CRITICAL ECOSYSTEM PARTNERSHIP FUND

Ecosystem Profile
SUMMARY

Wallacea
Biodiversity Hotspot

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1. INTRODUCTION

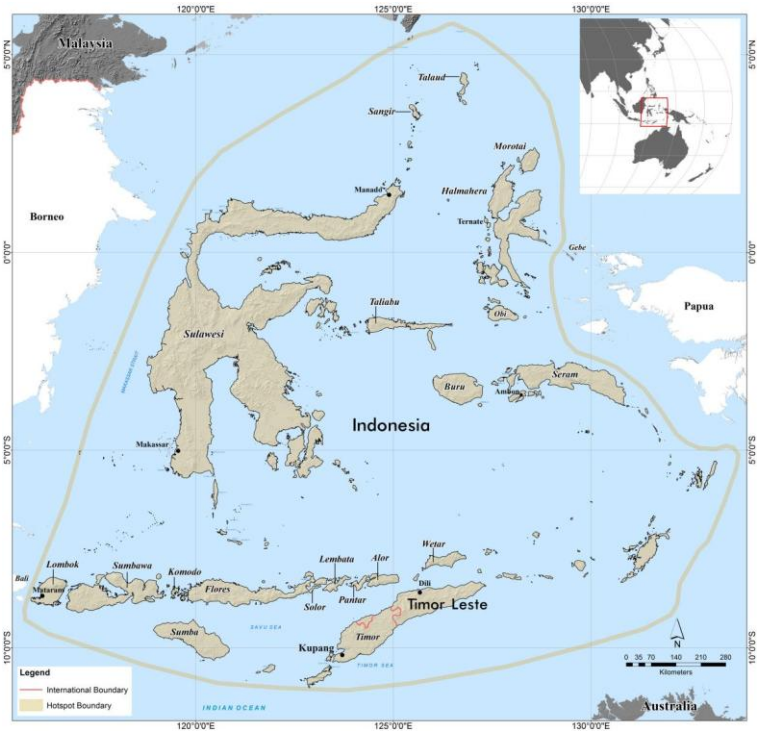
The loss of biodiversity is accelerating globally despite the recognition that it is a key element of the environment. Because biodiversity and the threats to it are not evenly distributed, conservation organizations need to focus their actions on places with high importance and a level of urgency.

Biodiversity hotspots are regions that have at least 1,500 endemic plant species and which have lost at least 70 percent of their natural habitat. The identification of these hotspots is one of the most effective priority-setting analyses for delivering conservation actions where they are most needed.

Hotspots situated in tropical countries struggle not only with biodiversity conservation issues, but also with the poverty and human development of the populations; local conservation efforts suffer from a shortage of funds and support. The Critical Ecosystem Partnership Fund (CEPF) was established to channel funding to civil society organizations in this subset of hotspots in developing countries.

In 2013, the Wallacea hotspot in Indonesia and Timor-Leste was selected by the CEPF Donor Council as eligible for funding. Before launching any program, CEPF commissions an ecosystem profile to present a snapshot of the current state of the hotspot, identifying priorities and opportunities for action.

Figure 1.1. Map of the Wallacea Biodiversity Hotspot



2. BACKGROUND

The development of the ecosystem profile document began in June 2013 by defining the "conservation outcomes" to describe actions needed in Wallacea. The information was compiled by reviewing published information from books, papers and other existing analyses, in particular those from the BirdLife International on Important Bird Areas and the IUCN Red List accounts for globally threatened species.

A preliminary list of sites identified for species of concern was then discussed with scientists who specialize in specific taxonomic groups. The ecosystem profile team also sought input from local governments, communities, businesses and civil society organizations in Wallacea. A total of 262 people participated in eight two-day workshops in seven cities in Indonesia and one in Timor-Leste. In addition, separate meetings were held to consult with relevant agencies of central government and national conservation organizations.

The workshops provided an important opportunity to learn about civil society as well as to collect information on stakeholders, threats and conservation actions at each site. To gain recommendations from a wider community and the public at large, the lists of species and the maps of proposed priority sites were posted on www.wallacea.org and promoted through the Profil Ekosistem Wallacea Facebook page.

The Indonesian and Timor-Leste governments provided advisement to the overall process and to the conservation outcomes analysis through the participation of representatives of key agencies and ministries that were formed into National Advisory Committees (NAC) in each country.

3. BIOLOGICAL IMPORTANCE OF THE HOTSPOT

Using the Wallace and Lydekker lines, CEPF defined the Wallacea hotspot as the islands in the Indonesian archipelago and Timor-Leste between the Sunda and Sahul continental shelves. This region covers an area of 33.8 million hectares and comprises three biogeographic subregions: Maluku, Lesser Sundas and Sulawesi.

As of 2011, forests covered only 17.7 million hectares or approximately 50 percent of the Wallacea land surface. Sulawesi contributes the largest forest cover with 56 percent of Wallacea's forests. Meanwhile, Maluku has only 24 percent, and the Lesser Sundas 19 percent, of which Timor-Leste contributes 4 percent.

Evergreen and semi-evergreen forests are the natural vegetation in the lowlands of the equatorial tropical zone, concentrated in Sulawesi and Maluku. Meanwhile, monsoon forest is the dominant forest type in the Lesser Sundas, which is the driest and the most seasonal subregion in Wallacea. Much of this forest type has been cleared for agriculture, mining and other development. Some 20 percent of Sulawesi is within the montane forest biome — generally found above 900 meters — that includes important centers of plant endemicity in Latimojong and Bogani Nani Wartabone national parks. Other forest types in Wallacea include heath, swamp and forest on ultrabasic rocks, along with savannas and grasslands.

Wallacea's forest is home to many endemic species. In the same way, karst ecosystems that can mainly be found in the Maluku and Sulawesi subregions also hold biological importance. The unique conditions within karst environments, especially caves, and their isolation from other systems have encouraged speciation and led to the evolution of a highly specialized endemic fauna.

The northern part of Wallacea has a double-peaked wet season while the southern part is more monsoonal with a single rainy season and a long dry season. There is, however, a local variation, especially on small islands with steep topography. El Nino Southern Oscillation (ENSO) cycles also affect the region, creating differences in the timing and quantity of the rainfall. Although the effects of ENSO vary depending on local climatic patterns, all areas experience a delay in getting the rains, which has implications for food security and health.

Moreover, rivers in the region are typically short, steep and prone to extreme fluctuations in flow over the years. This situation can become severe in the Lesser Sundas where lakes are relatively few; most of them are of volcanic origin. Thus, water supply and the management of water catchment areas in small islands are critical factors for livelihoods and economic development. While there are not many lakes in Maluku, Sulawesi has 13 lakes covering more than 500 hectares, including the second and third largest in Indonesia (Towuti and Poso) and the deepest

in Southeast Asia (Matano). These deep and isolated lakes support endemic fishes, shrimps and other fauna.

As a result of subduction and volcanic activity, the land area in Wallacea is fragmented into thousands of small islands and a few bigger ones (of more than a million hectares) separated by oceanic trenches.

The marine basins between the island arcs may be as deep as 7,000 meters and are swept by powerful currents. These form a barrier to the dispersal of terrestrial species and an obstacle to the dispersal of marine species. As a result, the marine area of this region, together with the neighboring area that forms the coral triangle, has the richest marine biodiversity on earth. Wallacea water is exceptionally rich in coral species with the main types of coral reefs being fringing reefs and atolls.

Compared to other subregions, the Lesser Sundas also have large area of seagrass that covers more than 700,000 hectares. This seagrass area is concentrated in shallow coastal water that is free from intense wave action or sedimentation. Seagrass beds function as nursery grounds for many invertebrate and juvenile fish and feeding grounds for fish, mollusks, green turtles and dugongs. They stabilize offshore sand reservoirs, act as sediment collectors and prevent coastal erosion.

Other important marine ecosystems in Wallacea include intertidal habitats such as mangroves, beaches, rocky coasts and estuaries. Sandy beaches are nesting grounds for sea turtles, while tidal sand and mud flats are important feeding grounds for migrating shorebirds. Meanwhile, deep-water areas in the region are sometimes close to shore, and provide feeding, breeding and migratory corridors for whales and other cetaceans, and large populations of pelagic fish, including tuna shark. Seamounts (underwater mountains that do not break the surface) create local upwelling that brings nutrients to the surface and support rich local ecosystems.

All of the above conditions combined with other factors, such as a periodic connection to the Australian and New Guinea land mass, make Wallacea exceptionally rich in unique species, many of them endemic to single islands or groups of islands. After all, Wallacea is home to 560 globally threatened species, 50 percent of all threatened species recorded from Indonesia. Table 3.1 summarizes species diversity and endemism in Wallacea.

Table 3.1. Summary of Species Diversity and Endemism in Wallacea

Taxonomic Group	Total # of Species	# of Endemic Species (percent)	# of Threatened Species (percent)
Plants	10,000	>1,500 (15)	66 (1)
Mammals	222	127 (57)	64 (29)
Birds	711	274 (39)	61 (9)
Reptiles	222	99 (44)	10 (5)
Birdwing Butterflies	80	40 (50)	7 (9)

Taxonomic Group	Total # of Species	# of Endemic Species (percent)	# of Threatened Species (percent)
Dragonflies			7
Amphibians	48	33 (68)	8 (17)
Freshwater Fishes	250	50 (20)	37 (15)
Decapods			32
Calanoida (Copepods)			1
Mollusks			2
Coral	450	Few	176 (39)
Marine Bivalves			2
Marine Fishes	2,112	110 (5)	54 (2)
Sea Cucumber			10

4. CONSERVATION OUTCOMES DEFINED FOR THE HOTSPOT

Managing the high number of biodiversity and diverse ecosystems in the Wallacea region will be a challenge. Resources are limited for this region, so conservation programs have to compete with other priorities that are providing more economic benefits for people in the region. Therefore, it is important to prioritize species, sites and landscape for conservation funding investment in Wallacea.

Methodology

Conservation outcomes as defined by CEPF are the entire set of conservation targets in a hotspot that need to be achieved to prevent species extinctions and biodiversity loss. The first step to identifying conservation outcomes is through the compilation of globally threatened species lists that are assessed by IUCN taxonomic specialist groups. IUCN classifies these species as critically endangered, endangered, or vulnerable. Species outcomes are the complete list of globally threatened species found in the hotspot.

CEPF describes site outcomes as key biodiversity areas (KBAs). Based on the best available data, a KBA is thought to contain either a population of a globally threatened species, a globally significant proportion of the population of an endemic species, or a species that is highly dependent on the conservation of the site.

Data for locality records were compiled from different types and authority sources available at the local, regional and international levels. KBAs are spatial units, so a polygon drawn around the species locality is used to define the KBA boundary using geolocated records, the ecological boundaries, and existing protected-area boundaries. In many publications, site records refer to named places (e.g., mountains and lakes) but do not provide a geolocated reference. These references were used while references that named only the island, for example, were not used.

A scoring system based on the concepts of vulnerability and irreplaceability developed by Langhammer *et al.* in 2007 was used to classify the biological prioritization. Terrestrial KBAs are categorized as extreme, high, medium or low for each of these factors. Where a single KBA has several species with different vulnerability and irreplaceability scores, the highest one is used; however, this scoring system identified only 19 of the highest priority KBAs. An alternative approach was used to identify the minimum network of sites needed to ensure that all globally threatened species in Wallacea are represented in at least one KBA. The first step of the analysis was to identify the most unique site, defined as the site with the highest number of species that are found nowhere else. The second step was to select sites with the greatest number of species that are represented at only two sites, and so on until all trigger species have been

covered at least once. Under this analysis, all sites with single-site species were automatically eligible.

There is very little locality data available for the most globally threatened marine species. Marine survey work focuses mainly on ecosystem monitoring, some marine species are difficult to identify, and some cases require laboratory examination. Even when many of sites are known for a species, it is difficult to confirm if there is a significant population. In total, the marine species data allowed the identification of 74 marine KBAs on the basis of trigger species; however, experts confirmed that this result was clearly not representative of the distribution and richness of marine sites in the Wallacea region.

For the purposes of maintaining ecological and evolutionary processes, corridors can be described as large landscape units that are necessary to sites and "landscape species," those specific species that rely on larger areas of habitat than can be conserved in a single KBA. They may be species where individuals range widely, either during their lifecycle or their daily search for food, such as frugivores. Corridors can also be recognized because they provide habitat connectivity between KBAs and environmental services that are of ecological and economic importance.

Terrestrial corridors are defined for landscape species and for the role of the corridor in maintaining ecosystem services and connectivity between KBAs. The terrestrial corridor boundaries were drawn to reflect the approximate limits of suitable habitat for the species concerned, in almost all cases forest. Marine corridor is defined as large areas that contain critical populations or processes, such as spawning sites or feeding concentrations. The marine corridors in the hotspot were defined on the basis of consultations with experts. The boundaries of marine corridors are approximate, typically following the limits of near-shore reefs, shallow seas divided by deep ocean trenches (e.g., the outer and inner Banda Arcs) or other marine ecosystems.

Species Outcomes

Based on globally threatened species data compiled up to November 1, 2013, 560 species in Wallacea were classified as threatened with extinction by IUCN in the critically endangered, endangered, or vulnerable categories. Of these threateed species, 308 are terrestrial or freshwater, and 252 are marine. The list of globally threatened species in Wallacea, including their distribution per region and country, is described in Table 4.1.

Table 4.1. List of Globally Threatened Species in Wallacea

	IUCN Red List Status				Species Distribution by Bioregion			Species Distribution by Country	
Taxonomic group	**CR**	**EN**	**VU**	**Total**	**Sul**	**Mal**	**LS**	**IND**	**T-L**
Amphibians	0	4	4	8	6	1	1	8	0
Birds	12	20	29	61	29	16	20	61	6
Calanoida	0	0	1	1	1	0	0	1	0
Decapoda	1	15	16	32	32	0	0	32	0
Freshwater Fish	4	4	29	37	37	0	0	37	0
Freshwater Gastropods and Bivalves	1	1	1	3	3	0	0	3	0
Lepidoptera	0	5	14	19	10	4	6	19	2
Mammals	5	23	36	64	40	13	15	64	2
Odonata	2	1	4	7	4	2	1	7	0
Plants	5	7	54	66	36	23	18	66	4
Reptiles	2	3	5	10	6	2	7	10	2
Corals	0	9	167	176	171	172	168	176	168
Marine fish	2	6	46	54	51	48	45	54	46
Marine mammals	0	3	2	5	5	5	5	5	5
Marine mollusk	0	0	2	2	2	2	2	2	2
Marine reptiles	1	2	2	5	5	5	5	5	5
Sea cucumbers	0	5	5	10	10	10	9	10	9
	35	**108**	**417**	**560**	**448**	**303**	**302**	**560**	**251**

Thirty-five species in Wallacea are classified as critically endangered by IUCN. Twenty-six of them are endemic to the hotspot, and of these 13 are only known from one site. There are 108 species classified as endangered in Wallacea, 83 terrestrial and 25 marine species. The marine species include three whales, two marine turtles and nine corals. Terrestrial species include 23 mammals, 20 birds, 15 shrimps and crabs and seven plants. Of the endangered species, 77 are endemic to Wallacea, and 24 are known from only a single KBA.

Site Outcomes

The initial list of terrestrial KBAs was developed based on existing data on Important Bird Areas analysis (110 in Indonesia and 16 in Timor-Leste) and Alliance for Zero Extinction sites (16 sites in Wallacea). The new KBA sites were defined through a compilation of locality records of globally threatened species gained from literature, stakeholder workshops and expert consultations. The final KBA list consists of 251 terrestrial KBAs, with 105 KBAs in the Lesser Sundas (82 in Nusa Tenggara and 23 in Timor-Leste), 95 KBAs in Sulawesi and 51 in Maluku.

Based on locality records for 186 globally threatened species, 74 marine KBAs were identified. No sites were identified for 66 species on the marine trigger species list. To complete the analysis on marine species and sites, an additional 66 candidate marine KBAs were identified using data on existing marine protected areas, priority areas identified in recent marine priority setting processes, and proposed marine protected areas. This analysis was improved through consultation with local stakeholders, experts and conservation organizations.
Table 4.2 describes the total area of the terrestrial and marine KBAs in Wallacea. The 251 terrestrial KBAs in Wallacea cover 9.5 million hectares, or about 30 percent of the 33.8 million hectare land surface of Wallacea. The average size of a terrestrial KBA is 37,892 hectares, but Sulawesi has fewer, larger KBAs, so that although the subregion has only 37 percent of all KBAs, they comprise 55 percent of the area included in KBAs. On the other hand, the Lesser Sundas have 42 percent of KBAs, but they comprise only 22 percent of the KBA area, averaging 20,000 hectares. The 140 marine KBAs and candidate marine KBAs cover a total of more than 9.5 milion hectares, and are on average almost twice the size of terrestrial KBAs, at 68,000 hectares.

Table 4.2. Total Area of Key Biodiversity Areas in Wallacea

	Terrestrial KBAs		**Marine KBAs + Candidate KBAs**		**Total**	
	Total No.	**Area (Ha)**	**Total No.**	**Area (Ha)**	**Total No.**	**Area (Ha)**
Sulawesi	95	5,266,204	49	5,937,618	144	11,203,823
Maluku	51	2,146,217	31	1,560,713	82	3,706,929
Lesser Sundas	105	2,098,638	60	2,020,792	165	4,119,429
total all	**251**	**9,511,059**	**140**	**9,519,123**	**391**	**19,030,181**
Indonesia	228	9,131,438	128	9,389,572	356	18,521,010
Timor-Leste	23	379,621	12	129,551	35	509,171

Terrestrial KBAs were ranked on the basis of vulnerability and irreplaceability scores. The irreplaceability score is based on the number of KBAs where the species occurs, with “extreme” allocated to single-KBA species. The irreplaceability score is intended to represent how many opportunities (sites) there are to conserve a particular species. There are two sources of potential error that could lead to underestimating how many sites there are for a species and thus allocating an irreplaceability score that is too high (a low number of sites elicits a high irreplaceability score): if there is a lack of locality data and if a species occurs at sites outside Wallacea.

Nineteen KBAs emerge as the highest priority using the approach described above, because one of the factors, irreplaceability or vulnerability, is classified as extreme. Eleven of them are in the provinces of Sulawesi, eight on the main island, and three on surrounding small islands, with clusters of priority KBAs in Northern and Central Sulawesi. Three sites are in East Nusa Tenggara, on Flores and Sumba. North Maluku has three sites, and Maluku has two. The two

sites on the islands of North Sulawesi, Sangihe and Siau, stand out for the high concentration of critically endangered species in two very small areas of habitat. The forests and lakes of the central parts of Sulawesi, Lore Lindu, Lake Poso and the Malili Lakes — Mahalona, Matano and Towuti (Towuti scores high-high) — are outstanding for the very high number of single-site endemics and threatened species.

An alternative approach was used to identify the minimum network of KBAs sites in Wallacea. The analysis ranked the site with the highest number of single-site endemics first, the site which could then contribute the greatest number of additional single-site species second, and so on until all the threatened species for which Wallacea is important were covered by at least one KBA. A network of 50 KBAs was identified, including the 19 KBAs identified as priorities using the vulnerability–irreplaceability approach. Two sites are in Timor-Leste, and 48 sites are in Indonesia.

Legal protection of KBAs: Land in Indonesia is divided into forest estate and nonforest estate. The forest estate is under the authority of the Ministry of Forestry and is divided into conservation forests, watershed protection forests, and forests that can be exploited or (in some cases) converted. The forest estate in Indonesian Wallacea covers 23.4 million hectares, 69 percent of the total land area. Approximately 7.9 million hectares, 88 percent of the area of terrestrial KBAs, is within the national forest estate: conservation forest, forests designated for watershed protection or protection forest, and production forest. There are 2.7 million hectares of KBAs within conservation areas in Indonesia. Seventy percent of the terrestrial KBA area in Indonesia (6.2 million hectares) is outside the formal protected areas network.

In Timor-Leste, 12 terrestrial areas and four marine areas were designated protected areas by the U.N. Transitional Administration covering the Nino Konis Santana National Park, which is the only protected area legally designated by the Timorese government. The government is proposing a protected areas decree to protect 50 areas for conservation purposes. When passed, the decree will confirm the protection of the KBAs in the country.

Ridge to reef KBAs: Where a terrestrial and a marine KBA are contiguous, they should be considered, and ideally managed, as a single ecological unit. The KBA analysis for the Wallacea region keeps the separation between terrestrial and marine KBA only because there are slight differences in priority setting methods. Plus, the quality and availability of data is typically better for terrestrial KBAs. Furthermore, a ranking and comparison of terrestrial, marine and combined KBAs would be difficult. In addition, the management authority for terrestrial and marine areas is different either in Timor-Leste and Indonesia. There are 64 terrestrial KBAs contiguous with 58 marine KBAs in total. In 37 cases, the terrestrial and marine KBAs share a border, while in 27 cases the terrestrial KBA is an island entirely within the marine KBA. In both conditions, land

management in the terrestrial KBA will likely influence the conservation status of the marine KBA.

Corridor Outcomes

Terrestrial corridors: From 308 terrestrial globally threatened species, 26 were judged to be landscape species, on the basis of known information about their ecology or assumption based on large body size and a relatively wide range. Species that are widely distributed outside the region or that occur only as vagrants were excluded. As the result, 10 landscape corridors were defined covering large, relatively contiguous areas of habitat where these species occur. Most of the remaining forest in the large islands of the hotspot is covered in the corridors. Where possible, ecological boundaries were used to define the corridor boundaries.

Three of the terrestrial corridors — North, Central, and South Sulawesi — have the largest number of landscape species, but share most of these species in common. The ranking of corridors based on species numbers was therefore not effective. As an alternative, a complementarity approach was used, starting with the corridor with the largest number of species (South Sulawesi), and then a second rank allocated to the site that added the greatest number of additional species, in this case Seram-Buru. All the landscape species are covered by only the first five corridors. The results are presented in Table 4.3 below.

Table 4.3: Terrestrial Corridors with Ranking

Corridor	Province/Country	Area (Ha)	# CR species	# EN species	# VU species	Rank
Halmahera	North Maluku	691,328	0	0	3	4
Seram-Buru	Maluku	1,427,848	0	1	4	2
Sumba	East Nusa Tenggara	662,795	1	0	2	5
Sumbawa-Lombok	West Nusa Tenggara	475,605	1	0	1	
Timor-Wetar	West Nusa Tenggara / Timor-Leste	1,902,524	1	1	0	5
Flores Forests	East Nusa Tenggara	685,928	2	1	2	3
Flores Coast	East Nusa Tenggara	179,880	0	0	1	7
North Sulawesi	North Sulawesi, Gorontalo	1,279,252	0	3	6	
Central Sulawesi	West Sulawesi, Central Sulawesi, South Sulawesi, South-east Sulawesi	6,243,989	0	3	6	1
Southern Sulawesi	South Sulawesi	879,949	0	2	6	

Marine corridors cover an area that is important for groups of wide-ranging or migratory species, or for critical ecological processes such as spawning grounds. Sixteen corridors were defined in the Wallacea region based on input from marine experts. The corridor boundaries are approximations of the limits of the conservation value contained by the corridor. A list of marine corridors are presented in Table 4.4 below.

Species records from the KBAs within each corridor were compiled to investigate the possibility of ranking corridors on the basis of biological importance. However, ranking using species records was unsatisfactory, because relatively detailed surveys are only available in four corridors – North Sulawesi, Timor-Leste, Banda Sea and Halmahera. These four corridors are known to have between 60 and 140 of the marine globally threatened species. The absence of species-level survey work in other corridors means that very few globally threatened species have been recorded there.

Hypothetical records of globally threatened species were assigned to corridors based on information about species range and habitat requirements to allow a tentative ranking of corridors. Many of marine globally threatened species are believed to occur across Wallacea, and therefore they are assumed to occur in all corridors. Nevertheless, a number of species are habitat specialists or have restricted ranges. As a result, there are differences in the total hypothetical species richness of the corridors that can be used as a tentative basis for biological ranking.

The North Sulawesi and Halmahera marine corridors are of highest biological priority, while the following 12 are almost equal in species richness. Timor Trench and Sulawesi Sea corridors do not have coral reef or other near-shore habitats and so are assumed to have a far smaller complement of globally threatened species. These corridors were identified because of their importance for pelagic fish and whales.

Table 4.4. Marine Corridors with Hypothetical and Recorded Total Numbers of Globally Threatened Species

Corridor Name	Hypothetical Total # of Globally Threatened Species	# of Globally Threatened Species with Confirmed Records
Sulawesi Utara	440	209
Perairan Halmahera	294	64
Timor Leste Marine	312	90
Barat Sulawesi Tengah	225	1
Togean–Banggai	226	4
Laut Sawu	227	3
Solor–Alor	224	2
Busur Banda Luar	226	4
Selat Lombok	226	4
Komodo–Selat Sumba	225	4
Bentang Laut Banda	294	76
Bentang Laut Buru	219	0
Busur Banda Dalam	218	0
Bentang Laut Lucipara	218	1
Laut Sulawesi	25	0
Palung Timor	25	0

5. SOCIOECONOMIC CONTEXT OF THE HOTSPOT

Sulawesi, Nusa Tenggara and Maluku are rich not only in biodiversity; these island groups, located in eastern Indonesia, are also rich in ethnic groups, cultures, languages and heritage. Populations in the Indonesia Wallacea region are described in Table 5.1 below.

Table 5.1. Basic Population Statistics for the Wallacea Hotspot in Indonesia (2010)

Province	Population	Population Density (ppl per km^2)	% Annual Population Growth (2000-2010)
North Sulawesi	2,265,937	160	1.26
Gorontalo	1,038,585	85	2.24
Central Sulawesi	2,633,420	43	1.94
West Sulawesi	1,158,336	69	2.67
South Sulawesi	8,032,551	170	1.17
South East Sulawesi	2,230,569	58	2.07
West Nusa Tenggara	4,496,855	230	1.17
East Nusa Tenggara	4,679,316	98	2.06
North Maluku	1,035,378	23	2.44
Maluku	1,531,402	33	2.78
Total Wallacea	29,102,349	73.9	2.40
Total Indonesia	237,556,363	127	1.49

Although the region is known for its extensive natural resource base, the socioeconomic development is still lower when compared with the other regions in Indonesia. Economic growth in Wallacea averaged 7.2 percent (2010-2012), consistently higher than the national average of 6.2 percent in the same period.

In an effort to accelerate national economic development, the Government of Indonesia developed the Master Plan for the Acceleration and Expansion Economic Development of Indonesia (MP3EI), which is expected to have a major impact on economic growth and development in Wallacea. This acceleration plan, as well as other economic development programs, will have significant impact on the KBA sites and biodiversity in the hotspot.

The total population in Timor-Leste is estimated at 1,066,409 (2010). More than 80 percent of the people live in rural areas and 75 percent of them depend on agriculture for their livelihood. About 50 percent of the population live in poverty. Timor-Leste has numerous ethnic groups and languages.

The government of Timor-Leste developed the Strategic Development Plan for period of 2011–2030 to improve economic development in the country. The four elements of the plan are social capital, infrastructure, economic foundations and institutional development. Five key areas that are crucial for economic development are rural development, agriculture, petroleum, tourism and private sector investment. The main economic sectors in Timor-Leste are petroleum, coffee and agriculture.

6. POLICY CONTEXT OF THE HOTSPOT

Indonesia does not have a natural resource policy framework per se. Indeed, a review by the Ministry of Environment concluded that there are 12 laws related to the management of natural resources involving 14 sectors that are conflicting with each other.

Changes in forest and land tenure are likely to change the governance of large areas of forest over the next 10 years in Indonesia. Spatial and land-use planning are developed at the district, provincial and national levels to accommodate the different development sectors as well as natural management and conservation. The spatial planning process offers public participation and involvement at the different levels. All of the provinces in Indonesian Wallacea have finalized their spatial plans, except for North Sulawesi and Central Sulawesi. The majority of the districts in the region have also finalized their spatial plans. Indonesia's national development programs are described in the current national long-term development plan, which covers 20 years (2005 to 2025) and is segmented into five-year medium-term plans. The biodiversity policy is set at a national level and implemented at local and national levels.

The Indonesia government has shown a strong commitment to biodiversity conservation through the ratification of international agreements, such as the Convention on Biological Diversity, the United Nations Forum on Forests, the Convention on International Trade in Endangered Species (CITES), and UNESCO's Man and the Biosphere (MAB) Program. There are four conservation areas in Indonesia designated under multilateral agreements in Nusa Tenggara and Sulawesi. Indonesia committed to two regional agreements that significantly support the biodiversity conservation in the hotspot: the Coral Triangle Initiative and the Association of Southeast Asia Nations (ASEAN).

Conservation and natural resource management in Timor-Leste are influenced by the long history of exploitation of natural resources in the country. In terms of policy, the country applies some regulations from Indonesia as well as from the United Nations for Transitional Administration in East Timor (UNTAET), but it is in the process of updating and adopting these laws to the needs of an independent state. A key law related to the industrial agriculture and extraction that will have an impact on the environment in Timor-Leste is already in place, while two key environmental decrees are being discussed related to biodiversity and protected areas. The responsibility of environmental protection and biodiversity conservation is shared between the Ministry of Commerce, Industry and Environment and the Ministry of Agriculture and Fisheries. The Strategic Development Plan 2011-2030 developed by the Timor-Leste government includes not only development priorities, but also includes natural resources and environmental protection. The government has launched a decentralization program on budget and decision into the village level. The commitment of Timor-Leste on biodiversity conservation is shown through the ratification of a number of international policies as well as participation in regional forums on biodiversity and environment.

7. CIVIL SOCIETY CONTEXT OF THE HOTSPOT

CSOs working in Indonesia range from international, national and local to community- and site-based organizations. They can be categorized as peoples organizations, primarily existing to serve the interests of members; nongovernmental organizations (NGOs), existing to pursue a vision of social or environmental change; and for-profit organizations that primarily exist for the financial benefit of shareholders, but consider social and environmental factors. In addition to the international NGOS (INGOs) and national organizations working in conservation in Indonesian Wallacea, major development organizations whose work is often integrated with conservation issues are also present. Table 7.1 categorizes the various types of organizations in Wallacea. Please note that CSO categories being used in this chapter are meant to be a tool for analysis, and not an attempt to impose a classification or to over-simplify the complex and dynamic nature of CSOs.

Table 7.1. Category and Examples of Organizations in Indonesia Wallacea

Origin and Scale of Organization	Category of Organization and Examples from Wallacea		
	People Organizations (POs)	**Nongovernmental Organizations (NGOs)**	**For-profit Organizations**
International		TNC, CI, CIFOR, ICRAF, WI-IP, WCS, Rare, Op-wall, Swisscontact, universities and research institutions	Mining, agribusiness, banking, infrastructure sectors, international media
National	AMAN, SPI, professional associations,	WWF, Samdhana, Burung Indonesia, Kehati, Telapak, JATAM, JKPP, Walhi, TIFA, KIARA, universities and research institutions, religious organizations	Same sectors, include government owned companies, producer associations, export associations, national media
Local (i.e., based in Wallacea)	Local chapters of national organizations, cultural associations, local producers associations	Yascita, Pikul, Tananua, Santiri, ALTO, Jurnal Celebes, YANI, Yakines, Jurnal Celebes, universities and research institutions	Same sectors, locally operated and licensed, tourism and travel, local media
Community-based or Site-based	Fishers and farmers groups, cooperative work groups, cultural organizations	Community forest protection groups, marine PA management groups	Community cooperatives, dive operators, community-based media

CSOs in Sulawesi are mostly small organizations focusing on species and site conservation, ecological justice, community rights, equitable trade chains, participation and marine issues. Southern Sulawesi is the weakest spot due to having very few organizations that actually work on conservation issues. In Maluku, small and dispersed POs dominate the composition of the CSOs; thus, it is difficult for alliance and collaboration building. Their number is still lacking compared to the high number of KBAs in this area. Within the Wallacea region, Nusa Tenggara has the highest number of CSOs, working mostly on micro-level issues linked to fishery and forestry; however, they are concentrated on certain islands (Lombok, Sumba, Timor), and fewer work in Flores and Sumbawa Island.

The distinction between NGOs and CBOs in Timor-Leste has become particularly important because of the requirement for NGOs to register with the NGO Forum (FONGTIL) in order to access funding from international donors. Community-based organization (CBO) is a term often used for common interest groups that form at village levels. There is no legal requirement or process for registration on other types of CSOs. The scale and origin of CSOs working in Timor-Leste are from international, national/subnational, and community- and site-based organizations. Table 7.2 presents the category of organizations in Timor-Leste. They are classified using the categories of organizations as found in Indonesian Wallacea.

Table 7.2. Category and Examples of CSOs in Timor-Leste

Origina and Scale of Organization	**Category of Organization and Examples from Timor-Leste**		
	Peoples Organizations	**Nongovernmental Organizations**	**For-profit Organizations**
International		CI, Mercy Corps, Oxfam, CARITAS, troiche	oil companies and associated service industries
National and subnational	UNAER, Hasitil, Front Mahasiswa, research institutions, university	Haburas, Permatil, Lao Hamatuk	Government owned oil companies, agricultural producer, media and export companies, tourism operators
Community-based or site-based	Fishers or farmers groups, cooperative, cultural/religous organizations	JEF Covalima, MDI, Natureza, Fraterna, and many more.	Community cooperatives, dive operators, community-based media

The generic capacity gap commonly found in Indonesian and Timor-Leste CSOs based on the assessments lies in three major areas: a lack of ability to identify and articulate the link between conservation and livelihoods; a lack of ability to secure sustainable funding; and a lack of knowledge of laws and regulations and their implementation to back up their capacity in defining problems and determining interventions.

CSOs in Indonesia and Timor-Leste have built up considerable experience with participatory approaches, community assessment, advocacy, awareness campaigns, traditional ecological knowledge and the development of community-level enterprises. Working on common programs has also developed their capacities to cooperate and to learn with each other.

CEPF can support building and increase these conservation capacities through opportunities for cross-visits, formal training and access to resources. Creating long-term relationships between organizations with different skill sets may be an effective way of filling capacity gaps in the short term, and enabling learning between organizations in the longer term. It is important to structure the grant-making program so that organizational weaknesses are not an obstacle to accessing grants, and so that capacity building is integrated into grant-making.

8. THREATS TO BIODIVERSITY IN WALLACEA

This chapter summarizes the main threats to biodiversity in Wallacea. For terrestrial habitats, conversion to other land uses, degradation and fragmentation are the direct drivers of biodiversity loss. For marine habitats, direct over-exploitation is the key threat for a subset of species, while pollution, sedimentation and other forms of disturbance are reducing the quality of habitats.

The direct drivers of the main threats both in Indonesian Wallacea and Timor-Leste are grouped into two main categories**.** The first is **overexploitation of natural resources**, such as unsustainable logging, unsustainable fishing, hunting and collecting. The scale of these threats depends on the actors — large-scale industry activities result in deep and broad impacts most of the time compared to the small-scale actors. The second category is **habitat degradation, fragmentation and conversion**, including mining, oil and gas, industrial agriculture and forestry, small-holder agriculture and livestock, urbanization, infrastructure and energy development. The expansion of industrial agriculture is predominantly for oil palm and sugar cane. A specific and highly damaging form in coastal mangrove areas is the land conversion to shrimp or fish ponds. The expansion of settlements is partly driven by the creation of new administrative entitites, which in turn means more housing, road corridors and power generation facilities. Mining concessions are rampant through Indonesian Wallacea, although they are not evenly distributed. Legal industrial mining is usually large scale and has a severe impact on the terestrial, freshwater and marine habitats. Small-scale mining, licensed or unlicensed, is limited in its ability to mobilize large machinery and capital, thus having less of an impact than large industrial operations; however, it is harder to monitor, and with its mobility, miners can penetrate far inside a forest area and change untouched forest into a degraded one.

Other additional categories that act as direct drivers are **pollution, erosion and sedimentation; invasive species; and climate change.** Pollution and sedimentation are particular problems in aquatic ecosystems, both the freshwater lakes that are sensitive to increased turbidity to coral reefs and seagrass beds. Wallacea's isolation has resulted in high levels of endemicity, but may also have left species susceptible to invasive alien species. Practices of imprudent introduction of new species in Wallacea have already occurred. Common carp introduction to freshwater lakes that leads to predation and extinction is just one example.

Indirect drivers of biodiversity loss for both terrestrial and marine habitats include a set of regulatory issues (absent, inappropriate and poorly enforced regulation), capital-intensive economic development (plantation, industrial forestry and mining, supported in some cases by subsidies and global demand for commodities), and increased intensity of small-scale resource use (driven by increased population pressure, changing technology, monetization of traditional economies, and weakening of the customary regulation of resources).

There are only slight differences to direct and indirect drivers in Indonesian Wallacea to Timor-Leste. Due to the size and the dry climatic area of Timor-Leste, large industrial logging or agriculture is not as widespread as in Indonesian Wallacea. Rather, small-scale and illegal logging are widespread due to the utilization of wood as fuel for cooking and heating by households throughout Timor-Leste; however, Timor-Leste has no legally defined state forest area (in contrast to Indonesia), and thus all land suitable for agricultural can be used, posing a

threat to the fragmented lowland forest and freshwater ecosystems. Policies and regulations on conservation are still poor in Timor-Leste; many are regulated through customary practices. Laws on environmental impact assessments do exist, but they are poorly enforced and implemented. A system of protected areas has been created, but none of them has a management plan yet, and resources for management are inadequate.

Using the methodology described in Langhammer *et al.* (2007), threats were divided into 12 categories, as can be seen in the Table 8.1. The severity or impact of threats at each site is scored on the basis of its timing (past, present, future), scope (proportion of the KBA affected) and severity (degree of degradation caused to the areas of the KBA affected). The results indicated that the prevalence of threats to the 197 sampled KBAs, both marine and terestrial KBA in Indonesia and TL were dominated by hunting and collecting. Followed by mining, energy, oil and gas as well as small-scale logging at almost similar levels. If the severity of threats is factored into the consideration adding to the frequency of threats, mining and oil exploration emerges as the most frequent and severe threat to KBAs, both marine and terestrial. Logging and agricultural expansion come next because they mostly take place on a large scale, and result in near-complete conversion of the natural habitat. Unsustainable local fishing also emerges as having a broad scope and high impact, because of the large number of people involved and the destructive methods (bombing, poisoning) used.

Table 8.1. Prevalence of Threats at KBAs per region (Terrestrial and Marine combined)

Threat	Prevalence in KBAs (% of KBAs assessed where threats in this category were reported)		
	Maluku	**Sulawesi**	**Lesser Sundas**
Hunting and collecting	51	40	58
Industrial Agriculture and Forestry	-	23	3
Unsustainable Industrial Logging	9	7	1
Linear Infrastructure Development	2	12	6
Invasive Species	-	3	1
Local agriculture and livestock	27	32	57
Unsustainable small-scale fishing	31	25	28
Mining, energy, oil and gas	40	49	33
Other threats	2	3	1
Pollution and sedimentation	20	19	16
Small-scale logging	49	30	29
Expansion of urban areas and tourist facilities	4	29	22
Overall	55	73	69

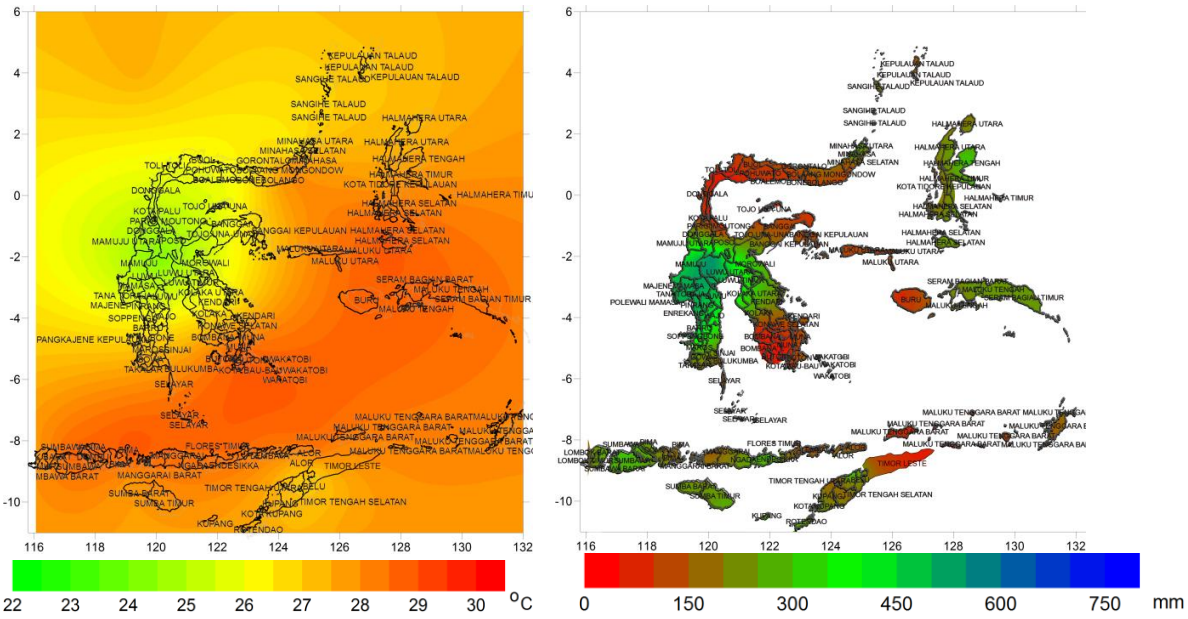
In addition to the threat assessment of the 197 sampled KBAs, an analysis of deforestation was carried out using Ministry of Forestry land cover maps from 2000 and 2011. Applied to 215 terestrial KBAs, it was found that protected KBAs had the lowest deforestation rate of 0.09 percent per year, far less than the unprotected KBAs, 0.21 percent. Partially protected KBAs (those with more than10 percent but less than 90 percent of their area inside a protected area) showed the highest deforestation rate, 0.29 percent per year, suggesting that factors other than protection status are important.

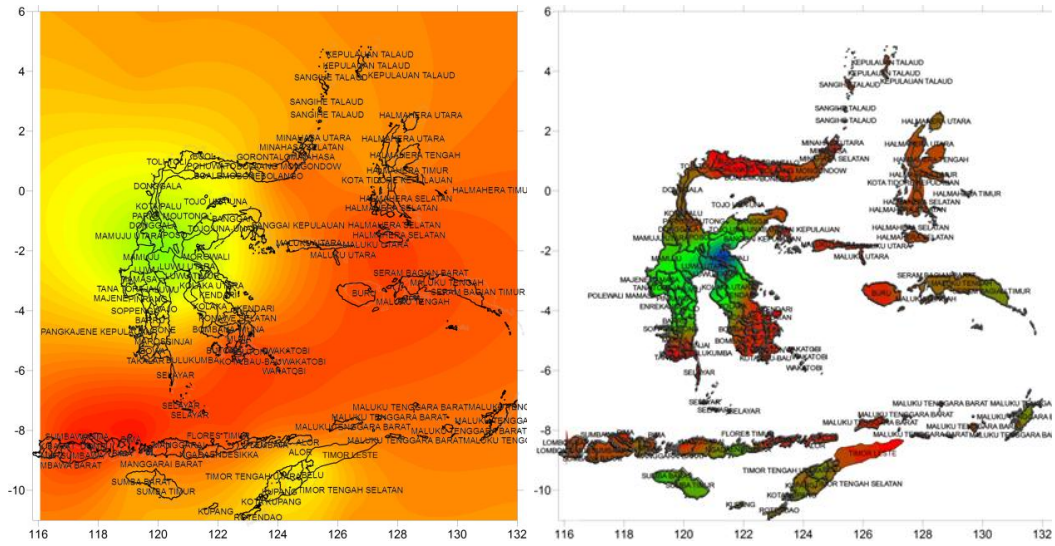
9. CLIMATE CHANGE ASSESSMENT

This chapter uses a climate modeling software and data from the Meteorology Unit, Bandung Technical University (ITB) to develop climate projections of the two main climatic parameters; temperature and precipitation—for Wallacea until 2033 and their implications for biodiversity in Wallacea.

In summary, the climate model predicts that wet season temperatures will remain constant, while rainfall will become more differentiated, increasing in the areas that already have higher rainfall, and decreasing in areas that are already dry. The model predicts that in the dry season, temperatures will increase in the Lesser Sundas, North Maluku and eastern Sulawesi. An increase of rainfall is predicted for eastern Sulawesi and North Maluku, but the Lesser Sundas are predicted to experience increased temperatures and stable/decreased rainfall, which means that evapotranspiration will be higher and available water for plant growth will be more limited.

Figure 9.1: Temperature and Rainfall Projections for Wallacea



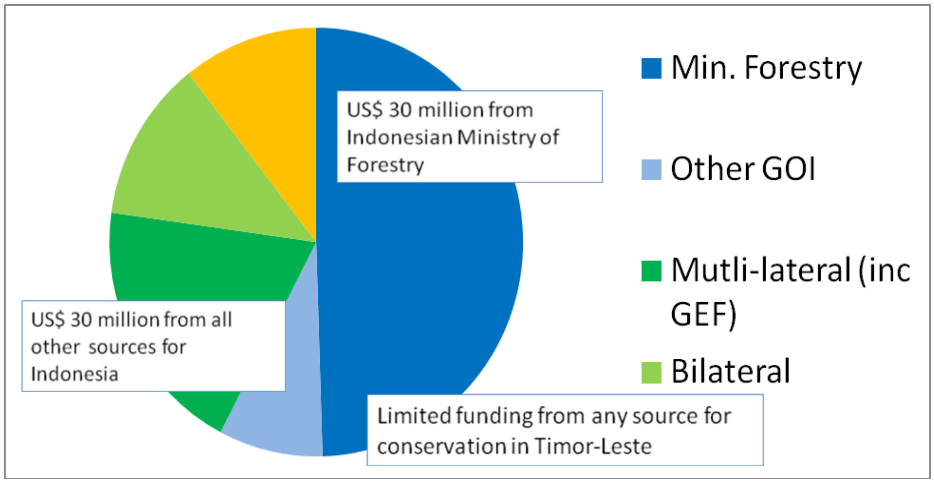


10. ASSESSMENT OF CURRENT CONSERVATION INVESTMENT

In Indonesia, conservation funding from government is focused on covering running costs of protected areas and high-budget reforestation programs. Marine donor funding focused on the expansion of marine protected areas and sustainable use of marine resources. The Sunda-Banda seascape is a priority area for marine funding. Many of terrestrial areas have no funding or a limited funding allocation.

There are 25 current funding programs in Indonesia. Wallacea is funded by 17 donor organizations covering eight bilateral donors, two multilateral, five foundations, and two business sectors. In Timor-Leste, conservation funding is limited for marine and terrestrial, whether from government or donors. The composition of these funding sources is described in Figure 10.1.

Figure 10.1. Funding Resources for Conservation in the Wallacea Region



Central government funding for conservation in Indonesia comes from the Ministry of Forestry and special allocation funds (DAK) focusing on environment and forestry activities. With financing from the DG of Forest Protection and Nature Conservation Directorate (PHKA), the Ministry of Forestry is the largest direct investor in protected areas and wildlife conservation in Wallacea. In 2013, a total of $30.4 million was spent by PHKA to support 15 national parks and seven provincial-level natural resource conservation units in the region. The DAK for environment by the Ministry of Environment is to support district-level activities in support of national objectives. The DAK for forestry by the Forestry Ministry is allocated for water, soil, and forest conservation and rehabilitation. In 2012, the maximum allocation from the environment DAK per local government was $200,000. A total of $39 million was allocated for forestry activities in 2013 from the forestry DAK.

The other funds for conservation in Indonesian Wallacea are from bilateral and multilateral foundations and private sectors. The main bilateral funders for Indonesia are Japan, Australia, the United States, Germany and France. The World Bank, the Asian Development Bank, the Global Environment Facility, and UNREDD channeled multilateral funds through grants and loans mechanism for conservation in Indonesian Wallacea.

The Coral Reef Management Project (COREMAP-CTI) is financed by the World Bank through a $47 million loan, a $10 million grant from the Global Environment Facility (GEF), and additional commitments from the Government of Indonesia. This five-year project (2014-2019) will be implemented in seven districts, five of which are in Wallacea region. The multilateral funds also allocated for the National Program for Community Empowerment (PNPM) at the subdistrict level across Indonesia. The GEF allocated $87 million for Indonesia for the period of 2010-2014. A total of $123,600 was disbursed recently by the GEF Small Grant Program to support local initiative activities in Wallacea. In the last 10 years, the Asian Development Bank provided three loans in Wallacea region related to the natural resources sector. Funding from Norway totaling $2.95 million was allocated to the UNREDD program in Central Sulawesi during 2010-2012.

The marine conservation programs and activities in Wallacea have been supported by various foundations, including the John D. and Catherine T. MacArthur, David and Lucille Packard, Margaret A. Cargill, Walton Family, and Waitt foundations. The first four foundations have coordinated their grant-making to support marine conservation in the Sunda-Banda Seascape, while the latter is to support Fish Forever initiatives implemented by RARE for the period 2014-2019.

It is difficult to calculate how much funding is coming from the private sector to support conservation actions. Nevertheless, many community-level activities in Wallacea are funded by

banks as well as the extractive industries through corporate social responsibility (CSR) programs.

In Timor-Leste, government data is not available for funds allocated to support protected areas. In 2011, 86 percent of the $284 million of foreign aid funding was from bilateral funds. Australia, the United States, Portugal, Japan and the European Union are the main bilateral donors to Timor-Leste. The Asian Development Bank funded marine conservation through the Coral Triangle Pacific Program with as much as $18.5 million for four years that were implemented until the end of 2014. The Global Environment Facility has allocated $4.4 million 2010-2014.

11. CEPF INVESTMENT NICHE

CEPF donor funds are limited while the area that needs its support is extensive. Therefore, the locations that will provide the greatest value for those funds have been identified to allow for the implementation of meaningful and sustainable conservation actions. Such locations are defined as CEPF's niche.

The niche is designated in terms of geographic and thematic priorities, the capacity of CEPF's core constituency, as well as where there is a lack of funding from other donors. It is specified based on the biological importance of the hotspot coupled with the socioeconomic setting of the hotspot, which influences grant-making priorities.

Both customary as well as protected area management will be supported equally by CEPF, along with conservation actions that are planned on the basis of a realistic assessment of the relevance and capacity of customary institutions.

CEPF will be open to making grants to communities — be it ethnic, religious or social — around priority areas, provided they can demonstrate that their work contributes to conservation outcomes. Whereas, for international and national NGOs, CEPF will give priority to NGOs from outside Wallacea that partner with, or subgrant to, local organizations, and that aim to leave a legacy of increased local capacity as a result of their work.

CEPF will prioritize its funding for local CSOs that focus their work on priority terrestrial clusters or marine corridors that cover a wide group of threatened species and sites while also making grants to a small set of national and international NGOs in the same way.

12. CEPF INVESTMENT STRATEGY AND PROGRAM FOCUS

Species Priorities in Wallacea

Of 560 globally threatened species in Wallacea, 229 species (22 terrestrial and 207 marine) are considered to be the subject of direct collection or killing for consumption and trade. This exploitation, however, is thought to be a serious threat to only a subset of these species. CEPF grant making will prioritize those globally threatened species that require specific action, beyond site protection, to ensure their conservation. Three of the 229 species that also occur in Timor-Leste — *Cacatua sulphurea* (bird), *Chelodina mccordi* and *Coura amboinensis* (reptiles) — are identified as species priorities for CEPF funding in the country. All 207 priority marine species occur in Indonesia as well as Timor-Leste.

Terrestrial Site Priorities in Indonesia

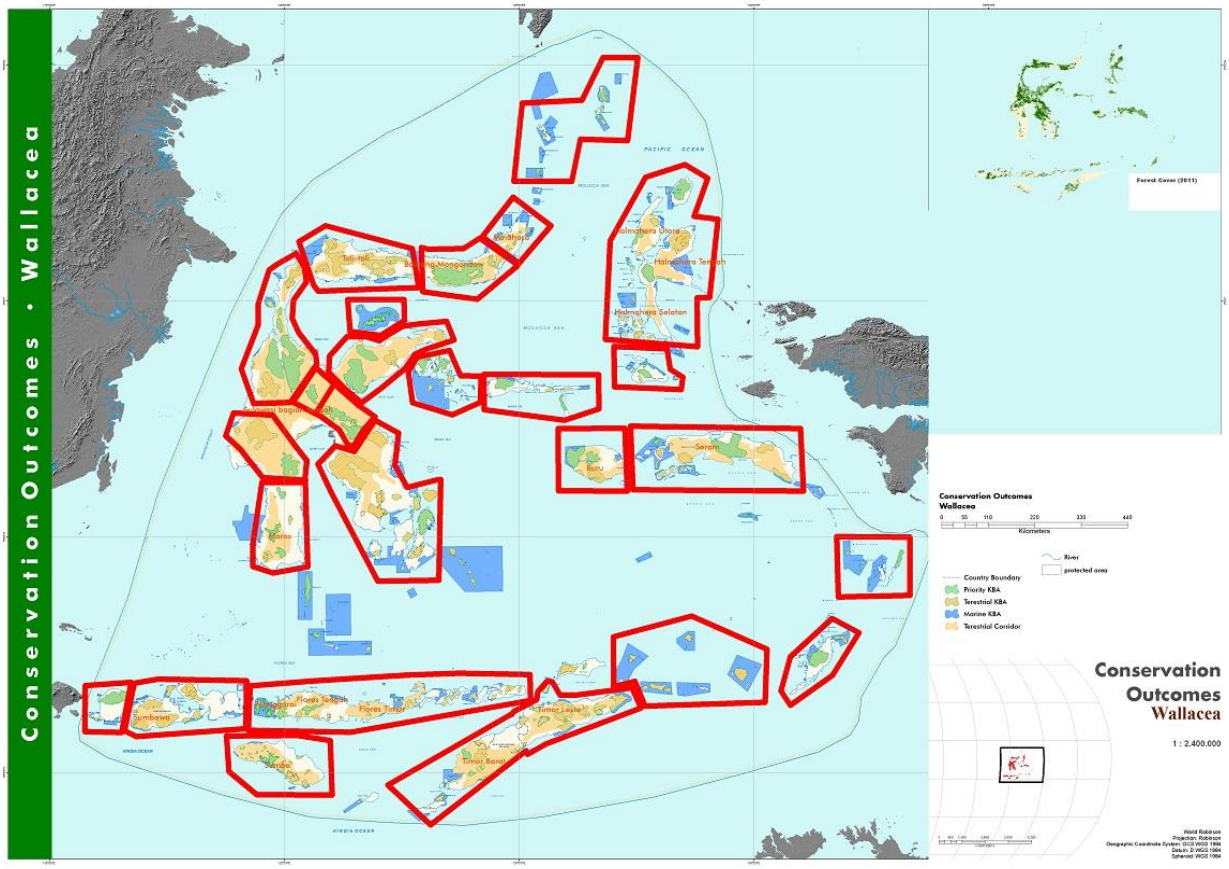
Based on the site outcomes exercise, 251 terrestrial KBAs were identified, 23 of which are in Timor-Leste. The two approaches that were used to prioritize KBAs — ranking them based on vulnerability and irreplaceability, and identification of a minimum critical set of sites that would need to be conserved to ensure that each globally threatened species is represented in at least one KBA — resulted in a list of priority KBAs that are spread across Wallacea.

This presents a challenge for CEPF grant-making implementation because it must take into account locations, thematic issues and CSO distribution. Based on other grant-making schemes, grants clustered in focus areas have shown advantages over those that are widely scattered. This reduces costs (e.g., travel, administration and communication), and provides support and capacity building efficiently. It also creates opportunities for collaboration between grantees, and for sharing knowledge and learning.

Therefore, it is necessary to select a set of priority areas that cover a high proportion of priority species and KBAs, while offering opportunities for efficient grant-making and capacity-building. So all KBAs were grouped into 26 clusters and each cluster comprises all of the terrestrial KBAs in a specific area. The boundaries between clusters are defined by island groups or bio-geographic fault lines. The 26 clusters covering 245 of the 251 terrestrial KBAs are presented in Figure 12.1. Six remote island KBAs (Banda, Tana Jampea, Kalatoa, Selayar, Manuk and Gunung Api) do not fall into any cluster because of access difficulties and lack of known stakeholder commitment in those KBAs.

All 26 clusters were prioritized based on the biological importance, threat, local stakeholder commitment, external stakeholder commitment and funding need criteria. Information gathered from local stakeholder workshops, expert consultations and literature was used to evaluate each cluster of KBAs against the above criteria.

Figure 12.1. Terrestrial KBA Grouped into 26 Bio-geographic Clusters for Prioritization



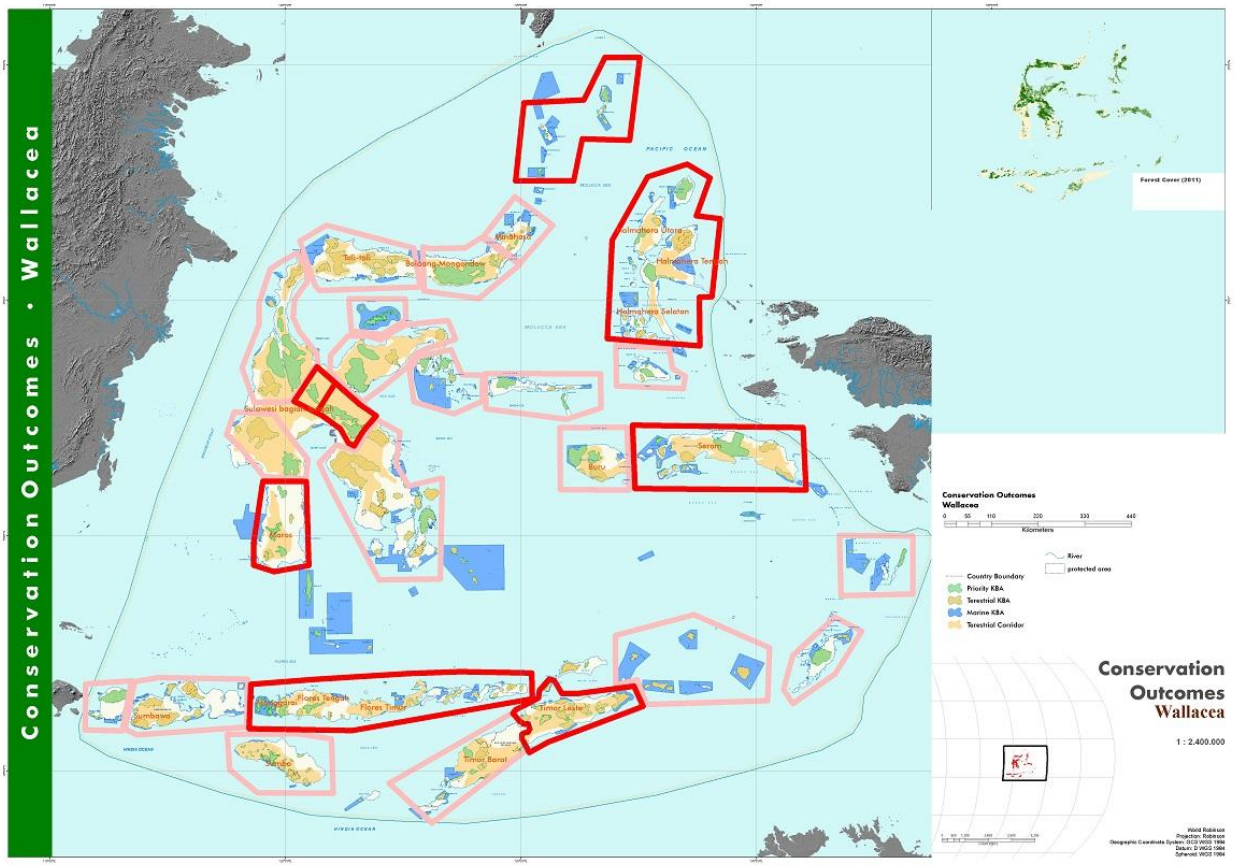
The eight selected priority clusters — Sangihe-Talaud, Poso, Sulawesi Selatan, Malili, Halmahera, Seram, Flores, and Timor as part of Timor-Leste — are defined as priority terrestrial KBA areas for CEPF funding, and are presented in Figure 12.2.

In total, there are 85 KBAs in eight priority clusters, including 10 of the 19 highest priority KBAs and threatened species that are believed to occur in only one KBA; 69 are included in this set of sites, including 22 of the 32 terrestrial critically endangered species, and 57 of 82 endangered species.

Marine Site Priority in Indonesia

Data on marine species cannot be used to make a priority of marine sites. Therefore, marine corridors are used for prioritization of marine conservation outcomes, so priority marine KBAs are included in the priority marine corridors.

Figure 12.2. Map of Eight Clusters of Terrestrial KBAs Prioritized for CEPF Funding



Terrestrial Corridor Priorities in Indonesia

Ten corridors were identified for 26 landscape species, covering most of the larger islands in Wallacea. When dealing with a large-area corridor or landscape, multi-stakeholders, and various issues, it is unlikely effective for CEPF to fund corridor-level conservation actions in areas where there are no site-based actions. Therefore, it is proposed that the priority terrestrial corridors are those that overlap with the priority KBAs, as described in Table 12.1.

Table 12.1. Priority Terrestrial Corridors for CEPF Funding

Corridor	Province/Country	Area (Ha)	# CR species	# EN species	# VU species	Rank
Halmahera	North Maluku	691,328	0	0	3	4
Seram–Buru	Maluku	1,427,848	0	1	4	2
Flores Forests	East Nusa Tenggara	685,928	2	1	2	3
Flores Coast	East Nusa Tenggara	179,880	0	0	1	7
Central Sulawesi	West Sulawesi, Central Sulawesi, South Sulawesi, Southeast Sulawesi	6,243,989	0	3	6	1
Southern Sulawesi	South Sulawesi	879,949	0	2	6	

Marine Corridor Priorities in Indonesia

Many marine species cannot be effectively protected by conservation of KBAs alone, and corridors are a vital component of a marine conservation strategy. Prioritization of the identified 16 marine corridors was based on:

- Biological importance, as judged by expert opinion
- Proximity to a terrestrial KBA cluster that has been selected as a priority for funding (see above)
- High funding need

The result of marine priority corridors can be seen in Table 12.2.

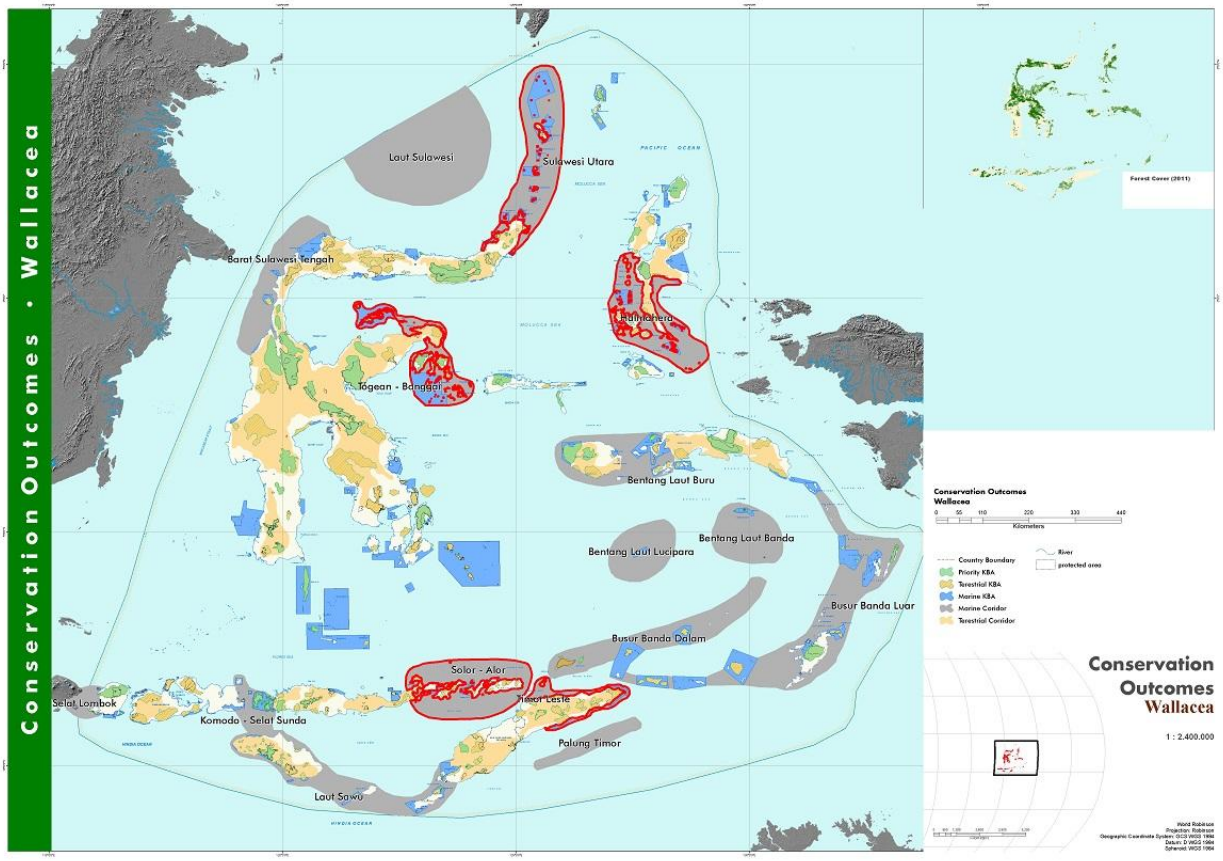
Table 12.2. Prioritization of Marine Corridors for CEPF Funding in Indonesia*

Marine Corridor	Biological importance	Proximity to terrestrial KBA cluster selected for funding	Funding need
Barat Sulawesi Tengah	Medium	No	High
Bentang Laut Banda	High	No	Low
Bentang Laut Buru	Medium	Yes (Seram)	High
Bentang Laut Lucipara	High	No	Low
Busur Banda Dalam	Medium	No	Low
Busur Banda Luar	Medium	No	Low
Halmahera	Extremely high	Yes (Halmahera)	High
Komodo–Selat Sumba	Medium	Yes (Flores)	Low
Laut Sawu	High	No	Low
Laut Sulawesi	Medium	No	High
Palung Timor	Medium	No	High
Selat Lombok	Medium	No	Low
Solor–Alor	Extremely high	Yes (Flores)	Low
Sulawesi Utara	High	Yes (Sangihe-Talaud)	High
Togean–Banggai	Extremely high	No	High

*Priority corridors for funding are shaded

Two marine corridors fulfilled all three criteria: Halmahera and North Sulawesi. The Solor–Alor marine corridor is of extremely high importance for biodiversity and adjacent to a priority KBA cluster. One marine corridor, Togean-Banggai, is an extremely high biodiversity priority and has a high need for funding, but it is not adjacent to a priority KBA cluster. CEPF will make grants for marine and coastal conservation in this area where it can be done without incurring significant transactions costs. The four priority marine corridors are presented in Figure 12.3.

Figure 12.3. Marine Corridors Prioritized for CEPF Funding



Terrestrial Site Priorities in Timor-Leste

In Timor-Leste, 23 terrestrial KBAs were identified and form part of a single KBA cluster, Timor. The approach outlined in Langhammer *et al.* (2007) can be used to rank KBAs individually because of the small area of the country. Four priority terrestrial KBA sites were identified and described in Table 12.3. Funding need is universally high across KBAs in Timor-Leste and so was not used as a criteria for priority setting. Nino Konis Santana is the only site that has an allocation of staff and resources.

Table 12.3. Priority Terrestrial KBAs for CEPF Funding in Timor-Leste

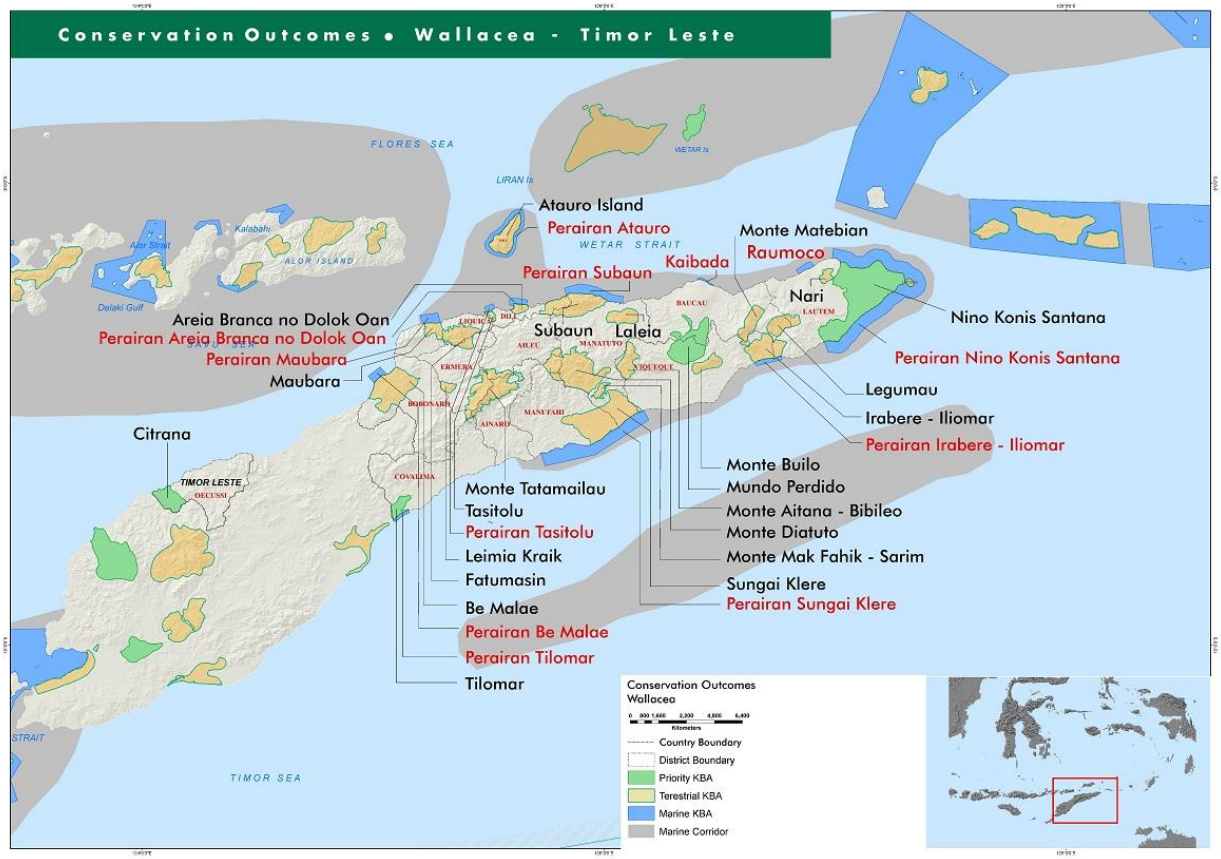
KBA code	KBA name	Area (Ha)	Protection	District
TLS001	Nino Konis Santana	67,482	Yes	Lautem
TLS010	Mundo Perdido	25,898	Yes	Baucau and Viqueque
TLS033	Tilomar	5,348	Yes	Covalima
TLS035	Citrana	10,924	No*	Oecussi

Marine Site Priorities in Timor-Leste

As in Indonesia, marine KBAs are prioritized based on marine corridors. All of the marine KBAs in Timor-Leste are included in the Timor-Leste Marine corridors and therefore qualify as priorities for CEPF funding.

All the terrestrial and marine KBAs sites in Timor-Leste identified from site outcomes exercise are shown in Figure 12.4.

Figure 12.4. Site outcomes in Timor-Leste



* Terrestrial KBAs prioritised for CEPF funding are dark green.

Terrestrial Corridor Priorities in Timor-Leste

Timor-Leste contains part of one terrestrial corridor, the Timor-Wetar corridor, where there are five species that depend on landscape connectivity beyond KBAs for their conservation: the yellow-crested cockatoo (*Cacatua sulphurea*), the Timor imperial pigeon (*Ducula cineracea*), the Timor green pigeon (*Treron psittaceus*), the Timor deer (*Rusa timorensis*) and Temminck's flying-fox (*Pteropus temminckii*).

Marine Corridor Priorities in Timor-Leste

Timor-Leste's marine KBAs are grouped into a single corridor, Timor-Leste marine, which encompasses the entire coastline and the waters around Atauro Island. This corridor is contiguous with the Solor–Alor corridor in Indonesia and forms an important route for cetacean migration between the Banda and Savu seas. The corridor also contains seamounts that are likely to be feeding and breeding grounds for economically important fish populations. This corridor is a priority for CEPF funding.

CEPF Strategic Directions and Investment Priorities

This section defines how CEPF will address the challenges of conservation to achieve these outcomes. Some strategic directions and investment priorities are specifically directed at species, sites or corridors. The direction or priority is relevant for a particular priority species, and the KBA or corridor will depend on specific local ecological, social and economic circumstances. Potential grantees will need to show that they have an adequate understanding of these local circumstances and the strategic directions and investment priorities that are relevant to their situation when developing proposals. Strategic directions are summarized in Table 12.4.

Table 12.4. Strategic Directions and Investment Priorities for CEPF in Wallacea, 2014-2019

CEPF Strategic Directions	CEPF Investment Priorities
1. Actions to address specific threats to high priority species **Allocation: 10%**	1.1 Carry out essential field survey and monitoring to provide improved knowledge of taxonomy, distribution and status of threatened and endemic species 1.2 Provide data and advocate for species outcomes to be addressed through relevant policies and programs of local and national government and other stakeholders 1.3 Change behavior of trappers, traders or buyers through appropriate enforcement, education, incentives and alternatives

2. Improve management of sites (KBAs) with and without official protection status **Allocation: 25%**	2.1 Facilitate effective collaboration between CSO, local and indigenous communities and park management units to overcome threats to protected areas 2.2 Support local stakeholders to contribute to the improved planning and management of official protected areas which do not have dedicated management units 2.3 Develop and implement management approaches that integrate sustainable use by business or local stakeholders with conservation of ecosystem values in KBAs outside official protected areas 2.4 Support surveys, research, and awareness campaigns to create new protected areas or better manage KBAs without protection status 2.5 Ensure that the approaches developed are recognized and adopted by local Government in land use and development planning 2.6 Work with central and local Governments on specific legal and policy instruments for better site management, and build a constituency of support for their promulgation and implementation 2.7: Undertake critical ecological field work to support monitoring and management decision making for protected areas.
3. Support sustainable natural resource management by communities at priority sites and corridors **Allocation: 20%**	3.1 Facilitate community based problem identification and planning processes 3.2 Support community institutions to secure adequate rights over resources, and to develop and implement rules on resource use 3.3 Develop alternatives for livelihoods otherwise dependent on unsustainable resource management practices and enhance markets for sustainably produced products and services 3.4 Build local community, CSO and government capacity to monitor and sustain implementation of the program 3.5 Propose specific legal and policy instruments to address obstacles to effective community based natural resource management at local or national level
4. Strengthen community-based action to protect marine species and sites **Allocation: 100% of Cargill funds if offered; otherwise, merged with SD 3**	4.1 Support the identification and establishment of new local marine protected areas 4.2 Strengthen local institutions and mechanisms for management and monitoring of marine protected areas 4.3 Support the engagement of local Government to increase the financial sustainability and legal effectiveness of local marine protected areas 4.4 Facilitate the sharing of lessons and experiences between stakeholders involved in marine conservation initiatives

5. Engage the <u>private sector</u> as an active participant in conservation of priority sites and corridors, in <u>production landscapes</u> and throughout the hotspot **Allocation: 15%**	5.1 Inform private sector players about the existence and importance of KBAs through business associations, local chambers of commerce 5.2 Engage with the planning and evaluation of CSR funding to make it more sustainable and pro-conservation 5.3 Encourage mining and plantation companies, their funders and buyers, to consider conservation values in management of concessions and rehabilitation of mined areas 5.4 Establish links between local CSOs and organizations undertaking campaigns with consumers, financiers and consumer-facing companies to create market-related incentives and disincentives for private sector to support conservation actions 5.5 Support efforts for mediation or legal action to reduce threats from mining or other industry which is unlicensed or operating with an illegitimate license
6. Enhance civil society capacity for effective conservation action in Wallacea **Allocation: 15%**	6.1 Contribute to the development of effective, sustainable, mission-driven CSOs by building their internal capacity 6.2 Enhance the capacity of civil society to identify, plan and undertake priority field monitoring and survey work 6.3 Support local civil society to develop the capacity to lead in the planning and execution of priority conservation actions 6.4 Catalyze networking and collaboration within and between community groups, NGOs, private sector, and other elements of civil society 6.5 Increase the volume of sustainable funding available to civil society for conservation actions
7. Provide strategic leadership and effective coordination of conservation investment through a Regional Implementation Team **Allocation: 15%**	7.1 Operationalize and coordinate CEPF's grant-making processes and procedures to ensure effective implementation of the investment strategy throughout the hotspot 7.2 Build a broad constituency of civil society groups working across institutional and political boundaries towards achieving the shared conservation goals described in the ecosystem profile 7.3 Monitor the status of priority KBAs and corridors 7.4 Implement a system for collating and disseminating information on conservation and biodiversity in Wallacea 7.5 Integrate data on biodiversity and actions for conservation into relevant Government and private sector development plans and strategies

13. SUSTAINABILITY

One of the main purposes of the development of CEPF strategic directions and investment priorities is to monitor the sustainability of the impact of CEPF programming in Wallacea. Such sustainability will depend on the extent to which the capacity of institutions and networks improves; resources are mobilized and directed toward sustainable activities; and the development of formal policies, regulations or informal norms that take into account the sustainable management of resources.

The focus of capacity building for sustainability is not only for individual organizations. Capacity building is needed to enable each institution to overcome its internal constraints and develop constructive collaborations with other stakeholders, such as government, private sector and civil society actors. Strategic Direction 2 addresses this issue.

Strategic Direction 6 addresses capacity gaps directly via building for organizational strengthening and knowledge and skills to plan and implement conservation-related projects (Investment Priority 6). It also addresses strengthening of networking within and between different groups in Civil Society (IP 6.2).

On the other hand, IP 3.1 and IP 4.1 address issues related to the susceptibility of private sector rights to political changes and its difficulty to protect law. Meanwhile, several different investment priorities were developed to address the significant gaps in basic information on species and habitats that slow down conservation programs and monitoring of their effectiveness.

To address the lack of a dedicated funding mechanism for conservation in Wallacea, IP 6.3 was developed. This investment priority allows the RIT and grantees to explore opportunities for establishing a dedicated mechanism.

To influence the spending of local government funds to more effectively address global conservation priorities in the hotspot requires working with the relevant stakeholders. SD 5 addresses this issue with private sector actors, IP 2.1 with protected area managers and IP 4.3 with local governments.

For some stakeholders, mobilizing resources for conservation is a capacity issue. They will shift their resources to more sustainable activities once provided with information and skills needed to enable them to do so. IP 1.3 addresses this for species conservation, IP 5.3 for the mining industry, while IP 3.2 emphasizes developing new or better markets for sustainability produced local products. Furthermore, IP 5.3 is intended to allow grantees to link local issues in Wallacea with market-led campaigns that have achieved important commitments in the oil palm and pulp-paper sectors in Indonesia.

In terms of sustaining change through norms and regulations, the development of formal and informal rules and decisions involves the presentation of data and making the case for change. Conversely, stakeholders should be engaged in an analysis of the problem and possible solutions. IP 1.2, IP 2.4, and SD 6 are intended to support these types of activities. It may also be necessary

to provide the capacity to formulate regulations, or to arrange sharing of experiences and examples from other areas (IP 3.3, IP 4.4).

Finally, changes to rules and regulations need to be communicated and implemented, which leads back to questions of awareness and capacity. Several investment priorities address this issue.

CONCLUSION

Wallacea is a hotspot in Indonesia and Timor-Leste in Southeast Asia with a total area of 33.8 million hectares. The region's thousands of islands support highly diverse biological communities with many unique species found only in Wallacea. CEPF will support actions to address the conservation of 22 terrestrial and 207 marine species of the 560 globally threatened species in 251 terrestrial and 140 marine KBAs spread all over Wallacea. Of the areas that act as corridors, 16 are marine and 10 are terrestrial. They will play an important role in ensuring connectivity between KBAs.

No location in Wallacea is further than 100 kilometers from the coast, and the fragmentation of the region into so many islands has had a defining influence on the social, political and economic landscapes. The majority of the region's 30 million people live in coastal areas and many still derive their living from farms, forests, wetlands and sea. Coastal and inland customary communities have developed a variety of mechanisms for controlling and managing their natural resources. These mechanisms, however, have been changed in ways that are beyond the control of local rules, by population growth, immigration, and by the development of policies that favor large-scale plantations, logging and mining concessions. Despite these problems, national and local governments have recognized the importance of the region's natural resources and biodiversity. To lever conservation actions and policies, it is important that actions supported by CEPF complement existing strategies and programs of national governments, donors and other stakeholders.