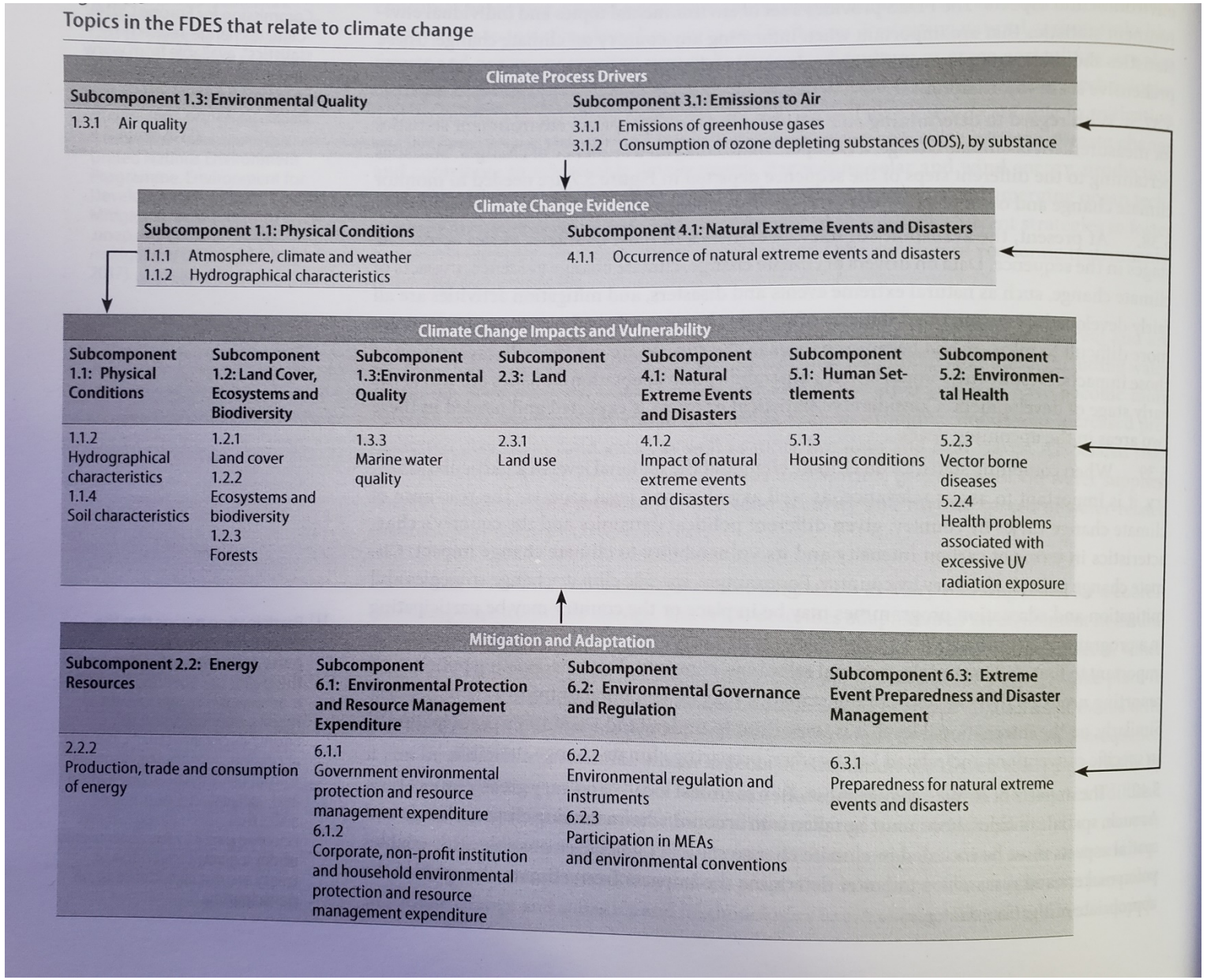
Climate Change in the FDES

Topics in the FDES that relate to climate change.

- Climate Process Drivers
- Climate Change Evidence
- Climate Change Impacts and Vulnerability
- Mitigation and Adaptation

Figure 5.8 on page 128.



Topics in the FDES that relate to climate change

Climate Process Drivers

Subcomponent 1.3: Environmental Quality	Subcomponent 3.1: Emissions to Air
1.3.1 Air quality	3.1.1 Emissions of greenhouse gases 3.1.2 Consumption of ozone depleting substances (ODS), by substance

Climate Change Evidence

Subcomponent 1.1: Physical Conditions	Subcomponent 4.1: Natural Extreme Events and Disasters
1.1.1 Atmosphere, climate and weather 1.1.2 Hydrographical characteristics	4.1.1 Occurrence of natural extreme events and disasters

Climate Change Impacts and Vulnerability

Subcomponent 1.1: Physical Conditions	Subcomponent 1.2: Land Cover, Ecosystems and Biodiversity	Subcomponent 1.3:Environmental Quality	Subcomponent 2.3: Land	Subcomponent 4.1: Natural Extreme Events and Disasters	Subcomponent 5.1: Human Settlements	Subcomponent 5.2: Environmental Health
1.1.2 Hydrographical characteristics 1.1.4 Soil characteristics	1.2.1 Land cover 1.2.2 Ecosystems and biodiversity 1.2.3 Forests	1.3.3 Marine water quality	2.3.1 Land use	4.1.2 Impact of natural extreme events and disasters	5.1.3 Housing conditions	5.2.3 Vector borne diseases 5.2.4 Health problems associated with excessive UV radiation exposure

Mitigation and Adaptation

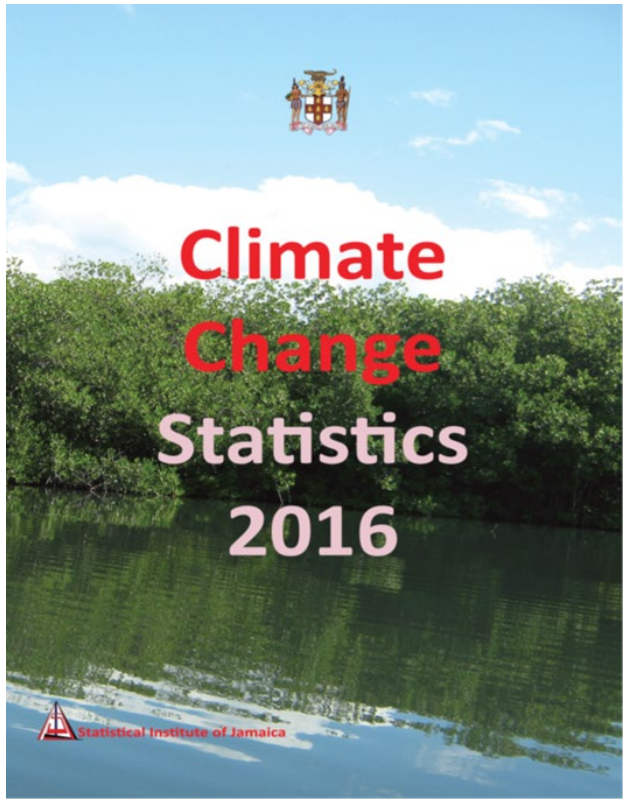
Subcomponent 2.2: Energy Resources	Subcomponent 6.1: Environmental Protection and Resource Management Expenditure	Subcomponent 6.2: Environmental Governance and Regulation	Subcomponent 6.3: Extreme Event Preparedness and Disaster Management
2.2.2 Production, trade and consumption of energy	6.1.1 Government environmental protection and resource management expenditure 6.1.2 Corporate, non-profit institution and household environmental protection and resource management expenditure	6.2.2 Environmental regulation and instruments 6.2.3 Participation in MEAs and environmental conventions	6.3.1 Preparedness for natural extreme events and disasters

Climate Change Statistics in Jamaica

The report looks at the:

- primary drivers of climate change;
- the evidence and impacts of climate change; and
- efforts to mitigate and adapt to climate change.

Climate Change Statistics 2016 is available for download at www.statinja.gov.jm. It is also available on the UNSD website.



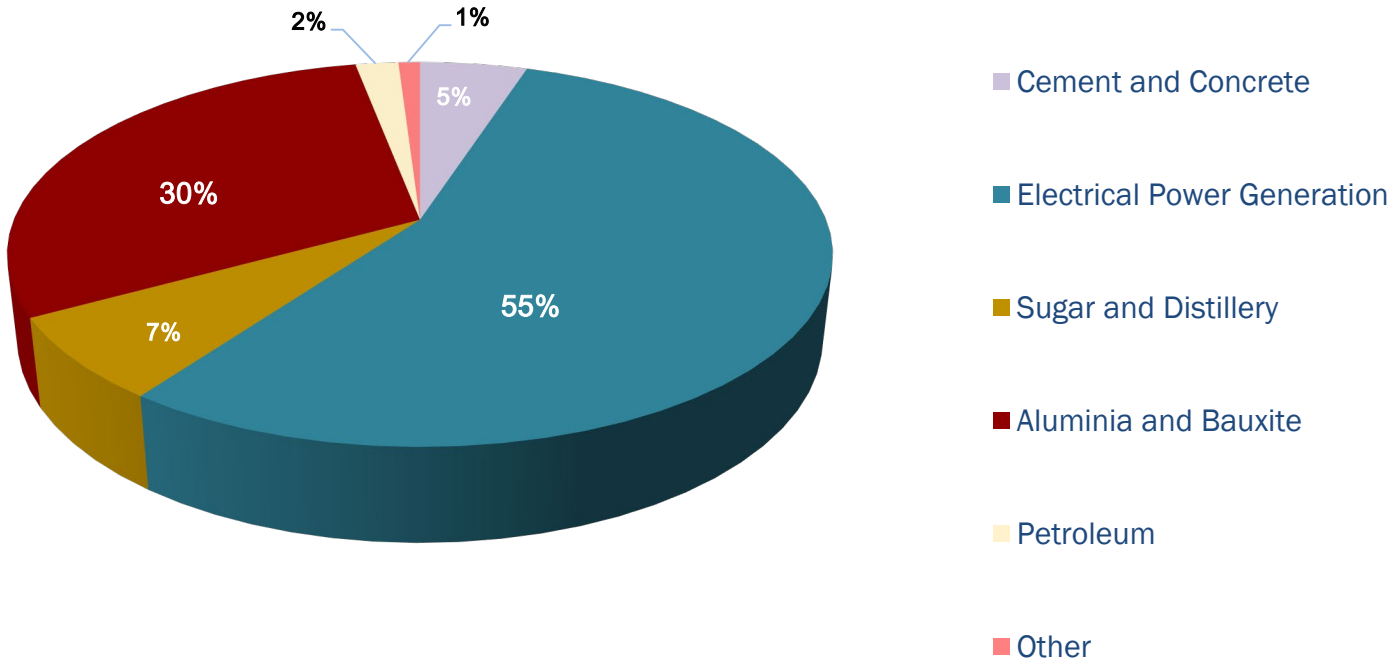
Primary drivers of CC

FDES Topic 3.1.1. Emissions of greenhouse gases

The industries responsible for the majority of CO_2 emissions in 2013 were:

- electrical power generation (55%); and
- alumina and bauxite (30%).

Carbon Dioxide Emissions by Sector, 2013



Source: Biennial update report of Jamaica

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Evidence of CC

FDES Topic 1.1.1. Atmosphere, climate and weather

Norman Manley: Minimum and Maximum Monthly Temperatures: 2012–2016, °C

	Minimum Temperatures					Maximum Temperatures				
Month	2012	2013	2014	2015	2016	2012	2013	2014	2015	2016
January	22.3	23.4	23.7	23.3	23.5	30.6	31.8	31.0	31.4	30.6
February	23.1	23.2	23.3	23.2	22.9	30.7	31.2	30.7	30.9	30.7
March	22.8	23.4	23.6	23.6	23.8	30.7	30.4	28.9	31.2	31.1
April	24.1	24.7	24.9	24.6	24.6	30.7	31.4	31.3	31.3	31.6
May	25.6	24.9	24.9	25.1	25.1	32.0	32.0	31.7	31.9	32.3
June	26.5	25.3	26.4	26.7	25.9	32.1	32.6	32.7	32.9	32.7
July	25.9	24.9	26.7	25.9	26.7	33.1	32.8	33.0	32.7	33.2
August	25.4	25.7	26.3	26.4	26.7	32.6	33.0	33.2	33.1	33.1
September	25.2	26.2	26.2	26.1	26.2	32.8	32.7	32.8	33.1	33.3
October	25.2	25.7	25.7	25.8	25.7	31.9	31.7	33.0	32.9	32.2
November	24.6	25.0	25.1	24.9	24.7	31.6	32.1	32.1	32.1	31.2
December	23.7	24.0	24.1	24.9	24.3	32.0	31.6	31.3	31.9	31.8

Source: Meteorological Service of Jamaica

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Impact and vulnerability

FDES Topic 1.2.2. Ecosystems and biodiversity

Cumulative Summary of Beach Erosion 2015–2016

Parish/Locality	Number of Sites	Cumulative Mean Beach Width (m) 2015	Cumulative Mean Beach Width (m) 2016	% Change 2015-16
Portland	5	18.60	23.99	29.0
Kingston	9	48.43	50.11	3.5
Trelawny	2	20.67	18.75	-9.3
Westmoreland (Other)	2	14.30	15.30	7.0
Negril (Hanover/Westmoreland)	14	31.75	37.39	17.7
Clarendon	2	16.87	27.15	60.9
Average		**25.10**	**28.78**	**14.7**

Source: National Environment and Planning Agency

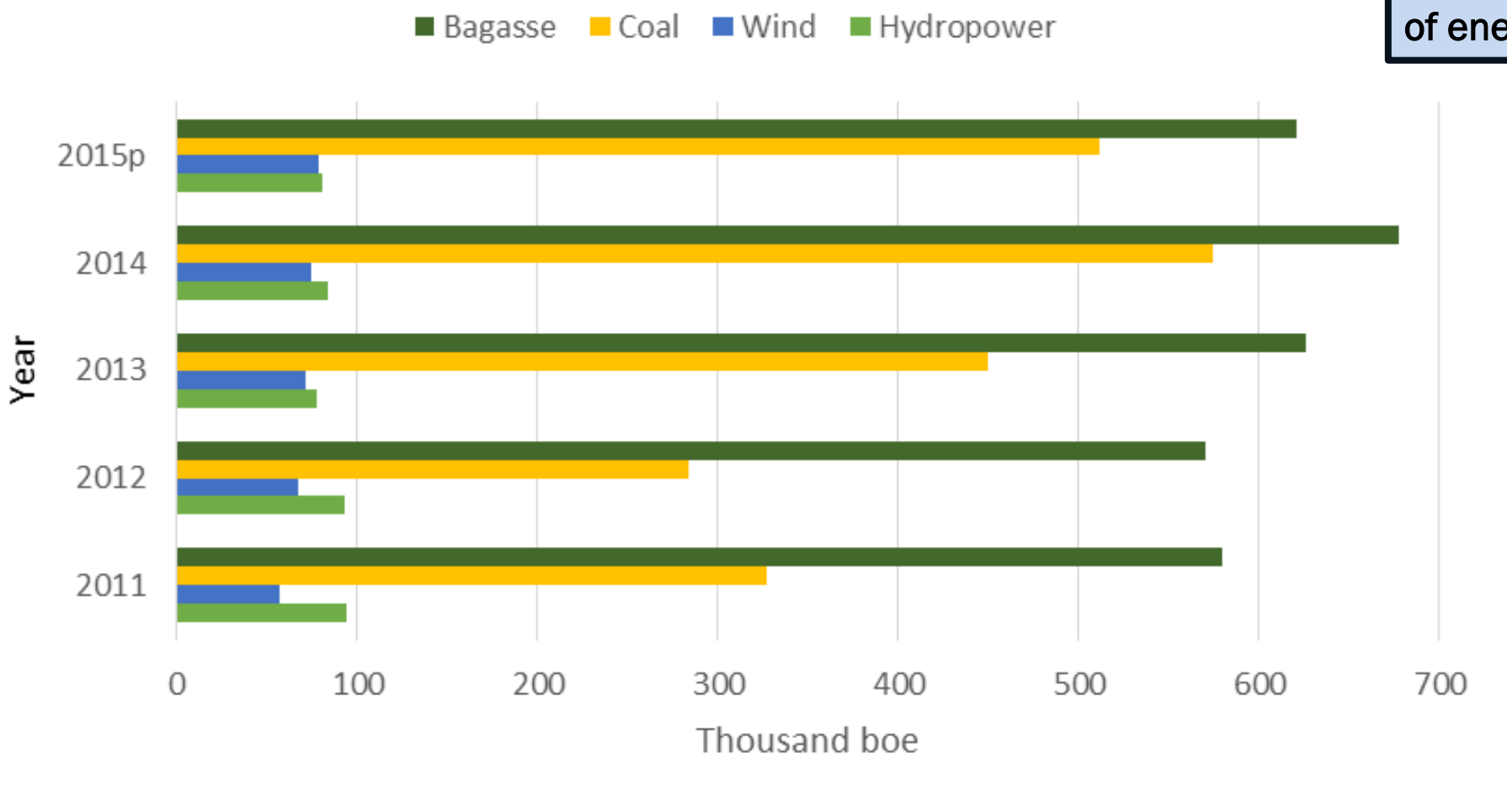
Threatened Species by Taxonomic Group 2016

Specie	Number
Mammals	6
Birds	10
Reptiles	21
Amphibians	15
Fish	30
Molluscs	–
Other Invertebrates	15
Plants*	214
Total	**311**

Source: IUCN Red List version 2016.3

Mitigation and adaptation

FDES Topic 2.2.2. Production, trade and consumption of energy



Source: Ministry of Science, Energy & Technology

Other Activities in Climate Change Statistics

- UNSD Pilot Survey on ***Climate Change-related Statistics and Indicators***.
- Side Event on Climate Change – Linking Statistics and Policy at the 49th Session of the Statistical Commission in 2018.
    - A presentation on **Climate Change Statistics in Small Island Developing States (SIDS)** is available at https://unstats.un.org/unsd/statcom/49th-session/side-events/20180307-1M-climate-change/.

STATIN is the only national statistics office that has produced a climate change statistics report.

STATISTICAL INSTITUTE OF JAMAICA

(STATIN)

7 CECELIO AVENUE

KINGSTON 10

JAMAICA W.I.

1 (876) 630-1600

INFO@STATINJA.GOV.JM

STATINJA.GOV.JM

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