CRITICAL ECOSYSTEM PARTNERSHIP FUND

Ecosystem Profile

Indo-Burma Biodiversity Hotspot

2020 Update

Technical Summary

FINAL VERSION
SEPTEMBER 2020

1. INTRODUCTION

The Critical Ecosystem Partnership Fund (CEPF) is designed to safeguard the world's biologically richest and most threatened regions known as biodiversity hotspots. It is a joint initiative of l'Agence Française de Développement (AFD), Conservation International (CI), the European Union (EU), the Global Environment Facility (GEF), the Government of Japan, and the World Bank.

Figure 1. Boundaries of the Indo-Burma Hotspot Followed by the Ecosystem Profile

The Indo-Burma Hotspot is ranked in the top 10 hotspots for irreplaceability and in the top five for threat, with only 5 percent of its natural habitat remaining and with more people than any other hotspot. For the purposes of CEPF investment, the Indo-Burma Hotspot comprises all non-marine parts of Cambodia, Lao PDR, Myanmar, Thailand and Vietnam,

plus parts of southern China, including Hong Kong and Macao Special Administrative Regions (Figure 1).

CEPF began making grants to civil society groups in the Indo-Burma Hotspot in July 2008, since when there have been two phases of investment: phase I from 2008 to 2013; and phase II from 2013 to 2020. In each phase, CEPF grant making followed an investment strategy developed through an extensive stakeholder consultation process conducted in 2003, the results of which were documented in the original ecosystem profile, published in May 2007; the strategy was then updated through further consultations, in 2011, which led to an updated ecosystem profile, published in October 2012. The consultations that resulted in the original ecosystem profile involved more than 170 stakeholders, while those that led to the 2011 update involved more than 470, ensuring that the ecosystem profile is truly a collaborative product of many sections of civil society, government and the donor community.

Much has changed in the nine years since the ecosystem profile was last updated. There have been many changes to the global threat status of species on the IUCN Red List of Threatened Species (IUCN 2020b), due to both changes in knowledge about species and changes (usually deterioration) in their underlying status. There have been some changes in knowledge about the distribution of biodiversity elements of global significance, reflected in the documentation of new Key Biodiversity Areas (KBAs): sites that contribute significantly to the global persistence of biodiversity (IUCN 2016). There have been changes to the nature and relative importance of threats to biodiversity and their root causes, although there is considerable consistency between the main conservation issues identified in 2011 and those in 2019, indicating that, in spite of some local successes, the conservation movement is still some way from addressing these problems at the hotspot scale. The last nine years have also seen changes to the enabling environment for civil society organizations (CSOs) in the hotspot, including to the availability of funding for them, the regulations that govern them and the political space in which they operate. With regard to the former, several international donors that had been an important source of support to civil society have ended their programs in the region. These departures may be compensated for to some degree by the emergence of Asian philanthropic support for conservation, which is creating new opportunities. Finally, there is a growing body of evidence on the effectiveness (or otherwise) of different conservation approaches that have been tested in the hotspot since the emergence of the modern conservation movement in the early 1990s. A number of approaches with positive impacts on biodiversity and human wellbeing have been demonstrated in specific local contexts. These models can inform the next phase of investment by CEPF and other funders, where the onus will be on taking effective approaches to scale and adapting them to different contexts.

In light of these changes, there was a need to update the ecosystem profile and the investment strategy it contains, in order to inform the third phase of CEPF investment in the hotspot. This was done through a participatory process, with a view to developing a broad platform on which funders interested in supporting conservation efforts led by civil society groups could build shared goals and strategies that address the highest priorities, take advantage of emerging opportunities, and align well with existing investments by governments and other donors.

2. BACKGROUND

The ecosystem profile presents an overview of the Indo-Burma Hotspot in terms of its biodiversity conservation importance, major threats to and root causes of biodiversity loss, and the socioeconomic, policy and civil society context in which conservation takes place. The profile also presents assessments of the implications of climate change for biodiversity conservation in the hotspot, and of patterns of conservation investment over the last five years. It defines a comprehensive suite of measurable conservation outcomes at species, site and corridor scales, and identifies priorities for conservation investment within these.

The ecosystem profile concludes with a five-year investment strategy for donors interested in supporting civil-society-led conservation efforts in the hotspot. This strategy comprises a series of strategic funding opportunities, termed strategic directions, broken down into a number of investment priorities outlining the types of activities that will be eligible for funding. CSOs or individuals may propose projects that will help implement the strategy by addressing at least one of the investment priorities. The ecosystem profile does not include specific project concepts, as CSOs will develop these as part of their funding applications. Applicants are required to prepare detailed proposals identifying and describing the interventions and performance indicators that will be used to evaluate the success of their projects.

2.1 Previous Ecosystem Profiles

The original ecosystem profile was developed in 2003 through a process of consultation and desk study coordinated by BirdLife International in collaboration with the Bird Conservation Society of Thailand, Kadoorie Farm & Botanic Garden (KFBG), and the World Wide Fund for Nature Cambodia Program, with the technical support of the Center for Applied Biodiversity Science at CI (CEPF 2007). In parallel to this process, a stand-alone investment strategy was developed for Myanmar during 2003 and 2004 (BirdLife International 2005).

The 2011 update to the ecosystem profile was developed through a consultation process coordinated by the CEPF Secretariat, in collaboration with BirdLife International *in Indochina*, the CI-China Program, KFBG, the Samdhana Institute and the Yunnan Green Environment Development Foundation (CEPF 2012). It incorporated and updated information from the two earlier documents.

2.2 First Investment Phase

The original ecosystem profile was approved by the CEPF Donor Council in April 2007, with a total budget allocation of $9.5 million. The Donor Council subsequently approved the appointment of BirdLife International as the Regional Implementation Team (RIT) for the hotspot in November 2007, and grant making began in July 2008, following the investment strategy set out in the profile.

Given the significant investments already being made in biodiversity conservation by international donors and national governments, the CEPF investment strategy supported civil society initiatives that complemented and better targeted existing investments. In particular, resources were targeted at conservation efforts for freshwater biodiversity and trade-threatened species: two long-standing investment gaps. Investment also targeted

efforts to mainstream biodiversity conservation goals into development policy and planning. The investment strategy had four strategic directions:

1. Safeguard priority globally threatened species by mitigating major threats.
2. Develop innovative, locally led approaches to site-based conservation at 28 key biodiversity areas.
3. Engage key actors in reconciling biodiversity conservation and development objectives.
4. Provide strategic leadership and effective coordination of CEPF investment through an RIT.

To maximize impact and enable synergies among individual projects, the first phase of CEPF investment focused on 67 priority species and 28 priority sites in two conservation corridors: the Mekong River and Major Tributaries; and the Northern Highlands Limestone (now renamed the Sino-Vietnamese Limestone). CEPF investment was restricted to four countries: Cambodia; Lao PDR; Thailand; and Vietnam.

During the five-and-a-half-year investment phase, between 2008 and 2013, CEPF and BirdLife International awarded 126 grants, totaling $9.7 million and engaging 66 CSOs (36 local and 30 international) in their implementation. The impacts of these grants were assessed at a final assessment workshop, held in Phnom Penh, Cambodia, in March 2013. The main impacts were summarized in the final assessment report (CEPF and BirdLife International 2014) as follows:

- Coherent and balanced grants portfolio developed, comprising 126 grants with a total value of $9.7 million.
- Nine civil society networks to coordinate conservation efforts established or strengthened.
- Global threat assessments completed for 3,122 species, as a basis for more effective and better targeted conservation planning and action, resulting in an almost 50 percent increase in the number of species in the hotspot officially assessed as globally threatened.
- Core populations of 32 globally threatened species secured from overexploitation and illegal trade.
- New information generated on six species identified as being in great need of improved knowledge about their status and distribution.
- Demonstrated improvements to the protection and management of 15 CEPF priority sites.
- Innovative, local stakeholder-based conservation initiatives with potential for wider replication in the hotspot demonstrated in all four countries, including nest protection schemes, conservation incentives and community fisheries co-management.
- Tangible socioeconomic benefits conferred to 186 communities at project sites.
- Strengthened protection and management of 79 percent of targeted protected areas, as evidenced by increased SP1 Management Effectiveness Tracking Tool (METT) scores.
- Formal protection extended to more than 150,000 hectares through the creation and expansion of protected areas.
- Biodiversity conservation strengthened in nearly 1.6 million hectares within protected areas and more than 360,000 hectares in production landscapes outside of protected areas.

- Seven development plans and policies analyzed for their impacts on biodiversity and ecosystem services, and alternative development scenarios proposed, particularly ones related to hydropower development in the Mekong Basin.
- Targeted outreach, training or awareness raising provided for more than 900 decision makers, journalists and lawyers.
- Sixty-six CSOs engaged directly as CEPF grantees or indirectly as sub-grantees; including 36 local organizations (55 percent).
- Strengthened capacity of 92 percent of local CSOs receiving CEPF grants, as evidenced by increased Civil Society Organizational Capacity Tracking Tool scores.
- Increased credibility of local CSOs in the eyes of government, donor and private sector partners, as evidenced by increased ability to influence development decision making.

Taken together, the achievements of CEPF phase I in Indo-Burma contributed to 12 of the 20 Aichi Biodiversity Targets of the Convention on Biological Diversity's Strategic Plan for Biodiversity 2011-2020.

2.3 Second Investment Phase

The updated ecosystem profile was approved by the CEPF Donor Council in October 2012, with a total spending authority of $10.4 million. The Donor Council subsequently approved the appointment of the International Union for Conservation of Nature (IUCN) as the RIT for the second investment phase. IUCN began work as the RIT in July 2013, thus beginning phase II of CEPF investment in the hotspot. The spending authority for Indo-Burma was subsequently raised to almost $15.8 million, thanks to additional commitments by CEPF's global and regional donors. These additional commitments allowed the investment phase to be extended to seven years, from July 2013 to June 2020.

In recognition of the fact that the investments during the first phase had delivered important results but that more time was needed, in many cases, to ensured lasting impacts (given the scale of the conservation issues addressed), the investment strategy for phase II built upon the strategy for phase I. The adoption of the ecosystem profile as a guide to investment by other funders, including the John D. and Catherine T. MacArthur Foundation, Margaret A. Cargill Philanthropies and the McKnight Foundation, allowed the investment strategy to be broadened beyond the original set of thematic, geographic and taxonomic priorities.

The number of strategic directions in the investment strategy was increased to 11, of which the following six were prioritized for CEPF investment:

1. Safeguard priority globally threatened species by mitigating major threats.
2. Demonstrate innovative responses to illegal trafficking and consumption of wildlife.
4. Empower local communities to engage in conservation and management of priority Key Biodiversity Areas.
6. Engage key actors in mainstreaming biodiversity, communities and livelihoods into development planning in the priority corridors.
8. Strengthen the capacity of civil society to work on biodiversity, communities and livelihoods at regional, national, local and grassroots levels.
11. Provide strategic leadership and effective coordination of conservation investment through a regional implementation team.

These strategies were focused on the sites and corridors where the top ranked threats (hunting and trade of wildlife, agro-industrial plantations, hydropower dams, and agricultural encroachment by smallholders) are most acutely felt: the Mekong River and its major tributaries; Tonle Sap Lake and its inundation zone; the limestone highlands along the Vietnam-China border; and the mountains of Hainan Island. The geographic priorities also included Myanmar, to take advantage of opportunities to strengthen capacity among CSOs in the country and enable them to address priority conservation actions in a rapidly changing political and development context. The list of priority species increased from 67 to 152, reflecting the gravity of the species extinction crisis in Southeast Asia (Duckworth *et al.* 2012).

Over the seven years of the investment phase, 84 large grants were awarded, including two to IUCN to serve as the RIT. These grants comprised 43 to international organizations and 41 to local organizations, with a total value of $13.7 million. Over the same period, 105 small grants were awarded, comprising 17 to international organizations and 88 to local organizations, with a total value of $1.8 million. The impacts of these grants were assessed at a final assessment workshop, held in Siem Reap, Cambodia, in May 2019. Highlights included the following:

- Long-term conservation programs put in place for core populations of 33 priority species.
- Initiatives to reduce wildlife trafficking across the Cambodia-Vietnam, Lao PDR-Vietnam, Vietnam-China and Myanmar-China borders piloted, resulting in intelligence-led seizures of major shipments of ivory, pangolin scales and other illegally traded products, and public commitments by private companies of zero tolerance towards illegal wildlife trade.
- Strengthened protection and management of 54 KBAs.
- Community-based conservation models piloted at 17 KBAs, including community forests, community fisheries and community-managed protected areas.
- Tangible wellbeing benefits gained by 123 local communities, including improved land tenure, food security and access to ecosystem services.
- Impacts on biodiversity and ecosystem services of 13 development policies, plans and programs analyzed and mitigating measures proposed.
- Public debate and awareness of 10 key environmental issues increased through coverage in domestic media.
- Five pilot models for biodiversity-friendly production established, including rice farming, medicinal plant collection and cement manufacture.
- Establishment or strengthening of 49 civil society networks, enabling collective responses to priority and emerging threats.
- Strengthened capacity of 134 CSOs working on conservation issues.

2.4 Updating Process

The ecosystem profile was updated through a consultative process coordinated by the CEPF Secretariat between May 2019 and August 2020. More than 170 stakeholders were consulted during the updating process, whether through the final assessment workshop, email correspondence or providing comments on the draft profile. Additional stakeholders were involved indirectly, by contributing to the main source documents that were drawn on to update the ecosystem profile: the situational analysis and the long-term vision.

The source documents, the outputs of the thematic studies and the results of the final assessment workshop were integrated into a draft ecosystem profile, which was circulated for online review in July 2020. Comments received were integrated into a final draft, which was then reviewed internally by the CEPF Secretariat, prior to submission to the CEPF Working Group for additional review in August 2020.

3. LESSONS LEARNED FROM PREVIOUS CEPF INVESTMENT

The third phase of CEPF investment in the Indo-Burma Hotspot will follow on more-or-less directly from the second phase. It is important, therefore, that lessons are learned from the previous phases, so that effective approaches are reinforced, and pitfalls are avoided during the third phase.

Key lessons from previous phases include the following:

- The conservation needs of many of the most highly threatened species are not adequately addressed by current approaches to ecosystem conservation, and they require targeted conservation interventions. The demand for funding for such species-focused conservation greatly outstrips supply, and CEPF funding has been critical in bridging this gap for many species.
- Local communities can be active partners in conservation, both within and outside of protected areas, but for their contributions to be effective and sustained they need to receive tangible, immediate benefits directly linked to their actions.
- Unless development planning and policy incorporates biodiversity conservation goals, site conservation efforts risk being rapidly undermined by incompatible developments, such as agro-industrial plantations or infrastructure projects. Civil society can play an important role in assessing the potential impacts of these developments on biodiversity and ecosystem services and proposing alternative development scenarios and appropriate mitigating measures.
- CEPF should support strategic training for CSOs in the following areas: (i) governance and organizational capacity; (ii) project cycle management, including participatory situational analysis, proposal development and implementation; (iii) conservation management and research; (iv) community-based natural resource management and co-management; (v) communications and advocacy; and (vi) engagement with business, especially in the agriculture, energy and tourism sectors.
- CEPF should be realistic about what it can achieve with its forecast budget, focus on areas where it can make a difference, and build on that progressively, rather than use a countrywide, scattergun approach. Guidance for this should come from strengthened National Advisory Committees in each country (see below).
- CEPF should invest in the development and strengthening of the National Advisory Committee in each hotspot country. The long-term aim would be for the National Advisory Committee in each country to be formalized and strengthened and able to act as an independent advisory committee, as well as a forum for integrating lessons learned from the work of civil society into national policy.
- CEPF should not lose its unique focus on biodiversity. During the second phase, several donors that had hitherto been important sources of funding for CSOs announced decisions to end their support for biodiversity in the Indo-Burma Hotspot. Should CEPF also exit the hotspot or shift its attention to another programmatic focus, such as climate change, this could have serious implications for biodiversity

conservation efforts in Indo-Burma, where CEPF has been at the forefront for the last 12 years.

4. BIOLOGICAL IMPORTANCE OF THE INDO-BURMA HOTSPOT

Indo-Burma boasts an impressive geographic diversity. It spans nearly 6,000 meters in elevation, from the summit of Hkakaborazi in Myanmar, Southeast Asia's highest mountain, down to a coastline along the Bay of Bengal, Andaman Sea, Gulf of Thailand and South China Sea. The hotspot features isolated massifs and plateaus, extensive areas of limestone karst and several of Asia's largest rivers: the Chindwin; Ayeyarwady (Irrawaddy); Salween (Nu/Thanlwin); Mekong (Lancang); Red (Yuan); and Pearl (Zhu). The hotspot's sweeping expanses of lowlands embrace several fertile floodplains and deltas and include the Great Lake of Tonle Sap, Southeast Asia's largest and most productive freshwater lake.

Reflecting its high diversity of landforms and climatic zones, Indo-Burma supports a wide variety of habitats and, thus, high overall biodiversity. This diversity is enriched by the development of areas of endemism as a result of the hotspot's geological and evolutionary history. Centers of endemism are concentrated in the Annamite Mountains, the northern highlands of southern China and northern Vietnam and Myanmar's northern highlands. Limestone karst formations also support high levels of extremely localized endemism.

The Indo-Burma Hotspot has extraordinarily high plant species richness (Davis *et al*. 1995). Preliminary estimates suggest that the hotspot may support 15,000 to 25,000 species of vascular plant, and that as many as half the angiosperms and gymnosperms are endemic to the hotspot (Davis *et al*. 1986, Campbell and Hammond 1989, Davis *et al*. 1995, van Dijk *et al*. 1999, Kress *et al.* 2003). On the basis of current knowledge, the Indo-Burma Hotspot harbors more than 470 mammal species and 1,330 bird species (IUCN 2020b). Reptiles number more than 670 species, of which more than a quarter are endemic (IUCN 2020b). Of the more than 380 amphibian species known so far to occur in the hotspot, more than half are endemic (IUCN 2020b), and new species are regularly being discovered (e.g. Stuart *et al.* 2020).

The Indo-Burma Hotspot as a whole supports at least 1,440 species of fish (IUCN 2020b). The Lower Mekong Basin alone supports at least 850 freshwater fish species, with a total estimate of 1,100 species if possible coastal or marine visitors are included (Hortle 2009). The basin may be exceeded in species richness only by the Amazon and Congo Basins (Dudgeon 2000a). Overall, knowledge of freshwater biodiversity is still at the exploratory stage, with numerous taxonomic uncertainties, large areas unsurveyed, and many species known only from a single locality (Kottelat and Whitten 1996, Baltzer *et al*. 2001). The high rate at which fish species were newly described during the 1990s and 2000s (often more than a dozen at a time, e.g. Freyhof and Serov 2001) shows no sign of abating, with, for example, Kottelat's (2011a) short (nine-day) survey of parts of the Sekong in Lao PDR, finding five species new to science.

While it is abundantly clear that Indo-Burma supports extraordinary vertebrate species richness, detailed comparable data for most plant and invertebrate groups are lacking.

5. CONSERVATION OUTCOMES DEFINED FOR THE HOTSPOT

Because of CEPF's focus on global biodiversity hotspots, the process to set conservation targets is based on global standards. The principal basis for defining species outcomes for this document is the global threat assessments contained within the IUCN Red List as of 1 June 2020 (IUCN 2020b). Thanks to a considerable amount of Red Listing activity over the last decade, these assessments are comprehensive for all classes of vertebrate, and extensive for many invertebrate and plant taxa; they are also reasonably current. For 44 percent of species, the most recent assessment was conducted within the last five years (2016-2020). For a further 31 percent of species, the most recent assessment was conducted five to 10 years ago (2011-2020); meaning that three-quarters of species have been either re-assessed or newly assessed since the last update of the ecosystem profile in 2011.

Many species are best conserved through the protection of a network of sites at which they occur, so the next stage is to define a set of Key Biodiversity Areas (KBAs): sites that contribute significantly to the global persistence of biodiversity. KBAs are identified for individual elements of biodiversity, such as globally threatened species or ecosystems. Multiple approaches have been used by conservation organizations to identify such sites. These were consolidated into a single methodology by the IUCN Species Survival Commission and IUCN World Commission on Protected Areas in association with the IUCN Global Species Programme, resulting in the *Global Standard for the Identification of Key Biodiversity Areas* (IUCN 2016).

With some exceptions, the site outcomes in the Indo-Burma Hotspot were identified prior to the adoption of the new KBA Standard. Significant additional work will be required to update the KBA analysis for the Indo-Burma Hotspot to meet the KBA Standard. This work requires considerably more time and resources than were available for updating the ecosystem profile. Nevertheless, all available new data on KBAs identified since the previous update for the ecosystem profile were incorporated.

While the protection of a network of sites would probably be sufficient to conserve most elements of biodiversity in the medium term, the long-term conservation of all elements of biodiversity requires the protection of inter-connected landscapes of sites, or conservation corridors. Conservation corridors were defined wherever it was considered necessary that connectivity be maintained between two or more KBAs in order to meet the long-term conservation needs of landscape species. Then, additional conservation corridors were defined wherever it was considered necessary to increase the area of actual or potential natural habitat in order to maintain evolutionary and ecological processes. In the latter case, the definition of conservation corridors was largely subjective, due to limitations of time, paucity of relevant data, and absence of detailed criteria. Given these limitations, emphasis was placed on maintaining continuums of natural habitat across environmental gradients, particularly altitudinal gradients, in order to maintain such ecological processes as seasonal altitudinal migration and to provide a safeguard against the potential impacts of climate change.

5.1 Species Outcomes

The 2011 ecosystem profile listed 754 species outcomes in the Indo-Burma Hotspot. Based on the IUCN Red List (IUCN 2020b), there are now 1,298 globally threatened species that occur (or occurred until recently) in the Indo-Burma Hotspot (Table 1). Fifty-three species outcomes from the 2011 ecosystem profile are no longer assessed as globally threatened. In most cases, this is because new information on the status of the species has led to a reassessment of its global threat status from globally threatened to a lower threat category. More worryingly, since 2011, 597 species have been added to the list of species outcomes, comprising species assessed for the first time, and species that were previously assessed as either non-threatened or Data Deficient.

This net change of 544 species represents a net increase of 72 percent over nine years. The magnitude of the increase varies among taxonomic groups, with the number of globally threatened mammals and birds (groups for which comprehensive threat assessments were available in 2011) increasing by only 10 and 27 percent, respectively, while the number of globally threatened plants, amphibians and invertebrates roughly doubled over the same period (increases of 91, 104 and 124 percent, respectively). The biggest increases were seen among reptiles and fishes, for which comprehensive Red List assessments were completed in the interim period. The number of globally threatened species in these groups increased by 164 and 344 percent, respectively.

Table 1. Summary of Globally Threatened Species in the Indo-Burma Hotspot

Taxonomic Group	Global Threat Status				Distribution by Country					
	Critically Endangered	Endangered	Vulnerable	Total	Cambodia	China	Lao PDR	Myanmar	Thailand	Vietnam
Mammals	18	37	42	**97**	38	49	50	47	57	60
Birds	18	32	58	**108**	34	58	31	63	70	57
Reptiles	28	42	54	**124**	24	36	30	34	38	75
Amphibians	3	42	53	**98**	11	41	17	9	8	52
Fish	25	43	66	**134**	30	27	60	21	61	38
Invertebrates	19	41	88	**148**	6	26	25	9	44	60
Plants	116	234	239	**589**	48	253	69	90	189	269
Total	**227**	**471**	**600**	**1,298**	**191**	**490**	**282**	**273**	**467**	**611**

Indo-Burma is on the frontlines of the species extinction crisis currently facing the planet, with 227 Critically Endangered, 471 Endangered and 600 Vulnerable species. Critically Endangered species are, by definition those most at risk of imminent extinction and, when

other factors are accounted for, warrant greater per-species attention than the species in the lower threat categories of Endangered and Vulnerable.

5.2 Site Outcomes

A total of 555 KBAs have been identified in Indo-Burma, covering a combined area of approximately 390,000 square kilometers or 16 percent of the total area of the hotspot (Table 2 and Figures 2 to 7). This total compares with 509 KBAs identified in 2011, and 438 identified in 2003-2004. This expansion reflects the inclusion of an additional 26 sites on the World Database of KBAs (http://www.keybiodiversityareas.org) since 2011: 10 in China; six in Vietnam; four in Lao PDR; three in Cambodia; and three in Thailand. Fifteen of these sites were identified during an analysis of freshwater KBAs in the Lower Mekong Basin conducted by the IUCN Freshwater Biodiversity Unit in 2018 (Máiz-Tomé 2019). Nine are IBAs identified in China in 2009 but overlooked during the 2011 update of the ecosystem profile (BirdLife International 2020a). The remaining two are Alliance for Zero Extinction (AZE) sites identified during a major reassessment in 2018 (Alliance for Zero Extinction 2020). It also reflects the identification of 24 KBAs in limestone karst ecosystems in Myanmar (Komerički *et al.* in prep.), which are in the process of being included on the World Database of KBAs. Four of these sites overlap with existing KBAs, meaning that only 20 additional KBAs were added to the list of site outcomes.

Table 2. Summary of Key Biodiversity Areas in the Indo-Burma Hotspot

Taxonomic Group	Cambodia	China	Lao PDR	Myanmar	Thailand	Vietnam	Total
Mammals	21	25	32	59	59	78	**274**
Birds	39	55	24	82	63	59	**322**
Reptiles	24	18	20	100	32	21	**215**
Amphibians	2	20	1	0	5	13	**41**
Fish	8	2	13	2	9	5	**39**
Invertebrates	1	0	2	16	3	3	**25**
Plants	8	48	8	28	75	36	**203**
All KBAs	**43**	**90**	**47**	**142**	**117**	**116**	**555**

Of the 555 KBAs in Indo-Burma, only 310 (56 percent) are wholly or partly included within gazetted protected areas. This indicates that, while protected area-based approaches could form an important component of any conservation strategy for the region, there also exists great potential (indeed, necessity) for other effective area-based conservation measures, such as indigenous and community conserved areas, fish conservation zones, and conservation concessions. The proportion of KBAs wholly or partly included within gazetted protected areas varies significantly among countries, from only 21 percent in Myanmar to 82 percent in Thailand; thus, the opportunity for conservation action outside formal protected areas may be greater in some countries than in others.

Figure 2. Site and Corridor Outcomes for Cambodia

Figure 3a. Site and Corridor Outcomes for China (Yunnan)

Figure 3b. Site and Corridor Outcomes for China (Guangxi)

Figure 3c. Site and Corridor Outcomes for China (Guangdong)

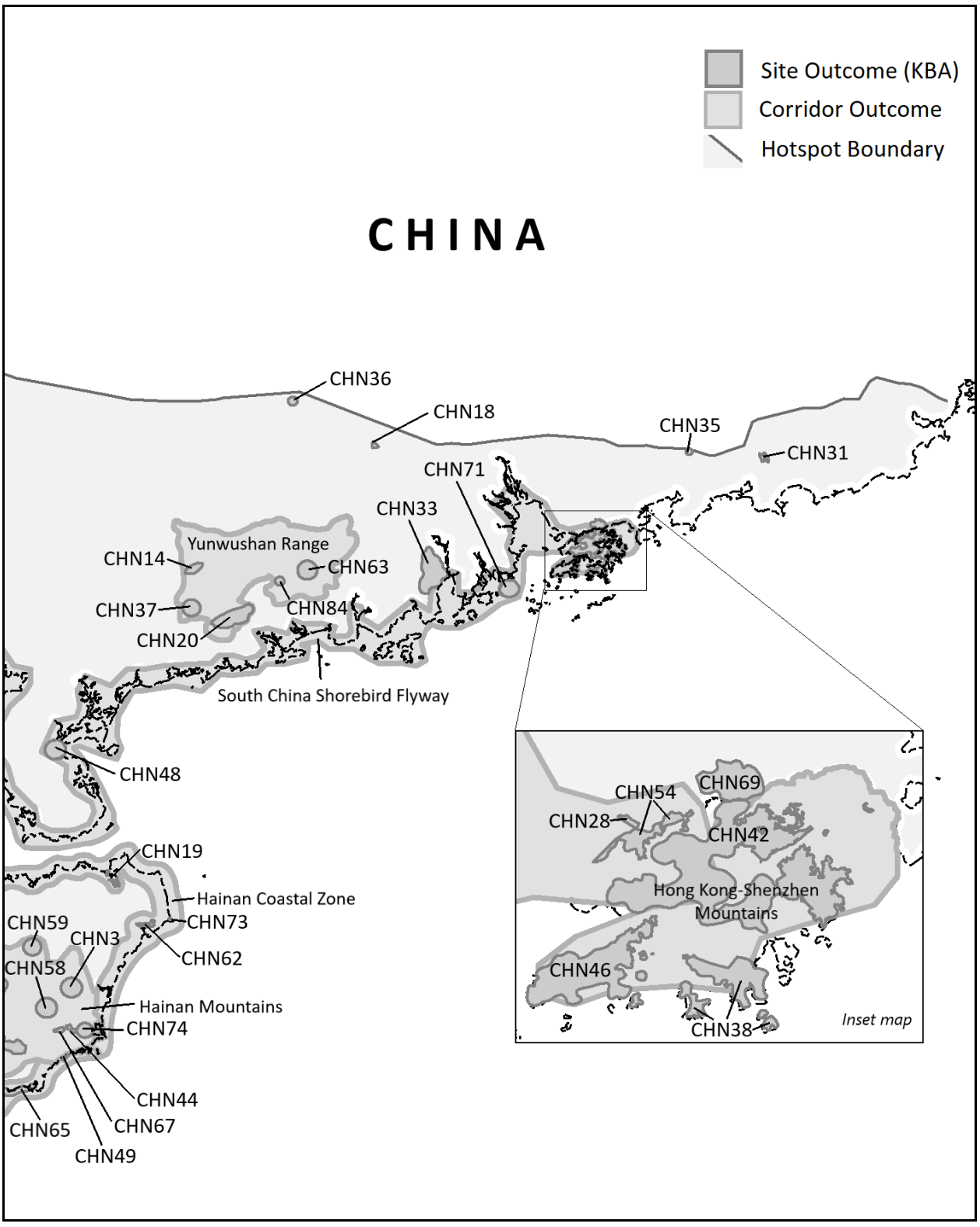


Figure 3d. Site and Corridor Outcomes for China (Hainan)

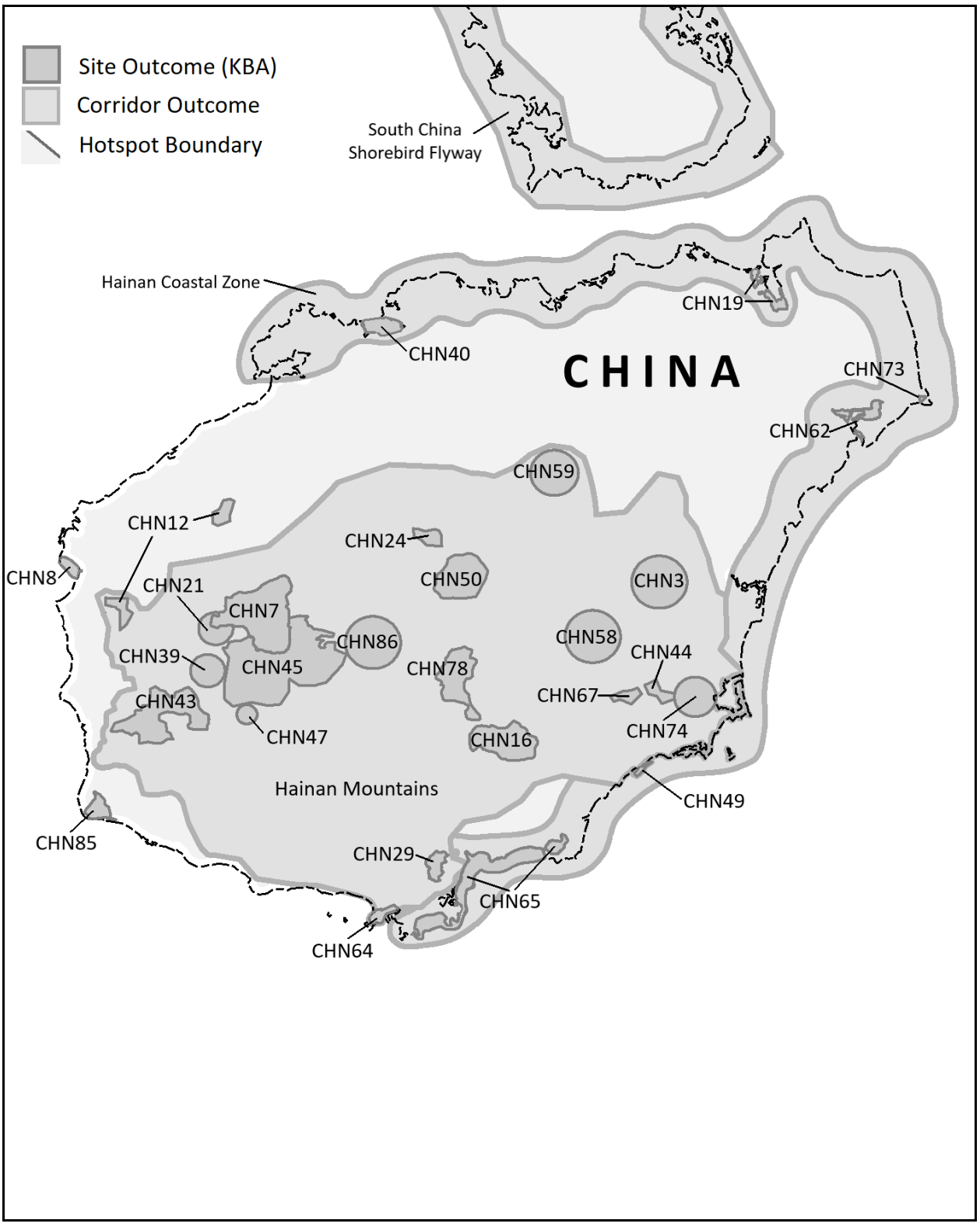


Figure 4a. Site and Corridor Outcomes for Lao PDR (North)

Figure 4b. Site and Corridor Outcomes for Lao PDR (South)

Figure 5a. Site and Corridor Outcomes for Myanmar (North)

Figure 5b. Site and Corridor Outcomes for Myanmar (South)

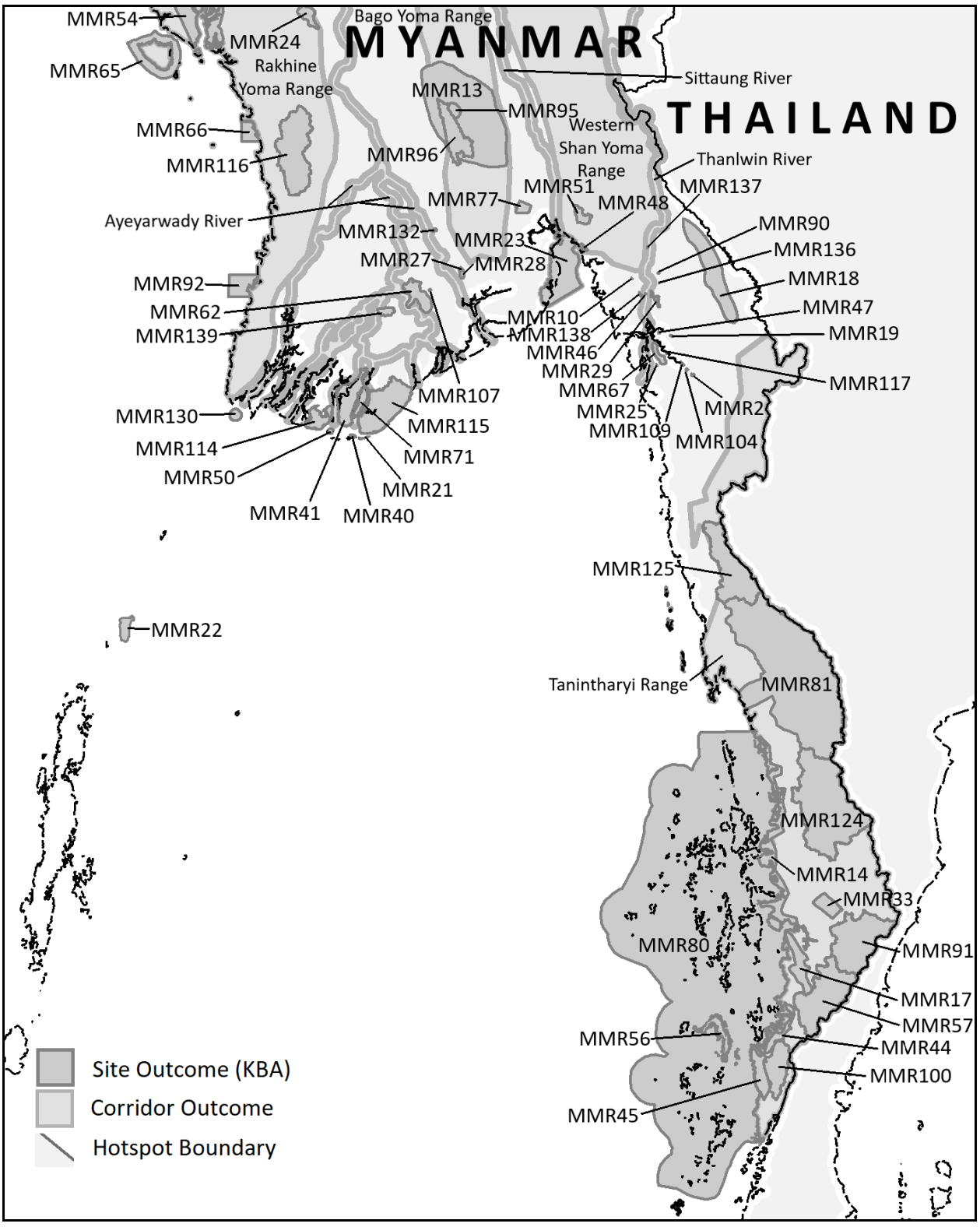


Figure 6a. Site and Corridor Outcomes for Thailand (North)

Figure 6b. Site and Corridor Outcomes for Thailand (South)

Figure 7a. Site and Corridor Outcomes for Vietnam (North)

Figure 7b. Site and Corridor Outcomes for Vietnam (Center)

Figure 7c. Site and Corridor Outcomes for Vietnam (South)

As the comprehensiveness of available data on the distribution of globally threatened species among KBAs varies significantly among taxonomic groups, KBAs identified as being important for the conservation of one taxonomic group may also be important for other groups for which data are not yet available. In addition, there are likely to be other important sites for the conservation of species assessed as globally threatened since the original KBA analysis, which, in many cases, dates back to the early 2000s. As discussed earlier, there is a need to re-evaluate the KBAs in the Indo-Burma Hotspot, drawing on current information about the population, distribution and global threat status of species, incorporating information about threatened and intact ecosystems, and applying the new KBA Standard (IUCN 2016).

5.3 Corridor Outcomes

Sixty-five conservation corridors were defined in Indo-Burma (Table 3). The corridors cover a total area of 1,063,134 square kilometers, equivalent to 46 percent of the total area of the hotspot. They range in size from around 1,000 square kilometers (Ke Go and Khe Net Lowlands) to a little over 100,000 square kilometers (Ayeyarwady Catchment). The 65 conservation corridors contain 416 KBAs (equivalent to 75 percent of the total). Moreover, the coverage of globally threatened species within the conservation corridors is very good: more than 95 percent occur in one or more conservation corridor.

Table 3. List of Conservation Corridors in the Indo-Burma Hotspot

Conservation Corridor	Countries	Area (km^2)	# of KBAs
Ailaoshan/Hoang Lien Mountains	China and Vietnam	28,076	7
Ayeyarwady Catchment	Myanmar	101,382	17
Ayeyarwady River	Myanmar	19,758	9
Bago Yoma Range	Myanmar	16,119	4
Bolaven Plateau	Lao PDR	4,411	2
Cambodia-Lao PDR-Vietnam Tri-border Forests	Cambodia, Lao PDR and Vietnam	10,617	4
Cardamom and Elephant Mountains	Cambodia	17,660	6
Central Annamites	Lao PDR and Vietnam	32,873	20
Central Indochina Limestone	Lao PDR and Vietnam	7,990	5
Chin Hills Complex	Myanmar	36,013	5
Chindwin Catchment	Myanmar	50,072	6
Chindwin River	Myanmar	5,281	1
Chumphon	Thailand	1,740	2
Damingshan Range	China	5,685	3
Di Linh	Vietnam	5,166	2
Doi Phuka-Mae Yom	Lao PDR and Thailand	17,053	10
Eastern Plains Dry Forests	Cambodia and Vietnam	21,160	8
Hainan Coastal Zone	China	8,311	5
Hainan Mountains	China	17,452	21

Conservation Corridor	Countries	Area (km^2)	# of KBAs
Hala-Bala	Thailand	7,423	7
Hong Kong-Shenzhen Mountains	China	1,337	3
Inner Gulf of Thailand	Thailand	1,408	2
Kaeng Krachan	Thailand	5,479	2
Ke Go and Khe Net Lowlands	Vietnam	1,011	2
Khao Banthad	Thailand	4,064	4
Khao Luang	Thailand	2,439	3
Khlong Saeng-Khao Sok	Thailand	8,132	8
Lower Chindwin Forest	Myanmar	39,926	6
Lower Eastern Forest Complex	Thailand	4,139	5
Lowland Dong Nai Watershed	Vietnam	8,293	5
Lum Nam Pai-Salawin	Thailand	24,333	7
Mae Ping-Om Koi	Thailand	8,666	3
Mekong Delta Coastal Zone	Vietnam	3,933	8
Mekong River and Major Tributaries	Cambodia, Lao PDR and Thailand	19,435	18
Mu Ko Similan-Phi Phi-Andaman	Thailand	26,317	11
Nam Et-Phou Louey	Lao PDR	4,391	2
Nam Ha-Xishuangbanna-Phou Dendin	China and Lao PDR	21,523	9
Nangunhe-Yongde Daxueshan	China	2,588	2
North-western Mekong Delta Wetlands	Cambodia and Vietnam	7,854	7
Northern Annamites	Lao PDR and Vietnam	21,112	7
Northern Indochina Limestone	Vietnam	6,793	10
Northern Plains Seasonally Inundated Forests	Cambodia and Lao PDR	19,322	4
Phanom Dongrak-Pha Tam	Thailand	3,510	2
Phu Khieo-Nam Nao	Thailand	13,395	6
Phu Miang-Phu Thong	Thailand	9,944	2
Quang Binh-Quang Tri-Xe Bangfai Lowlands	Lao PDR and Vietnam	3,819	3
Rakhine Yoma Range	Myanmar	47,614	12
Red River Delta Coastal Zone	Vietnam	2,255	7
Shiwandashan Range	China	2,458	2
Sino-Vietnamese Limestone	China and Vietnam	58,502	31
Sittaung River	Myanmar	47,614	1
South China Shorebird Flyway	China	22,665	8
Southern Annamites Main Montane Block	Vietnam	11,976	7
Southern Annamites Western Slopes	Cambodia and Vietnam	3,945	2
Sri Lanna-Khun Tan	Thailand	20,164	1
Tanintharyi Range	Myanmar	42,912	12
Thanlwin River	Myanmar	7,696	2
Tongbiguan-Gaoligongshan	China	11,216	3

Conservation Corridor	Countries	Area (km^2)	# of KBAs
Tonle Sap Lake and Inundation Zone	Cambodia	17,547	12
Upper Chu River Watershed	Vietnam	4,505	2
Upper Eastern Forest Complex	Thailand	9,685	4
Western Forest Complex	Thailand	24,112	12
Western Shan Yoma Range	Myanmar	27,732	5
Xe Khampho-Xe Pian	Lao PDR	4,723	3
Yunwushan Range	China	8,408	5

6. THREAT ASSESSMENT

The Indo-Burma Hotspot is the most threatened hotspot, based on the proportion of original habitat remaining (CI 2011). Threats to many species, sites and even landscapes are immediate and severe (e.g. Duckworth *et al*. 1999, Baltzer *et al*. 2001, Nooren and Claridge 2001, Tordoff 2002, IUCN 2020b). The combination of economic development and an increasing human population is exerting enormous pressure on the region's natural resources, and overexploitation has extirpated species from many areas. Existing planning and management systems are inadequate to control these pressures. The government institutions responsible for the management of natural resources and biodiversity often lack the financial resources, technical expertise and incentives to fulfill their mandates effectively.

Overall, there was broad agreement about the most urgent threats to biodiversity in the region among the participants at the May 2019 final assessment workshop (Figure 8), although there were differences among groups and countries with regard to the relative severity of different threats. Some of these differences can be attributed to different perspectives among diverse groups of stakeholders but they also reflect genuine variation across the hotspot with regard to the severity and immediacy of different threats. It should also be noted that the conclusions of the participants reflect a very broad range in level of understanding of the identified threats among the individual participants within each country and across the hotspot as a whole.

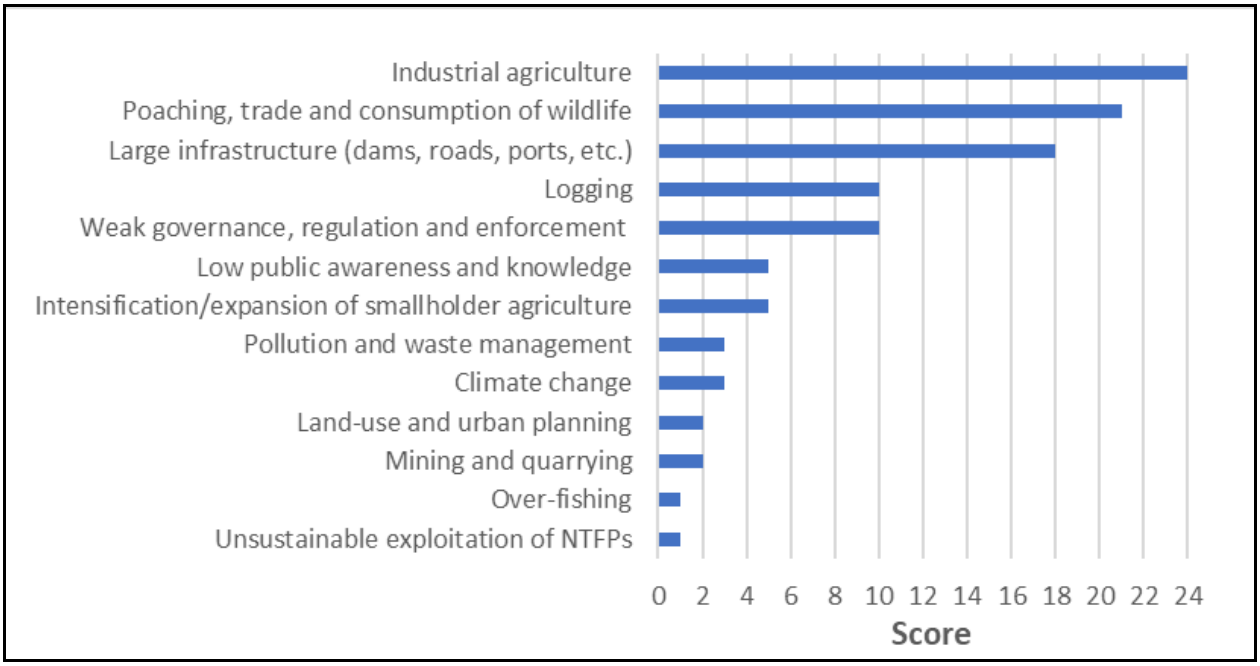
Comparing the results of the May 2019 consultations with the stakeholder consultations during the 2011 update of the ecosystem profile, the overall ranking of threats is similar. Given the degree of variation among the rankings of different groups of stakeholders, even those from the same country, it is plausible that the small differences in ranking can be attributed to the different composition of stakeholders in the two exercises rather than any underlying change in the relative severity of different threats. In both exercises, the top-ranked threats were poaching, trade and consumption of wildlife (referred to as hunting and trade of wildlife in 2011) and industrial agriculture (referred to as agro-industrial plantations in 2011). Poaching, trade and consumption of wildlife was ranked first in 2011 but was (narrowly) overtaken by industrial agriculture in 2019.

Large infrastructure was the third-ranked threat in both exercises. In 2011, the threat was defined narrowly as hydropower dams; this definition was broadened to large infrastructure (dams, roads, ports, etc.) in 2019, reflecting the impacts of large hydropower projects are

not limited to the dams themselves but include access roads, river engineering for navigation, transmission lines and other ancillary infrastructure.

In both exercises, the next five highest ranked threats included logging, intensification and expansion of smallholder agriculture (referred to as agricultural encroachment by smallholders in 2011), and climate change. These can be considered the next suite of threats in terms of overall severity. Other conservation issues highly ranked by stakeholders are not direct threats to biodiversity *per se* but can be better thought of as enabling factors of biodiversity loss: weak governance, regulation and enforcement; and low public awareness and knowledge.

Figure 8. Prioritized Threats to Biodiversity in the Indo-Burma Hotspot, Based on Stakeholder Consultations during the May 2019 Final Assessment Workshop

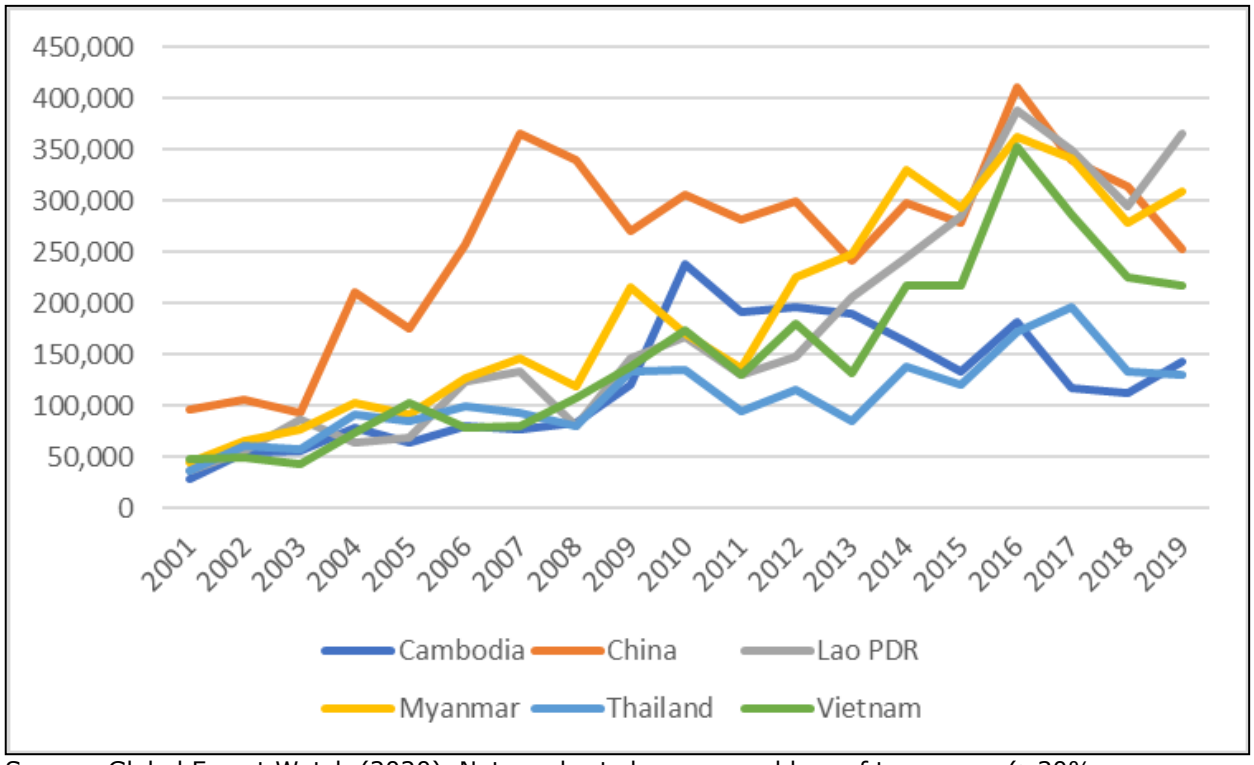


Forest landscapes continue to face many pressures in Indo-Burma. Based on Global Forest Watch (2020) data from the University of Maryland and the World Resources Institute, there has been an increase in annual forest loss in all six hotspot countries since 2001. Although the rate of forest loss in Cambodia has begun to decrease since a peak in 2010, it continued to climb overall in the other countries (Figure 9).

Although commercial timber extraction accounts for much of the past deforestation in Indo-Burma, it is now the second highest cause, accounting for 28 percent of forest destruction in the hotspot outside of China between 2001 and 2019 (Global Forest Watch 2020). The main cause of forest loss over this period was commodity-driven deforestation (i.e. industrial agriculture), which accounted for 54 percent (Global Forest Watch 2020). It is important to note, however, that these two issues are inter-linked, because much timber extraction takes place within economic land concessions under the pretext of clearing land for cash crop cultivation. Shifting agriculture accounted for 18 percent of tree cover loss during 2001-2019, and urbanization for less than 1 percent (Global Forest Watch 2020).

Another grouping of threats identified during the stakeholder consultations were ones related to overexploitation of natural resources, including poaching, trade and consumption of wildlife, logging, and unsustainable exploitation of non-timber forest products. Many species face extinction due to these threats, with knock-on effects on wider ecosystems. Red List assessments of many ungulate, primate and turtle species point to the severity of this threat and highlight the gravity of their plight (IUCN 2020b).

Figure 9. Annual Tree Cover Loss in Countries in the Indo-Burma Hotspot, 2001-2019



Source: Global Forest Watch (2020). Notes: chart shows annual loss of tree cover (>30% canopy cover) in hectares. Tree cover includes both natural forest cover (which accounted for 93% of the total in 2001) and plantations. Figures for China are based on the four provinces that overlap with the hotspot: Guangdong; Guangxi; Hainan; and Yunnan.

Ecosystem integrity is also deteriorating due to a variety of other threats, notably the proliferation of pollution, mining, invasive species and climate change. The broad consensus among stakeholders is that most of these threats are set to get more rather than less severe, at least in the short-term. For instance, while climate change is currently ranked as the eighth most severe threat, because its effects on species and ecosystem have only started to be observed, it has the potential to become one of, if not the most, severe threats in coming decades.

7. SOCIOECONOMIC CONTEXT OF THE INDO-BURMA HOTSPOT

Indo-Burma is the most populous of all the biodiversity hotspots. The total population is estimated as at least 346 million people. Population density averages 150 people per square kilometer across the hotspot but varies greatly among and within countries. There is, similarly, great variation in population growth between the countries. The application of the one child policy in Mainland China has kept its national population growth at only around 0.5 percent per annum (World Bank 2020c). In contrast, both Cambodia and Lao PDR had a population growth rate of around 1.5 percent in 2018, and both countries have seen their populations grow by 17 percent over the last decade (World Bank 2020c). It is also of important to note that the region's population is young and still growing (ODM 2015).

Since the 2011 update of the ecosystem profile, rapid and increasingly large-scale development, based significantly on exploitation of natural resources, accelerated by considerable investment from China and within the Lower Mekong region, has had substantial impacts on the region's environment and its natural resource-dependent communities (Lower Mekong Network 2018).

As with many other socioeconomic metrics, the hotspot exhibits great disparities in wealth and human wellbeing. Although absolute poverty remains in each hotspot country, dramatic transitions out of extreme poverty have taken place over the past decade, with major gains in education and healthcare, and increased employment opportunities for young professionals. Rapid economic growth has dramatically reduced levels of poverty; Vietnam saw a decrease from 60 percent in 1993 to 10 percent in 2016, for example (World Bank 2018d). Nonetheless, a significant proportion of rural people, particularly in Cambodia and Lao PDR, still live on the brink of poverty.

Until very recently, all nations had predominantly rural, natural resource/agriculture-based economies. This is essentially still the case in Cambodia, Lao PDR and Myanmar, as well as significant parts of Thailand, Vietnam and southern China, despite rapid industrialization elsewhere in these countries. Thailand achieved double-digit economic growth in the late 1980s, marking its gradual shift to an export-driven, industrialized economy (ADB 2000). During the 1990s, Vietnam has gradually shed its centrally planned economic policies for market-oriented policies. China went through a similar transition, starting in 1978, and is now the world's second-largest economy by nominal GDP (IMF 2018). A large part of this growth has occurred within the hotspot, in the heavily industrialized Pearl River Delta. All countries in the region were affected by the Asian economic crisis and global economic slump in the late 1990s, Thailand most severely. The region recovered well during the 2000s and continued to see fast economic growth until the COVID-19 pandemic of 2020; whose long-term economic impacts are too early to see. Over the first two decades of the 21st century as a whole, however, economic growth rates in the Indo-Burma Hotspot were the highest of any hotspot, with all countries reaching at least lower middle income status by 2018.

This rapid economic growth has brought much of the population of the hotspot countries out of poverty, and seen many of the cities transformed into major metropolises. Development priorities have also influenced rural areas. Most countries have seen a rapid increase in the

road network (often paid for with aid from neighboring economies). Thus, previously remote areas have, in recent years, been opened up. Market economies have become more established and agricultural economies have tended towards cash crops (Pollard and Evans 2008), such as cashew, cassava, coffee and rubber smallholdings.

Throughout the hotspot, there is considerable variation in how changes in the national economic context affect different geographic, ethnic, and rural/urban groups. On the one hand, as industrial agriculture has increased, it has led to large-scale land-grabbing, with negative impacts on biodiversity and forest-dependent communities. On the other hand, growth of the industrial and service sectors has created off-farm employment, which has diminished agriculture's proportional contribution to the economy and, in combination with mechanization and technological advances, has led to dramatic declines in the workforce employed in the agriculture sector. For example, 32 percent of Thailand's workforce was employed in agriculture in 2015, compared with 64 percent in 1990 (NESDB 2017).

Intra-regional investment has rapidly evolved in the Indo-Burma Hotspot in recent years. New regional initiatives, such as the Association of Southeast Asian Nations (ASEAN) Economic Community, established in 2015, and China's Belt and Road Initiative, established in 2013, are increasing regional economic integration. The larger economies of Thailand, Vietnam and, in particular, China are investing in the smaller economies of Cambodia, Lao PDR and Myanmar. This investment is both from the private sector and in the form of ODA (principally loans). Chinese, Thai and Vietnamese investment firms are investing in agro-industrial plantations, timber extraction and extractive industries to supply raw materials to manufacturers in their countries. These rapid and generally poorly planned and regulated developments are having significant impacts on biodiversity in many parts of the hotspot, including priority sites and corridors.

8. POLICY CONTEXT OF THE INDO-BURMA HOTSPOT

The current policy and institutional context has been greatly influenced by the recent history of the region and individual nations. At the same time, older, deeper cultural aspects still influence policy and its implementation. The past two decades have been a period of relative political stability in the region. This era of stability follows a long period of political instability and armed conflict following the end of the Second World War and the withdrawal of the colonial powers. One notable exception to this is Thailand, which, despite frequent changes of government and periods of military rule, has remained a constitutional monarchy with most of the trappings of a liberal democracy. The other notable exception is Myanmar, where many of the ethnic conflicts that erupted following independence in 1948 continue to this day, despite the signing of a National Ceasefire Agreement in 2015 and an ongoing peace process.

The hotspot includes three of the world's five remaining communist states in the People's Republic of China, Lao People's Democratic Republic, and the Socialist Republic of Vietnam. All three of these states have been opening up and introducing reforms since the 1990s, particularly with regard to liberalization of the economy. Political changes have been slower and all three states still maintain strong, one-party control of government, limited political space for civil society, regulated media and limited democratic accountability. Hong Kong and Macau (both in the Indo-Burma Hotspot) have the status of SARs in China. This affords

them a degree of autonomy and they have control over all issues except diplomacy and national defense.

After nearly 30 years of armed conflict, including a genocide under the despotic Khmer Rouge regime, Cambodia has been a constitutional monarchy and democracy since 1993, although there is no effective opposition to the current ruling party, which has been in power since the mid-1980s and dominates the political scene. Myanmar was under direct military rule from 1962 to 2015, when the first openly contested elections returned a civil government to power. The military still retains considerable influence over many aspects of public life and sectors of the economy.

A general pattern exists across the hotspot where political power in each country is held by an elite that has dominated for several decades. Only in Thailand (and, to some extent, Myanmar) have there been major swings in political power in the last quarter of a century. There have been some moves towards decentralization (see below) but political power tends to be centralized and top-down. The political elites also hold great economic power, which fuels patronage networks and encourages cronyism. With the partial exception of Thailand, the media are under state control across the region, and efforts at wider citizen participation in the political process have been sporadic. This tight state-control has fostered rapid industrialization, massive state investment in infrastructure, and brought millions out of poverty. This rush for economic growth has, however, taken priority over other issues, such as the environment.

The legal frameworks that exist provide a clear opportunity for improved biodiversity conservation in the hotspot. The legislation is already in place but needs the right conditions to be implemented. Sustained improvements in implementation of environmental laws and policies are likely to be only achievable as part of comprehensive public administration reforms. These reform processes are typically gradual and may be beyond the influence of CSOs. Local-level improvements can occur, however, particularly by taking advantage of opportunities arising from increased decentralization. Piloting improvements to legislation, enhancing inter-departmental cooperation, and delivering training for protected area staff are examples of the types of action that can be taken by civil society to enhance implementation of legislation on the ground. Efforts to improve capacity of national staff should not be restricted to civil society. Building the capacity of interested and motivated government staff should be encouraged.

9. CIVIL SOCIETY CONTEXT OF THE INDO-BURMA HOTSPOT

CSOs actively engaged in biodiversity conservation in the Indo-Burma Hotspot or with the potential to support the conservation agenda comprise a mixture of domestic and international organizations. Domestic organizations include community-based organizations (CBOs), national and local NGOs, academic institutions, private companies, and faith-based organizations. Compared with many other parts of the world, domestic CSOs in Indo-Burma have relatively recently begun to register and engage on environmental issues. In most hotspot countries, there are still only a small number of national and local NGOs active in biodiversity conservation, and these typically face limitations in terms of human and financial resources and political leverage. Nevertheless, the last two decades have witnessed the emergence of a growing number of domestic NGOs, which are finding

innovative ways to work, and bringing new perspectives to dialogues on conservation and sustainable development.

CBOs take different forms across the hotspot, including Indigenous Peoples organizations, community fisheries and forestry organizations, and people's movements. They are typically interested in the wellbeing and rights (human, land, natural resource, etc.) of the communities they represent. Grassroots CBOs are present in many of the most important conservation landscapes in the hotspot, where a number of domestic and international NGOs are partnering with them to promote community-based natural resource management and respond to development projects with major social and environmental impacts. The potential for such alliances is great but greatly under-utilized. They also carry risks, due to the power imbalances inherent to them. For instance, there are suggestions that grassroots people's movements have often been replaced or suppressed by aid-funded NGOs, owing to their use of quick, relatively shallow community organizing models and the focus of many donors and NGOs on short-term projects, quantitative process indicators (rather than long-term qualitative impact indicators), and pre-planning despite constantly changing contexts (Lower Mekong Network 2018).

An important section of civil society throughout the hotspot is domestic academic institutions, which have the capacity to undertake applied biodiversity, social and economic research to inform key questions. In many countries, these academic institutions form the main reservoir of national scientific expertise, as well as playing a critical role in training new generations of conservationists and taxonomists. With a few exceptions, the private sector in the hotspot is generally not actively engaged in conservation, although signs of active philanthropy by domestic companies are beginning to be seen, facilitated in part by the emergence of public and non-public foundations in China and Thailand. Faith-based organizations can also play an important role in conservation in the region, through both promoting positive attitudes toward environmental protection and taking on-the-ground action. In the Mekong Delta of Vietnam, for instance, there are examples of Buddhist monks protecting bird and bat colonies within temple grounds, while, in Cambodia's Oddar Meanchey province, the Buddhist monks of Samraong Pagoda are protecting an 18,000 hectare block of forest, known as the Monks Community Forest.

International CSOs active in the hotspot include international NGOs (INGOs) and networks. These organizations typically have larger programs and greater financial and human capacity than domestic NGOs, and many are active in more than one country in the region. INGOs have generally been considered to have greater leverage with governments and international donors, although there are signs that this may be changing, as the overall influence of the international community on domestic policy decisions wanes and domestic NGOs grow in credibility and influence. In addition to INGOs, several academic institutions based outside of the hotspot are active in conservation efforts there. These groups typically focus on research and capacity building, particularly in biodiversity survey and taxonomy.

With the exception of consulting companies, international private sector organizations have played a relatively limited role in biodiversity conservation in the hotspot to date. Again, there are signs that this may be changing, as a number of private sector companies, most notably in the extractives industry, enter into partnerships with conservation groups to conserve biodiversity in their areas of operation. In Myanmar, for example, Shwe Taung Cement Company has supported an expansion of Panlaung-Padalin Cave Wildlife Sanctuary

by 6,475 hectares, to offset impacts on karst ecosystems caused by its limestone quarrying operations.

10. CLIMATE CHANGE ASSESSMENT

The adverse impacts of climate change on biodiversity and human wellbeing are now widely accepted by scientists, government and the general public, resulting in major regional and international agreements to respond to the crisis, most notably the 2015 Paris Agreement under the United Nations Framework Convention on Climate Change. In addition, a large array of mitigation and adaptation projects has been initiated by local, national, and international communities. The negative impacts of climate change have already begun and, over the coming decades, they are anticipated to be severe in the Indo-Burma Hotspot. This is partly due to the dependence of much of its population on freshwater fisheries and wetlands, which are among the most sensitive of natural resources to climate change, and the vulnerability of its coastal populations to sea-level rise.

Impacts of climate change have started to be observed in the hotspot: average temperatures have gone up; rainfall patterns have changed; sea levels have begun to rise; and extreme weather events like storms and droughts are being recorded more frequently (Prakash 2018, Ha 2019, MRC 2019a). While most available data recording the impacts of climate change have so far come from the Mekong Basin, most of the hotspot will have similar trends, although in some places the impacts may be more pronounced, for example in the dry zone of central Myanmar.

There remains considerable uncertainty about the ways in which the climate will change and how these changes will impact the natural ecosystems of hotspot and the people who depend on them. In large part, this reflects uncertainty about future greenhouse gas emissions scenarios, which depend upon complex political, economic and social changes that are inherently difficult to model.

Climate change is anticipated to have significant impacts on a diverse range of coastal, lowland and upland ecosystems in the Indo-Burma Hotspot. Most climate change models anticipate the global average temperature to increase by more than 1.5°C before dropping down again (Levin 2018). As temperature increases are expected to be greatest in tropical regions, this will have huge impacts on the ecosystems in the hotspot. Already stressed hotspots, experiencing unpredictable monsoons and higher temperatures, may not be able to cope with even higher temperatures, even if it is just for a short period of years. Species turnover is likely to be significantly higher than background rates, and synergistic relationships among species (e.g. between flowering plants and their pollinators) will be hugely impacted, potentially with irreversible impacts. Whole ecosystems will be altered at best and lost at worst.

Given the pressures that biodiversity is already under from causes other than climate change (i.e., over-exploitation, habitat degradation and loss, invasive alien species) and the difficulty of predicting climate change impacts on species and their habitats with precision, reducing pressure from existing sources will need to be a cornerstone of strategies to help species adapt to climate change. This should not, however, be interpreted as a call for business as usual. Conservation strategies will need to adapt in the face of climate change, including by a greater emphasis on maintaining ecological connectivity among sites (which

may, in turn, require a focus on restoration in strategic locations), as well as a diverse array of species-specific measures, such as physical modification of seasonal wetlands to provide suitable conditions for large waterbirds for longer, or artificial incubation of turtle eggs to ensure optimal sex ratios.

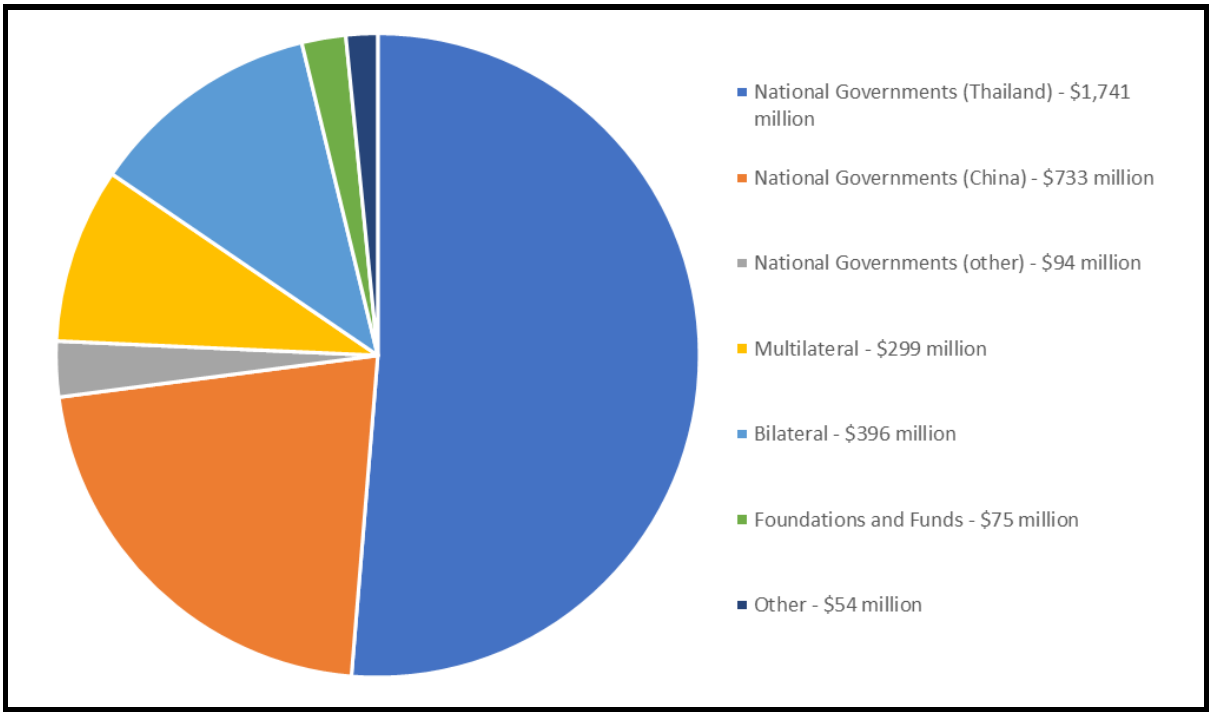
11. ASSESSMENT OF CURRENT CONSERVATION INVESTMENT

While it is not possible to exhaustively identify every biodiversity conservation investment made in Indo-Burma during this period, data were collated on more than 1,600 individual investments. For comparison, the analysis of investment during 2006-2010 was based on more than 700 grants awarded during that period (CEPF 2012).

Data collection took place through a combination of web searches (particularly for major bilateral and multilateral donors), direct enquiries to donors and recipients, and consultation with key donors and implementers. For each investment, data were collected on donor, donor type (bilateral, multilateral, fund/foundation, etc.), country (or countries) of implementation, grantee, currency, value, start and end dates, and project title.

During the period 2015-2019, national governments, bilateral and multilateral donors, foundations and funds, and other entities invested at least $3.4 billion in biodiversity conservation in the Indo-Burma Hotspot (Figure 10).

Figure 10. Value of Conservation Investment in the Indo-Burma Hotspot by Source (2015-2019)

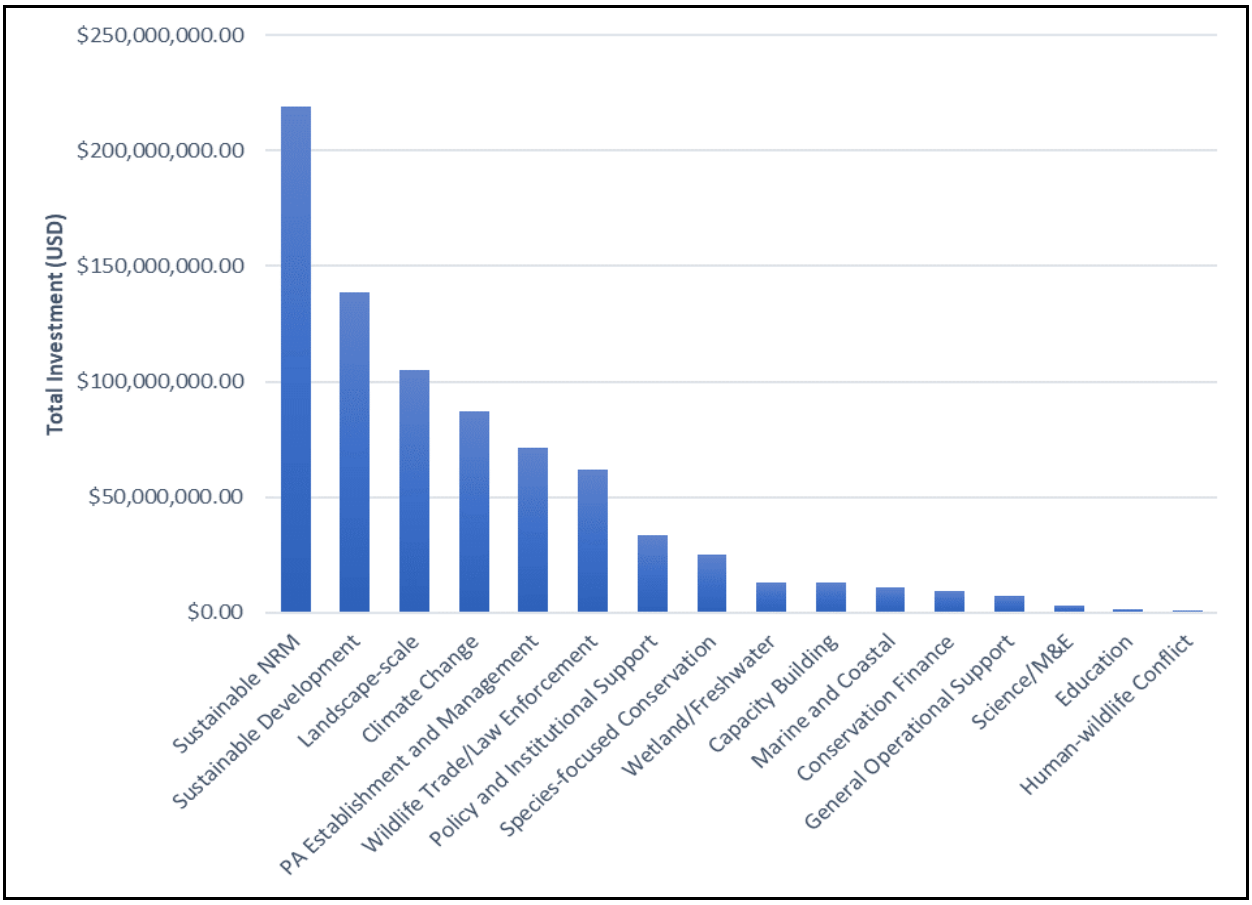


The majority of this investment ($2.6 billion) represents spending by governments within the region, with funding from all other sources accounting for $824 million (or 24 percent of the total). This represents a near six-fold increase in total investment from 2006-2010. Spending by national governments has increased 6.4 times, from about $400 million, while spending by 'international sources' (i.e. sources other than national governments; predominantly from outside of the hotspot countries but with around 1 percent coming from local private sector and philanthropic sources) has increased 4.3 times, from $200 million (CEPF 2012). These different rates of investment growth from different sources have resulted in the ratio of investment from national to international sources increasing from about 2:1 in 2006-2010 to 3:1 in 2015-2019.

Although the total value of investment made in 2015-2019 was much higher than in 2006-2010, the distribution of funds among countries remained broadly similar, with investments in Vietnam and regional investments receiving the highest proportion of funds in both periods, and China, Myanmar, and Thailand receiving the least.

To illuminate the thematic distribution of investment in the region, each of the 1,600 investments analyzed by this study was assigned to one of 16 themes (Figure 11).

Figure 11. Conservation Investment by Theme (2015-2019)



There have been several changes in the conservation investment landscape of the hotspot over the past decade, including in terms of the total value of investment, the make-up of donors investing, and their thematic priorities and funding modalities. There has been a significant increase in the value of investment made by both national governments and international sources. Total investment has grown from about $600 million in 2006-2010 ($119 million per annum) to $3.4 billion in 2015-2019 ($679 million per annum). This is a result of several factors, including: economic development of the countries within the region, allowing for greater public spending on biodiversity conservation; a growing understanding among international stakeholders of the urgency of implementing nature-based solutions to societal and environmental challenges in the region; and the increasing absorptive capacity of the region's public sector institutions and civil society.

Economic development in the hotspot has led to changes in the make-up of donors that are investing in biodiversity there. For example, some bilateral donors such as JICA, have largely withdrawn, leaving the governments of Germany, the UK, and the USA as the major bilateral donors remaining. In particular, Thailand's status as a 'middle income' country has resulted in a significant reduction of bilateral funding availability there.

Similarly, as economies and public institutions have grown and developed, the focus of international donors has shifted from poverty reduction and protected area establishment, to conservation through sustainable development and sustainable natural resource management.

Other significant changes in the thematic focus of international donors include:

- A reduced emphasis on species-focused conservation (perhaps based on an expectation that funding for sustainable development will also generate species conservation outcomes).
- A reduced emphasis on supporting the core management operations of protected areas (based on an expectation that government spending will be sufficient for effective protected area management).
- An increased emphasis on climate change funding, including mitigation, adaptation, ecosystem and community resilience, and carbon markets (based on global trends, including an understanding of the likely disproportionate impacts of climate change on developing countries).
- An increased emphasis on funding to combat illegal wildlife trade (led by the governments of the US and UK): a trend likely to continue in the future due to a greater global appreciation of the link between illegal wildlife trade and pandemics such as COVID-19.

Although $3.4 billion was invested in biodiversity conservation in Indo-Burma over the last five years (including $824 million from international sources), significant threats to the hotspot's biodiversity remain. Clearly, the availability of financial resources is not the only limiting factor. For conservation to be more effective, the right people/organizations need to be provided with the right type of support, at the right time. While the resources available for investment in the hotspot by CEPF are only modest in the context of the overall funding landscape, they can have a disproportionate impact if they are well targeted.

Funding for sustainable natural resource management and sustainable development work accounts for nearly half of all investment recorded. Funding is also relatively abundant for

landscape-scale initiatives and climate change projects. Less investment is available for explicit species-focused conservation, protected area management, combating illegal wildlife trade, capacity building, and wetland/freshwater conservation. These are all topics that CEPF has invested in significantly in recent years.

Stakeholders consulted during the update of the ecosystem profile consistently emphasized the lack of donor interest in funding species-focused conservation, despite this being a cornerstone of effective biodiversity conservation. This topic is a priority for only few major donors (such as the Arcus Foundation, CEPF, Mohamed bin Zayed Species Conservation Fund, USFWS, and the international zoo and aquarium community), who often only award relatively small grants. Moreover, a significant proportion of these grants focus on research activities rather than conservation ones. Funding availability is also skewed towards charismatic megafauna, such as tiger and Asian elephant.

In terms of the geographic distribution of funding by international donors, the limited investment in China and Thailand may reflect the perceived greater availability of domestic funding sources in these countries, the limited capacity of many Thai CSOs to comply with English-language application and reporting requirements, and the administrative challenges faced by Chinese CSOs in receiving international funds.

In terms of geographic focus, stakeholders encouraged CEPF to continue targeting investment to KBAs. Stakeholders felt that the geographic priorities targeted by CEPF during the second phase (i.e., Sino-Vietnamese Limestone, Mekong and Major Tributaries, Tonle Sap Lake and Inundation Zone, Hainan Mountains, and Myanmar) remained valid, although CEPF could consider identifying specific geographic priorities within Myanmar.

Stakeholders encouraged CEPF to continue to utilize the RIT as a vehicle for coordinating investment with other funders, facilitating collaboration between CSOs, and seeking opportunities to foster long-term biodiversity funding from within the region. Opportunities may include collaboration with the Wildlife Reserves Singapore-hosted ASAP, or with upcoming funding streams planned by SOS, DEFRA, and other donors.

12. CEPF INVESTMENT NICHE

The ecosystem profile provides a shared situational analysis and overarching set of investment priorities that can facilitate coordinated support by CEPF and other funders for biodiversity conservation actions with a leading role for civil society. The basic premise underlying the investment strategy is that conservation investment should be targeted where it can have the maximum impact on the highest conservation priorities while supporting the livelihoods of some of the poorest sections of society. Chapter 13 outlines a comprehensive investment strategy. Within this shared strategy, a niche for CEPF was defined that best fits with its approach, while playing to CEPF's unique strengths and contributing to the fund's global objectives.

Specifically, the CEPF niche builds on the experience of the first two investment phases by focusing on approaches that have demonstrated success, moving from pilot projects to longer-term interventions, and integrating results more concretely into public policy and private sector practice. At the same time, the CEPF niche responds to major conservation issues, such as trade and consumption of wildlife, hydropower development, expansion of

industrial agriculture and limestone quarrying, with strategies developed through extensive consultation with practitioners in the field. These strategies focus on the geographies where these conservation issues are most acutely felt: the Mekong River and its major tributaries; the Northern Plains seasonally inundated forests and Tonle Sap Lake and inundation zone in Cambodia; the limestone highlands along the Vietnam-China border; and Myanmar's Chindwin River and limestone karst landscapes. The overall objective of the new phase of CEPF investment will be to demonstrate effective, scalable approaches to major conservation issues that leverage the skills, experience and energy of civil society actors.

The implementation of this shared strategy will be coordinated through regular meetings between CEPF and other funders, under the auspices of the Lower Mekong Funder Collaborative. As other funders make decisions about investment in the region and develop their grant portfolios, CEPF will adapt the development of its own portfolio to avoid duplication, address gaps and take advantage of opportunities for collaboration, synergy and amplification. One important area for collaboration will be sharing experience among grantees of different funders. This was done with some success during the mid-term and final assessment workshops of the second investment phase, in 2015 and 2019, respectively, where grantees of the Chino Cienega Foundation, MacArthur Foundation, Margaret A. Cargill Philanthropies, McConnell Foundation and McKnight Foundation in the Lower Mekong Region exchanged good practice and lessons learned with CEPF grantees in the Indo-Burma Hotspot.

The shared investment strategy is both ambitious and indicative of the scale of the conservation challenges still facing the Indo-Burma Hotspot. The amount of resources required to adequately support work under all parts of the strategy over the next five years very likely exceeds the amount of resources available to any individual funder for investing in civil society. For this reason, it is important for grant making to remain competitive, and to seek out value for money and opportunities for leverage.

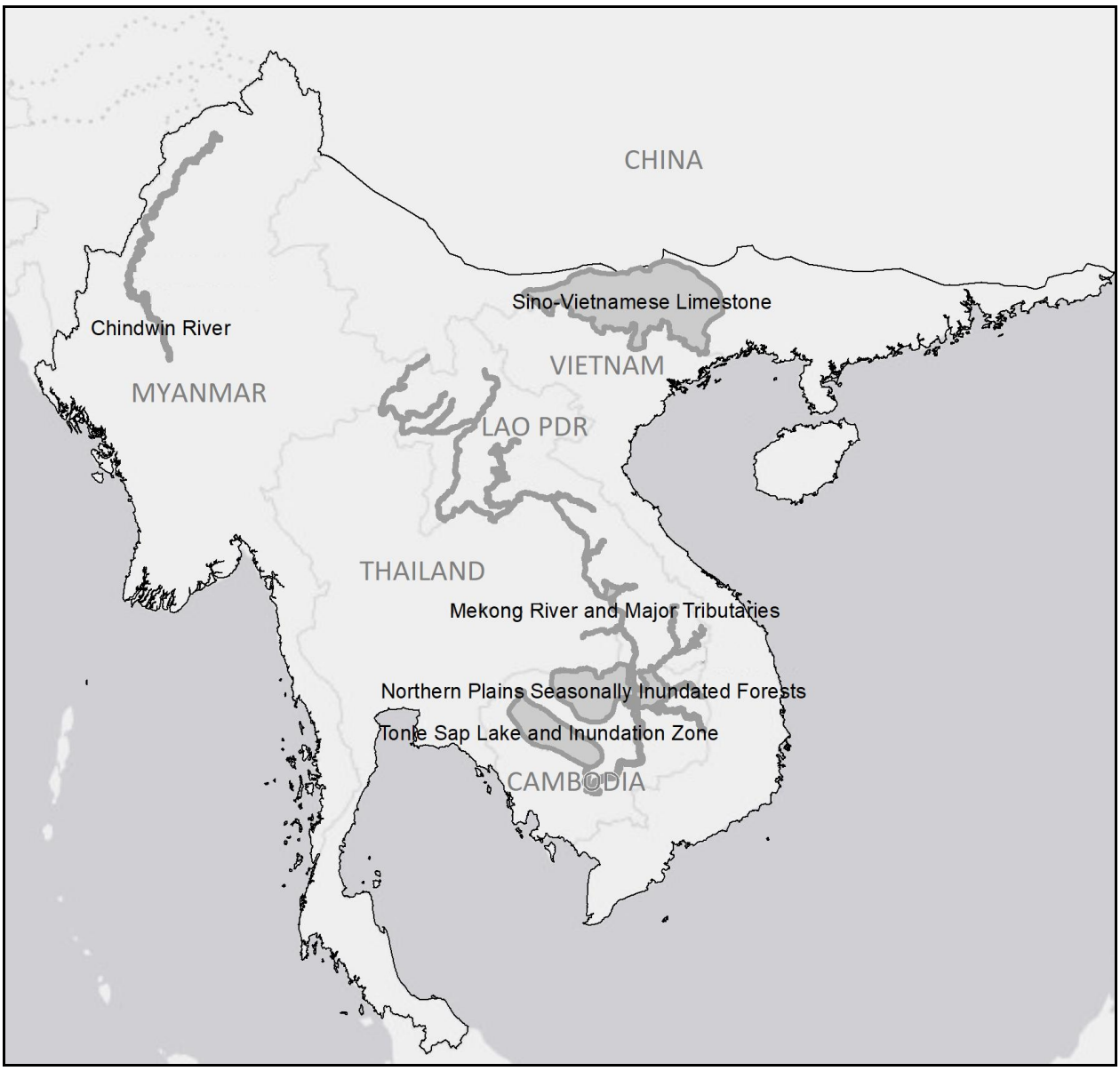
13. CEPF INVESTMENT STRATEGY AND PROGRAM FOCUS

13.1 Priority Species, Sites and Corridors

To maximize the contribution of CEPF investment to the conservation of global biodiversity, the full lists of globally threatened species, KBAs and conservation corridors in the hotspot were refined into a focused set of priority outcomes (species, sites and corridors) for investment over a five-year period. The purpose of selecting priority sites and corridors was to enable investment by CEPF and other funders in site-based and landscape-scale conservation to focus on the highest priority geographic areas. The purpose of selecting priority species was to enable investments in species-focused conservation to be directed at those globally threatened species whose conservation needs cannot adequately be addressed by general habitat protection alone.

Five priority corridors were selected (Figure 12). They contain a total of 66 KBAs, which were all automatically selected as priority sites (Table 4). In addition to the five corridors, a network of 24 limestone karst KBAs in Myanmar was identified as a geographic priority for investment. The 90 priority sites represent 16 percent of the site outcomes in the hotspot.

Figure 12. Priority Corridors for CEPF Investment in the Indo-Burma Hotspot



Note: not shown on this map is Myanmar Limestone Karst, a network of small sites dispersed throughout the country; these sites are too small to appear on a map this scale.

The five corridors and the network of limestone karst KBAs cover a combined area of 120,623 hectares, equivalent to 5 percent of the total area of the hotspot. This is a major reduction in area from the geographic priorities in the 2011 ecosystem profile, which covered 786,551 hectares, or 34 percent of the hotspot. This is due to a tighter focusing of geographic priorities in Myanmar, from the whole country to one corridor and one network of sites. The Hainan Mountains corridor was dropped as a priority and replaced with the similarly sized Northern Plains Seasonally Inundated Forests corridor.

Table 4. Priority Corridors and Sites for Investment in the Indo-Burma Hotspot

Priority Corridor	Priority Sites	Countries	Area (km^2)
Chindwin River	Upper Chindwin River: Kaunghein to Padumone Section	Myanmar	5,281
Mekong River and Major Tributaries	Lower Nam Ou; Mekong Confluence with Nam Kading; Mekong Confluence with Xe Bangfai; Mekong Channel near Pakchom; Mekong River from Kratie to Lao PDR; Mekong River from Phou Xiang Thong to Siphandon; Mekong River from Louangphabang to Vientiane; Pakxan Wetlands; Sekong River; Sesan River; Siphandon; Srepok River; Thala Stueng Treng; Ubon Nam Mun; Upper Lao Mekong; Upper Xe Kaman; Western Siem Pang; Xe Champhon	Cambodia, Lao PDR and Thailand	19,435
Myanmar Limestone Karst*	Ataran Taung Karst; Bayin Nyi Karst; Dhammata Karst; Himeinkanein Karst; Hpa-an; Hpruso Karst; Kayin Linno Karst; Kayon Karst; Kyauk Nagar; Montawa Cave; Myaleik Taung; Naung Ka Myaing Karst; Padamyar Karst; Panlaung-Pyadalin Cave; Parpant Caves; Pathein Karst; Pharbaung Karst; Phayartan Karst**; Sabel Karst; Tar Tar Karst; Waiponla Karst; Weibyan Karst; Yathae Pyan Karst; Ywangan Karst	Myanmar	536
Northern Plains Seasonally Inundated Forests	Chhep; Dong Khanthung; O Skach; Upper Stung Sen Catchment	Cambodia and Lao PDR	19,322
Sino-Vietnamese Limestone	Ba Be; Ban Bung; Ban Thi-Xuan Lac; Bangliang; Bat Dai Son; Binh An; Cham Chu; Chongzuo; Daweishan; Diding; Du Gia; Funing Niaowangshan; Fuping-Gula-Dingye; Gulongshan; Khau Ca; Lam Binh; Longhua; Longhushan; Longshan Section of Nonggang; Malipo; Na Chi; Nonggang; Paiyangshan; Shangsi-Biannian; Sinh Long; Tat Ke; Tay Con Linh; Than Xa; Trung Khanh; Tung Vai; Xidamingshan	China and Vietnam	58,502
Tonle Sap Lake and Inundation Zone	Ang Trapeang Thmor; Bakan; Boeung Chhmar-Moat Khla; Chhnuk Tru; Dei Roneat; Kampong Laeng; Lower Stung Sen; Preah Net Preah-Kra Lanh-Pourk; Prek Toal; Stung-Chi Kreng-Kampong Svay; Stung Sen-Santuk-Baray; Veal Srongae	Cambodia	17,547

Notes: * = Myanmar Limestone Karst is a dispersed network of small sites, which does not meet the criteria for a conservation corridor but is nevertheless recognized as a geographic priority for CEPF investment; it is included here to provide a complete list of priority KBAs in one place. ** = Phayartan Karst is located within Lenya KBA but is several orders of magnitude smaller; therefore, only the limestone karst is considered a priority site and not the wider KBA within which it lies.

One hundred and thirty-six globally threatened vertebrate species were selected as priority species, equivalent to 24 percent of the full list of 561 globally threatened vertebrates in the hotspot. The priority species include 39 reptiles, 34 mammals, 31 fishes and 27 birds but only five amphibians, which reflects the fact that amphibians require species-focused conservation action only in exceptional cases. The list of priority species excludes various other species that are high, in some cases very high, global priorities for conservation but for which, for one reason or another, the CEPF modality is not appropriate. Compared with the 2011 ecosystem profile, the number of priority species in the hotspot has decreased from 152 to 136.

13.2 Strategic Directions and Investment Priorities

The investment strategy for the Indo-Burma Hotspot was updated during the final assessment workshop in May 2019. Participants were asked to review the investment strategy for the second phase (2013-2020), discuss what worked, what did not work and why, and propose updates, if needed, with justifications. They were also asked to focus on conservation approaches where civil society could play a leading role in implementation, and where additional funding would make a significant difference compared with baseline levels of conservation investment from governments and major international donors.

Of the 11 strategic directions in the overall strategy, six were included within the CEPF investment niche (Table 5). These six strategic directions contain 23 of the 45 investment priorities in the overall strategy, focusing on ones that play to the unique strengths of the fund and contribute directly to its global objectives, while complementing the investment strategies of other funders.

Table 5. Strategic Directions and Investment Priorities in the Indo-Burma Hotspot

Strategic Directions	Investment Priorities
COMPONENT I: CONSERVATION OF PRIORITY SPECIES	
1. Safeguard priority globally threatened species by mitigating major threats [CEPF niche]	1.1 Sustain long-term conservation programs for core populations of priority species
	1.2 Reestablish viable wild populations of priority species in line with global guidelines
	1.3 Conduct research on globally threatened species for which there is a need for greatly improved information on status and distribution
	1.4 Research and pilot innovative funding sources for species conservation
	1.5 Support species champions at the community level to implement locally identified actions for priority species
2. Mitigate zoonotic disease risks by reducing illegal trade and consumption of and threats to wildlife [CEPF niche]	2.1 Support enforcement agencies to unravel high-level wildlife trade networks by promoting the application of global best practice with investigations, intelligence and informants
	2.2 Facilitate collaboration among enforcement agencies involved in combatting illegal wildlife trade, as well as with other sectors as part of a One Health approach
	2.3 Work with private and state-owned companies, with a particular focus on logistics and online platforms, to reduce their involvement in wildlife trafficking
	2.4 Support targeted campaigns to reduce demand and mobilize public participation in detecting and reporting wildlife crime
	2.5 Understand and support action to address linkages between biodiversity and human health, including the role of biodiversity loss in the emergence of zoonotic diseases

COMPONENT II: PROTECTION AND STEWARDSHIP OF PRIORITY SITES	
3. Strengthen management effectiveness at protected areas as a tool to conserve priority sites	3.1 Support the use of global standards and tools for protected area management by all stakeholders and embed in national policy
	3.2 Develop accredited training programs for protected area practitioners within domestic academic institutions and other qualified bodies
	3.3 Pilot the direct involvement of civil society organizations in protected area management and document best practice
	3.4 Support the use of the results of global standards and tools for adaptive protected area management and budgeting
4. Empower local communities to engage in conservation and management of priority sites [CEPF niche]	4.1 Support communities to analyze conservation issues and inform them about rights and opportunities related to natural resource management and conservation
	4.2 Pilot, amplify and develop sustainability mechanisms for community forests, community fisheries and community-managed protected areas through authentic, community-led processes
	4.3 Develop co-management mechanisms for protected areas that enable community participation in zoning, management and governance
	4.4 Revise KBA identification in the hotspot using the new KBA standard
	4.5 Undertake third-party evaluation of project impacts in the priority sites
5. Strengthen biodiversity conservation by promoting sustainable livelihoods and incentives for local communities at priority sites	5.1 Promote sustainable livelihood projects that demonstrably link livelihood and socio-economic improvements to conservation outcomes at priority sites, and document and share practices and lessons
	5.2 Develop and strengthen best-practice ecotourism initiatives at priority sites
COMPONENT III: ENHANCEMENT OF ECOLOGICAL CONNECTIVITY AND RESILIENCE	
6. Demonstrate scalable approaches for integrating biodiversity and ecosystem services into development planning in the priority corridors [CEPF niche]	6.1 Analyze development policies, plans and programs; evaluate their impact on biodiversity and ecosystem services, and propose and actively support the application of alternative development scenarios, nature-based solutions and mitigation measures
	6.2 Develop demonstration projects for ecosystem restoration, with protocols suitable for replication
	6.3 Engage the media in order to increase awareness, inform public debate and influence decision making on mainstreaming biodiversity into development planning
	6.4 Pilot and scale-up models for biodiversity-friendly production, including certification and eco-labelling

7. Minimize the social and environmental impacts of agro-industrial plantations and hydropower dams in the priority corridors	7.1 Support land registration for local and indigenous communities at priority sites
	7.2 Upgrade the legal status of unprotected priority sites threatened by incompatible land uses
	7.3 Strengthen the voice of communities who are potentially or actually affected by agro-industrial plantations and hydropower dams
	7.4 Work with the private sector to ensure that agro-industrial plantations and hydropower dams are developed and operated in an environmentally and socially responsible manner
	7.5 Identify water, food and energy nexus models and develop policy options
	7.6 Support research and monitoring of the impacts of agro-industrial plantations and hydropower dams
COMPONENT IV: DEVELOPMENT OF A CONSERVATION CONSTITUENCY	
8. Strengthen the capacity of civil society to work on biodiversity, communities and livelihoods at regional, national, local and grassroots levels [CEPF niche]	8.1 Support networking mechanisms that enable collective civil society responses to priority and emerging threats
	8.2 Provide core support for the sustainable organizational and technical capacity development of domestic civil society organizations
	8.3 Establish mechanisms to match volunteers to civil society organizations' training needs
9. Conduct targeted education, training and awareness raising to build capacity and support for biodiversity conservation among all sections of society	9.1 Invest in the professional development of future conservation leaders through support to vocational, certificate, diploma and graduate programs at domestic academic institutions, and promote regional replication to each country
	9.2 Investigate the feasibility of establishing an Indo-Burma Conservation Field Studies Center
	9.3 Foster leadership for sustainable development by investing in professional development of key individuals
	9.4 Implement programs of experiential education to connect school children to nature in priority corridors and beyond
	9.5 Conduct targeted, effective outreach and awareness raising for behavioral change among rural and urban populations in regard to the values of natural ecosystems, with a focus on livelihoods, consumption patterns and lifestyle
	9.6 Conduct targeted training and awareness raising activities for decision makers in government and the private sector on biodiversity conservation, including impacts of development policies and projects on ecosystems

COMPONENT V: COORDINATION AND MONITORING OF CONSERVATION INVESTMENT	
10.Evaluate the impacts of conservation investment on biodiversity and human wellbeing through systematic monitoring	10.1 Develop common standards and systems for monitoring the impacts and effectiveness of conservation actions
	10.2 Develop common standards and systems for monitoring the negative impacts of development policies, plans and actions across multiple scales
	10.3 Support systematic efforts to build capacity for monitoring and data analysis among domestic organizations
	10.4 Develop and test mechanisms for ensuring that monitoring results inform national policy debates and local adaptive management
11.Provide strategic leadership and effective coordination of conservation investment through a regional implementation team [CEPF niche]	11.1 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

14. INDO-BURMA HOTSPOT LOGICAL FRAMEWORK: 2020-2025

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 priorities	At least 50 CSOs, including at least 40 domestic organizations, actively participate in conservation actions guided by the ecosystem profile. At least 12 alliances and networks formed among civil society actors to avoid duplication of effort and maximize impact in support of the CEPF ecosystem profile. At least 25 Key Biodiversity Areas targeted by CEPF grants have new or strengthened protection and management. At least 3 development plans or policies influenced to accommodate biodiversity. At least 100,000 hectares of production landscapes with strengthened management of biodiversity. At least 5,000 women and 5,000 of men receive direct socio-economic benefits through increased income, food security, resource rights or other measures of human wellbeing.	Grantee and RIT performance reports. Annual portfolio overview reports; portfolio midterm and final assessment reports. Protected Areas Tracking Tool (SP1 METT).	The CEPF ecosystem portfolio will effectively guide and coordinate conservation action in the Indo-Burma Hotspot. Investments by other funders will support complementary activities that reduce threats to priority corridors, sites and species, and improve the operating environment for civil society.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 1: Priority globally threatened species safeguarded by mitigating major threats. $2,800,000	Long-term conservation programs for core populations of at least 20 priority species sustained until 2025. Viable wild populations of at least 3 priority species reestablished. Knowledge of the status and distribution of at least 3 priority species improved through research. At least $1 million in funding for species conservation leveraged from innovative sources. At least 8 community-level species champions implement locally identified actions for priority species.	Grantee and RIT performance reports. CEPF Secretariat supervision mission reports. IUCN Red List species accounts.	National and international laws provide an appropriate basis for species-focused conservation action. Government agencies grant permission to reintroduce priority species. Sufficient civil society capacity to implement species-focused conservation exists among civil society or can be built. Innovative funding sources for species conservation (e.g., private companies, high net worth individuals, etc.) can be identified and accessed. Community members interested and able to become species champions can be identified.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 2: Zoonotic disease threats mitigated by reducing illegal trade and consumption of wildlife. $1,000,000	At least 1 high-level wildlife trade network unraveled by enforcement agencies employing global best practice with investigations and informants. At least 2 initiatives to reduce transportation, sale and consumption of wildlife piloted in collaboration with enforcement agencies and/or actors in the public health sector. At least 5 private and/or state-owned companies introduce effective measures to reduce their involvement in the transportation, sale and consumption of wildlife. At least 3 campaigns implemented to reduce consumer demand for wildlife and mobilize public participation in wildlife crime detection and reporting.	Grantee and RIT performance reports. CEPF Secretariat supervision mission reports. Court records and press coverage of prosecutions for wildlife crime.	Sufficient political will to control overexploitation of wildlife species exists or can be generated. Government conservation agencies are receptive to working with civil society to address illegal trafficking of wildlife. Actors in the public health sector are receptive to collaborating with conservation organizations as part of a One Health approach. Companies are willing to engage with civil society to address transportation, sale and consumption of wildlife. Local media are willing to support public awareness campaigns. General public is receptive to conservation messages about consumption of wildlife.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 3: Local communities empowered to engage in conservation and management of priority sites. $2,000,000	Awareness of local conservation issues and rights and opportunities related to natural resource management raised among local communities within at least 5 priority sites. Community forests, community fisheries and/or community-managed protected areas piloted or replicated within at least 10 priority sites. Co-management mechanisms that enable community participation in zoning, management and governance of formal protected areas developed for at least 5 priority sites. Lists of KBAs in at least 3 hotspot countries updated in line with the new KBA standard. Third-party evaluation of project impacts on biodiversity and human wellbeing undertaken in at least 10 priority sites.	Grantee and RIT performance reports. CEPF Secretariat supervision mission reports. Protected Areas Tracking Tool (SP1 METT). Formal legal declarations or community agreements designating new protected areas. World Database on KBAs. Third-party impact evaluation reports.	Local communities are willing to play an active role in site-based conservation. Government policies provide for community management of forests, fisheries and conservation areas. Protected area managers are receptive to involving local communities in zoning, management and governance. Appropriate, cost-effective site-based monitoring protocols for biodiversity and human wellbeing impacts can be developed. Sufficient civil society capacity to implement site-based conservation exists or can be built

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 4: Key actors engaged in mainstreaming biodiversity, communities and livelihoods into development planning in the priority corridors. $1,800,000	At least 6 development policies, plans or programs analyzed, with impacts on biodiversity and ecosystem services evaluated and alternative development scenarios, nature-based solutions and mitigating measures proposed. Land-use/development plans in at least 1 priority corridor incorporate safeguards for biodiversity and ecosystem services. Demonstration projects for ecological restoration established in at least 2 priority corridors. Public debate and awareness of at least 5 key environmental issues increased through coverage in domestic media. Models for biodiversity-friendly production piloted for at least 3 commodities.	Grantee and RIT performance reports. CEPF Secretariat supervision mission reports. Official land-use and development plans and policies covering the priority corridors.	Governments and donors remain committed to environmentally sustainable development. Governments create space for civil society to engage in the review and formulation of development policies, plans and programs. Government decision making can be influenced by arguments about the biodiversity and ecosystem service values of natural ecosystems. Increased awareness of environmental issues will translate into increased support for conservation initiatives. Sufficient civil society capacity to undertake biodiversity mainstreaming exists or can be built. Markets for sustainably produced commodities from the hotspot exist or can be built.

Intermediate Outcomes	Intermediate Indicators	Means of Verification	Important Assumptions
Outcome 5: Civil society capacity to work on biodiversity, communities and livelihoods strengthened at regional, national, local and grassroots levels. $1,000,000	At least 15 civil society networks enable collective responses to priority and emerging threats. At least 50 domestic CSOs demonstrate improvements in organizational capacity. At least 20 domestic CSOs demonstrate improved performance with gender mainstreaming. At least 1 mechanism established to match volunteers to CSOs' training needs.	Grantee and Regional Implementation Team performance reports. CEPF Secretariat supervision mission reports. Civil society organizational capacity tracking tool. Gender tracking tool.	Civil society actors able to work collaboratively to respond to conservation challenges. The operating environment for civil society remains constant or improves across the hotspot. Key capacity limitations of CSOs can be addressed through grant support.
Outcome 6: A Regional Implementation Team provides strategic leadership and effectively coordinates CEPF investment in the Indo-Burma Hotspot. $1,400,000	At least 50 CSOs, including at least 40 domestic organizations actively participate in conservation actions guided by the ecosystem profile. At least 75 percent of domestic CSOs receiving grants demonstrate more effective capacity to design and implement conservation actions. At least 2 participatory assessments are undertaken and documented.	Regional Implementation Team performance reports. CEPF Secretariat supervision mission reports. Civil society organizational capacity tracking tool.	Qualified organizations will apply to serve as the Regional Implementation Team 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.
Funding Summary	**Amount**		
Total Budget	$10,000,000		

15. SUSTAINABILITY

Sustainability of CEPF's investments in the Indo-Burma Hotspot will be achieved if their results endure well beyond the investment period. Recognizing that threats to biodiversity in the hotspot are at a scale that precludes easy fixes, and which will require sustained effort over decades to fully address, sustainability was a paramount consideration throughout the process to update the ecosystem profile. In particular, the investment strategy was developed with sustainability in mind, and many of the investment priorities explicitly address it.

Institutional sustainability is addressed through an explicit focus on strengthening the capacity of CSOs (Strategic Direction 8) and training future conservation leaders (Strategic Direction 9). This focus, which is integral to CEPF's global mission, recognizes that the emergence of domestic CSOs creates opportunities to support the growth of conservation movements with sufficient credibility and legitimacy to influence national and regional debates on the future direction of natural ecosystems. Strengthening the capacity of conservation movements in the hotspot will contribute to sustainability by reducing dependence on external technical and financial support. Furthermore, specific capacity building measures, such as training programs for protected area practitioners (Investment Priority 3.2) and conservation professionals (Investment Priority 9.1), will be institutionalized within domestic academic institutions.

Financial sustainability is addressed in various parts of the investment strategy. Under Strategic Direction 1, long-term conservation programs for priority species will be sustained, while innovative funding sources to sustain species conservation efforts into the long-term will be explored. Under Investment Priorities 2.3, 6.5 and 7.4, grantees will engage with private and state-owned companies, develop joint conservation actions, and leverage support for their implementation. Other opportunities to engage the private sector in supporting innovative conservation actions are presented by Investment Priorities 2.4, 5.2 and 9.6.

Political sustainability is addressed by mainstreaming biodiversity, communities and livelihoods into development plans, policies and programs (Strategic Direction 6). Economic arguments for the conservation of biodiversity, based on ecosystem service values, will be developed and widely promoted among different sectors, such as agriculture, energy and industry. Major government investments in protected areas (Strategic Direction 3) and reforestation (Investment Priority 6.3) will be leveraged towards conservation goals through demonstration projects and promotion of best practice.

Societal sustainability for the goals of the investment strategy will be achieved through a major emphasis on engaging wider civil society as positive stakeholders in conservation in various ways. Local communities will be empowered to engage in management of priority sites (Strategic Direction 4), to adopt alternative livelihoods (Strategic Direction 5) and to formalize their traditional rights over land and resources (Strategic Direction 7). There will also be support to species champions at the community level, who will implement locally identified actions for priority species (Investment Priority 1.5), as well as for farmers to adopt wildlife-friendly production practices (Investment Priority 6.5). The wider public, especially urban dwellers, will be involved in programs to reduce consumer demand for wildlife and support enforcement agencies to tackle wildlife crime (Strategic Direction 2),

and engaged by targeted education, training and awareness raising aimed at building support for biodiversity conservation (Strategic Direction 9).

Finally, the sustainability of the strategy will be ensured by the means of its creation: through a participatory process involving more than 170 stakeholders from across the hotspot. CEPF will continue to collaborate with other funders with overlapping interests and missions, to align its support to civil society in the hotspot and leverage additional support to ensure delivery of the investment strategy. The investment strategy is truly a common vision for action, jointly owned by multiple stakeholders. This will ensure that, as in the previous phases of CEPF investment, the ambitious goals of the strategy are realized through partnership.

16. CONCLUSION

In terms of species diversity and endemism, Indo-Burma is one of the most biologically important regions on the planet. A spate of discoveries of new species during the 1990s focused the attention of the global conservation community on the hotspot. Changing political climates in several countries meant that increasing amounts of international donor assistance, including conservation investment, flowed into most countries in the hotspot from the 1990s onwards. Over the last five years, conservation investment from international sources averaged at least $160 million per year.

In spite of the considerable sums invested in conservation, the biodiversity of the hotspot continues to face massive and accelerating threats, most significantly industrial agriculture, poaching, trade and consumption of wildlife, large infrastructure (in particular, hydropower dams) and logging. The root causes and enabling factors of biodiversity loss include population growth, urbanization and migration patterns, economic growth and increasing consumption, regional economic integration, weak regulatory and governance frameworks, and development models that prioritize large-scale projects with insufficient transparency or public participation. If these threats continue unabated, the natural ecosystems of the hotspot will continue to be degraded and lost, their capacity to deliver ecosystem services will erode, the resilience of the region to the effects of climate change will diminish, the rate of species extinctions will accelerate, and the risk of emergence of zoonotic diseases will increase. Civil society is well placed to address both immediate threats to biodiversity and their underlying causes. However, current investment does not always target the highest conservation priorities or promote the most effective approaches, and the potential to engage civil society in biodiversity conservation has yet to be fully realized. In this context, the opportunities for CEPF and other funders to support biodiversity conservation in the hotspot are almost limitless.

In order to focus potential future investment by CEPF and other funders, the ecosystem profile for Indo-Burma was updated during 2019 and 2020. Drawing on experience from two previous phases of investment dating back to 2008, and engaging stakeholders through a regional workshop in May 2019 and an online consultation in July-August 2020, the CEPF Secretariat updated the ecosystem profile and presented a refreshed investment strategy for the five-year period from 2020 to 2025. This strategy comprises 45 investment priorities, grouped into 11 strategic directions under five broad components.

Over the next investment phase, CEPF funding will concentrate on six of these strategic directions, containing 23 investment priorities. The objective of CEPF's investment will be to demonstrate effective, scalable approaches to major conservation issues that leverage the skills, experience and energy of civil society actors. The geographic focus will be five priority corridors (the Chindwin River, the Mekong River and Major Tributaries, the Northern Plains Seasonally Inundated Forests, the Sino-Vietnamese Limestone, and the Tonle Sap Lake and Inundation Zone) plus a network of limestone karst sites in Myanmar. Moreover, CEPF investment will focus on 136 priority species that require species-focused action in addition to site-based and landscape-scale conservation. Although ambitious, the CEPF investment strategy is realistic, and represents an important opportunity to realize the potential of civil society in the hotspot, and to make a lasting contribution to the conservation of Indo-Burma's unique and irreplaceable biodiversity values.