Ecosystem Profile

THE CARIBBEAN ISLANDS BIODIVERSITY HOTSPOT

Technical Summary

Draft for Submission to the CEPF Donor Council

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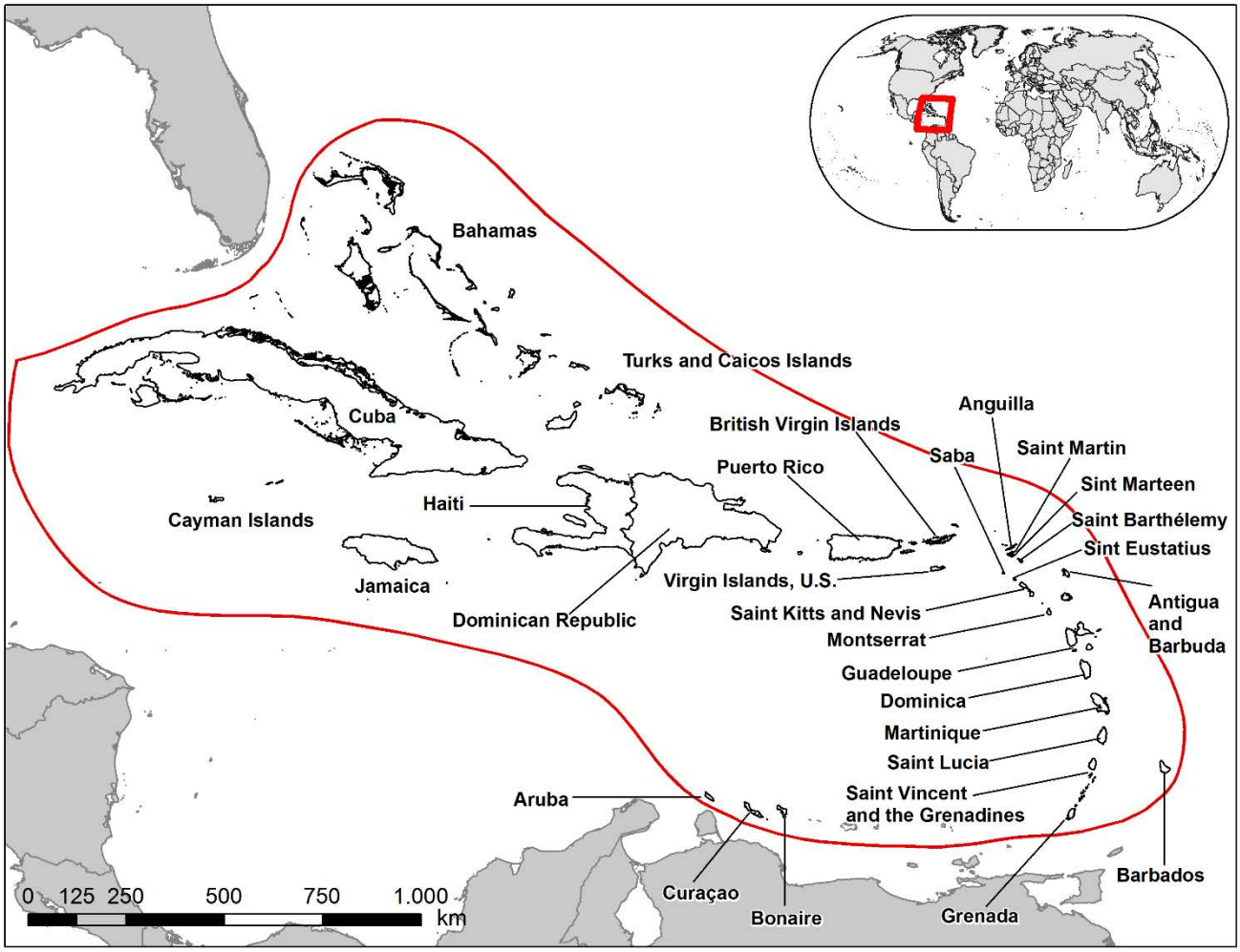
1 INTRODUCTION

The Caribbean Islands Biodiversity Hotspot is one of 36 biodiversity hotspots in the world. Biodiversity hotspots hold least 1,500 plant species found nowhere else and have lost at least 70 percent of their original habitat extent (Mittermeier *et al*. 2004). The island geography and complex geology of the Caribbean has created unique habitats and high species diversity, and these islands have among the highest number of globally threatened species of any hotspot in the world. Between October 2010 and July 2016, the Critical Ecosystem Partnership Fund (CEPF) invested $6.9 million towards safeguarding the Caribbean's biodiversity and preventing extinctions. In June 2016, the CEPF Donor Council selected the Caribbean Islands for reinvestment, to build on gains made during the initial phase of investment and make further progess with conserving the hotspot's rich biodiversity.

The Caribbean Islands Hotspot comprises more than 7,000 islands, islets, reefs and cays with a land area of 230,000 km^2 scattered across 4 million km^2 of sea (Figure 1.1). The hotspot takes in the 30 biologically and culturally diverse nations and territories, among which 11 are eligible for CEPF support: Antigua and Barbuda; the Bahamas; Barbados; Dominica; the Dominican Republic; Grenada; Haiti; Jamaica; Saint Lucia; St. Kitts and Nevis; and St. Vincent and the Grenadines.

Figure 1.1 The Caribbean Islands Biodiversity Hotspot



2 BACKGROUND

This ecosystem profile and the five-year investment strategy for the Caribbean Islands Biodiversity Hotspot it contains were developed by the Caribbean Natural Resources Institute (CANARI) and BirdLife International, with technical support from the International Union for Conservation of Nature (IUCN) and the New York Botanical Garden (NYBG), under the supervision of the CEPF Secretariat. The ecosystem profile is a situational analysis of the social, environmental, economic and political conditions that inform and influence biodiversity conservation efforts in the hotspot. It further defines a niche and strategy for CEPF investment in the Caribbean Islands for a five-year period.

2.1 Preliminary Data Compilation and Analysis

The process to develop the ecosystem profile entailed the compilation of existing data and information on biodiversity, socio-economic conditions, policy, civil society, threats, climate change and funding, as well as the pre-assessment of the hotspot's Key Biodiversity Areas (KBAs). The profiling team prepared discussion papers based on desk research and interviews with in-country stakeholders. Supplementary information on civil society was gathered via an online survey in September 2017.

2.2 KBA Assessment

More than 400 sites were analyzed during this ecosystem profile update using the new *Global Standard for the Identification of Key Biodiversity Areas* (IUCN 2016).The preliminary list of KBAs took into account sites from existing initiatives, including: sites those identified previously as KBAs according to the previous global standard (Langhammer *et al*. 2007); Important Bird and Biodiversity Areas (IBAs); Alliance for Zero Extinction (AZE) sites; and protected areas. This list was shared with national experts (electronically and via an interactive ArcGIS Story Map microsite) and discussed during the stakeholder consultations. The KBAs with the highest biological values were later reviewed by national expert groups and participants in the final regional workshop.

2.3 Stakeholder Consultation

The ecosystem profiling process incorporated regional stakeholder expertise through three national workshops (in the Dominican Republic, Haiti and Jamaica), and an online sub-regional meeting for the Bahamas and the Eastern Caribbean, national KBA working groups and a final regional consultation in Jamaica. The process engaged 175 stakeholders from 94 organizations within civil society, government, the private sector and the donor community.

The draft niche and strategy for investment were reviewed and validated by participants in the regional consultation to update the ecosystem profile. This regional meeting brought together experts from civil society, government, and funding agencies, who were asked to review the document from a regional perspective.

3 INITIAL PHASE OF CEPF INVESTMENT: OVERVIEW AND LESSONS LEARNED

3.1 CEPF Investment Strategy 2010-2016

The initial phase of CEPF investment in the Caribbean Islands Biodiversity Hotspot was guided by an ecosystem profile, published in January 2010, which contained an investment strategy with five strategic directions. The first three strategic directions focused on site-level interventions, corridor-level interventions and civil society capacity building. The fourth was dedicated to the Regional Implementation Team (RIT). The fifth strategic direction, which was approved separately by the Donor Council, provided special emergency support to Haitian civil society to mitigate the effects of the devastating earthquake that occurred in early 2010.

3.2 Overview of CEPF Investment 2010-2016

The RIT for the Caribbean Islands was established in October 2010 to provide strategic leadership and effective coordination of CEPF investment in the hotspot. The RIT role for the Caribbean Islands was performed by CANARI: a regional technical non-profit organization that has been working in the islands of the Caribbean for more than 20 years. The RIT was managed from CANARI's office in Trinidad and Tobago, and team members included three local coordinators based in the countries of highest priority for CEPF's investment in the region: the Dominican Republic; Haiti; and Jamaica.

Between January 2011 and March 2015, CEPF and CANARI issued seven calls for proposals, receiving a total of 241 letters of inquiry (LoIs): 149 for large grants and 92 for small grants. From among these LoIs, 77 projects were supported. The RIT deliberately promoted grant opportunities to local and regional civil society organizations (CSOs), which received 78 percent of all funding awarded.

3.3 Summary of Impacts

The initial phase of CEPF investment in the Caribbean Islands focused on site-level interventions. CEPF grantees improved management and protection of 25 KBAs, covering 593,967 hectares in eight countries, through the development, approval and implementation of participatory protected area management plans that engaged communities and resource users. CEPF grantees strengthened the organizational and technical conservation capacities of community groups and park rangers. Stakeholder committees were established to ensure the active and effective participation of resource users and communities in decision-making, in collaboration with protected area agencies. Local communities' awareness of the importance of biodiversity conservation was raised and their capacity was built to meaningfully engage in conservation actions and national dialogues.

The initial phase of CEPF investment in the Caribbean Islands supported the creation of eight new protected areas covering 111,496 hectares in the Bahamas, the Dominican Republic and Haiti. These included terrestrial and marine national parks, municipal reserves and a private protected area. The Dominican Republic's first private protected area was declared, and the procedures required to implement the existing legal framework for the declaration of private protected areas were developed and disseminated. Haiti's first municipal protected area was declared.

Climate change adaptation was integrated into protected area planning and implementation actions for the first time in Jamaica and the Dominican Republic. A climate change risk assessment was integrated into the Portland Bight and Hellshire Hills sub-area management plans in Jamaica. Similarly, a climate change adaptation action plan and strategy was included in the management plan for the Dominican Republic's Parque Nacional La Humeadora.

Innovative financing mechanisms for biodiversity conservation were developed, including the sale of the Caribbean's first forest carbon offsets in a payment for ecosystem services (PES) scheme, which allows smallholders and cocoa farmers in the Dominican Republic to improve production while reforesting their plots with native species. Also in the Dominican Republic, an economic valuation of water resources to support a participatory PES system was completed, laying the foundation for the establishment of a water fund for the city of Santo Domingo.

Sustainable livelihoods were strengthened in communities living in and around KBAs, through developing and promoting crop diversity, forest carbon credits, fruit and vegetable processing, ecotourism and beekeeping. Offering viable economic alternatives is key to reducing human pressure on critical ecosystems especially in small island developing states where the socio-economic needs of families who depend on natural resources for their survival must be taken into account.

CEPF also strengthened the capacity of 58 local and regional Caribbean CSOs through the development of strategic plans, fundraising plans and financial manuals, communication strategies, upgraded websites and financial systems. Capacity was built in a range of areas, including project design and proposal development, monitoring and evaluation, effective environmental communications and engagement of the private sector. Technical skills were built in sustainable tourism, field data collection and monitoring, and invasive species eradication and management.

With support from CEPF, grantees built alliances, supported regional networking and consolidated multi-sectoral partnerships for biodiversity that crossed political jurisdictions and language barriers. For example, CSOs in the Dominican Republic fostered strategic alliances with local cement and mining private sector companies for conservation actions in Sierra de Bahoruco. In Jamaica, local, national and international stakeholders came together to mount a campaign to save the Goat Islands within the Portland Bight Protected Area, which were threatened by a proposed transshipment port.

3.4 Lessons Learned from CEPF Investment 2010-2016

Working in the Caribbean Islands Biodiversity Hotspot is complicated and costly due to the archipelagic geography and differences in language, culture and political systems, just to mention a few challenges. Lessons learned were monitored throughout the implementation of the initial phase of CEPF investment. A mid-term assessment was carried out between May and September 2013, and the findings informed the second half of the investment phase. A final assessment was held in November 2015, with stakeholder consultations in the Dominican Republic, Haiti and Jamaica. Key lessons learned from these two evaluations that are relevant to future investment in the Caribbean Islands Hotspot can be summarized as follows:

1. Building a grantee's organizational capacity in parallel with grant implementation encourages long-term sustainability of efforts and efficient use of funds.
2. It is important to support planning and capacity building efforts to enable effective conservation action.

3. Fostering strategic partnerships across civil society including with the public and private sector and other managers and users of natural resources enhances conservation impacts and ensures long-term conservation goals are met.
4. It is important to support civil society to innovate and test new approaches to conservation, especially in the face of a changing climate, which demands new responses to emerging challenges.
5. Coordination with other national and regional initiatives helps ensure a strategic and coordinated regional programmatic response to supporting civil society's work in biodiversity conservation, climate change and sustainable rural livelihoods.

During January-March 2018, an independent evaluation of lessons learned was conducted in relation to the Caribbean Islands RIT. The objective of the evaluation was to inform investment decisions for the next phase of CEPF investment in the hotspot, including by documenting challenges and opportunities encountered by the RIT, while implementing a grants program to engage and strengthen civil society in conserving globally important biodiversity in the social, political and institutional context of the hotspot. The evaluation was undertaken by a team of consultants at Kiunzi SRL, and involved a desk study, a questionnaire survey of grantees, and interviews with stakeholders. The full report of the independent evaluation is available on the CEPF website[1].

The evaluation concluded that the initial phase of CEPF investment in the Caribbean was overall relevant, and the objectives set at the beginning of the program were globally reached. However, part of the strategy aimed at guaranteeing the sustainability of the intervention and optimizing its impact was not implemented in a systematic and consistent manner. Communication, partnerships among grantees, establishing synergies between the public and private sectors, fund leverage and developing a regional dimension among the grantees were not prioritized during the initial phase of the program. To heighten the impact of the program, these aspects of running the program must be redressed to their full extent in the next phase.

The evaluation also recommended that CEPF provides a regional framework that needs to be enhanced in the case of the Caribbean. The region is fragmented in many aspects, and one of the main challenges for the next phase will be to build Caribbean awareness. Strong regional links must be established within the Caribbean civil society, with donors, with the public and private sectors, and with academia and the media.

[1] https://www.cepf.net/sites/default/files/evaluation_of_lessons_learned_caribbean_islands.pdf

4 BIOLOGICAL IMPORTANCE OF THE CARIBBEAN ISLAND BIODIVERSITY HOTSPOT

4.1 Introduction

The Caribbean Islands Biodiversity Hotspot is one of the world's greatest centers of endemic biodiversity, resulting from the region's geography and climate: an archipelago of habitat-rich tropical and semi-tropical islands tenuously connected to surrounding continents. Dispersal processes from North, Central and South America, Africa and Europe, climate events, and *in situ* radiations within the islands have resulted in outstanding plant diversity (WWF and IUCN 1997; Caujapé-Castells 2011; Nieto-Blázquez *et al.* 2017). The biotas of these islands share an "oceanic" character marked by a relatively low representation of higher taxa but there is extraordinary diversity within those that are present. Vertebrate diversity and endemism in the hotspot are also noteworthy (Mittermeier *et al.* 2004).

4.2 Geography and Climate

The Caribbean Islands Hotspot is situated on the Caribbean Plate and comprises more than 7,000 islands, islets, reefs and cays with a land area of 230,000 km^2 scattered across 4 million km^2 of sea. Island arcs delineate the eastern and northern edges of the Caribbean Sea: a semi-enclosed basin of the western Atlantic Ocean between Florida in the north and Venezuela in the south. Some islands, such as Antigua and Barbados, have relatively flat terrain of non-volcanic origin. Others, like Cuba, Hispaniola and Jamaica, have rugged, towering mountain ranges. The highest mountain ranges rise to more than 3,000 m above sea level, while low-lying islands reach little more than 50–60 m above sea level.

Climate in the Caribbean is tropical humid but both climate and rainfall vary with elevation, island size and ocean currents. The climate is moderated, to some extent, by the prevailing warm, moist trade winds that blow consistently from the northeast, creating tropical wet forest/semi-desert divisions on mountainous islands. Rainfall distribution is determined by the size, topography and position of the islands in relation to the trade winds. Flat islands receive slightly less rainfall, albeit falling more predictably. The heaviest rainfall periods are in the middle of May and in September (albeit with temporal variation across the hotspot), with the "rainy season" coinciding with the summer hurricane season. Hurricanes develop over the ocean during the mid- to later months of the year.

4.3 Habitats and Ecosystems

Geography, climate and the large geographic expanse of the Caribbean Islands Hotspot have resulted in a diverse range of habitats and ecosystems, which in turn support high levels of species richness. Fourteen Holdridge life zones and 16 World Wildlife Fund (WWF) ecoregions have been defined in the hotspot. There are four major terrestrial forest types: tropical/subtropical moist broadleaf forests; tropical/subtropical dry broadleaf forests; tropical/subtropical coniferous forests; and shrublands and xeric scrub.

In the marine realm, the Caribbean Islands' shallow marine environment is part of the large marine ecosystem of the Caribbean Sea, with more than 12,000 marine species reported. There are low endemism rates compared to terrestrial ecosystems, due to the high degree of connectivity resulting from currents influence and species migration (Miloslavich *et al.* 2010). The coastal zone contains

many productive and biologically complex ecosystems, including beaches, coral reefs, seagrass beds, mangroves, coastal lagoons and mud bottom communities.

4.4 Species Diversity and Endemicity

The Caribbean Islands Hotspot supports about 11,000 plant species, of which 72 percent are endemic (Acevedo-Rodriguez and Strong 2007). For vertebrates, 96 percent of the 200 amphibian species and 82 percent of 602 reptile species in the hotspot are endemic, which is likely due to their low dispersal rates, in contrast to the more mobile birds (26 percent of 565 species) and mammals (49 percent of 104 species, most of which are bats) (BirdLife International 2017; IUCN 2017a).

Data for marine species are still incomplete. The approximately 12,000 marine species recorded so far in the Caribbean are a clear underestimate for this diverse tropical region. Sampling efforts, to date, have been strongly biased toward certain habitats in coastal and shallow waters, particularly coral reefs; there is very little information available about benthic organisms below 500 m (Miloslavich *et al.* 2010).

4.5 Globally Threatened Species

With just around 10 percent of the hotspot's original habitat remaining, most of the major habitat loss has already occurred. Nevertheless, in the face of population growth (albeit slowing) and changing land-use patterns, what little habitat remains is at risk from both human activity and natural disasters. The hotspot's biodiversity is at serious risk of species extinctions, even due to the loss of relatively small patches of habitat. In percentage terms, amphibians and reptiles are among the most threatened of the taxonomic groups assessed, at 73 percent and 31 percent respectively (Table 4.1).

Table 4.1: Species Diversity, Endemicity and Global Threat Status in the Caribbean Islands Hotspot

Taxonomic Group	Species	Hotspot Endemic Species	Percentage Endemic	Globally Threatened Species	Percentage Threatened
Mammals	104	51	49.0	26	25.0
Birds	565	148	26.2	55	9.7
Reptiles	602	494	82.1	184	30.6
Amphibians	200	191	95.5	146	73.0
Bony fishes	1,538	65	4.2	42	2.7
Cartilaginous fishes	83	-	-	17	20.5
Reef-forming corals	91	-	-	15	16.5
Seed plants	10,948	7,868	71.9	507	4.6
Total	**14,134**	**8,817**	**62.4**	**992**	**7.0**

4.6 Ecosystem Services

Although there have been some studies of ecosystem services in the insular Caribbean, there is much less information available about the hotspot's ecosystem and ecological services than for other regions in the Americas. The available information is fragmented and not yet compiled at the hotspot scale. All of the hotspot's ecosystems, and, by extension, many of its KBAs, provide multiple ecosystem services. The main services provided include provision of water, food and non-timber forest products, moderation of extreme hydrometeorological events, erosion control and maintenance of soil fertility, carbon sequestration and storage, recreation and tourism, and spiritual experience and sense of place.

5 CONSERVATION OUTCOMES DEFINED FOR THE CARIBBEAN ISLANDS BIODIVERSITY HOTSPOT

CEPF invests in defining conservation outcomes to identify a quantifiable set of species, sites and corridors that must be conserved to promote the long-term persistence of global biodiversity. By presenting quantitative, justifiable and verifiable targets against which the success of investments can be measured, conservation outcomes allow the limited resources available for conservation to be targeted more effectively and their impacts to be monitored at the global scale. Conservation outcomes are set in terms of extinctions avoided (species outcomes), areas protected (site outcomes) and corridors consolidated (corridor outcomes).

CEPF defines species outcomes as extinctions avoided at the global level, which directly links to globally threatened species using the IUCN Red List categories: Critically Endangered, Endangered and Vulnerable. This definition excludes Data Deficient species, which are considered priorities for further research but not necessarily for conservation action *per se*. The basis for defining species outcomes for the Caribbean Island Biodiversity Hotspot profile is *the 2017-3 IUCN Red List of Threatened Species* (www.iucnredlist.org), which is the authoritative data source on the global conservation status of species.

Given that most globally threatened species in the Caribbean are best conserved by protecting a network of sites at which they occur, the basis for defining site outcomes is the comprehensive set of KBAs in the hotspot. KBAs are sites of importance for the global persistence of biodiversity. The identification of KBAs follows the *Global Standard for the Identification of Key Biodiversity Areas* (IUCN 2016). Only seven of the 11 available sub-criteria were used to identify KBAs in the Caribbean: threatened species (Criteria A1a-e); individually geographically restricted species (B1); and demographic aggregations (D1, for some birds only).

While the protection of a network of sites may be sufficient for conserving most elements of Caribbean biodiversity in the medium term, the long-term conservation of biodiversity often requires the consolidation of interconnected landscapes of sites, or "conservation corridors", especially in larger island landscapes. Conservation corridors are anchored on KBAs, with the rest of the corridor comprising either areas that have the potential to become KBAs in their own right (through management or restoration) or areas that contribute to the ability of the conservation corridor to support all elements of biodiversity in the long term. Emphasis was placed on maintaining continua of natural habitat across environmental gradients, particularly altitudinal gradients, in order to maintain such ecological processes as altitudinal migration of bird species and to provide a safeguard against the potential impacts of climate change.

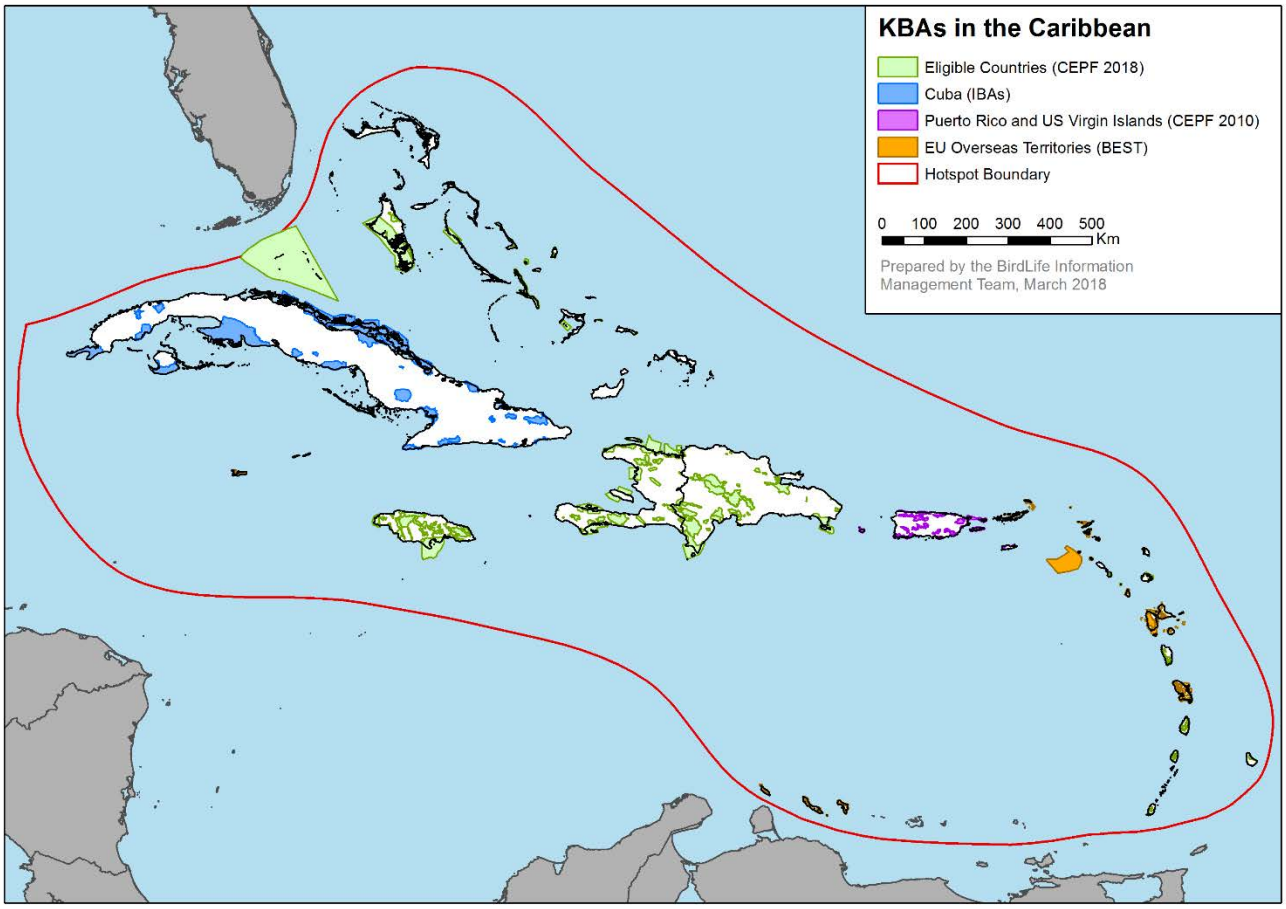
5.1 Species Outcomes

The biodiversity of the Caribbean Islands Hotspot is at serious risk of species extinctions. Of the taxa reviewed for the prepareation of the ecosystem profile, 992 species are assessed as globally threatened. Of the 992 globally threatened species in the Caribbean Islands Hotspot, 575 species occur in countries eligible to receive CEPF funding. These comprise 14 mammals, 37 birds, 118 reptiles, 78 amphibians, 33 bony fishes, 16 cartilagenous fishes, 11 reef-forming corals, 258 flowering plants, seven conifers and three cycads.

5.2 Site Outcomes

A total of 324 KBAs were identified in the Caribbean Islands Biodiversity Hotspot, 167 of which are in CEPF-eligible countries (Figure 5.1). These sites were identified at different points in time using different methodologies. As a result, there are currently four different datasets for Caribbean KBAs: there are 167 KBAs in the CEPF-eligible countries; there are 91 in European overseas countries and territories and outermost regions; there are 28 in Cuba; and there are 38 in Puerto Rico and the US Virgin Islands. The sites in Cuba and the overseas entities of the EU and USA were identified before the new KBA Standard (IUCN 2016) was introduced. At some point in the future, these KBAs should be re-assessed against the new KBA Standard, in order to resolve their global/regional status.

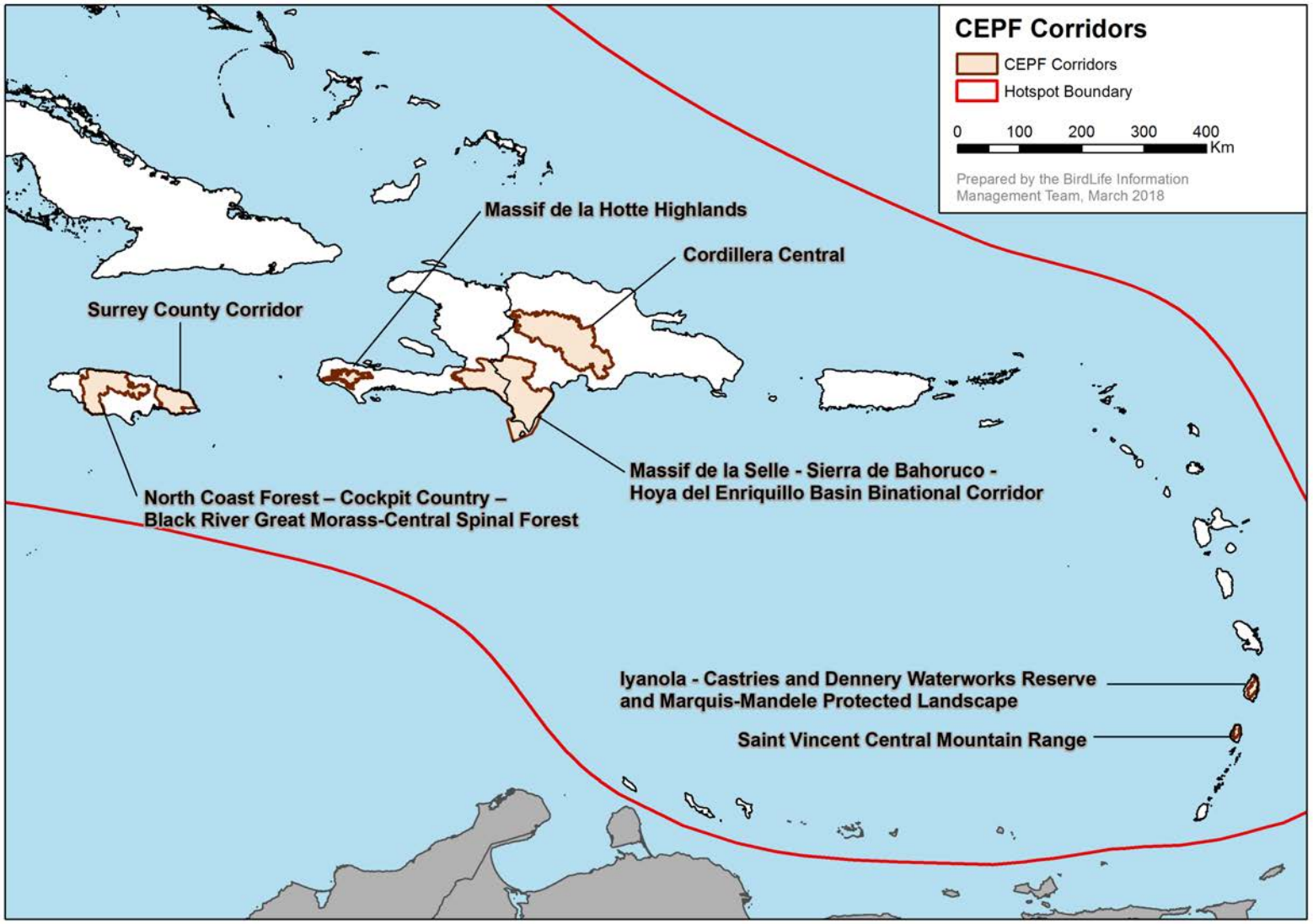
Figure 5.1. Key Biodiversity Areas in the Caribbean Island Biodiversity Hotspot



5.3 Corridor Outcomes

Seven conservation corridors, covering 47 KBAs, were defined for the Caribbean Islands Hotspot. Ecological connectivity within river catchments was strongly emphasized, because of the importance of maintaining flows of ecosystem goods and services and the linkages to land, water, forest, biodiversity and coastal resource management, which potentially contribute to poverty reduction, sustainable livelihoods and climate resilience. The conservation corridors occur in five countries, with one of them shared between Haiti and the Dominican Republic (Figure 5.2).

Figure 5.2 CEPF Conservation Corridors of the Caribbean Islands Biodiversity Hotspot



6. SOCIO-ECONOMIC CONTEXT

Although the Caribbean islands are, to some extent, culturally, politically, economically, and socially diverse, there are notable commonalities in history, culture, and ethnic composition. These include a history of European colonization that led to the dominance of the plantation system and the creation of Creole societies built on the early elimination of indigenous people and import of slave and indentured labor. Caribbean cultures grew out of a blend of traditions from various societies and continents. The region is ethnically diverse, with large numbers of people of African descent and relatively small indigenous Amerindian populations (Brown *et al.* 2007).

The Caribbean's infrastructure-driven development model comes at the expense of biodiversity (Economic Commission for Latin America and the Caribbean 2015, UNEP 2016b). This is at odds with the high level of dependence by Caribbean countries on natural resource-supported economic activities, such as fisheries, agriculture, and tourism. Although the natural resource base is of great economic importance in the hotspot, the value of ecosystem services is still not incorporated into development planning, and overall there are few economic instruments across the Caribbean that promote biodiversity conservation.

6.1 Human Demography and Impact on the Environment

In 2016, the regional population was approximately 38 million. Populations have increased significantly in the last 40 years in most countries, although the rate of growth has slowed. The region's population is projected to increase slightly by 2050, although with differences among countries. Some are expected to have substantial population growth, for example Haiti and the Dominican Republic, while others are predicted to experience a decline, for example Cuba (Population Reference Bureau 2008). Urban areas are growing faster in the Caribbean than anywhere else in the world. At the start of the millennium, 62 percent of the population lived in urban areas. This proportion is projected to reach 75 percent by 2025 (United Nations, Department of Economic and Social Affairs, Population Division 2014).

6.2 Political, Economic and Social Issues

There is wide variation in Caribbean political systems. This is partly a reflection of former or current colonial affiliations. Half of the islands in the hotspot are overseas countries or territories or outermost regions of France, the Netherlands, the UK or the USA, while the other half are sovereign states.

The small, open economies of the Caribbean Islands are vulnerable to external shocks, such as natural disasters, fluctuating commodity prices in the world market, and volatility in the tourism sector, which is a major income-earning sector in most countries. Based on their gross national income per capita, all the hotspot's countries are classified as high or upper middle income by the World Bank, except Haiti, which is classified as low income.

Caribbean economies depend heavily on external trade. The loss of non-reciprocal and preferential trade agreements as part of recent globalization measures has contributed to the

decline of the traditional agricultural sector in the region and increased competition in the international marketplace. Regional economic growth slowed during and after the global economic crisis of 2008-2009, and this was coupled with reductions in overseas development assistance and private investment. Stimulus measures implemented by countries have included short-term construction initiatives that can degrade habitats and affect biodiversity.

Several CEPF-eligible countries continue to be burdened by high levels of debt. Barbados and Jamaica, for example, have debt-to-GDP ratios greater than 100 percent (Caribbean Development Bank 2016). Debt servicing obligations limit fiscal space for economic and social investment, including investment in the natural resource base.

Participants in the national consultations highlighted linkages between sustainable livelihoods and biodiversity conservation in the hotspot. While the poor are particularly vulnerable to environmental degradation, poverty also drives unsustainable use of resources, for example, the use of forest or mangrove-derived charcoal for fuel, or encroachment on watersheds and forested areas for agricultural land.

Poverty has a gendered dimension in the region, with female-headed households more likely to be poor than male-headed households and there is a greater prevalence of poverty among women than men (Rawwida Baksh and Associates 2016). There has been little research about gender roles and the use and management of natural resources in the Caribbean. Women are, however, involved in productive sectors that depend on natural resources, such as agriculture and fisheries, and are, therefore, affected by environmental threats to these sectors.

Although the Caribbean private sector includes national, regional and multinational players, it mainly comprises locally owned, small and medium-sized enterprises that operate in small and medium-sized towns and lack strong links to the global economy (The Economist Intelligence Unit Limited 2015). Many of the large private sector companies in the region have established charitable, non-profit foundations as a vehicle for corporate giving in the countries and communities where they operate. Most of these corporate foundations orient their giving towards social issues (education, health, etc.), although some have an environmental focus.

Efforts to engage the private sector in conservation efforts across the region have met with varying degrees of success. During the initial phase of CEPF investment, seven projects in Antigua and Barbuda, the Dominican Republic, and Haiti resulted in successful collaborations with the private sector, with the most traction being gained in the Dominican Republic. Efforts to involve the tourism industry have met with most success at the very local level. Some tourism interests have made conservation funding an important part of their CSR activities. Smaller adventure and outdoor recreation-oriented hotels, for example, have supported conservation of the resources upon which they depend, and small-scale, community-run ecotourism ventures are open for business in several countries.

There are several examples of private sector support for environmental initiatives outside of the tourism sector. The *Coalición Rio* (River Coalition) in the Dominican Republic was formed in 2015 to stimulate private sector participation and investment in the clean-up and rehabilitation of the heavily contaminated Ozama and Isabela rivers, which flow through Santo Domingo city.

6.3 Key Economic Sectors

Tourism is the primary economic driver in most Caribbean economies having taken over from agriculture, which has suffered a steady overall decline since the 1960s. In 2016, the total contribution of travel and tourism in the region was $56.4 billion or 14.9 percent of GDP (WTTC 2017a). In some countries, the total contribution of tourism to GDP exceeds 80 percent. Viewed purely in terms of contribution to growth, GDP, and employment, tourism development can be considered a success for the region. However, the sector puts pressure on the natural resource base on which it depends and those mechanisms that are in place to capture economic rents or payments from the sector channel relatively little back into conservation. The Caribbean's mass tourism is highly dependent on coastal and marine areas, and the concentration of tourism infrastructure and activities in the coastal zone puts pressure on coastal habitats. The industry also places a high demand on freshwater and energy resources and generates large quantities of solid and liquid waste.

There has been a drive towards the development of eco-tourism and community-based nature and heritage tourism products in several hotspot countries, although this has been done as part of moves to diversify the tourism product, and not to promote fundamental change towards more sustainable models. These forms of tourism can, however, be a way of fostering stewardship of natural resources within communities. Within the sector, there appears to be growing concern about sustainability and good environmental practice, particularly in the face of climate change.

The role of the agricultural sector in the Caribbean has been diminishing for decades, with its contribution to GDP for the region falling from 11.1 percent in 1990 to an average 4.3 percent in 2000. Besides a lack of competitiveness, the sector is faced with the loss of access to preferential European markets and growing consumer demand for imported food. The percentage of land area under agriculture in the hotspot has remained relatively constant since 2009. The abandonment of agricultural land is leading to a trend of increasing forest cover (albeit of secondary forest) in some countries (FAO 2014).

Although the forestry sector in the insular Caribbean is small, it can be locally important. Most islands are heavily dependent on imports to meet their paper, sawn wood, and wood-based panel requirements. The economic contribution of the forestry sector to GDP is, therefore, also relatively small and fluctuates between 0 and 1.6 percent within hotspot countries.

Mining and quarrying are an important source of foreign exchange for some hotspot countries, especially Cuba, the Dominican Republic and Jamaica. Concerns about the negative impacts of mining and quarrying activities, particularly open-pit bauxite mining, on human health, communities and the environment are growing.

Per capita energy use is high in the Caribbean. Due to limited development of other sources, 90 percent of all energy used in the region comes from petroleum, most of which is imported at high cost. Renewables represent only 8 percent of the energy mix for the region, compared to 20 percent globally (UNDP 2016b). Nevertheless, hotspot countries are moving towards increasing their use of renewables. Aruba has a target of being fossil fuel free by 2020, for example.

7 POLICY CONTEXT OF THE HOTSPOT

Biodiversity protection and management in the Caribbean takes place through a multi-layered, multi-scalar system of policy, legislative and institutional frameworks. National-level action is informed and complemented by regional and international initiatives and frameworks.

7.1 International Frameworks and Agreements

CEPF-eligible countries in the hotspot are signatory to several multilateral environmental agreements (MEAs) that guide global, regional, and national action on environmental issues. These include the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC). There are also a number of regional policies and agreements that directly and indirectly influence biodiversity management, such as the Cartagena Convention's Protocol Concerning Specially Protected Areas and Wildlife (SPAW). Thirty-two protected areas in the hotspot have been listed under the SPAW Protocol, six of which are in CEPF-eligible countries.

Caribbean countries, like many other developing nations, have found it difficult to fulfill their MEA obligations due to a lack of capacity to address emerging and increasingly complex scientific and technical issues (CARICOM n.d.). UN Environment (formerly UNEP) and the CARICOM Secretariat have responded to this challenge with the Caribbean Hub of the Programme for Capacity Building Related to Multilateral Environmental Agreements.

7.2 Regional Institutional Frameworks, Policies and Initiatives

Key regional groupings include the Caribbean Community (CARICOM), the Organisation of Eastern Caribbean States (OECS) and the Association of Caribbean States (ACS). The secretariats and technical institutes of these associations administer regional projects and policies that address biodiversity concerns. The Caribbean Community Climate Change Centre *(*CCCCC*)* in Belize is the CARICOM institution mandated to coordinate the Caribbean region's response to climate change. There is no specific regional inter-governmental body responsible for biodiversity in the way that there is a regional organization devoted to climate change. However, the mandates of CARICOM and the OECS include sharing human resources and providing technical expertise to countries where specific skill sets are absent. In some instances, regional agencies act as intermediaries between international funders and national stakeholders. In this way, several multi-country projects are managed by these regional organizations.

The challenges associated with the hotspot's regional agencies include overlap of mandates and, sometimes, redundancy in projects and programs. Regional agencies have also been critiqued for their low level of civil society engagement. At the project level, engagement is primarily with national governmental agencies rather than civil society. Where engagement with civil society occurs, it is generally at the point of implementation, often with civil society as beneficiaries, rather than at the strategic stage of conceptualization and design. There is scope for improved coordination among regional initiatives as well as increased involvement of civil society for better management of the region's biodiversity resources.

7.3 National Policies, Strategies, Plans and Institutional Frameworks

The policy and institutional context for protected area management in the hotspot is changing but there remain challenges that impede efforts. All CEPF-eligible countries have institutional frameworks in place, with legal underpinnings, for protected area management. However, the institutional landscape can be complex, with many agencies having authority over protected areas but few overarching coordinating mechanisms being in place, particularly at the operational level.

Countries have established different categories, norms, and nomenclatures for their protected areas but many have sought to use the protected area categories established by IUCN. National protected area systems in the hotspot include UNESCO World Heritage Sites and Biosphere Reserves, as well as Wetlands of International Importance designated under the Ramsar Convention.

Most hotspot countries now have defined protected area systems. Active management does not always accompany protection under national frameworks, and implementation of system-level protected area master plans (and site-level management plans) has been impeded by a combination of lack of resources, capacity and political will (Brown *et al.* 2007).

The extent of marine and terrestrial areas under formal protection in CEPF-eligible countries in the Caribbean has increased by approximately 7 million hectares since 2009. Of this total, the initial phase of CEPF investment contributed to bringing 111,496 hectares under new or expanded protection.

Most protected areas in CEPF-eligible countries are public, having been declared at the national level. However, the initial phase of CEPF investment helped demonstrate proof of concept of policy framework provisions for decentralizing protected areas through support for the declaration of the Dominican Republic's first private protected area and Haiti's first municipal reserve.

There have also been legislative and institutional advances in several CEPF-eligible countries since 2009. The GEF, in particular, has been instrumental in supporting the development of policy and institutional frameworks in hotspot countries. Ongoing investments in Dominica, St. Kitts and Nevis, and St. Vincent and the Grenadines are helping to expand protection, strengthen management and address legal and regulatory gaps. A GEF project to establish a financially sustainable national protected areas system in Haiti, which ended in 2014, helped to operationalize the national protected areas agency (ANAP) and build its technical capacity (Lefebvre 2017).

Nevertheless, the multiplicity of policies, laws and jurisdictions that exists can result in disjointed actions, rather than a more holistic approach that the interconnected ecosystems of small island states require. Improved land-use planning is essential for the rationalization of resources given competing interests. Other shortcomings include gaps in regulatory frameworks, for example, for environmental impact assessments (EIAs), strategic environmental assessments, financing mechanisms, and hunting, as well as a lack of enforcement of existing legislation.

8 CIVIL SOCIETY CONTEXT

Caribbean civil society is heterogenous: organizations have a wide range of interests and mandates, multiple agendas, and varying levels of capacity. There is little coherence across the sector and relatively few fora in which CSOs, in particular non-governmental organizations (NGOs), engage among themselves across thematic issues, countries and languages. It is difficult to obtain precise information and data or even reasonable estimates about the size and scope of Caribbean civil society (Webson 2010, Bowen 2015).

8.1 Civil Society Activity in the Environmental Sphere

A rapid exercise to map CSOs in the hotspot identified 379 local, national, regional and international non-profit, non-governmental, and academic organizations working on environment and conservation issues (including in the productive sectors of fisheries, agriculture and ecotourism) in CEPF-eligible countries. Although the primary mandate of all these organizations may not be natural resource management or biodiversity conservation, they are all involved in activities that support or overlap with those areas. For example, several organizations work on socioeconomic development in rural communities and, in that context, promote livelihood strategies aligned with sustainable natural resource use. These strategies include agroforestry and apiculture in protected area buffer zones and countering unsustainable mangrove harvesting.

The main type of organization identified in the mapping exercise was NGOs. Although NGOs are the most represented, there are many active CBOs and resource user (producer) associations (for example, fisherfolk, farmers, beekeepers, tour and dive operators) in the hotspot. It is important to note, however, that only a subset of these organizations is active at the sites prioritized for the new phase of CEPF investment. It is also important to note that some of those groups move in and out of activity, depending on availability of funding and institutional capacity at any given time.

All CEPF-eligible countries have least one NGO with a mission that includes biodiversity conservation or related issues, and many have co-management responsibilities for protected areas. The mapping exercise identified 145 national and regional NGOs, of which 137 are national and work at the national or site level. The results of the exercise suggest that the work of most environmental NGOs is weighted towards an operational orientation (i.e., a focus on the design and implementation of activities related to management of sites and/or species, sustainable livelihoods, community development, environmental education, etc.) rather than advocacy (i.e., a focus on influencing the policies and practices of governments or institutions), even though many groups appear to be engaged in a combination of both.

The operational work of NGOs includes site-based management, with some organizations working at a very large scale. The Bahamas National Trust, for example, manages the entire national parks system of the Bahamas (33 national parks, covering over 800,000 hectares). The Jamaica Conservation and Development Trust manages the 49,520-hectare Blue and John Crow Mountains National Park Heritage site.

More NGOs operate at the national level than at the regional level. During the initial phase of CEPF investment in the hotspot, a new regional environmental network, Nature Caribé, was formed out of a project to strengthen networking among the CSO members of the IUCN Caribbean Regional Committee with the intention of filling a gap in collaborative policy influencing and action.

International NGOs (INGOs) play an important role in channeling resources to national and local groups: just over three-quarters of the CSOs surveyed said they had been funded by and through INGOs in the past three years. The type of support provided by INGOs varies but typically goes towards project implementation. Some indigenous Caribbean organizations, however, are concerned about what they perceive to be predatory behavior and competition for donor resources from some external NGOs. The policies and practices of INGOs may impact negatively on indigenous NGOs by disrupting operations, draining capacity and distracting or re-directing focus. Partnerships are not always equitable.

CBOs have been playing an increasingly important role in biodiversity conservation in the Caribbean. These groups may be organized around a business or productive activity like agriculture or fisheries and may directly or indirectly benefit conservation (for example, sustainable farming in a KBA buffer zone or ecotourism in a protected area). The scope of these organizations is generally more narrowly focused than that of their NGO counterparts and their capacity to plan, implement and evaluate programs tends to be lower. Many require accompaniment from NGOs or government agencies. They are, however, an essential component of national and local efforts to implement socio-culturally relevant and sustainable conservation and resource management initiatives. The mapping exercise identified 63 environmentally-focused CBOs and 84 producer organizations in CEPF-eligible countries.

The hotspot's tertiary education and research institutions play an important role in supporting biodiversity conservation and environmental management through their research and outreach. This engagement occurs at different levels, such as partnering with local communities and NGOs to carry out tailored research in support of project implementation, collaborating with government institutions and agencies, and implementing multi-partner national and regional programs.

8.2 Operating Environment

The space for civil society in the Caribbean hotspot is more open than in many regions of the world, but a trend of narrowing of this space has been observed in some countries in the region (CIVICUS 2017a). The CIVICUS Monitor (June 2016 - March 2017) of trends in civic space in countries of the hotspot, reported "narrowed" civic space in 10 of the 11 CEPF-eligible countries. Only one country was rated as "open": Barbados (CIVICUS 2017a).

Notwithstanding concerns about narrowing civic space, Caribbean CSOs have been engaging more in national and regional policy and decision-making processes and are increasingly recognized as important actors in those spheres. In Jamaica, for example, the four boards with the national land-use and planning decision-making authority include members drawn from civil society. In Haiti, CSOs are part of the Protected Areas Working Group (*Groupe de Travail sur*

les Aires Protégées), which was set up by the protected areas management agency, ANAP, in 2014 to contribute to the establishment of a physical, regulatory and administrative framework to make Haiti's protected areas functional.

8.3 Civil Society Capacity Needs

The capacity of the hotspots' CSOs varies. Although there are some strong organizations with advanced governance and management systems, the overall picture is of a sector that could benefit from further strengthening in targeted areas. Many of the region's CSOs are small and under-capacitated, and some are quite isolated, especially in the Lesser Antilles and on Haiti. Although some organizations are stronger in 2017 than they were in 2010, many continue to face limitations in their administrative, managerial, financial and technical capacity. Many have insufficient funds to hire the staff needed to maintain a fully functional organization.

There was high demand for capacity building support during the initial phase of CEPF investment in the hotspot, and this investment contributed to the organizational and technical capacity development of 58 CSOs in such areas as strategic planning, business planning, financial management, social and mass media communication, and basic conservation science.

Notwithstanding the support provided by CEPF during its initial phase, stakeholders in the consultation process confirmed that the environmental and conservation civil society sector continues to have both technical and organizational capacity needs. The primary organizational capacity need identified during the consultation process was financial sustainability, although the need for support for project design and implementation, particularly among CBOs, was also highlighted. The results of the CSO survey show higher levels of satisfaction among respondents with their financial and project management capacity than with staff fundraising capacity. Sixty-three percent of the organizations surveyed were dissatisfied with their staff fundraising capacity, and 44 percent were dissatisfied with their ability to identify sources of funding and adapt to funding opportunities. All of the surveyed CSOs reported having more than one source of funding during the three previous years but the level of reliance on grant funding is high. The four primary sources of funding reported were INGOs (76 percent), international private foundations (42 percent), private sector foundations (39 percent) and government subventions (39 percent). National conservation and environmental trust funds are not yet a significant source of funding across the region but, as these mechanisms come on stream, it is expected that they will become a more important source of financing for CSOs.

Beyond overcoming capacity building for financial sustainability, areas in which stakeholders said that additional technical capacity was needed include conservation planning, data collection and management, invasive species management, and co-management. While some capacity exists within organizations, there is scope for further development and strengthening across the sector. Consultation participants noted, however, that long-term sustainability of conservation efforts will be elusive unless critical barriers to conservation are addressed, including gaps in national policy frameworks, and weaknesses in governance processes. They also emphasized the importance of engendering knowledge and awareness among communities and other stakeholders, given the linkages between community/stakeholder benefit, buy-in, and effective management outcomes. Strong CSOs alone will not deliver conservation results.

9 THREATS TO BIODIVERSITY IN THE HOTSPOT

9.1 Threats

Terrestrial biodiversity in the hotspot has been impacted by humans since the first arrival of people in the Caribbean some 6,000 to 7,000 years ago. However, negative impacts increased substantially following the arrival of Europeans from the end of the 15th century onwards, and have escalated in the last 50 years due to the rapidly increasing island populations and economies in the region (Brooks *et al*. 2002).

The main prioritized threats to the terrestrial biodiversity of the insular Caribbean, based on a review of the threats to the hotspot's 992 globally threatened species, are: over-exploitation of biological resources; habitat destruction and fragmentation due to agricultural/aquaculture, urban, tourism and industrial/commercial development; predation and competition by invasive alien (and other problematic) species; and, increasingly, climate change/severe weather events (IUCN 2017b; Table 9.1).

Pollution is a major threat to the marine environment in the hotspot (CEP 2003). While pollution and sedimentation pose a threat to freshwater ecosystems, they also affect the marine environment extensively. Given the relatively small size of most Caribbean islands, pollution from terrestrial sources tends to end up in coastal waters. Sedimentation and pollutants flowing downstream affect coastal water quality, smother corals, kill fish and reduce the tourism and recreational value of beaches in many countries.

Unsustainable use of limited, and often dwindling, biological resources is the primary threat to biodiversity across the Caribbean Islands Hotspot. It has been identified as a threat to 29 percent of the globally threatened species in the hotspot. The main activities that fall into this threat category in the hotspot include: timber extraction; over-collection of wood for fuel (especially charcoal); collection of plants for horticulture; unsustainable hunting and egg collection for food or sport; and trapping of animals for the pet and aquarium trades.

The expansion and intensification of agriculture and aquaculture is an identified threat to 28 percent of the globally threatened species in the hotspot. Large-scale clearance of land for agriculture, principally sugarcane plantations at lower elevations, started in the 16th century, and increased through the 18th and 19th centuries, leading to widespread deforestation throughout the region (the timber being used for construction and fuel for the sugar factories). The later rise of new agricultural export markets led to further periods of intense deforestation, such as during and after the banana boom of the 1970s and 1980s in the Windward Islands. Recent threats to montane forest from agriculture come from extension of cocoa, coffee and tobacco plantations. The abandonment of sugar (and other major crops, such as cotton, on some islands) due to changed economic conditions or a reduction in soil fertility often resulted in transformation to pasture and a large increase of livestock production, especially cattle.

Invasive alien species (IAS) pose a threat to 19 percent of the hotspot's globally threatened species, especially its endemic species. The most damaging IAS on islands are typically terrestrial vertebrates such as goats, feral cats, pigs and rats. Like other islands, Caribbean

habitats are vulnerable to impacts of invasive species because of the generally small populations of indigenous species, the evolutionary effects of isolation, and the release of introduced species from natural enemies (Kairo *et al*. 2003). The spread of IAS is facilitated in the Caribbean by the region's dependence on imports, its high degree of exposure to extreme weather events, and the multiplicity of pathways that alien species may use to reach the islands.

Emerging infectious diseases are a newly recognized threat to biodiversity globally and in the Caribbean. Amphibian chytridiomycosis is a striking example of this threat (Daszak *et al*. 2000). Caused by the recently described chytrid fungus *Batrachochytrium dendrobatidis*, chytridiomycosis is a disease that is capable of driving amphibian populations and species to extinction (Skerratt *et al*. 2007, Chenga *et al* 2011). Within the Caribbean, the amphibian chytrid fungus is known to occur on the islands of Puerto Rico, Hispaniola, Dominica, Cuba, and Montserrat. The disease has been implicated in the decline of mountain chicken (*Leptodactylus fallax*) on Dominica and Montserrat, and is suspected in the probable extinction of three species from Puerto Rico (Burrowes *et al*. 2004, Díaz *et al.* 2007).

Loss of habitat to residential and commercial development has been identified as a threat to 17 percent of all globally threatened species in the hotspot. The considerable growth of the populations and economies of most Caribbean countries in the last 50 years has been accompanied by extensive urban industrial and commercial developments and associated infrastructure. This has led to the destruction and degradation of huge areas of natural habitats, transforming the landscape and character of many Caribbean islands. Of greatest concern has been the enormous, uncontrolled, growth of tourism in the Caribbean region, with the widespread construction of hotels, marinas and associated developments, especially along coasts with white-sand beaches and coral reefs offshore, often resulting in beach erosion and other profound impacts (UNEP RCU 2001, UNEP 2004b).

While it is accepted that climate change has adversely affected biodiversity at the genetic, species and ecosystem levels, and will continue to do so, there is an incomplete understanding of the full scope of how changes in climate already underway are affecting species and ecosystems in the Caribbean Islands Hotspot. So, although climate change has been identified as a threat to just 9 percent of globally threatened species in the hotspot, it is expected to become recognized as a greater threat to biodiversity over time. Climate change interacts with other threats to increase the vulnerability of species and ecosystems.

Extensive loss of natural habitats has also occurred due to mining activities in some countries. This is most notable on Jamaica, where significant areas, particularly of native forest in the center of the country, have been lost due to bauxite mining and limestone quarrying, and largely pristine tracts of wet limestone forest are threatened. Bauxite mining has also occurred on Cuba and Hispaniola, although nickel, cobalt, iron and copper are Cuba's main mining products.

9.2 Root Causes and Barriers

There is a complex mix of interacting socio-economic, political, cultural and environmental factors driving environmental change and threatening biodiversity in the insular Caribbean. Principal among these are increasing population and material consumption, poverty and

inequitable access to resources, the inherent economic and environmental vulnerability of the islands to external forces such as changes in global trade regimes, and climate change. Some of these, such as poverty, are local or national issues, while others, such as climate change, require attention at the global level to solve.

At a fundamental level, many trends affecting biodiversity and ecosystems in the insular Caribbean reflect the limited land available for an ever-increasing number of users. The Caribbean islands have some of the highest population densities in the world, and all countries are witnessing rapid rates of urbanization and migration from rural to urban areas. These demographic changes have increased the concentration of people in ecologically sensitive areas, particularly coastal zones and mountain slopes, which has led to severe environmental degradation in some countries.

Along with increasing populations, many countries in the region have seen a rise in GDP and average incomes in recent decades with the rise of a middle class that has generated demand for developed world goods and lifestyles. Along with increased trade, which has increased the incidence and risk of IAS introduction, the change in consumption patterns has led to increased pressure on land for housing and urban development, as well as environmental services, particularly energy and freshwater. In the case of water, especially the reliable provision of clean water, demand is exceeding natural supply capacity. This is caused in part by the huge demands of the agriculture and tourism sectors, and by a reduction in supply, quality and reliability as a result of forest conversion, pollution and soil erosion in river catchments.

Although most countries in the Caribbean are considered middle or high income, there are high levels of economic inequity in some countries. Poor people in the Caribbean often depend directly on natural resources but are frequently forced to use them unsustainably because of immediate survival needs. Consequently, poverty is considered a root cause of biodiversity and ecosystem loss and degradation on many of the islands. Lack of legal ownership of, and access to, land and resources are two of the key determinants of poverty in the Caribbean. In addition, poor groups and individuals have little voice in decision-making, and fewer rights, and are often displaced or dispossessed by existing power structures and vested interests. Control over natural resources and their use has been, and remains, in the hands of the wealthy and powerful, including governments. Consequently, poor farmers and rural communities have few alternatives to cutting down the remaining forests and growing subsistence crops on marginal erosion-prone lands or overexploiting natural resources. Given their reliance on biodiversity and ecosystem services, those most hurt by environmental degradation are usually the rural poor themselves.

There are several constraints that need to be overcome to address the environmental threats outlined above and achieve more effective conservation of biodiversity and ecosystem services. The main ones identified at the ecosystem profile national consultations were: poor land-use planning; limited capacity and financial resources for biodiversity conservation and environmental management; lack of awareness and understanding of the importance of biodiversity and ecosystem services; vested interests, corruption and lack of political will; weak and ineffective policy and legislation; inefficient institutional frameworks, networks and collaboration; inadequate public participation in decision-making processes; and limited technical and scientific knowledge and poor availability of information.

10 CLIMATE CHANGE ASSESSMENT

10.1 Caribbean Climate Trends

The number of days during which maximum temperatures exceed 35˚C have increased in the Caribbean, as have the number of nights above 25˚C. There has been an overall warming rate of 0.19°C per decade. Regional climate modeling tools, such as the Providing Regional Climates for Impact Studies (PRECIS) tool, suggest that a 1 to 4˚C increase is likely over the next hundred years (Cashman *et al.* 2010, IPCC 2014, Stephenson *et al*. 2014, Cap-Net 2015).

Average rainfall records for the Caribbean over the past 100 years have shown a consistent reduction in precipitation; this trend is predicted to continue. Some variation of this pattern is expected, however, with possible wetter conditions in the northern Caribbean, while the main Caribbean basin is expected to be drier. Overall, dry seasons are expected to be drier and more protracted, and drought frequency is expected to increase. The number of days of consecutive rainfall will increase. When rain does fall, it will be characterized by heavy downpours rather than light drizzles, thereby triggering more frequent landslides and flooding.

Sea level rise has been occurring in the Caribbean at a rate of 20 to 40 mm every decade, and is likely to increase by 5 to 10 mm per year into the future (Cashman *et al.* 2010, IPCC 2014, Stephenson *et al*. 2014, Cap-Net 2015).

While it cannot yet be scientifically determined that hurricanes and storms are increasing in frequency, it is accepted that the intensity of these events is (Cashman *et al.* 2010, IPCC 2014, Stephenson *et al*. 2014, Cap-Net 2015). The 2017 Atlantic hurricane season was one of the most active on record, with 13 named storms, including eight hurricanes. Five of those hurricanes were considered major, with a rating of Category 3 or stronger. In September 2017, Barbuda, Dominica, and Puerto Rico were devastated by Hurricane Maria: a Category 5 storm. Barbuda was rendered uninhabitable, and all 1,400 of its residents were evacuated, marking the single largest displacement of people due to a climate event in the hotspot to date.

10.2 Impacts of Climate Change and Variability on Biodiversity

Climate change and climate variability are expected to increase rates of species loss and provide opportunities for the establishment of IAS, resulting in changes in the dominant species in ecosystems. The most visible impact of climate change on biodiversity in the Caribbean to date has been coral bleaching (Petit and Prudent 2010). Almost all the hotspot's coral reefs have been affected, with the most recent widespread impacts resulting from the third global coral bleaching event, which began in 2015. Climate change may also facilitate invasive pathways (Masters *et al.* 2010). Warmer temperatures are implicated in the spread of fungi, such as chytridiomycosis, which decimated mountain chicken populations in Dominica and Montserrat in 2002 and 2009 respectively (Hudson *et al.* 2016). Sea level rise is likely to result in inundation of breeding and nesting sites, and seawater intrusion into fresh groundwater sources, causing problems for coastal plants, animals and ecosystems. Mangroves are especially vulnerable to the impacts of sea-level rise, since they often have limited space to move landward due to seawalls and other types of coastal development.

Terrestrial species ranges are likely to shift altitudinally and latitudinally due to air temperature increases. As temperatures increase, species that cannot tolerate heat, such as those found in Caribbean elfin forests, will (if they are able to) migrate to higher altitudes and latitudes in search of cooler conditions. Species movement may, in turn, reduce the utility of existing protected area boundaries and require research and legislative changes to adjust boundaries.

10.3 Overview of Climate Change Responses

Caribbean countries are among the lowest greenhouse gas emitters but, paradoxically, must cope with some of the most devastating impacts of climate change. This means that, although Caribbean states' climate change responses include mitigation, as articulated in their Nationally Determined Contributions, they must also focus heavily on adaptation to assure their very survival in the face of unprecedented change (Taylor 2017).

An assessment of climate funding for small island developing states between 2003 and 2016 found that the Caribbean received most of the approved climate finance from targeted climate funds, with 43 percent funding going towards adaptation projects, most of which fell in the disaster prevention and preparedness category (Watson *et al*. 2016). Overall, the region has received more support for mitigation than adaptation but, at the country level, most states have been receiving more funds for adaptation. The regional profile is skewed by large mitigation inflows to Antigua and Barbuda, Cuba, the Dominican Republic, and Grenada (Atteridge *et al.* 2017). Supported by the Climate Investment Fund, the Pilot Program for Climate Resilience (PPCR) is the biggest funder in Caribbean small island developing states, funding 12 projects with a total value of $136 million (Watson *et al*. 2016).

The region's representation and actions in international fora are coordinated by the CARICOM Secretariat, the OECS Secretariat and the CCCCC. The CCCCC is the official repository and clearinghouse for regional climate change data for CARICOM member states. It provides climate change-related policy advice and guidelines and plays a critical role in providing technical support and channeling climate funding to the region.

The Regional Framework for Achieving Development Resilient to Climate Change and subsequent Implementation Plan, which were approved by the CARICOM Heads of Government in 2009 and 2012, respectively, guide the work of the CCCCC. Other regional agencies have also used the framework and implementation plan as the basis for their climate adaptation and climate resilience work. Strategic Element 2 of the regional framework focuses on strengthening the climate resilience of the most vulnerable sectors, including coastal and marine ecosystems, and Strategic Element 4 promotes the adoption of best practices for sustainable forest management (CCCCC 2009).

To date, regional/multi-country projects on climate change have tended to focus more on marine and coastal ecosystems than on terrestrial ecosystems (Mercer *at al*. 2014). Several of these projects have had a biodiversity dimension, including the GEF-funded *Special Program on Adaptation to Climate Change: Implementation of Adaptation Measures in Coastal Zones*, which was implemented by the CCCCC between 2007 and 2011

10.4 Niche for Civil Society in Climate Change Responses

Caribbean CSOs have been involved in formulating local, national, regional and even international responses to climate change in the hotspot. Climate advocacy and awareness-raising have been the main areas of focus for civil society to date but greater civil society involvement in policy, technical and management aspects is needed for improved climate resilience and ecosystem-based adaptation. Where local knowledge is combined with sustainable livelihoods, utilizing resources within the hotspot, biodiversity adaptation and resilience measures are likely to be more successful. CSOs can be particularly useful at implementing local responses by bringing to bear site-specific, local knowledge on climate adaptation and resilience measures.

CSOs have been playing an important role in building the climate resilience of communities in the hotspot. In some instances, this work has been linked to disaster-risk-reduction efforts in vulnerable communities. In some national contexts, CSOs have come together to define their niche in the country's climate change response. In 2011, for example, CSOs in Saint Lucia developed a Civil Society Agenda to Address the Impact of Climate Change outlining their specific roles and responsibilities in the decision making and implementation of responses to the impacts of climate change.

Following the significant impacts of Hurricanes Irma and Maria in the Caribbean, some CSOs started assessing the damage to ecosystems and species. In Sint Maarten, for example, the Sint Maarten Nature Foundation assessed the terrestrial and marine impacts of the recent hurricanes to understand what had happened and develop countervailing strategies. BirdsCaribbean has conducted similar assessments on bird populations on Barbuda, while groups in Cuba have assessed the status of key taxa. IFAW carried out assessments of Dominica's endemic parrots in October 2017 and began rehabilitation efforts in December.

During its initial phase of investment in the Caribbean Islands Biodiversity Hotspot (2010-2016), CEPF supported six initiatives with an explicit climate change focus. Four projects in the Dominican Republic and Jamaica focused on site-level interventions, while two projects had policy mainstreaming outcomes in Grenada, and St. Vincent and the Grenadines. Although the focus of these projects was to make KBA/corridor-level management more robust, in several instances CEPF's support facilitated the testing of new approaches in national contexts, and, in one case, it supported a Caribbean "first", with the establishment of a forest carbon offsets PES scheme.

Overall, more work needs to be done to align the biodiversity conservation and climate change agendas. There is scope for greater use of facilities like the Green Climate Fund (GCF) for biodiversity conservation. Additionally, dedicated funding is needed to help fill information gaps, so interventions can be better guided and directed. In particular, few studies provide detailed guidance on what should be done when planning for conservation against the backdrop of rapid climate change. It is important to go beyond merely using the label of "adaptation" for known conservation approaches that are expected or thought to have a "climate adaptation" impact, to empirically understanding which actions are indeed the most appropriate (Watson *et al.* 2011).

11 ASSESSMENT OF CURRENT CONSERVATION INVESTMENT

A mapping exercise of ongoing and recently-concluded projects in the Caribbean, conducted in 2017, suggests that conservation funding is still largely derived from multilateral and bilateral sources and is often disbursed through regional projects. This was also the case in 2010, when the CEPF first began operating in the Caribbean Islands. Most of these projects are implemented by international or regional agencies and have country components determined by governments, with little direct funding to civil society. There has been, however, an important change in the funding landscape, with the establishment of the Caribbean Biodiversity Fund (CBF) and recent establishment of national trust funds, although most of these are not yet fully operational.

Dedicated funding flows to civil society are smaller than those to governments and regional agencies, but national conservation trust funds are new sustainable financing mechanisms in hotspot countries that have the potential to support CSO activity over the medium to long term and to do so strategically.

11.1 Multilateral Investments

The GEF remains one of the most important sources of funding for biodiversity conservation in the hotspot. CSOs are supported through the Small Grants Programme (SGP) managed by UNDP, as well as multilateral projects that include dedicated components for civil society. The mapping exercise identified 35 projects funded by the GEF under the biodiversity focal area (or multiple focal areas), with a total value of $161.5 million, including SGP disbursements. Excluding the SGP, three of these grants focused on marine/coastal ecosystems, 16 on terrestrial ecosystems, and 16 on both marine/coastal and terrestrial ecosystems. During the period between 2010 and 2017, the SGP funded 311 projects with a biodiversity focus; most grants were for $50,000, which is too small for higher capacity CSOs that want to do more ambitious, long-term work.

The InterAmerican Development Bank (IDB) aims to mainstream its support for biodiversity projects through regular loan and technical cooperation operations. A total of 13 active grant-funded projects with components contributing to improved management of terrestrial and marine protected areas were identified totalling around $30.4 million. Twelve were financed by the IDB and one was funded through the Japan Special Fund Poverty Reduction Program administered by the IDB. Of the 13 grants identified, only three are led by CSOs.

The focus of the World Bank's support to Caribbean governments has primarily been strengthening macroeconomic management and supporting growth-enhancing reforms. World Bank support for environmental and ecosystem management has been integrated into both loans and grants. Examples of loan support incorporating biodiversity conservation include initiatives to build climate resilience in Grenada, Saint Lucia, and St. Vincent and the Grenadines through measures that include non-structural flood and landslide risk reduction interventions (World Bank 2014, 2017f). Similarly, disaster vulnerability loan support to Jamaica included financing ecosystem-based adaptation assessments to reduce coastal vulnerability (World Bank 2016). Five ongoing and pipeline grants with a biodiversity component were identified in the mapping exercise, with a combined value of $58.7 million.

In its role as a GEF implementing agency, the World Bank is responsible for the *Caribbean Regional Oceanscape* project. Between 2011 and 2016, it implemented the GEF-funded *Sustainable Financing and Management of Eastern Caribbean Marine Ecosystem Project*, which supported the creation of the CBF and national-level protected areas trust funds in each of the five OECS countries, as well as marine protected areas in Antigua and Barbuda and Grenada. In 2018, the World Bank will begin implementing the *Resilient Productive Landscapes Project* in Haiti, which includes actions to improve agricultural production and practices in support of improved watershed and landscape management.

11.2 Bilateral Investments

The mapping exercise identified eight active programs and projects with a biodiversity-conservation-related focus supported by the EU, with a combined value of $101.9 million. Most EU funding for biodiversity is directed to public sector institutions. However, the EU also has specific programs targeting support to civil society. It is widely perceived that the EU is one of the most important sources of funding for civil society generally in the Caribbean, with support targeting enhancing civil society capacity, participatory governance and rights-based initiatives, including on environmental rights.

The EU supports developing countries and overseas countries and territories and outermost regions in the Caribbean. Funding programs and mechanisms such as Europe Aid (International Cooperation and Development), the European Territorial Cooperation (ETC) Interreg V Caribbean cooperation program (2014-2020) and European Development Fund (EDF) Caribbean Regional Indicative Programme (CRIP) promote cooperation through multi-country and regional projects, some of which have a biodiversity conservation component or focus.

The EU BEST initiative (voluntary scheme for Biodiversity and Ecosystem Services in Territories of European overseas) supports the conservation of biodiversity and sustainable use of ecosystem services including ecosystem-based approaches to climate change adaptation and mitigation in the overseas countries and territories and outermost regions. Programing under the BEST 2.0 program is guided by a regional ecosystem profile and investment strategy (Vaslet and Renoux 2016), which follows the CEPF model. The program includes a two-tiered small grants component for CSOs that provides up to $50,000 for swift small grants and $100,000 for small grants. Between 2015 and 2017, 16 projects were funded for a total of €2,300,000 ($2,454,642).

The EU is also supporting regional biodiversity initiatives through global programs and projects like the Global Climate Change Alliance Plus (GCCA+), which is implementing the *Climate Change Adaptation and Sustainable Land Management in the Caribbean* project in the OECS sub-region, and the EuropeAid Marine biodiversity and forest governance program (FLEGT/REDD+), which is supporting a regional project entitled *Powering Innovations in Civil Society and Enterprises for Sustainability in the Caribbean* (PISCES), which aims to strengthen the role of CSOs and small and micro-enterprises in marine protected areas. The PISCES project is implemented by a partnership of seven Caribbean CSOs.

Other sources of bilateral funding for biodiversity conservation are increasing in importance in the hotspot. Germany is responsible for significant bilateral inflows to the hotspot through GIZ

(a government-owned development agency) and KfW (the German Development Bank). The US government, through USAID, is currently funding three large-scale projects (two regional, one national) with a conservation focus, as well as a sub-regional initiative in the eastern Caribbean to build civil society capacity: the *Local Capacity for Local Solutions* project. Also, through the US Fish and Wildlife Service's Caribbean program, the US government is supporting efforts that reduce threats to key species and the region and strengthen the capacities of local individuals and institutions to undertake sustained biodiversity conservation actions in the long-term.

The government of Japan is supporting the $13 million UNDP-implemented Japan-Caribbean Climate Change Partnership in five hotspot countries (Dominica, Grenada, Jamaica, Saint Lucia, and St. Vincent and the Grenadines), plus the continental Caribbean states and Suriname. Also, the Japanese Trust Funds and resources from the Japan Special Fund Poverty Reduction Program are supporting an IDB-implemented community-based conch management initiative in the Bahamas with a budget of $500,000.

L'Agence Française de Développement (AFD) is active in Haiti and the Dominican Republic. Its program in the Dominican Republic includes support to the Plan Sierra reforestation and community development initiative in the Cordillera Central. Between 2001 and 2016, AfD invested €13.3 million ($14.4 million) in Plan Sierra.

11.3 Pooled Investments

While most funding for biodiversity conservation in the hotspot comes from multilateral and bilateral sources, there are a few examples of pooled investments, with funding from multiple donors. Apart from CEPF, none of these are specifically dedicated to funding CSOs, although CSOs are included as beneficiaries. The GCF is active in the hotspot, with a focus on energy efficiency, renewable energy and water sector resilience; one of these projects had ecosystem-based adaptation components. However, the biodiversity conservation sector in the hotspot has not yet made a concerted push to access climate funding from sources like the GCF, although there is tremendous potential for ecosystem-based adaptation and building climate resilience.

11.4 Nationally Derived Funding

Expenditures on biodiversity conservation by the more than 30 governmental entities in the Caribbean are not readily available. There are some indicative figures for national recurring expenditure, although this is highly variable among countries. For instance, in the Dominican Republic, the reported annual expenditure on protected areas was $10.4 million, which is less than half the required funding for the basic needs ($22.6 million) and optimal management ($28.0 million) scenarios (World Bank 2012).

Some governments have created legislative/policy frameworks that enable CSOs to collect user fees from the management of protected areas. For example, in the British Virgin Islands, Jamaica and Saint Lucia, CSOs with delegated management responsibility can collect user fees and channel them towards supporting biodiversity conservation efforts. There are also a few examples of governments channeling support to CSOs engaged in protected area management and other biodiversity conservation activities through subventions.

11.5 Funding from Private Sources

Private philanthropic flows for conservation in the hotpot are a part of the funding base for CSOs in the region. Forty-percent of the CSOs that took part in the survey carried out as part of the ecosystem profiling exercise indicated that they had received funding from international private foundations in the past three years but only 5 percent said they were their primary source of funding. Just over 30 percent of respondents indicated that they received support from individual donors, which were the main source of support for 5 percent of respondents. The main source of funding identified by respondents were INGOs: almost 80 percent of the respondents said they had received funding from INGOs and just over 25 percent of them identified INGOs as their main source of support over the past three years.

Once an important source of philanthropic funding for CSOs in the Caribbean, the John D. and Catherine T. MacArthur Foundation will complete its 10-year commitment to coastal and marine conservation efforts, with final calls for proposals in the hotspot in Cuba in 2019. All grantmaking will conclude by 2020. MacArthur is shifting its grantmaking approach to other priorities, and the Conservation and Sustainable Development Program is being phased out.

Private sector foundations are also a source of support to Caribbean CSOs active in biodiversity conservation in the hotspot. Forty percent of CSOs surveyed in 2017 obtained funding from private sector foundations within the past three years, while 10 percent of respondents said they were their principal source of support. To date, efforts to engage the national and regional private sector in conservation efforts across the region have met with varying degrees of success to date, with the most traction being gained in the Dominican Republic, where, for example, Bepensa S.A. de C.V., a Mexican beverage company that operates as a Coca-Cola bottler, is supporting catchment restoration, consistent with the Coca-Cola Company's focus on water resource sustainability. Although several Caribbean private sector organisations in the hotspot are active in biodiversity conservation, most private sector philanthropy and corporate social responsibility activities in hotspot countries target social issues, such as children, youth and education.

11.7 Emerging Funding Sources

The CBF is a regional endowment fund that was established in 2012 to provide a sustainable flow of resources for the conservation, protection and maintenance of biodiversity within national protected area systems and any other areas of biological importance in the Caribbean. The CBF is part of the sustainable financing architecture set up to support the Caribbean Challenge Initiative and its "20 by 20" goal to effectively conserve and manage at least 20 percent of the marine and coastal environment by 2020 in participating countries. Currently, the CBF manages approximately $70 million through a conservation-focused endowment ($43 million) and a sinking fund to support ecosystem-based adaptation ($26.5 million) (Caribbean Biodiversity Fund 2014).

National conservation trust funds have been established in the hotspot under the Caribbean Challenge Initiative. Except for the Fondo MARENA in the Dominican Republic, which is a government fund, thes trust funds have been set up as private legal entities. Once the national conservation trust funds are operational, the CBF will channel funding to them annually.

12 NICHE FOR INVESTMENT

The CEPF niche in the Caribbean Islands Biodiversity Hotspot is guided by CEPF's mission and informed by the experience of the initial phase of CEPF investment and the findings of the ecosystem profile. The niche was defined during the three national workshops, the online consultation process for the Bahamas and the eastern Caribbean, and the final regional workshop.

The next phase of CEPF investment will support actions and efforts begun under the initial phase that require consolidation. In particular, it will support replication and scaling-up of good practice models. The activities and results of projects supported in the initial phase have been reviewed with a view to identifying opportunities to add value through "continuity of action". The approach and actions of the new phase will apply lessons learned from the earlier phase

The new phase of CEPF investment seeks to: mainstream conservation values into the policy and legal frameworks of hotspot countries; improve governance arrangements; expand financing opportunities, particularly from local sources; and build a constituency for nature, conservation and ecosystem services. Participants in the ecosystem profile consultations emphasized the importance of a multi-pronged approach to conservation that includes addressing the institutional and structural impediments to management and preservation of the natural environment.

The new phase of CEPF investment will focus on priority sites: KBAs with the highest biological values, where there is an existing civil society constituency with an interest in conservation. During the initial phase, there were examples of clustered grant-making, where linked grants were made to CSOs with complementary capabilities to address the conservation of a single site. CEPF will actively promote such approaches to build synergies across grants and scale up impact in sites and corridors.

In a departure from the initial phase, the investment strategy includes a specific strategic direction for species conservation. Participants in the consultations highlighted the need for targeted species conservation initiatives to complement the work that is being done at site level. The review of current funding for conservation in the hotspot revealed that little funding is currently earmarked for species conservation.

CEPF aims to use its investment to leverage new and existing financial and human resources as part of a sustainability strategy for the hotspot. In implementing the strategy, CEPF seeks to work in partnership with the public and private sector to identify and maximize opportunities for value-added synergies. Particular emphasis will be placed on collaborating with CEPF donors and other active conservation financiers. CEPF will also seek to co-finance and collaborate with the EU BEST Initiative (voluntary scheme for Biodiversity and Ecosystem Services in Territories of European overseas) in the hotspot.

Biodiversity is inextricably linked with ecosystems and the services they provide for human-well-being. CEPF recognizes that the conservation, rehabilitation and sustainable use of biological diversity can help address a range of societal challenges that face the Caribbean, as well as contribute to the hotspot's resilience in the face of a changing climate. The investment strategy for the new phase is, therefore, aligned not only with Aichi Targets 1, 2, 5, 9, 11, 12 and

14 but also with the following targets Sustainable Development Goal 15: "protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss":

- Ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands (15.1).
- Promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally (15.2).
- Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species (15.5).
- Introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species (15.8).
- Integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts (15.9).
- Mobilize and significantly increase financial resources from all sources to conserve and sustainably use biodiversity and ecosystem (15.a).

The CEPF investment strategy also supports Sustainable Development Goal 14: "conserve and sustainably use the oceans, seas and marine resources for sustainable development". It explicitly addresses Target 14.2, to sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts.

Two crosscutting themes (climate change and gender) will be integrated across grant-making objectives and programming as relevant. The 2017 Atlantic hurricane season refocused the attention of all sectors of Caribbean society on the region's vulnerability and the need to take the threat of climate change seriously. There is an opportunity to build on this receptiveness. There is also an imperative to build climate resilience to ensure sustainability of the investment. The investment strategy recognizes the value of ecosystem-based adaptation in increasing resilience and reducing the vulnerability of people and the environment to climate change. It explicitly calls for climate change to be taken into consideration in conservation interventions.

Men and women often play different roles in managing natural resources. Women's reliance on ecosystems, for example, is usually strongly linked to the provision of water, food and health at the household level. What is more, the degradation of ecosystems and climate change affect groups in society differently, with disadvantaged groups often being most adversely impacted. Consistent with CEPF's Gender Policy, gender equity is a critical element of how the investment strategy for the Caribbean will ensure that civil society is empowered, and that there is equitable participation and decision-making by stakeholders at all scales. The portfolio will be managed to ensure gender analysis and recommendations are included in project design, implementation and monitoring, and will promote best practices for incorporating gender in conservation strategies throughout the hotspot. Gender equity will be sought under all strategic directors, and all applications will be reviewed through a gender lens.

13 CEPF INVESTMENT STRATEGY AND PROGRAMMATIC FOCUS

13.1 Site, Corridor and Species Prioritization

Of the 167 KBAs identified to date in CEPF-eligible countries, the investment strategy will target 33 sites that are considered the highest priorities (Figures 13.1 to 13.6)**.** Twenty-three of these sites (70 percent) were priorities for CEPF support during the initial phase of investment (Table 13.1). Prioritized sites encompass terrestrial and nearshore marine ecosystems. The 33 priority sites cover 1.2 million hectares in eight countries; 91 percent of their land area is partially or completely protected. Collectively, they represent those sites with the highest biological values that are under the most threat, with the most urgent need for improved management, and where is it possible to work without major impediments.

Table 13.1 Priority Sites for CEPF Investment

	CEPF Code	Site	Country	Land Area (ha)	Area Protected (ha)	Percentage of KBA Protected	CEPF Priority in Phase 1
1.	ATG-5	North East Marine Management Area and Fitches Creek Bay	Antigua and Barbuda	11,115	10,885	98	Yes
2.	ATG-6	Redonda	Antigua and Barbuda	2,130	0	0	No
3.	BHS-2	Andros Blue Holes National Park	Bahamas	13,479	13,479	100	No
4.	BHS12	Exuma Cays Land and Sea Park	Bahamas	60,223	58,326	97	No
5.	DMA-1	Morne Diablotin National Park	Dominica	3,347	3,347	100	No
6.	DOM-4	Monumento Natural Cabo Samaná	Dominican Republic	931	931	100	No
7.	DOM-13	Parque Nacional Dr. Juan Bautista Pérez Rancier (Valle Nuevo)	Dominican Republic	90,915	90,894	100	Yes
8.	DOM-16	Parque Nacional Jaragua	Dominican Republic	156,092	156,089	100	Yes
9.	DOM-18	Parque Nacional Lago Enriquillo e Isla Cabritos	Dominican Republic	40,575	40,575	100	Yes
10.	DOM-20	Parque Nacional Los Haitises	Dominican Republic	63,408	63,408	100	Yes
11.	DOM-23	Parque Nacional Montaña La Humeadora	Dominican Republic	30,646	30,646	100	Yes
12.	DOM-24	Parque Nacional Sierra de Bahoruco	Dominican Republic	109,423	109,423	100	Yes
13.	DOM-32	Refugio de Vida Silvestre Monumento Natural Miguel Domingo Fuerte (Bahoruco Oriental)	Dominican Republic	3,362	3,362	100	Yes
14.	DOM-34	Reserva Científica Ébano Verde	Dominican Republic	2,999	2,999	100	Yes
15.	HTI-1	Aire Protégée de Ressources Naturelles Gérées de Baradères-Cayemites	Haiti	87,920	87,920	100	No
16.	HTI-3	Aire Protégée de Ressources Naturelles Gérées des Trois Baies	Haiti	75,500	75,500	100	Yes

	CEPF Code	Site	Country	Land Area (ha)	Area Protected (ha)	Percentage of KBA Protected	CEPF Priority in Phase 1
17.	HTI-16	Lac Azuéi – Trou Caiman	Haiti	16,317	147	1	No
18.	HTI-23	Parc National Naturel de Grand Bois	Haiti	372	372	100	Yes
19.	HTI-24	Parc National Naturel Forêt des Pins-Unité 1	Haiti	6,799	6,799	100	Yes
20.	HTI-25	Parc National Naturel La Visite	Haiti	11,455	11,455	100	Yes
21.	HTI-26	Parc National Naturel Macaya	Haiti	13,486	9,938	74	Yes
22.	JAM-2	Blue and John Crow Mountains Protected National Heritage and surroundings	Jamaica	60,497	46,782	77	No
23.	JAM-5	Catadupa	Jamaica	15,785	1,911	12	Yes
24.	JAM-7	Cockpit Country	Jamaica	64,139	25,461	40	Yes
25.	JAM-8	Dolphin Head	Jamaica	5,389	1,043	19	Yes
26.	JAM-13	Litchfield Mountain - Matheson's Run	Jamaica	16,013	5,611	35	Yes
27.	JAM-20	Peckham Woods	Jamaica	239	67	28	Yes
28.	JAM-22	Portland Bight Protected Area	Jamaica	197,957	197,957	100	Yes
29.	LCA-2	Castries and Dennery Waterworks Reserve and Marquis	Saint Lucia	7,886	7,886	100	No
30.	LCA-4	Mandelé Protected Landscape	Saint Lucia	2,561	417	16	Yes
31.	LCA-6	Pointe Sables	Saint Lucia	2,050	1,504	73	Yes
32.	VCT-1	Chatham Bay, Union Island	St. Vincent and the Grenadines	350	0	0	No
33.	VCT-3	Cumberland Forest Reserve	St. Vincent and the Grenadines	1,017	1,017	100	Yes
Total CEPF Priority Area				**1,174,380**	**1,069,699**	**91**	**23 sites**

The investment strategy gives special consideration to three sites in Barbados and Haiti (Table 13.2). These sites were prioritized under the initial phase of CEPF investment but their status under the new KBA standard is undetermined due to insufficient species-level data. The investment strategy provides for the compilation of existing species data to verify their status as confirmed KBAs.

Table 13.2 Special Consideration Data Deficient Sites

	Site	Country	Land Area (ha)	Protected Area (ha)	Percentage of KBA Protected	Notes
1	Scotland District	Barbados	5,711	104	2	Site currently assessed as a KBA but needs to be re-delineated
2	Parc National Naturel des Deux Mamelles	Haiti	2,265	2,265	100	Insufficient data for assessment
3	Parc National Naturel Forêt des Pins-Unité 2	Haiti	14,165	14,165	100	Insufficient data for assessment

Figure 13.1 Priority Sites for CEPF Investment in the Bahamas

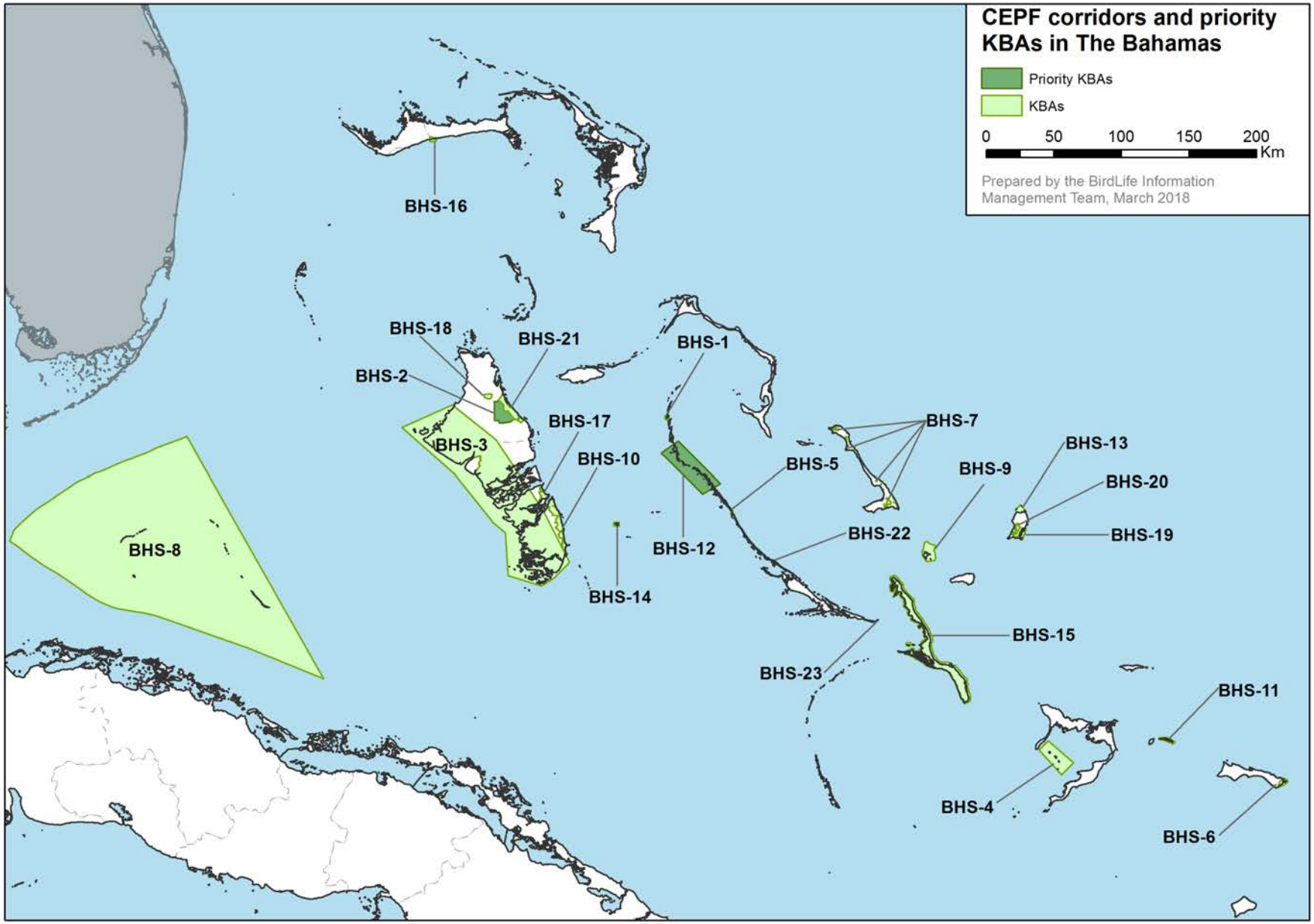


Figure 13.2 Priority Sites and Corridors for CEPF Investment in Jamaica

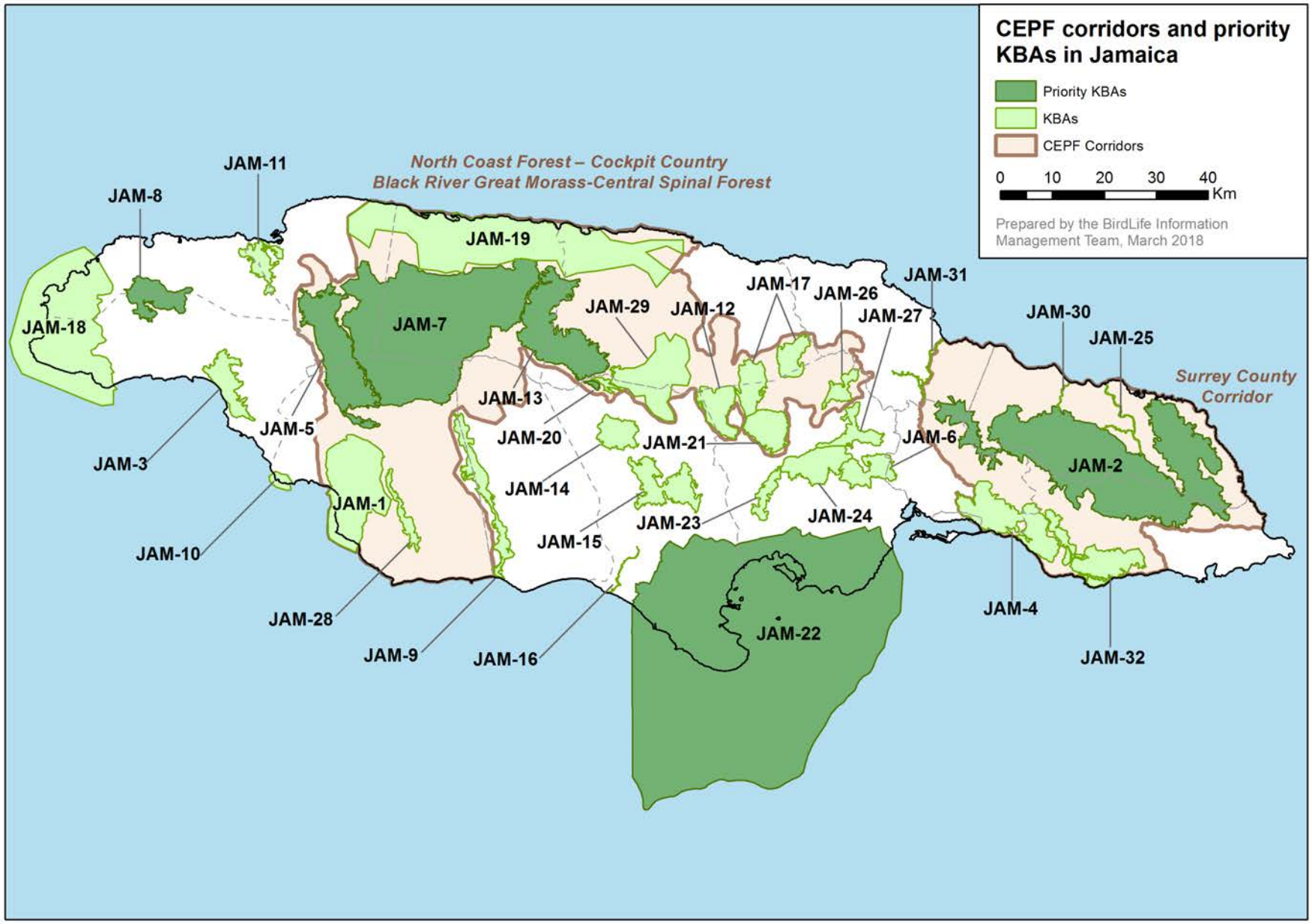


Figure 13.3 Priority Sites and Corridors for CEPF Investment in Haiti

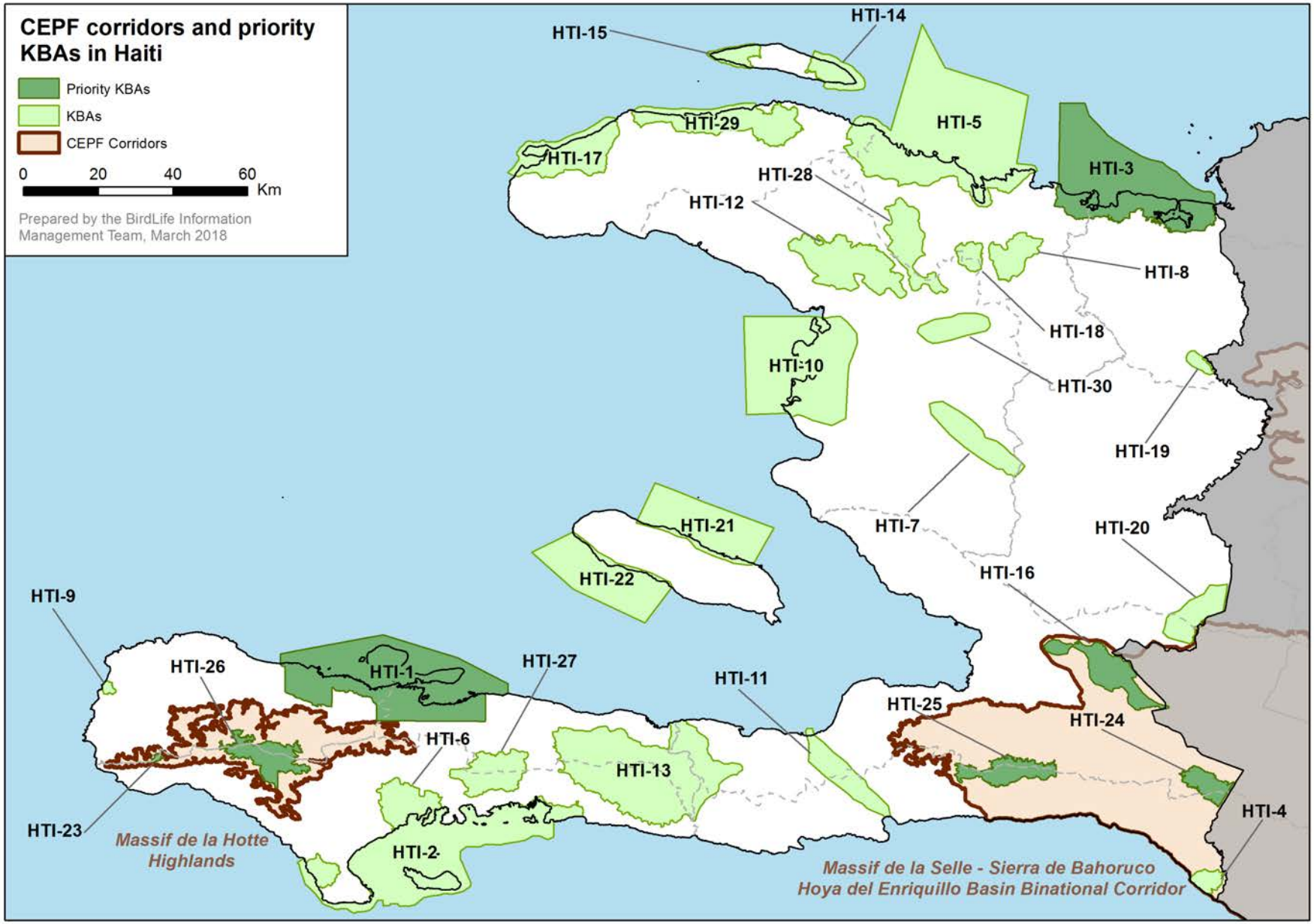


Figure 13.4 Priority Sites and Corridors for CEPF Investment in the Dominican Republic

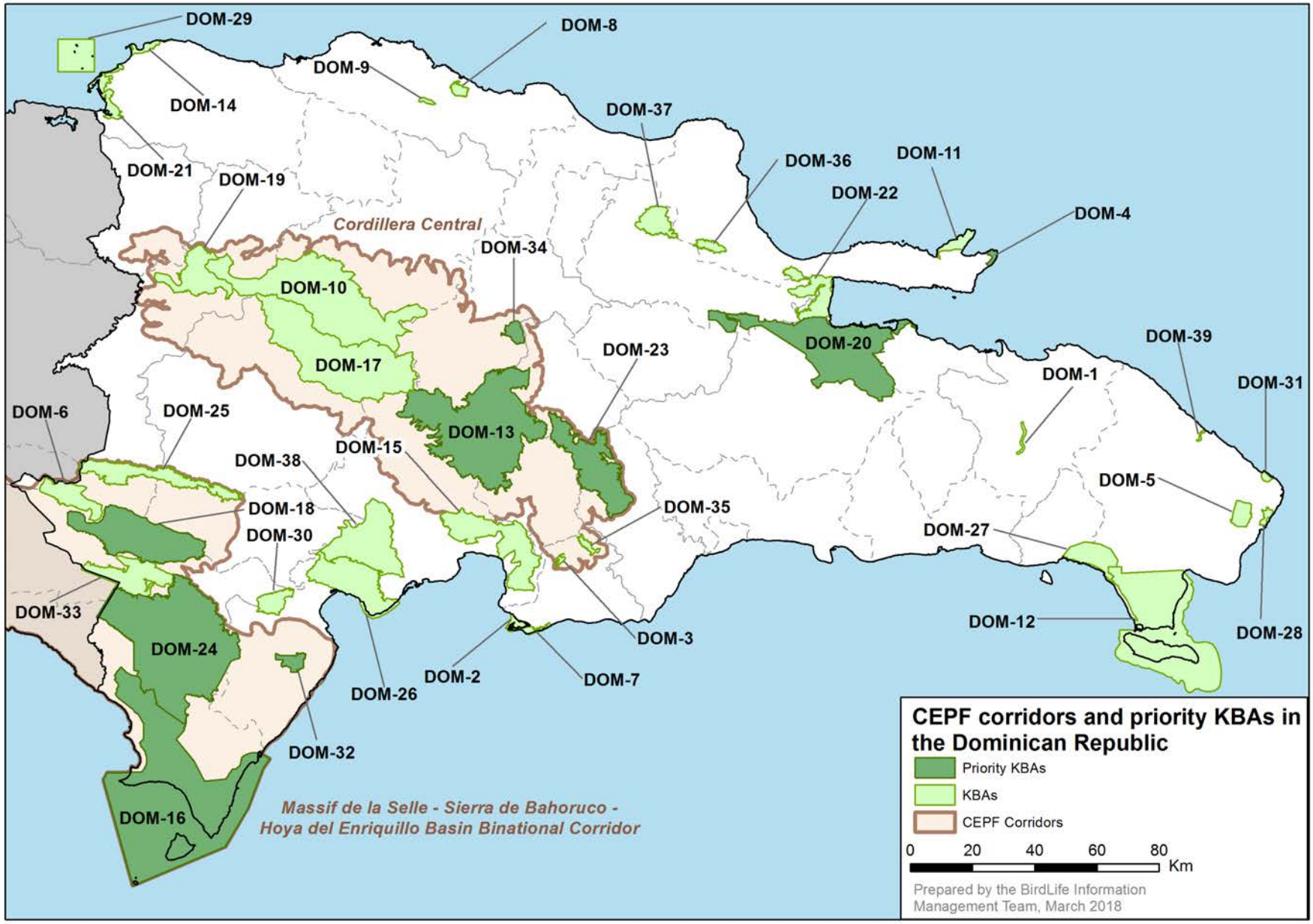


Figure 13.5 Priority Sites for CEPF Investment in Antigua and Barbuda, and Dominica

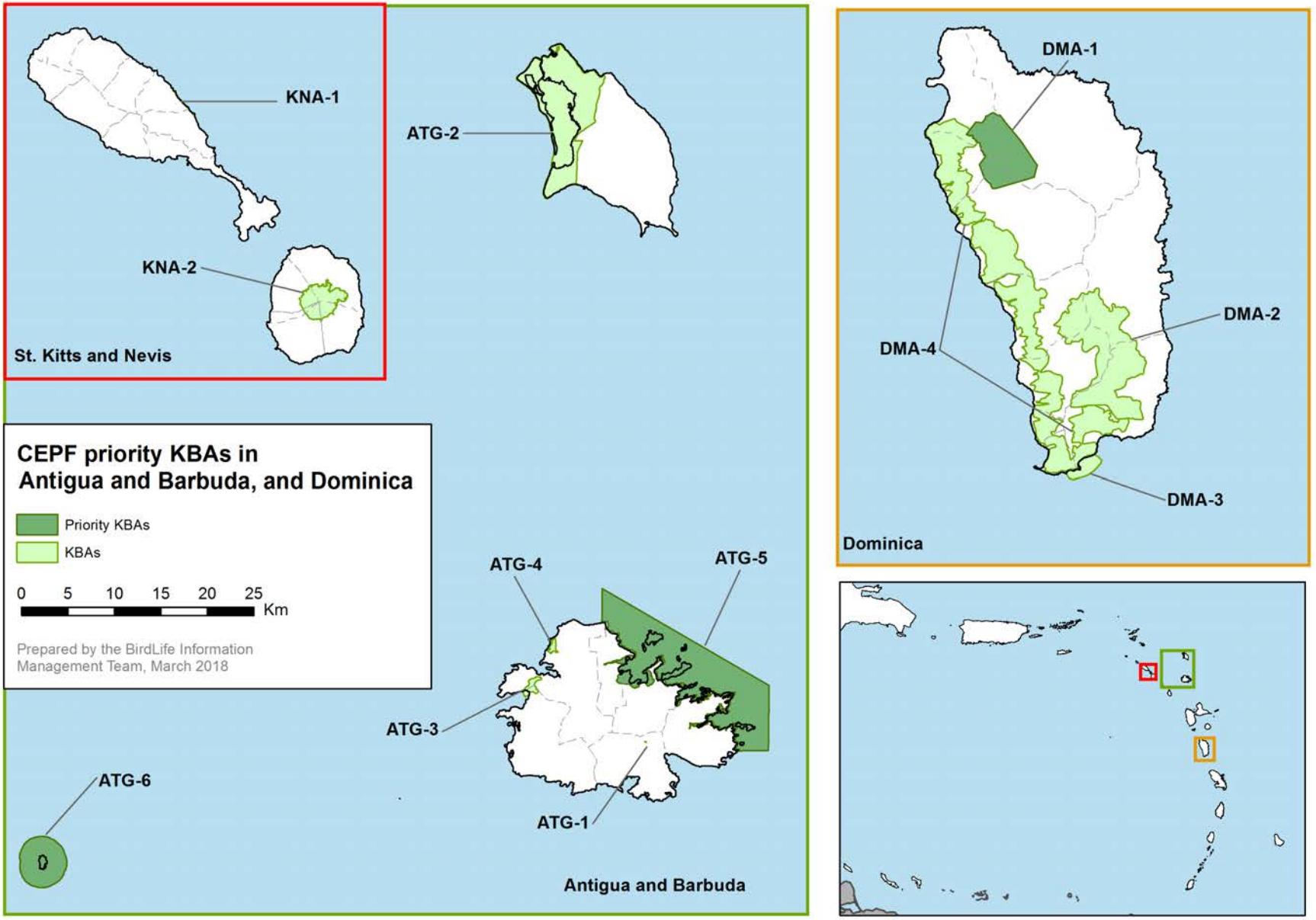
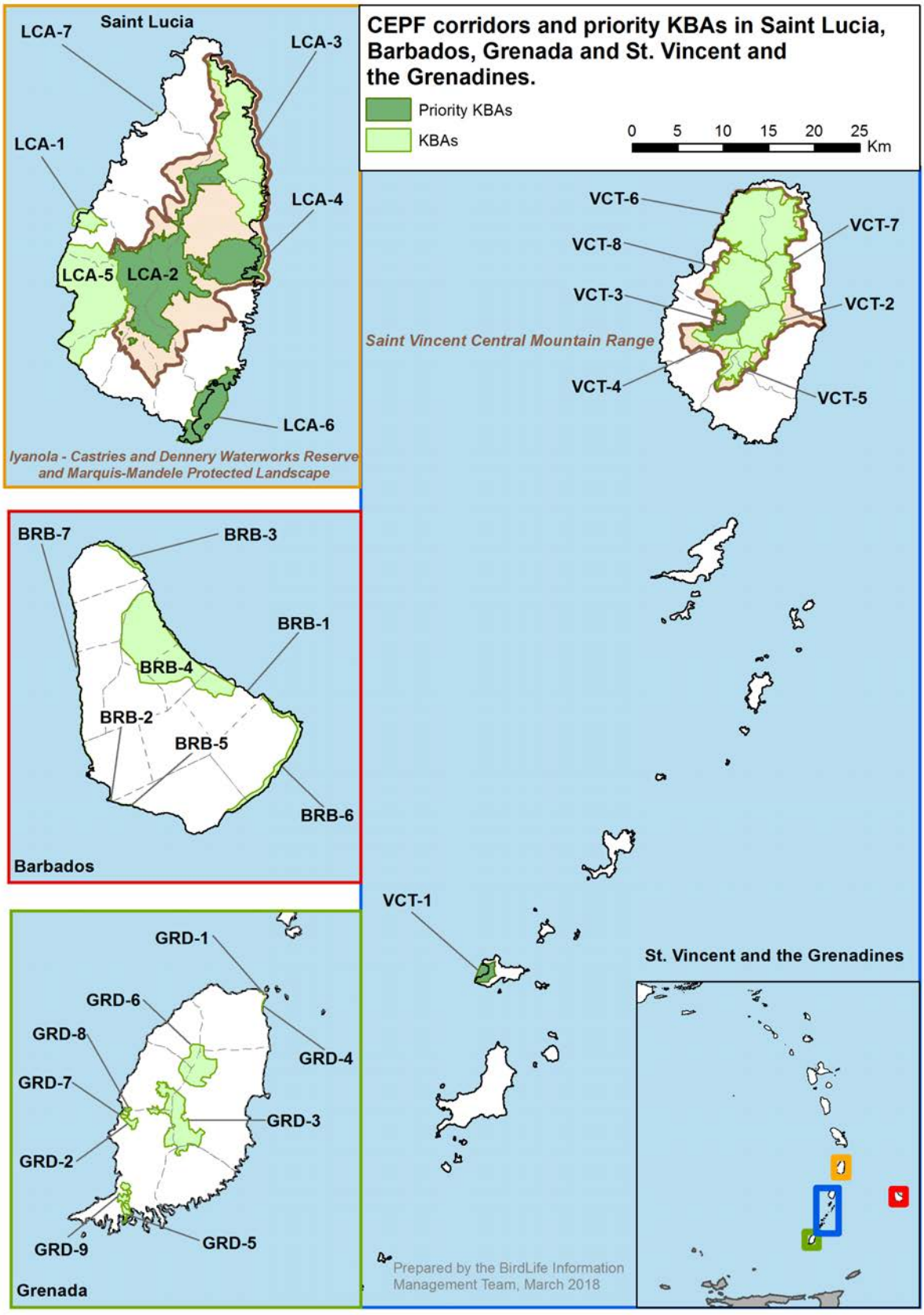


Figure 13.5 Priority Sites and Corridors for CEPF Investment in Saint Lucia, Barbados, Grenada and St Vincent and the Grenadines



CEPF will support landscape-level conservation actions in the seven corridors listed in Table 13.3. Each corridor includes at least one CEPF priority site.

Table 13.3 CEPF Priority Corridors in the Caribbean Islands

	Corridor Name	KBAs		Country	Area (ha)	CEPF Priority in Phase 1
		CEPF Priority Sites	Other KBAs			
1	Massif de la Selle – Sierra de Bahoruco – Hoya del Enriquillo Basin Binational Corridor	Parc National Naturel Forêt des Pins-Unité 1; Lac Azuei-Trou Caiman; Parc National Naturel La Visite; Parque Nacional Jaragua; Parque Nacional Lago Enriquillo e Isla Cabritos; Parque Nacional Sierra de Bahoruco; Refugio de Vida Silvestre Monumento Natural Miguel Domingo Fuerte (Bahoruco Oriental)	Anse-à-Pitres; Monumento Natural Las Caobas; Parque Nacional Sierra de Neyba; Reserva Biológica Loma Charco Azul	Haiti, Dominican Republic	885,067	Yes (but geography extended to include Lac Azuei-Trou Caiman KBA)
2	Cordillera Central	Parque Nacional Montaña La Humeadora; Parque Nacional Parque Nacional Dr. Juan Bautista Pérez (Valle Nuevo) Reserva Científica Ébano Verde	Parque Nacional Armando Bermúdez; Loma Nalga de Maco y Rio Limpio Parque Nacional José del Carmen Ramírez;	Dominican Republic	777,604	Yes
3	Massif de la Hotte Highlands	Parc National Naturel de Grand Bois; Parc National Naturel Macaya		Haiti	86,100	No (formerly part of Massif de la Hotte KBA)
4	North Coast Forest-Cockpit Country-Black River Great Morass-Central Spinal Forest	Catadupa, Cockpit Country, Litchfield Mountain- Matheson's Run, Peckham Woods	Black River Great Morass; Kellits Camperdown; Mt. Diablo; Point Hill; Santa Cruz Mountains; Stephney John's Vale-Bull Head	Jamaica	370,405	Yes (extended to include Central Spinal Forest)
5	Surrey County Corridor	Blue and John Crow Mountains Protected National Heritage and surroundings	Bull Bay; Yallahs	Jamaica	178,196	No
6	Iyanola - Castries and Dennery Waterworks Reserve and Marquis-Mandele Protected Landscape	Castries and Dennery Waterworks Reserve and Marquis; Mandele Protected Landscape	Iyanola	Saint Lucia	31,228	No
7	Saint Vincent Central Mountain Range	Cumberland Forest Reserve	Colonaire Forest Reserve; Dalaway Forest Reserve; Kingstown Forest Reserve; La Soufriere National Park; Mount Pleasant Forest Reserve; Richmond Forest Reserve	Saint Vincent and the Grenadines	16,711	Yes

CEPF investment will also address the conservation of globally threatened single-island endemic species occurring in at least one priority site, with the aim of reversing species declines and preventing extinctions. Globally threatened single-island endemic species occurring in Barbados and Grenada, where no KBAs have been prioritized for investment under this strategy, will also be eligible for support. In total, 138 globally threatened species (75 animal and 63 plants) are prioritized for CEPF support under the investment strategy. The strategy also prioritizes strategic conservation actions in support of seven priority plant families with high levels of endemism and threat because of intensive use by local populations.

13.2 Strategic Directions and Investment Priorities

The thematic focus of the investment strategy is set out in Table 13.4. CEPF investment will address 19 investment priorities grouped into six strategic directions. Targets and indicative spending allocations for each strategic direction are given in the logframe, which follows in Chapter 14.

Table 13.4 CEPF Caribbean Islands Strategic Directions and Investment Priorities

Strategic Directions	CEPF Investment Priorities
1. Improve the protection and management of 33 priority sites for long-term sustainability	1.1 Strengthen the legal protection of priority sites 1.2 Prepare and implement participatory management plans that support broad stakeholder collaboration 1.3 Assess climate change impacts and integrate climate change adaptation into management plans and their implementation responses to protect ecosystem functions and build resilience 1.4 Eradicate, control or prevent further spread of invasive plants and animals that are affecting globally threatened species populations at priority sites 1.5 Update the KBA analysis to fill critical conservation planning data gaps in Barbados and Haiti
2. Increase landscape-level connectivity and ecosystem resilience in seven priority corridors	2.1 Prepare and support implementation of participatory local and corridor-scale land-use and watershed management plans to guide future development and conservation efforts 2.2 Support sustainable livelihoods in agriculture, fisheries, forestry, and nature tourism that enhance ecosystem resilience and landscape-level connectivity and deliver gender-equitable benefits, in order to maintain the functionality of priority sites 2.3 Promote the adoption and scaling up of conservation best practices in those enterprises compatible with conservation to promote connectivity and ecosystem services in the corridors
3. Safeguard priority Critically Endangered and Endangered species	3.1 Pepare and implement conservation actions plans for priority Critically Endangered and Endangered species 3.2 Identify climate impacts and develop and implement management plans in response to climate change impacts on priority Critically Endangered and Endangered species 3.3 Support assessments of high priority plant families to update national lists and the IUCN Red List and develop conservation action plans

Strategic Directions	CEPF Investment Priorities
4. Improve the enabling conditions for biodiversity conservation in countries with priority sites	4.1 Support the role of civil society organizations in policy dialogue and advocacy focused on government policies and practices that impact priority sites 4.2 Mainstream biodiversity conservation and ecosystem service values into development policies, projects, and plans by government and the private sector, with a focus on addressing major threats, such as unsustainable agriculture, mining, tourism and infrastructure development 4.3 Establish and strengthen sustainable financing mechanisms 4.4 Build stakeholder and constituency support for the conservation of priority sites and priority globally threatened species through targeted communication and information dissemination
5. Support Caribbean civil society to conserve biodiversity by building local, national and regional institutional capacity and fostering stakeholder collaboration	5.1 Strengthen CSOs' technical knowledge and skills to implement practical, applied biodiversity conservation actions through short-term training in topics that will advance implementation of projects that support CEPF priorities, based on a CSO training assessment and strategy 5.2 Strengthen the administrative, financial, fundraising and project management capacity of strategic CEPF civil society partners to implement biodiversity conservation programs and activities 5.3 Support local, national and regional information exchange, networking, mentorship, and coalition building among civil society organizations
6. Provide strategic leadership and effective coordination of CEPF investment through a Regional Implementation Team	6.1 Build a broad constituency of civil society groups working across institutional and political boundaries to strengthen the communication capacity of local civil society organizations in support of their mission and to build public awareness on the importance of conservation outcomes

14. LOGICAL FRAMEWORK FOR CEPF INVESTMENT

Global Objective	Goals and Indicators	Means of Verification	Important Assumptions
Support the conservation of biodiversity within the global hotspots by engaging and strengthening the capacity of civil society	***Biodiversity*** Goal: Improve the status of globally significant biodiversity in critical ecosystems within hotspots Indicators: • Number of globally threatened species benefiting from conservation action. • Number of hectares of Key Biodiversity Areas with improved management. • Number of hectares of protected areas created and/or expanded. • Number of hectares of production landscapes with strengthened management of biodiversity. • Number of protected areas with improved management. ***Civil Society*** Goal: Strengthen the capacity of civil society to be effective as environmental stewards and advocates for the conservation of globally significant biodiversity. Indicators: • Number of CEPF grantees with improved organizational capacity. • Number of CEPF grantees with improved understanding of and commitment to gender issues. • Number of networks and partnerships that have been created and/or strengthened. ***Human Well-being*** Goal: Improve the well-being of people living in and dependent on critical ecosystems within hotspots. Indicators: • Number of people receiving structured training. • Number of people receiving non-cash benefits other than structured training. • Number of people receiving cash benefits. • Number of projects promoting nature-based solutions to combat climate change.	Annual global impact report	The main drivers of biodiversity loss operate at local, national and regional scales and can be influenced by conservation interventions at these different scales. Civil society organizations are present and willing to engage in biodiversity conservation, to partner with unfamiliar actors from other sectors, and to adopt innovative approaches. The capacity of civil society organizations can be augmented and translated into more effective local conservation movements. Short-term grant funding can make significant contributions to overcoming the resource constraints facing civil society organizations. Increasing the capacity and credibility of local civil society organizations is likely to open political space for these organizations as they become recognized as trusted advisors (rather than causing them to be viewed as threats to vested interests). Some government and private sector/corporate actors are receptive to innovative conservation models demonstrated by CEPF projects and have incentives to adopt these for wider replication.

	• Amount of CO2e sequestered in CEPF-supported natural habitats. ***Enabling Conditions for Conservation*** Goal: Establish the conditions needed for the conservation of globally significant biodiversity. Indicators: • Number of laws, regulations, and policies with conservation provisions that have been enacted or amended. • Number of sustainable financing mechanisms that are delivering funds for conservation. • Number of companies that adopt biodiversity-friendly practices.		National academic institutions produce graduates with the skills and perspective to respond to local conservation challenges by working with or within civil society organizations. Raised local public awareness that results from the participation of these organizations in conservation issues has the potential to change attitudes and, ultimately, behavior towards the consumption of energy and natural resources.
Portfolio Objective	**Targets**	**Means of Verification**	**Important Assumptions**
Engage civil society in the conservation of globally threatened biodiversity through targeted investments with maximum impact on the highest conservation and ecosystem services priorities.	Thirty-three KBAs covering 1,174,380 hectares have strengthened management, as guided by sustainable management plans. At least 40,000 hectares of the 2,345,311 hectares within production landscapes are under improved management for biodiversity conservation and ecosystem services. At least five local development plans, projects or policies mainstream biodiversity and ecosystem services, with a focus on tourism, mining, unsustainable agriculture and infrastructure development.	Grantee and RIT progress reports Annual portfolio overview reports; portfolio mid-term and final assessment Protected Areas Tracking Tool (SP1 METT). IUCN Red List of Threatened Species.	The CEPF grants portfolio will effectively guide and coordinate conservation action in the Caribbean Islands Hotspot. Stakeholder interest remains stable or increases with respect to working in partnership with CSOs to achieve the ecosystem profile conservation outcomes. Regulatory and institutional environment for conservation, environmental protection, and civil society engagement remains stable or improves. Political stability will facilitate the implementation of conservation initiatives and improve the operating environment for civil society. Investments by other donors will support complementary activities that reduce threats to priority sites and species.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 1. Improve the protection and management of 33 priority sites for long-term sustainability. **$4,500,000.00**	At least 75 percent (678,044 hectares) of the 19 existing protected areas in the priority sites, totaling 904,059 hectares experience, on average, a 15 percent improvement on the Protected Area Management Effectiveness Tracking Tool. At least seven (50 percent) of the 14 under-protected priority KBAs brought under new or strengthened protection status. Climate change resilience integrated into 100 percent of management plans developed or updated with CEPF support. At least 10 participatory or collaborative management arrangements developed or strengthened. Three data-deficient sites assessed as KBAs under the 2016 Global KBA Standard.	Grantee and RIT progress reports CEPF Secretariat supervision mission reports Protected Area Management Effectiveness Tracking Tool (SP1 METT) Formal legal declarations or community agreements designating new protected areas Management plans and reports on management activities Human wellbeing monitoring reports KBA Global Partnership Database	Government agencies are supportive of civil society efforts to conserve KBAs and corridors. Local communities are sufficiently organized, have enough capacity and are willing to participate in these activities. CSOs have adequate capacity and are interested in engaging in conservation and management of KBAs and corridors.
Outcome 2. Increase landscape-level connectivity and ecosystem resilience in seven priority corridors. **$1,000,000.00**	At least five participatory local land-use or catchment management plans developed or strengthened to improve ecosystem services and connectivity within conservation corridors. Climate change resilience integrated into 100 percent of landscape-level plans developed. At least three conservation-based enterprises (e.g. nature-based tourism, conservation coffee and cacao, sustainable fisheries, etc.) developed in communities within the priority conservation corridors. Three businesses and/or their associations influenced to better incorporate biodiversity conservation into business and production practices, strategies and policies.	Grantee and RIT progress reports CEPF Secretariat supervision mission reports Official land-use and development plans and policies covering the priority corridors. Integrated management plans Private sector reports	Decision-makers are receptive and sympathetic to conservation and sustainable development of the priority KBAs and corridors. Private companies in key natural resource sectors appreciate the business case for better environmental and social practices.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 3. Safeguard priority Critically Endangered and Endangered species. **$1,000,000.00**	Conservation plans developed and implemented for at least 20 priority Critically Endangered and Endangered species. At least five species or species-group management plans and programs updated to integrate climate change responses. IUCN Red List updated with assessments of at least three priority plant families At least 50 CEPF priority species benefit from conservation actions through CEPF-supported management plans and their implementation.	Grantee and RIT progress reports CEPF Secretariat supervision mission reports IUCN Red List species accounts Conservation action plans	Adequate capacity to implement species-focused conservation exists among civil society or can be built. Governments and international donors remain committed to species conservation and are able to provide financial support for long-term programs.
Outcome 4. Improve the enabling conditions for biodiversity conservation in countries with priority sites. **$1,000,000.00**	At least 10 local, national and regional policies, projects or plans incorporate biodiversity, climate change and ecosystem services in the agricultural, mining, tourism and infrastructural development sectors. Three small-scale climate change demonstration projects in priority sites and conservation corridors planned and implemented to illustrate the benefits of biodiversity conservation and ecosystem services for adaption and mitigation. At least two sustainable financing mechanisms or programs include CEPF priority sites in their programming. Three private sector demonstration projects planned and implemented in support of biodiversity conservation. Awareness of, and support for, conservation issues increased among stakeholders in least 10 priority sites.	Grantee and RIT progress reports and site visits National and regional policy documents Public-private partnership agreements/MOUs/ contracts	Local, national and regional policy environments are supportive of the integration of biodiversity and development and a focus on priority KBAs. Targeted decision-makers are in a position to influence select policies and projects. Capacity is sufficient and can be built to enable the strategic, targeted “informing” of decision-makers. National legislation includes or allows for the establishment of sustainable financing mechanisms. Private companies in key natural resource sectors appreciate the business case for better environmental and social practices. CSOs have sufficient capacity to engage in advocacy at the national and regional decision-making level.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 5. Support Caribbean civil society to conserve biodiversity by building local, national and regional institutional capacity and fostering stakeholder collaboration **$1,000,000.00**	At least 15 local CSOs demonstrate improved performance with gender mainstreaming (at least 10 percent increase). At least 20 local CSOs demonstrate improved organizational capacity (at least 10 percent increase). At least 20 civil society networks and alliances enable collective responses to priority and emerging threats. Two innovative financing mechanisms for civil society sustainable funding developed.	Grantee and RIT progress reports and site visits CEPF Secretariat supervision mission reports CEPF gender tracking tool CEPF civil society organizational capacity tracking tool	The operating environment for civil society will remain constant or improve across the hotspot. Key capacity limitations of CSOs can be addressed through grant support. Civil society actors are able to work collaboratively to respond to conservation challenges.
Outcome 6. Provide strategic leadership and effective coordination of CEPF investment through a Regional Implementation Team **$1,500,000**	At least 50 CSOs, including at least 40 local organizations, actively participate in conservation actions guided by the ecosystem profile. At least 75 percent of local CSOs receiving CEPF grants are found to have met or exceeded expectations regarding programmatic performance. At least 30 CSOs supported by CEPF secure follow-up funding to promote the sustainability of their CEPF grants. At least 2 participatory assessments are undertaken and lessons learned and best practices from the hotspot are documented.	RIT progress reports CEPF Secretariat supervision missions and monitoring Post-project evaluation forms	Qualified organizations will apply to serve as the RIT in line with the approved terms of reference and the ecosystem profile. The CEPF call for proposals will elicit appropriate proposals that advance the goals of the ecosystem profile. CSOs will collaborate with each other, government agencies, and private sector actors in a coordinated regional conservation program in line with the ecosystem profile.
Total Budget:	**$10,000,000**		

15 SUSTAINABILITY

The investment strategy aims to strengthen ecosystem functionality and build resilience through Strategic Directions 1 and 2. Within the Caribbean context, addressing climate change is an essential element of any effort to promote biodiversity conservation. The new strategy for the hotspot integrates climate change as a cross-cutting theme and specifically supports climate change-focused actions through Strategic Directions 1, 2 and 3.

CEPF funding fills gaps in those areas where essential activities are not being undertaken at the moment and complements larger funding support from multilateral and bilateral sources to government agencies in the region. The investment strategy actively promotes leveraging of resources and co-financing. The emergence of environmental trust funds in CEPF-eligible countries across the hotspot presents an important opportunity for CEPF as it seeks to support innovative financing mechanisms under Strategic Direction 4. The CEPF Secretariat and RIT will actively seek to build synergies with other funding sources in the region.

With its focus on sustainable livelihoods, especially under Strategic Direction 2, the investment strategy attempts to ensure that direct users of natural resources or beneficiaries derive benefits as part of the conservation process. The elements of the strategy that address natural resource governance (Strategic Direction 4) and promote integrated multi-stakeholder approaches and cooperation between civil society, governments and the private sector (Strategic Directions 1, 2 and 4) reflect an appreciation of the need for efforts to be grounded in communities and owned by stakeholders. The inclusion of gender as a cross-cutting theme further supports social equity.

The new phase of CEPF investment in the Caribbean Islands Hotspot will play a major role in increasing the capacity of NGOs and other CSOs based in the region. Strengthening of civil society is a focus across all the strategic directions but is made explicit in Strategic Direction 5. The CEPF program will use a demand-driven approach to supporting the region's CSOs, to strengthen their technical and organizational capacity.

The RIT's contribution to the sustainability of the overall impact of the CEPF program encompasses grant selection and management, as well as establishing linkages between the program and government decision makers and regional processes. Through its grant management, the RIT will contribute to sustainability by considering each potential project's relevance in the local political and cultural context, as well as alignment with national priorities and commitments under international conventions. Through its regional networking role, the RIT is expected to be aware of other funding opportunities and relevant programs, and to be proactive in ensuring that grantees are involved, including through sharing information on the CEPF program with other donors.

By helping facilitate linkages to government, the RIT will help grantees draw the attention of decision makers to the results and lessons learned from their projects, and demonstrate ways that they can contribute to government agendas. Where strategic opportunities to do so arise, the RIT will also support grantees in their outreach to private sector entities. The RIT will contribute to securing additional and continuing funding for projects initiated under the CEPF program, including working with partners on innovative financing mechanisms.