

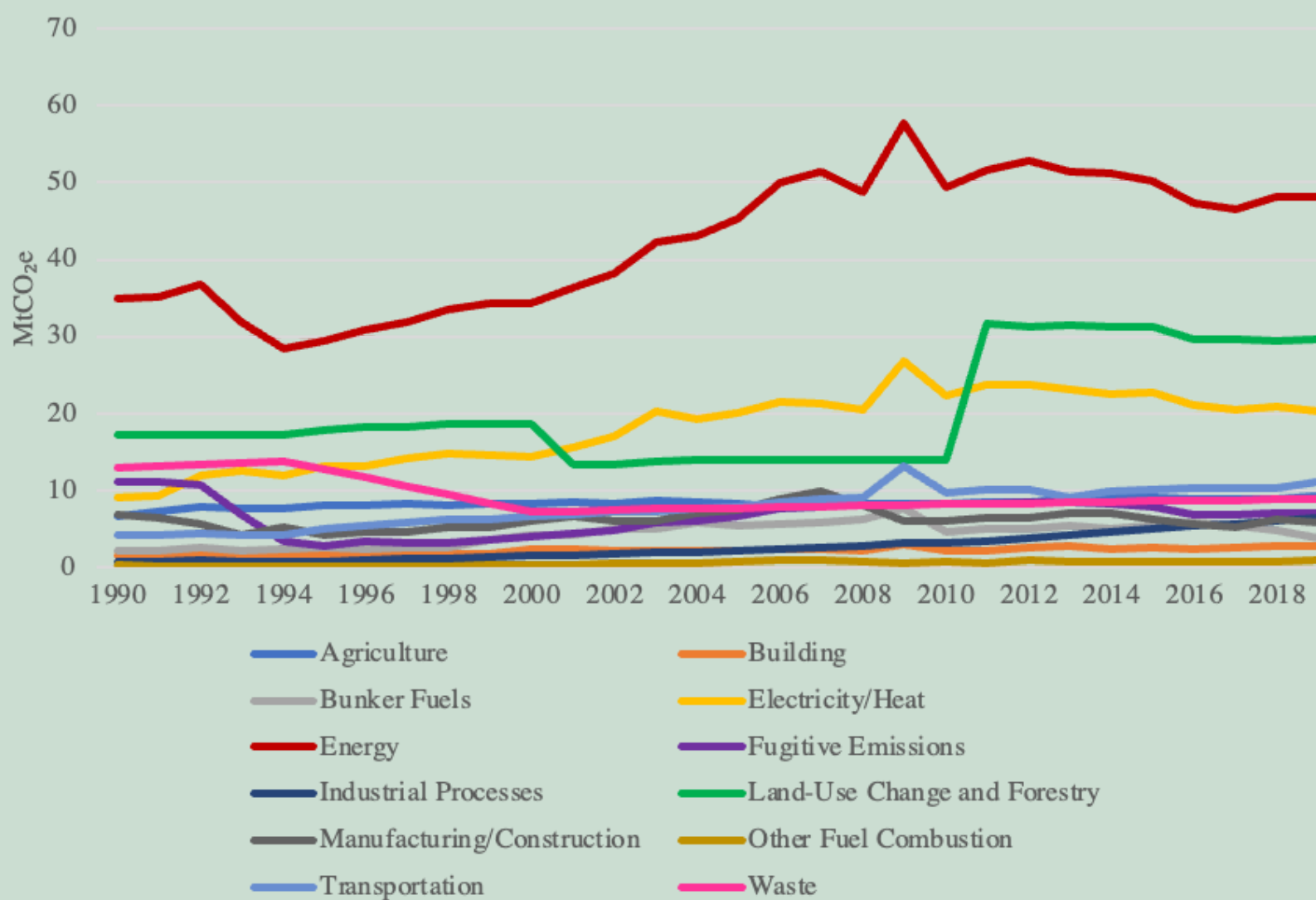
SRC QUICK GUIDE #10

TRADE & CLIMATE CHANGE THE CARICOM PERSPECTIVE

CARICOM'S GHG PROFILE

CARICOM countries combined account for less than 1% (0.33%) of all Global Green House Gas Emissions (GHG), second only to the Pacific which emits 0.03%. The region's main GHG emitting sectors are energy, land-use change and forestry, and electricity/heat, with increased emissions in more recent years from sectors like transportation, agriculture, and waste (see Figure 1 below). Trinidad and Tobago (0.06%), Guyana (0.04%), and Suriname (0.03%) are the region's largest GHG emitters, which is not surprising since they are also the region's main commodities-based economies heavily dependent on the oil and gas and mining sectors.

Figure 1: Caribbean's Regional GHG Emissions by Sector (1990-2018)



Source: ClimateWatchData.org

CLIMATE CHANGE IMPACT

CARICOM is 7 times more likely to be hit by natural disasters than larger states, and 2 times as likely as other small states. Among the main climate-induced disasters impacting the Caribbean include:

- Frequent and intense weather systems (storms and hurricanes),
- Rising sea-levels and temperatures
- Longer and more intense drought periods
- Increasing salinisation of fresh water

It is estimated that the disaster damage, as a ratio to GDP, was 4.5 times greater for small states than for larger ones, but 6 times higher for countries in the Caribbean. By some projections, the CARICOM region stands to lose a total of US \$22 billion annually by 2050, which represents roughly 10% of the CARICOM economy.

CLIMATE CHANGE IMPACT (CONTD.)

These climate-induced disasters continue to negatively impact the region's most important trade sectors such as tourism, agriculture, and the blue economy, and critical human development sectors like health, costing the region millions.

- **Tourism**

Tourism is CARICOM's dominant industry, accounting for over 60% of GDP and employment and over 80% of total exports in some Caribbean countries. Travel receipts are driving the region's surplus in its trade in services, accounting for the bulk of CARICOM's services exports. The region's tourism model is predicated on its competitive advantage in sandy beaches, upon which the sun-sand-sea tourism model is built. However, climate change is threatening the sustainability of this tourism model. Almost a third of all Caribbean tourism resorts are at flooding risk from the sea-level rise, and several others will have their beach assets (including coral reefs and coastlines) substantially eroded or destroyed. The loss of critical beach assets also has major implications for property values, destination competitiveness, and marketability. The 2022 empirical study titled "Sea Level Rise Under Climate Change: Implications for Beach Tourism in the Caribbean" estimated the following impact:

- An average 53% loss in sandy beaches, resulting in a 30% hotel room loss and a 38% tourism revenue decrease by 2100 under a low CO2 emissions pathway (RCP4.5).
- 59% and 39% reductions in beach and hotel rooms, respectively, and a 47% reduction in direct tourism revenue which is only one aspect of beach erosion costs under a higher emissions path (RCP8.5).

- **Agriculture**

The region's agriculture sector currently accounts for 7-17% of GDP and 10-25% of jobs. On average, the agriculture sector in developing countries absorbs 25% of the total damage and losses from climate-related disasters. Caribbean agriculture-based economies are concentrated among one or two main commodity exports that depend on their natural environment, which increases the sector's vulnerability to large-scale loss from climate-induced disasters.

One study estimated that under 2 metres sea-level rise more than 3% of agricultural land will be lost on average, and even higher projections are estimated for the Bahamas (12%), St. Kitts and Nevis (8%) and Haiti (5%). Another study predicted that the biological effects of 2050 climate on Caribbean agriculture compared to 2000 climate would reduce yields by as much as 3-8% for commodities like rice, maize, and cowpea. Certainly, the impact of climate change on changes to land and water use, and agricultural production patterns will also compound the region's food security problem.

- **The Blue Economy**

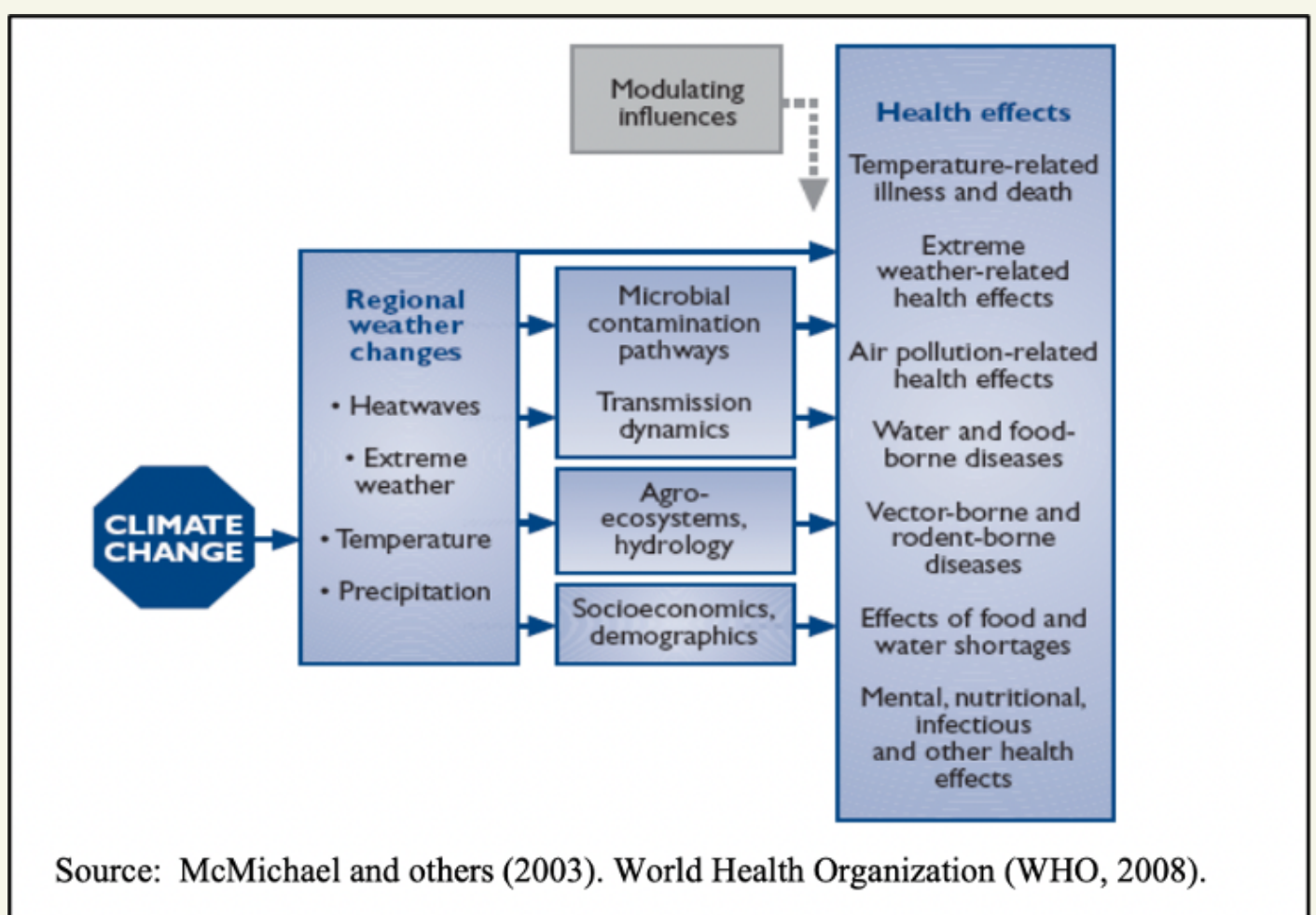
Caribbean SIDS are increasingly being called big ocean economies to draw reference to the vast oceanic resources which surround them. However, climate-induced disasters like weather systems (hurricanes/storms), increased oceanic temperatures and acidification threaten the region's oceanic biodiversity. 90% of reefs in the Caribbean are expected to be at risk by the year 2030 and up to 100% with around 85% at high, very high or critical levels by 2050. One-third of sea turtle nesting beaches across the region are likely to be lost under 0.5 metres sea-level rise. The region's fisheries sector which employs around 200,000 fishers and 100,000 people in fish processing, marketing, and other supporting roles, and accounts for around US \$1.2 billion in annual export earnings, will also be negatively impacted as fish migrate to cooler waters and the biological ecosystem changes.

CLIMATE CHANGE IMPACT (CONTD.)

- Health**

Figure 2 depicts the pathways through which climate change affects population health. Studies predict that a 2°C increase of temperature by 2099 will lead to a three-fold increase in the transmission of dengue fever, and extreme weather events are expected to increase heat stress, diarrhoea distress, and respiratory complications. One study found reported cases of dengue in Trinidad and Tobago between 1997-1998 to be correlated with temperature and rainfall and warming of early months of the year. The Caribbean is particularly vulnerable to climate impacts on health because of the dual disease burden present in the region where there are many endemic and environmentally-sensitive diseases vectors coupled with high rates of cardio-respiratory diseases.

Figure 2: Pathways through which climate change affects population health



CARICOM'S EG TRADE PROFILE

Data from the IMF Climate Change Indicators Dashboard confirm that apart from Trinidad and Tobago, CARICOM states are generally net importers of environmental goods (EGs). In 2019, Trinidad and Tobago (10.21%), Jamaica (8.69%), and Guyana (7.1%) had the largest shares of EG goods imports as a percentage of their total imports, while during the same period Trinidad and Tobago (27.5%), Grenada (6.9%), and Barbados (2.87%) recorded the largest shares of EG goods exports as a percentage of their total exports.

It is difficult to provide a detailed breakdown of EG trade by commodity type. However, to provide some preliminary insight Tables 1 and 2 capture top 10 EG exports and imports for Barbados and Jamaica in 2019, using the OECD product list of EGs as a guide.

Table 1: Jamaica's Top EG Imports and Exports (2019)

Top 10 EG Imports				Top 10 EG Exports			
Code	Product label	Imported value in 2019 (US\$ thousands)	% of total EG imports	Code	Product label	Exported value in 2019 (US\$ thousands)	% of total EG exports
281512	Sodium hydroxide "caustic soda" in aqueous solution "soda lye or liquid soda"	104159	31.25	281830	Aluminium hydroxide	14215	57.24
220710	Undenatured ethyl alcohol, of actual alcoholic strength of >= 80%	27084	8.13	252100	Limestone flux; limestone and other calcareous stone, of a kind used for the manufacture of ...	3609	14.53
848180	Appliances for pipes, boiler shells, tanks, vats or the like (excluding pressure-reducing valves, ...)	21802	6.54	731029	Tanks, casks, drums, cans, boxes and similar containers, of iron or steel, for any material, ...	1732	6.97
392690	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s (excluding ...)	15569	4.67	842121	Machinery and apparatus for filtering or purifying water	1021	4.11
854140	Photosensitive semiconductor devices, incl. photovoltaic cells whether or not assembled in ...	13345	4.00	392490	Household articles and toilet articles, of plastics (excluding tableware, kitchenware, baths, ...)	773	3.11
841381	Pumps for liquids, power-driven (excluding those of subheading 8413.11 and 8413.19, fuel, lubricating ...)	11170	3.35	902710	Gas or smoke analysis apparatus	593	2.39
392020	Plates, sheets, film, foil and strip, of non-cellular polymers of ethylene, not reinforced, ...	10866	3.26	903180	Instruments, appliances and machines for measuring or checking, not elsewhere specified in ...	443	1.78
842121	Machinery and apparatus for filtering or purifying water	6883	1.95	392690	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s (excluding ...)	387	1.56
392490	Household articles and toilet articles, of plastics (excluding tableware, kitchenware, baths, ...)	6509	1.95	841381	Pumps for liquids, power-driven (excluding those of subheading 8413.11 and 8413.19, fuel, lubricating ...)	353	1.42
903289	Regulating or controlling instruments and apparatus (excluding hydraulic or pneumatic, manostats, ...)	6186	1.86	854140	Photosensitive semiconductor devices, incl. photovoltaic cells whether or not assembled in ...	261	1.05

Source: ITC Trade Map (2022)

CARICOM'S EG TRADE PROFILE (CONTD.)

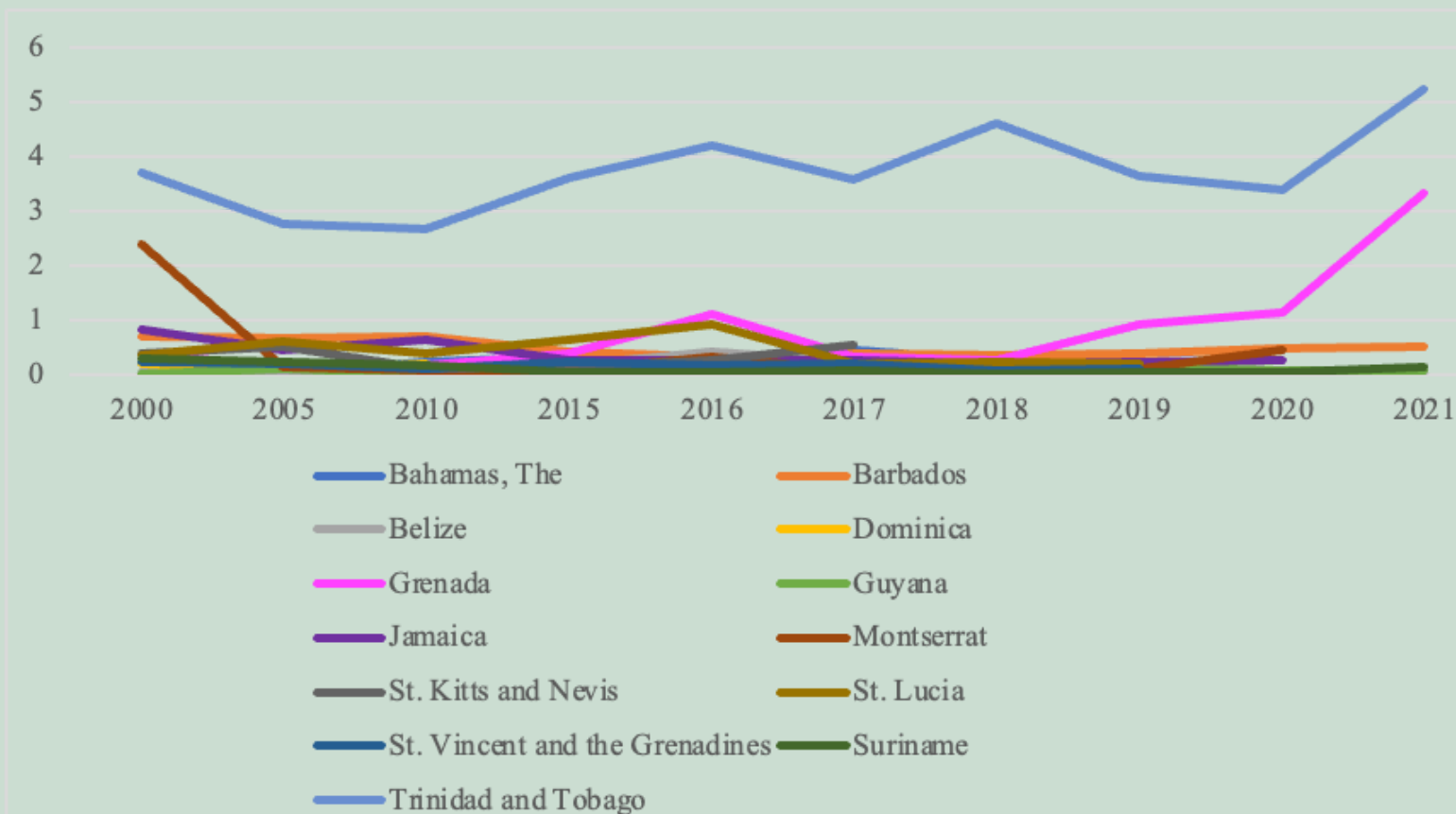
Table 2: Barbados' Top EG Imports and Exports (2019)

Top 10 EG Imports				Top 10 EG Exports			
Code	Product label	Imported value in 2019 (US\$ thousands)	% of total EG imports	Code	Product label	Exported value in 2019 (US\$ thousands)	% of total EG exports
854140	Photosensitive semiconductor devices, incl. photovoltaic cells whether or not assembled in ...	5752	12.39	731029	Tanks, casks, drums, cans, boxes and similar containers, of iron or steel, for any material, ...	4350	43.22
392690	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s (excluding ...	5395	11.62	220710	Undenatured ethyl alcohol, of actual alcoholic strength of >= 80%	3860	38.35
848180	Appliances for pipes, boiler shells, tanks, vats or the like (excluding pressure-reducing valves, ...	3114	6.71	841919	Instantaneous or storage water heaters, non-electric (excluding instantaneous gas water heaters ...	378	3.76
392490	Household articles and toilet articles, of plastics (excluding tableware, kitchenware, baths, ...	2483	5.35	392690	Articles of plastics and articles of other materials of heading 3901 to 3914, n.e.s (excluding ...	340	3.38
841381	Pumps for liquids, power-driven (excluding those of subheading 8413.11 and 8413.19, fuel, lubricating ...	2280	4.91	252100	Limestone flux; limestone and other calcareous stone, of a kind used for the manufacture of ...	249	2.47
842121	Machinery and apparatus for filtering or purifying water	1851	3.99	320910	Paints and varnishes, incl. enamels and lacquers, based on acrylic or vinyl polymers, dispersed ...	184	1.83
731029	Tanks, casks, drums, cans, boxes and similar containers, of iron or steel, for any material, ...	1697	3.65	392490	Household articles and toilet articles, of plastics (excluding tableware, kitchenware, baths, ...	117	1.16
730900	Reservoirs, tanks, vats and similar containers, of iron or steel, for any material other than ...	1413	3.04	730900	Reservoirs, tanks, vats and similar containers, of iron or steel, for any material other than ...	80	0.79
847989	Machines and mechanical appliances, n.e.s.	1321	2.84	841381	Pumps for liquids, power-driven (excluding those of subheading 8413.11 and 8413.19, fuel, lubricating ...	57	0.57
840991	Parts suitable for use solely or principally with spark-ignition internal combustion piston ...	1042	2.24	840991	Parts suitable for use solely or principally with spark-ignition internal combustion piston ...	45	0.45

Source: ITC Trade Map (2022)

Most Caribbean countries have demonstrated a relative disadvantage in environmental goods trade, reflecting the region's current limited export potential in this area. Using IMF staff calculations, where comparative advantage is calculated as the proportion of an economy's exports that are environmental goods to the proportion of global exports that are environmental goods, Figure 3 reveals that only Trinidad and Tobago and in more recent years Grenada have registered values greater than 1 which indicate a relative advantage in environmental goods. Based on the overall trade profile findings for the region, Trinidad and Tobago appears to feature as the region's dominant player in EG trade, being both CARICOM's leading EG importer and exporter, the only net exporter of EGs and one of the few CARICOM states with a revealed comparative advantage in EG trade

Figure 3: Comparative Advantage in Environmental Goods



CARICOM'S EG EXPORT OPPORTUNITIES

Opportunities exist for the Caribbean to participate in global value chains for environmental goods and services.

- Renewable Energy Generation & Technologies**

One market intelligence report valued the global renewable energy market size at US \$881.70 billion in 2021, with expectations that it will grow at a compound annual growth rate of 8.50% during 2021-2030 reaching US \$1930.60 billion by 2030. The Caribbean's abundance of natural resources affords it a competitive advantage for several energy diversification possibilities ranging from solar, to wind and geothermal energy, and even hydro and biomass renewables. At the Caribbean Investment Forum, European Union Ambassador Peter Cavendish highlighted the potential for the Caribbean to become green hydrogen producers of the future.

CARICOM'S EG EXPORT OPPORTUNITIES (CONTD.)

- Ecotourism

Perhaps one of the lowest hanging fruits for the region to consider is the exportation of ecotourism. In 2021 the global ecotourism market was valued around US \$185.87 billion and is expected to grow at a compound annual growth rate of 15.2% during 2022 to 2030 reaching US \$665.20 billion. Global demand for ecotourism is driven primarily by increasing popularity of immersive travel, outdoor recreational activities, solo travel, rapid urbanisation, and growing awareness of tourism's adverse impact on the environment. Apart from financial motivations, strong arguments exist for the region to adopt a more sustainable tourism model, given the impact of climate change on the sustainability of the sun-sand-sea model (previously discussed) and the contribution of the current extractive model to water and air pollution and to added pressure on waste management systems.

The region's abundance of natural resources and rich biodiversity provide natural competitive advantages for the development of ecotourism. Consider for example, the fact that the region is home to 11,000 plant species of which 72% are endemic, and 7% of the world's total coral reef ecosystems are found in the Caribbean – with the second and third largest reefs off the shores of Belize and the Bahamas respectively. The high proportion of endemism in the region's terrestrial ecosystem makes it one of the greatest centres of biodiversity in the world.

- Trade in Niche Products

In most, if not all cases, it is impossible for the Caribbean to compete in terms of trade volume, but there is potential to capitalize on specialized niche markets. Given the region's rich biodiversity, natural fibers represent a potential niche for the Caribbean to exploit, but greater research is needed in this area. One study has already examined the utility of Caribbean coconut fibers (which are environmentally friendly) for potential applications in civil engineering. The study's analysis found that "the tensile strength, modulus, strain at break and crystallinity properties of the Caribbean coir fibers were comparable to commercially available coir fiber currently being used in many building applications." Evidently, there is some potential for the region to consider commercializing this asset which has typically been discarded as waste material. This type of R&D which involves converting waste into useable output can prove beneficial in assisting the region to develop a circular economy.

Another example is seagrass – an underrated but immensely valuable asset growing throughout the Caribbean where four genera can be found, notably: *Thalassia*, *Halophila*, *Halodule* and *Syringodium*. Seagrass not only provides vital shoreline protection for the region but has significant capacity for carbon absorption, acting as a sediment trap that captures carbon, stores it and deposits it into the seafloor. In fact one report noted that although seagrass only occupies 0.2% of the seafloor, it accounts for 10% of the ocean's capacity to store carbon from the atmosphere and does so 35 times faster than tropical rainforests. As seagrass restoration efforts are being scaled up across countries, opportunities may exist for the region to export some of its seagrass to assist in these initiatives, but this remains an area where greater research is needed.

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