British Virgin Islands Ecosystem Accounting

2019 ecosystem account

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Disclaimer

Document evolution

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2019 Ecosystem account

At 151 square kilometres (Government of the Virgin Islands, 2019a) with a population of 27,800 (Government of the Virgin Islands, 2019b), the island nation of the British Virgin Islands (BVI) is largely dependent on its wealth of environmental assets, in fact the environment contributes at least **$125 million annual value** to BVI in 2019 (BVI 2019 Ecosystem account, 2021), which is 10% of its GDP (Government of the Virgin Islands, 2020). These environmental assets provide an abundance of benefit to the people of BVI, including: the attraction of some of the world's most beautiful beaches for tourists ($47m/ year); coral reefs for coastal protection ($74m/ year); terrestrial and marine ecosystems sequestering carbon ($4 m/ year); and other more difficult to measure values such as the biodiversity that makes life richer to both local inhabitants and visitors. The economic prosperity and wellbeing of the people of BVI are fundamentally linked to effective management of the environment, and an understanding of the value that it provides.

Ecosystem accounts provide economic evidence that supports the delivery of sustainable value from environmental assets[1]. Effective management of the environment must consider the extent and underlying condition of ecosystems over time, as well as the range of benefits they provide and the economic value of those benefits to different stakeholder groups. Specifically, the data in ecosystem accounts can help address several fundamental questions for policy and planning:

- What environmental assets are present and what state are they in? How does this change over time?
- What benefits does the environment provide? How are these received by beneficiaries?
- What is the economic value of these benefits? How is this value distributed across the population?

The environmental and socioeconomic data produced within ecosystem accounts provide a basis for answering these questions. Their importance is reflected in the development of the System of Environmental Economic Accounting – Ecosystem Accounts (SEEA-EA)[2], by the United Nations (UN). Officially adopted by the UN as a statistical standard in March 2021, the SEEA-EA supports the implementation of ecosystem accounting as a part of National Accounts by National Statistics Offices around the world. Ecosystem accounts provide indicators that compliment national economic and social indicators (such as GDP and demographic trends), and this evidence can support policy development and decision making, such as:

- Effective decisions which impact on the environment and the benefits it provides;
- Action on climate change, including mitigation, adaptation and resilience to impact;
- Delivery of international initiatives, such as the UN Sustainable Development Goals (SDGs)3; and
- A green post-COVID economic recovery, and in particular a sustainable tourism sector.

For ecosystem accounts to be a valuable addition to government and organisational policy and planning strategy, they should be embedded into the decision-making process, and updated on an annual basis both to provide current data and to monitor trends over time. A partnership of eftec, the UK Joint Nature Conservation Committee (JNCC), the New Economics Foundation, and BVI's Ministry of Natural Resources, Labour and Immigration with Darwin Plus funding from the UK Government, have initiated this process in BVI

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[1] See: **Box 1**
[2] See: https://seea.un.org/ecosystem-accounting
[3] See: https://sdgs.un.org/goals

and it is hoped that with support, full ownership of the accounting process is handed over to the Government of BVI by Q1 2022.

Physical flow and monetary flow

A range of benefits have been assessed within the ecosystem account, with estimated annual physical flow and monetary values given a confidence rating, as described in **Table 1**. The confidence rating is based on the robustness of the evidence and assumptions used. The summary of the ecosystem account is presented in **Table 2.** The annual physical flow and monetary flow are divided between those measured in accordance with the SEEA-EA standard, and those measured by supplementary methods. The present values (the sum over 25 years), of the benefits are also shown.

Table 1: **Description of confidence**

Confidence	Symbol	Description
Low	🔴	Evidence is partial and significant assumptions are made so that the data provides only order of magnitude estimates of value to inform decisions and spending choices.
Medium	🟡	Science-based assumptions and published data are used but there is some uncertainty in combining them, resulting in reasonable confidence in using the data to guide decisions and spending choices.
High	🟢	Evidence is peer reviewed or based on published guidance so there is good confidence in using the data to support specific decisions and spending choices.
No colour	⚫	Not assessed

Table 2: Physical and monetary account

Annual overview	Physical flow (unit/yr)			Monetary flow (US$m/yr)			Present Value 25 years (US$m)
Produced at: July 2021	Reporting (2019/20)	Confidence	Units	Reporting (2019/20)	Confidence	Valuation metric	
Ecosystem service flow account							
Carbon sequestration	40,403	●	Total carbon sequestered (tCO2e/yr)	3.7	●	Total value of carbon sequestered	90.0
Coastal protection	2,234	●	Total number of buildings protected by coral reefs (buildings/yr)	74.3	●	Estimated damage costs to properties if coral reefs were destroyed	1,267.4
Tourism	3,300,355	●	Total number of visits (visits/yr)	47.1	●	Total value added to tourism industry attributed to ecosystems	841.0
			Total value	**125.1**		**Mix of values**	**2,198.4**
Supplementary information							
Other exchange values							
Tourism	3,300,355	●	Total number of visits (visits/yr)	188.4	●	Remaining visitor expenditure attributed to ecosystems	3,364.1
Non-monetised benefits							
Coastal protection	148	●	Total length of roads at high risk of storm surge (km/yr)				
Flood hazard regulation	362	●	Total length of roads at high risk of inland flooding (km/yr)				

Extent and condition account

Spatial analysis was conducted to assess the ecosystems present within BVI. The quantity (i.e. extent) and quality (i.e. condition) of the present ecosystems are recorded in the extent account (**Table 3**) and condition account (**Table 4**), respectively. The accounts can be used to monitor changes in the environmental assets over time. The terrestrial and marine ecosystem of BVI are mapped in **Figure 1.**

Table 3: Extent account

IUCN Code	Ecosystem	Area (ha)
Terrestrial		
Total		**19,187**
T1	Tropical-subtropical forests biome	3,755
T1.2	Tropical-subtropical dry forests and scrubs	5,787
T1.3	Tropical-subtropical montane rainforests	1,761
T7	Intensive land-use	43
T7.4	Urban and industrial ecosystems	2,133
MFT1.2	Intertidal forests and shrublands	384
MT1.3	Sandy shorelines	203
F2.7	Ephemeral salt lakes	989
n/a	Bare ground	250
n/a	Rock	490
n/a	Sediment	3,392
Marine		
Total		**166,464**
M1.1	Seagrass meadows	7,010
M1.3	Photic coral reefs	9,215
M1.6	Subtidal rocky reefs	77,525
M1.7	Subtidal sand beds	72,662
M1.8	Subtidal mud plains	52

Source: JNCC (2018); TNC (2020)

Table 4: Condition account

Category	Sub-category	Value
Ecological communities and species		
Fisheries Priority areas (ha)		102
Protected fisheries area (ha)		5,020
Tropical Important Plant (TIP) areas (ha)		7,365
Number of leatherback nesting sites (#)		11
Christmas bird count (#)	Abundance – Tortola	246
	Abundance - Anegada	362
	Number of species – Tortola	45
	Number of species - Anegada	30
Land		
National Park area	Total area (ha)	447

Source: National Parks Trust (2020a; 2020b; 2020c; 2020d; 2020e; 2020f)
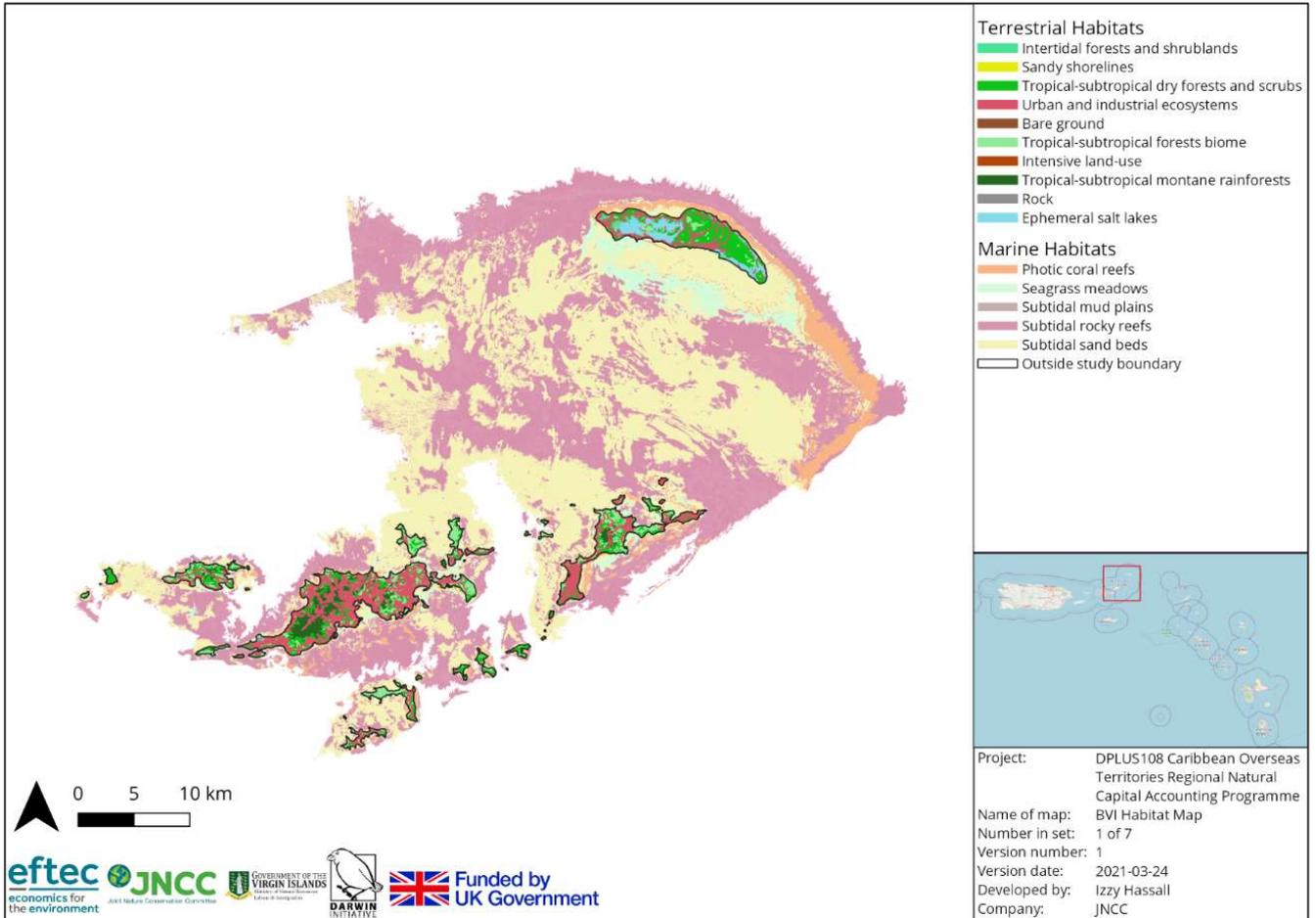
Figure 1: BVI terrestrial and marine ecosystems
Source: JNCC (2018); TNC (2020)

Box 1: Ecosystem accounts

The ecosystem accounting approach helps frame the interconnection between humans and the environment in economic terms. The environment can be viewed as an asset, or natural capital, that provides a revenue of ecosystem goods and services, which benefit people. This includes provisioning services, such as agricultural produce or fisheries, regulating services, such as protection from natural hazards and carbon sequestration, and cultural services, such as tourism and local recreation. These benefits can be measured and valued in a consistent and structured manner, and compiled into an accounting framework, called ecosystem accounts. Ecosystem accounts produce environmental statistics which provide an evidence base on the benefits provided by the environment.

An ecosystem account is structured as a set of component accounts, each of which require data to be consistently collected and collated in a systematic way. The main components of an ecosystem account are:

- **Extent and condition accounts** - an inventory that holds details on the state of all the ecosystem assets that are present, including their extent and condition (quality and other relevant factors). For example, the spatial area of a reef system, and its health in terms of suitable indicators.

- **Physical flow account** – contains the flow of goods and services which are dependent on the ecosystem assets that are identified in the identified in the extent and condition accounts. This includes benefits related to provisioning, regulating and cultural goods and services provided by ecosystems.

- **Monetary flow account** – calculates the annual value of the estimated flow of benefits that are captured in the physical flow account. The overall asset value is estimated based on assumptions about the values of the physical and monetary flows into the future.

This set of accounts therefore monitor the presence and state of different habitats, the benefits these provide, and the value that humans receive from them. When updated year on year they provide a useful means to monitor and evaluate growth or decline in any of these elements, while also helping to understand the relationship between the environment, the services it provides, and how humans use and value them.