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Biodiversity Finance Initiative (BIOFIN)

Mobilizing Resources for Biodiversity and Sustainable Development

FINANCIAL NEEDS ASSESSMENT

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(with the support of international and national consultants)

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TABLE OF CONTENTS

LIST OF FIGURES	3
LIST OF TABLES	3
ABBREVIATIONS AND ACRONYMS	4
ACKNOWLEDGEMENT	5
EXECUTIVE SUMMARY	6
1 INTRODUCTION	10
2 PROCEDURES AND METHODOLOGY	11
2.1 Narrowing the framework and objectives of the FNA	11
2.2 Approach and methodology for the Viet Nam FNA	13
2.3 Methodology of estimating PA unit-cost-per-hectare	17
2.4 Scenario analysis	19
3 RESULTS OF FINANCIAL NEED ASSESSMENT	23
3.1 Land area statistics per types of PAs	23
3.2 Unit costs results	26
3.3 Results of financial needs analysis	28
4 FINANCIAL GAPS	38
4.1 Total financial gap for optimal biodiversity conservation in Viet Nam	38
4.2 Financial gap for PA financing	41
5. CONCLUSIONS AND RECOMMENDATIONS	45
5.1 Conclusions	45
5.2 Recommendations	47
ANNEXES	48

LIST OF FIGURES

Figure 1	Financial Needs Assessment Procedure	11
Figure 2	Framework of FNA for costing biodiversity conservation in Viet Nam	14
Figure 3	Bottom up Approach in the FNA, Vietnam.....	14
Figure 4	Average share of biodiversity expenses by sector between 2011-2015	20
Figure 5	Structure of financial gap analysis between BER and FNA.....	22
Figure 6	Annual financial needs for optimal PA management under two scenarios	31
Figure 7	Estimated annual financial needs for achieving the targets of the Viet Nam NBS	34
Figure 8	Indicative annual sectoral contributions to achieving biodiversity conservation in Viet Nam ...	35
Figure 9	Estimated total annual expenditure for biodiversity conservation in Vietnam up to 2030.....	38
Figure 10	Gap between actual and optimal finance for biodiversity management under 2 scenarios	40
Figure 11	Finance gaps between forecasted actual and optimal PA finance under 2 scenarios	43

LIST OF TABLES

Table 1	Weighting factors applied to biodiversity expenditures.....	15
Table 2	Summary of methods applied in the FNA for costing of the VN NBS	16
Table 3	List of sample PAs used to calculate unit-cost-per-hectare values	17
Table 4	Description of cost categories used in unit-cost-per-hectare calculations	18
Table 5	Relative contribution to biodiversity expenditure by sector between 2011 and 2015.....	20
Table 6	Estimated sector contribution rates to biodiversity finance between 2018 and 2030	20
Table 7	Area coverage of existing and planned Terrestrial PAs in Viet Nam	23
Table 8	Area coverage of existing and planned Marine PAs in Viet Nam	23
Table 9	Statistics number of hectares by wetland PAs.....	24
Table 10	Land area of Viet Nam's existing and planned PA network between 2018 and 2030.....	25
Table 11	Quantified unit-cost-per-hectare categorized for existing and new PAs	26
Table 12	Unit cost structure for existing PAs	27
Table 13	Actual and optimal unit-cost-per-hectare financing for biodiversity management in PAs.....	28
Table 14	Finance needs for optimal management in Viet Nam's PA-network under 2 scenarios.....	29
Table 15	Finance needs to 2030 for optimal management in Viet Nam's 2018 existing PA network	30
Table 16	Finance needs to 2030 for optimal management in Viet Nam's expanding PA-network	30
Table 17	Historical expenditures at central and provincial levels in the period 2011-2015	32
Table 18	Forecasted finance needs for optimal biodiversity management at central-provincial levels ..	32
Table 19	Total finance needs for achieving the targets of the Viet Nam NBS under 2 scenarios	33
Table 20	Scenario analyses of financial needs for biodiversity conservation in Viet Nam	36
Table 21	Total finance needs for optimal biodiversity conservation per sector	37
Table 22	Total finance needs for biodiversity conservation in Viet Nam between 2018-2030	39
Table 23	Estimated total biodiversity expenditure per PA type during 2011-2015	41
Table 24	Finance needs for optimal biodiversity conservation in Viet Nam's PA system.....	42

ABBREVIATIONS AND ACRONYMS

ABC	Activity-Based Costing	MPI	Ministry of Planning and Investment
ASEAN	Association of Southeast Asian Nations	NAPB	National Action Plan on Biodiversity
BCA	BD Conservation Agency / MONRE	NBS	National Biodiversity Strategy
BER	Biodiversity Expenditure Review	NGO	Non-Governmental Organization
BIOFIN	Biodiversity Finance Initiative	NP	National Park
CBD	Convention on Biological Diversity	NR	Nature Reserve
CDF	Community Development Fund	ODA	Official Development Assistance
DARD	Department of Agriculture and Rural Development / MARD	PA	Protected Area
DONRE	Department of Natural Resource and Environment / MONRE	PFES	Payment for Forest Ecosystem Services
FNA	Financial Needs Assessment	PIR	Policy and Institutional Review
GDP	Gross Domestic Product	PPC	Province People's Committee
GEF	Global Environment Facility	RBC	Result-Based Costing
GSO	General Statistic Office of VN	SCA	Species Conservation Area
IBA	Incremental Budgeting Approach	SUF	Special Use Forest
IUCN	<i>International Union for the Conservation of Nature</i>	TF	Trust Fund
LCA	Landscape Conservation Area	TPA	Terrestrial Protected Area
MARD	Ministry of Agriculture and Rural Development of Viet Nam	UNDP	UN Development Program
MOET	Ministry of Education and Training of Viet Nam	UNEP	United Nations Environment Program
MOF	Ministry of Finance of Viet Nam	USD	Dollar currency of the United States of America
MOH	Ministry of Health of Viet Nam	VEA	VN Environment Administration / MONRE
MOIT	Ministry of Industry and Trade of Viet Nam	VEPF	Viet Nam Environment Protection Fund
MONRE	Ministry of Natural Resource and Environment of Viet Nam	VIFARR	Viet Nam Fund for Aquatic Resources Reproduction
MOST	Ministry of Science and Technology of Viet Nam	VN	Viet Nam
MPA	Marine Protected Area	VND	Dong currency of Viet Nam
		VNFF	VN Forest Protection and Development Fund
		VNFOREST	Viet Nam Administration of Forestry / MARD
		WB	World Bank
		WPA	Wetland Protected Area

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EXECUTIVE SUMMARY

The Viet Nam Biodiversity Financial Needs Assessment (FNA) was undertaken as part of the Global Biodiversity Finance Initiative (BIOFIN) project, managed by UNDP in partnership with the European Commission (EU) and the governments of Germany, Switzerland, Norway and Flanders. The overall BIOFIN goal is to explore national and sub-national level finance allocations by government organizations, agencies, ministries, NGOs and private sector actors for biodiversity conservation, providing inputs for the development of a Biodiversity Finance Plan, formulating implementable actions to achieve national targets for biodiversity conservation.

The Viet Nam FNA follows guidance provided by the BIOFIN global team, with a number of adjustments to ensure alignment with the specific contextual conditions of the country. The FNA was completed with inputs from various sources at both the national and provincial level, including the Ministry of Agriculture and Rural Development (MARD), the Ministry of Natural Resources and Environment (MONRE), the Ministry of Science and Technology (MOST), relevant subordinate ministerial Administrations, Agencies and Departments, Provincial Departments of Agriculture and Rural Development (DARDs), Provincial Departments of Natural Resources and Environment (DONREs), National Parks (NPs), Nature Reserves (NRs), etc. All collected data and information were analyzed following the guidance provided in the BIOFIN Workbook (UNDP, 2016). Two consultation workshops were organized, to collect comments and feedback from relevant stakeholders and interested parties, which were used to frame this final report and its recommendations.

The FNA is the BIOFIN report estimating the anticipated financial needs to achieve the specific targets as formulated in the Viet Nam National Biodiversity Strategy (VN NBS) to 2020, vision to 2030. The FNA adopted Decision 45/QĐ-TTg, dated 08 January 2014 on Approval for Master Plan of Nation-Wide Biodiversity Conservation by 2020, with a vision to 2030 as quantitative guidance for the anticipated expanding Viet Nam's Terrestrial Protected Area (TPA) and Wetland PA (WPA) systems, and Decision 742/QĐ-TTg, dated 26 May 2010, approving the Plan on the system of Viet Nam's marine conservation zones through 2020 as quantitative guidance for Viet Nam's expanding Marine PA (MPA) network. Specific targets related to forest cover, mangroves, sea grass beds and coral reefs as well as degraded critical ecosystems are also assumed to be achieved through managing an expanding PA system. In addition, the FNA assumed that the poorly to not-quantifiable specific targets of the VN NBS, on endangered, rare and precious species, avoidance of species extinction and genetic resources, can be represented by the proxy target of "administration expenditures for biodiversity conservation management at provincial level and central level".

The FNA estimated the finance needs for optimal management¹ of biodiversity conservation in Viet Nam's existing and planned PAs, using a bottom-up Activity Based Costing (ABC) approach to obtain a unit-cost-per-hectare for different PA types based on quantitative information provided by sample PAs for 8 cost categories (e.g. salaries, annual operational and maintenance costs, costs for biodiversity conservation activities), as well as one-time investment costs for infrastructure and facilities in new PAs. The administrative expenditures for biodiversity conservation management at the provincial and central levels were costed using an Incremental Budgeting Approach (IBA), based on actual expenditures for 2015 obtained from the BIOFIN Viet Nam Biodiversity Expenditure Review (BER). Both estimates were summed to obtain the total

¹ The term "optimal biodiversity management" refers to a more rigorous management scenario with an ideal level of funding ensured to operate all biodiversity conservation programs to reach and sustain optimal ecosystem functioning, in PAs and beyond, as appropriate (after Flores M., G. Rivero, F. León, G. Chan, et al. (2008). *Financial Planning for National Systems of Protected Areas: Guidelines and Early Lessons*. The Nature Conservancy, Arlington, Virginia, US.

finance needs to achieve the targets of the VN NBS, and compared with the actual biodiversity expenditures as forecasted in the BER report, to obtain the quantified financial gap for achieving the Viet Nam NBS.

The FNA assessed the finance needs for the optimal management of biodiversity in Viet Nam to 2030 against 2 scenarios: (i) Finance needs for optimal biodiversity management in Viet Nam to 2030 based on the PA network established prior to 2018; and (ii) Finance needs for optimal biodiversity management in Viet Nam to 2030 based on an annually expanding PA network. Scenario 1 is “lower-optimum” scenario, estimating financing needs for optimal biodiversity management only for PAs existing in 2018, equal to 7.5% of the country’s surface area. Scenario 2 is the “optimum” scenario, estimating finance needs for optimal biodiversity management including for a PA network expanded in line with adopted government policies, to achieve a PA coverage in 2030 equal to 9.6% of the country as stipulated in the VN NBS.

Key findings of the Viet Nam FNA include:

- The estimated unit-cost-per-hectare for annual recurring costs to ensure optimal biodiversity conservation in Viet Nam’s PA system on average amounts to VND 3.51 million (USD 152.5), with significant differences observed between PA types, varying from VND 3,259,260 (USD 141.7) for TPAs, VND 3,063,700 (USD 133.2) for WPAs, to VND 5,188,500 (USD 225.6) for MPAs. At the same time, one-time initial investment cost per hectare in infrastructure and facilities on average amounts to VND 17.52 million (USD 761.7), varying from VND 21.7 million (USD 943.4) for TPAs, VND 18.3 million (USD 797.4) for MPAs, to VND 8.3 million (USD 362.7) for WPAs.
- Estimated financing allocated to PAs in 2018, expressed as unit-cost-per-hectare data based on actual financing in 2015 corrected for inflation (BER report) is quite lower than the anticipated unit-cost-per-hectare for optimal biodiversity management in PAs, due to limited budgets for recurring biodiversity conservation costs, with actual allocations supporting salaries, operations and maintenance.
- Under Scenario 1a the total finance needed for optimal biodiversity management in the existing PA network between 2018 and 2030 is about VND 132,399 billion (USD 5,756.5 million), including about VND 113,653 billion (USD 4,941.5 million; 86%) for TPAs, about VND 17,276 billion (USD 751.1 million; 13%) for MPAs, and about VND 1,470 billion (USD 63.9 million; 1%) for WPAs. Annually the finance needs for PAs will increase, for TPAs from about VND 6,836 billion (USD 297.2 million) in 2018 to VND 10,944 billion (USD 475.8 million) in 2030, for MPAs from about VND 1,039 billion (USD 45.2 million) in 2018 to about VND 1,664 billion (USD 103.5 million), and for WPAs from about VND 88 billion (USD 3.8 million) in 2018 to about VND 142 billion (USD 6.2 million) in 2030.
- Under Scenario 2a, the estimated total financing needed for optimal biodiversity management in Viet Nam’s expanding PA network, by 697,176.60 ha to 3,181,916.38 ha in 2030, is about VND 167,276 billion (USD 7,273 million), of which about VND 11,368 billion (USD 494.2 million) is needed for initial one-time investment in PA infrastructure and facilities for new PAs. In line with new PAs being established annually, towards 2030 the annual financial needs in the expanding PA network will increase from about VND 7,963 billion (USD 346.2 million) in 2018 to about VND 16,694 billion (USD 725.8 million) in 2030, largely for TPAs, about VND 12,338 billion (USD 536.4 million; 73%), followed by MPAs, about VND 2,475 billion (USD 107.6 million; 15%) and WPAs, about VND 1,880 billion (USD 81.7 million; 12%).
- Future annual financial needs for general biodiversity management at the central and provincial levels is estimated to increase from VND 754,086 million (USD 32.8 million) in 2018 to about VND 2,239 billion (USD 97.4 million) in 2030, obtained from data on actual financing in 2015 corrected for estimated future annual inflation and GDP growth.

- Total annual financial needs for optimal biodiversity management in support of achieving the targets of the VN NBS under Scenario 1 increase gradually from 2018 to 2030, from about VND 8,717 billion (USD 379.0 million) in 2018 to about VND 14,988 billion (USD 651.7 million) in 2030. Accordingly, for the period 2018-2030 the total financial needs to achieve the targets of the VN NBS with the 2018 existing PA system amount to VND 150,408 billion (USD 6,539 million).
- To 2030 under Scenario 2 the total financing needed for optimal biodiversity management and achieving the VN NBS' targets with an expanding PA system is VND 185,286 billion (USD 8,056 million), or an additional VND 34,877 billion (USD 1,516 million; +23%) compared to Scenario 1 (**Table ES1**).
- under Scenario 1 the gap between finance needs for optimal biodiversity management and forecaster future finance allocations decreases gradually from about VND 2,600 billion (USD 113.1 million) in 2018 to about VND 1,809 billion (USD 78.7 million) in 2025 and to about VND 818 billion (USD 35.57 million) in 2030. Meanwhile, to 2025 under Scenario 2 the annual biodiversity finance gap more than doubles, from about VND 2,476 billion (USD 107.6 million) in 2019 to about VND 5,825 billion (USD 253.3 million) in 2025, due to the significant expansion of the PA network by almost 570,000 hectares and the related finance needs for one-time investments in infrastructure and facilities. Between 2026 and 2030 the expansion of the PA network continues, albeit at a slower pace, and accordingly the finance gap in 2030 is about VND 4,763 billion (USD 207.1 million) (**Figure ES1**).
- In conclusion, under both scenarios, the gap in between forecasted actual financing and the finance needs for optimal management of biodiversity in Viet Nam will remain in the short, medium, and long-term. Accordingly, financing will remain insufficient to achieve the targets of the Viet Nam NBS.

Key recommendations of the Viet Nam FNA include:

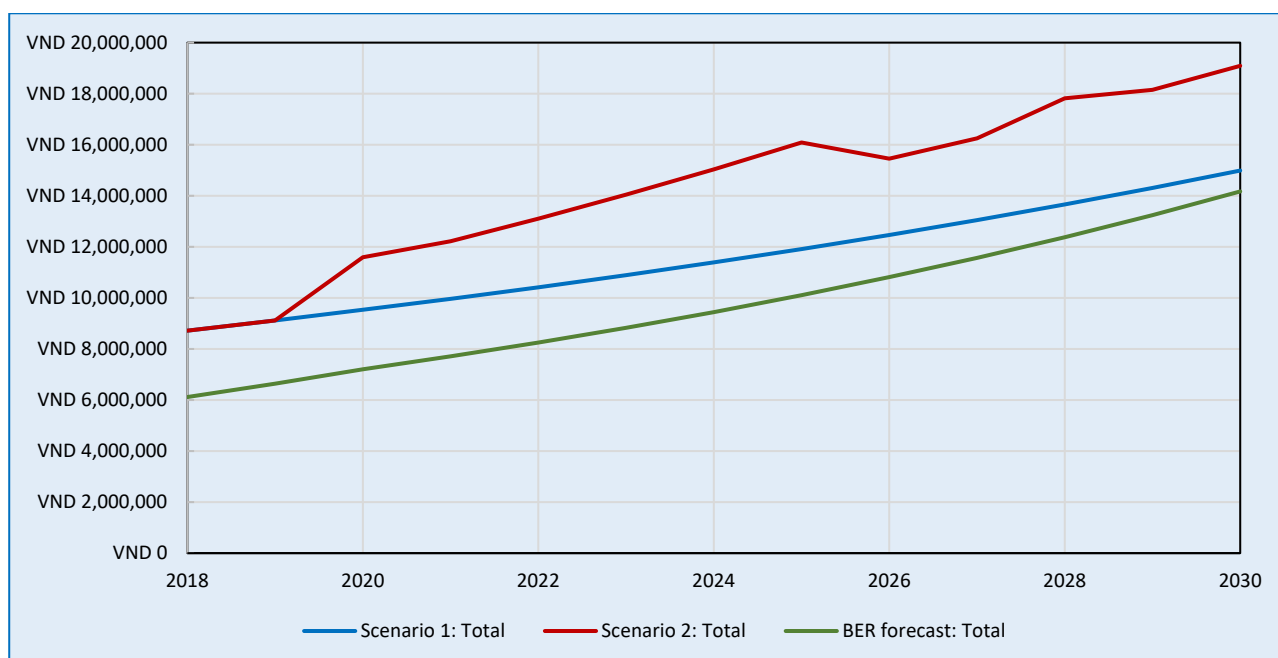
- The FNA assumes that the 2015 level of actual financing of administration costs for biodiversity conservation management at the central and province levels are sufficient. However, the confirmation of this assumption requires further research and analysis, the outcomes of which may lead to a re-assessment of the total financial needs for optimal biodiversity management in Viet Nam under both scenarios may need to be reassessed, as may the consequential gap with anticipated actual allocations.
- With the estimated unit-cost-per-hectare for different PA types, as estimated in this FNA, being very high compared to international best practice, a follow-up analysis is required, including data collection in a larger set of sample PAs as well as an critical review of quantified cost categories by independent experts, to avoid cost over estimations based on wishful thinking by PA staff. Specifically attention should be paid to analyzing options to reduce the very high costs for one-time investment in infrastructure and facilities of new PAs.
- The FNA is conducted as a financial analysis; no attention was paid to linkages between financing needs and the positive on-the-ground impact on biodiversity. It is recommended to further research such linkages, in PAs and beyond, to incorporate aspects of efficiency and effectiveness into the FNA.
- It is anticipated that state budget is insufficient to increase biodiversity financing with such volume as estimated by the FNA, towards closing the gap observed. Consideration needs to be given to strengthening currently available finance instruments as well as to the introduction of appropriate alternative effective finance instruments. This analysis will be the topic of the Biodiversity Finance Plan prepared under the BIOFIN-Viet Nam project.

Table ES1 Total finance needs for achieving the targets of the Viet Nam NBS under 2 scenarios

Currency		VND million				USD million			
PA type		2018-2020	2021-2025	2026-2030	Total	2018-2020	2021-2025	2026-2030	Total
Optimal BD management in PAs	S-1	24,857,182	48,515,350	59,026,342	132,398,874	1,080.7	2,109.4	2,566.4	5,756.5
Optimal BD management at central and provincial level		2,507,383	6,055,759	9,446,466	18,009,608	109.0	263.3	410.7	783.0
Total Scenario 1		27,364,565	54,571,109	68,472,808	150,408,482	1,189.8	2,372.7	2,977.1	6,539.5
Optimal BD management in PAs	S-2	26,835,041	63,824,185	76,616,694	167,275,920	1,166.7	2,775.0	3,331.2	7,272.9
Optimal BD management at central and provincial level		2,507,383	6,055,759	9,446,466	18,009,608	109.0	263.3	410.7	783.0
Total Scenario 2		29,342,424	69,879,943	86,063,161	185,285,529	1,275.8	3,038.3	3,741.9	8,055.9
Difference		1,977,860	15,308,834	17,590,353	34,877,047	86.0	665.6	764.8	1,516.4

Note: S-1 represents Scenario 1, S-2 represents Scenario 2.

Figure ES1 Gap between actual and optimal finance for biodiversity management under 2 scenarios



1 INTRODUCTION

The Financial Needs Assessment Report (FNA) under the “The Biodiversity Finance Initiative” (BIOFIN) is the report estimating the anticipated financial needs to implement the Viet Nam National Biodiversity Strategy to 2020, vision to 2030 (VN NBS; Decision 1250/QĐ-TTg, dated 31 July 2013). The FNA was prepared using the results of the Policy and Institutional Review report (PIR)² and the Biodiversity Expenditure Review report (BER)³, specifically Viet Nam’s standards of budget expenditures. In addition, the FNA conducted extensive consultations with experts, to clarify which important sub-strategies could be quantified, as well as to define the feasible Viet Nam-specific FNA framework to be applied. Based on discussions with the BER expert, the methodology of unit costs is adjusted and customized to fit with the Vietnamese context.

The VN NBS formulates the national policy on biodiversity conservation, including viewpoints, a vision, an overall target, specific targets, major tasks, priority programs, and institutional implementation arrangements, in support of the ongoing government policies in place for the implementation of the Law on Biodiversity approved by National Assembly in 2008 (Law No. 20/2008/QH12, dated 13 November 2008).

As also concluded in the BER, the detailed analysis of the VN NBS shows that not all objectives are sufficiently quantified to allow their costing. Taking into account data availability and priority targets formulated, the FNA consulted with key biodiversity and financing experts to select the key targets that can be financially quantified. Accordingly, it was decided to focus the Viet Nam FNA report on estimating the financial needs to maintain and expand the country’s system of Protected Areas (PAs) including Terrestrial PAs (TPAs), Marine PAs (MPAs) and Wetland PAs (WPAs). The classification of PAs follows the categories specified in the VN NBS, and reviewed in the PIR report against related legislative documents, specifically the Government Decision 742/QĐ-TTg, dated 26 May 2010, on approving the Plan on the system of Viet Nam’s marine conservation zones through 2020, the Government Decision No. 1976/QĐ-TTg, dated 30 October 2014 on approving the master plan on the national special-use forest system through 2020, with a vision towards 2030, the Ministry of Natural Resources and Environment (MONRE) Decision 1107/2015/QĐ-BTNMT, dated 12 May 2015 promulgating the list of protected areas and Government Decision 45/QĐ-TTg, dated 08 January 2014 on Approval for Master Plan of Nation-Wide Biodiversity Conservation by 2020, with a vision to 2030.

Specifically, Decision 45 provides detailed data about Viet Nam’s PA system, including on the different types of PAs already established, those planned to be established by 2020, and those planned to be established up to 2030. At the same time, Decision 742/QĐ-TTg, dated 26 May 2010, approving the Plan on the system of Viet Nam’s marine conservation zones through 2020 provides more detailed information with regard to the planned development of the country’s network of MPAs.

The Viet Nam FNA report consists of the following five chapters:

- Chapter 1 Introduction.
- Chapter 2 Procedures and methodology.
- Chapter 3 Results of financial needs.
- Chapter 4 Results of financial gaps.
- Chapter 5 Conclusions.

² Nguyen Xuan Nguyen, 2018. *Viet Nam Biodiversity Finance Initiative – Policy and Institutional Review*. UNDP Viet Nam, Hanoi, May 2018, 90 pp.

³ Tran Thi Thu Ha, 2018. *Viet Nam Biodiversity Finance Initiative –Biodiversity Expenditure Review*. UNDP Viet Nam, Hanoi, December 2018, 90 pp.

2 PROCEDURES AND METHODOLOGY

The methodology to estimate the financial needs for biodiversity conservation in Viet Nam was customized based on the procedures proposed in the Biodiversity Finance Initiative workbook (UNDP, 2016)⁴ (Figure 1). At the same time, the Viet Nam FNA approach adopted a number of adjustments, to properly reflect the Viet Nam context, as discussed in the sections below.

Figure 1 Financial Needs Assessment Procedure

Step	Activity
1	Preparation
2	Scoping and clarification of the VN NBS
3	Desktop study and initial costing tables
4	Refining cost models with expert input
5	Analysis of costing results
6	Estimation of finance needs

Source: BIOFIN Workbook (UNDP, 2016)

2.1 Narrowing the framework and objectives of the FNA

As discussed, the FNA estimates the financial needs to achieve biodiversity conservation targets outlined in the VN NBS.

The VN NBS formulates Viet Nam's Vision of Biodiversity to 2030 as follows: *"By 2030, 25% of degraded ecosystems of national and international significance will be restored; biodiversity shall be conserved and used sustainably, bringing major benefits to the citizenry and contributing significantly to the country's socio-economic development"*.

The overall target to 2020 of the VN NBS is that *"by 2020, the naturally important ecosystems, endangered, rare, and precious species, and genetic resources are preserved and used sustainably, contribute to the development of the green economy, and actively respond to climate change"*, based on which the three specific targets were formulated:

- To improve the quality and increase the area of protected ecosystems, ensuring that:
 - the area of terrestrial PAs accounts for 9% of the total territorial area; marine PAs account for 0.24% of the sea area, forest coverage reaches 45%, primary forest remains at 0.57 million hectares coupled with effective protection plans.
 - mangrove forests, sea grass beds, and coral reefs are maintained at the current levels.
 - 15% of degraded critical ecosystems are restored.
 - the numbers of internationally recognized PAs are increased to 10 Ramsar wetlands, 10 Biosphere Reserves, and 10 ASEAN Heritage Parks.

⁴ UNDP, 2016. *The 2016 BIOFIN Workbook: Mobilizing resources for biodiversity and sustainable development. The Biodiversity Finance Initiative. United Nations Development Programme: New York, 266 pp.*

- To improve the quality and populations of endangered, rare and precious species, ensuring that no new case of species extinction is reported, and significantly improve the status of endangered, rare and threatened species.
- To compile an inventory, store and conserve native, endangered, rare and precious genetic resources (including animals, plants and microorganisms) to ensure that they are not impaired or eroded.

The specific targets of the VN NBS are further elaborated in a number of supportive legislative documents. Decision 45/QĐ-TTg, dated 08 January 2014 on Approval for Master Plan of Nation-Wide Biodiversity Conservation by 2020, with a vision to 2030, directly supports and clarifies Decision 1250/QĐ-TTg, dated 31 July 2013, on the VN NBS. While a number of other legal documents provide guidance on Viet Nam's PA system, specifically Decree 1479/QĐ-TTg, dated 13 October 2008 on the Master Plan on Inland Water Protected Area System to 2020, Government Decision 742/QĐ-TTg, dated 26 May 2010 on approving the Plan on the system of Viet Nam's Marine Conservation Zones through 2020, Government Decision 1976/QĐ-TTg, dated 30 October 2014 on the Master plan on the National Special-Use Forest system to 2020 and vision to 2030, and Decision 1107/2015/QĐ-BTNMT, dated 12 May 2015 on the list of Protected Areas, the PIR report under the BIOFIN Viet Nam project has already shown that particularly Decision 45/2014/QĐ-TTg provides the full details on currently established and planned PAs in Viet Nam in the three categories of TPAs, MPAs and WPAs, to include also other biodiversity conservation facilities like Animal Rescue Centers, Medicinal plant gardens, Gene Banks and Biodiversity Corridors. At the same time, while the MPA network described in Decision 45 is largely comparable to that presented in Decision 742/2010, Decision 742/2010 provides a better fit with the already established MPA network in 2018 and the plans for its extension by 2020. At the same time, Decision 742/2010 only considered the period of 2010-2015 for MPA gazetting, while Decision 45 also envisions expansion of the MPA network up to 2030. Therefore, to ensure consistency, the FNA costed the financing of the MPA network based on merging the short-term MPA target as per Decision 742 with the long-term target of Decision 45.

Following consultations with and advisory received from biodiversity and finance experts, the FNA was narrowed such as to address feasible targets, i.e. targets with a clearly quantified objective to be achieved for which sufficient and reliable data are available to allow for the calculation of financial needs to achieve the quantified objective. Accordingly, the FNA builds its costing approach on the following selected legal documents:

- (i) Decision 45/QĐ-TTg, dated 08 January 2014 on Approval for Master Plan of Nation-Wide Biodiversity Conservation by 2020, with a vision to 2030, which in Appendix I includes a detailed list of planned TPAs, MPAs and WPAs, both already existing as well as planned for gazetting by 2020 and up to 2030, respectively. Decision 45 is considered as the most comprehensive legal document about the network of TPAs and WPAs up to the start of the BIOFIN project in Viet Nam. Accordingly, the specific targets for TPAs and WPAs for the FNA were defined as:
 - a. by 2030, TPAs account for 2,554,817.87 ha (7.7%) of Viet Nam's land area, in line with the TPAs listed in Appendix I of Decision 45.
 - b. By 2030, WPAs account for 336,827.6 hectares, in line with WPAs listed in Appendix I of Decision 45. Although WPAs were not specifically listed as a target in the VN NBS, considering the important role of wetlands for the conservation of biodiversity as well as socio-economic development, and the Government of Viet Nam's attention towards the expanding the WPA network, following discussions with experts of the Biodiversity Conservation Agency (BCA) under MONRE it was decided to add the quantified WPA target to the FNA.

- (ii) Decision 742/QĐ-TTg, dated 26 May 2010, approving the Plan on the system of Viet Nam's marine conservation zones through 2020, which in Appendix I includes a detailed list of existing and planned MPAs. Accordingly, the specific targets for MPAs for the FNA were defined as:
- a. By 2020, Marine PAs account for 270,271 ha (0.24%) of the sea area, in line with Decision 742/2010, to increase to 290,271 ha (0.26%) by 2030 in line with Decision 45.

Based on the selected targets as described above, the FNA report focused on conducting specific activities to quantify the financial needs to maintain and expand the PA network - TPAs, MPAs and WPAs.

Considering that the forest estate in Viet Nam specifically includes Special Use Forests (SUFs, equal to Terrestrial PAs) as well as Protection Forests as defined in the Master plan on the National Special-Use Forest system to 2020 and vision to 2030 (Decree 1976/QĐ-TTg, dated 30 October 2014) supporting implementation of the Law on Forest Protection and Development (No. 29/2004/QH11), the FNA adopted the assumption that achieving VN NBS targets on 45% forest coverage, 0.57 million hectares of protected primary forest, as well as 15% of degraded critical natural ecosystems restored are covered under the quantified targets of Viet Nam's terrestrial protected area estate.

The FNA also adopted the assumption that the target of "mangrove forests, sea grass beds, and coral reefs are maintained at the current levels", insufficiently quantified in the VN NBS, can be considered incorporated in the specific quantified targets for MPAs and WPAs.

As such, a number of additional VN NBS targets remain, that presently are hard or impossible to quantify:

- Improve the quality, populations and status of endangered, rare and precious species.
- Avoid new case of species extinction.
- Compile an inventory, store and conserve native, endangered, rare and precious genetic resources (including animals, plants and microorganisms) to ensure that they are not impaired or eroded.

While indirectly these targets can be considered to be supported by maintaining and expanding Viet Nam's PA system, with PAs serving as core areas for the conservation of species of flora and fauna, the absence of quantified targets as well as the limited availability of financial data specifically related to these targets caused the FNA to adopt the proxy target of "administration expenditures for biodiversity conservation management at provincial level and central level" as indirect indicator for the financial allocations towards achieving the VN NBS' currently unquantifiable targets.

Accordingly, the overall framework of the FNA for costing biodiversity conservation in Viet Nam to 2030 is presented in **Figure 2**.

2.2 Approach and methodology for the Viet Nam FNA

Bottom-up approach

In order to cost the financial needs for achieving the quantitative targets defined in section 2.1, the Viet Nam FNA selected the bottom-up approach. According to this approach, first the direct financial needs of the Viet Nam protected area estate –terrestrial, marine and wetland PAs – were estimated. Subsequently, the costs for the administration and management of biodiversity conservation at the provincial level and the central level were estimated, using an incremental approach to the costed biodiversity expenditures as presented in the BER report. Finally, both cost categories were summed to obtain an assessment of total financial needs for biodiversity conservation in Viet Nam based on the targets formulated in the VN NBS (**Figure 3**).

Figure 2 Framework of FNA for costing biodiversity conservation in Viet Nam

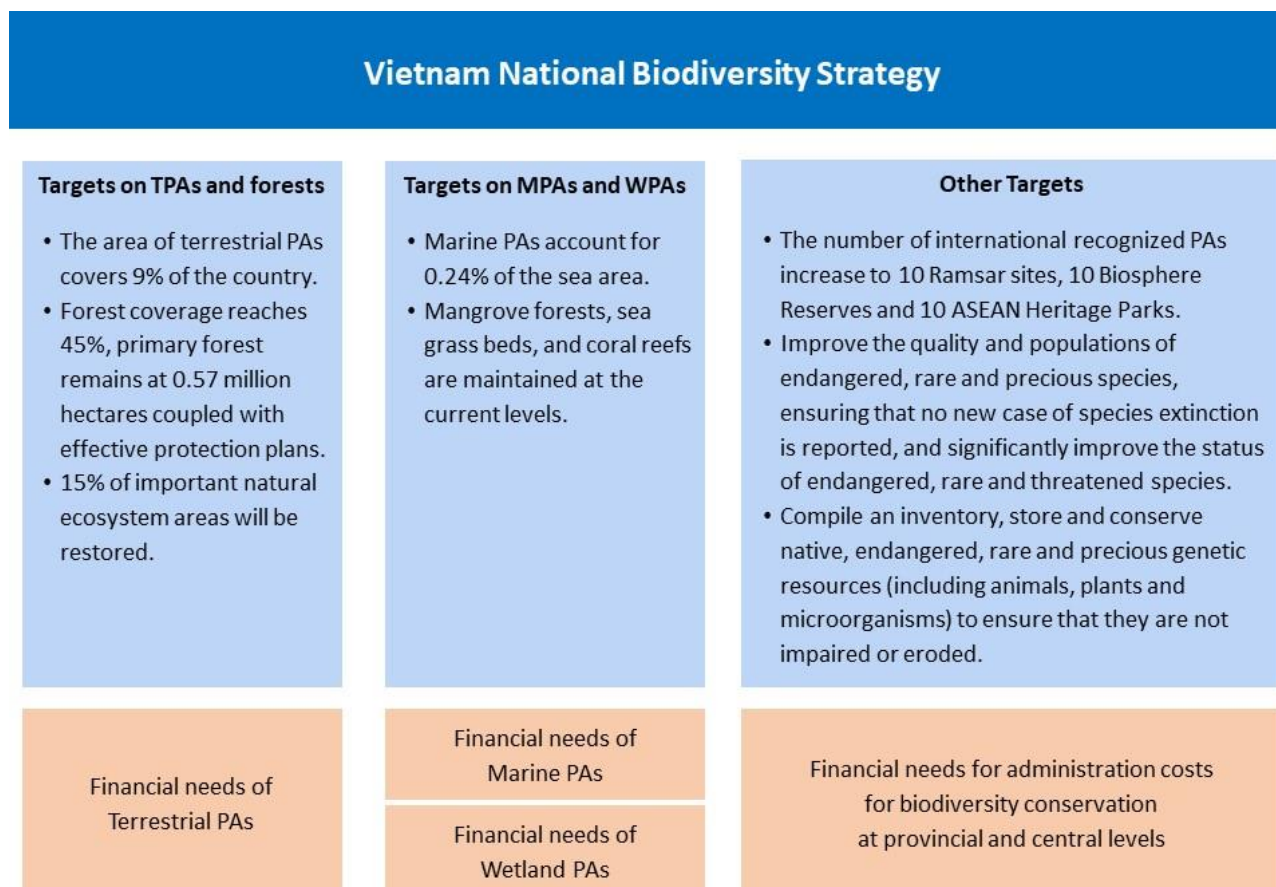
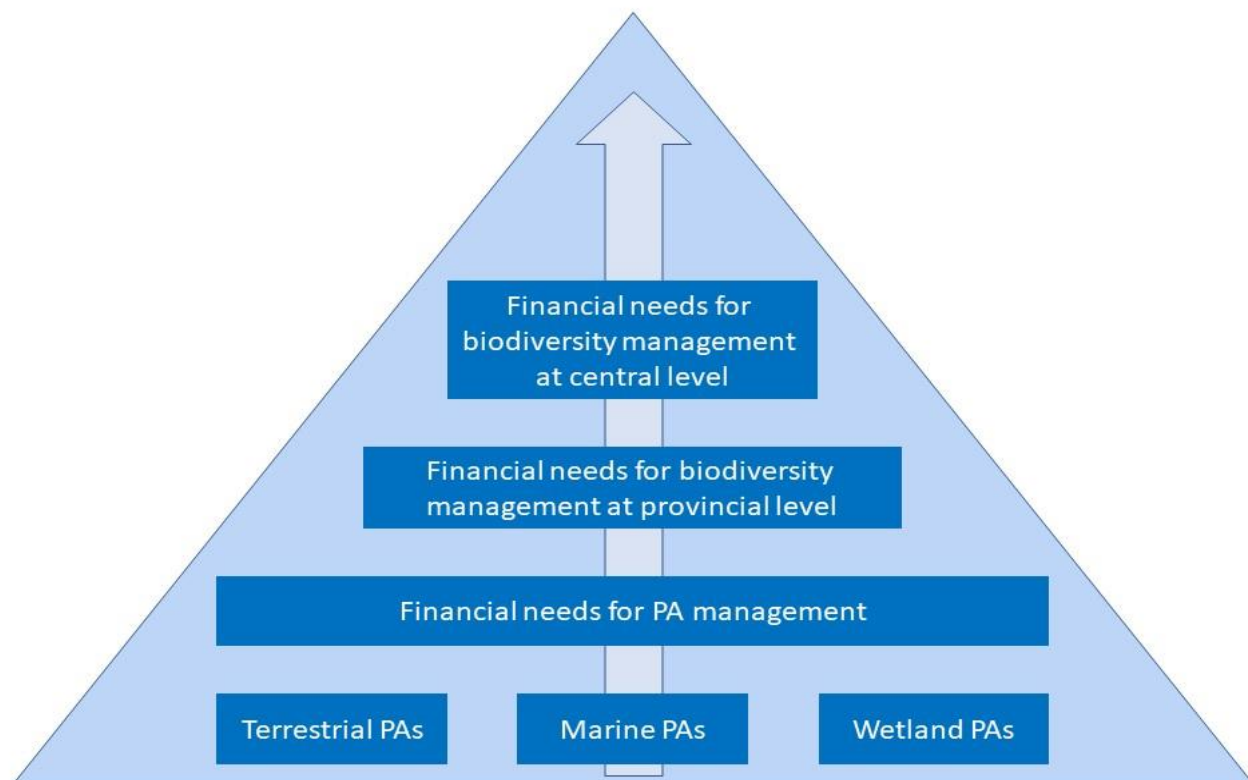


Figure 3 Bottom up Approach in the FNA, Vietnam



Notes: FNA expert's proposal

FNA methodology

The BIOFIN workbook suggests 5 methodologies for conducting an FNA, each of which has both advantages and disadvantages for its application in the Vietnamese context.

Incremental budgeting

This is a simple method in which some expected percentage increase is added to the quantitative historical costs in order to obtain an estimate for the future financial needs. The FNA has assessed this method as not suitable to estimate the financial needs of Viet Nam's PA system because, as the BER report discussed, the historical unit costs for protection in some PAs in Viet Nam are too low and do not realistically reflect the actual necessary costs. Also, for some types of PAs, like WPAs, no historical data on financing are available.

However, with regard to the administrative costs for biodiversity conservation management at the provincial and central levels, the BER report provides a diligent and quantified review of past expenditures. As such, while reliable information regarding the effectiveness of use of finances allocated for biodiversity conservation at the provincial and central levels is not available, expert consultations agreed that the current financial expenditures can be considered sufficient towards supporting the achievement of the non-quantified targets of the VN NBS. As such, it is reasonable to estimate future financial needs based on incremental budgeting, assuming an appropriate percentage increase of the provincial and central-level financial allocations for biodiversity management in the coming years. In other words, the FNA assumed that the provincial and central administrative costs for biodiversity management will incrementally increase from the current budget expenses in accordance with the GDP growth and the expected inflation as suggested by economic experts (**Table 1**), taken into consideration when the total finance needs are consolidated.

Table 1 **Weighting factors applied to biodiversity expenditures**

	2018	2019	2020	2025*	2030*
Expected inflation rates	4.00	4.00	4.00	20.00	20.00
Accumulative inflation	4.00	8.16	12.49	34.98	61.98
GDP growth rate ⁵	6.46	6.47	6.47	5.3 (annual)	

Source: Statista.com (<https://www.statista.com/statistics/444749/inflation-rate-in-vietnam/>)

Notes: * - Inflation in 2025 and 2030 is accumulated from 5 previous years; Unit - percentage

Historical projection

The basic idea of this method is to estimate the financial needs using detailed historical records of financing for conservation activities, rather than only the historical total cost used for incremental budgeting.

However, the historical projection method cannot be applied in Viet Nam, because the Vietnamese budgeting process is not based on results-based costing, but based on inputs needed for PA management, including salary costs, operation and maintenance costs, communication costs, etc. As such, considering that besides conservation-related tasks, PAs have the responsibility for a variety of other activities, like student internships, tourism, etc., it is very hard to determine the detailed historical cost for activities specific targeting biodiversity conservation, for example for replanting a hectare of forest. Therefore, the FNA refrained from using this method.

⁵ World Bank, 2018. Country profile: Viet Nam, assessed in 19 April 2018, <https://data.worldbank.org/country/Viet Nam>.

Cost modeling

This method is based on the use of quantitative models with selected input variables to discover significant correlations between the input and output variables. In order to produce reliable estimators, it is required to have a sufficient amount of relevant quantitative data over a long period of time. As such, the FNA assessed this method as being unsuitable for its use in Viet Nam, as a detailed database on biodiversity financing, and specifically for the financing of the protected areas, has not yet been set up in the country.

Activity based costing (ABC) and Result based costing (RBC)

Both ABC and RBC involve estimating the costs for biodiversity conservation activities based on specific programs and activities. ABC is applicable when short-term results are desired, while longer-term results are difficult to quantify but can be estimated from the short-term results. RBC is an expansion of ABC in which all financial costs are associated with specific medium to long-term results. This is an advanced method, encouraged to be used to fully reflect the total financial needs, but it requires the national budgeting process to be based on performance-based budgeting. As currently the Viet Nam national budgeting approach is based on input-based costing, as compared to output-based costing, the ABC method is more applicable than the RBC method for estimating the financial needs for biodiversity conservation in the PA network.

Currently in Viet Nam, most of the existing PAs are TPAs and MPAs, while Decision 45/QĐ-TTg, dated 08 January 2014 on Approval for Master Plan of Nation-Wide Biodiversity Conservation by 2020, with a vision to 2030 stipulates additional TPAs as well as WPAs to be established by 2020 and up to 2030, respectively. In addition, the Plan on the system of Viet Nam's marine conservation zones through 2020 (Decision 742/QĐ-TTg, dated 26 May 2010) targets to establish a total of 16 MPAs. As maintaining and expanding the PAs system is an outcome of the VN NBS, the ABC method is suitable to cost the financial needs of all PAs.

In conducting the FNA, for each (sub-)type of PAs, one to several representative PAs were chosen to clarify relevant costs, i.e. for salaries, operations, biodiversity-conservation expenses, investment, etc., reflecting the biodiversity conservation activities implemented by the PA. As such, the ABC method was used to cost the financial needs of the PA sample, expressed as unit-cost-per-hectare per (sub-)type of PA. Subsequently, the total costs for all PAs was calculated by multiplying the hectare coverage of each PA (sub)type with the unit-cost-per-hectare for that (sub)type, and summing the resulting costs for all PA (sub)types.

For each specific (sub)type of PA, the detailed explanation of the approach to calculate the unit-cost-per-hectare for biodiversity management is presented in section 2.3. While for existing PAs only the future costs for management and annual regular maintenance will be considered, for those PAs still to be established in future also the initial infrastructure investment costs need to be added to the unit costs of such future PAs. As with the Incremental Budgeting approach, inflation rates suggested by economic experts (**Table 1**) will be taken into consideration when the total financial needs are consolidated.

Table 2 **Summary of methods applied in the FNA for costing of the VN NBS**

Financial needs	Methods	Notes/ Principles
Terrestrial Protected Areas Marine Protected Areas Wetland Protected Areas	Activity Based Costing (ABC)	Estimating financial costs for biodiversity management based on unit-cost-per-hectare for PAs investigated in 2018, corrected for future inflation.
Administration costs for biodiversity conservation management at the provincial and central levels	Incremental Budgeting approach (IBA)	Estimating increasing percentages based on expected GDP growth rates and inflation.

Using the financial modeling framework provided by the Global BIOFIN Team, the combining of unit-cost-per-hectare for existing and new PAs with the estimated one-time investment costs as per time schedule to establish new PAs, and applying an appropriate inflation correction will finally provide the consolidated estimate of the total financial needs for Viet Nam's PAs network for the medium to long-term period.

2.3 Methodology of estimating PA unit-cost-per-hectare

Selection of sample PAs

The calculation of unit-cost-per-hectare for optimal protected area biodiversity management was conducted for a balanced sample of PAs, chosen in close consultation with experts at BCA of MONRE. The investigated PAs included representatives for each type of PAs identified, including TPAs and their sub-types, MPAs and WPAs, while care was taken to balance their geographic spread over different regions of Viet Nam (**Table 3**).

Table 3 *List of sample PAs used to calculate unit-cost-per-hectare values*

PA category	Type	Region	Sample site	Date of investigation
Terrestrial Protected Areas				
1	Central-managed NP	Red River Delta	Ba Vi	28 Dec 2017
			Cuc Phuong	19 Jan. 2018
2	Province-managed NP	Northeast	Cat Ba	30 May 2018
3	Nature Reserve	South Central	Son Tra (Da Nang)	1 Feb.2018
4	LCA	Northeast	Yen Tu	1 June 2018
5	SCA	Mekong river delta	Phu My	30 March 2018
		North Central	Sao La (Hue)	28 Sept. 2018
Marine Protected Areas				
6	Marine PA	South Central	Cu Lao Cham	2 Feb. 2018
Wetland Protected Areas				
7	Wetland PA	Mekong river delta	Tram Chim (Dong Thap)	30 March 2018

Calculation of unit-cost-per-hectare

Following the approach discussed above, unit-cost-per-hectare values were obtained by using the ABC method, individually for each of the selected sample PAs to obtain an informed estimate for the financial needs to fulfill the PA's defined tasks related to biodiversity conservation. The individual unit-cost-per-hectare values obtained for sample PAs sites of each PA type were used as reference costs for the calculation of the total financial needs to maintain Viet Nam's expanding PA estate currently and in future to 2030, based on current and future surface area coverage for each PA type and sub-type.

The current national budget system of Viet Nam considers 8 groups of costs (**Table 4**), data on which were collected for the sample PAs by means of a detailed questionnaire (**Appendix 9**).

Based on the information provided by the individual PAs, the FNA calculated the unit-cost-per-hectare for each group of costable activities C_1 to C_8 as defined in table 4, based on the actual expenditure for each group divided by the size of the sample PA in hectares, according to:

$$\text{Unit costs of existing PAs} = \sum_{i=1}^7 C_i \text{ (mil. VND/ha)}$$

$$\text{Unit costs of new-established PAs} = \sum_{i=1}^8 C_i \text{ (mil. VND/ha)}$$

Table 4 Description of cost categories used in unit-cost-per-hectare calculations

Category	Costable actions	Notes
<u>Recurring administration costs ($C_1 + C_2$)</u>		
C_1	Salary: payment to required number of staffs to fulfill the biodiversity works of the PA	Based on the requirements as stated by the investigated PA
C_2	Operation & Maintenance: (electricity, travel, water, etc.)	Based on the requirements as stated by the investigated PA
<u>Recurring biodiversity conservation costs ($C_3+C_4+C_5+C_6$)</u>		
C_3	Biodiversity- related expenses: due to the complex and multi-functions of the PA activities, only activities related to biodiversity conservation are accounted for this category.	Dependent on the specific biodiversity activities reported by each PA
C_4	Support people in buffer zone: people in buffer zone are supported to have more stable and better life. The costs help to limit the damages to the biodiversity in PAs	Based on Decision 24/2012/QĐ-TTg, dated 1 June 2012 ⁶
C_5	Education and communication about biodiversity: Spent on educating the residence to have better knowledge about the biodiversity conservation	Based on the requirements as stated by the investigated PA
C_6	Research: Specific research activities to protect or reserve specific species or to enhance the biodiversity outcome	Based on the requirements of the investigated PA
<u>Annual maintenance costs for investments (C_7)</u>		
C_7	Annual infrastructure and facility maintenance investment costs: The annual investment cost needed to maintain the infrastructure, facilities and equipment in existing PAs. This annual investment need differs from the one-time / initial investment need for new infrastructure (category C_8)	Based on the requirements as stated by the investigated PA
<u>One-time infrastructure investment costs (C_8)</u>		
C_8	Represent the one-time investment cost needed to build new infrastructure and facilities for new-established PAs. As existing PAs have been provided with sufficient infrastructure (offices, meeting rooms, fire defense equipment, etc.), the FNA only covered annual recurrent maintenance costs for investments (C_7). Newly established PAs however require the initial investment to build infrastructure and facilities.	Based on the Decision 2370/QĐ/BNN-KL, dated 5 August 2008 by the Ministry of Agriculture and Rural Development (MARD) ⁷ on the basic requirements for infrastructure in a standard SUF

The difference between the unit-cost-per-hectare for new-established PAs and existing PAs consists only of considerations given in new PAs to the need for initial one-time investments related to the infrastructure development (cost group C_8). All other cost groups remain the same, including the annual maintenance costs for investments (C_7) to maintain a PA's infrastructure after its establishment.

The unit-cost-per-hectare for the management of each PA type is calculated based on the actual financing provided to the investigated sample PAs listed in **Table 3**. It is recalled that these sample PAs are representative for each (sub-)type of PAs in the Viet Nam PA network, as such the unit-cost-per-hectare calculated for each PA (sub)type is assumed to be optimal and suitable to obtain total financial costs allocated to a specific PA (sub)type, and, by summing, for the current and future Viet Nam PA system at large.

⁶ Prime Minister Decision 24/2012/ QĐ-TTg on Policies of investing and developing Special Used Forest in the period of 2011-2020, 01 June 2012

⁷ Decision 2370/QĐ/BNN-KL on Project Approval of Infrastructure Construction and Improvement Program for Special Used Forest System in Vietnam under the period of 2008-2020, issued on 05 August 2008 by the Minister of MARD

2.4 Scenario analysis

The FNA assessed the financial needs for the optimal management⁸ of biodiversity in Viet Nam to 2030 – including the administration costs for biodiversity conservation management at the provincial and central levels as well as the costs for biodiversity conservation in the Viet Nam PA network - against two scenarios:

Scenario 1 – Finance needs for optimal biodiversity management in Viet Nam to 2030 based on the PA network established prior to 2018 calculates the total financing needed to ensure optimal biodiversity conservation management at the central and provincial levels and in the Viet Nam PA network – TPAs, MPAs and WPAs – as formally established and functioning in 2018, to ensure sufficient finance resources for optimal management and operations in support of achieving the anticipated biodiversity conservation outcomes. Following discussions with biodiversity experts and government stakeholders, the baseline scenario was adopted as the minimum future annual financial investment required if, for any reason, the anticipated financing related to the expansion of the PA network as envisioned in Decision 45/2014 and Decision 742/2010 will not become available. The unit-cost-per-hectare for optimal biodiversity conservation in PAs under scenario 1 incorporates only recurring cost categories (c_1 to c_7); no consideration is given to any one-time initial infrastructure investment c_8 , as such investment was already completed in the past.

Scenario 2 - finance needs for optimal biodiversity management in Viet Nam to 2030 based on an annually expanding PA network presents the financing needed to cover all costs related to optimal management of biodiversity in Viet Nam at the central and provincial levels and in the 2018 PA network annually expanding with new-established PAs as planned to be set up in the short-term (2018-2020), medium-term (2021-2025) and in the long-term (2026-2030), in line with Decision 45/2014 for TPAs and WPAs, and Decision 742/2010 for MPAs. For new-established PAs, the total unit-cost-per-hectare for optimal biodiversity conservation is obtained by summing the costs for initial one-time infrastructure investment and the annual recurring unit-cost-per-hectare for existing PAs of similar type.

As such, the two scenarios separately estimate the minimum and maximum financial resources needed to achieve the biodiversity objectives in Vietnam. The minimum scenario is based on the 2018 existing PA network, The maximum scenario includes the expansion of protected areas in line with adopted policies in Viet Nam. The total amount of financing needed under each scenario is calculated based on the unit-cost-per-hectare obtained from selected sample PAs upscaled for the total area in hectares for each PA (sub)type identified. Unit-cost-per-hectare established for 2018 will for future years to 2030 be adjusted in accordance with anticipated inflation rates as presented in **Table 1**.

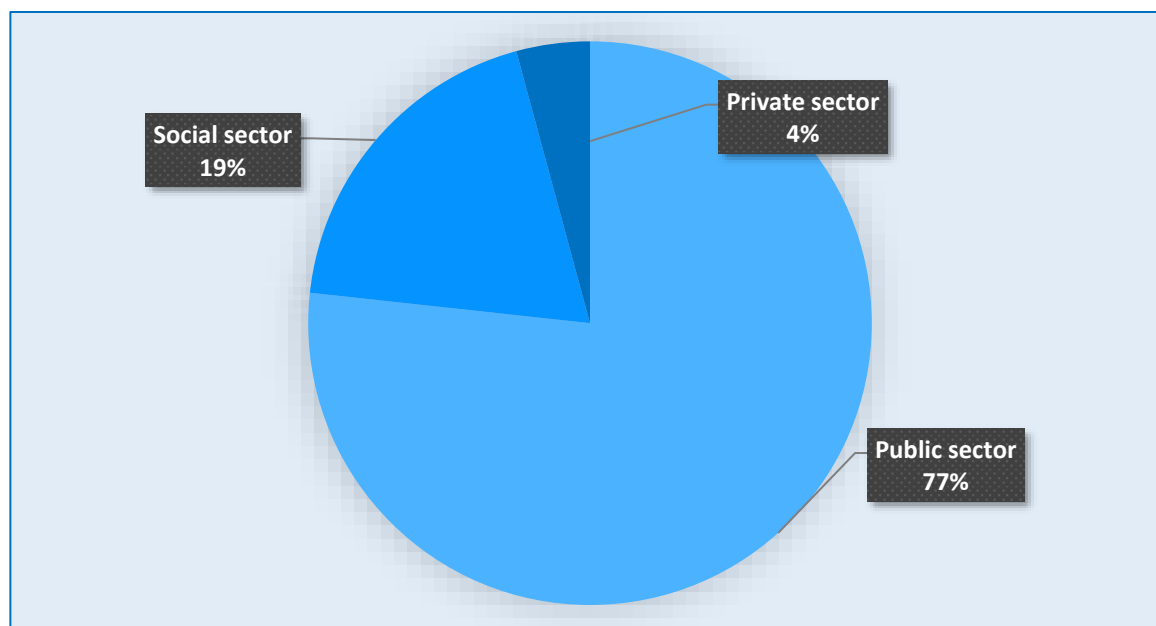
Contributions from the public, social and private sectors

The BER report analyzed biodiversity spending for 2011-2015, concluding that in Viet Nam financing for biodiversity-related activities is provided by (i) the public sector (76.7%), i.e. by the state budget and Official Development Assistance (ODA) expenditures for central and provincial government authorities and PAs; (ii) by the social sector (19.1%), through Trust Funds (TFs) such as the Viet Nam Forest Protection and Development Fund (VNFF), the Viet Nam Environment Protection Fund (VEPF), the Viet Nam Fund for Aquatic Resources Reproduction (VIFARR), the Community Development Fund (CDF), etc.; and (iii) the private sector (4.2%), i.e. contributions of private domestic and international companies and organizations (**Figure 4**).

⁸ The term “optimal biodiversity management” refers to a more rigorous management scenario with an ideal level of funding ensured to operate all biodiversity conservation programs to reach and sustain optimal ecosystem functioning, in PAs and beyond, as appropriate (after Flores M., G. Rivero, F. León, G. Chan, et al. (2008). *Financial Planning for National Systems of Protected Areas: Guidelines and Early Lessons*. The Nature Conservancy, Arlington, Virginia, US.

The BER report noted distinct changes in the contribution rates by the different sectors over time, with public spending decreasing, social spending increasing, and private spending remaining stable (**Table 5**). Specifically, between 2011 and 2015 biodiversity-related financing from the public sector annually decreased by on average 3.5%. Accordingly, the FNA assumed that in the near future to 2030 the relative contribution by the public sector to biodiversity conservation will continue to decrease between 1-2% annually, while the relative contribution from the social sector will increase by 1-2% annually, and the contribution from the private sector will show an average annual 1% increase after 2020, in response to targeted international and national programs for strengthening private sector support to biodiversity (**Table 6**).

Figure 4 Average share of biodiversity expenses by sector between 2011-2015



Source: VN - BER report (2018)

Table 5 Relative contribution to biodiversity expenditure by sector between 2011 and 2015

Sector	2011	2012	2013	2014	2015
Public sector	87%	73%	78%	76%	73%
Social sector	7%	22%	18%	20%	24%
Private sector	6%	5%	5%	3%	3%
Total	100%	100%	100%	100%	100%

Source: BER report

Table 6 Estimated sector contribution rates to biodiversity finance between 2018 and 2030

Sector	2018	2019	2020	2025	2030
Public sector	70%	68%	66%	60%	55%
Social sector	26%	28%	29%	30%	30%
Private sector	4%	4%	5%	10%	15%
Total	100%	100%	100%	100%	100%

Source: FNA expert proposal

Biodiversity finance gap

The FNA study obtained an estimate of the finance gap for biodiversity conservation in Viet Nam by comparing the estimated future expenditure for biodiversity conservation under the business-as-usual scenario presented in the BER study with the finance needed for optimal management under the FNA's "baseline" and "PA expansion" scenarios.

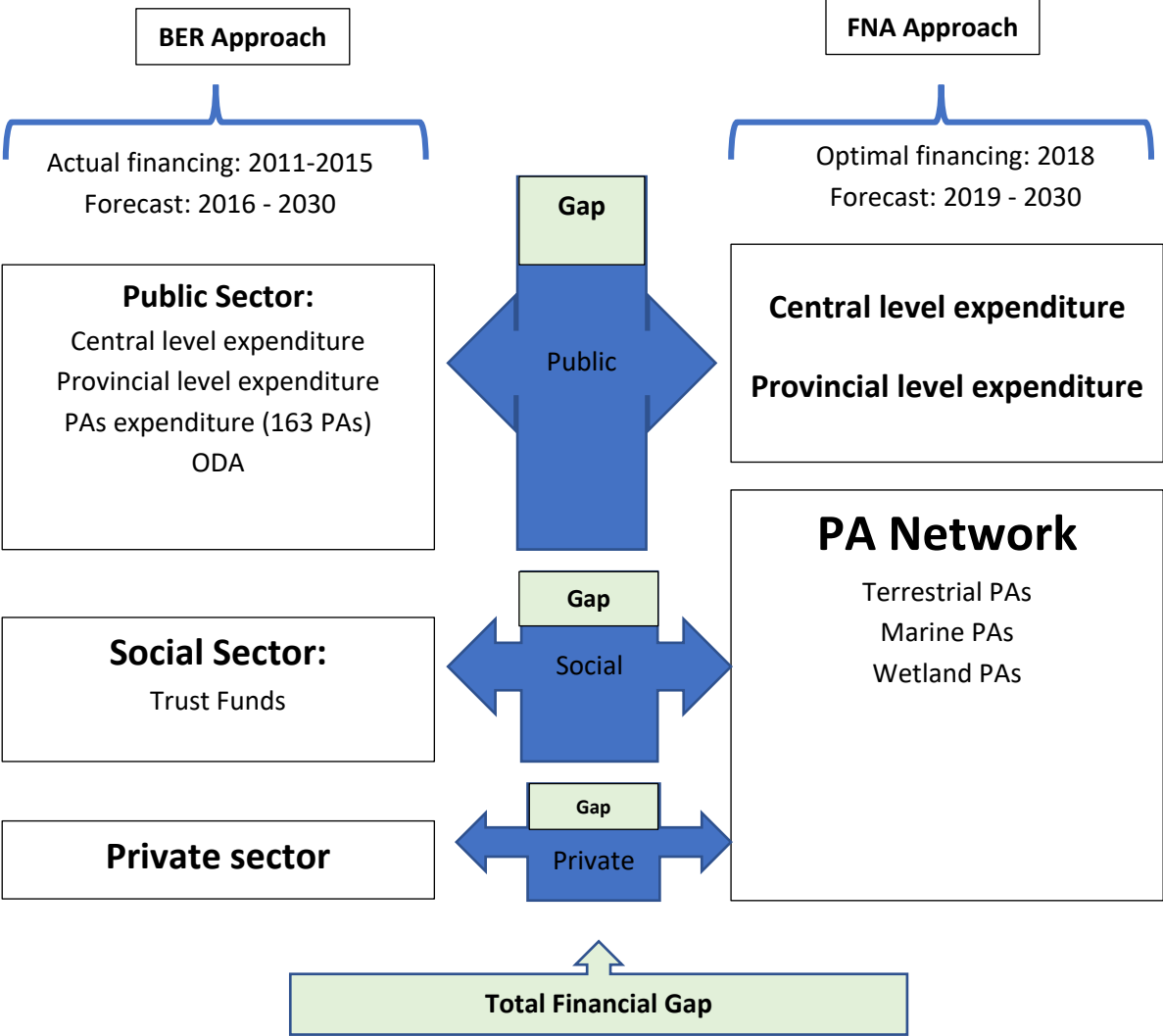
The forecasted business-as-usual biodiversity expenditure as calculated in the BER study is considered a variant of the FNA "scenario 1", forecasting the expenditures for maintaining biodiversity conservation based on the analysis of actual expenditures on biodiversity conservation from different sectors (public, social, private) during the period 2011-2015.

Meanwhile, the future financial needs as presented in the underlying FNA report are based on the financial needs for optimal management of the PA network, either the currently existing one – the FNA "baseline" scenario - or the expanded one – the FNA "scenario 2" - as assessed by the authorities of the sample PAs augmented with the necessary administration costs for biodiversity conservation management at the provincial and central levels. The administration costs for biodiversity conservation management at the central and provincial levels are added to reflect the necessary all relevant expenditures in support of achieving unquantified biodiversity conservation targets of the VN NBS. The total financial needs reflect the best management solutions, not specifying the sources of finance.

Using the estimated relevant contribution of the different sectors to financing biodiversity conservation in Viet Nam (**Table 6**), as assessed in the BER report, subsequently the financial gaps between BER's business-as-usual biodiversity finance needs and finance needs for optimal biodiversity management are also calculated for each sector individually, in support of informing sectoral stakeholders on the need for adopting appropriate finance mechanisms to fill the anticipated sectoral finance gaps

The FNA's approach to assess the biodiversity finance gap is schematically presented in **Figure 5**.

Figure 5 *Structure of financial gap analysis between BER and FNA*



3 RESULTS OF FINANCIAL NEED ASSESSMENT

3.1 Land area statistics per types of PAs

In line with the legislative documents as discussed in chapter 2 above, the PAs were grouped based on their type and sub-type. Subsequently, the total area of existing and planned PAs in each group – Terrestrial PAs, Marine PAs and Wetland PAs - was calculated.

3.1.1 Terrestrial PAs

In line with adopted legislation, Terrestrial PAs are subdivided into 5 sub-types, including (i) Central government-managed National Parks (NPs); (ii) Provincial government-managed NPs; (iii) Nature Reserves (NRs); (iv) Landscape Conservation Areas (LCAs); and (v) Species Conservation Areas (SCAs) (Table 7).

Table 7 Area coverage of existing and planned Terrestrial PAs in Viet Nam

Terrestrial PA type	2018-2020	2025	2030
Central-managed National Park (C-NP)	200,114.73	200,114.73	200,114.73
Province-managed National Parks (P-NP)	880,402.50	880,402.50	880,402.50
Nature Reserves (NR) *	1,051,683.11	1,283,912.21	1,303,912.21
Species Conservation Areas (SCA)	74,257.24	107,102.04	112,402.04
Landscape Conservation Areas (LCA)	57,986.30	57,986.30	57,986.30
Total	2,264,443.88	2,529,517.78	2,554,817.78

Notes: * Existing and planned NRs are managed at the provincial level, except for the Giang Man NR (20,000 ha) planned for gazettement between 2025-2030. Source: Consolidation from Decision 45/2014/QĐ-TTg; Unit - hectare

Analysis of Appendix I of Decision 45/2014/QĐ-TTg shows that between 2018 and 2030 the total surface areas of Central-managed NPs, province-managed NPs and LCAs remain unchanged; in these TPA sub-types no new PAs are planned to be gazetted. Meanwhile, new TPAs to be established between 2020 and 2030 are planned to be assigned the status of either NR or SCA. As such, by 2025 and by 2030, the total area under legal protection as TPAs is planned to increase by 11.7% and 12.8%, respectively, compared to the surface area designated as TPAs in 2018, equal to an additional 290,373.9 hectares added to the TPA estate by 2030.

3.1.2 Marine PAs

In accordance with Decision 742/2010/QĐ-TTg on approving the Plan on the system of Viet Nam's marine conservation zones through 2020, a total of 16 MPAs were targeted for gazettement to 2020, to cover 0.24% of the marine area of Viet Nam. Currently, in 2018 a total of 12 Marine PAs (192,552 ha) were already officially gazetted and are functioning, while consultations with the government informed the FNA that the remaining 4 MPAs will be formally established in 2020, as the necessary documentation for their formal gazettement is in the process of being finalized. In addition, in line with Decision 45, one more MPA (Tho Chu in Kien Giang province, 20,000 ha) will be gazetted by 2030, which the FNA assumes to assume functioning in 2028. Accordingly, by 2020 and 2030 the area of officially established MPAs will expand by 77,719 ha (40%) and 97,719 ha (51%), respectively.

Table 8 Area coverage of existing and planned Marine PAs in Viet Nam

	2018 – 2019	2020 – 2027	2028 – 2030
Marine Protected Areas	192,552	270,271	290,271

Source: Expert consolidation; Unit - hectare

3.1.3 Wetland PAs

To date, the number of existing WPAs and their land area is still limited, including Xuan Thuy NP, 4 NRs (Tram Chim, Tien Hai, Van Long, Lang Sen), 1 SCA (Ea Ral) and 1 LCA (Lak Lake). As presented in Decision 45/2014, the government of Viet Nam plans to significantly expand the land area formally designated as WPA, by 2020 and up to 2030, respectively. Considering limited factual progress to date, the FNA assumes that all WPAs planned to be established by 2020 will be gazetted between 2021 and 2025, and that WPAs documented for establishment for the period 2020-2030 will be gazetted between 2026 and 2030. As such, by 2025 the total area of WPAs will increase from the current 27,743.9 ha to 253,417.6 ha (+813%). Subsequently, by 2030 the area of WPA will further increase, to reach 336,827.6 ha (+33% compared to 2025). Accordingly, in future the financial needs for the optimal management of all planned WPAs will increase significantly.

Table 9 Statistics number of hectares by wetland PAs

	2018-2020	2025	2030
Province-managed National Parks	7,100.00	7,100.00	7,100.00
Nature Reserves *	11,116.60	135,961.30	177,071.30
Species Conservation Areas	49.00	100,438.00	100,438.00
Landscape Conservation Areas	9,478.30	9,918.30	52,218.30
Total	27,743.90	253,417.60	336,827.60

*Notes: ** Existing WPA-NRs are managed at the provincial level, while WPA-NRs planned to be established between 2020-2025 include 2 WPA-NRs (42,000 ha) to be managed at the central level, and 9 WPA-NRs (82,844.70 ha) to be managed at the provincial level. Between 2025-2030, an additional 10 WPA-NRs are planned, all envisioned to be managed at the provincial level. The only existing WPA-SCA (Ea Ral, 49 ha) is managed at the provincial level. WPA-SCAs planned between 2020-2025 will include 3 WPA-SCAs (30,800 ha) managed at the central level and 8 WPA-SCAs (69,589 ha) managed at the provincial level. Existing (1), planned by 2025 (1) and planned by 2030 (7) WPA-LCAs are all managed at the provincial level. Source: Expert consolidation based on Decision 45/2014/QD-TTg; Unit – hectare.*

3.1.4 PA network expansion to 2030

The FNA's consideration for expansion of the PA network to 2030 assumes all TPAs and WPA will be established as stipulated in Decision 45/2014/QD-TTg up to the year 2020 and 2030, respectively, and that all MPAs will be established in line with Decision 742/2010 (up to 2020) and Decision 45 (2026 to 2030). For the calculation of future financial needs for optimal biodiversity management in consideration of PA expansion, the FNA assumed a balanced expansion of the PA system in annual incremental steps, calculated from averaging the total increase in PA land area in a specific period of time (2021-2025 or 2026-2030, respectively) based on the number of years in that period, the total increase in line with adopted government strategies and FNA assumptions described in the previous section. The resulting summary of land area designated as PA (sub-)type between 2018 and 2030 is presented in **table 10**, showing that by 2020, 2025 and 2030 the overall PA network of Viet Nam cumulatively will increase by 77,719.00 ha (3%), 568,466.60 ha (23%) and 697,176.60 ha (28%), respectively, compared to 2018.

Table 10 Land area of Viet Nam's existing and planned PA network between 2018 and 2030.

SURFACE AREA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
TPA - central NP	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73	200,114.73
Annual expansion		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TPA - province NP	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50	880,402.50
Annual expansion		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
TPA - NR	1,051,683.11	1,051,683.11	1,051,683.11	1,098,128.93	1,144,574.75	1,191,020.57	1,237,466.39	1,283,912.21	1,287,912.21	1,291,912.21	1,295,912.21	1,299,912.21	1,303,912.21
Annual expansion		0.00	0.00	46,445.82	46,445.82	46,445.82	46,445.82	46,445.82	4,000.00	4,000.00	4,000.00	4,000.00	4,000.00
TPA - SCA	74,257.24	74,257.24	74,257.24	80,826.20	87,395.16	93,964.12	100,533.08	107,102.04	108,162.04	109,222.04	110,282.04	111,342.04	112,402.04
Annual expansion		0.00	0.00	6,568.96	6,568.96	6,568.96	6,568.96	6,568.96	1,060.00	1,060.00	1,060.00	1,060.00	1,060.00
TPA - LCA	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30	57,986.30
Annual expansion		0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Terrestrial PAs	2,264,443.88	2,264,443.88	2,264,443.88	2,317,458.66	2,370,473.44	2,423,488.22	2,476,503.00	2,529,517.78	2,534,577.78	2,539,637.78	2,544,697.78	2,549,757.78	2,554,817.78
Marine PAs	192,552.00	192,552.00	270,271.00	270,271.00	270,271.00	270,271.00	270,271.00	270,271.00	270,271.00	270,271.00	290,271.00	290,271.00	290,271.00
Annual expansion		0.00	0.00	77,719.00	0.00	0.00	0.00	0.00	0.00	0.00	20,000.00	0.00	0.00
Wetland PAs	27,743.90	27,743.90	27,743.90	72,878.64	118,013.38	163,148.12	208,282.86	253,417.60	270,099.60	286,781.60	303,463.60	320,145.60	336,827.60
Annual expansion		0.00	0.00	45,134.74	45,134.74	45,134.74	45,134.74	45,134.74	16,682.00	16,682.00	16,682.00	16,682.00	16,682.00
Total	2,484,739.78	2,484,739.78	2,562,458.78	2,660,608.30	2,758,757.82	2,856,907.34	2,955,056.86	3,053,206.38	3,074,948.38	3,096,690.38	3,138,432.38	3,160,174.38	3,181,916.38

Unit: hectares

3.2 Unit costs results

As discussed in chapter 2, the unit-cost-per-hectare for optimal biodiversity management in different PA types established in Viet Nam were obtained by using the ABC method, individually determined per PA (sub)type based on selected sample PAs (**Table 3**), costing realistically the expenditures needed for achieving optimal and effective biodiversity conservation management under the 8 groups of costs as adopted under Viet Nam's current national budget system (**Table 4**) using detailed questionnaires (**Appendices 1-7** and **Appendix 10**) and in-depth interviewing with relevant PA staff members.

As presented in section 3.1, between 2018 and 2030 the total land area designated as Central-managed NP, Province-managed NP and LCA will remain unchanged; no new PAs of these sub-types of TPAs will be set up. Therefore, for these PA types the FNA will only consider annual recurrent costs, i.e. for the cost categories C₁-C₇, to estimate the total financial needs for optimal PA management. For other types and sub-types of PAs, specifically NRs, SCAs, MPAs and WPAs, Decision 45/2014 and Decision 742/2010, respectively, stipulate that the network of PAs will be expanded by a number of PAs planned for gazetting, which the FNA assumes to take place in 2020 (MPAs), between 2021-2025 (TPAs, WPAs) or between 2026-2030 (TPAs, WPAs, MPAs), respectively. Accordingly, for established PAs again only annual recurrent costs – cost categories C₁-C₇ - will be considered, while for new PAs in addition also cost category C₈ – one-time initial investment costs for the construction of infrastructure and facilities – will be applied for the first year of operations, to obtain the total estimated unit-cost-per-hectare.

The resulting unit-cost-per-hectare for each type of PAs – for both existing and new-established ones - is presented in **Table 11**. A detailed description of the unit cost calculations for the individual PA types can be found in **Appendices 1 – 7** and **Appendix 10** attached to this report.

Table 11 Quantified unit-cost-per-hectare categorized for existing and new PAs

Cost Category		Terrestrial PA					Marine PA	Wetland PA
		C-NP	P-NP	NR	SCA	LCA		
C ₁	Salary	0.3727	0.5113	0.2857	0.3990	0.3881	1.3021	0.6164
C ₂	Operation & Maintenance	0.2893	0.3299	0.0905	0.0177	0.0719	0.4991	0.1295
C ₃	Biodiversity - related expense	0.5600	0.1833	0.4000	0.2577	0.3593	0.4255	0.4795
C ₄	Support people in buffer zone	0.0518	0.0257	0.1429	0.0799	0.0719	0.0681	0.0329
C ₅	Education and communication	0.0223	0.0229	0.0397	0.0258	0.0359	0.1277	0.0274
C ₆	Research	0.0446	0.0458	0.1190	0.0322	0.1078	0.4255	0.1096
C ₇	Infrastructure & facility annual maintenance investment	2.0014	2.0014	1.4647	2.8749	2.5692	2.3404	1.6685
	Total – Annual recurrent costs (Cost categories C ₁ -C ₇)	3.3422 (\$145.3)	3.1203 (\$135.7)	2.5425 (\$110.5)	3.6873 (\$160.3)	3.6040 (\$156.7)	5.1885 (\$225.6)	3.0637 (\$133.2)
C ₈	One-time infrastructure investment (new PAs)	n/a	n/a	14.6468	28.7495	n/a	18.3404	8.3425
	Total – Annual recurrent costs + one-time investment costs (Cost categories C ₁ -C ₈)	n/a	n/a	17.1893 (\$747.4)	32.4368 (\$1,410.3)	n/a	23.5289 (\$1,023.0)	11.4062 (\$495.9)

Unit: million VND (USD); Abbreviations: C-NP – Central National Park, P-NP – Province-managed National Park, NR – Nature Reserve, SCA – Species Conservation Area, LCA – Landscape Conservation Area.

The unit-cost-per-hectare for optimal PA management in Viet Nam presented in **Table 10** are calculated from the actual quantitative data provided by the administration of the sample PAs selected. Overall, analysis of the data obtained show that:

- Unit-cost-per-hectare for annual maintenance of infrastructure and facilities (C_7) is the largest anticipated recurring expenditure in existing PAs, varying from 45% (MPAs), to 54% (WPAs) to 66% (TPAs). Under this cost category, the FNA included the demand for additional infrastructure and its maintenance that were not provided for during initial one-time investment when the PA was formally gazetted.
- The average recurring unit-cost-per-hectare for all sub-types of TPAs (VND 3,259,260 / USD 141.7⁹ per hectare) as well as for WPAs (VND 3,063,700 / USD 133.2 per hectare) are significantly lower than for MPAs (VND 5,188,500 / USD 225.6 per hectare). National experts informed the FNA that MPAs are considered much more complicated in ensuring effective conservation, restoration. Specifically, the marine aspects of this PA type require higher investment and maintenance costs than in other types of PAs, e.g. for boats, aquatic demarcation, etc.
- For TPAs, the unit-cost-per-hectare for annual recurrent costs are the highest for SCAs, VND 3,687,300 (USD 160.3), the lowest for NRs, VND 2,542,500 (USD 110.5), confirming a comparable ranking current financing allocated to different sub-types of TPAs as observed in the BER.
- One-time initial investment costs were identified the highest for Sao La SCA, a sub-category of TPAs, followed by Marine PAs (i.e. Cu Lao Cham MPA), while costs for wetland PAs (i.e. Tram Chim WPA) are the lowest. National experts informed the FNA that SCAs typically have a specific conservation target on a smaller land area, requiring investment costs in absolute amounts comparable to other PA types, consequently leading to higher unit-cost-per-hectare both for one-time investment costs and for recurrent costs.

For existing PAs, the 7 cost categories presented in detail in **Table 11** can also be regrouped into recurrent financing for optimal administration, recurring financing for optimal biodiversity conservation and the annual costs for maintenance of infrastructure, facilities and equipment (**Table 12**), confirming that the recurrent costs for MPAs are about 65% higher than those for TPAs and WPAs.

Table 12 Unit cost structure for existing PAs

Cumulative cost group	Terrestrial PA	Marine PA	Wetland PA
Recurring administration costs ($C_1 - C_2$)	0.55122	1.8012	0.7459
Recurring biodiversity conservation costs ($C_3 - C_6$)	0.52570	1.0468	0.6494
Annual Infrastructure & facility maintenance costs (C_7)	2.18232	2.3404	1.6685
Total	3.25924	5.1884	3.0638

Unit: million VND

The quantified unit-cost-per-hectare for optimal biodiversity conservation management in Viet Nam's PAs was compared with the actual financing in 2015, expressed as unit-cost-per-hectare, as calculated in the BER based on the actual financing received by sample PAs from several sources, corrected to 2018 figures in consideration of inflation (**Table 13**). It shows that even after correction of 2015 actual unit-cost-per-hectare financing to 2018 prices, actual financing allocated to PAs in Viet Nam is much lower than the anticipated unit-cost-per-hectare for optimal biodiversity management, estimated based on information provided by PA

⁹ Average exchange rate applied for 2018 is VND 23,000 per USD

authorities. This large difference is explained by the FNA's costing approach, which requested PA authorities to assess realistic budgets for all relevant cost categories (C_1 - C_8) to achieve optimal PA management, while an analysis of current financing in the BER shows that in 2015 most PAs were allocated limited to no budget for recurring biodiversity conservation costs (cost categories $C_3 - C_7$), being allocated only financing for salaries (C_1) and operation & maintenance (C_2).

Table 13 Actual and optimal unit-cost-per-hectare financing for biodiversity management in PAs

PAs types		Actual		Optimal
		2015 (BER study)	2018-prices (BER study)	2018 (FNA study)
Marine Protected Area		1.16	1.3048	5.1885
National Park	Central -managed	1.08	1.2149	3.3422
	Province-managed			3.1203
Nature Reserve		0.16	0.1800	2.5425
Species and Habitat Protected Areas		1.21	1.3611	3.6873

Unit: million VND

Table 13 confirms a comparable ranking of PA (sub-)types in the 2015 unit-cost-per-hectare data and the unit-cost-per-hectare values for optimal PA management, with the highest value observed for MPAs, followed by the TPA sub-types SCAs and NPs, respectively, although differences among TPA sub-types are small, except for NRs which rank lowest. The BER did not provide unit-cost-per-hectare data for WPAs.

3.3 Results of financial needs analysis

3.3.1 Financial Needs for optimal biodiversity conservation in PAs

Using the financial modeling approach provided by the BIOFIN global team, the total financial needs for optimal biodiversity management of Viet Nam's PA system were consolidated using the unit-cost-per-hectare obtained for the different (sub-)types of PAs. The financial modeling approach is conducted in annual steps for the period 2018 to 2030, by multiplying the specific recurrent unit-cost-per-hectare - cost categories C_1 - C_7 - per PA (sub-)type with the land area designated as PA, corrected for expected inflation rates.

In addition, the unit-cost-per-hectare for one-time infrastructure investment (cost category C_8) were applied, but only for new PAs planned for gazetting in the short (by 2020), medium (by 2025) and long term (by 2030). As the one-time investment unit-cost-per-hectare were calculated based on 2018 prices, the actual costs for one-time investment will be corrected with a cumulative inflation factor, the value depending on the year of gazetting of the new PA.

Analysis shows that under Scenario 1 the financing needed for optimal biodiversity management in the existing PA network between 2018 and 2030 totals to about VND 132,399 billion (USD 5,756.5 million), of which about VND 113,653 billion (USD 4,941.5 million; 86%) is needed for TPAs, about VND 17,276 billion (USD 751.1 million; 13%) for MPAs, and about VND 1,470 billion (USD 63.9 million; 1%) for WPAs (**Table 14**).

The estimated annual financing needs for the optimal management in Viet Nam's 2018 existing PA network, obtained by multiplying inflation-corrected unit-cost-per-hectare for recurrent cost categories with the area of land designated as different PA (sub)-types, under Scenario 1 are presented in **Table 15**.

In line with an anticipated annual inflation rate of 4% per year, under Scenario 1 the finance needs for optimal biodiversity management in existing PAs will increase annually, for TPAs from about VND 6,836 billion (USD 297.2 million) in 2018 to VND 10,944 billion (USD 475.8 million) in 2030. Accordingly, finance needs for

existing MPAs will gradually increase from about VND 1,039 billion (USD 45.2 million) in 2018 to about VND 1,664 billion (USD 103.5 million) in 2030, while the financial needs for existing WPAs will increase from about VND 88 billion (USD 3.8 million) in 2018 to about VND 142 billion (USD 6.2 million) in 2030.

The estimated financing needs for optimal biodiversity management in Viet Nam's PA network, expanding under Scenario 2 by in total 697,176.60 ha to 2030 (**Table 10**), are also presented in **Table 14**. Between 2018 and 2030 finance needs in support of annual recurring costs for existing PAs and one-time investments for new PAs will require a total financing of about VND 167,276 billion (USD 7,273 million). Of this, about VND 11,368 billion (USD 494.2 million) is needed for initial one-time investment in PA infrastructure and facilities for the new PAs, of which 52% is required for TPAs, 30% for WPAs and 18% for MPAs.

Table 16 shows that to 2030, annually the total financial needs to ensure optimal biodiversity conservation management under Scenario 2 increase sharply, in consideration of covering both increased financial needs for annually recurring costs of an expanding PA network as well as covering the high investment costs for initial infrastructure and facilities in new PAs. Towards 2030 the annual financial needs for optimal biodiversity conservation management in the expanding PA network will increase from about VND 7,963 billion (USD 346.2 million) in 2018 to about VND 16,694 billion (USD 725.8 million) in 2030, largely required for TPAs, about VND 12,338 billion (USD 536.4 million; 73%), followed by MPAs, about VND 2,475 billion (USD 107.6 million; 15%) and WPAs, about VND 1,880 billion (USD 81.7 million; 12%).

Table 14 *Finance needs for optimal management in Viet Nam's PA-network under 2 scenarios*

Currency		VND million				USD million			
PA type		2018-2020	2021-2025	2026-2030	Total	2018-2020	2021-2025	2026-2030	Total
TPA - central NP	S-1	2,171,311	4,237,887	5,156,037	11,565,236	94.4	184.3	224.2	502.8
	S-2	2,171,311	4,237,887	5,156,037	11,565,236	94.4	184.3	224.2	502.8
TPA - province NP	S-1	8,918,426	17,406,662	21,177,866	47,502,954	387.8	756.8	920.8	2,065.3
	S-2	8,918,426	17,406,662	21,177,866	47,502,954	387.8	756.8	920.8	2,065.3
TPA - NR	S-1	8,680,734	16,942,744	20,613,438	46,236,916	377.4	736.6	896.2	2,010.3
	S-2	8,680,734	23,302,257	25,656,511	57,639,503	377.4	1013.1	1115.5	2,506.1
TPA - SCA	S-1	888,910	1,734,943	2,110,823	4,734,676	38.6	75.4	91.8	205.9
	S-2	888,910	3,339,852	3,323,638	7,552,400	38.6	145.2	144.5	328.4
TPA - LCA	S-1	678,455	1,324,183	1,611,071	3,613,709	29.5	57.6	70.0	157.1
	S-2	678,455	1,324,183	1,611,071	3,613,709	29.5	57.6	70.0	157.1
Terrestrial PAs	S-1	21,337,836	41,646,418	50,669,236	113,653,490	927.7	1,810.7	2,203.0	4,941.5
	S-2	21,337,836	49,610,841	56,925,124	127,873,801	927.7	2,157.0	2,475.0	5,559.7
Marine PAs	S-1	3,243,400	6,330,350	7,701,839	17,275,589	141.0	275.2	334.9	751.1
	S-2	5,221,259	8,787,171	11,713,396	25,721,827	227.0	382.1	509.3	1,118.3
Wetland PAs	S-1	275,946	538,582	655,267	1,469,795	12.0	23.4	28.5	63.9
	S-2	275,946	5,426,172	7,978,174	13,680,292	12.0	235.9	346.9	594.8
Total	S-1	24,857,182	48,515,350	59,026,342	132,398,874	1,080.7	2,109.4	2,566.4	5,756.5
	S-2	26,835,041	63,824,185	76,616,694	167,275,920	1,166.7	2,775.0	3,331.2	7,272.9

Note: S-1 represents Scenario 1, S-2 represents Scenario 2.

Table 15 Finance needs to 2030 for optimal management in Viet Nam's 2018 existing PA network

SURFACE AREA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
TPA - central NP	695,576	723,399	752,335	782,429	813,726	846,275	880,126	915,331	951,944	990,022	1,029,623	1,070,808	1,113,640
TPA - province NP	2,857,005	2,971,285	3,090,136	3,213,742	3,342,291	3,475,983	3,615,022	3,759,623	3,910,008	4,066,409	4,229,065	4,398,228	4,574,157
TPA - NR	2,780,860	2,892,095	3,007,779	3,128,090	3,253,213	3,383,342	3,518,676	3,659,423	3,805,800	3,958,032	4,116,353	4,281,007	4,452,247
TPA - SCA	284,761	296,152	307,998	320,317	333,130	346,455	360,314	374,726	389,715	405,304	421,516	438,377	455,912
TPA - LCA	217,342	226,036	235,077	244,480	254,259	264,430	275,007	286,007	297,447	309,345	321,719	334,588	347,971
Terrestrial PAs	6,835,545	7,108,966	7,393,325	7,689,058	7,996,620	8,316,485	8,649,145	8,995,110	9,354,915	9,729,111	10,118,276	10,523,007	10,943,927
Marine PAs	1,039,018	1,080,579	1,123,802	1,168,754	1,215,504	1,264,125	1,314,690	1,367,277	1,421,968	1,478,847	1,538,001	1,599,521	1,663,502
Wetland PAs	88,399	91,935	95,612	99,437	103,414	107,551	111,853	116,327	120,980	125,819	130,852	136,086	141,530
Total	7,962,962 (346.22)	8,281,480 (360.06)	8,612,740 (374.47)	8,957,249 (389.45)	9,315,539 (405.02)	9,688,161 (421.22)	10,075,687 (438.07)	10,478,715 (455.60)	10,897,863 (473.82)	11,333,778 (492.77)	11,787,129 (512.48)	12,258,614 (532.98)	12,748,958 (554.3)

Unit: million VND (million USD)

Table 16 Finance needs to 2030 for optimal management in Viet Nam's expanding PA-network

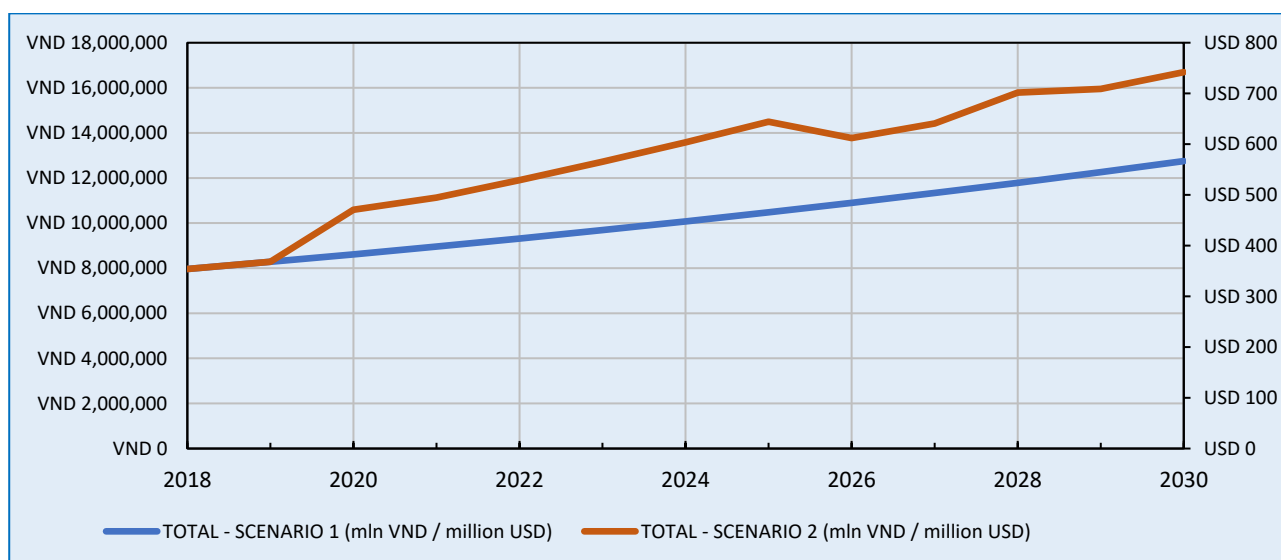
SURFACE AREA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
TPA - central NP	695,576	723,399	752,335	782,429	813,726	846,275	880,126	915,331	951,944	990,022	1,029,623	1,070,808	1,113,640
TPA - province NP	2,857,005	2,971,285	3,090,136	3,213,742	3,342,291	3,475,983	3,615,022	3,759,623	3,910,008	4,066,409	4,229,065	4,398,228	4,574,157
TPA - NR	2,780,860	2,892,095	3,007,779	4,026,149	4,325,342	4,642,028	4,977,129	5,331,610	4,707,960	4,910,753	5,122,238	5,342,783	5,572,777
TPA - SCA	284,761	296,152	307,998	559,999	610,735	664,634	721,867	782,616	602,516	632,180	663,253	695,800	729,890
TPA - LCA	217,342	226,036	235,077	244,480	254,259	264,430	275,007	286,007	297,447	309,345	321,719	334,588	347,971
Terrestrial PAs	6,835,545	7,108,966	7,393,325	8,826,799	9,346,353	9,893,350	10,469,151	11,075,188	10,469,876	10,908,709	11,365,897	11,842,206	12,338,435
Marine PAs	1,039,018	1,080,579	3,101,662	1,622,350	1,687,244	1,754,734	1,824,923	1,897,920	1,973,837	2,052,790	2,831,472	2,380,047	2,475,249
Wetland PAs	88,399	91,935	95,612	678,535	867,443	1,070,379	1,288,161	1,521,654	1,327,613	1,453,461	1,587,253	1,729,422	1,880,426
Total	7,962,962 (346.22)	8,281,480 (360.06)	10,590,599 (460.46)	11,127,683 (483.81)	11,901,041 (517.44)	12,718,462 (552.98)	13,582,236 (590.53)	14,494,762 (630.21)	13,771,326 (598.75)	14,414,961 (626.74)	15,784,622 (686.29)	15,951,676 (693.55)	16,694,110 (725.83)

Unit: million VND (million USD)

In line with the assumed annual step-wise expansion of the PA network, the annual finance needed as one-time infrastructure and facilities investment varies from about VND 1,518 billion (USD 67.0 million) in 2020, to on average VND 1,579 billion (USD 66.0 million) for the years 2021 to 2025, and on average VND 447 billion (USD 19.4 million) for the years 2026 to 2030.

Comparing the financial needs to ensure optimal biodiversity conservation management in the 2018 existing PA network until 2030 (Scenario 1) with the financial needs for optimal management in the expanding PA network (Scenario 2) shows that between 2020 and 2030, annually on average about an additional VND 3,171 billion (USD 137.9 million) are needed, varying from about VND 2,170 billion (USD 94.4 million) in 2020 to about VND 4,016 billion (USD 174.6 million) in 2025, the consequence of the large, but annually varying, area of land planned to be gazetted as new PAs during this period (**Figure 6**).

Figure 6 Annual financial needs for optimal PA management under two scenarios



The finance needs to ensure optimal biodiversity conservation of the expanding PA network to 2030 (Scenario 2) exceed the finance needs for optimal management in the 2018 existing PA network (Scenario 1), in total by about VND 34,877 billion (USD 1,516 million), of which 32.6% (VND 11,366 billion; USD 494.2 million) represents one-time investment costs for infrastructure and facilities in new PAs. As shown in Figure 6, for individual years the difference in finance needs between scenario 1 and scenario 2 varies, in response to the annual differences in the surface area of newly gazetting PAs under scenario 2 (Table 10), and consequently varying finance needs specifically for one-time investments in infrastructure and facilities.

3.3.2 Financial needs from Central level and Provincial level

As described in chapter 2, in addition to direct support for Viet Nam's PA system, the FNA estimates the financial needs for optimal biodiversity conservation at the central and provincial levels, understood as the financial costs allocated from the state budget, including ODA, to relevant ministries, including MONRE, MARD, etc., and their subordinate administrations, departments, agencies, etc. at the central and provincial level, as well as financial resources subsequently allocated by central and provincial level authorities to relevant biodiversity conservation stakeholders in support of achieving the non- to poorly quantified VN NBS targets. Specifically, this excludes any financing directly related to the management of PAs, whether related to covering administrative or managerial tasks, or biodiversity conservation activities.

Calculation of future financial needs for general biodiversity management at the central and provincial levels is based on actual financing allocated in 2015, as estimated in the BER report (**Table 17**), forecasted for the years 2018 to 2030, taking annual inflation and GDP growth into account (**Table 18**).

The FNA assumes that the authorities responsible for the management of biodiversity conservation at the central and provincial-levels are working efficiently, as such the estimated future financing these authorities at the central and provincial levels are assumed to be sufficient to achieve the non-quantified NBS targets.

Table 17 *Historical expenditures at central and provincial levels in the period 2011-2015*

	2011	2012	2013	2014	2015
Central: MONRE, MARD, MOST	205,837	311,092	272,744	306,735	317,673
Provincial: DONRE	18,671	37,431	37,890	25,233	58,853
Provincial: DARD	87,740	154,354	181,199	185,739	183,237
Total	312,248	502,877	491,833	517,707	559,763

Unit: million VND; source: BER report

Table 18 *Forecasted finance needs for optimal biodiversity management at central-provincial levels*

Indicator	2016	2017	2018	2019	2020
GDP growth rate ¹⁰	6.21%	6.66%	6.46%	6.47%	6.47%
Inflation rate	4.00%	4.00%	4.00%	4.00%	4.00%
Estimated biodiversity financing	616,915 (26.82)	682,678 (29.68)	754,086 (32.79)	833,039 (36.22)	920,258 (40.01)
Indicator	2021	2022	2023	2024	2025
GDP growth rate ¹¹	5.30%	5.30%	5.30%	5.30%	5.30%
Inflation rate	4.00%	4.00%	4.00%	4.00%	4.00%
Estimated biodiversity financing	1,005,842 (43.73)	1,099,385 (47.80)	1,201,628 (52.24)	1,313,380 (57.10)	1,435,524 (62.41)
Indicator	2026	2027	2028	2029	2030
GDP growth rate ¹⁰	5.30%	5.30%	5.30%	5.30%	5.30%
Inflation rate	4.00%	4.00%	4.00%	4.00%	4.00%
Estimated biodiversity financing	1,569,028 (68.22)	1,714,947 (74.56)	1,874,437 (81.50)	2,048,437 (89.08)	2,239,295 (97.36)

Unit for biodiversity financing - million VND (million USD).

3.3.3 Total estimated financial needs

In order to obtain a total estimate for the financial needs to fulfil relevant biodiversity conservation activities in support of achieving the targets as outlined in the VN NBS, the estimated financing needed to ensure optimal biodiversity conservation management in Viet Nam's PA system are summed with the estimated needs for optimal biodiversity conservation management activities at the central and provincial levels.

The total financial needs are again presented for two scenarios: (i) Scenario 1, covering the financial needs to ensure optimal biodiversity management in the existing PA network and at central and province levels; and (ii) Scenario 2, ensuring sufficient financial means for optimal biodiversity management at the central and province levels as well as in a PA network expanding as per government policies.

Under Scenario 1, the total financial needs for optimal biodiversity management in support of achieving the targets of the VN NBS increase gradually through the years to 2030, the resultant of an annual inflation

¹⁰ According to the World Bank forecast (2018).

¹¹ According to the HSBC (2012) and JCER (2017) forecasts.

correction applied to the estimated recurrent management costs in existing PAs and the incremental growth of the financial needs for biodiversity management at the central and provincial level in accordance with expected GDP growth rates and inflation correction. As a result, to 2030 the total financial needs for optimal biodiversity management with a PA system as existing in 2018 amount to VND 150,408 billion (USD 6,539 million) (**Table 19**). During this period, annually the finance need increase from about VND 8,717 billion (USD 379.0 million) in 2018 to about VND 14,988 billion (USD 651.7 million) in 2030 (**Table 20; Figure 7**).

Under **Scenario 2**, the FNA assumes that from 2020, annually new PAs will be gazetted in line with adopted government policies, while the incremental growth of financial needs for biodiversity management at the central and provincial level will be in accordance with expected GDP growth rates and inflation correction.

Overall, to 2030 under Scenario 2 the total financial needs for optimal biodiversity management and achieving VN NBS' targets with an expanding PA system amount to VND 185,286 billion (USD 8,056 million), or an additional VND 34,877 billion (USD 1,516 million; +23%) compared to Scenario 1 (**Table 19**).

With the majority of new PAs scheduled for gazettement between 2020-2025, in total 568,466 ha or 82% of all new PAs, during this period the annual financial needs increase sharply, up to about VND 15,930 billion (USD 692.6 million) in 2025. After 2025, the annual financial needs for optimal biodiversity management for an expanding PA network will increase further, up to about VND 18,933 billion (USD 823.2 million) in 2030, due to an additional 128,710 ha, or 18% of all new PAs gazetted since 2018, being added to the PA network, as well as increasing financial needs to cover annual recurring costs for operations and biodiversity conservation activities in the already established network of PAs (**Table 20; Figure 7**).

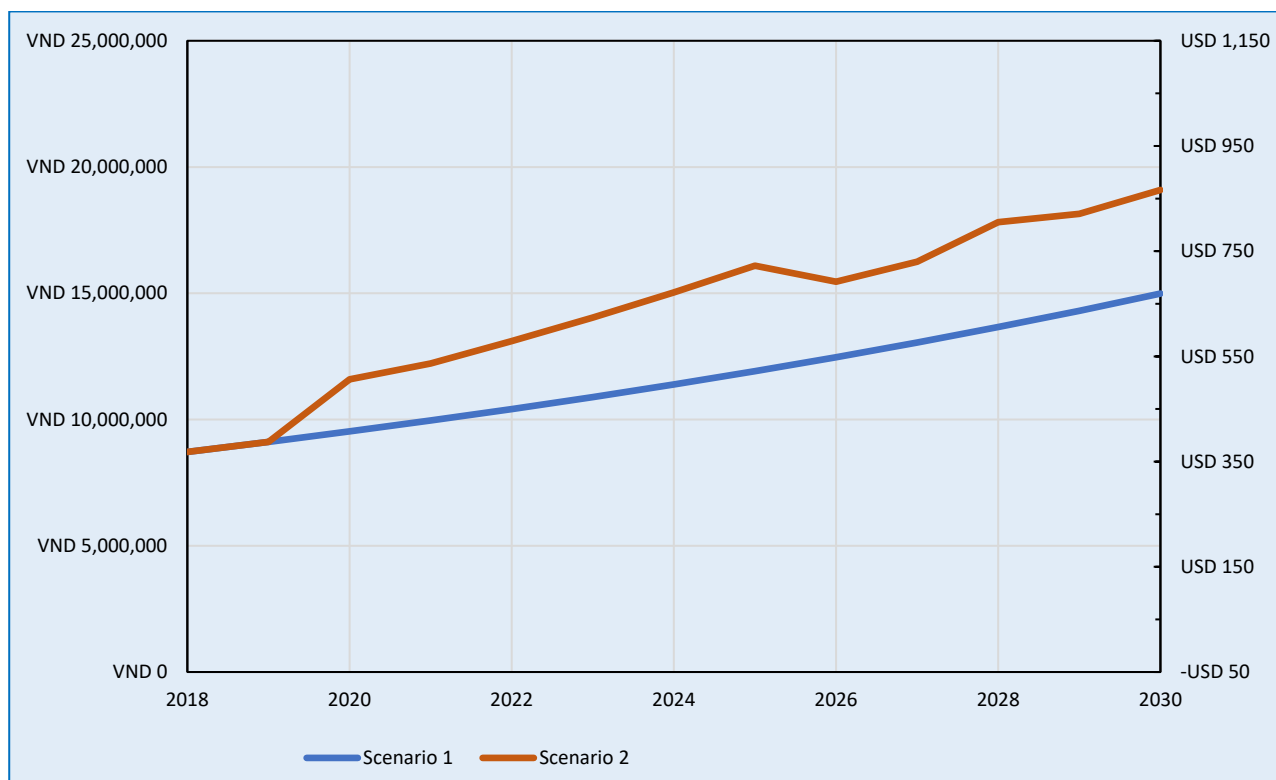
Figure 7 shows that annually the finance needs of Scenario 1 and Scenario 2 vary, because under scenario 2 annually a varying land area is gazetted as new PAs (**Table 10**); consequently the one-time investment cost in infrastructure and facilities varies. Finance needs to cover administration expenditures for biodiversity conservation at provincial and central levels are similar under both scenarios, per FNA assumption that current financing for central and provincial biodiversity management is sufficient (section 3.3.2).

Table 19 Total finance needs for achieving the targets of the Viet Nam NBS under 2 scenarios

Currency		VND million				USD million			
PA type		2018-2020	2021-2025	2026-2030	Total	2018-2020	2021-2025	2026-2030	Total
Optimal BD management in PAs	S-1	24,857,182	48,515,350	59,026,342	132,398,874	1,080.7	2,109.4	2,566.4	5,756.5
Central & provincial BD management		2,507,383	6,055,759	9,446,466	18,009,608	109.0	263.3	410.7	783.0
Total Scenario 1		27,364,565	54,571,109	68,472,808	150,408,482	1,189.8	2,372.7	2,977.1	6,539.5
Optimal BD management in PAs	S-2	26,835,041	63,824,185	76,616,694	167,275,920	1,166.7	2,775.0	3,331.2	7,272.9
Central & provincial BD management		2,507,383	6,055,759	9,446,466	18,009,608	109.0	263.3	410.7	783.0
Total Scenario 2		29,342,424	69,879,943	86,063,161	185,285,529	1,275.8	3,038.3	3,741.9	8,055.9
Difference		1,977,860	15,308,834	17,590,353	34,877,047	86.0	665.6	764.8	1,516.4

Note: S-1 represents Scenario 1, S-2 represents Scenario 2.

Figure 7 Estimated annual financial needs for achieving the targets of the Viet Nam NBS



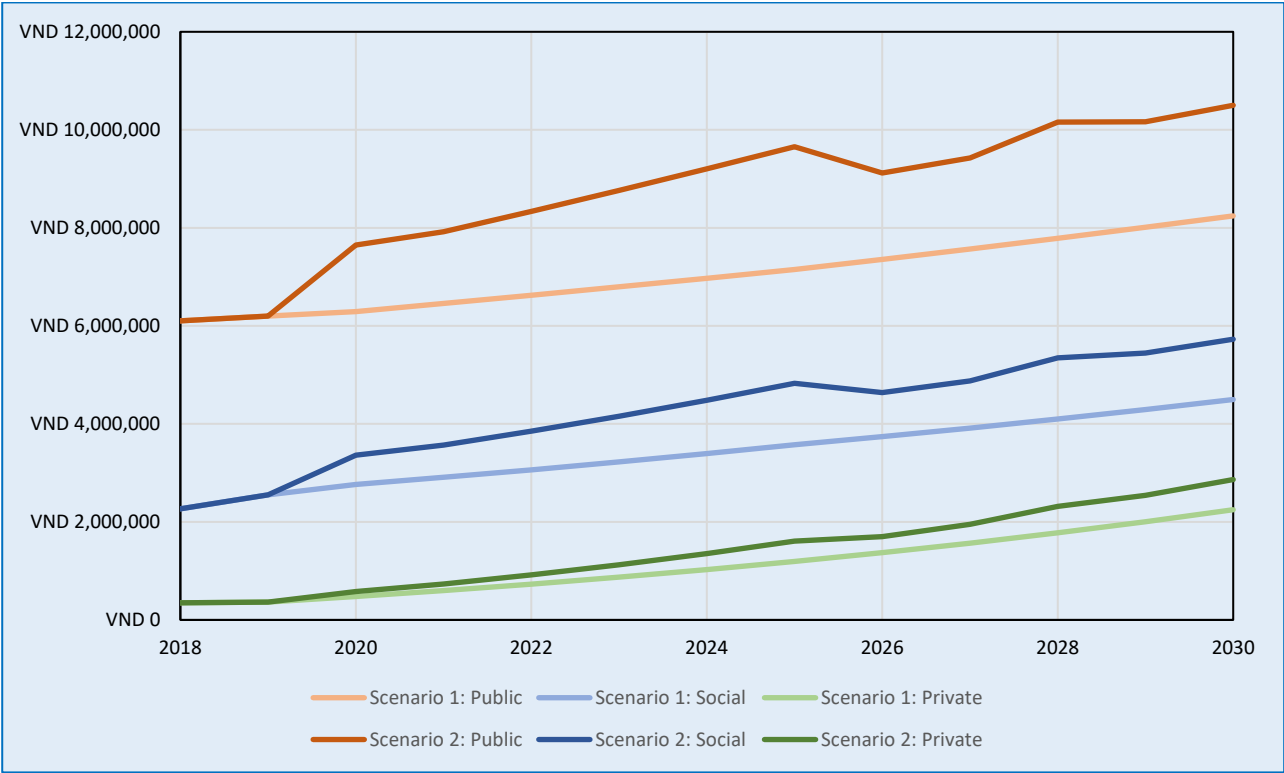
Unit: million VND / million USD

3.3.4 Estimated financial needs in different sectors

Based on the estimated sector contribution rates to biodiversity finance in Viet Nam (**Table 6**, section 2.4), inferred from the observations on trends in sectoral support to biodiversity finance between 2011 and 2015 as described in the BER report, the FNA forecasts the anticipated future contributions to biodiversity conservation finance per individual sector up to 2030, adopting the two Scenarios as formulated (**Table 21**).

The FNA notes that the interpretation of data in **Table 21** is of indicative value only, being based on observed expenditure patterns in the past. Future absolute and relative contributions by different sectors to biodiversity conservation will be significantly subject to state and sector policies adopted, towards offering guidance and incentives to practices benefiting biodiversity conservation, or disincentives for harmful practices, as well as by sectoral acceptance of responsibilities and societal awareness. Meanwhile, estimated contributions by the different sectors as presented in **Table 21** and **Figure 8** may support policy makers and sectoral decision makers in each sector in considering adopting appropriate measures to ensure the allocation of the sufficient financial means for optimal biodiversity conservation in Viet Nam.

Figure 8 *Indicative annual sectoral contributions to achieving biodiversity conservation in Viet Nam*



Unit: million VND

Table 20 Scenario analyses of financial needs for biodiversity conservation in Viet Nam

SURFACE AREA		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Scenario 1 – Financial needs for optimal biodiversity management in the 2018 PA network and general administration at central and province levels														
PA financing	VND	7,962,962	8,281,480	8,612,740	8,957,249	9,315,539	9,688,161	10,075,687	10,478,715	10,897,863	11,333,778	11,787,129	12,258,614	12,748,958
	USD	346.22	360.06	374.47	389.45	405.02	421.22	438.07	455.60	473.82	492.77	512.48	532.98	554.30
Central and province financing	VND	754,086	833,039	920,258	1,005,842	1,099,385	1,201,628	1,313,380	1,435,524	1,569,028	1,714,947	1,874,437	2,048,760	2,239,295
	USD	32.79	36.22	40.01	43.73	47.80	52.24	57.10	62.41	68.22	74.56	81.50	89.08	97.36
TOTAL	VND	8,717,048	9,114,519	9,532,998	9,963,091	10,414,924	10,889,789	11,389,067	11,914,238	12,466,891	13,048,725	13,661,566	14,307,374	14,988,253
Baseline	USD	379.00	396.28	414.48	433.18	452.82	473.47	495.18	518.01	542.04	567.34	593.98	622.06	651.66
Scenario 2 - Financial needs for optimal biodiversity management at central and province levels and in an expanding PA network														
PA financing	VND	7,962,962	8,281,480	10,590,599	11,127,683	11,901,041	12,718,462	13,582,236	14,494,762	13,771,326	14,414,961	15,784,622	15,951,676	16,694,110
	USD	346.22	360.06	460.46	483.81	517.44	552.98	590.53	630.21	598.75	626.74	686.29	693.55	725.83
Central and province financing	VND	754,086	833,039	920,258	1,005,842	1,099,385	1,201,628	1,313,380	1,435,524	1,569,028	1,714,947	1,874,437	2,048,760	2,239,295
	USD	32.79	36.22	40.01	43.73	47.80	52.24	57.10	62.41	68.22	74.56	81.50	89.08	97.36
TOTAL	VND	8,717,048	9,114,519	11,510,857	12,133,525	13,000,426	13,920,090	14,895,616	15,930,286	15,340,353	16,129,908	17,659,060	18,000,436	18,933,404
PA Expansion	USD	379.00	396.28	500.47	527.54	565.24	605.22	647.64	692.62	666.97	701.30	767.79	782.63	823.19

Unit: million VND / million USD

Table 21 Total finance needs for optimal biodiversity conservation per sector

SURFACE AREA	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Baseline Scenario													
Public Sector	6,101,933	6,197,873	6,291,779	6,456,083	6,623,892	6,795,228	6,970,109	7,148,543	7,355,465	7,568,260	7,787,093	8,012,129	8,243,539
Social Sector	2,266,432	2,552,065	2,764,569	2,909,223	3,061,988	3,223,377	3,393,942	3,574,272	3,740,067	3,914,617	4,098,470	4,292,212	4,496,476
Private Sector	348,682	364,581	476,650	597,785	729,045	871,183	1,025,016	1,191,424	1,371,358	1,565,847	1,776,004	2,003,032	2,248,238
TOTAL Baseline	8,717,048	9,114,519	9,532,998	9,963,091	10,414,924	10,889,789	11,389,067	11,914,238	12,466,891	13,048,725	13,661,566	14,307,374	14,988,253
PA Expansion Scenario													
Public Sector	6,101,933	6,197,873	7,597,166	7,862,524	8,268,271	8,686,136	9,116,117	9,558,172	9,050,809	9,355,346	10,065,664	10,080,244	10,413,372
Social Sector	2,266,432	2,552,065	3,338,149	3,542,989	3,822,125	4,120,347	4,438,893	4,779,086	4,602,106	4,838,972	5,297,718	5,400,131	5,680,021
Private Sector	348,682	364,581	575,543	728,012	910,030	1,113,607	1,340,605	1,593,029	1,687,439	1,935,589	2,295,678	2,520,061	2,840,011
TOTAL PA Expansion	8,717,048	9,114,519	11,510,857	12,133,525	13,000,426	13,920,090	14,895,616	15,930,286	15,340,353	16,129,908	17,659,060	18,000,436	18,933,404

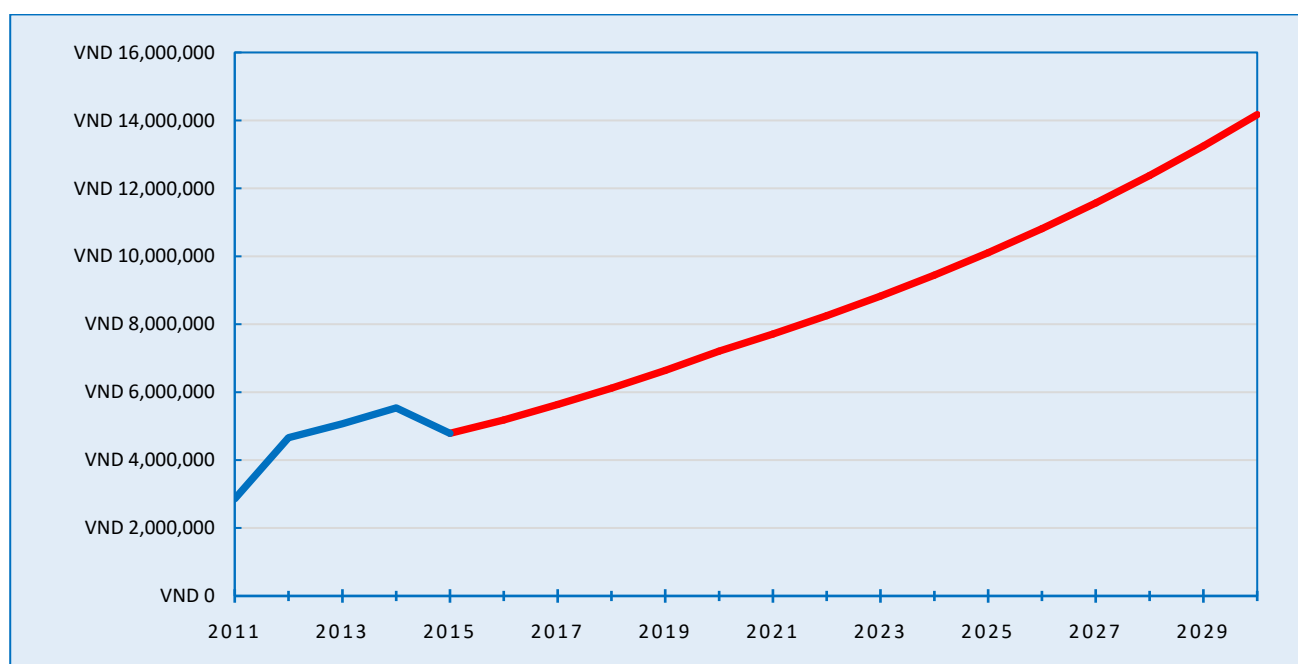
Unit: million VND / million USD

4 FINANCIAL GAPS

4.1 Total financial gap for optimal biodiversity conservation in Viet Nam

The Viet Nam BER report applied a linear regression analysis using a multitude of independent variables to show that total biodiversity expenditure for 2011-2015 correlated best with GDP growth. Accordingly, taking into account the economic analyses of HSBC (2012), JCER (2017) and the World Bank (2018), forecasting the average GDP growth rates of Viet Nam for the period 2018-2030, the BER report estimated the future biodiversity expenditure of Viet Nam under the “business-as-usual” scenario, i.e. based on actual financing allocated for biodiversity conservation in Viet Nam during the period 2011-2015 (**Figure 9**).

Figure 9 Estimated total annual expenditure for biodiversity conservation in Vietnam up to 2030



Notes: Blue line – actual biodiversity finance allocated between 2011-2015; Red line – forecasted actual biodiversity expenditure under the business-as-usual scenario in the years 2011-2015; Unit: mil. VND; Source: BER report.

Comparing the forecasted financial needs for optimal management of Viet Nam’s existing PA network under **Scenario 1** with the anticipated financial means allocated annually up to 2030 as estimated in the BER report (**Table 22**), it is noted that the observed gap in 2018 of about VND 2,600 billion (USD 113.1 million) gradually decreases, to about VND 1,809 billion (USD 78.7 million) in 2025 and to about VND 818 billion (USD 35.57 million) in 2030. The decrease of the gap over time may be the result of a proper inflation correction applied to budgets being allocated to the existing PAs to achieve their biodiversity conservation targets, aligned with financing allocated for effective general biodiversity management activities at the central and provincial level, appropriately corrected over time for inflation and GDP growth (**Figure 10**).

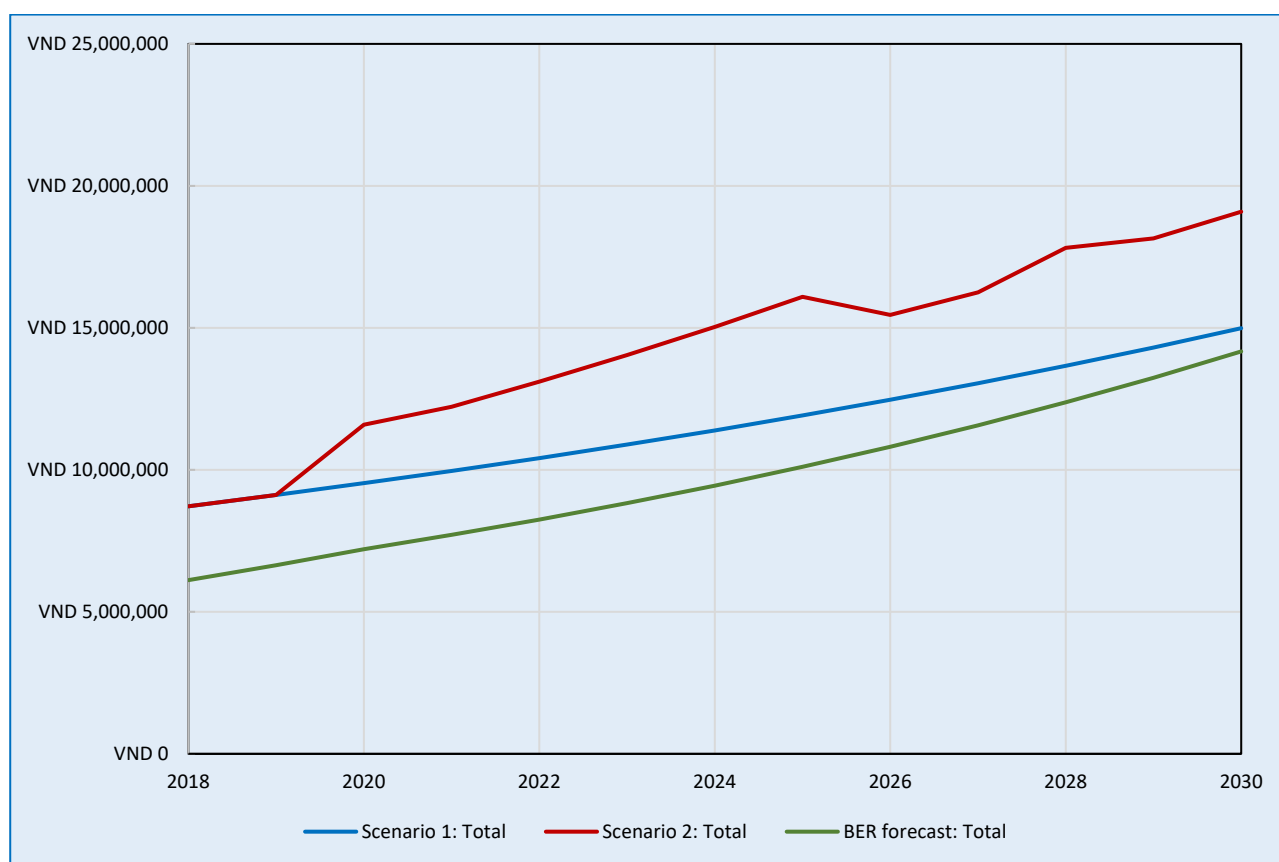
Table 22 Total finance needs for biodiversity conservation in Viet Nam between 2018-2030

SURFACE AREA		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
TOTAL Scenario 1	VND	8,717,048	9,114,519	9,532,998	9,963,091	10,414,924	10,889,789	11,389,067	11,914,238	12,466,891	13,048,725	13,661,566	14,307,374	14,988,253
	USD	379.00	396.28	414.48	433.18	452.82	473.47	495.18	518.01	542.04	567.34	593.98	622.06	651.66
TOTAL Scenario 2	VND	8,717,048	9,114,519	11,510,857	12,133,525	13,000,426	13,920,090	14,895,616	15,930,286	15,340,353	16,129,908	17,659,060	18,000,436	18,933,404
	USD	379.00	396.28	500.47	527.54	565.24	605.22	647.64	692.62	666.97	701.30	767.79	782.63	823.19
BER forecast	VND	6,116,667	6,639,055	7,206,057	7,710,193	8,249,598	8,826,740	9,444,259	10,104,979	10,811,923	11,568,325	12,377,645	13,243,586	14,170,107
	USD	265.94	288.65	313.31	335.23	358.68	383.77	410.62	439.35	470.08	502.97	538.16	575.81	616.09
GAP Scenario 1	VND	-2,600,381	-2,475,464	-2,326,941	-2,252,898	-2,165,326	-2,063,049	-1,944,808	-1,809,259	-1,654,968	-1,480,400	-1,283,921	-1,063,788	-818,146
	USD	-113.06	-107.63	-101.17	-97.95	-94.14	-89.70	-84.56	-78.66	-71.96	-64.37	-55.82	-46.25	-35.57
GAP Scenario 2	VND	-2,600,381	-2,475,464	-4,304,800	-4,423,332	-4,750,828	-5,093,350	-5,451,357	-5,825,307	-4,528,430	-4,561,583	-5,281,415	-4,756,850	-4,763,297
	USD	-113.06	-107.63	-187.17	-192.32	-206.56	-221.45	-237.02	-253.27	-196.89	-198.33	-229.63	-206.82	-207.10

Unit: million VND / million USD

The comparative analysis of the financial means expected to be allocated annually up to 2030 as estimated in the BER report with the estimated financial needs for optimal biodiversity conservation under Scenario 2 (**Table 22**) shows that between 2020 and 2025 the annual biodiversity finance gap more than doubles, from about VND 2,476 billion (USD 107.6 million) in 2019 to about VND 5,825 billion (USD 253.3 million) in 2025, a consequence of the envisioned significant expansion of the PA network by almost 570,000 hectares, especially the needs for one-time investments in infrastructure for new PAs during this period to ensure a sufficient technical-material basis for successful PA operations from the start. Subsequently, while between 2025 and 2030 the PA system is planned to be further expanded by almost 130,000 hectares, and accordingly the financial needs for optimal biodiversity management continue to increase annually, at the same time the lower needs for one-time investment in infrastructure for the new PAs causes the finance gap in 2030 to slightly reduce to about VND 4,763 billion (USD 207.1 million), compared to 2025 (**Figure 10**).

Figure 10 Gap between actual and optimal finance for biodiversity management under 2 scenarios



Meanwhile, the FNA notices that the observed gradual closure of the gap between BER forecasted finance allocations and financial needs under Scenario 1 is not the result of additional pro-active measures, taken by either public, social or private sectors, to increase biodiversity finance compared with the “Business-as-Usual” scenario, but the mere result of maintaining allocated financing as per 2015 level, duly corrected for inflation and GDP growth. Accordingly, if appropriate measures for increasing finance allocation towards optimal biodiversity management would be adopted, the finance gap may accordingly be reduced faster. At the same time, the FNA recalls that implementation of Scenario 1 is characterized as a “minimum-option” scenario representing financing needs for achieving the Viet Nam NBS targets including for the PA system as existing in 2018, equal to 7.5% of the country’s surface area. In other words, no new PAs will be gazetted despite adopted government policies, and therefore in fact the quantitative targets for PA surface area as formulated in the VN NBS and related policy documents – a PA coverage in 2030 equal to 9.6% of the country – will not be achieved.

At the same time, the forecasted increase in the gap between finance needs for achieving the targets of the Viet Nam NBS under Scenario 2 and the BER forecasted “Business-as-Usual” biodiversity finance practice will ensure achieving the targets set by the VN NBS. However, achieving these targets, in the FNA analysis especially linked to the planned expansion of the PA network in Viet Nam by 2030, comes at a significant demand for the allocation of additional financing, on average annually VND 4,886 billion (USD 212.4 million) between 2020 and 2030.

4.2 Financial gap for PA financing

Considering the attention paid in the VN NBS on achieving the conservation of naturally important ecosystems as well as endangered, rare and previous species, specifically through improving the quality and increase in the area of land under formal protection, the FNA paid also specific attention to estimating the annual finance needed for optimal biodiversity management in the Viet Nam’s existing and planned PA network (Section 3.3.1).

At the same time, quantitative data on actual annual financing allocated to Viet Nam’s PAs were estimated as part of the Viet Nam BER process, based on data on average expenditure per hectare calculated from a sample set of 30 PAs having provided quantitative data on annual financing received between 2011 and 2015 (**Table 23**).

Table 23 *Estimated total biodiversity expenditure per PA type during 2011-2015*

PA type	2011	2012	2013	2014	2015
Marine PAs	18,602	193,511	193,000	135,340	184,508
Province-level National Parks	402,675	595,370	768,385	944,584	949,621
Nature Reserves	93,610	169,442	184,404	182,355	182,281
Species and Habitat PAs	149,636	222,315	174,907	102,055	97,259
Landscape PAs	3,906	7,071	7,695	7,609	7,606
Total	668,429	1,187,709	1,328,390	1,371,944	1,421,276

Notes: Unit – million VND; Source: BER report

At the same time, the BER report only projected the future total annual finance needs for biodiversity conservation in Viet Nam, without specific considerations for the finance needs for maintaining the country’s PA system, either existing in 2015 or its planned expansion. Therefore, to obtain a quantified estimate for the anticipated future biodiversity expenditure in support of Viet Nam’s PA system under the BER’s “business-as-usual” scenario, the FNA extrapolated the actual annual finance allocated to PAs in 2015 towards 2030, using the forecasted inflation rate and GDP growth rate as estimated by the economic analyses of HSBC (2012), JCER (2017) and the World Bank (2018), mimicking the forecasting approach of the BER.

Subsequently, focusing on PA financing only, the FNA analyzed the annual gap between the finance needs for optimal biodiversity management in the existing PA network (Scenario 1a) and expanding PA network (Scenario 2a) and the business-as-usual forecasted financing made available from public sources to PAs in Viet Nam. The results, presented in **Table 24** and **Figure 11**, show that even for scenario 1a – maintaining the 2018 PA network (i.e. no new PAs are gazetted) - the finance gap between estimated finance allocated to PAs based on 2015 actual financing provided increases annually to 2030, from about VND 6,048 billion (USD 262.9 million) in 2018 to about VND 7,063 billion (USD 307.1 million) in 2030. Under scenario 2a - the significant expansion of the PA network to 2030 - the finance gap with anticipated actual finance allocations in support of Viet Nam’s PA network is expected to increase significantly, from VND 6,048 billion (USD 262.9 million) in 2018 to VND 11,008 billion (USD 478.6 million) in 2030.

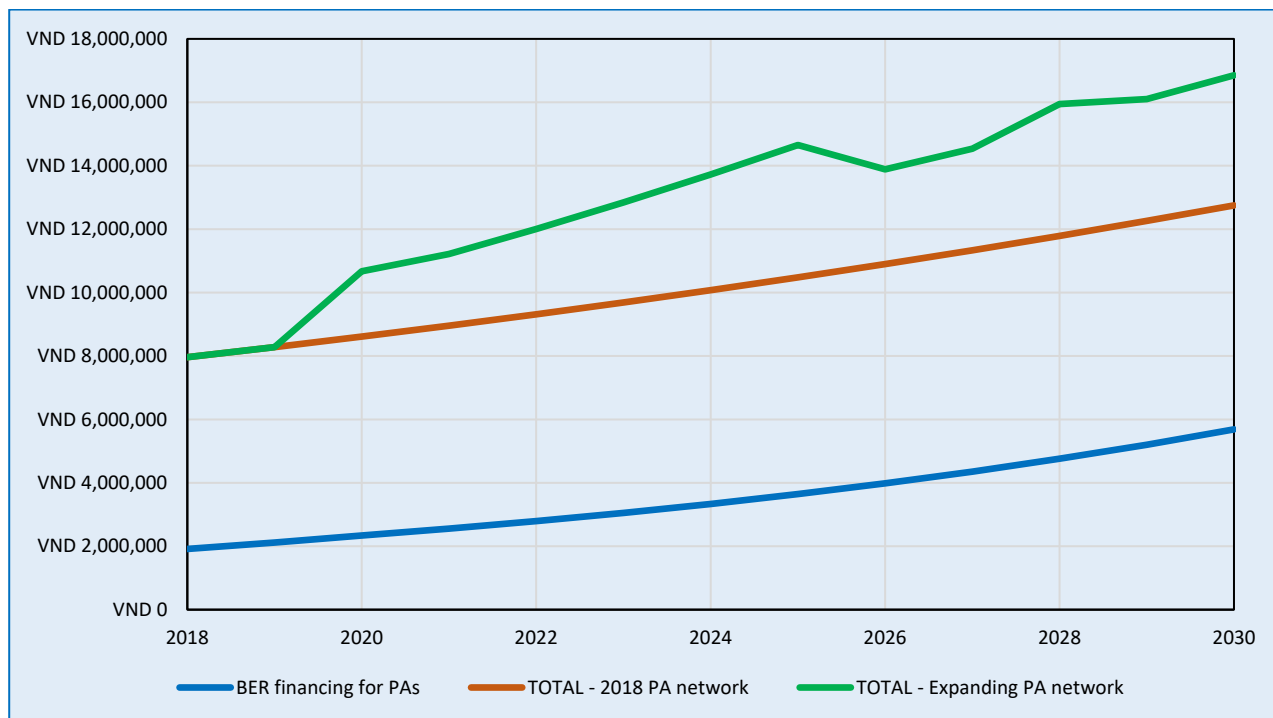
Table 24 Finance needs for optimal biodiversity conservation in Viet Nam's PA system

SURFACE AREA		2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
TOTAL Scenario 1a	VND	7,962,962	8,281,480	8,612,740	8,957,249	9,315,539	9,688,161	10,075,687	10,478,715	10,897,863	11,333,778	11,787,129	12,258,614	12,748,958
	USD	346.22	360.06	374.47	389.45	405.02	421.22	438.07	455.60	473.82	492.77	512.48	532.98	554.30
TOTAL Scenario 2a	VND	7,962,962	8,281,480	10,590,599	11,127,683	11,901,041	12,718,462	13,582,236	14,494,762	13,771,326	14,414,961	15,784,622	15,951,676	16,694,110
	USD	346.22	360.06	460.5	483.8	517.4	553.0	590.5	630.2	598.8	626.7	686.3	693.6	725.8
BER forecast PA financing	VND	1,914,675	2,115,142	2,336,597	2,553,901	2,791,413	3,051,015	3,334,759	3,644,892	3,983,867	4,354,366	4,759,322	5,201,939	5,685,720
	USD	83.2	92.0	101.6	111.0	121.4	132.7	145.0	158.5	173.2	189.3	206.9	226.2	247.2
GAP Scenario 1a	VND	-6,048,287	-6,166,339	-6,276,142	-6,403,348	-6,524,126	-6,637,146	-6,740,928	-6,833,823	-6,913,996	-6,979,411	-7,027,806	-7,056,674	-7,063,239
	USD	-262.97	-268.10	-272.88	-278.41	-283.66	-288.57	-293.08	-297.12	-300.61	-303.45	-305.56	-306.81	-307.10
GAP Scenario 2a	VND	-6,048,287	-6,166,339	8,254,002	8,573,783	9,109,627	9,667,447	10,247,477	10,849,870	9,787,459	10,060,594	11,025,300	10,749,736	11,008,390
	USD	-262.97	-268.10	358.9	372.8	396.1	420.3	445.5	471.7	425.5	437.4	479.4	467.4	478.6

Unit: billion VND / million USD

The future persistence of a large gap between finance needs for optimal biodiversity conservation in Viet Nam's PAs and forecasted actual finance allocations to the PA network under both scenarios is caused by the fact that 2011-2015 finance allocations largely covered only costs for salaries (C_1) and operation & maintenance (C_2), with very limited to no budget allocated for recurring biodiversity conservation costs (cost categories $C_3 - C_7$), while the FNA's assessment of finance needs for optimal management specifically included estimates for all cost categories.

Figure 11 Finance gaps between forecasted actual and optimal PA finance under 2 scenarios



It is obvious that despite the anticipated trend of increase in future finance allocations to the PA system, as estimated from BER data provided, big gaps will persist in PA financing in all three periods: short term to 2018-2019, medium-term 2020-2025, and long term 2026-2030. While the total financial gap for the PA system is likely to be somewhat smaller, as the BER analysis of actual biodiversity expenditures in support of PAs include not only allocations from the public sector (as applied by the FNA) but also from the social and private sectors, the FNA and BER note that financing for PAs in Viet Nam largely is considered a public sector responsibility, including the use of ODA, with finance contributions from other social and private sectors to the PA system being minor, legally complex or inappropriate.

Therefore, in order to achieve the specific targets of the VN NBS on PAs, urgent action is needed in public sector decision making on considerations to strengthen public finance allocations to the country's PAs, specifically increasing financing of biodiversity conservation related costs. At the same time, thoughts need to be given to diversify the provision of financial support to PAs, adopting policies and incentives in support of alternative sources and mechanisms of finance, including from social and private sector players, being promoted in providing support to PAs in Viet Nam.

Box 1: Finance needs for management of Biodiversity Corridors

In addition to the List of PAs for gazetting by 2020 and 2030, Decision 45/QD-TTg, dated 8 January 2014 on Approval for Master Plan of Nation-Wide Biodiversity Conservation by 2020 with a vision to 2030 also stipulates specific objectives regarding the establishment of Biodiversity Corridors (BCs):

- By 2020: Establishing and putting into operation 4 Biodiversity Corridors in the Northeast (1) and South Central (3) regions with a total area of about 120,000 ha to connect habitats and enhance the capacity to respond to climate change of the ecosystems and species.
- By 2030: Continuing to establish and put into operation the protected areas, biodiversity conservation facilities and Biodiversity Corridors that have been proposed.

Appendix III of Decision 45/2014/QD-TTg presents the list of BCs, their proposed area and province, and the period of establishment for each of the 8 regions of Viet Nam (**Table B1**).

Table B1: Statistics on planned Biodiversity Corridors

Region	2020	2030
Northeast	506	31,384
Northwest		19,763
Red River Delta		20,056
North Central		244,793
South Central	118,741	9,633
Central Highlands		11,847
Southeast		16,722
Mekong river Delta		90,222
Sub-total	119,247	444,420
TOTAL	563,667	

Notes: Unit – hectare; Source: Decision 45/2014/QD-TTg

While by 2018 no BCs were yet formally established, and no financing was allocated, the FNA conducted an initial assessment of the financial needs for optimal biodiversity management in BCS, using available information and biodiversity expert opinions, serving as reference information for government decision makers. Use was made of information on financial support provided for the management of 530,000 ha of BC in central Vietnam under the ADB supported Biodiversity Conservation Corridors (BCC) project implemented in 3 provinces of Viet Nam's South-Central region - Quang Nam, Thua Thien Hue and Quang Tri.

Under output 2 “Biodiversity Corridors restoration, ecosystem services protection, and sustainable management by local resource managers”, the BCC project provided financial support for the following activities in the Biodiversity Corridor: (i) USD 1.495 million for forest patrolling of 112,000 ha (21% of BC) over 8 years, equal to a unit-cost-ha of USD 1.67 per year; (ii) USD 7.596 million for natural forest restoration in 5,400 ha (1.02% of the BC), equal to a one-time unit-cost-per-ha of USD 1,407; and (iii) USD 0.87 million for forest enrichment in 2,900 ha (0.55% of the BC), equal to a one-time unit-cost-per-ha of USD 300.

Accordingly, to estimate finance needs for establishing the Biodiversity Corridors planned under Decision 45/2014/QD-TTg, the FNA adopted the percentages and unit-cost-per-ha values from the BCC project. Assuming (i) an annual cumulative expansion of area under recurrent patrolling; (ii) a one-time annual investments in forest restoration and forest enrichment to 2020 and 2030, respectively, and; (iii) incorporating the estimated annual inflation rate of 4%, an initial estimate of the finance needs for biodiversity management in Biodiversity Corridors planned under Decision 45/2014/QD-TTg is as follows:

Parameter	2018	2019	2020	2021	2022	2023	2024
Area designated annually as BC (ha)	0	59,624	59,624	44,442	44,442	44,442	44,442
Cumulative area designated as BC (ha)	0	59,624	119,247	163,689	208,131	252,573	297,015
Cumulative area of BC patrolled (ha)		12,600	25,199	34,591	43,982	53,374	62,765
Annual forest restoration area (ha)		607	607	453	453	453	453
Annual forest rehabilitation area (ha)		326	326	243	243	243	243
Unit-cost-per-ha for patrolling	1.67	1.74	1.80	1.88	1.95	2.03	2.11
Unit-cost-per-ha for forest restoration	1,407	1,463	1,521	1,582	1,646	1,711	1,780
Unit-cost-per-ha for forest enrichment	300	312	324	337	351	365	380
FINANCE NEEDS (USD)							
BC patrolling (recurrent)		21,864	45,477	64,922	85,851	108,350	132,512
BC forest restoration (one-time investment)		888,710	924,258	716,478	745,137	774,942	805,940
BC forest enrichment (one-time investment)		101,787	105,859	82,061	85,343	88,757	92,308
TOTAL Annual Finance Needs		1,012,361	1,075,594	863,461	916,331	972,050	1,030,759
Parameter	2025	2026	2027	2028	2029	2030	Total
Area designated annually as BC (ha)	44,442	44,442	44,442	44,442	44,442	44,442	563,667
Cumulative area designated as BC (ha)	341,457	385,899	430,341	474,783	519,225	563,667	563,667
Cumulative area of BC patrolled (ha)	72,157	81,548	90,940	100,332	109,723	119,115	119,115
Annual forest restoration area (ha)	453	453	453	453	453	453	5,743
Annual forest rehabilitation area (ha)	243	243	243	243	243	243	3,084
Unit-cost-per-ha for patrolling	2.20	2.28	2.37	2.47	2.57	2.67	
Unit-cost-per-ha for forest restoration	1,851	1,925	2,002	2,082	2,165	2,252	
Unit-cost-per-ha for forest enrichment	395	411	427	444	462	480	
FINANCE NEEDS (USD)							
BC patrolling (recurrent)	158,433	186,215	215,967	247,801	281,837	318,198	1,867,428
BC forest restoration (one-time investment)	838,178	871,705	906,573	942,836	980,549	1,019,771	10,415,076
BC forest enrichment (one-time investment)	96,000	99,840	103,833	107,987	112,306	116,798	1,192,880
TOTAL Annual Finance Needs	1,092,610	1,157,760	1,226,374	1,298,624	1,374,692	1,454,768	13,475,384

5. CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The Financial Needs Assessment Report (FNA) under the “The Biodiversity Finance Initiative” (BIOFIN) is the report estimating the anticipated financial needs to implement the VN NBS and achieve its specific targets described. In consideration of the fact that not all objectives and targets of the VN NBS are sufficiently quantified to allow their costing, the FNA adopted a two-pronged approach, focusing on (i) estimating the financial needs to maintain and expand the country’s PA system (TPAs, WPAs and MPAs), also used as proxy for the achieving the VN NBS targets for primary forest cover, degraded critical natural ecosystems, mangrove forests, sea grass beds, coral reefs and endangered, rare and precious species; and (ii) estimation of administration expenditures for optimal biodiversity conservation at provincial level and central level”, as proxy quantitative indicator for achieving the VN NBS’ currently unquantifiable targets, including improving the quality, populations and status of endangered, rare and precious species beyond PAs, avoiding new case of species extinction, the conservation of genetic resources, etc.

The FNA estimated the financial needs for optimal biodiversity management in Viet Nam’s PA system based on calculated unit-cost-per-hectare for different PA types based on field research and quantitative information provided by individual sample PAs for the 8 groups of relevant cost categories, including salaries, annual operational and maintenance costs, costs for biodiversity conservation activities, as well as one-time investment costs for infrastructure and facilities in new PAs.

The FNA estimated the administration expenditures for optimal biodiversity conservation at provincial and central levels by forecasting the 2015 actual expenditures as assessed in the BER report towards the years 2018 to 2030 based on annual inflation rates and GDP growth rates.

As requested by government stakeholders, the FNA presents its results in two scenarios: (i) Scenario 1, estimating the finance needs for optimal biodiversity conservation in Viet Nam without further expansion of the PA network; and (ii) Scenario 2, estimating the finance needs for optimal biodiversity conservation in Viet Nam assuming an expansion of the PA network in line with adopted state policies.

The FNA calculated the biodiversity finance gaps for the two scenarios compared to the estimated future biodiversity expenditure in Viet Nam under the “business-as-usual” scenario, i.e. calculated based on actual financing allocated for biodiversity conservation in Viet Nam during the period 2011-2015 increasing to 2030 as function of GDP growth

Specifically, the FNA concludes the following:

- Scenario 1. Until 2030, the total financial needs for optimal biodiversity management and achieving VN NBS’ targets with a PA system as existing in 2018 amount to VND 150,408 billion (USD 6,539 million). During this period, annually the finance need increase from about VND 8,717 billion (USD 379.0 million) in 2018 to about VND 14,988 billion (USD 651.7 million) in 2030, exclusively in consideration of annual inflation and GDP growth.
- Scenario 2. Until 2030, the total financial needs for optimal biodiversity management and achieving VN NBS’ targets with an PA system expanded by 697,176.6 ha amount to VND 185,286 billion (USD 8,056 million),
- The implementation of Scenario 1 is considered to be “lower-optimum” scenario, considering financing optimal biodiversity management only in PAs existing in 2018, equal to 7.5% of the country’s surface area, as such the relevant target VN NBS target for PA cover will not be achieved. Scenario 2 meanwhile is the “optimum” scenario, estimating finance needs for optimal biodiversity

management including for a PA network expanded in line with adopted government policies, to achieve a PA coverage in 2030 equal to 9.6% of the country as stipulated in the VN NBS. Accordingly, finance needs for optimal biodiversity conservation in Viet Nam under Scenario 2 require an additional VND 34,877 billion (USD 1,516 million; +23%) compared to the finance needs estimated under Scenario 1.

- Compared to the future finance allocations forecasted in the BER based on actual allocations to 2015, under Scenario 1 in 2018 the finance gap to achieve optimal biodiversity management in Viet Nam is about VND 2,600 billion (USD 113.1 million) in 2018, gradually decreasing to about VND 1,809 billion (USD 78.7 million) in 2025, and to about VND 818 billion (USD 35.57 million) in 2030. The total biodiversity finance gap for the period 2018-2030 under Scenario 1 is estimated being VND 23,939 billion (USD 1,041 million).
- Under Scenario 2, the annual finance gap in 2018 and 2019 is equal to that in Scenario 1, as no new PAs are gazetted in these years. Subsequently, due to the significant expansion of the PA network in the period 2020-2025, the annual biodiversity finance gap to achieve optimal biodiversity management in Viet Nam more than doubles, from about VND 2,476 billion (USD 107.6 million) in 2019 to about VND 5,825 billion (USD 253.3 million) in 2025. Between 2025 and 2030, the PA system further expands, but less rapidly, as such the annual finance gap to 2030 slightly reduces to about VND 4,763 billion (USD 207.1 million). The total biodiversity finance gap for the period 2018-2030 under Scenario 2 is estimated as VND 58,816 billion (USD 2,557 million).
- The gap between estimated finance needs for optimal biodiversity management in Viet Nam under Scenarios 1 and 2, and estimated future finance allocations for biodiversity management is largely explained by the only minimal to no financing in practice allocated to biodiversity conservation measures in PAs; actual financing is only provided to PAs in support of covering cost categories for salaries and operational costs, while the FNA strived to obtain realistic quantified estimates for all cost categories, even if at present PAs do not receive financing for such costs.
- The FNA's targeted analysis of finance needs for Viet Nam's existing and expanding PA network shows that between 2018 and 2030 under both scenario 1 and scenario 2 the finance gap between estimated finance allocated to PAs based on 2015 actual financing provided will increase annually to 2030, under scenario 1 - from about VND 6,048 billion (USD 262.9 million) in 2018 to about VND 7,063 billion (USD 307.1 million) in 2030; under scenario 2 - from VND 6,048 billion (USD 262.9 million) in 2018 to VND 11,008 billion (USD 478.6 million). In other words, the FNA shows that anticipated finance needs for optimal biodiversity management in the PA system increase faster than the forecasted future finance allocations based on past practice. As such, it seems likely that the conservation status of biodiversity in PAs may worsen.

In summary, the FNA concludes that under both scenarios analyzed, the gap in between forecasted actual financing allocated and the finance needs for optimal management of biodiversity in Viet Nam will remain in the short, medium, and long-term. Accordingly, financing will remain insufficient to achieve the targets adopted in the Viet Nam NBS.

Consequently, if additional financing cannot be made available through strengthening public, social and/or private sector finance mechanisms, and the volume of future financing for biodiversity will develop comparable with the present-day practice as analyzed in the BER report, corrected in future only for inflation and GDP growth, biodiversity in Viet Nam will continue to be under significant threat. The significant gap estimated in this FNA between actual anticipated financing allocated in support of biodiversity conservation and the finance needs for optimal biodiversity management will hamper properly addressing the root causes

of biodiversity degradation and loss - economic development without considerations for the environment, biodiversity and related ecosystem services; population growth; ineffective and insufficient institutional and legal framework, including lack of coordination, governance, and enforcement; and the lack of knowledge, understanding and appreciation for biodiversity BD and the beneficial ecosystem services it provides – and the resulting direct negative impacts on biodiversity, including (i) deforestation, fragmentation and land use change, from commercial agriculture, urbanization and infrastructure development, forest logging, aquaculture, etc.; (ii) ecosystem degradation, from overexploitation, including subsistence non-timber forest product collection, poaching and wildlife trade, overfishing, etc.; and (iii) pollution..

5.2 Recommendations

Based on the analytical work of the FNA, the following recommendations are formulated:

- The FNA assumes that the 2015 level of actual financing of administration costs for biodiversity conservation management at the central and province levels are sufficient. However, this assumption has not been confirmed through in-depth analysis of financing allocated, nor by key informant or focus group discussions with the relevant stakeholder to assess the correctness of the assumption. Therefore, it is recommended to further research and confirm the assumption, by collecting reliable data and stakeholder opinions on the financial needs for optimal biodiversity conservation at the central and provincial levels. Based on the outcomes of such activity, the total financial needs for optimal biodiversity management in Viet Nam under both scenarios may need to be reassessed, as may the consequential gap with anticipated actual allocations.
- It is recommended to conduct a follow-up in-depth analysis of unit-cost-per-hectare for different PA types, as the FNA estimated unit-cost-per-hectare for optimal biodiversity management in Viet Nam's PAs are very high even compared to international best practice. Primarily this can include an expansion of the number of pilot PAs included in the financial cost estimate for optimal management, as well as a critical review of quantified cost categories by independent experts, to avoid cost over estimations based on wishful thinking by PA staff.
- Under Scenario 2, costs for optimal biodiversity management in PAs are especially high due to the high anticipated costs for one-time infrastructure investment in new PAs. It is recommended to review the opportunities to establish new PAs with less costly initial investment in infrastructure and facilities, while still aiming to support achieving the set targets of the VN NBS.
- The FNA is conducted as a financial analysis, without proper attention paid to the linkage between financing needs and the positive impact on on-the-ground biodiversity. It is recommended to further research the linkage between biodiversity finance and actual biodiversity conservation impacts, in PAs and beyond, to incorporate aspects of efficiency and effectiveness into the financial needs assessment.
- It is anticipated that state budget is insufficient to increase biodiversity financing with such volume as estimated by the FNA, towards closing the gap observed. Therefore, consideration need to be given to strengthen currently available finance instruments and introduce appropriate alternative effective finance instruments. This analysis will be the topic of the Biodiversity Finance Plan prepared under the BIOFIN-Viet Nam project.

ANNEXES

Annex 1	Unit costs for Central-Managed National Parks
Annex 2	Unit costs for Province-Managed National Parks
Annex 3	Unit costs for Nature Reserves
Annex 4	Unit costs for Species and Habitat Conservation Sites
Annex 5	Unit costs for Marine Protected Areas
Annex 6	Unit costs for Wetland Protected Areas
Annex 7	Summary of unit costs for Protected Areas
Annex 8	Survey for National Parks and Protected Areas in Viet Nam
Annex 9	Cost estimation of infrastructure by types of PAs based on survey standards

Annex 1 Unit costs for Central-Managed National Parks

Appendix 1: Unit costs for Federal National Parks						
Cuc Phuong / Ba Vi – case study						
Area Density		Cuc Phuong:		22408.8	ha	
		Ba Vi:		10814.6	ha	
No.	Budget items	Quantity		Proposed Cost Norms	Information Sources	Notes
		Current	Required in Futures			
1	Salary	113 staffs	116 staffs 5 mil.VND – 6 mil.VND/month	0.37271 $116 \times 6 \times 12 / 22408.8 = 0.3727 \text{ mil./ha}$	Required salary is based on the real data provided by the sites' managers	Too many staffs in Cuc Phuong due to Cuc Phuong is a big and multi-function National Park. It may not represent well for the other Federal National Parks, used Ba Vi data instead Ba Vi (64 staff)
2	Operation & Maintenance	15 700 mil/3 year 2015-2017	Keep as the past	6483.4 mil/2017year/ 22408.8 ha 0.289	QD46/2016 – TTg 19/10/2016 : 19mil/person - \rightarrow the cost is too low compared to the real cost of Cuc Phuong Used the Cuc Phuong case for the other FNP	Haven't found the legal documents legalized the operation costs per staff. In Decision 46/2016: there are the regulation on the operation costs per staff at the central level (ministerial levels)
	Biodiversity – related expense		Based on the real requirement provided by Cuc Phuong	$= 37650 \text{ mil/ 3 year/ 22408.8 ha}$	Forest protection cost (100.000đ/ha) is followed the Decision 24/2012/QĐ-TTg	- QĐ 07/2012/TTg: hỗ trợ 100.000tr/1ha để tổ chức bảo vệ rừng
	In Cuc Phuong, this cost includes:		37650 mil/ 3 years	0.560	1070 mil/year : provided by Cuc Phuong	- CV38: Bảo vệ rừng bình quân 300.000đ/1ha/1 năm

	Biodiversity – related expense		Based on the real requirement provided by Cuc Phuong	= 37650 mil/ 3 year/ 22408.8 ha	Forest protection cost (100.000đ/ha) is followed the Decision 24/2012/QĐ-TTg	- QĐ 07/2012/TTg: hỗ trợ 100.000tr/1ha để tổ chức bảo vệ rừng	
	In Cuc Phuong, this cost includes:		37650 mil/ 3 years	0.560	1070 mil/year : provided by Cuc Phuong	- CV38: Bảo vệ rừng bình quân 300.000đ/1ha/1 năm	
3	+ Forest protection cost	100.000/ha		560 k/ha	Cost norms is based on the real financial requirements by Cuc Phuong	- QĐ 16: Bảo vệ rừng ven biển 450.000đ/1ha	
	+ Biodiversity supervision	1070 mil/year					
	+ Specific programs protecting species and habitat (details provided by Cuc Phuong)	2017: 9992 mil/year					
4	Support people in buffer zone	1160 mil/year	1160 mil/year	1160 mil/year/ 22408.8 ha = 0.052 mil/ha	Decision 24/2012: support 40 mil.VND to one commune in the buffer zone	theo điều 8 khoản 2 QĐ 24/2012/QĐ – TTg: hỗ trợ 40 tr đồng/năm cho một thôn, bản vùng đệm	
		40 mi. VND/ commune/year		0.052			
5	Education and communication about biodiversity	450 mil/year (2017)	500 mil/ year	500 mil/ 22408.8 = 0.0223 mil/ha	Education and communication costs were based on the real data provided by Cuc Phuong		
				0.0223			

6	Research	None	1000 mil/year	1000 mil./22408.8 = 0.04463 mil./ha	Based on the real data provided by Cuc Phuong	- TT44: Đề tài cấp tỉnh, thành phố: 300TR/1 đề tài ngành KH, XH, NV; 600TR /1 đề tài KHTN, KHCN.	
				0.045		Đề tài cấp nhà nước: 500tr; 1000tr	
7	Infrastructure and facility investment	Working office	Improve the Museum	Not applied	6 Federal National Parks are assumed to be satisfied in Infrastructure and facility investments	QD2370/2008 BNN&PTNT:	
		Meeting room			facility costs will be filled with the project-based mechanism and the Federal National Parks can handle by themselves		
		Kitchen room					
		Stores					
		Information Center					
		Museum					
		Species Protection and Rescue Centers					
8	Others			Not applied			

Annex 2 Unit costs for Province-Managed National Parks

Cat Ba – case study						
Area Density		Protection area	10912.5 ha	6450.5 ha	terrestrial marine	
No.	Budget items	Quantity		Proposed Cost Norms	Information Sources	Notes
		Current	Required in Futures			
1	Salary	93 staffs	93 staffs + 15 seasonal staffs 150 mil./year/per	0.511340206 93*5*12/10912.5ha	Required salary is based on the average data provided by other sites	Cat Ba proposed the salary which is too high compared to the other sites
2	Operation & Maintenance	20% of 18 000 mil/year		3600/10912.5 ha 0.329896907	Based on the real data provided by the Cat Ba in which the total amount of money from the Province is 18 bil./2018, 20% is for operation and maintenance	
3	Biodiversity – related expense Proposed financial needs for database of biodiversity supervision and assessment	None	2000 mil./year	2000/10912.5 0.18327606	Based on the real demand of Cat Ba	
4	Support people in buffer zone	None	40 mil/commune * 7 commune	0.025658648	Decision 24/2012: support 40 mil.VND to one commune in the buffee zone	theo điều 8 khoản 2 QĐ 24/2012/QĐ – TTg: hỗ trợ 40 tr đồng/năm cho một thôn, bản vùng đệm

5	Education and communication about biodiversity	None	250 mil./year	0.022909507	Based on the estimated requirement by Cat Ba	
6	Research	None	500 mil./year	0.045819015	Based on the estimated requirement by Cat Ba	- TT44: Đề tài cấp tỉnh, thành phố: 300TR/1 đề tài ngành KH XHN; 600TR /1 đề tài KHTN, KHCN.
7	Infrastructure and facility investment	<i>Details in the Appendix 9</i>	21 840 mil/year	2.00137457	Based on the real demand provided by Cat Ba	QD2370/2008 BNN&PTNT:
	Cat Ba propose to have:					
	<i>Forest Protection Centers</i>					
	<i>Fire Alarm/Oversight Towers</i>					
	<i>Animal Center</i>					
8	Others				No other costs related to initial investment are required	

Annex 3 Unit costs for Nature Reserves

Appendix 3: Unit costs for Natural Reserves						
Son Tra – case study						
	Area Density	Protection area	2520	ha		
		Buffee zone	1258	ha		
No.	Budget items	Quantity		Proposed Cost Norms	Information Sources	Notes
		Current	Required in Futures			
1	Salary	9 staffs	12 staffs 5 mil.VND/month	0.285714286 12*5*12/2520ha	Required salary is based on the real data provided by the site's managers	
2	Operation & Maintenance	100 mil/year	12 19mil/person/year	12*19 mil./2520 ha 0.09047619	QD46/2016 – TTg 19/10/2016 : 19mil/person	documents legalized the operation costs per staff. In Decision 46/2016: there are the regulation on the operation costs per staff at the central level
3	Biodiversity – related expense	None	2520 ha * 100 000 VND/ha	0.4	Forest protection cost (100.000đ/ha) is followed the Decision 24/2012/QĐ-TTg	- QĐ 07/2012/TTg: hỗ trợ 100.000tr/1ha để tổ chức bảo vệ rừng
	In Son Tra, this is the expenses for the forest protection team		300K/ha			Average costs by VFFA?

4	Support people in buffer zone	None	40 mil./commune * 9 commune	0.142857143	Decision 24/2012: support 40 mil.VND to one commune in the buffer zone	theo điều 8 khoản 2 QĐ 24/2012/QĐ – TTg: hỗ trợ 40 tr đồng/năm cho một thôn, bản vùng đệm
5	Education and communication about biodiversity	None	100 mil./year	0.03968254	Based on the estimated requirement by Son Tra	
6	Research	None	300 mil./year	0.119047619	Based on the estimated requirement by Son Tra	- TT44: Đề tài cấp tỉnh, thành phố: 300TR/1 đề tài ngành KH-XHNV; 600TR /1 đề tài KHTN.KHCN.
7	Infrastructure and facility investment	<i>Details in a separate sheet</i>	4500 mil =	10% of the total investment cost		
	Son Tra propose to have:			1.46468254	Based on the real demand provided by Son Tra	QD2370/2008 BNN&PTNT:
	<i>Forest Protection Centers</i>		1500 mil. * 2			
	<i>Fire Alarm/Oversight Towers</i>		500 mil * 2			
	<i>Temporary Animal Rescue Box</i>		500 mil			
8	Others			14.6468254	Chi phí others được sử dụng để tính chi phí XDCB đầu tư ban đầu cần thiết cho việc xây dựng mới hoàn toàn đối với các khu mới thành lập	

Annex 4 Unit costs for Species and Habitat Conservation Sites

Appendix 4: Unit costs for Species and Habitat Conservation						
Phu My (Kien Luong, Kien Giang) – case study						
	Area Density	Protection area	1070.28	ha		
No.	Budget items	Quantity		Proposed Cost Norms	Information Sources	Notes
		Current	Required in Futures			
1	Salary	7 staffs	12 staffs 5 mil.VND/month	0.672721157 12*5*12/1070.28ha	Required salary is based on the real data provided by the site's managers	
2	Operation & Maintenance	N/A	30mil + 20 mil. + 25 mil. + 18 mil.	93 mil./1070.28 ha 0.086893149	Based on the real demand provided by Phu My	
3	Biodiversity – related expense	None	1070 ha ha * 100 000 VND/ha	0.4	Forest protection cost (100.000đ/ha) is followed the Decision 24/2012/QĐ-TTg	Phu My required 800.000 đ/ha for forest protection (too high)?
			plus 300K/ha			Sugggest use the cost norms of Decision 24/2012

4	Support people in buffer zone	None	3 mil * 10 households	0.028030048	Based on the proposed cost	
5	Education and communication about biodiversity	None	100 mil./year	0.093433494		Phu My required 285mil/year for education and communication (too high?) Proposed 100 mil, higher than Natural Reserves when it's new to the public
6	Research	None	100 mil./year	0.093433494		
7	Infrastructure and facility investment	<i>Details in a separate sheet</i>	5000 mil =	10% of the total investment cost		
	Phu My propose to have:			2.874948612	Based on the real demand provided by Phu My	QD2370/2008 BNN&PTNT:
	<i>Management Office</i>		4000 mil			
	<i>Boundary construction</i>		1000 mil			
8	Others			28.74948612	Chi phí others được sử dụng để tính chi phí XDCB đầu tư ban đầu cần thiết cho việc xây dựng mới hoàn toàn đối với các khu mới thành lập	

Annex 5 Unit costs for Marine Protected Areas

Appendix 6: Unit costs for Marine						
Cu Lao Cham – case study						
Area Density		Protection area	2350	ha		
No.	Budget items	Quantity		Proposed Cost Norms	Information Sources	Notes
		Current	Required in Futures			
1	Salary	51 staffs	51 staffs 5 mil.VND/month	1.30212766 51*5*12/2350ha	Required salary is based on the real data provided by the site's managers	Too high if based on the numbers of staff. If using the amount of money spent as salary per year: 70 mil/year, used the cost norm instead
2	Operation & Maintenance	23 mil./person/year	Keep as current Plus 200 mil/year for new facility mainternance 100 mil/year for sea floating markers	51*23 mil./2350 ha 0.499148936	Based on the cost norm approved by The Quang Nam's PPC	
3	Biodiversity – related expense	1000 mil/year	3000 mil./year	1.276595745	Based on the real data provided by the site	No cost norms legalized in Government's documents
	In Cu Lao Cham, this is the expenses for supervising, sea protection, ect		3 – 4 bil. VND/year in 5 years (for coral and sea grass restoration)	0.425531915		The real demand is too high, may need to keep the current expenditure as the baseline

4	Support people in buffer zone	2 – 3 bill.VND/year in the period 2006-2011 on 100 households (2500 residences)	Proposed for more 345 household in the next 5 years (2018 -2023)	1.276595745	Based on the real data provided by the site	No cost norms legalized in Government's documents
				0.068085106		The real demand is too high, may need to use baseline cost norms from inland Pas
5	Education and communication about biodiversity	300 mil/ years for 13 communes	Expand for all 17 surrounding communes	0.127659574	Based on the real data provided by the site	
6	Research	1000 mil/year	1000 mil./year	0.425531915	Based on the real data provided by the site	No cost norms legalized in Government's documents
7	Infrastructure and facility investment	<i>Details in a separate sheet</i>	5500 mil =	12% of the total investment cost		
	Cu Lao Cham propose to have invested more in			2.340425532	Based on the real demand provided by Son Tra	QD2370/2008 BNN&PTNT:
	Marine borders/boundary improvement		144 * 0.14 mil			
	Machine to construct the borders		3500 mil			

7	Infrastructure and facility investment	<i>Details in a separate sheet</i>	5500 mil =	12% of the total investment cost		
	Cu Lao Cham propose to have invested more in			2.340425532	Based on the real demand provided by Son Tra	QD2370/2008 BNN&PTNT:
	<i>Marine borders/boundary improvement</i>		144 * 0.14 mil			
	<i>Machine to construct the borders</i>		3500 mil			
8	Others			18.34042553	Chi phí others được sử dụng để tính chi phí XDCB đầu tư ban đầu cần thiết cho việc xây dựng mới hoàn toàn đối với các khu mới thành lập	

Annex 6 Unit costs for Wetland Protected Areas

Appendix 7: Unit costs for Wetland						
Tram Chim (Dong Thap) – case study						
Area Density		Protection area		7300	ha	
No.	Budget items	Quantity		Proposed Cost Norms	Information Sources	Notes
		Current	Required in Futures			
1	Salary	45 staffs	45 permanent staffs & 50 seasonal staffs 5 mil.VND/month - permanent; 2mil./month - seasonal	0.616438356 (45*5*12+50*3*12)/7300	Required salary is based on the real data provided by the site's managers	
2	Operation & Maintenance	21mil./person	21mil./person	21 mil. * 45/7300 0.129452055	Based on the cost norms approved by the Dong Thap's PPC	
3	Biodiversity – related expense In Tram Chim, this is the expenses for supervision & restoration; rescue and	1500 mil/year	1500 mil/year	0.479452055	Based on the real data provided by the site's managers	

	Fire Defense and Prevention	2000 mil/year	2000 mil/year			
4	Support people in buffee zone	None	40 mil/commune * 6 commune	0.032876712	Decision 24/2012: support 40 mil.VND to one commune in the buffee zone	Haven't known about the Decision 24, propose to apply
5	Education communication and biodiversity	100 mil/year	200 mil/year	0.02739726	Based on the estimated requirement by Son Tra	
6	Research	None	800 mil/year (for Sếu đầu đỏ)	0.109589041	Based on the estimated requirement by Son Tra	
7	Infrastructure and facility investment	<i>Details in a separate sheet</i>	6000 mil =	10% of the total investment cost		
	Tram Chim propose to have:			0.834246575	Based on the real demand provided by Tram Chim	QD2370/2008 BNN&PTNT:
	<i>Fire Alarm/Oversight Towers</i>		500 mil * 6			
	<i>Animal Rescue Center</i>		500 mil			
	Ect.					
8	Others			8.342465753	Chi phí others được sử dụng để tính chi phí XDCB đầu tư ban đầu cần thiết cho việc xây dựng mới hoàn toàn đối với các khu mới thành lập	

Annex 7 Summary of unit costs for Protected Areas

	Unit costs of National Parks	Central National Parks	Provincial National Parks
<i>Code</i>	<i>Unit costs</i>	$\sum_{i=1}^7 C_i$	$\sum_{i=1}^7 C_i$
		3.3422	3.1203
C ₁	Salary	0.3727	0.5113
C ₂	Operation & Maintenance	0.2893	0.3299
C ₃	Biodiversity - related expense	0.5600	0.1833
C ₄	Support people in buffer zone	0.0518	0.0257
C ₅	Education and communication	0.0223	0.0229
C ₆	Research	0.0446	0.0458
C ₇	Infrastructure & Facility Investment	2.0014	2.0014
C ₈	Others (Initial Investment for new sites)	-	-

Unit: VND Millions/ha

	Unit cost of Natural Reserves	Baseline Scenario	Full Scenario
<i>Code</i>	<i>Unit Costs</i>	$\sum_{i=1}^7 C_i$	$\sum_{i=1}^7 C_i$
		2.5425	17.1893
C ₁	Salary	0.2857	0.2857
C ₂	Operation & Maintenance	0.0905	0.0905
C ₃	Biodiversity - related expense	0.4000	0.4000
C ₄	Support people in buffer zone	0.1429	0.1429
C ₅	Education and communication	0.0397	0.0397
C ₆	Research	0.1190	0.1190
C ₇	Infrastructure & Facility Investment	1.4647	1.4647
C ₈	Others (Initial Investment for new sites)		14.6468

Unit: VND Millions/ha

	Unit cost of Species and Habitat Conservation Sites	Baseline Scenario	Full Scenario
<i>Code</i>	<i>Unit cost</i>	$\sum_{i=1}^7 C_i$	$\sum_{i=1}^8 C_i$
		4.2495	32.9989
C ₁	Salary	0.6727	0.6727
C ₂	Operation & Maintenance	0.0869	0.0869
C ₃	Biodiversity - related expense	0.4000	0.4000
C ₄	Support people in buffer zone	0.0280	0.0280
C ₅	Education and communication	0.0934	0.0934
C ₆	Research	0.0934	0.0934
C ₇	Infrastructure & Facility Investment	2.8749	2.8749
C ₈	Others (Initial Investment for new sites)		28.7495

Unit: VND Millions/ha

	Unit cost of Landscape Protection	Baseline Scenario	Full Scenario
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Code	Unit cost	$\sum_{i=1}^7 C_i$	
		3.6040	
C ₁	Salary	0.3881	
C ₂	Operation & Maintenance	0.0719	
C ₃	Biodiversity - related expense	0.3593	
C ₄	Support people in buffer zone	0.0719	
C ₅	Education and communication	0.0359	
C ₆	Research	0.1078	
C ₇	Infrastructure & Facility Investment	2.5692	
C ₈	Others (Initial Investment for new sites)		

Unit: VND Millions/ha

	Unit cost of Marine PAs	Baseline Scenario	Full Scenario
Code	Unit cost	$\sum_{i=1}^7 C_i$	$\sum_{i=1}^8 C_i$
		5.1885	23.5289
C ₁	Salary	1.3021	1.3021
C ₂	Operation & Maintenance	0.4991	0.4991
C ₃	Biodiversity - related expense	0.4255	0.4255
C ₄	Support people in buffer zone	0.0681	0.0681
C ₅	Education and communication	0.1277	0.1277
C ₆	Research	0.4255	0.4255
C ₇	Infrastructure & Facility Investment	2.3404	2.3404
C ₈	Others (Initial Investment for new sites)		18.3404

Unit: VND Millions/ha

	Unit cost of Wetland PAs	Baseline Scenario	Full Scenario
Code	Unit cost	$\sum_{i=1}^7 C_i$	$\sum_{i=1}^8 C_i$
		3.0637	11.4062
C ₁	Salary	0.6164	0.6164
C ₂	Operation & Maintenance	0.1295	0.1295
C ₃	Biodiversity - related expense	0.4795	0.4795
C ₄	Support people in buffer zone	0.0329	0.0329
C ₅	Education and communication	0.0274	0.0274
C ₆	Research	0.1096	0.1096
C ₇	Infrastructure & Facility Investment	1.6685	1.6685
C ₈	Others (Initial Investment for new sites)		8.3425

Unit: VND Millions/ha

Annex 8 Survey for National Parks and Protected Areas in Viet Nam

SURVEY FOR NATIONAL PARKS AND PROTECTED AREAS IN VIETNAM

ASSESSING FUTURE FINANCIAL NEEDS

With the aim of assessing financial needs for National Parks/ Protected Areas (PA) activities, we would like you to fill in this survey so that the research group could calculate the total financial needs for your National Parks/PA. Your answer will be an important contribution to future policy and financial planning that would be applied on your National Parks/PA in near future.

Thank you very much!

I. General Information

1. Name of National Park/ Protection Area (PA):

.....

2. Contact address:

.....

Phone number:

Website (if possible):.....

3. Total area of National Park/ Protection Area:.....(ha)

4. Type of protected area:

☐ National Park

☐ Natural Reserves

☐ Species and Habitat PA

☐ Landscapes PA

☐ Marine PA

☐ Wetland PA

II. Detailed goals of the National Park/ PA in order to protect/ develop plants and animals in the upcoming time period?

No	Species that needs to be protected	Number of species		
		Now	Until 2020	Until 2030
1	Species 1 (name)			
2	Species 2 (name)			
..	...			

III. The formal area and the area that needs to be developed in the future of your PA
(Choose *ONLY* featured types of area that you managed)

No	Types	Area (ha)		
		Now	Until 2020	Until 2030
1	Special used forest			
2	Protection forest			
3	Production forest			
4	Primary forest			
5	Mangroves			
6	Marine Protection			
7	Sea Grass			
8	Coral Reef			
9	Others (please specify) -----			

II. Which of the following departments and crews that your National Park/ PA has?

1	Head of departments (managers)	Yes <input type="checkbox"/>	No <input type="checkbox"/>
2	Department of statistical planning, monitoring and researching	Yes <input type="checkbox"/>	No <input type="checkbox"/>
3	Department of monitoring violations to enviromental protection regulations of the PA	Yes <input type="checkbox"/>	No <input type="checkbox"/>
4	Department of planning forest	Yes <input type="checkbox"/>	No <input type="checkbox"/>
5	Department of caring forest	Yes <input type="checkbox"/>	No <input type="checkbox"/>
6	Department of protecting plants and animals	Yes <input type="checkbox"/>	No <input type="checkbox"/>
7	Department of seeding plants	Yes <input type="checkbox"/>	No <input type="checkbox"/>
8	Department of propagating of organisms	Yes <input type="checkbox"/>	No <input type="checkbox"/>
9	Department of producing and diving food for conserved organisms	Yes <input type="checkbox"/>	No <input type="checkbox"/>
10	Department of caring and breeding conserved organisms	Yes <input type="checkbox"/>	No <input type="checkbox"/>
11	Animal rescue center	Yes <input type="checkbox"/>	No <input type="checkbox"/>
12	Other departments (please specify)		
		
		
		

V. In order to achieving your assigned goals, what are your optimal costs for your activities consists of?

	Cost	Please provide your suggestion and appropriate cost norm on each cost
	COST FOR HUMAN RESOURCES - Salary for officials and employees; - Salary for manual workers	How many people should the staff of the department be?..... Estimate income/ person? If possible, provide a specific number of staffs for each jobs' positions
	COST FOR OPERATION AND MAINTENANCE OF THE PA - Cost for maintenance and operation of the PA's working area in order to ensure regular operation of the PA - Cost for maintenace and operation of equipment of the PA - Cost for maintenace and operation of storage deports, workshops, cages, huts and caves (habitats) of conserved species. - Cost for electricity, water and stationary of the PA - Others (please specify)	Cost norm: - How much money per year? - How much percentage of the total construction cost? Other suggestions
	COST FOR BIODIVERSITY ACTIVITIES - Cost for forest protection - Cost for forest enrichment	Cost norm: -How much money per year? -How much money per ha?

	<ul style="list-style-type: none"> - Cost for forest plantation - Cost for preserving seeds (planning conserved trees, plants as food for conserved species) -Cost for conservation/ production of seed (for rare animals, medicines, care,..) -Cost for rehabilitation and improvement of the environment, ensuring that the environment in the reserve is always up to the prescribed standards 	<p>Other suggestions</p> <p>.....</p> <p>.....</p>
	<p>COST FOR FOREST PROTECTION OF FIRE</p> <ul style="list-style-type: none"> -Cost for the construction of fire prevention in the forest (irrigation ditches or fireproof equipment in forests) -Cost for specialized equipment (fire pumps, wind blowers, watering machines, labor protection ...) -Cost for training, rehearsal and activities of the firefighters -Other costs 	<p>Cost for contruction of (How many) fireproof works in the forest?</p> <p>+ (How many) lakes,</p> <p>+ (How many) meters of ditch irrigation or fireproof in the forest,</p> <p>+ (How many) meters of preventing fire spread path</p> <p>+ v...v..</p> <p>Cost for other (How many) specialized equipment?</p> <p>+ (How many) fire pumps,</p> <p>+ (How many) wind blowers,</p> <p>+ (How many)..... watering machines,</p> <p>+ (How many) labor protection equipment</p> <p>Cost for training, rehearsal and activities of the firefighters (cost norm per year.....)</p> <p>Other costs for fire prevention in forests - related (cost norm per year.....)</p>

		<p><i>Other suggesstions</i></p> <p>.....</p> <p>.....</p>
	<p>COST FOR SUPPORTING PEOPLE IN THE BUFFER ZONE</p> <p>- Cost for protection of the belts (land/ forest belt) and afforestation belt</p> <p>-Cost for poverty alleviation, livelihood development for people living in the buffer zone</p>	<p>Cost norm:</p> <ul style="list-style-type: none"> - How much money per person annual? - How much money per ha? <p><i>Other suggestions</i></p> <p>.....</p> <p>.....</p>
	<p>COST FOR COOPERATION, EDUCATION AND COMMUNICATION ABOUT BIO-DIVERSITY</p> <p>- Cost for cooperation; technology transfer, diplomacy, inspection</p> <p>- Cost for communication and education to raise the awareness of officials and employees in the agencies; For officials in agencies, units and people residing in and around the reserve, tourists, ...</p>	<p>Cost norm:</p> <ul style="list-style-type: none"> - How much money per year? - How much money per ha? <p><i>Other suggestions</i></p> <p>.....</p> <p>.....</p>
	<p>COST FOR SCIENTIFIC RESEARCH</p> <p>- Cost for researching (including observation, collection, measurement, verification, data collection on conservation in the area, clearance work, forcible violation activities, sabotage, encroachment, illegal exploitation, release, discharge of waste indiscriminately)</p>	<p>Cost norm:</p> <ul style="list-style-type: none"> - How much money per year? - How much money per ha? <p><i>Other suggestions</i></p>

	<ul style="list-style-type: none"> - Cost for training, fostering and training (at schools, offices, in-service centers) in order to improve the skills of conservation area staff; Cost for training of fire prevention and fighting forces and rescue forces - Cost for scientific research (research, development, implementation of environmental improvement projects, conservation of rare species, improvement of quality of management and labor productivity ...) 	
	<p>COST FOR INFRASTRUCTURE AND FACILITY</p> <ul style="list-style-type: none"> - Cost for construction investment, working house for the PA - Cost on investment in the construction of conservation areas (storage depots, workshops, cages, groups, caves (habitats) of species of conserved species..) - Cost for construction or renewal of roads (roads, parking lots); the construction of protective infrastructure systems (including trenches, walls, fences, separating markers) - Cost for construction of protective stations - Cost for procurement of equipment to ensure operation of the facility - Cost for transportation equipment - Cost for specific equipment (spraying pesticides, watering, ...) 	<ul style="list-style-type: none"> - Renew (how many) meters of working place for employees? - Renew (how many) meters of storages? - Renew (how many) production stations? - Build more (how many) kilometers of roads? - Làm thêm (how many) kilometers of grading roads? - Build more (how many) kilometers of preventing fire spread path - Build more (how many) meters of embankments, dams? - Dig (how many) irrigation canals, lakes, pumping stations for preventing fire, observation stations ...? - Build (how many) meters of clean water pipelines? - Build (how many) meters of walls, fences for protection purpose? - Instal (how many) milestones? - Buy (how many) water pumps, large pesticide sprayers?

		<p>- Buy (how many) means of transportation, specialized services for production and patrol?</p> <p>- Build (how many) conserved plants and animals breeding stations?</p> <p><i>Other specific investments? (please specify)</i></p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p> <p>.....</p>
	<p>OTHER COSTS</p> <p>(Cost for policy, building legal documents system...)</p> <p><u><i>Specialized costs for your National Park/ PA (please specify)</i></u></p>	<p>Cost norm:</p> <p>-How much money per year?</p> <p>-How much money per ha?</p> <p><i>Other suggestions</i></p> <p>.....</p> <p>.....</p>

Thank you for your cooperation!

CONFIRMATION OF NATIONAL PARK/ PA CỦA VQG/KB

.....date.....month..... 2017

**DIRECTOR OF
THE NATIONAL PARK/ PA**

Annex 9 Cost estimation of infrastructure by types of PAs based on survey standards

1. CENTRAL NATIONAL PARKS

2. PROVINCIAL NATIONAL PARKS

Cost estimation of Cat Ba PA's Infrastructure & facility annual maintenance investment (Unit cost of C7)

Cat Ba's Area: 10,912.5 ha

No	Content	Technical Cost norm	Current status	Additional requirements	Unit Cost (VND)	Total required cost (VND)
1	Infrastructure of the PA					
	Working offices	500 m ²	Already have	0	6 billion	
	Big meeting room	200 m ²	Already have	0		0
	Small meeting room	50 m ²	Already have	0		
	Data storage room	100 m ²	Already have	0		
	Forest protection station	3000 ha/1T200 m ²	11 station	0	1.5 billion/station	0
	Internal road, sewer through the road	1000 ha/1km	15 km	0		0
	Communication system		Already have	0		0
	Electricity system		3/11 units	8 units	0.5 billion/tower	4 billion
	Water system		3/11 units	8 units		
2	Fire preventing system					
	Fire alarm tower	1 station /1 tower	1towers	10 towers	0.5 billion/tower	5 billion
	Firefighters' training house	400 m ² /PA	Already have		3 billion	0
	Aquifers, tanks and ditches	Per factual need	1 tank 200 m ³	2 tanks 600 m ³	0.35 billion/tank	0.7 billion
	Storages	Per factual need	0	100 m ²	0.8 billion	0.8 billion
3	Scientific research facility					
	Museums	400 m ² /PA	Already have	0	4 billion/PA	0
	Data collection station/ tower	On demand	0	Merging with Fire Alarm Tower		
	Plants/animals collection garden	PAs, NP	13,5 ha	0	3 billion/PA	0
4	Tourism facility					
	Reception center	400 m ² /PA	0	400 m ²	4 billion/PA	4 billion
	The PA's model	1 model/PA	Need improve	1 SB	0.5 billion/PA	0.5 billion
5	Other constructions		0			
	Roads. milestones		0	50 km	0.5 billion/PA	6 billion
	Harbors/ parking stations		5 stations	0	0.2 billion/station	0
	Fire preventing path		0	10 km white path, 4km blue path	0.01 billion/1km	0.14 billion
	Animal rescue center		0	Need new	0.5 billion/PA	0.5 billion
	Plan and nursery garden		Already have	0	0.5 billion/PA	0
	Signs, information boards		0	20 board	0.01 billion/1 board	0.2 billion
	Walls, fences		Already have	0		0
Total						21.84 billion

3. NATURE RESERVES

Cost estimation of Son Tra PA's Infrastructure investment (Unit cost of C8 and C7 = 10% of C8)

Son Tra's area: 2,520 ha

No	Content	Technical Cost norm	Current status	Additional requirements	Unit Cost (VND)	Total required cost (VND)
1	Infrastructure of the PA					
	Working offices	500 m ²	240 m ²	260 m ²	6 billion/PAs (include 5.4 billion for new infrastructures + 15% for annual maintenance)	About 5.4 billion
	Big meeting room	200 m ²	0	200 m ²		About 5.4 billion
	Small meeting room	50 m ²	0	50 m ²		
	Data storage room	100 m ²	0	100 m ²		
	Forest protection station	3000 ha/1T200 m ²	0	2 stations (250 m ²)	1.5 billions/station	3 billion
	Internal road, sewer through the road	1000 ha/1km	7 km	50 km	Suggest total costs	5 billion
	Communication system		0	20 ICOM	10 million/ ICOM and 1.5 billion/ station	1.7 billion
	Electricity & water system		1 station	2 stations	0.5 billion/system	1.5 billion
2	Fire preventing system					
	Fire alarm tower	On reality	0	2 towers	0.5 billion/tower	1 billion
	Firefighters' training house	400 m ² /1KBT	0	400 m ²	3 billion/house	3 billion
	Aquifers, tanks and ditches	On reality	0	4 tanks	0.25 billion/ tank	1 billion
	Storages	Based on standards	0	100 m ²	0.8 billion/ store room	0.8 billion
3	Scientific research facility					
	Museums	400 m ² /1KBT	0	400 m ²	4 billion	4 billion
	Data collection station/ tower	On reality	0	May be not required now		
	Plants/animals collection garden	1 per PA	0	1 garden	3 billion	3 billion
4	Tourism facility					
	Reception center	400 m ² /KBT	0	400 m ²	4 billion	4 billion
	The PA's model	1SB/1KBT	0	1 SB	0.5 billion/model	0.5 billion
5	Other constructions		0			
	Roads. milestones		0	70 milestones	5 million/milestones	0.35 billion
	Harbors/ parking stations		0	1	0.2 billion/station	0.2 billion
	Fire preventing path		0	Not now		
	Animal rescue center		0	1	0,5 billion/center	0.5 billion
	Plan and nursery garden		0	1	0.5 billion/garden	0.5 billion
	Signs, information boards		0	40 big boards and 100 small boards	9 million/big board 1 million/small board	0.46 billion
	Walls, fences		0	For working areas and other gardens	Based on real demand	1 billion
Total						36.91 billion

4. SPECIES AND HABITAT CONSERVATION AREA

Cost estimation of Phu My PA's Infrastructure investment (Unit cost of C8 and C7 = 10% of C8)

Phu My area: 1,070.28 ha

No	Content	Technical Cost norm	Current status	Additional requirements	Unit Cost (VND)	Total required cost (VND)
1	Infrastructure of the PA					
	Working offices	500 m ²	0	200 m ²	6 billions/ standard PA in big province Proposed 3 billion/ Phu My PA in a cheap province (Kien Giang)	3 billion
	Big meeting room	200 m ²	0	100 m ²		3 billion
	Small meeting room	50 m ²	0	50 m ²		
	Data storage room	100 m ²	0	100 m ²		
	Forest protection station	3000 ha/1 station 200 m ²	0	1 station (200 m ²)	1.5 billion/station	1.5 billion
	Internal road, sewer through the road	1000 ha/1km	7.5 km	10 km	0.12 billion/km	2.1 billion
	Communication system		0	15 ICOM, 2 stations	10 million/ ICOM and 1.5 billion/station	3.15 billion
	Electricity & water system		0	2 systems	0.5 billion/system	1 billion
2	Fire preventing system					
	Fire alarm tower	1 station/ 1 tower	0	1 station + 1 tower	0.5 billion/tower	1 billion
	Firefighters' training house	400 m ² /1KBT	0	400 m ²	3 billion	3 billion
	Aquifers, tanks and ditches	On reality	0	Just estimated the total	1 billion/site	1 billion
	Storages	Based on standards	0	100 m ²	0.8 billion/ room	0.8 billion
3	Scientific research facility					
	Museums	400 m ² /1KBT	0	400 m ²	4 billion	4 billion
	Data collection station/ tower	On reality	0		Not now	
	Plants/animals collection garden	Based on standards	0	23 ha	3 billion	3 billion
4	Tourism facility					
	Reception center	400 m ² /KBT	0	400 m ²	4 billions	4 billion
	The PA's model	1SB/1KBT	0	1 SB	0.5 billion	0.5 billion
5	Other constructions		0			
	Roads. milestones		0	40 milestones for 10km	5 millions/milestone	0.2 billion
	Harbors/ parking stations		0	2 stations	0.2 billion/station	0.4 billion
	Fire preventing path		0	Not now		
	Animal rescue center		0	Need new one	0.5 billion	0.5 billion
	Plan and nursery garden		0	Need new one	0.5 billion	0.5 billion
	Signs, information boards		0	8 boards/signs	15 million/1 board	0.12 billion
	Walls, fences		0	Surroundings the sites	Estimated the total costs	1 billion
TOTAL						30.77 billion

5. LANDSCAPE CONSERVATION AREA

Cost estimation of Yen Tu PA's Infrastructure & facility annual maintenance investment (Unit cost of C7)

Yen tu's area: 2,783 ha

No	Content	Technical Cost norm	Current status	Additional requirements	Unit Cost (VND)	Total required cost (VND)
1	Infrastructure of the PA					
	Working offices	500 m ²	Already have	0	6 billion/PA	
	Big meeting room	200 m ²	Already have	0		0
	Small meeting room	50 m ²	Already have	0		
	Data storage room	100 m ²	Already have	0		
	Forest protection station	3000 ha/1T200 m ²	4 station	0	1.5 billion/station	0
	Internal road, sewer through the road	1000 ha/1km	Already have	0		0
	Communication system		Already have	0		0
	Electricity & water system		4/4 system	0	0.5 billion/system	0
2	Fire preventing system					
	Fire alarm tower	1 station /1 tower	2 towers	0	0.5 billion/tower	0
	Firefighters' training house	400 m ² /PA	Already have	0	3 billion	0
	Aquifers, tanks and ditches	On reality	300 m ³	0	1 billion/ PA	0
	Storages	Per standards	Already have	0	0.8 billion/ stored room	0
3	Scientific research facility					
	Museums	400 m ²	0	Bổ sung	4 billion/PA	4 billion
	Data collection station/ tower	On reality	0	Not now		
	Plants/animals collection garden	Per standards	0	5 ha	0.5 billion/ha	2.5 billion
4	Tourism facility					
	Reception center	400 m ² /KBT	Already have	0	4 billion/PA	0
	The PA's model	1SB/1KBT	Already have	0	0.5 billion/PA	0
5	Other infrastructure		0			
	Roads. milestones		Already have	0		0
	Harbors/ parking stations		Already have	0		0
	Fire preventing path		0	15 km white path	10 million/km	0.15 billion
	Animal rescue center		0	1	0,5 billion/KBT	0.5 billion
	Signs, information boards		Already have	0	10 Tr/1 bảng	0
TOTAL						7.15 billion

6. MARINE PROTECTED AREA

Cost estimation of Cu Lao Cham PA's Infrastructure investment (Unit cost of C8 and C7 = 12% - 13% of C8)

Cu Lao Cham's protection area: 2,350 ha

No	Content	Technical Cost norm	Current status	Additional requirements	Unit Cost (VND)	Total required cost (VND)
1	Infrastructure of the PA					
	Working offices	500 m ²	500m ²	Maintenance costs	6 billion/ standard marine PA	6 billion
	Big meeting room	200 m ²	0	200 m ²		About 3 billion
	Small meeting room	50m ²	0	50 m ²		
	Data storage room	100m ²	0	100 m ²		
	Marine protection station	3000ha/200 m ²	0	3 stations (250 m ²)	1.5 billion/station	4.5 billion
	Internal road, sewer through the road	1000ha/1km	2 km	renewable	Suggest the total costs based on the reality	2 billion
	Communication system		0	20 ICOM	10 million/ ICOM and 1.5 billion/ station	1.7 billion
	Electricity & water system		1	3 systems	0.5 billion/system	2 billion
2	Fire preventing system					
	Fire alarm tower	1 tower	0	1 tower	0.5 billion/tower	0.5 billion
	Firefighters' training house	400 m ² /PA	0	400 m ²	3 billion	3 billion
	Aquifers, tanks and ditches	On reality	0	Suggest the total cost	1 billion	1 billion
	Storages	Follow the standards	0	100 m ²	0.8 billion	0.8 billion
3	Scientific research facility					
	Museums	400 m ² /PA	Too small	400 m ²	4 billion	4 billion
	Data collection station/ tower	Theo thực tế	0	Not now		
	Plants/animals collection garden	Follow the standards	0	1 standard garden	3 billion	3 billion
4	Tourism facility					
	Reception center	400 m ² /PA	Too small	400 m ²	4 billion	4 billion
	The PA's model	1 model/PA	0	1 model	0.5 billion	0.5 billion
5	Other facilities and infrastructure		0			
	Ships/ boats	On reality	2	3	1 billion/boat	5 billion
	Roads. milestones	On reality	144 too old milestones on marine surface	Renewable milestones 144	25 million/milestones	3.6 billion
	Harbors/ parking stations	On reality	1	1	0.2 billion/station	0.4 billion
	Animal rescue center	Per standards	0	1 center	0.5 billion	0.5 billion
	Plan and nursery garden	Per standards	0	1 garden	0.5 billion	0.5 billion
	Signs, information boards	On reality	0	3 big boards	30 million/board	0.1 billion
TOTAL						43.1 billion

7. WETLAND PROTECTED AREA

Cost estimation of Tram Chim PA's Infrastructure investment (Unit cost of C8 and C7 = 20% of C8)

Tram Chim's protection area: 7,300ha

No	Content	Technical Cost norm	Current status	Additional requirements	Unit Cost (VND)	Total required cost (VND)
1	Infrastructure of the PA					
	Working offices	500 m ²	On construction	Need maintenance	6 billion	6 billion
	Big meeting room	200 m ²	On construction		6 billion/khu	1 billion
	Small meeting room	50m	On construction			
	Data storage room	100m	On construction			
	Wetland protection station	Follow the reality	20 special stations (too old)	Need renewable	0.5 billions/station	10 billion
	Internal road, sewer under the road	1000 ha/1km	90km	Need renewable	0.4 billion/1km (new)	1 billion
	Communication for forest guards		21 ICOM	3 stations for communication	10 million/ICOM; 1.5 billion/ station	4.7 billion
	Electricity & water system		On construction	Need for 20 stations on wetland	0.4 billion/station	8 billion
2	Fire preventing system					
	Fire alarm tower	Towers	6 towers	Need 3 more towers	0.5 billion/tower	4.5 billion
	Firefighters' training house	400m/1KBT	0	1	3 billions/house	3 billion
	Aquifers, tanks and ditches	On reality		Based on specific demand	Suggest total costs	1 billion
	Storages	Per standards	0	100 m ² room	0.8 billion/room	0.8 billion
3	Scientific research facility					
	Museums	400 m ² /1KBT	Not yet	need 400 m ² museum	4 billions	4 billion
	Data collection station/ tower	On reality	Not now			
	Plants/animals collection garden	On reality	Not yet	45 ha	3 billions	3 billion
4	Tourism facility					
	Reception center	400 m ² /PA	Already have		4 billions/center	4 billion
	The PA's model	1 model/PA	Already have		0.5 billion/ model	0.5 billion
5	Other facilities and infrastructure					
	Ships/ boat	Follow the reality	4 small boats	6 boats	0.8 billions/boat	8 billion
	Roads. milestones			10 km + 40 milestones	Suggest total costs	0.3 billion
	Animal rescue center	Per standards	Not yet	Need new one	0.5 billion/center	0.5 billion
	Plan and nursery garden	Per the standards	Not yet	Need new one	0.5 billion/garden	0.5 billion
	Signs, information boards		37 information board	10 boards	10 millions/Boards	0.5 billion
	Harbors/ parking stations		2 stations	1 station	0.2 billion /station	0.6 billion
TOTAL						60.9 billion

