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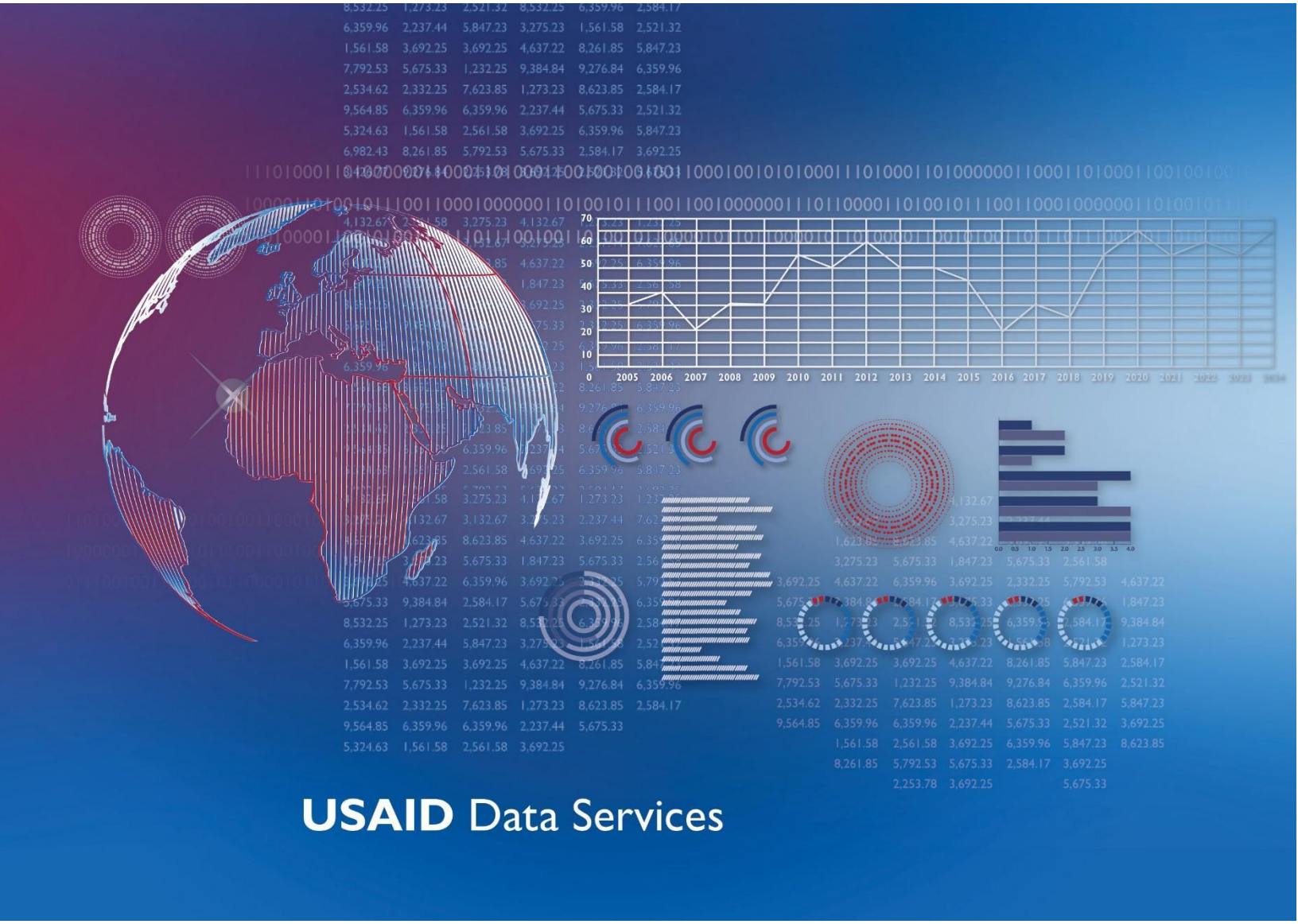

Greenhouse Gas Emissions in the Eastern and Southern Caribbean Region

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Country ISO Code Legend

ATG	Antigua and Barbuda	KNA	Saint Kitts and Nevis
BHS	Bahamas	LCA	Saint Lucia
BRB	Barbados	VCT	Saint Vincent and the Grenadines
DMA	Dominica	SUR	Suriname
GRD	Grenada	TTO	Trinidad and Tobago
GUY	Guyana		

Overview

Numbers at a Glance (2018)							
Country	Emissions, total (MtCO2e)	Emissions, % of global total	Population (thousands)	Emissions, total (MtCO2e per capita)	GDP (constant 2010 $US) (billions)	Emissions, total (% of GDP)	Emissions, total (MtCO2e, change from 2000-2018)
ATG	1.21	0.48%	96.28	0.0126	1.45	0.84	0.6 (99.03%)
BHS	2.65	1.05%	385.64	0.0069	11.12	0.24	0.13 (5.26%)
BRB	3.79	1.51%	286.64	0.0132	4.63	0.82	0.18 (5.12%)
DMA	0.23	0.09%	71.63	0.0032	0.48	0.48	-0.03 (-10.59%)
GRD	2.36	0.94%	111.45	0.0211	1.01	2.32	0.29 (13.80%)
GUY	19.12	7.61%	779.01	0.0245	4.55	4.20	7.5 (64.47%)
KNA	0.37	0.15%	52.44	0.0070	0.89	0.41	0.09 (30.61%)
LCA	0.59	0.24%	181.89	0.0032	1.68	0.35	0.11 (21.83%)
VCT	0.37	0.15%	110.21	0.0033	0.76	0.49	0.17 (85.70%)
SUR	13.15	5.23%	575.99	0.0228	4.80	2.74	6.96 (112.69%)
TTO	23.03	9.17%	1389.84	0.0166	21.08	1.09	6.96 (43.34%)
ESC Avg.	6.08	2.42%	367.36	0.0165	4.77	1.27	2.09 (42.84%)
World	251.14	100.00%	39823.13	0.0063	442.12	0.57	68.4 (40.02%)

Note: Emissions are measured in metric tons of carbon dioxide equivalent (MtCO2e). Total emissions indicators cover emissions from energy, LUCF, waste, agriculture, and industry processes sectors. Emissions, % of global total is calculated as a country's Emissions, total (MtCO2e) divided by the World Emissions, total (MtCO2e). Emissions, total (MtCO2e per capita) is calculated as a country's Emissions, total (MtCO2e) divided by a country's Population (thousands). Emissions, total (% of GDP) is calculated as a country's Emissions, total (MtCO2e) divided by GDP (constant 2010 $US) (billions).

Sources: World Bank, World Development Indicators; World Resources Institute, Climate Analysis Indicators Tool (CAIT) downloaded from idea.usaid.gov

Of the 11 countries included in the Eastern and Southern Caribbean (ESC) Mission, Trinidad and Tobago has the highest greenhouse gas (GHG) emissions across all sectors at 23.0 metrics tons of carbon dioxide equivalent ($MtCO_2e$) for 2018, followed by Guyana at 19.1 MtCO2e and

Suriname at 13.1 $MtCO_2e$, according to data from the World Resources Institute Climate Analysis Indicators Tool (WRI CAIT).[1]

The ESC region's GHG emissions represent less than 2.42 percent of global emissions.[2] However, per capita emissions in the region are higher than the world average. Only the per capita emissions of Saint Vincent and the Grenadines, Dominica, and Saint Lucia are below the world average.[3] The region's GDP carbon intensity, or emissions expressed as a percentage of GDP, is almost triple the world average; five countries (Bahamas, Saint Vincent and the Grenadines, Saint Kitts and Nevis, Saint Lucia, and Dominica) emit fewer GHGs relative to GDP than the world average. Between 1990 and 2018, world GHG emissions more than tripled (246 percent increase), compared to ESC average growth of 81 percent.

Source: World Resources Institute (WRI), Climate Watch and World Bank, World Development Indicators (WDI)

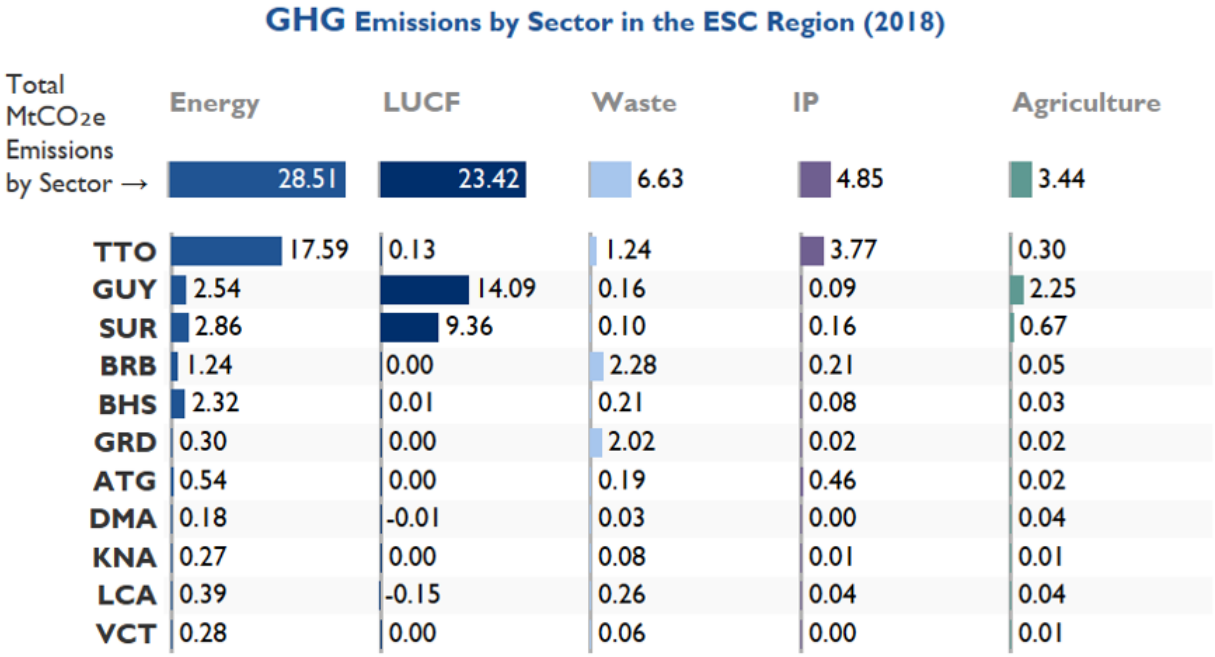
The region's GHG emissions by sector, their change over time, and the drivers of key sources of GHG emissions in the region are described below, followed by an outline of key national climate change commitments and policies as described in the countries' Intended Nationally Determined Contributions (INDCs) and Nationally Determined Contributions.

GHG Emissions by Sector (2018)

Data available from WRI CAIT covers energy, land-use change and forestry (LUCF), waste, agriculture, and industrial processes (IP) sectors.

Across the Eastern and Southern Caribbean region, a majority of the total region's emissions come from the energy sector. According to the National Communications submitted by countries to the United Nations Framework Convention on Climate Change (UNFCCC), most ESC countries attribute the high level of energy sector emissions to their strong dependence on fossil fuels for electricity production and transport, a common development challenge among Small Island Developing States (SIDS).[4]

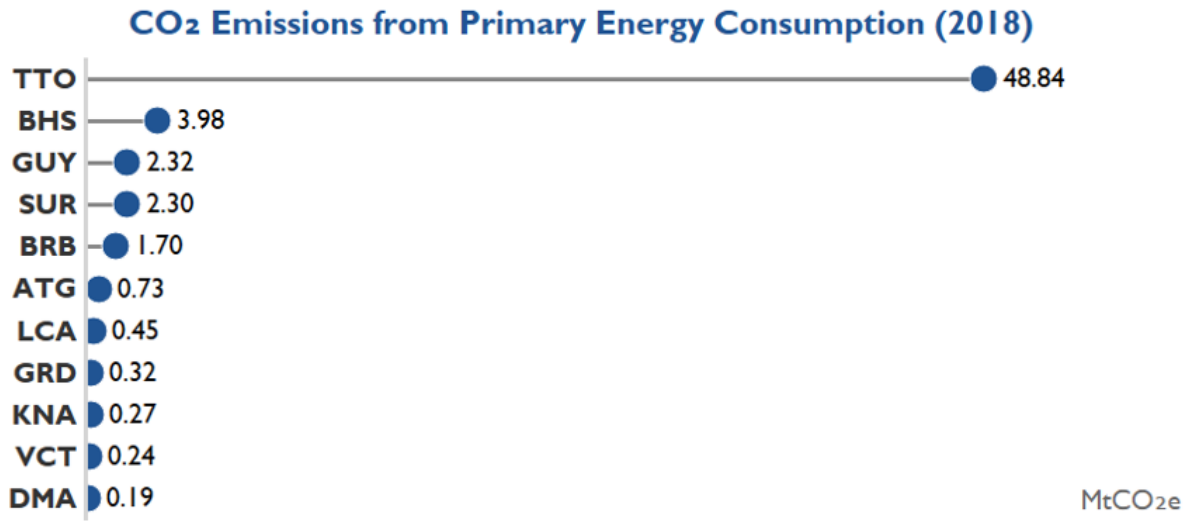
[1] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.
[2] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.
[3] The World Bank: World Development Indicators
[4] UNFCCC. Climate Change and Small Island Developing States. May 2020. page 15.



Source: WRI, Climate Watch
Note: Total Emissions is the sum of each country's emissions by sector.

Trinidad and Tobago's emissions from the energy sector are the main driver of the high regional emissions in this sector. This country does not contribute as many metric tons of carbon dioxide equivalent emissions to any of the other sectors. Suriname, Guyana, and the Bahamas are the next highest contributors, but even those three countries combined do not exceed the 17.59 $MtCO_2e$ emitted by Trinidad and Tobago in 2018.

Even when considering carbon dioxide emissions alone from energy consumption, Trinidad and Tobago exceeds emissions from the other countries in the region



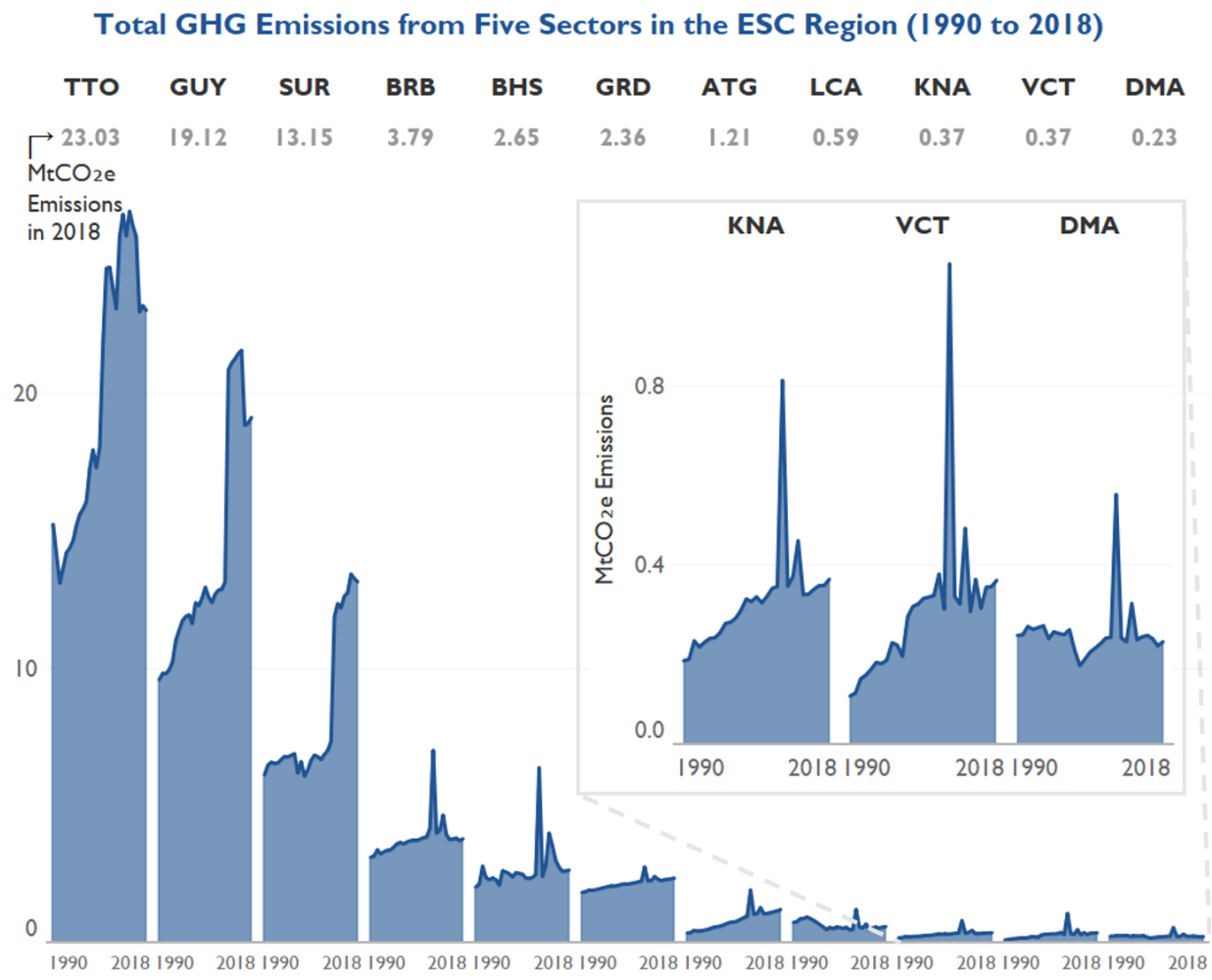
Source: Energy Information Administration (EIA), International Energy Statistics

Change in GHG Emissions in the Eastern and Southern Caribbean Region (1990-2018)

Between 1990 and 2018, the ESC region's total GHG emissions increased by 81 percent, from 3.60 $MtCO_2e$ to 6.10 $MtCO_2e$.[5] The following graphs show the change in emissions in each country during this time. At the national level, the change in emissions from 1990 to 2018 decreased for Dominica (-0.01 $MtCO_2e$) and Saint Lucia (-0.16 $MtCO_2e$). For the rest of the countries in the region, the growth in emissions ranges from a 21 percent increase (Barbados) to a 238 percent increase (Saint Vincent and the Grenadines).[6] Trinidad and Tobago, which has been the highest contributor to total regional emissions during this time period, saw an average annual increase in emissions of 51 percent. The region's second highest emitter, Guyana, experienced its peak in GHG emissions in 2015, but experienced a 99 percent growth over the 1990-2018 period, the highest among ESC countries.[7]

The drivers of the region's key emitting sectors are summarized in the Total GHG Emissions from Five Sectors graph below, focusing on the countries whose combined sectoral emissions represent a significant share (90 percent) of the region's sectoral emissions.

[5] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.
[6] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.
[7] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.



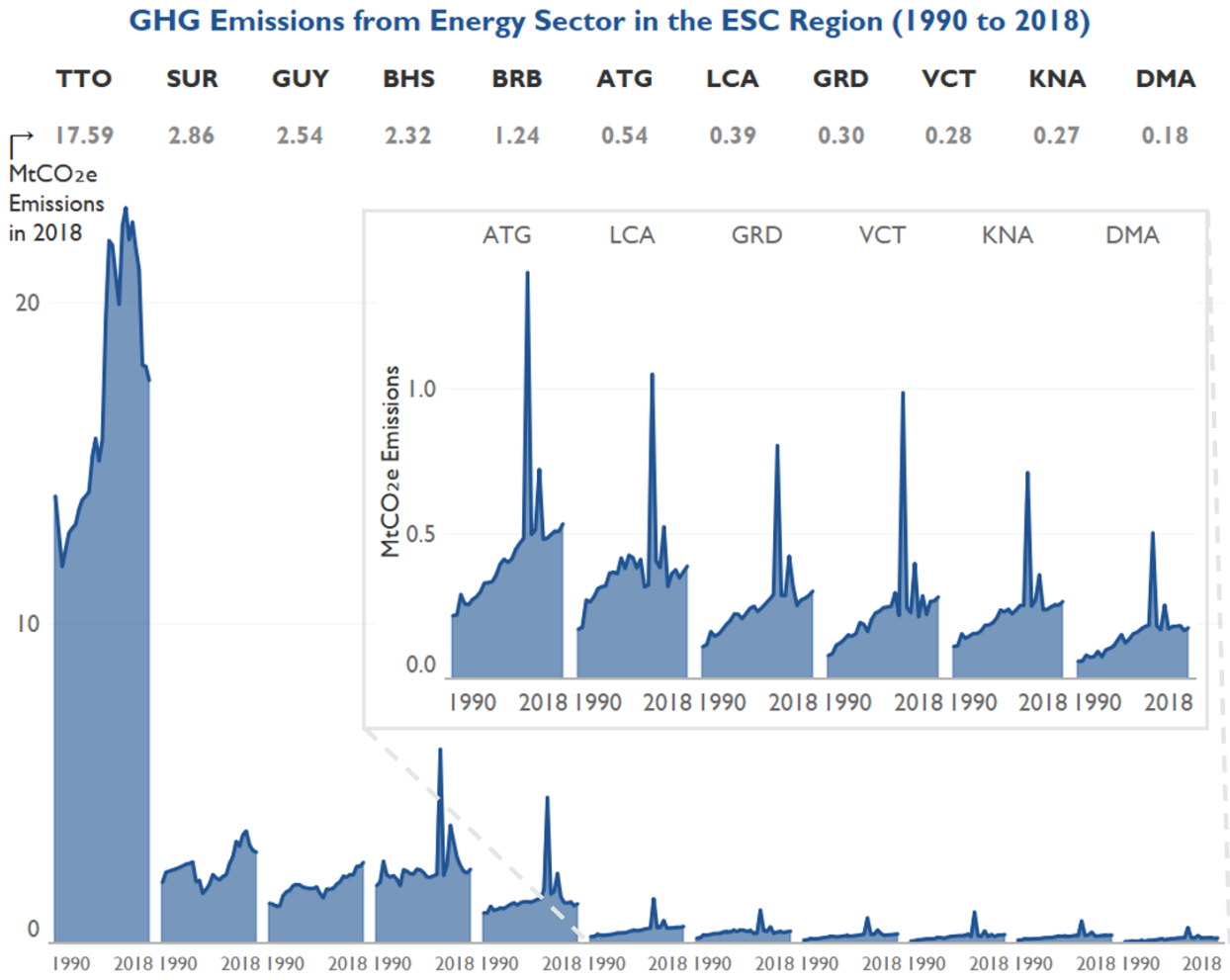
Source: WRI, Climate Watch

Energy

Changes in the region's carbon dioxide emissions from primary energy consumption are driven by Trinidad and Tobago's high emissions. Trinidad and Tobago's Second National Communication (SNC) to the UNFCCC in 2013 notes a 43.3 percent increase in carbon dioxide emissions between 1990 and 2006, which was found to correlate with the doubling of electricity generation during this time.[8] It is important to note, however, that as of 2018, more than 99 percent of electricity in Trinidad and Tobago was generated from natural gas.[9] The Government of the Republic of Trinidad and Tobago is seeking to establish a legislative framework for the generation of electricity from renewable energy sources, but currently no provision of this type is included in legislation.[10]

[8] Second National Communication of the Republic of Trinidad and Tobago, Under the United Nations Framework Convention on Climate Change, April 2013, page 42.
[9] International Energy Agency, Data and Statistics, Electricity and Heat, Electricity Generation by Source, Accessed August 16, 2021.
[10] Renewable Energy Electricity Generation in Trinidad and Tobago, Ministry of Energy and Energy Industries, Accessed August 16, 2021.

In 2018, Guyana was the third highest ESC emitter of all greenhouse gases in the energy sector and the second highest emitter of carbon dioxide in the sector.[11] While other countries in the ESC regions have seen fluctuation in emissions from this sector, especially in the period following the 2007-2008 financial crisis, Guyana's energy sector emissions have maintained a consistent upward trend since 1990.



Source: WRI, Climate Watch

Land-Use Change and Forestry (LUCF)

According to WRI CAIT, changes in the ESC region's emissions from 1990 to 2018 are driven by LUCF activities in Suriname and Guyana, in addition to energy sector activities in Trinidad and Tobago. Suriname and Guyana's LUCF emissions are shown below in the graph of the region's LUCF sector GHG emissions.

[11] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.

Although high for the ESC region, Guyana's historical deforestation rates have been relatively low, ranging between 0.1 percent and 0.3 percent annually.[12] As of 2015, Guyana has a total forest area of 16.5 million hectares (ha) or 84 percent of the country's area.[13] Suriname's 15 million ha of forests cover 94 percent of its total land area.[14] Due to its low deforestation rate of 0.03 percent to 0.04 percent annually, Suriname is identified as a country with a High Forest Cover, and Low Deforestation rate (HFLD country).[15] In Suriname, deforestation is mainly caused by timber harvesting, conversion of forest areas to agricultural lands, and development of infrastructure, such as roads and reservoirs for hydroelectric dams.[16] Mining, mainly bauxite, gold, and granite, drive deforestation in Suriname and Guyana. Forest fires contribute to forest depletion in Guyana.[17]

Guyana and Suriname participate in the UN-REDD Programme and the Forest Carbon Partnership Facility, both of which support national level planning and implementation for Reducing Emissions from Deforestation and Forest Degradation and the conservation and sustainable management of forests and enhancement of forest carbon stocks (REDD+).[18] Suriname and Guyana have both prepared their Readiness Preparation Proposals (R-PP).

Regionally, there are similarities in the causes of deforestation and forest degradation, including the harvesting or use of forest resources in the residential sector in the form of charcoal and firewood in Dominica, Grenada, Guyana, Saint Kitts and Nevis, Saint Lucia, and Saint Vincent and the Grenadines. Land clearing for agriculture and infrastructure development is a commonly identified driver of deforestation in most of the ESC countries.[19]

Dominica's Third National Communication states that forest cover—which constitutes Dominica's largest carbon sink—has gradually reduced in lower elevation areas since 2000.[20] In Antigua and Barbuda and Barbados, forest areas are limited since most of the original forests were cleared to establish sugar, rum, cotton, fruits, and vegetables as agricultural products.

Saint Lucia and Saint Vincent and the Grenadines announced forest land mitigation policies or measures in the agriculture and land-use sectors in their 2015 nationally determined contributions (NDCs). Saint Lucia included reducing deforestation, forest conservation, reducing degradation, and sustainable forest management as part of the mitigation policies on forest land in their NDCs. Saint Vincent reported the same forest land mitigation policies in their NDCs as well as afforestation/reforestation.[21]

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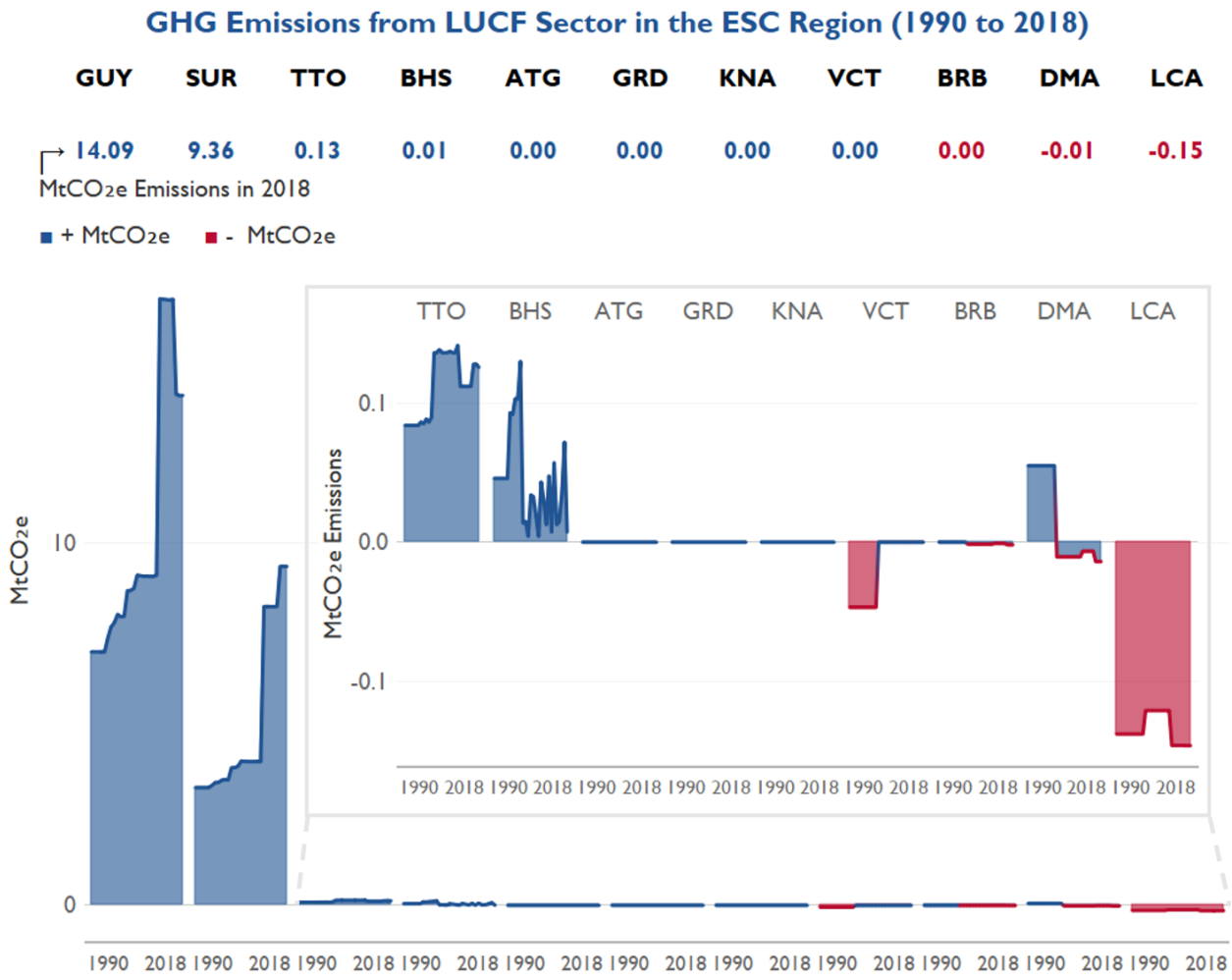
[12] UNFCCC. Case Study: Guyana Redd-Plus Investment Fund (GRIF).
[13] Food and Agriculture Organization of the United Nations (FAO). Country Profile - Guyana, 2015.
[14] UNFCCC. Republic of Suriname - Second National Communication (SNC) to the United Nations Framework Convention on Climate Change, 2016.
[15] Ibid.
[16] Ibid.
[17] Guyana SNC, 2012 and Suriname SNC, 2016.
[18] UN-REDD Programme. Regions and Countries, Latin America and the Caribbean, Guyana and Suriname, 2017.
[19] Dominica (2012), Grenada (2000), Guyana (2012), Saint Kitts & Nevis (2016), Saint Lucia (2012), and Saint Vincent & Grenadines (2016), National Communications to the UNFCCC.
[20] Dominica. Dominica's Second National Communication (SNC) to the UNFCCC, 2020.
[21] FAO. Regional Analysis of the Nationally Determined Contributions in the Caribbean, 2020.



Source: WRI, Climate Watch

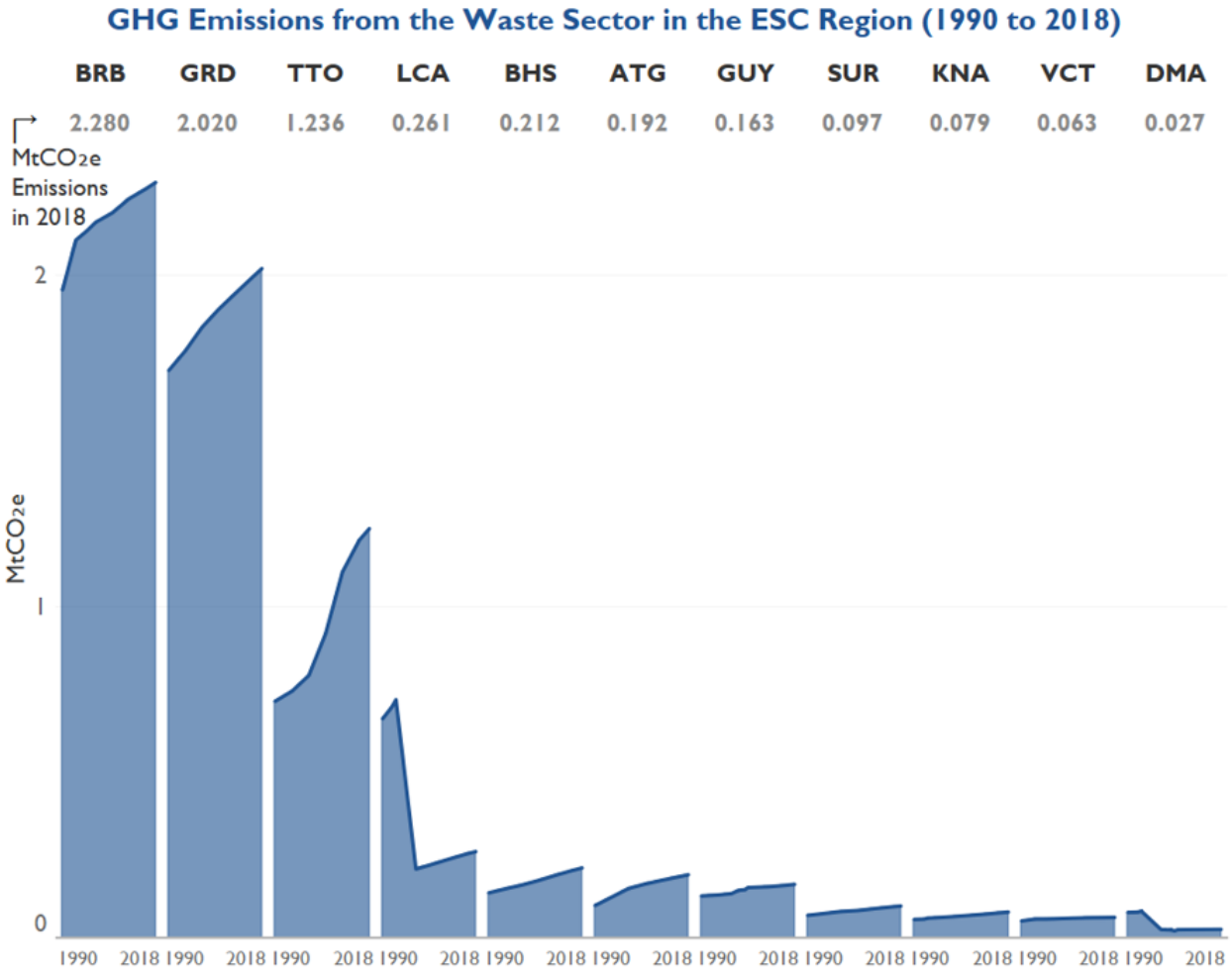
Waste

Changes in the ESC region's waste sector GHG emissions are driven by Barbados, Grenada, Saint Lucia, and Trinidad and Tobago. Their emissions are shown in the GHG Emissions from the Waste Sector graph below in the "Waste Sector" graph.

In Barbados, organic material accounts for about 47 percent of municipal solid waste and is the primary source of methane emissions in the waste sector.[22] Between 1994 and 2005, the volume of waste in Barbados increased fivefold, from 200 tons per day to more than 1,000 tons per day.[23] In 2015, the average weight remained just over 1,000 tons per day.[24] In Grenada, an estimated 46,097 tons of waste per capita per day was generated in 2017, resulting from the challenge of materials accumulating in open

[22] Barbados INC, 2001.
[23] Inter-American Development Bank. Solid Waste Management in the Caribbean - Proceedings from the Caribbean Solid Waste Conference, 2016.
[24] Waste Characterization Study for Barbados, 2015.

dumpsites and the persistence of illegal dumping.[25] Grenada plans to build a controlled (or capped) landfill with the technology to collect the methane gas produced to generate electricity.[26] Grenada also targets reducing emissions by 40 percent by 2030, which covers waste, energy, forestry, and industrial processes and product use (IPPU) (cooling sectors).[27]



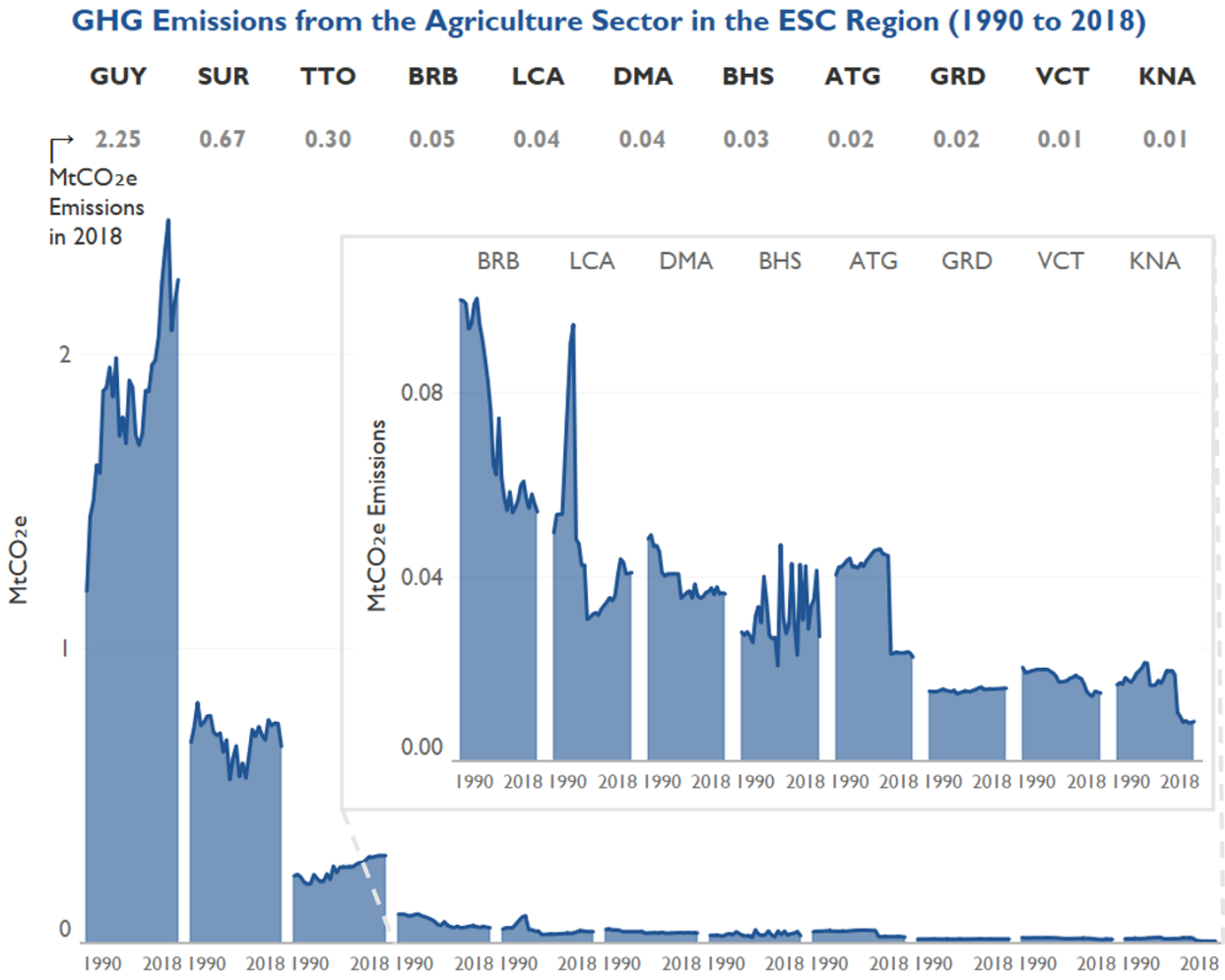
Source: WRI, Climate Watch

Agriculture

Changes in the ESC region's agriculture emissions are driven by agricultural activities in Guyana, Suriname, and Trinidad and Tobago. In Guyana and Suriname, according to the FAO, emissions from rice

[25] Allison R. Elgie, Simron Jit Singh, John N. Telesford, You can't manage what you can't measure: The potential for circularity in Grenada's waste management system, Resources, Conservation and Recycling, Volume 164, 2021, 105170, ISSN 0921-3449.
[26] Government of Grenada. Grenada's Intended Nationally Determined Contribution (INDC) to the UNFCCC, 2015.
[27] Government of Grenada. Second Nationally Determined Contribution, 2020.

cultivation[28] (64.3 percent and 63.3 percent, respectively) drove agriculture emissions, while enteric fermentation (31 percent) from livestock was the primary driver in Trinidad and Tobago between 1990 and 2018.[29] The rice industry continues to be a leader in Guyana's economy, recording annual increases of 22 percent. Rice contributes around 5 percent of total GDP and 13.8 percent of agricultural GDP.[30] In 2013, the Government prepared its 2013-2020 National Strategy for Agriculture in Guyana, which set 25 priority areas that represented opportunities, challenges, and the strategic thrust for the agriculture sector.[31]



Source: WRI, Climate Watch

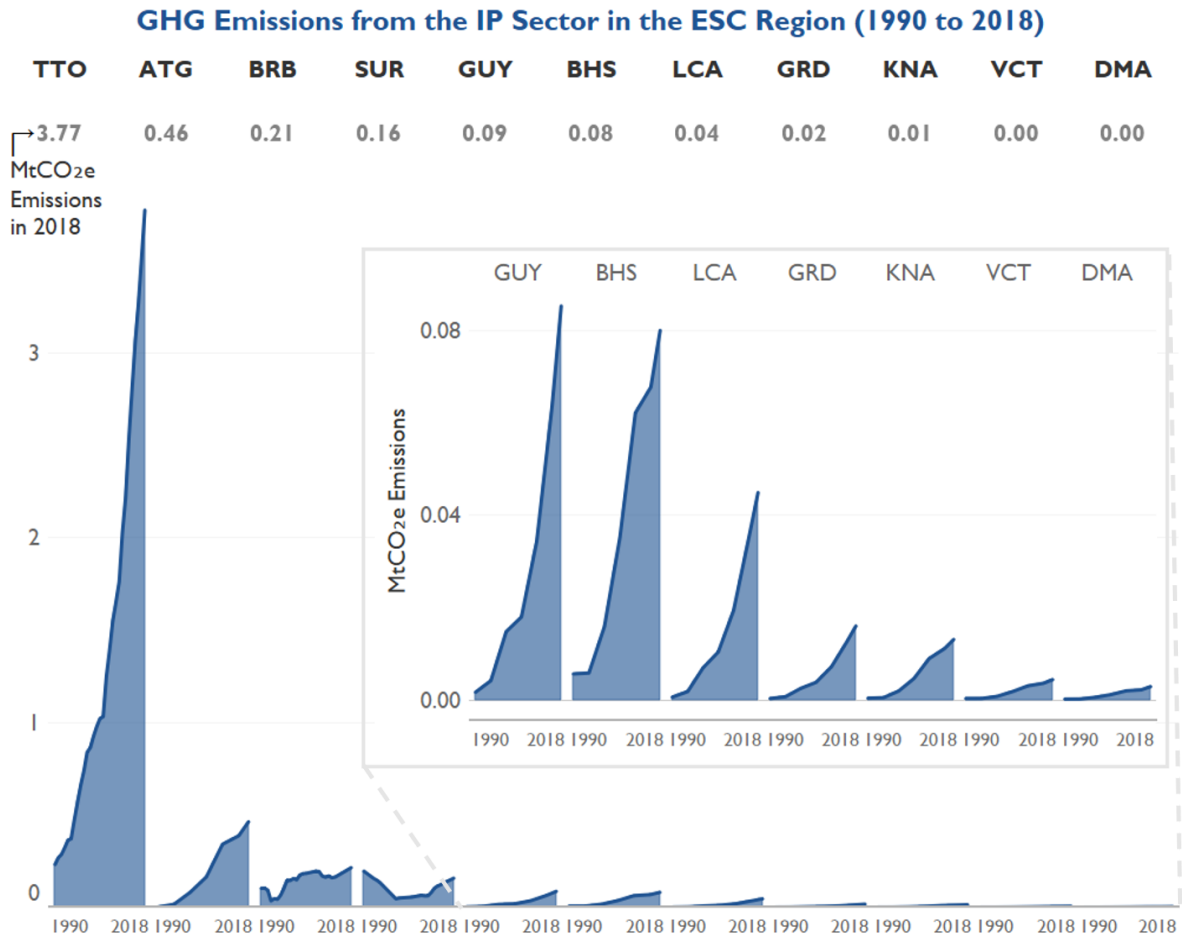
[28] Rice cultivation causes agricultural methane – flooded fields to cultivate rice prevent oxygen from penetrating the soil, creating ideal conditions for methane-emitting bacteria.
[29] Food and Agriculture Organization of the United Nations Statistics Division (FAOSTAT). Emissions – Agriculture total, viewed on August 16, 2021.
[30] Guyana Ministry of Agriculture. A National Strategy for Agriculture 2013-2020.
[31] Ibid.

Industry Processes

Between 1990 and 2018, IP sector emissions in the ESC region more than doubled, led by industrial activities in Trinidad and Tobago at 3.77 $MtCO_2e$. Most of Trinidad and Tobago's emissions are attributed to the energy sector through petrochemical production, power generation, and flaring. [32] IP emissions from Antigua and Barbuda, Barbados, and Suriname were relatively high as well, and grew to 0.46 $MtCO_2e$, 0.21 $MtCO_2e$, and 0.16 $MtCO_2e$, respectively, in the same period.[33] The industrial sector in Antigua and Barbuda is minimal and fragmented, and the refrigeration and air conditioning business are currently the most significant GHG contributors of the sector.[34] In Barbados, the most significant sources of GHG emissions in the industrial sector are cement production and food and drink manufacturing.[35]

IP sector emissions for Saint Vincent and Grenadines and Dominica are reported by WRI CAIT are below 0.01 $MtCO_2e$, at 0.004 $MtCO_2e$ and 0.003 $MtCO_2e$, respectively.[36] There is little information on GHG emissions from the IP sector in both of these countries.[37] The national communication of Saint Kitts and Nevis notes that it lacks a strong manufacturing or industrial sector such that carbon dioxide and non-carbon dioxide emissions from light manufacturing or heavy industries are minimal or nonexistent.[38] The change in the region's IP emissions are shown in the GHG Emissions from the IP Sector graph below.

[32] United Nations. Economic Commission for Latin America and the Caribbean. An assessment of the economic impact of climate change on the Energy Sector in Trinidad and Tobago , 2011.
[33] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.
[34] Antigua and Barbuda, Third National Communication, 2016.
[35] Barbados, Second National Communication, 2018.
[36] CAIT data: Climate Watch. 2020. GHG Emissions. Washington, DC: World Resources Institute. Available at: https://www.climatewatchdata.org/ghg-emissions.
[37] Commonwealth of Dominica. Third National Communication to the United Nations Framework Convention on Climate Change, 2020.
[38] Saint Kitts and Nevis, The Second National Communications Report of St. Christopher and Nevis under the United Nations Framework Convention on Climate Change, 2015.



Source: WRI, Climate Watch

Key National Climate Change Commitments and Policies

All countries in the ESC region submitted an intended nationally determined contribution (INDC) prior to the UN climate change conference (COP 21) that culminated in the Paris Agreement. Since then, Barbados, Grenada, Saint Lucia, and Suriname have submitted their second NDC or updates to their first NDC to the UN ahead of COP 26, the 26th United Nations Climate Change conference in November 2021. The commitments are summarized in the Nationally Determined Contribution table below. When detailing the commitments, the table will differentiate between conditional and unconditional commitments, which are dependent on the receipt of international support. The sectors in which greenhouse gas mitigation is expected to be achieved are also identified.

Nationally Determined Contribution (NDC)

Country	Commitment	Sectors for Mitigation and Enhanced Removals
Antigua and Barbuda	Date of Submission: 21/09/2016 INDC Unconditional 1. Enhance the established enabling legal, policy, and institutional environment for a low carbon emission development pathway to achieve poverty reduction and sustainable development. 2. By 2020, update the Building Code to meet projected impacts of climate change. Conditional – Capacity building, technology transfer, and financial resources (cost of mitigation targets is estimated at approximately USD 220 million). 1. By 2020, establish efficiency standards for the import of all vehicles and appliances. 2. By 2020, finalize technical studies with the intention to construct and operationalize a waste-to-energy plant by 2025. 3. By 2030, achieve an energy matrix with 50 MW of electricity from renewable sources both on and off-grid in the public and private sectors. 4. By 2030, all remaining wetlands and watershed areas with carbon sequestration potential are protected as carbon sinks.[39]	• Enactment of the Renewable Energy Act of 2015, the Environmental Protection and Management Act of 2015, the National Energy Policy and the Sustainable Energy Action Plan • Energy, Health, Tourism, Agriculture, Waste, Water, Transportation, Forestry and Land Use Change[40]

[39] Antigua and Barbuda INDC, page 2.
[40] Antigua and Barbuda INDC, page 3-4.

The Bahamas	Date of Submission: 31/10/2016 INDC Unconditional By 2030, achieve an economy-wide reduction in GHG emissions of 30% when compared to a business as usual (BAU) scenario. Conditional - Access to required technologies, energy efficiency measures, and energy conservation measures appropriate for an archipelagic nation. By 2030, achieve a minimum of 30% renewables in the energy mix.[41]	• Energy and Forestry[42]
Barbados	Date of Submission: 30/07/2021 NDC Barbados will put policies in place to seek to be the first 100% green and fossil-fuel free island-state in the world by 2030.[43] Unconditional By 2030, achieve a contribution for the electricity sector of an emissions reduction of 50%. Conditional (updated) 1. A 95% share of renewable energy in the electricity mix 2. 100% electric or alternatively-fueled vehicles in the passenger fleet 3. A 20% increase in energy efficiency across all sectors as compared to BAU 4. A 29% decrease in industrial, commercial, and residential fuel consumption as compared to BAU 5. A 20% decrease in waste emissions These goals replace the conditional goals in the original NDC, noted below: 1. Intention to reduce GHG emissions by 44% below BAU levels by 2030 (23% below 2008 levels). 2008 base year (1,820 Gg CO_2e)	• Industrial Processes and Product Use • Agriculture • Land Use Change and Forestry • Energy (including domestic transport) • Waste[45]

[41] Bahamas INDC, page 4.
[42] Bahamas INDC, page 10.
[43] Barbados NDC, page 6.
[45] Barbados INDC, page 20.

	2. Intention to reduce GHG emissions by 37% below BAU levels by 2025 (21% below 2008 levels)[44]	
Dominica	Date of Submission: 21/09/2016 INDC Conditional – access to international climate change financing, technology development and transfer, and capacity building support for priority adaptation and mitigation measures (cost of mitigation targets is estimated at approximately USD 90 million). Reduce total GHG emissions below 2014 levels (estimated to be 164.5 Gigagrams) at the following reduction rates: 17.9% by 2020; 39.2% by 2025; and 44.7% by 2030.	By 2030, total emission reductions per sector will be as follows: • Energy industries: 98.6% (principally from harnessing of geothermal resources) • Transport: 16.9% • Manufacturing and construction: 8.8% • Commercial/institutional, residential, agriculture, forestry, fishing: 8.1; • Solid waste: 78.6%[46]
Grenada	Date of Submission: 01/12/2020 NDC Conditional - access to multilateral and bilateral support including through the Green Climate Fund, multilateral agencies, and bilateral arrangements with development partners. The indicative cost for Grenada's identified NDC mitigation measures through 2030 is between $984.9 and $1,054.5 million USD. Grenada commits to reducing its GHG emissions by 40% of the 2010 emissions levels by 2030.[47] While Grenada will make every effort to meet the targets laid out in its NDC, it will not be feasible at this stage to commit to further emissions reductions beyond the 40% target.[48]	Grenada's economy-wide target to reduce emissions by 40% by 2030 covers the energy, forestry, waste, and IPPU sectors. The inclusion of F-gases is a new addition to Grenada's second NDC.[49] Sectors: • Energy (including domestic transport) • Forestry • Waste • IPPU (Cooling sector) Gases: • Carbon Dioxide (CO_2) • Methane (CH_4) • F-gases: hydrochlorofluorocarbons (HCFC) and hydrofluorocarbons (HFC) and their mixture/blends. In line with obligations under the Kigali Amendment to the Montreal protocol
Guyana	Date of Submission: 20/05/2016 INDC Unconditional • Forestry: Continue and improve ongoing work to realize sustainable forest management.	• Energy and Forestry[51]

[44] Barbados INDC, page 13.
[46] Dominica INDC, page 1.
[47] Grenada NDC, page 2-3.
[48] Grenada NDC, page 14.
[49] Grenada NDC, page 5.
[51] Guyana INDC, page 5.

	• Energy: Reduce energy consumption. Conditional • Forestry: Avoided deforestation – Through its REDD+ Programme, Guyana can continue to avoid emissions in the amount of 48.7 $MtCO_2e$. • Energy: Develop a 100% renewable power supply by 2025.[50]	
Saint Kitts and Nevis	Date of Submission: 22/04/2016 INDC Conditional – based on the availability of financing and technological support. Reduction of 22% and 35% of Saint Kitts and Nevis' GHG emissions projected in the BAU scenario for 2025 and 2030, respectively.[52]	All the economic sectors are covered and targeted into Saint Kitts and Nevis' national contributions, but with special attention to the Energy (increase the use of renewable energy sources by 50%) and Transport sectors, since they are the highest contributors to the GHG national matrix.[53]
Saint Lucia	Date of Submission: 27/01/2021 NDC Saint Lucia's updated NDC will reduce greenhouse gases by 37 $GgCO_2e$, compared to 2010 emissions, a deeper reduction in emissions than the first NDC, which effectively proposed to reduce GHG emissions by 10 $GgCO_2e$. In terms of percentage decrease, the updated NDC translates to approximately a 7% reduction in GHG emissions in the energy sector by 2030, relative to the 2010 emissions. In comparison, Saint Lucia's first NDC effectively resulted in an emissions reduction of 2%. Conditional - In August 2019, Saint Lucia submitted a request for support to the NDC Partnership's Climate Action Enhancement Package (CAEP). Through the CAEP, Saint Lucia has received technical assistance from Climate Analytics (CA), the Organization of Eastern Caribbean States (OECS) Commission, the Global Green Growth Institute (GGGI) and the World Resources Institute (WRI).[54]	Priority sectors for adaptation action include: Tourism; Water; Agriculture; Fisheries; Infrastructure and Spatial Planning; Resilient Ecosystems; Education; and Health. Sectoral Adaptation Strategy and Action Plans (SASAPs) have already been developed for the Agriculture, Fisheries and Water sectors, as well as for Resilient Ecosystems (marine and terrestrial).[55]
Saint Vincent and the Grenadines	Date of Submission: 29/06/2016 INDC Unconditional	All sectors and sources of emissions with key measures in the energy sector including:

[50] Guyana INDC, page 7-10.
[52] Saint Kitts and Nevis INDC, page 1.
[53] Saint Kitts and Nevis INDC, page 6.
[54] Saint Lucia NDC, page 12.
[55] Saint Lucia NDC, page 5.

	Economy-wide reduction in GHG emissions of 22% compared to the BAU scenario by 2025.[56] Conditional St. Vincent and the Grenadines considers the use of instruments for achieving and financing flexibly part of its mitigation target including the International Carbon Markets. St. Vincent and the Grenadines considers that certain low emission development options mentioned in its INDC, or additional actions, could be entirely or partially funded by the transfer of international carbon assets mobilized through bilateral, regional, and international carbon markets while taking into account environmental integrity and transparency.[57]	• Renewable energy generation: focused on the development of the country's proposed geothermal power plant (planned to be completed in 2018) • Energy efficiency: 15% reduction in electricity consumption by 2025 achieved through retrofitting of street lighting nationally, a new building code and an energy labelling scheme for appliances • Transport: new policies to reduce the import duty paid on low emission vehicles[58]
Suriname	Date of Submission: 09/12/2019 NDC Unconditional • Increase efforts at sustainable forest and ecosystem management and stabilizing and minimizing deforestation and forest degradation unconditionally. • Adopt a Renewable Energy Act to provide the legal, economic, and institutional basis for the promotion of the use of renewable energy resources. • Introduce a national land use planning system, to make the embedding of climate change in (agricultural) development plans possible.[59] Annex 1 details the active and upcoming projects to support goals of the NDC.	Forestry • It enters as a conditional contribution the REDD+ Investment Strategy with a 10-year timeframe, aligned with the NDC. The strategy covers five main programs to attract and guide the allocation of international and national funding. Electricity • There is a need for a sustainable and scalable business model for installing, operating and maintaining mini-grids, including a payment system. Transport • A contribution will be made through a number of infrastructure investment projects for improving the road and drainage infrastructure; this includes sea defences infrastructure (grey and green) for Paramaribo, upgrading of roads and canals.
Trinidad and Tobago	Date of Submission: 22/02/2018 INDC Unconditional	• Transportation • Power generation

[56] Saint Vincent and the Grenadines INDC, page 3.
[57] Saint Vincent and the Grenadines INDC, page 6.
[58] Saint Vincent and the Grenadines INDC, page 3-4.
[59] Suriname NDC, page 21.

30% reduction in GHG emissions by 2030 in the public transportation sector compared to a BAU scenario (reference year 2013).

Conditional

Additional reduction achievable under certain conditions bringing the total GHG reductions to 15% below BAU emission levels by 2030.

The estimated cost of achieving the reduction objectives is USD 2 billion, which is expected to be met partly through domestic funding and conditional on international climate financing including through the Green Climate Fund.[60]

- Industry[61]

All country NDCs can be found via the UNFCCC interim NDC registry site. Please click each country name to view the linked NDCs. The text in this table is pulled directly from published NDCs.

Several countries in the ESC region have developed a climate-related policy or strategy, or have a draft that is under development or pending approval. These are briefly listed below to provide additional context:

- **Antigua and Barbuda**

  The Climate Change Transformational Program is designed to address the gaps in environmental governance, policy development and implementation, and project and program development execution, as well as other issues such as just transition of the workforce, gender, and monitoring and evaluation of impacts.[62]

- **The Bahamas**

  The Bahamas National Energy Policy 2013-2033 is designed and structured to ensure that by 2033, the Bahamas has a modern, diversified, and efficient energy sector, by providing Bahamians with affordable energy supplies and long-term energy security. The aim is to enhance international competitiveness and sustainable prosperity of the country.

- **Barbados**

  The 2021 Physical Development Plan Amendment has undergone wide consultation and will provide the framework for government decision-making across a number of key areas of development with a direct impact on climate change mitigation and adaptation.

  The Roofs 2 Reefs Programme (R2RP) framework operationalizes the PDP and provides the vehicle through which public investment will be directed.[63]

[60] Trinidad and Tobago INDC, page 4.
[61] Trinidad and Tobago INDC, page 5.
[62] Antigua and Barbuda's First Biennial Update Report, 2020.
[63] Barbados NDC, page 6-7.

The 2019 Barbados National Energy Policy (BNEP) signals the Government's unwavering commitment to a clean energy future by setting the target of a fossil fuel-free electricity sector by 2030.[64]

- **Dominica**

  A Climate Change, Environment and Natural Resource Management Bill will soon be introduced in Parliament. The Bill has undergone several reviews and will provide a strategic framework for focusing the nation's effort and resources in meeting the challenges of Climate Change and sustainable development.[65]

- **Grenada**

  The 2017-2021 National Adaptation Plan (NAP) will be one of Grenada's main mechanisms for accessing external climate finance and will play a crucial role as a vehicle for strategic investments in Grenada's climate-resilient development. Furthermore, the NAP will provide the framework for additional integration of climate change considerations into planning and budgetary processes to "climate-proof" public and private investments, ensuring efficient spending of scarce financial resources.[66]

- **Guyana**

  In 2009, Guyana launched its Low Carbon Development Strategy (LCDS), which aims to transform Guyana's economy on to a low carbon, sustainable development trajectory, while simultaneously combating climate change. The LCDS aims to protect and maintain the forests in an effort to reduce global carbon emissions and at the same time attract payments from developed countries for the climate services that the forests offer.

- **Saint Kitts and Nevis**

  In October 2017, St. Kitts and Nevis adopted the National Climate Change Policy. This policy provides an overarching guide on the country's pathway to addressing climate change. Further, a National Climate Change Adaptation Strategy and Action Plan was approved in 2018. It is geared toward operationalizing the adaptation responses to climate change.

- **Saint Lucia**

  In 2019, Saint Lucia's Cabinet of Ministers endorsed the NDC Partnership Plan with the goal of supporting the implementation of the 2015 targets. In line with the 2020 NDC, Saint Lucia has developed an Implementation Plan and a Financing Strategy for the NDC with concrete measures and a timeline for their implementation to transition the NDC target to real action and emission reductions, provided the access to the requisite support is forthcoming. This builds upon and is to be executed alongside the Saint Lucia NDC Partnership Plan.[67]

- **Saint Vincent and the Grenadines**

  The 2019 National Climate Change Policy of Saint Vincent and the Grenadines provides overarching guidance for building resilience and mainstreaming climate change into the national development agenda for low carbon and sustainable growth.

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[64] Barbados NDC, page 14.
[65] Third National Communication to the United Nations Framework Convention on Climate Change, March 2020.
[66] National Climate Change Adaptation Plan (Nap) For Grenada, Carriacou And Petite Martinique, 2017.
[67] Saint Lucia NDC, page 17.

- **Suriname**

  In 2014, Suriname developed its National Climate Change Policy, Strategy and Action Plan 2014-2021, which is intended to be a key policy of the Environmental Policy Plan and provide the legal basis for integrating climate change into the national development planning and resource allocation mechanisms of the country, a first for Caribbean Community (CARICOM) countries.

- **Trinidad and Tobago**

  In 2019, Trinidad and Tobago passed its National Climate Change Policy into law. It is guided by the following objectives:

  1. Reducing or avoiding greenhouse gas emissions from all emitting sectors;
  2. Enhancing carbon sinks;
  3. Protection of the natural environment and human health;
  4. Conserving and building resilience of human and natural systems to adapt to the adverse impacts of climate change, including through capacity building, the application of cleaner and energy efficient technologies, and relevant research and development;
  5. Enhanced agricultural production and food security;
  6. Educating the wider public on the potential impacts of climate change and the recommended adaptation strategies; and
  7. Conserving and guaranteeing a sustainable supply of potable water.

Appendix: Indicator Names and Definitions from idea.usaid.gov

Indicator Name *(Name in Report)*	Indicator Definition	Source of Indicator
Population, total *(Population (thousands))*	Total population is based on the de facto definition of population, which counts all residents regardless of legal status or citizenship. The values shown are mid-year estimates. Population estimates are usually based on national population censuses. Estimates for the years before and after the census are interpolations or extrapolations based on demographic models. Errors and undercounting occur even in high-income countries. In developing countries, errors may be substantial because of limits in the transport, communications, and other resources required to conduct and analyze a full census. The quality and reliability of official demographic data are also affected by public trust in the government, government commitment to full and accurate enumeration, confidentiality and protection against misuse of census data, and census agencies' independence from political influence. Moreover, comparability of population indicators is limited by differences in the concepts, definitions, collection procedures, and estimation methods used by national statistical agencies and other organizations that collect the data. The currentness of a census and the availability of complementary data from surveys or registration systems are objective ways to judge demographic data quality. Some European countries' registration systems offer complete information on population in the absence of a census. The United Nations Statistics Division monitors the completeness of vital registration systems. Some developing countries have made progress over the last 60 years, but others still have deficiencies in civil registration systems. International migration is the only other factor besides birth and death rates that directly determines a country's population growth. Estimating migration is difficult. At any time, many people are located outside their home country as tourists, workers, or refugees, or for other reasons. Standards for the duration and purpose of international moves that qualify as migration vary, and estimates require information on flows into and out of countries that is difficult to collect. Population projections starting from a base year are projected forward using assumptions of mortality, fertility, and migration by age and sex through 2050, based on the UN Population Division's World Population Prospects database medium variant. Original Source: (1) United Nations Population Division. World Population Prospects: 2019 Revision, (2) Census reports and other statistical publications from national statistical offices, (3) Eurostat: Demographic Statistics, (4) United Nations Statistical Division. Population and Vital Statistics Report (various years), (5) U.S. Census Bureau: International Database, and (6) Secretariat of the Pacific Community: Statistics and Demography Programme.	World Bank, World Development Indicators (WDI)
GDP (constant	GDP at purchaser's prices is the sum of gross value added by all	World Bank,

2010 $US) *(GDP (constant 2010 $US) (billions))*	resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 2010 U.S. dollars. Dollar figures for GDP are converted from domestic currencies using 2010 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used. Gross domestic product (GDP) represents the sum of value added by all its producers. Value added is the value of the gross output of producers less the value of intermediate goods and services consumed in production, before accounting for consumption of fixed capital in production. The United Nations System of National Accounts calls for value added to be valued at either basic prices (excluding net taxes on products) or producer prices (including net taxes on products paid by producers but excluding sales or value added taxes). Both valuations exclude transport charges that are invoiced separately by producers. Total GDP is measured at purchaser prices. Value added by industry is normally measured at basic prices. When value added is measured at producer prices, Growth rates of GDP and its components are calculated using the least squares method and constant price data in the local currency. Constant price U.S. dollar series are used to calculate regional and income group growth rates. Local currency series are converted to constant U.S. dollars using an exchange rate in the common reference year. Original Source: World Bank national accounts data, and OECD National Accounts data files.	World Development Indicators (WDI)
Total emissions, All sectors (including land-use change and forestry (LUCF)), All greenhouse gases (GHG) (metric tons of carbon dioxide equivalent ($MtCO_2e$)) *(Total GHG Emissions from Five Sectors)*	The total GHG emissions for all sectors including Land-use change and forestry (LUCF). Total GHG emissions account for CO_2 and non-CO_2 gases and are the sum of the data from each of the individual sectors/gases. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). The additional sectors are Buildings, Bunker fuels, Electricity/heat, Energy, Fugitive emissions, Industrial processes, Manufacturing/construction, and Other fuel combustion. The data, reported directly by countries to the United Nations Framework Convention on Climate Change (UNFCCC) through their national GHG inventories, generally include a six-gas inventory. That is, estimates by source and sector of CO_2 and non-CO_2 gases, where applicable. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). World Resource Institute (WRI) also compiles data from a variety of non-governmental sources, not to replace those data reported by countries to the UNFCCC, but to complement them. Visit http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf for more technical details.	World Resources Institute (WRI), Climate Watch
Total emissions, Agriculture, All greenhouse gases	The total greenhouse gas (GHG) emissions for the Agriculture sector. Total GHG emissions are the sum of the data from each of the individual gases. All GHG emissions from agriculture consist of	World Resources Institute (WRI), Climate Watch

(GHG) (metric tons of carbon dioxide equivalent ($MtCO_2e$)) *(GHG Emissions from the Agriculture Sector)*	non-CO_2 gases, namely methane (CH_4) and nitrous oxide (N_2O), produced by aerobic and anaerobic decomposition processes in crop and livestock production and management activities. The sector contents include livestock manure management, rice cultivation, agricultural soils, enteric fermentation, and other agricultural resources. The data, reported directly by countries to the United Nations Framework Convention on Climate Change (UNFCCC) through their national GHG inventories, generally include a six-gas inventory. That is, estimates by source and sector of CO_2 and non-CO_2 gases, where applicable. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). World Resource Institute (WRI) also compiles data from a variety of non-governmental sources, not to replace those data reported by countries to the UNFCCC, but to complement them. Visit http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf for more technical details.	
Total emissions, Energy, All greenhouse gases (GHG) (metric tons of carbon dioxide equivalent ($MtCO_2e$)) *(GHG Emissions from Energy Sector)*	The total greenhouse gas (GHG) emissions for the Energy sector. Emissions in the Energy sector include sub-sectors of electricity/heat, fugitive emissions, manufacturing/construction, transportation, and other fuel combustion. Total GHG emissions are the sum of the data from each of the individual subsectors/gases. Most energy emissions come from Carbon dioxide (CO_2) fossil fuel combustion, but emissions from Methane (CH_4) and Nitrous oxide (N_2O) are also significant, particularly in the Fugitive Emissions subsector (CH_4). The sector contents include electricity and heat plants (fossil fuels), such as public plants and auto producers and other energy industries. The data, reported directly by countries to the United Nations Framework Convention on Climate Change (UNFCCC) through their national GHG inventories, generally include a six-gas inventory. That is, estimates by source and sector of CO_2 and non-CO_2 gases, where applicable. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs, perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). World Resource Institute (WRI) also compiles data from a variety of non-governmental sources, not to replace those data reported by countries to the UNFCCC, but to complement them. Visit http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf for more technical details.	World Resources Institute (WRI), Climate Watch
Total emissions, Industrial processes, All greenhouse gases (GHG) (metric tons of carbon dioxide equivalent ($MtCO_2e$)) *(GHG Emissions from the IP Sector)*	The total greenhouse gas (GHG) emissions for the Industrial processes sector. Total GHG emissions are the sum of the data from each of the individual gases. The Industrial processes sector includes Carbon dioxide (CO_2) emissions from cement manufacture, Nitrous oxide (N_2O) emissions from adipic and nitric acid production, N_2O and Methane (CH_4) emissions from other industrial (non-agriculture), and all F-gases: (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). These include emissions from the chemical industry and iron and steel production. The data, reported directly by countries to the United Nations Framework Convention on Climate Change (UNFCCC)	World Resources Institute (WRI), Climate Watch

	through their national GHG inventories, generally include a six-gas inventory. That is, estimates by source and sector of CO_2 and non-CO_2 gases, where applicable. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). World Resource Institute (WRI) also compiles data from a variety of non-governmental sources, not to replace those data reported by countries to the UNFCCC, but to complement them. Visit http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf for more technical details.	
Total emissions, Land-use change and forestry (LUCF), All Greenhouse gases (GHG) (metric tons of carbon dioxide equivalent ($MtCO_2e$)) *(GHG Emissions from LUCF Sector)*	The total greenhouse gas (GHG) emissions for the Land-use and forestry (LUCF) sector. LUCF emissions consist of Carbon dioxide (CO_2), Methane (CH_4) and Nitrous oxide (N_2O), produced by aerobic and anaerobic processes, e.g. combustion and decay, and by harvesting associated with land management activities. Total GHG emissions are the sum of the data from each of the individual gases. The sector contents include land use such as forest land, cropland, grassland and biomass burning. The data, reported directly by countries to the United Nations Framework Convention on Climate Change (UNFCCC) through their national GHG inventories, generally include a six-gas inventory. That is, estimates by source and sector of CO_2 and non-CO_2 gases, where applicable. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). World Resource Institute (WRI) also compiles data from a variety of non-governmental sources, not to replace those data reported by countries to the UNFCCC, but to complement them. Visit http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf for more technical details.	World Resources Institute (WRI), Climate Watch
Total emissions, Waste, All greenhouse gases (metric tons of carbon dioxide equivalent ($MtCO_2e$)) *(GHG Emissions from the Waste Sector)*	The total greenhouse gas (GHG) emissions from the Waste sector. Total GHG emissions are the sum of the data from each of the individual gases. The waste sector consists of Methane (CH_4) and Nitrous oxide (N_2O) emissions, including the activities of landfills (solid waste), wastewater treatment, human sewage, and other non-agricultural waste. The data, reported directly by countries to the United Nations Framework Convention on Climate Change (UNFCCC) through their national GHG inventories, generally include a six-gas inventory. That is, estimates by source and sector of CO_2 and non-CO_2 gases, where applicable. Non-CO_2 gases include methane (CH_4), nitrous oxide (N_2O), and F-gases (hydrofluorocarbons - HFCs; perfluorocarbons - PFCs; and sulfur hexafluoride - SF_6). World Resource Institute (WRI) also compiles data from a variety of non-governmental sources, not to replace those data reported by countries to the UNFCCC, but to complement them. Visit http://cait.wri.org/docs/CAIT2.0_CountryGHG_Methods.pdf for more technical details.	World Resources Institute (WRI), Climate Watch
Carbon dioxide emissions (millions of metric tons)	Total carbon dioxide emissions, expressed in millions of metric tons. International data for carbon dioxide emissions from the consumption of energy include emissions due to the consumption of	Energy Information Administration

(CO_2 Emissions from Primary Energy Consumption)	petroleum, natural gas, and coal, and also from natural gas flaring. Note: CO_2 emissions are calculated for each individual fuel with some refinements that are detailed below, by applying carbon emission coefficients—or million metric tons of CO_2 emitted per quadrillion British thermal units (BTUs) of fuel consumed —to international consumption and flaring data. Metric tons of CO_2 can be converted to metric tons of carbon equivalent by multiplying by 12/44. Emissions from petroleum and coal account for differences in product-level consumption patterns and emissions factors. For example, in the case of petroleum, residual fuel oil has a significantly higher emissions factor than motor gasoline. The calculation methodology therefore applies emissions factors to individual petroleum product consumption data, and then sums to obtain total CO_2 emissions from the consumption of petroleum. Emissions data from the consumption of petroleum also incorporates carbon sequestration due to non-fuel use (for example, asphalt used for street paving). This is done by applying: 1) rates of non-fuel use and 2) sequestration rates of non-fuel use to individual products. Product-level emissions are accordingly reduced to account for carbon that is sequestered rather than combusted and emitted as CO_2.	(EIA), International Energy Statistics