ベトナム国
天然資源環境省
ベトナム環境保護総局
国家生物多様性保全局

ベトナム国
国家生物多様性データベース
システム開発プロジェクト

プロジェクト事業完了報告書
（要約）

平成 27 年 6 月
（2015 年）

独立行政法人国際協力機構（JICA）
株式会社日本開発サービス（JDS）

環境
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略語表

略語	英語	日本語
ADB	Asian Development Bank	アジア開発銀行
ASEAN	Association of South‐East Asian Nations	東南アジア諸国連合
BCA	Biodiversity Conservation Agency	国家生物多様性保全局
BD	Biodiversity	生物多様性
BDMI	Biodiversity Monitoring Indicators	生物多様性モニタリング指標
BIP	Biodiversity Indicators Partnership	生物多様性指標パートナーシップ
C/P	Counterpart Personnel	カウンターパート
CG	Core Grouop	コア・グループ
CBD	Convention on Biological Diversity	生物の多様性に関する条約（生物多様性条約）
CCA	Canonical Correspondence Analysis	正準対応分析
CEID	Centre for Environmental Information and Documentation, VEA, MONRE	環境情報文書センター
CEM	Centre for Environmental Monitoring, VEA, MONRE	環境モニタリングセンター
CETAF	Consortium of European Taxonomic Facilities	欧州分類学機関コンソーシアム
CEPF	Critical Ecosystem Partnership Fund	クリティカル・エコシステム・パートナーシップ基金
CI	Cooperazione Italiana	
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora	絶滅のおそれのある野生動植物の種の国際取引に関する条約（ワシントン条約）
CMS	Convention on the Conservation of Migratory Species of Wild Animals /Bonn Convention	移動性野生動物種の保全に関する条約（ボン条約）
COP	Conference of the Parties	締約国会議
CRES	Center for Natural Resources and Environmental Studies – Viet Nam National University	ベトナム国家大学 生物学部/天然資源・環境研究センター
DARD	Department of Agriculture and Rural Development	（地方各省の）農業農村開発局
DINTE	Department of Information Technology, MONRE	天然資源環境省 情報技術局
DoF	Department of Forestry	林業局
DONRE	Department of Natural Resources and Environment	（地方各省の）天然資源環境局
DOST	Peoples Committee of Ho Chi Minh City, Vietnam Department of Science and Technology	ホーチミン市科学技術局
EIA	Environmental Impact Assessment	環境影響評価
FAO	Food and Agriculture Organization	国際連合食糧農業機関
FIPI	Forest Inventory Planning Institute	森林インベントリー・計画研究所
FOB	Free on Board	本船渡し条件
FORMIS	Development of Management Information Systems for Forestry Sector Project	森林セクター向け管理情報システム開発プロジェクト
FSSP	Forest Sector Support Partnership	森林セクター支援プログラム
GBIF	Global Biodiversity Information Facility	地球規模生物多様性情報機構
GDP	Gross Domestic Product	国内総生産
GEF	Global Environment Facility	地球環境ファシリティ
GIS	Geographic Information System	地理情報システム
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit	ドイツ国際協力公社
GPS	Global Positioning System	全地球測位システム

略語	英語	日本語
HUS	Hanoi University of Science	ハノイ科学大学
ICBN	International Code of Botanical Nomenclature	国際植物命名規約
ICT	Information and Communication Technology	情報通信技術
IC/R	Inception Report	インセプション・レポート
IEBR	Institute of Ecology and Biological Resources	生態・生物資源研究所
IET	Institute of Environmental Technology	環境技術研究所
IT	Information Technology	情報技術
ITC	Information Technology Center, Administration Office, VEA, MONRE	情報技術センター
IT IS	Interagency Taxonomic Information System	統合分類学情報システム
IUCN	International Union for Conservation of Nature and Natural Resources	国際自然保護連合
ICZN	International Code of Zoological Nomenclature	国際動物命名規約
JCC	Joint Coordinating Committee	合同調整委員会
MARD	Ministry of Agriculture and Rural Development	農業農村開発省
MONRE	Ministry of Natural Resources and Environment	天然資源環境省
MOST	Ministry of Science and Technology	科学技術省
MPI	Ministry of Planning and Investment	計画投資省
NBSAP	National Biodiversity Strategies and Action Plans	国家生物多様性戦略・アクションプラン
NGO	Non-Governmental Organizations	非政府組織
OJT	On the Job Training	職場内教育
PDM	Project Design Matrix	プロジェクト・デザイン・マトリクス
PO	Plan of Operation	業務計画
R/D	Record of Discussions	協議記録（政府間技術協力プロジェクト合意文書）
RIA	Research Institute for Aquaculture	水産養殖研究所
RSC	Vietnam National Remote Sensing Center	ベトナム国家リモートセンシングセンター
TDWG	Taxonomic Database Working Group	生物分類学データベース作業部会
TWG	Technology Working Groups	技術検討ワーキング・グループ
UNEP-WCMC	United Nations Environment Programme – World Conservation Monitoring Centre	国連環境計画・世界自然保全モニタリングセンター
VACNE	Vietnam Association for Conservation of Nature and Environment	ベトナム自然環境保護協会
VAST	Vietnam Academy of Science and Technology	ベトナム科学技術院
VEA	Vietnam Environment Administration	ベトナム環境保護総局
VNU	Vietnam National University	ベトナム国家大学
WCS	Wildlife Conservation Society	野生生物保護協会
WRI	World Resources Institute	世界資源研究所
WTO	World Trade Organization	世界貿易機関
WWF	World Wildlife Fund for Nature	世界自然保護基金
XTNP	Xuan Thuy National Park	スアントゥイ国立公園

1. プロジェクトの概要（背景・経緯・目的）

(1) プロジェクトの基本情報

【プロジェクト名】

国家生物多様性データベースシステム開発プロジェクト

【プロジェクト期間】

2011年11月～2015年3月（3年5か月）
うち2011年11月～2013年3月（第1年次）／2013年4月～2015年3月（第2年次）

【実施機関】

ベトナム天然資源環境省（MONRE）環境保護総局（VEA）生物多様性保全局（BCA）

【協力関係機関】

農業農村開発省（MARD）、科学技術省（MOST）、ベトナム科学技術院（VAST）、ナムディン省ほか

【パイロット調査実施地域】

ナムディン省　スアントゥイ国立公園

(2) プロジェクトの背景

ベトナム国（以下、「ベ」国）は、世界の生物種の約10%を有し、生物多様性が極めて豊かな国であるにも関わらず、陸域生態系の生息地として重要な森林は、人口増加と貧困による農地への転換や違法伐採等により、1990年にはその被覆率が1943年の約43%から27.7%低下した。

その後の森林回復の取り組みの結果、森林被覆は2009年末時点では約39.1%まで回復したが、増加した森林被覆の面積の半分は生物多様性が低いプランテーションや再植林地で原生林は僅かであり、未だ劣化し続けていると言われている。加えて、近年の飛躍的な経済成長を背景に、急激な人口増加とそれに伴う消費の増加は天然資源の過剰利用をもたらし、急激な開発とインフラ整備が国土の景観を改変、自然景観が減少し、生態的隔離や野生動植物の生息場所の消失をもたらしている。また、気候変動による影響が極めて大きいことが予測されており、生物多様性の大規模な損失も懸念されている。

このような状況の中、「ベ」国は、生物多様性条約第6回締約国会議（CBD / COP6 ,2002年）で採択された「2010年目標[1]」を受けて、2007年に「国家生物多様性アクションプラン2010、2020への方向性（Decision No. 79/2007/QD-TTg）」を策定し、陸域、海域、湿地、農業における生物多様性の保全・開発と、生物資源の持続的利用、バイオセーフティの管理強化を掲

[1] 締約国は現在の生物多様性の損失速度を 2010 年までに顕著に減少させる

げ、2008年に生物多様性保護法を制定した。さらに、国際的な生物多様性に関連する条約に加入し、生物多様性の保全を約束している。

本プロジェクトの実施機関となるMONREは、同法にて定めている生物多様性管理を統一的に行うことと規定されており（第6条）、同省は生物多様性保全に係る国家計画の策定（第10条）のほか、生物多様性をモニタリングするための基礎調査（生物多様性基礎調査）の実施、生物多様性データベースの構築、その利用の推進、生物多様性状況の報告などについて主導的役割を担うこととされている。

しかしながら、実際には生物多様性情報は、関連省庁や研究所・大学などに散在し、また、体系的に生物多様性をモニタリングし評価するための調査も行われておらず、国家レベルにおいて生物多様性を評価することが困難な状況となっている。

このため、我が国はベトナム政府より、体系的なモニタリングを基に、データの集約と公開を担うデータベースシステムの開発等を内容とする技術協力の要請を受け、本格協力実施にかかる条件が整ったことから、ベトナム国MONRE環境総局生物多様性保全局（VEA BCA）をプロジェクトカウンターパート（C/P）機関として、本件業務が開始されたものである。

(3) プロジェクトの目的および指標

本プロジェクトは、生物多様性情報を有する「ベ」国内関係各機関と協力し、散在する生物多様性情報を集約し公開する国家レベルのデータベースシステム（NBDS）の第1世代を構築すると共に、同情報のモニタリングに必要な体系的調査方法を技術移転し、調査により取得されたデータを蓄積するための地方省レベルのデータベースを構築することを業務の目的とする。それには、将来的にNBDSが国家レベルの生物多様性の保全と持続可能な利用、環境影響評価（EIA）、その他の地球規模の枠組みの展開に資するシステムとなるよう留意する。また、構築したNBDSのデータの情報共有・管理・利用に関して、既存データベースの運営機関との協力メカニズムを提言し、各機関および生物多様性保全を担当する中央・地方機関の職員に対してNBDSを紹介するとともに、NBDS第2世代に向けたロードマップを提言することも業務の目的に含める。本件のプロジェクト目標、上位目標、およびスーパーゴールは以下の通りである。

【スーパーゴール】（2025年）

第2世代の国家生物多様性データベースシステムが開発される。

［指標・目標値］

- 各省と関連機関のデータを有する第2世代のNBDSが国家レベルの生物多様性のモニタリングに使用される。
- ナムディン省を念頭に置いて、NBDSの特定アプリケーション向け活用方法（EIA等）が開発される。

【上位目標】（2020年）

第2世代の国家生物多様性データベースシステムが開発され、選択された保護地域と省において試行される。

［指標・目標値］

- 管理を目的としたNBDSの活用方法がナムディン省において開発される
- GISと統合化されたNBDSが選択された保護地域とナムディン省以外の省において使用される。
- NBDSが生物多様性に関連した国家レポートの作成に使用される。

【プロジェクト目標】

第1世代の国家生物多様性データベースシステムが開発される。

［指標・目標値］

- MONRE VEAがNBDSのアーキテクチャを承認する。
- 「ベ」国のレッドリストに掲載されている全ての動植物種を含む、「ベ」国動植物種に関する基礎的データがNBDSに入力される。
- NBDSの第1世代がVEA/MONREにおいて開発、運用、保守される。

2. 成果及び活動の達成状況についての概要

本項ではプロジェクト実施期間中の成果及び活動について述べる。

(1) プロジェクトの主な成果

プロジェクトの主な成果を業務完了報告書Appendix 9に示す。

(2) 主な活動の達成状況について

本項ではプロジェクトの活動のうち主要な活動の達成状況について、Appendix 2に示したワークフローに沿って述べる。

0-1: PDM、POの検討、協議、JCCによる承認

プロジェクトチーム内やコア・グループ会議等における協議の結果を踏まえて、PDMは計3回改定された（バージョン1から4）。PDMの全履歴をAppendix 1に示す。改定内容は以下の通りである。

- Version 2（2013年5月30日）：中間レビューにおける議論の結果に基づき、PDMの内容を大幅に改定し、コア・グループの導入による新たな成果物の追加（マスター・スキーム、協力メカニズムに関する協力文書等）が行われた。これに伴い、成果・目標の指標についても大幅に改定・追加された。

- Version 3（2014年8月1日）: 終了時評価における議論の結果に基づき、それまでの上位目標の内容を目標年が明記された2段階に分割することによって、新たな上位目標（2020年）とスーパーゴール（2025年）が導入された。ナムディン省向けの教育・啓発ツールに関する記述も、より広範囲なNBDSの利用促進向けのツールという記述に改められた。
- Version 4（2015年1月27日）: PDM中に記載された2つのガイドライン（コア・グループ成果物）の名前を、実際に印刷製本された成果物の表題に合わせて以下のように変更された。
  - ➢ （旧） Guideline for developing National indicators for biodiversity monitoring
    （新） Guideline for biodiversity indicator development and utilization
  - ➢ （旧） Technical guideline of basic survey and monitoring on wetland ecosystem
    （新） Technical guideline for basic survey and monitoring of coastal wetlands

0-2: プロジェクト活動のモニタリング・評価

プロジェクト活動のモニタリングと評価は、PDMに基づき主としてTWG（第1年次：2011年11月~2013年3月）やコア・グループ活動（第2年次：2013年4月~2015年3月）の進捗を測ることによって行った。中間レビューの際の議論の結果により、以下の5つの成果物が新たに追加あるいは変更されたことから、プロジェクト活動の進捗もこれらの成果物の作成進捗状況を測ることによって行われた。

- NBDSマスター・スキーム（政府向け技術提案書）の最終ドラフト
- NBDSのシステム・アーキテクチャ文書
- 生物多様性指標の開発と活用に関するガイドライン文書（以下「指標ガイドライン文書」と略記）
- 海岸湿地生態系における調査技術ガイドライン文書（以下「調査技術ガイドライン文書」と略記）
- 協力メカニズムに関する法的文書の最終ドラフト

2013年12月に、プロジェクト活動の進捗に大幅な遅れがあることが認識され、その対策を関係各機関と協議した結果、コア・グループの活動の技術的調整を行うための技術コーディネータ（Prof. Cu）を配置することで合意した。

終了時評価が2014年7月13日～8月2日にかけて実施され、プロジェクト目標はプロジェクト期間中に達成される見通しであると結論付けると共に、プロジェクト終了後の自立発展性に関する勧告を行った。

1-1: 生物多様性に係る既存のデータベースの確認・分析

プロジェクトチームはNBDSを設計する際の参照情報とするため、ベトナム国内及び世界における既存の生物多様性関連データベースに関する調査を実施し、またベトナム国内の関連機関に対する訪問協議を実施した。訪問協議先のリストとその協議内容のポイントをAppendix 10に示す。またプロジェクトチームは関連機関向けに実施したキャパシティアセスメント調査においても、既存のデータベースに関する質問を行った（5-3参照）。

これらの調査結果を分析することにより、NBDSは生物種に関するデータ、メタデータ、そして（XTNPをパイロット調査とする）サイトレベルのデータの3種類のデータベースを実現すべきアーキテクチャとした。

1-2: NDBS技術検討ワーキング・グループ（TWG）の設立

プロジェクト活動の第1年次に、TWG設立準備会議（pre-TWG）の結果に基づき、生物多様性調査とモニタリング関連を担当するグループAと、データベース開発と管理を担当するグループBの2つのTWGを設立した。

1-3: 技術検討ワーキング・グループ会議を開催

プロジェクトでは計14回のTWG会議を第1年次に開催した。その概要について以下の表に示す。また、各TWGにおける議論の要点については、英語版報告書を参照のこと。Group A（生物多様性調査とモニタリング関連担当）では国家レベル・サイトレベル（XTNP）の生物多様性モニタリング指標の検討・選定とXTNPにおけるパイロット調査の手法等に関する議論が中心となり、Group B（データベース開発と管理担当）ではNBDSのアーキテクチャ設計の検討とシステム開発に必要な要素技術の選定や技術移転が中心となった。

表-1　TWG会議

No.	グループ	日付	参加者数（参加組織）
Pre-TWG	-	2012 年 3 月 14 日	27 (BCA, MONRE, DONRE, IEBR, etc.)
TWG1	Group A	2012 年 6 月 14 日	37 (BCA, CEID, ITC, CEM, IEBR, DONRE, XTNP, MARD, CRES, etc.)
	Group B	2012 年 6 月 14 日	
TWG2	Group A	2012 年 7 月 14 日	17 (BCA, IEBR, DONRE, XTNP, etc.)
	Group B	2012 年 7 月 25 日	13 (BCA, ITC, CEID, CEM, DONRE, XTNP, MOST, etc.)
TWG3	Group A	2012 年 9 月 15 日	13 (BCA, HNUE, XTNP, HUS, etc.)
	Group B	2012 年 8 月 17 日	12 (BCA, ITC, CEID, CEM, DONRE, XTNP)
TWG4	Group A	2012 年 10 月 10 日	29 (BCA, MARD, IEBR, HNUE, DONRE, XTNP, etc.)
	Group B	2012 年 10 月 10 日	19 (BCA, ITC, CEID, CEM, DONRE, XTNP)
TWG5	Group A	2012 年 11 月 2 日	34 (BCA, VEA, DONRE, XTNP, FIPI, RSC, RIA, IEBR, HUS, CRES, etc.)
	Group B	2012 年 11 月 20 日	19 (BCA, ITC, CEID, CEM, FORMIS, etc.)
TWG6	Group A	2013 年 1 月 17 日	29 (BCA, DONRE, XTNP, RSC, IEBR, ITC, CEID, CEM, etc.)
	Group B	2013 年 1 月 17 日	
TWG6.1.B	Group B	2013 年 1 月 25 日	17 (BCA, ITC, CEID, CEM, HUS, etc.)

1-3-1. 5つのコア・グループを設立

中間レビューの結果に基づき、0-2の項で述べた5つの成果物を作成するために2013年6月から順次5つのコア・グループが設立された。コア・グループにおける成果物の作成と技術レビューの手順を以下の図に示す。

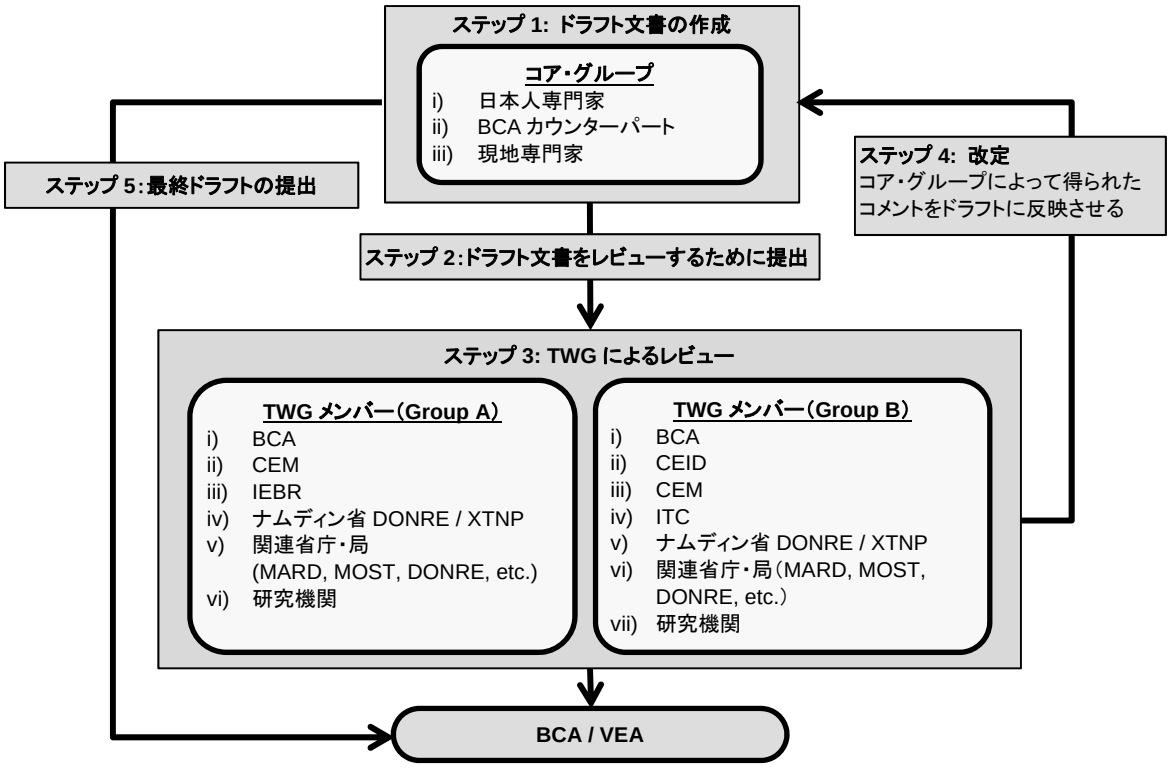


図-1　コア・グループにおける成果物の作成・技術レビュー手順

各コア・グループのメンバーを以下の表に示す。

表-2　コア・グループのメンバー

コア・グループ	メンバー
NBDS のマスター・スキーム	• **LE1:** Prof. Mai Trong Nhuan* (Senior national expert, Former president of VNUH) • **LE2:** Mr. Bui Ngoc Anh (IT consultant, FPT University) • **LE3:** Dr. Bui Quang Hung (Lecturer, Faculty of Information Technology, University of Engineering and Technology, VNUH) / Mr. Duong Le Minh (Lecturer, VNUH) • **JE1:** Mr. Yoichi Kogure (Chief advisor, JICA expert team) • **JE3:** Mr. Tsutomu Ono (Database Development 3, JICA expert team) • BCA C/Ps
NBDS のシステム・アーキテクチャ	• **LE4:** Dr. Le Xuan Canh* (Biodiversity Expert, IEBR) • **LE5:** Ms. Nguyen Kim Ngoc (Project Officer, Petrolimex information technology and Telecommunication JSC) • **JE1:** Mr. Yoichi Kogure (Chief advisor, JICA expert team) • **JE2:** Ms. Yukiyo Yamada (Database Development 2, JICA expert team) • **JE3:** Mr. Tsutomu Ono (Database Development 3, JICA expert team) • BCA C/Ps • ITC C/Ps
生物多様性指標の開発と活用に関するガイドライン文書	• **LE6:** Dr. Ho Thanh Hai* (Vice Chairman, VACNE) • **LE7:** Dr. Vo Thanh Son (Researcher, CRES) • **LE8:** Ms. Phan Thi Thanh Hoi (Lecturer, Faculty of Biology, HNUE) • **JE4:** Mr. Masahiro Otsuka (Vegetation Survey 1 / Biodiversity 1, JICA expert team) • **JE6:** Mr. Masakazu Kashio (Vegetation Survey 3 / Biodiversity 2, JICA expert team) • **JE5:** Mr. Nguyen Duc Tu (Ecological Survey 1 / Vegetation Survey 2, JICA expert team) • **JE7:** Mr. Choshin Haneji (Ecological Survey 2 / Biodiversity 4, JICA expert team) • BCA C/Ps

コア・グループ	メンバー
海岸湿地生態系における調査技術ガイドライン文書	• **LC:** Local consultant group for XTNP pilot survey lead by Dr. Do Van Tu* • **JE4:** Mr. Masahiro Otsuka (Vegetation Survey 1 / Biodiversity 1, JICA expert team) • **JE6:** Mr. Masakazu Kashio (Vegetation Survey 3 / Biodiversity 2, JICA expert team) • **JE5:** Mr. Nguyen Duc Tu (Ecological Survey 1 / Vegetation Survey 2, JICA expert team) • **JE7:** Mr. Choshin Haneji (Ecological Survey 2 / Biodiversity 4, JICA expert team) • BCA C/Ps
協力メカニズムに関する法的文書	• **LE9:** Mr. Le Hung Anh* (Head of Department of Aquatic Ecology and Environment, IEBR) • **LE10:** Mr. Tran Thanh Than (Researcher, IET) • BCA C/Ps

* … コア・グループのリーダー
LE： 現地専門家、JE：JICA 専門家、LC：ローカルコンサルタント

これらのコア・グループメンバーに加えて、プロジェクトは各グループ間の情報共有と技術的な調整を行うための技術コーディネータTC（Prof. Pham Van Cu）を配置した。

1-3-2. コア・グループの会議とワークショップを開催

5つのコア・グループは、それぞれの成果物を作成するために活発に活動した。特にプロジェクトの第2年次においては日本人専門家の配置が限られていることから、多くのコア・グループ協議が日本人が現地に居ない時期にもC/P主導で開催され、C/Pのオーナーシップの醸成に寄与した。各コア・グループによる、議事録が作成された会議を以下の表に示すが、この他にも（特に法的文書CGにおいて）ベトナム側主導で多くの会議が開催された。なお、以下の表中の会議参加者は上記1-3-1で定義された記号で示している。

1) NBDSのマスター・スキーム

表-3 マスター・スキームCGの会議（記録済のみ）

No.	年月日	時間	参加者
1	2013/9/23	08:00 - 10:20	LE1, LE2, JE2, JE4
	• マスター・スキームの重要な前提条件 • 現在の進捗状況の確認 • 未解決内容の確認（データ構造、データ管理方法、実装技術等）		
2	2013/10/11	14:00 - 17:00	LE1, LE2, JE3, JE4, BCA, CEID
	• 現在の執筆状況の確認（第 1 章～第 7 章） • データベース管理システムの選択に関する報告と議論 • BCA、JICA 専門家、CEID からのコメントと提案		
3	2014/2/17	16:00 - 17:30	LE3, TC
	• 現在の進捗状況のまとめ • 他の CG との情報共有の必要性を確認 • 全ての関係者の作業計画と、生物多様性指標 CG との協議予定の作成		
4	2014/2/18	13:30 - 16:30	LE1, LE2, LE3, TC, BCA
	• 他の CG との協議結果の報告 • マスター・スキームの現在の進捗状況と問題点 • 異なるローカル専門家からの意見をどう集約するか • 他の CG（特に生物多様性指標 CG）との更なる協議を促進することで合意		
5	2014/3/14	11:40 - 12:15	LE1, LE2, LE3, Mr. Miyata, JE7, BCA, etc.
	• 他の CG の成果をどうマスター・スキームに統合するか • マスター・スキームの現在の進捗状況と問題点		
6	2014/4/18	14:00 - 17:00	LE1, LE3, JE1, JE3, BCA
	• 次週 VEA で発表するマスター・スキーム第 1 ドラフトの発表 • 現在のドラフトの内容と問題点に関する議論		

No.	年月日	時間	参加者
7	2014/4/25	14:00 - 17:00	LE1, LE3, JE1, JE3, JE6, JE7, BCA, CEID, IEBR, HNUE, HUS, etc.
	• VEA で発表する第 1 ドラフト（更新済み）の発表 • マスター・スキームの詳細な各項目に関する技術面での議論		
8	2014/4/28	08:30 - 11:45	LE1, LE3, JE1, JE3, BCA, VEA IT Committee, etc.
	• VEA の IT 委員会において、完成したマスター・スキームの第 1 ドラフトを発表し、レビューと議論を行う • 現在のドラフトに対するコメントと提案		
9	2014/6/4	09:00 - 11:00	LE3, TC
	• マスター・スキームの内容に関する改善点の議論 • 現在の政府情報システムへの NBDS の統合に関する議論		
10	2014/8/15	13:00 - 14:00	LE3, TC, BCA
	• マスター・スキームの最終化に必要な改善点 • 各 CG の成果物の内容の不整合性をどうするか • 最終化に向けての作業計画		

注：第 10 回会議の後、CG メンバーは現地に居ない日本人専門家等と電子メールによって意見交換を続け、またベトナム側主導による非公式の会合も多数行った。その結果、2014 年 12 月 27 日に最終ドラフトが完成した。

2) NBDSのシステム・アーキテクチャ

表-4　システム・アーキテクチャCGの会議（記録済のみ）

No.	年月日	時間	参加者
1	2014/4/29	16:00 - 17:30	LE4, LE5, JE1, JE6, LE1-LE3, BCA, etc.
	• NBDS の開発フローと計画のレビュー • 追加データ構造（遺伝子多様性、生態系多様性）に関する議論 • NBDS で採用すべきデータベース技術の選択に関する議論 • システム・アーキテクチャ文書の作成スケジュールの合意		
2	2014/5/15	14:00 - 16:00	LE4, LE5, JE1, BCA, ITC, CEID, CEM, etc.
	• BCA における生物多様性データ管理のニーズに関するブレインストーミング • NBDS に要求される機能に関する議論		
3	2014/7/22	15:00 - 16:00	LE4, LE5, JE1, JE3, BCA, ITC, CEID, etc.
	• システム・アーキテクチャ文書第 2 ドラフトの発表と議論		
4	2014/9/10	09:00 - 12:00	LE4, LE5,BCA, ITC, CEID, DINTE, IET, VNU, HNUE, etc.
	• 様々な機関の生物多様性および IT の専門家から、最新版の SA 文書の内容に関する聞き取りと議論 • MONRE における NBDS のためのデータベース基盤に関する議論		
5	2014/10/2	09:00 - 12:00	BCA, CEID, VAST, DINTE, CRES, VNU, etc.
	• 最新の SA 文書における詳細な評価と議論 • SA 文書に対するコメントと提案のまとめ		

3) 生物多様性指標の開発と活用に関するガイドライン文書

表-5　生物多様性指標ガイドラインCGの会議（記録済のみ）

No.	年月日	時間	参加者
1	2013/7/6	14:00 - 18:00	LE6, LE7, LE8, JE4, JE7, BCA
	• 生物多様性指標案の進捗状況の確認 • XTNP 向けコアセット指標案の更なる改定に関する議論 • Natural Capital Index (NCI)に関する議論		
2	2013/8/30	14:00 - 17:00	LE6, LE7, LE8, BCA
	• 国家レベル生物多様性指標のドラフトに関する発表と議論 • 生物多様性指標ガイドライン作成の基本方針に関する議論		

No.	年月日	時間	参加者
3	2013/9/21	14:00 - 16:30	LE6, LE7, JE4, BCA, Local experts from research institutes.
	• 生物多様性指標ガイドラインの進捗状況に関する発表と議論 • 参加した研究機関からのコメントと提案		
4	2013/10/14	09:00 - 11:30	LE6, LE7, LE8, JE4, JE5, BCA, LC
	• 生物多様性指標における生態系の量的・質的アセスメントの必要性に関する議論 • 同アセスメントに関する指標の提案		
5	2013/10/21	14:00 - 17:00	LE6, LE7, LE8, JE4, JE5, JE7, BCA, IEBR
	• 生物多様性指標現地専門家の第 2 回 TOR に関する議論 • 複合指標・インデックスに関するレビューと議論		
6	2014/1/10	08:30 - 16:00	LE6, LE7, LE8, TC, Mr. Sakaguchi, JE1, JE2, JE6, BCA
	• 現在の XTNP 向け指標セットの発表と議論 • 2011-2020 年の生物多様性に関する戦略と計画に掲載すべき生物多様性指標リスト、また国家レベルと XTNP レベルの指標に関する発表と議論 • 現在の生物多様性指標ガイドラインの発表と議論 • 日本の生物多様性指標の状況に関する発表（坂口氏）		
7	2014/2/14	13:30 - 17:30	LE6, LE7, LE8, JE5, TC, BCA
	• 生物多様性指標ガイドラインの進捗状況に関する発表と議論 • XTNP 向け生物多様性モニタリング指標の解析に関する発表と議論 • 国家レベル生物多様性指標案に関する発表と議論		
8	2014/3/12	13:30 - 17:00	LE6, LE7, LE8, Mr. Miyata, JE5, JE7, BCA, LC, NBSAP project in VEA
	• 国家レベル生物多様性指標案とそのガイドラインに関する発表と議論		
9	2014/4/08	13:30 - 17:30	LE6, LE7, LE8, LE3, HNUE, VNU, HUS, LE4, JE5, JE7, JE3, TC, BCA
	• 生物多様性指標ガイドラインの最終化に向けたレビューと議論 • 招待した現地専門家からのコメントと提案		
10	2014/4/24	08:30 - 12:00	LE6, LE7, LE8, LE1, LE3, JE1, JE3, JE5, JE6, JE7, VNU, FIPI, BCA
	• 国家レベル及び XTNP 向け生物多様性指標の最終ドラフト発表 • 最終ドラフトに関する議論		

4) 海岸湿地生態系における調査技術ガイドライン文書

海岸湿地生態系における調査技術ガイドライン文書の開発は、XTNPにおけるパイロット調査を実施したローカルコンサルタントチームの業務の一部として行った。これは、4回にわたる調査の経験をそのまま調査技術ガイドライン文書の内容に反映させることが非常に重要で有効であると判断したためである。本CGに関しては、調査技法等に関してパイロット調査の開始以前から日本人専門家チームやC/Pとの協議や技術移転を重ねてきたため、調査技術ガイドライン文書の作成に特化したCG会議は、以下の表に示すものだけとなる。

表-6　海岸湿地生態系における調査技術ガイドラインCGの会議（記録済のみ）

No.	年月日	時間	参加者
1	2014/3/13	14:00 - 15:30	LC, Mr. Miyata, JE5, JE7, BCA
	• 調査ガイドラインの進捗状況の確認と議論 • ガイドラインの内容に関するコメントと提案		

5) 協力メカニズムに関する法的文書

中間レビュー時の協議結果に基づき、協力メカニズムに関する法的文書を作成するCGのメンバーに日本人専門家はいない。これは、法律関連の日本人専門家が居ないことや、ベトナム国内の法制度等に精通していないと法案の作成はできないことが理由であるが、日本人専門家チームも自らの専門技術的見地から必要に応じてコメント・助言等を行った。以下に議事録を取った会議の一覧を示すが、この他にベトナム側が主体となって、MARD等関連省庁の担当者を招くなどして数多くの会議を実施した。

表-7　CGの会議（記録済のみ）

No.	Date (Y/M/D)	Time	Participants
1	2014/5/9	14:00 - 16:00	LE10, LE4, LE6, LE7, LE8, JE1, JE6, LC, BCA, FIPI, etc.
	• 法的文書作成の進捗状況の確認と議論 • 文書中の各条項に関する詳細な議論		
2	2014/6/17	08:30 - 12:00	LE9, LE10, LE4, TC, LC, JE6, JE7, BCA, etc.
	• 法的文書の第 2 ドラフトの発表と議論 • 文書中の各条項に関する詳細な議論		

6) コア・グループ間会議

各コア・グループの会議の他に、プロジェクトでは各CG間で進捗や協議内容を共有し、各成果物の内容の統一を図るために、技術コーディネータが中心になってコア・グループ間会議を適宜実施した。

表-8　コア・グループ間会議（記録済のみ）

No.	年月日	時間	参加者
1	2014/1/7	08:30 - 16:30	TC, Mr. Egashira, JE1, JE2, BCA
	• CG 間の技術的な調整をどう進めるか • CG 間の調整のために TC を配置することで合意		
2	2014/2/28	08:45 - 10:45	LE1, LE3, LE6, LE8, JE5, TC, BCA
	• 各 CG の作業の進捗状況に関する発表と確認 • 生物多様性指標の分類法において DPSIR ではなく PSBR のアプローチを採用することで合意		
3	2014/4/16	10:30 - 12:30	TC, JE1, JE3, JE6, JE7, BCA, etc.
	• 各 CG の作業の進捗状況に関する TC からの発表 • CG 作業の問題点（特にマスター・スキーム）に関する議論		

1-4. NBDS仕様確定を目的とした関係専門家参加による技術ワークショップの開催

プロジェクトは以下に示す計11回の技術ワークショップを開催した。

表-9　技術ワークショップの一覧と開催目的

No.	年月日	タイトル	参加者数（参加組織）
1	2013/2/27	Workshop on Biodiversity Monitoring Indicators and Data Processing	67 (BCA/VEA, DONRE, XTNP, MARD, MONRE, CRES, VAST, HNUE, VNU, etc.)
	• Review on-going activities of the NBDS project and discuss suggestions for the next steps and challenging issues.		

No.	年月日	タイトル	参加者数（参加組織）
2	2014/1/15	Workshop on Biodiversity Monitoring Indicator	85 (BCA/VEA, DONRE, XTNP, MARD, MOST, CRES, VAST, HNUE, VNU, GIZ, ICEM, ISPONRE, etc.)
	• Develop national biodiversity monitoring indicators and identify necessary data set, in order to evaluate the achievement of the National Biodiversity Strategy and Action Plan (NBSAP) of Vietnam.		
3	2014/6/13	Workshop on Technical Guideline for Wetland Survey	85 (BCA/VEA, DONRE, XTNP, MARD, MOST, MPI, CRES, VAST, HNUE, VNU, VASI, VESDI, VACNE, etc.)
	• Introduce the developed technical guideline for wetland survey and monitoring. • Skill-up of stakeholders engaging on biodiversity monitoring activities.		
4	2014/6/18-19	Workshop on Biodiversity Monitoring Indicator	56 (BCA/VEA, DONRE, DARD, XTNP, National Parks, IEBR, etc.)
	• Introduction of the project outputs • Review of biodiversity monitoring indicators • Enhancement of common understanding toward the future collaboration mechanism. • Planning of awareness raising materials.		
5	2014/6/20-25	Workshop on Biodiversity Monitoring Indicator	47 (BCA, DONRE, DARD, XTNP, National Parks, VNU, CEM, etc.)
	• Training on biodiversity monitoring indicator collection and processing • Acquire skill to become future trainers on biodiversity monitoring survey		
6	2014/8/25	Workshop on Master Scheme	86 (BCA/VEA, DONRE, XTNP, MARD, MOST, VAST, VNU, HNUE, FIPI, FORMIS, VACNE, etc.)
	• Introduce the Master Scheme of NBDS and receive comments, feedback from participants to finalize the draft		
7	2014/10/9	Workshop on System Architecture of NBDS	54 (BCA/VEA, DONRE, XTNP, MARD, MOIT, MONRE, FIPI, HESDI, ISPONRE, VACNE, VAFS, etc.)
	• Introduce current draft version of System Architecture document. • Discuss the content of System Architecture for the future NBDS • Create action plan for the revision of System Architecture		
8	2014/11/13 (Quang Binh)	Workshop on Legal Document for Collaboration Mechanism	44 (BCA/VEA, DONRE/EPA/National Parks of central provinces, etc.)
	• Introduction of the NBDS project • Introduction of Legal Document Draft to central provinces • Receiving Feedback, Comments on the Legal document draft.		
9	2014/12/10 (Hanoi)	Workshop on Legal Document for Collaboration Mechanism	40 (BCA/VEA, DONRE, XTNP, MARD, IEBR, IET, IFEE, VNSDI, NGO, etc.)
	• Introduction of the NBDS project • Introduction of Legal Document Draft to central provinces • Receiving Feedback, Comments on the Legal document draft.		
10	2015/1/20 (HCMC)	Workshop on the achievement and conclusion of NBDS project	76 (BCA, DONRE/DARD/National Parks /Research Institutes of southern provinces, etc.)
	• Report on the achievement of the project • Announcement of official launch of NBDS (The 1st generation) • Introduction of collaboration mechanism on data sharing for NBDS • Announcement of the plan for future NBDS generations		
11	2015/1/27 (Hanoi)	Workshop on the achievement and conclusion of NBDS project	89 (BCA/VEA, DONRE, XTNP, MARD, MOST, VAST, CRES, FIPI, Bidoup Nui Ba NP, etc.)
	• Report on the achievement of the project • Announcement of official launch of NBDS (The 1st generation) • Introduction of collaboration mechanism on data sharing for NBDS • Announcement of the plan for future NBDS generations		

これらのワークショップの場において、各CGの成果物の内容が関連機関からの参加者に紹介され、それに対するコメントや提言を元に各CGは成果物を最終化した。また、プロジェクト期間の最後には、プロジェクトの成果を発表し、完成した全CGの成果物を配布すると共にNBDSの公開をアナウンスする最終ワークショップを、ハノイとホーチミン市の2か所で開催した。

1-5: NBDSのマスター・スキーム、システム・アーキテクチャ、生物多様性モニタリングのための指標のコアセットをTWGメンバーの承認の下に作成する

以下の通り3つの成果物を作成した。

1-5-1. NBDSのマスター・スキームの作成

マスター・スキームは、ベトナム政府内において（将来の世代も含む）NBDSを正式に国家プロジェクトとして承認してもらうための、技術プロポーザル文書である。

- 2013年7月27日：マスター・スキームのCGを結成。
- 2014年4月28日：ドラフト第1版が完成。
- 2014年7月23日：ドラフト第2版が完成。
- 2014年8月25日：マスター・スキームに関するワークショップを開催。
- 2014年12月27日：最終ドラフトが完成し、MONREに提出された。
- 2015年1月：最終ドラフトを英語版に翻訳し、越語版と共に最終ワークショップと第4回JCC会議において配布。また、関連省庁および国内各省に送付され、最終的な意見収集を開始。
- 2015年3月：収集されたコメントを元にBCAが内容を修正し最終版とする。
- 2015年4月：完成した最終版がBCAからVEAに提出された。4月末現在VEAの内部手続き中。

1-5-2. NBDSのシステム・アーキテクチャの作成

NBDSのシステム・アーキテクチャは、NBDSのデータ構造やフォーマット等を規定する技術的な設計文書である。

- 2012年初頭：JICA専門家チームがNBDSのユーザ・インターフェースの設計を開始。
- 2012年8月17日：NBDSの外部仕様書が完成し、TWG3会議においてそのレビューを実施。
- 2012年9月：TWG会議での議論を元に、データ構造を含むNBDSの詳細設計が完成。同時に実際のシステム開発（プログラミング）を開始。
- 2012年11月20日：TWG5会議の場において、NBDSのWebサイトのプレビューを実施。同時にNBDSの設置・調整・テストおよびデータ入力の計画を発表。協議の中でデータ構造の見直しを含む多数のコメントが寄せられた。
- 2013年1月：TWG6とTWG6Bの議論を通じて、NBDSに生態系多様性および遺伝子多様性のデータ構造を追加することで合意。
- 2014年5月：中間レビューにおける議論の結果、NBDSの将来像を含むシステム・アーキテクチャ文書を作成することで合意。

- 2014年6月29日：ドラフト第1版が完成。
- 2014年7月22日：ドラフト第2版が完成。
- 2014年10月9日：システム・アーキテクチャ文書の内容に関する技術ワークショップを開催。
- 2014年12月9日：システム・アーキテクチャ文書の最終版が完成し、BCAに提出。
- 2015年1月：最終版を越語版に翻訳し、英語版と共に第4回JCC会議において配布。
- 2015年1月26日：NBDSの第1世代Webサイトが完成。公開された。
- 2015年3月：プロジェクトの現地活動が終了する前に、システムのアップデートを実施。

1-5-3. 生物多様性モニタリングのための指標のコアセットをTWGメンバーの承認の下に作成

プロジェクトチームは世界各国における生物多様性指標の例を調査した結果を元に、TWG会議でベトナムに適した指標案を議論し、PSBR（Pressure - State – Benefit – Response）モデルに基づく生物多様性指標のコアセット候補を作成した。その後これらの候補についてさらにTWG、コア・グループ会議、技術ワークショップの場において議論を重ね、2014年4月に指標の最終案が完成し2014年7月9日にBCAに提出した。

1-6: 生物多様性指標の開発と活用に関するガイドライン文書の作成

中間レビューの結果に基づき、生物多様性指標の開発と活用方法を示すガイドライン文書をプロジェクトの成果物として作成することが決定された。既にプロジェクトでは第1年次から指標案の作成を行ってきたため、その開発経緯等を文書にまとめる作業は比較的円滑に行われた。

- 2013年6月：指標ガイドラインのCGが活動開始
- 2014年4月27日：ドラフト第1版が完成。
- 2014年6月13日：生物多様性モニタリング指標に関する技術ワークショップにて指標ガイドライン文書の内容を公表。
- 2014年7月9日：ワークショップで得られた意見を元に指標ガイドライン文書を最終化し、BCAに提出。
- 2014年12月：BCA/VEA内の審査を経て、指標ガイドライン文書が承認され、英語翻訳版が作成される。
- 2015年1月：英越両語版を最終ワークショップと第4回JCC会議で配布。

1-7: データを収集しNBDSに入力

ベトナム国内の生物多様性に関する以下のデータをプロジェクト期間中にNBDSに入力した。

1) Vietnam Red list 2007（IEBR作成）
2) Vietnam Red data book 2007（IEBR作成）
3) Flora of Vietnam, Fauna of Vietnam（IEBR作成）
4) Vietnam Red data book 2003（CEM作成）
5) XTNPにおける2回の基礎調査と2回のモニタリング調査の結果データ

NBDSに入力した全データのリストをAppendix 8に示す。これらのデータ入力は、基本的に専門家チームがデータ入力のオペレータを雇用して行った。

1-8: 生物多様性基礎調査の結果からNBDSを改良

計4回のXTNPにおけるパイロット調査を通じて、NBDSのデータ構造やデータ入力方法に細かな改良を実施した。特に、ITリテラシーが高くない生物多様性分野の担当者でも容易にデータの入力が可能となるよう、NBDSへのデータ入力専用のExcelテンプレートを作成し、そのExcelファイルにデータを入力してアップロードすれば、自動的にNBDSにデータを登録できる仕組みも新たに開発、その使用法を含めてC/Pに技術移転した。

2-1: 関連データベースを保有する主要機関（国際機関を含む）の特定

プロジェクトチームは、国内外の主要な生物多様性データベースの情報を調査すると共に、データを所有する主要機関を訪問して協議し、5-3で述べるキャパシティアセスメント調査でも所有データに関する質問を行い、データを保持する主要機関のリストを作成した（Appendix 10参照）。また、同調査内容に関するCRESの事前調査レポート[2]も活用した。

2-2: データの入手性、フォーマット、データ共有とデータベース管理能力を評価する

前項によって洗い出したデータ所有機関から重要と考えられる機関を選択し、実際に訪問してデータの入手性やフォーマット、データ共有の意志等について調査・協議した。訪問した機関の一覧とその調査結果概要をAppendix 10に示す。

2-3: 既存のデータ所有機関とのデータ共有、管理、活用に関する協力メカニズムに関する文書の作成

中間レビューの結果に基づき、協力メカニズムに関する法的文書（MONRE省令）のドラフトとして新たに作成することを合意した。

- 2012年7月：法的文書の作成を担当するCG結成。
- 2012～2013年：CGはベトナム側主導で活発な議論を重ね、MARD等重要な関連機関からの担当者も参加して内容を詰めていった。日本人専門家はメンバーとしては参加しなかったが、適宜技術面での助言を行った。
- 2014年11月13日：Quang Binh省において、ベトナム中部各省からの参加者を招いてワークショップを実施し、法的文書の内容に関する発表と協議を行う。
- 2014年12月10日：ハノイにてベトナム北部各省および関連機関からの参加者を招いてワークショップを実施し、法的文書の内容に関する発表と協議を行う。
- 2014年12月27日：省令の最終案が完成し、MONREに提出された。その後直ちに関連機関および各省に最終レビューのために送付された。

[2] “Preliminary Survey and Investigation for the Development of National Biodiversity Database System” (March 2010, JICA Vietnam, CRES)

- 2015年3月末：省令案の内容に対して100以上の意見が寄せられ、BCAがその集約と法令案への反映作業を開始。
- 2015年4月：省令案が完成し、MONREに提出された。2015年発布予定の省令リストに掲載。

3-1: ナムディン省XTNPの生物多様性指標の作成

国家レベルの指標案作成と並行して、XTNP向けの指標の開発も実施した。

- 2012年9月15日：TWG2～TWG3会議においてXTNP向けの指標について協議を行い、指標マトリクスのドラフトを作成した。これに基づき、同年9月24～25日にXTNPにおいて同公園の関係者及び同公園で調査を行った経験のある研究者を集めてその内容に関する集中協議を行った。
- 2012年10月10日：TWG4会議において、XTNP向け指標セットが大枠で合意され、その後開始されたパイロット調査で同指標セットを実際に適用した。
- 2014年7月9日：指標ガイドライン文書の内容とXTNPにおけるパイロット調査の結果を反映して、XTNPの生物多様性指標の最終版が完成し、BCAに提出された。

3-2: ナムディン省向けデータベースのデータ形式の開発

TWG会議での議論を元に、専門家チームがナムディン省向けデータベースのデータ形式を世界標準であるGBIFに準拠した形で開発した。この形式はTWG2会議で承認された。その後、4回のXTNPにおけるパイロット調査の結果を反映して、データ形式の改善が行われた。

3-3: ナムディン省向けデータベースに入れるデータの特定

TWG会議及びXTNPにおける調査を担当したローカルコンサルとの協議に基づいて、ナムディン省向けデータベースに入力すべきデータ項目を決定した。その後2回目以降のパイロット調査では、ローカルコンサルと共同で同データ項目の確認・整理・追加を毎回実施した。

3-4: XTNPにおけるパイロット調査向けデータ収集、分析、モニタリング手法の開発

XTNPにおけるパイロット調査を担当するローカルコンサルチームが決定した後、同コンサルと調査手法について何度も協議と技術移転を実施した。調査手法に関しては、文献調査の他にベトナム国内で過去に調査を実施した機関や研究者を実際に訪問して調査手法に関する意見交換等を行った。調査手法の協議のために訪問した機関の一覧を以下の表に示す。

表-10　調査手法に関するインタビュー・協議を行った機関

機関	面会者	協議内容
IET (Institute of Environmental Technology), VAST	Dr. Nguyen Thi Phuong Thao (Deputy Director)	Visited the Laboratory of Environmental Toxicity Analysis and discussed on the method and quotation for soil/water quality analysis at Xuan Thuy national park.
IEBR (Institute of Ecology and Biological Resources), VAST	Dr. Le Xuan Canh (Director)	Discussed on the TOR of local consultant for the survey.

機関	面会者	協議内容
VAAS (Vietnam Academy of Agricultural Sciences), VAST	Dr. Le Quoc Doanh (Vice director)	Discussed on the method of pollen analysis in the sediments and its possible application to our survey at Xuan Thuy national park.
VNU (Vietnam National University)	Prof. Do Minh Duc (Faculty of Geology)	Discussed on the movement and change of wetland boundary and coast lines along the time at Xuan Thuy national park.
CERE (Center for Environmental Research and Education), Hanoi National University of Education	Dr. Nguyen Hoang Tri (Director)	Discussed on the vegetation species (such as Casuarina) at Xuan Thuy national park that are under the influence from the sedimentation of Red river.
CETASD (Research Center for Environmental Technology and Sustainable Development), Hanoi University of Science	Dr. Pham Thi Kim Trang	Discussed on the past survey on water pollution by heavy metal (Copper, Mercury, Arsenic) and their impact on the local people's health, and the possible method for our survey.

またプロジェクトチームは、実際の調査を開始する以前の2012年6月に、調査手法の確認や現場の状況視察のため、日本人専門家による事前調査を行った。以下の表に事前調査の一覧を示す。

表-11　専門家による事前調査

実施日	専門家	調査内容
2012 年 5 月 21 日 ～6 月 8 日	羽地	• Interviewed with IEC, IEBR, VAAS, VNU, NUH, CETASD (as described above) • Explained the latest survey plan and TOR for local consultant • Observation tour in national park for ecological survey
2012 年 6 月 11 日 ～18 日	小暮 羽地	• Survey of outer area of XTNP which is near to the ocean • Capacity assessment and discussions with local organizations in Nam Dinh province
2012 年 7 月 11 日 ～13 日	小暮 大野 大塚	• Discussion on biodiversity monitoring indicators for XTNP • Survey the result of past and present surveys done by the XTNP • Preliminary survey of vegetation in the XTNP • Testing of survey equipment that is procured already

これらのインタビュー、事前調査、そしてTWGやローカルコンサルとの協議に基づいて、XTNPにおける調査計画をローカルコンサルが中心となって作成した。またこれらの手法は後に調査技術ガイドライン文書に反映された。

3-5: ナムディン省XTNPにおける生物多様性基礎調査およびモニタリング調査の実施

プロジェクトでは合計4回のパイロット調査をXTNPで実施した。当初の計画では2回だけの予定であったが、TWG会議や中間レビューでの協議の結果、夏季と冬季において、それぞれ基礎調査とその結果に基づくモニタリング調査を実施することになった。調査は以下の4つのステップに従って実施した。

1) 調査を実施するローカルコンサルの選定

現地再委託契約によって調査の実施を担当するローカルコンサルは、第1年次に3社の競争入札によって選定した（選定経緯報告書参照）。第2年次には、第1年次の調査内容との継続

性が要求され、かつ必要な調査内容を実行できる研究者が、第1年次の構成メンバーしかいないことが判明していたこと（現地再委託特命随意契約に関する打合簿参照)、また第1年次に既に調査に必要な技術移転をローカルコンサルチームに対して多数行っていたことなどから、特命随意契約によって第1年次と同じ研究者のメンバーによるチームを選定した。

2) XTNPにおける基礎調査の実施

基礎調査は生物種ごとに以下のグループに分かれて実施した。

- 底生動物（水生昆虫を含む)、貝類
- 魚類
- 水質・土壌検査
- マングローブと他の植生
- 鳥類
- 爬虫類、両生類、陸生哺乳類
- 陸生昆虫
- 生態系全般（GISを含む）
- 社会経済面での調査

2回行われた基礎調査の結果の概要は、以下の通り。

表-12　基礎調査の主な成果

実施月	内容	主な成果
2012 年 12 月	冬季基礎調査	• 植物：73 種 • 底生動物：80 種 • 鳥類：70 種 • 魚類：80 種
2013 年 7 月	夏季基礎調査	• 植物：118 種 • 底生動物：358 種 • 魚類：29 種 • 爬虫類・両生類：28 種 • 鳥類：47 種

3) モニタリング調査に関する技術移転

専門の研究者による大規模な調査が必要な基礎調査とは異なり、国立公園のスタッフでも実施可能なモニタリング調査をプロジェクト終了後も継続して実施してもらうことを想定して、XTNPのスタッフに対してモニタリング調査の手法を2013年12月の調査開始前に技術移転した。

4) XTNPにおけるモニタリング調査の実施

基礎調査の結果を分析し、ローカルコンサルやローカル専門家との協議により、生物多様性の指標となる種や計測対象を選定して行うモニタリング調査を、2013年12月（冬季）と2014年7月（夏季）に実施した。

3-6: 基礎調査のデータを収集

計4回の調査結果のデータは、毎回ローカルコンサルによって所定のExcelシートに入力され、日本人専門家によってその内容チェックを行った。

3-7: 収集したデータのデータベースへの入力

収集したデータは、日本人専門家チームによってNBDSに入力されたが、その作業手順はNBDSの操作マニュアルに記載すると共に、実習を通じてローカルコンサル及びC/Pスタッフに技術移転した（4-1参照）。

3-8: XTNPにおける調査や指標開発の経験を元に、湿地生態系の基礎調査技術ガイドラインを開発する

調査技術ガイドライン文書は、調査を担当したローカルコンサルが中心となって作成した。

- 2014年6月13日：同ガイドラインのドラフト第1版をワークショップで発表し、続く6月18日～25日に開催された調査手法の実習セミナーにおいて使用した。
- その後第2回モニタリング調査の経験を元に内容が追加・改定された。
- 2014年12月：最終版が完成。
- 2015年1月：英語翻訳版と共に最終ワークショップと第4回JCC会議で配布。

4-1: 関連省庁・機関のスタッフに対するデータベース管理・活用・基礎調査に関するトレーニングの実施

プロジェクトで実施した技術移転の一覧をAppendix 12 (1)に示す。

4-2: NBDSの管理者向け・ユーザ向けマニュアルの作成

NBDSの管理者向け・ユーザ向けマニュアルの最終ドラフトは2014年10月に完成し、それらのマニュアルを用いて管理者向け、ユーザ向けそれぞれの実習セミナーを開催した。その後マニュアルはプロジェクト期間終了直前まで細かな改良を加えた。

4-3: XTNPで収集したデータを元に報告と公開のためのサンプル文書を作成

中間レビューにおける協議の結果、プロジェクトチームはNBDSの活用促進のためのツールとなる文書を「Awareness Raising Material」として作成した。どのような内容とするかについてC/Pや2014年10月22日のセミナー等で協議した結果、NBDSの想定されるユーザを対象とした、NBDSの機能紹介と利用促進のためのプロモーション用リーフレットを作成し、最終ワークショップ等で配布を開始した。

4-4: NBDSを紹介するワークショップ／セミナーを、関連する中央／地方政府職員に対して実施

プロジェクトは2015年1月20日にホーチミン市にて、また2015年1月27日にハノイにてNBDSを紹介し第1世代NBDSの公開を発表する最終ワークショップを開催した。

5-1: 機材の調達準備と実施

プロジェクトの計画およびC/Pとの協議結果に基づき、プロジェクト活動に必要な機材を調達した。調達した機材の一覧をAppendix 6に示す。

5-2: 日本および第三国における研修の準備と実施

プロジェクトは以下の表に示す通り3回の本邦・在外補完研修を実施した。

表-13　プロジェクトで実施した本邦・在外補完研修の一覧

No.	実施日	対象	研修の目的
1	2012 年 5 月 27 日 ～6 月 2 日	JCC メンバー省庁・機関の管理者	• 日本における生物多様性関連機関と施設の紹介 • 関連機関間における生物多様性データの共有促進
2	2012 年 8 月 19 日 ～9 月 1 日	生物多様性保全に係る関連機関のスタッフ	• 日本における生物多様性保全活動のノウハウを修得し、ベ国に応用する。 • 日本における生物多様性関連の政策と活動の実例を修得する。
		NBDS の管理運用を担当する IT 分野のスタッフ	• Web 上のデータベースシステムの管理運用に関する技術知識を修得する。 • 日本における生物多様性関連の政策と活動の実例を修得する。
3	2013 年 10 月 27 日 ～11 月 9 日	生物多様性調査を担当する研究者および政府機関職員	• 生物多様性モニタリングおよびデータベース管理運用に関するマレーシアおよび日本におけるノウハウの修得 • 継続的な生物多様性モニタリング調査の計画策定スキルと知識の修得

5-3: ベ国における生物多様性分野のキャパシティアセスメントの実施

TWG3会議において、プロジェクトはベ国全土の関連機関に対してアンケート調査によるキャパシティアセスメントを実施することを決定した。アンケートは対象組織の人的資源や実施している調査の有無と内容、既存のデータ等について問う内容で、ベ国全土のDONRE、DARD、DOST、保護地域を中心とする約300組織に対して2012年10月にBCAを通じて送付した。アンケートへの回答は約140組織からあり、専門家チームがその結果のPCへの入力、翻訳、解析を行った。集計結果はTWG6会議及び第1回技術ワークショップで発表した。その要点を以下に示す。

- 地方では生物多様性を担う組織が明確に決まっていない。
- ほとんどの既存データは植生（森林）に関するものだけである。
- 生物多様性のモニタリングは、主にDONREまたは保護地域が行っている。
- モニタリングの大部分は自然林生態系で実施されており、これに淡水生態系、農業生態系が続く。
- 主としてモニタリングされている種／対象は、陸生植物、哺乳類、鳥類、爬虫類、両生類である。
- モニタリングの予算は主として地方政府から出ている。
- 組織の65%は全てのデータが共有可能であると回答しており、その半数以上の組織は無償で共有が可能であると回答している。
- データ共有可能な形式としては、45%がハードコピー（印刷物）と答えている。デジタル形式としてはMicrosoft Word / Excel最も普及しているフォーマットである。

3. プロジェクト目標の達成状況

(1) プロジェクト成果の達成状況

成果1. NBDSのアーキテクチャがMARD, MOST, VASTその他の関連機関からの協力によってVEAで開発される。

1.1 NBDSのデータ形式、ソフトウェア、ハードウェアの仕様が決定される

NBDSのデータ形式、ソフトウェア、ハードウェアの仕様はTWG会議の協議等を通じて全て決定された。これに基づいて機材の調達が実施され設置された。調達された機材のリストをAppendix 6に示す。また、決定されたソフトウェアの種類はAppendix 12 (13)の管理者向けマニュアルに記載されている。

1.2 得られる情報と条件に基づいたNBDSのアーキテクチャ案がMONREに提出される

NBDSを実現するためのアーキテクチャはプロジェクト期間中に作成された以下の3つの成果物に全て記載されている。

- NBDSマスター・スキームの最終ドラフト– Appendix 12 (8)
- NBDSのシステム・アーキテクチャ文書– Appendix 12 (9)
- 生物多様性指標の開発と活用に関するガイドライン文書– Appendix 12 (10)

以上のことから、成果1は完全に達成された。

成果2. NBDSのデータを共有、管理、活用するための関連機関との協力メカニズムが提言される

2.1 様々な組織の既存のデータとフォーマットが評価される

プロジェクトはキャパシティアセスメント調査を実施すると共に、既存データを有する機関への訪問協議を実施した。これらの報告書をAppendix 10に示す。これらのデータを共有するためのメカニズムは、TWG会議およびCG会議で協議された。

2.2 法的文書としての提言が作成される

上記調査結果や協議結果を元に、MONREの省令として協力メカニズムに関する法的文書が作成された（Appendix 12 (12).）。

従って、成果2は達成された。MONREの省令が公式に発布・施行された時点でより完全に達成される。

成果3. NBDSの一部としてナムディン省向けデータベースが開発される

3.1 NBDSへのXTNPにおけるパイロット調査のデータ入力が完了する

プロジェクトで実施した4回のパイロット調査のデータは、すべてNBDSに入力した。入力したデータの一覧をAppendix 8に示す。

3.2　ナムディン省向けパイロットデータベースを定期的に更新する準備が整う

プロジェクトはNBDSの管理者向けおよびユーザ向けマニュアルを作成した。これらをAppendix 12 (13)及び(14)に示す。

3.3　海岸湿地生態系モニタリングのための調査技術ガイドラインが完成する

Appendix 12 (11)に示す通り、同ガイドラインは完成した。

3.4　DONREスタッフがナムディン省向けデータベースを利用し運用管理するよう訓練される

ナムディン省DONRE / DARDのスタッフは、Appendix 12 (1)の技術移転研修記録にあるように、ナムディン省向けデータベースの利用と運営管理に関する技術移転を受け、その結果も合格であった。

以上のことから、成果3は完全に達成された。

成果4.　NBDSの管理と利活用促進に関する能力が向上する

4.1　BCA/ VEA/ DONREのスタッフがNBDSの管理スキルを修得する

プロジェクトはAppendix 12 (1)に示す通り、BCA/VEA/DONREのスタッフに対してNBDSの管理方法等に関する技術移転やセミナーを実施した。その結果、スタッフは十分なスキルを獲得した。

4.2　NBDS第1世代の管理と利用に関するマニュアルが作成される

プロジェクトは管理者向けとユーザ向けの2種類のマニュアルを作成し、それに基づいてC/Pスタッフに技術移転を実施した。これらマニュアルをAppendix 12 (13)と(14)に示す。

4.3　NBDSの利活用促進のためのワークショップが開催される

プロジェクトは利活用促進のためのリーフレットを作成し（Appendix 12 (6)）、また2014年10月22日にNBDSの利活用促進に関する技術ワークショップを開催した。完成したリーフレットはハノイとホーチミン市で開催された最終ワークショップの会場で参加者全員に配布された。配布数は165を超える。

以上のことから、成果4は完全に達成された。

(2)　プロジェクト目標の達成状況

1.　MONRE VEAがNBDSのアーキテクチャを承認する

プロジェクトはNBDSの将来像も含む完全なアーキテクチャを、マスター・スキーム文書およびシステム・アーキテクチャ文書として開発した。その内容は第4回JCCで承認された。

2. 「ベ」国のレッドリストに掲載されている全ての動植物種を含む、「ベ」国動植物種に関する基礎的データがNBDSに入力される

プロジェクトはXTNPにおける全調査結果のデータ、及びレッドリストに掲載されているすべての動植物種を含む多くのデータをNBDSに入力した（Appendix 8）。これらのデータはNBDSのWebサイトで自由に検索可能な状態にある。

3. NBDSの第1世代がVEA/MONREにおいて開発、運用、保守される

上記マスター・スキーム文書及びシステム・アーキテクチャ文書に基づいて、プロジェクトは第1世代のNBDSをWeb上に開発し公開した（http://nbds.vea.gov.vn/）。BCA/VEAのスタッフは2015年3月末からその運営管理を開始した。

以上のことから、プロジェクト目標は達成された。

4. プロジェクト実施上の課題と教訓

本プロジェクトでは、以下の実施上の課題があった。

(1) MARDなど他の関連機関からの積極的な参加が十分でなかった

プロジェクトが常に他の関連機関からの代表をTWG会議等に招待していたにも関わらず、招待された代表は多くの場合コメントや助言は口にするが、プロジェクトの具体的な活動にはほとんど関与しなかった。多くの関連機関はプロジェクトへの協力意志を見せたが、公式にデータの共有等を実現することには多くの困難があった。

この状況を克服するため、コア・グループによるプロジェクト活動の具体的な実施体制が作られ、また関連機関間の協力メカニズムを実現するための法的文書（MONRE省令）案をCGによって作成した。

(2) CG活動の大幅な遅れとスケジュール修正

中間レビューの結果新たに追加または変更されたプロジェクトの成果物を作成するためのコア・グループであったが、その活動は当初大幅に遅れていた。2014年1月現在、その遅れは最大5か月にもなり、プロジェクト期間中の成果物の完成が危ぶまれていた。しかも、5つのCG成果物は、その内容がお互いに密接に関連・依存しており、特にマスター・スキームの内容が固まらないと他の成果物の内容も固まらない状態であった。これらCG間の技術的調整が不十分であったことも、その遅れに拍車をかけた。

この状況を克服するため、プロジェクトでは各CGの成果物の作成スケジュールを大幅に見直し、CG間の調整を専門に行う技術コーディネータ（TC）を新たに配置することで、依存関係にある成果物の作成を同時並行で進められるようにし、それらの内容の調整は随時（TC）が柔軟に行う体制に切り替えた。また、日本人専門家チームでも新たに2名の専門家を追加配置することで、各CGの成果物作成業務の促進を図った。

以上の課題とその対処などから、本プロジェクトでは以下の教訓が得られた。

(1) ベ国において政府の公式文書を作成する際の現地専門家の必要性

ベ国においてプロジェクトの成果物として何らかの公式文書を作成する場合には、ベ国内の現地専門家からの助言を求めるだけではなく、実際に成果物を作成する作業に配置する必要性がある。日本人専門家がその作成作業に参加することは無論可能だが、ベ国特有の事情を考慮した内容とするためには、ベ国政府の公式文書を作成した経験のある現地専門家の投入が必須である。

(2) 現地専門家が作業する際の技術コーディネータの必要性

現地専門家による作業の進捗を管理・促進するためには、専任の技術コーディネータを配置する必要がある。これは、現地専門家が往々にして自身の専門分野に関連した作業しかできず、成果物作成に必要な他の専門家との調整やスケジュール管理ができないことが多いためである。技術コーディネータはベトナム人でも日本人でも可だが、ローカル専門家の業務を十分に管理できるよう十分な期間にわたって配置する必要がある。

5. 上位目標達成のための提言

(1) NBDSへの定常的なデータの追加・更新

データの定常的な追加と更新は、いかなるデータベースにとっても不可欠である。第1世代のNBDSはXTNPにおける調査データと基本的な種のデータしか持っていないため、データ共有の協力メカニズムを通じた他の保護地域や省、関連機関からの定常的なデータの追加や更新が欠かせない。この観点から、協力メカニズムを記したMONRE省令の早急な公布と発効が待たれる。

(2) NBDSに保存されたデータの品質保証

プロジェクトの最終ワークショップやローカル専門家から頻繁に投げ掛けられた疑問は、NBDSに保存するデータの品質を（国家レベルのデータベースとして）どう保証するか、という点であった。NBDSでは基本的にアカウントを持つユーザはいかなるデータでもアップロードできるため、アップロードされたデータが科学的に正しいものであるかどうかを確認するGBIFのデータクリーニング[3]のような仕組みが必要となる。理想的にはNBDSの管理主体であるBCA/VEA/MONREがアップロードされたデータの品質チェックを行うための専任のスタッフを配置すべきであるが、そのスタッフは十分なTaxonomyなどの専門知識を有していなければならない。また、将来的にデータがどのくらいの頻度と量でNBDSにアップロードされるかの予測は難しい。このため、専任の品質管理スタッフを恒常的に配置することは困難であると想定される。

この問題に対するより現実的な解法は、品質保証の責任をデータの提供者側（個人／組織）に負ってもらうことである。アップロードされたデータに問題があった場合には、その提供者が責任をもって修正するようにNBDSの利用規定・ガイドラインを定める必要がある。

[3] http://www.gbif.org/resource/80528

(3) NBDSに保存されたデータの活用

NBDSに保存されるデータは、単に追加・更新されるだけではなく、ベ国政府によって十分に活用されなければならない。第1世代のNBDSは柔軟なデータ検索とデータのExport機能を有するため、BCA/VEA/MONREはNBDSに保存されたデータを積極的に活用すべきである。第2世代以降のNBDSでは、データの解析やより高度なレポート機能を装備する計画となっていることから、さらなるデータの活用が望まれる。

(4) NBDSの保守管理に必要な定常的な予算の確保

NBDSはWeb上のシステムであるため、ユーザの操作が全く無い場合でも定期的な保守が必要となる。これは、Web上のシステムが常にハッカー等からの攻撃を受ける可能性があるためである。このため、定期的なNBDSのデータのバックアップが必要であり、これらの保守管理にかかる予算をBCA/VEA/MONREは常に確保しておく必要がある。また、JICA側もNBDSのより良い活用のため追加の技術支援を行うことが望まれる。

以上

APPENDIX

Appendix 1: Project Design Matrix

(1) PDM Version 1.1

Project Design Matrix (PDM)

Project Title: Project for Development of the National Biodiversity Database System
Project period: November 2011 – March 2015 (3 years and 5 months) (tentative)
Executing agency: Vietnam Environment Administration (MONRE)
Target area: Hanoi, Nam Dinh Province, and Vietnam countrywide
Target group: Counterpart staffs of BCA, VEA, Nam Dinh DONRE

PDM Version 1.1 / 14-March-2012

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
The second generation of national biodiversity database system is developed	1. GIS linked NBDS for Nam Dinh Province is developed. 2. Utilization method of NBDS for specific application is developed with Nam Dinh Province in mind.	Roadmap for fulfillment of NBDS	Additional financial and human resources are mobilized.
Project Purpose			
The first generation of national biodiversity database system is developed.	1. NBDS with international standard architecture is properly developed, operated and maintained in BCA/VEA. 2. Basic data on fauna and flora species, at least all species on Vietnam red list are input into NBDS.	1&2 Final report of the Project, Records of JCC, meetings and workshops	・ Annual state budget for operation and management of NBDS is appropriately allocated. ・ MONRE legislates mechanism for collaboration based on the submitted recommendation. ・ Trained staffs are not displaced.
Outputs			
1. Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.	1.1 Specification of data format, software, and hardware of NBDS are identified. 1.2 A roadmap for the second generation of NBDS is developed	1.1 Project report 1.2 Final report	
2. Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended.	2.1 Recommendation on the mechanism for collaboration is agreed among JCC. 2.2 Recommendation document is submitted to MONRE.	2.1 Record of JCC meetings 2.2 Project reports	
3. A database for Nam Dinh Province is developed as a part of NBDS.	3.1 The pilot database for Nam Dinh Province is ready to be regularly updated. 3.2 Local communities and NGOs participate in conducting basic survey in Nam Dinh Province. 3.3 Some educational tools with visual image are made by using collected data in Nam Dinh Province.	3.1 Project reports 3.2 Project reports, Procedures and guidelines for basic survey and monitoring. 3.3 Project reports	
4. Capacity on management and utilization of NBDS is strengthened.	4.1 NBDS is in full operation by the staff trained.	4.1 Evaluation report	

Activities	Inputs		
	Japanese side	Vietnamese side	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC. 0-2. Monitor and evaluate progress of the project activities. 1-1. Identify and analyze existing databases. 1-2. Establish a technical working group for NBDS development with the participation of MONRE, MARD, MOST, VAST, etc. 1-3. Organize meetings of technical working group (TWG). 1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS. 1-5. Develop the architecture of NBDS, and core set of indicators for biodiversity monitoring with the agreement among TWG members. 1-6. Gather and input data in NBDS. 1-7. Modify NBDS architecture based on experiences from the pilot project. 2-1. Identify key database holders. 2-2. Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS. 3-1. Identify biodiversity indicators of Nam Dinh Province. 3-2. Develop data format of the pilot database for Nam Dinh Province. 3-3. Identify data of the pilot database for Nam Dinh Province. 3-4. Develop procedure for data collection, compilation, and monitoring. 3-5. Develop technical guideline of basic survey and monitoring on wetland ecosystem based on experiences in the pilot project. 3-6. Carry out basic survey and biodiversity monitoring at Xuan Thuy national park in Nam Dinh Province. 3-7. Compile data collected from basic survey. 3-8. Input gathered data to the pilot database. 3-9. Use data collected from basic survey in Nam Dinh Province to test and modify NBDS. 4-1. Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies. 4-2. Prepare manual/instruction on NBDS. 4-3. Introduce NBDS to central and provincial officers related to biodiversity conservation.	Japanese Experts ・Chief Technical Advisor ・Database Development ・Vegetation Survey ・Ecological Survey ・Coordinator Machinery and equipment ・Server ・Database software ・Workstation ・PC ・Color laser printer and photocopy machine ・Scanner ・UPS ・OA software ・Camera trap ・Digital camera ・Handheld GPS ・Binocular ・Clinometer with compass ・Hypsometer ・Others Training ・Training in Japan or third country Project budget	Counterpart ・Project Director ・Project Manager ・Other staff Facility, machinery and equipment Project office, meeting room, necessary machinery and equipment, establishment of internet infrastructure and registration of domain for NDBS Project counterpart budget	**Pre-conditions** MARD, MOST, VAST and other related organizations support the project implementation.

(2) PDM Version 2

Project Design Matrix (PDM) Version 2

Project Title: Project for Development of the National Biodiversity Database System
Project period: November 2011 – March 2015 (3 years and 5 months)
Target area: Hanoi, Nam Dinh Province, and Vietnam countrywide
Target group: VEA (Mainly counterpart staffs of BCA, VEA,CEID, CEM, and ITC) and Nam Dinh DONRE

Executing agency: Vietnam Environment Administration (MONRE)

PDM Version 2 / 30 May 2013

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
The second generation of national biodiversity database system is developed.	1. GIS-linked NBDS for Nam Dinh Province is developed. 2. Utilization method of NBDS for specific application is developed with Nam Dinh Province in mind.	Roadmap for fulfillment of NBDS	Additional financial and human resources are mobilized.
Project Purpose			
The first generation of national biodiversity database system is developed.	1. NBDS Architecture is approved by VEA/ MONRE. 2. Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS. 3. 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.	1-1 Entity Relationship Diagram (Note 1) 1-2 Letter of Approval from VEA/ MONRE 2-1 Print out of all species data entered into NBDS by the project 3-1 Report of Acceptance Test (Note 2) 3-2 Maintenance record 3-3 Number of Account holders	・ Annual state budget for operation and management of NBDS is appropriately allocated. ・ MONRE legislates mechanism for collaboration based on the submitted recommendation. ・ Trained staffs are not displaced.
Outputs			
1. Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.	1.1 Specification of data format, software, and hardware of NBDS are identified. 1.2 The proposed architecture for NBDS based on the available information/ condition is submitted to MONRE.	1.1 (i) List of procured equipments 1.1 (ii) Type of software (Note 3) 1.2 (i) Proposal (Master Scheme) (Note 4) 1.2 (ii) A document – Architecture of NBDS (Note 4) 1.2 (iii) Guideline for developing National Level indicators for biodiversity monitoring(Note 5)	・ VEA/ MONRE facilitates the dialogue between the stakeholders to establish consensus on the architecture of NBDS. ・ BCA will decide the core-set of national biodiversity monitoring indicators before January 2014
2. Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended	2.1 Existing data and formats in various agencies is assessed. 2.2 Recommendations as a draft legal document are prepared.	2.1 Assessment Report on related organizations 2.2 Draft legal document	
3. A database for Nam Dinh Province is developed as a part of NBDS (Note 6).	3.1 The entry of data of pilot survey in Xuan Thuy National Park into NBDS is completed. 3.2 The pilot database for Nam Dinh	3.1 Survey Report (Note 7) 3.2 Manual for maintenance and usage of	

	Province is ready to be regularly updated. 3.3 Technical Guideline of basic survey and monitoring on wetland ecosystem is completed. 3.4 The staff of DONRE is trained to use and maintain the database for Nam Dinh Province.	database (Same as in 4.2 (i) and 4.2 (ii)) 3.3 Technical Guideline for basic survey and monitoring on wetland ecosystem (Note 8) 3.4 Record of training programs conducted	
4. Capacity on management and awareness of utilization of NBDS are strengthened.	4.1 BCA/ VEA/ DONRE staff gained skills to manage NBDS. 4.2 Manual for management and utilization of 1st generation NBDS is developed. 4.3 Awareness raising workshops are conducted.	4.1 (i) Training Records (Number of trainee, training days, training materials used) 4.1 (ii) Number of trained staff passed the test 4.2 (i) Administrator's Manual 4.2 (ii) Users' Manual 4.3 (i) Materials prepared for awareness raising including sample materials for reporting and publication based on the data collected in Xuan Thuy National Park 4.3 (ii) Number of participants/ Number of workshops conducted/ Number of materials distributed	

Activities	**Inputs**		
	Japanese side	**Vietnamese side**	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC. 0-2. Monitor and evaluate progress of the project activities. 1-1. Identify and analyze existing databases. 1-2. Establish a technical working group for NBDS development with the participation of MONRE, MARD, MOST, VAST, etc. 1-3. Organize meetings of technical working group (TWG). 1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS. 1-5. Prepare Proposal (Master Scheme) and a draft Architecture of NBDS, and national core set of indicators for biodiversity monitoring with the agreement among TWG members. 1-6. Develop a Guideline for developing National indicators for biodiversity monitoring 1-7. Gather and input data in NBDS. 1-8. Modify NBDS architecture based on experiences from the pilot survey. 1-9. Submit the final draft Architecture of NBDS to MONRE.	Japanese Experts ・ Chief Technical Advisor ・ Database Development ・ Biodiversity ・ Vegetation Survey ・ Ecological Survey ・ Coordinator Machinery and equipment ・ Server ・ Database software ・ Workstation ・ PC ・ Color laser printer and photocopy machine ・ Scanner ・ UPS	Counterpart ・ Project Director ・ Project Manager ・ Other staff Facility, machinery and equipment Project office, meeting room, necessary machinery and equipment, establishment of internet infrastructure and registration of domain for NDBS Project counterpart budget	

2-1. Identify key database holders. 2-2. Assess the data availability, formats and capacity for data sharing and database management amongst the database holders. 2-3. Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS. 3-1. Identify biodiversity indicators of Xuan Thuy National Park, Nam Dinh Province. 3-2. Develop data format of the pilot database for Nam Dinh Province. 3-3. Identify data of the pilot database for Nam Dinh Province. 3-4. Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park. 3-5. Carry out basic survey and biodiversity monitoring at Xuan Thuy National Park in Nam Dinh Province. 3-6. Compile data collected from basic survey. 3-7. Input gathered data to the pilot database. 3-8. Develop technical guideline of basic survey and monitoring on wetland ecosystem based on experiences in the pilot survey including an indicator development and use in XTNP. 4-1. Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies. 4-2. Prepare Administrator's manual and User's manual on 1st generation of NBDS. 4-3. Develop sample materials for reporting and publication based on the data collected in Xuan Thuy National Park. 4-4. Conduct workshop/ seminar to introduce NBDS to policy makers, and central/ provincial officers concerned.	・ OA software ・ Camera trap ・ Digital camera ・ Handheld GPS ・ Binocular ・ Clinometer with compass ・ Hypsometer ・ Others <u>Training</u> ・ Training in Japan or third country <u>Project budget</u>		**Pre-conditions** MARD, MOST, VAST and other related organizations support the project implementation.

Note 1: Entity Relationship Diagram gives an overview of the structure of NBDS. The print out can be obtained from the project for verification.
Note 2: The acceptance test is to be done jointly done by Japanese Expert Team and BCA with the users.
Note 3: The type of software used can be verified in the Administrator's manual.
Note 4: Architecture does not include the institutional mechanism of database management. However, the Project will prepare "Proposal (Master Scheme)" to elaborate on that aspect.
Note5: In the Guideline for National Level- Biodiversity Monitoring Indicators, the process of indicator development in Xuan Thuy National Park, the process of selection of national indicators, rationale, selection criteria will also be included.
Note 6: The pilot survey has been planned mainly for the purpose of generating data to be used to test and verify the data structure of and data entry procedure for NBDS. Thus, it has been planned in a limited scale and scope. The project has selected Xuan Thuy National Park as the pilot site and does not have a plan to carry out the similar survey to cover the entire Nam Dinh Province.
Note 7: The contents will include the actual survey design, data collection and analysis methods, and the results of the pilot survey conducted in Xuan Thuy National Park.
Note 8: The contents may include; design of a basic survey and monitoring methods for wetland eco system. Further details can be discussed between BCA and Japanese Expert Team.

(3) PDM Version 3

Project Design Matrix (PDM) Version 3

Project Title: Project for Development of the National Biodiversity Database System
Project period: November 2011 – March 2015 (3 years and 5 months)
Target area: Hanoi, Nam Dinh Province, and Vietnam countrywide
Target group: VEA (Mainly counterpart staffs of BCA, VEA,CEID, CEM, and ITC) and Nam Dinh DONRE

Executing agency: Vietnam Environment Administration (MONRE)

PDM Version 3 / 1 August 2014

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal (2025)			
The 2nd generation of national biodiversity database system is developed.	1. The 2nd generation of NBDS with data of provinces and related organizations is used for monitoring national biodiversity. 2. Utilization method of NBDS for management purposes such as EIA is developed in provinces.	1. Master Scheme 2. Number of access to NBDS from ministries and academic organizations.	・ Biodiversity-related policies do not change.
Overall Goal (2020)			
The second generation of national biodiversity database system is developed and piloted in selected protected areas and provinces.	1. Utilization method of NBDS for management purpose is developed in Nam Dinh Province. 2. The GIS-liked NBDS is used for a selected protected areas and province in a province other than Nam Dinh. 3. NBDS is used for the preparation of biodiversity-related national reports.	1. Master Scheme 2. Annual Reports by Nam Dinh PPC 3. Annual Reports by targeted PPC 4. The biodiversity-related national reports to be submitted to the Ramsar Secretariat, SBCD, and others.	・ Collaborative mechanism with ministries and academic organizations endorsed. ・ Provinces implement the biodiversity monitoring survey.
Project Purpose			
The first generation of national biodiversity database system is developed.	1.1 NBDS Architecture is approved by VEA/ MONRE. 1.2 Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS. 1.3 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.	1-1 Entity Relationship Diagram (Note 1) 1-2 Letter of Approval from VEA/ MONRE 2-1 Print out of all species data entered into NBDS by the project 3-1 Report of Acceptance Test (Note 2) 3-2 Maintenance record 3-3 Number of Account holders	・ Annual state budget for operation and management of NBDS is appropriately allocated. ・ MONRE legislates mechanism for collaboration based on the submitted recommendation. ・ Trained staffs are not displaced.

Outputs			
1. Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.	1.1 Specification of data format, software, and hardware of NBDS are identified. 1.2 The proposed architecture for NBDS based on the available information/ condition is submitted to MONRE.	1.1 (i) List of procured equipments 1.1 (ii) Type of software (Note 3) 1.2 (i) Proposal (Master Scheme) (Note 4) 1.2 (ii) A document – Architecture of NBDS (Note 4) 1.2 (iii) Guideline for developing National Level indicators for biodiversity monitoring(Note 5)	・ VEA/ MONRE facilitates the dialogue between the stakeholders to establish consensus on the architecture of NBDS. ・ BCA will decide the core-set of national biodiversity monitoring indicators before January 2014
2. Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended	2.1 Existing data and formats in various agencies is assessed. 2.2 Recommendations as a draft legal document are prepared.	2.1 Assessment Report on related organizations 2.2 Draft legal document	
3. A database for Nam Dinh Province is developed as a part of NBDS (Note 6).	3.1 The entry of data of pilot survey in Xuan Thuy National Park into NBDS is completed. 3.2 The pilot database for Nam Dinh Province is ready to be regularly updated. 3.3 Technical Guideline of basic survey and monitoring on wetland ecosystem is completed. 3.4 The staff of DONRE is trained to use and maintain the database for Nam Dinh Province.	3.1 Survey Report (Note 7) 3.2 Manual for maintenance and usage of database (Same as in 4.2 (i) and 4.2 (ii)) 3.3 Technical Guideline for basic survey and monitoring on wetland ecosystem (Note 8) 3.4 Record of training programs conducted	
4. Capacity on management and awareness of utilization of NBDS are strengthened.	4.1 BCA/ VEA/ DONRE staff gained skills to manage NBDS. 4.2 Manual for management and utilization of 1st generation NBDS is developed. 4.3 Awareness raising workshops are conducted.	4.1 (i) Training Records (Number of trainee, training days, training materials used) 4.1 (ii) Number of trained staff passed the test 4.2 (i) Administrator's Manual 4.2 (ii) Users' Manual 4.3 (i) Materials prepared for awareness raising including in Xuan Thuy National Park 4.3 (ii) Number of participants/ Number of workshops conducted/ Number of materials distributed	

Activities	Inputs		
	Japanese side	Vietnamese side	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC. 0-2. Monitor and evaluate progress of the project activities. 1-1. Identify and analyze existing databases. 1-2. Establish a technical working group for NBDS development with the participation of MONRE, MARD, MOST, VAST, etc. 1-3. Organize meetings of technical working group (TWG). 1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS. 1-5. Prepare Proposal (Master Scheme) and a draft Architecture of NBDS, and national core set of indicators for biodiversity monitoring with the agreement among TWG members. 1-6. Develop a Guideline for developing National indicators for biodiversity monitoring 1-7. Gather and input data in NBDS. 1-8. Modify NBDS architecture based on experiences from the pilot survey. 1-9. Submit the final draft Architecture of NBDS to MONRE. 2-1. Identify key database holders. 2-2. Assess the data availability, formats and capacity for data sharing and database management amongst the database holders. 2-3. Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS. 3-1. Identify biodiversity indicators of Xuan Thuy National Park, Nam Dinh Province. 3-2. Develop data format of the pilot database for Nam Dinh Province. 3-3. Identify data of the pilot database for Nam Dinh Province. 3-4. Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park. 3-5. Carry out basic survey and biodiversity monitoring at Xuan Thuy National Park in Nam Dinh Province. 3-6. Compile data collected from basic survey. 3-7. Input gathered data to the pilot database. 3-8. Develop technical guideline of basic survey and monitoring on wetland ecosystem based on experiences in the pilot survey including an indicator development and use in XTNP. 4-1. Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies. 4-2. Prepare Administrator's manual and User's manual on 1st generation of NBDS.	Japanese Experts ・ Chief Technical Advisor ・ Database Development ・ Biodiversity ・ Vegetation Survey ・ Ecological Survey ・ Coordinator Machinery and equipment ・ Server ・ Database software ・ Workstation ・ PC ・ Color laser printer and photocopy machine ・ Scanner ・ UPS ・ OA software ・ Camera trap ・ Digital camera ・ Handheld GPS ・ Binocular ・ Clinometer with compass ・ Hypsometer ・ Others Training ・ Training in Japan or third country Project budget	Counterpart ・ Project Director ・ Project Manager ・ Other staff Facility, machinery and equipment Project office, meeting room, necessary machinery and equipment, establishment of internet infrastructure and registration of domain for NDBS Project counterpart budget	**Pre-conditions** MARD, MOST, VAST and other related organizations support the project implementation.

4-3. Develop sample materials for reporting and publication based on the data collected in Xuan Thuy National Park.			
4-4. Conduct workshop/ seminar to introduce NBDS to policy makers, and central/ provincial officers concerned.			

Note 1: Entity Relationship Diagram gives an overview of the structure of NBDS. The print out can be obtained from the project for verification.
Note 2: The acceptance test is to be done jointly done by Japanese Expert Team and BCA with the users.
Note 3: The type of software used can be verified in the Administrator's manual.
Note 4: Architecture does not include the institutional mechanism of database management. However, the Project will prepare "Proposal (Master Scheme)" to elaborate on that aspect.
Note5: In the Guideline for National Level- Biodiversity Monitoring Indicators, the process of indicator development in Xuan Thuy National Park, the process of selection of national indicators, rationale, selection criteria will also be included.
Note 6: The pilot survey has been planned mainly for the purpose of generating data to be used to test and verify the data structure of and data entry procedure for NBDS. Thus, it has been planned in a limited scale and scope. The project has selected Xuan Thuy National Park as the pilot site and does not have a plan to carry out the similar survey to cover the entire Nam Dinh Province.
Note 7: The contents will include the actual survey design, data collection and analysis methods, and the results of the pilot survey conducted in Xuan Thuy National Park.
Note 8: The contents may include; design of a basic survey and monitoring methods for wetland eco system. Further details can be discussed between BCA and Japanese Expert Team.

(4) PDM Version 4

Project Design Matrix (PDM) Version 4

Project Title: Project for Development of the National Biodiversity Database System
Project period: November 2011 – March 2015 (3 years and 5 months)
Target area: Hanoi, Nam Dinh Province, and Vietnam countrywide
Target group: VEA (Mainly counterpart staffs of BCA, VEA,CEID, CEM, and ITC) and Nam Dinh DONRE

Executing agency: Vietnam Environment Administration (MONRE)

PDM Version 4 / 27 January 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal (2025)			
The 2nd generation of national biodiversity database system is developed.	1. The 2nd generation of NBDS with data of provinces and related organizations is used for monitoring national biodiversity. 2. Utilization method of NBDS for management purposes such as EIA is developed in provinces.	1. Master Scheme 2. Number of access to NBDS from ministries and academic organizations.	・ Biodiversity-related policies do not change.
Overall Goal (2020)			
The second generation of national biodiversity database system is developed and piloted in selected protected areas and provinces.	1. Utilization method of NBDS for management purpose is developed in Nam Dinh Province. 2. The GIS-liked NBDS is used for a selected protected areas and province in a province other than Nam Dinh. 3. NBDS is used for the preparation of biodiversity-related national reports.	1. Master Scheme 2. Annual Reports by Nam Dinh PPC 3. Annual Reports by targeted PPC 4. The biodiversity-related national reports to be submitted to the Ramsar Secretariat, SBCD, and others.	・ Collaborative mechanism with ministries and academic organizations endorsed. ・ Provinces implement the biodiversity monitoring survey.
Project Purpose			
The first generation of national biodiversity database system is developed.	1. NBDS Architecture is approved by VEA/ MONRE. 2. Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS. 3. 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.	1-1 Entity Relationship Diagram (Note 1) 1-2 Letter of Approval from VEA/ MONRE 2-1 Print out of all species data entered into NBDS by the project 3-1 Report of Acceptance Test (Note 2) 3-2 Maintenance record 3-3 Number of Account holders	・ Annual state budget for operation and management of NBDS is appropriately allocated. ・ MONRE legislates mechanism for collaboration based on the submitted recommendation. ・ Trained staffs are not displaced.

Outputs			
1. Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.	1.1 Specification of data format, software, and hardware of NBDS are identified. 1.2 The proposed architecture for NBDS based on the available information/ condition is submitted to MONRE.	1.1 (i) List of procured equipments 1.1 (ii) Type of software (Note 3) 1.2 (i) Proposal (Master Scheme) (Note 4) 1.2 (ii) A document – Architecture of NBDS (Note 4) 1.2 (iii) **Guideline for biodiversity indicator development and utilization** monitoring(Note 5)	・ VEA/ MONRE facilitates the dialogue between the stakeholders to establish consensus on the architecture of NBDS. ・ BCA will decide the core-set of national biodiversity monitoring indicators before January 2014
2. Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended	2.1 Existing data and formats in various agencies is assessed. 2.2 Recommendations as a draft legal document are prepared.	2.1 Assessment Report on related organizations 2.2 Draft legal document	
3. A database for Nam Dinh Province is developed as a part of NBDS (Note 6).	3.1 The entry of data of pilot survey in Xuan Thuy National Park into NBDS is completed. 3.2 The pilot database for Nam Dinh Province is ready to be regularly updated. 3.3 **Technical Guideline for basic survey and monitoring of coastal wetlands** is completed. 3.4 The staff of DONRE is trained to use and maintain the database for Nam Dinh Province.	3.1 Survey Report (Note 7) 3.2 Manual for maintenance and usage of database (Same as in 4.2 (i) and 4.2 (ii)) 3.3 **Technical Guideline for basic survey and monitoring of coastal wetlands** (Note 8) 3.4 Record of training programs conducted	
4. Capacity on management and awareness of utilization of NBDS are strengthened.	4.1 BCA/ VEA/ DONRE staff gained skills to manage NBDS. 4.2 Manual for management and utilization of 1st generation NBDS is developed. 4.3 Awareness raising workshops are conducted.	4.1 (i) Training Records (Number of trainee, training days, training materials used) 4.1 (ii) Number of trained staff passed the test 4.2 (i) Administrator's Manual 4.2 (ii) Users' Manual 4.3 (i) Materials prepared for awareness raising including in Xuan Thuy National Park 4.3 (ii) Number of participants/ Number of workshops conducted/ Number of materials distributed	

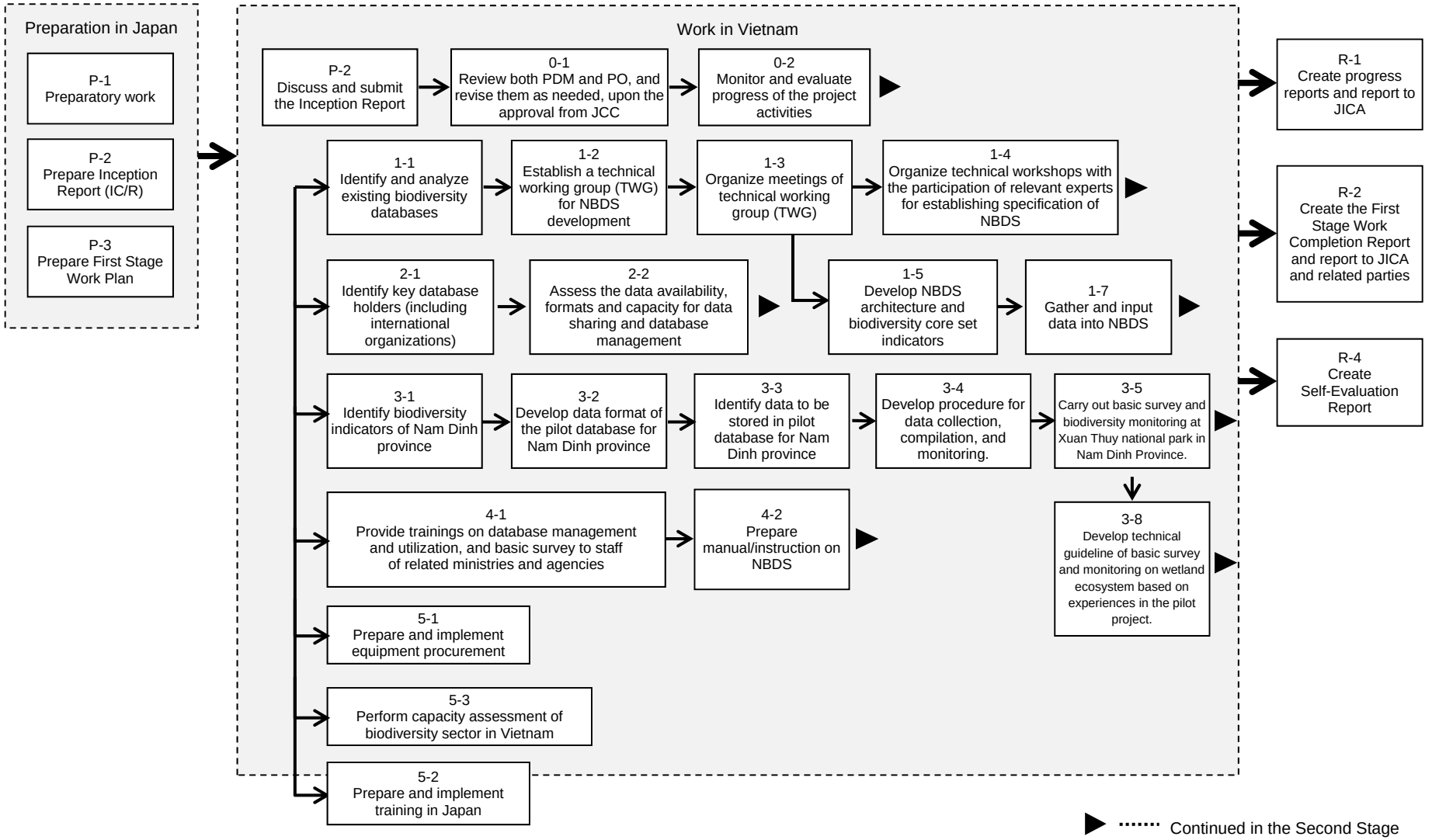
Activities	Inputs		
	Japanese side	**Vietnamese side**	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC. 0-2. Monitor and evaluate progress of the project activities. 1-1. Identify and analyze existing databases. 1-2. Establish a technical working group for NBDS development with the participation of MONRE, MARD, MOST, VAST, etc. 1-3. Organize meetings of technical working group (TWG). 1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS. 1-5. Prepare Proposal (Master Scheme) and a draft Architecture of NBDS, and national core set of indicators for biodiversity monitoring with the agreement among TWG members. 1-6. Develop a **Guideline for biodiversity indicator development and utilization** 1-7. Gather and input data in NBDS. 1-8. Modify NBDS architecture based on experiences from the pilot survey. 1-9. Submit the final draft Architecture of NBDS to MONRE. 2-1. Identify key database holders. 2-2. Assess the data availability, formats and capacity for data sharing and database management amongst the database holders. 2-3. Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS. 3-1. Identify biodiversity indicators of Xuan Thuy National Park, Nam Dinh Province. 3-2. Develop data format of the pilot database for Nam Dinh Province. 3-3. Identify data of the pilot database for Nam Dinh Province. 3-4. Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park. 3-5. Carry out basic survey and biodiversity monitoring at Xuan Thuy National Park in Nam Dinh Province. 3-6. Compile data collected from basic survey. 3-7. Input gathered data to the pilot database. 3-8. Develop **technical guideline for basic survey and monitoring of coastal wetland**s based on experiences in the pilot survey including an indicator development and use in XTNP. 4-1. Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies. 4-2. Prepare Administrator's manual and User's manual on 1st generation of NBDS.	Japanese Experts ・ Chief Technical Advisor ・ Database Development ・ Biodiversity ・ Vegetation Survey ・ Ecological Survey ・ Coordinator Machinery and equipment ・ Server ・ Database software ・ Workstation ・ PC ・ Color laser printer and photocopy machine ・ Scanner ・ UPS ・ OA software ・ Camera trap ・ Digital camera ・ Handheld GPS ・ Binocular ・ Clinometer with compass ・ Hypsometer ・ Others Training ・ Training in Japan or third country Project budget	Counterpart ・ Project Director ・ Project Manager ・ Other staff Facility, machinery and equipment Project office, meeting room, necessary machinery and equipment, establishment of internet infrastructure and registration of domain for NDBS Project counterpart budget	**Pre-conditions** MARD, MOST, VAST and other related organizations support the project implementation.

4-3. Develop sample materials for reporting and publication based on the data collected in Xuan Thuy National Park.			
4-4. Conduct workshop/ seminar to introduce NBDS to policy makers, and central/ provincial officers concerned.			

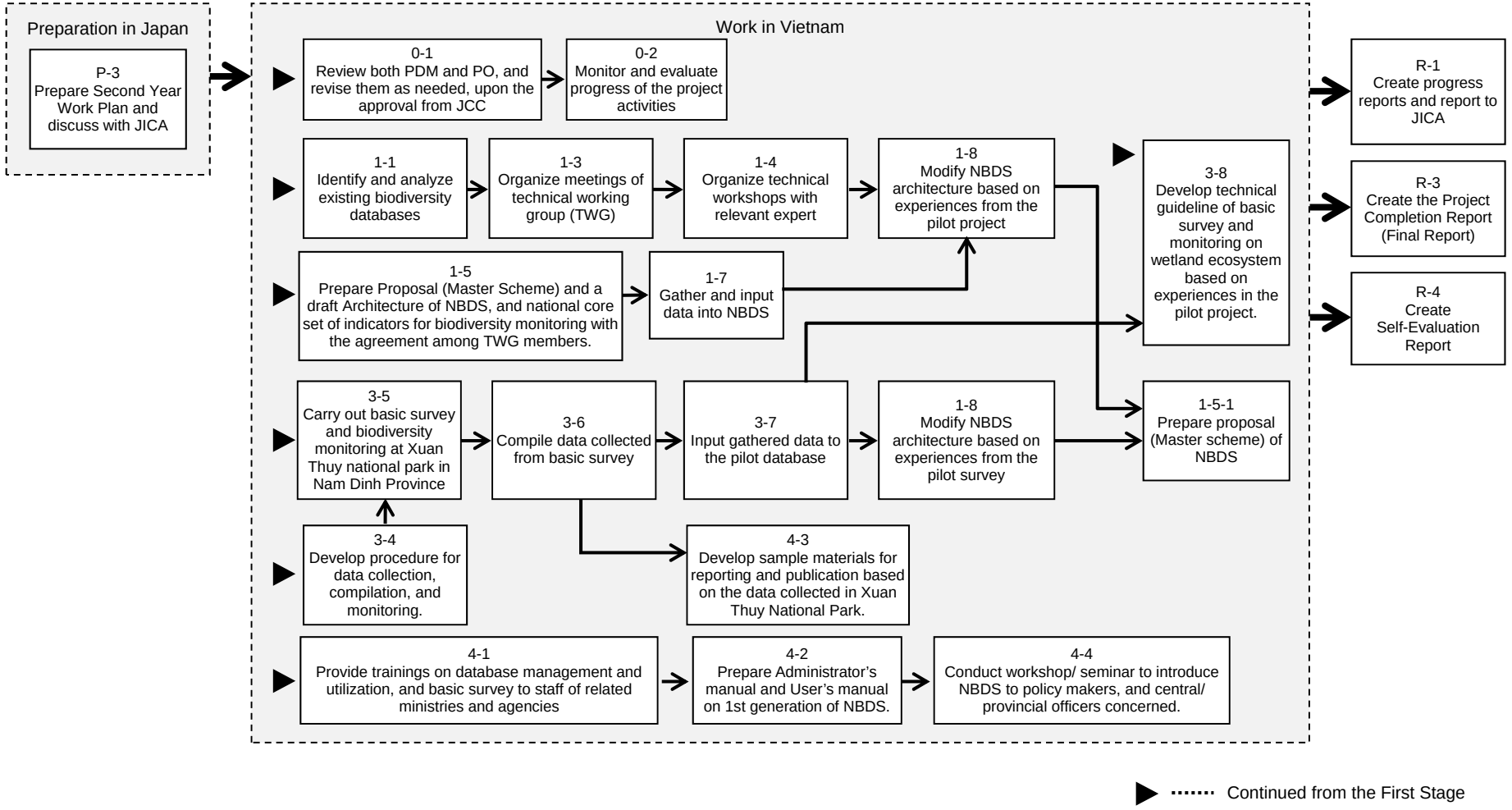
Note 1: Entity Relationship Diagram gives an overview of the structure of NBDS. The print out can be obtained from the project for verification.
Note 2: The acceptance test is to be done jointly done by Japanese Expert Team and BCA with the users.
Note 3: The type of software used can be verified in the Administrator's manual.
Note 4: Architecture does not include the institutional mechanism of database management. However, the Project will prepare "Proposal (Master Scheme)" to elaborate on that aspect.
Note5: In the **Guideline for biodiversity indicator development and utilization**, the process of indicator development in Xuan Thuy National Park, the process of selection of national indicators, rationale, selection criteria will also be included.
Note 6: The pilot survey has been planned mainly for the purpose of generating data to be used to test and verify the data structure of and data entry procedure for NBDS. Thus, it has been planned in a limited scale and scope. The project has selected Xuan Thuy National Park as the pilot site and does not have a plan to carry out the similar survey to cover the entire Nam Dinh Province.
Note 7: The contents will include the actual survey design, data collection and analysis methods, and the results of the pilot survey conducted in Xuan Thuy National Park.
Note 8: The contents may include; design of a basic survey and monitoring methods for wetland eco system. Further details can be discussed between BCA and Japanese Expert Team.

Appendix 2: Overall Work Flow

(1) 1st Stage (November 2011~March 2013)

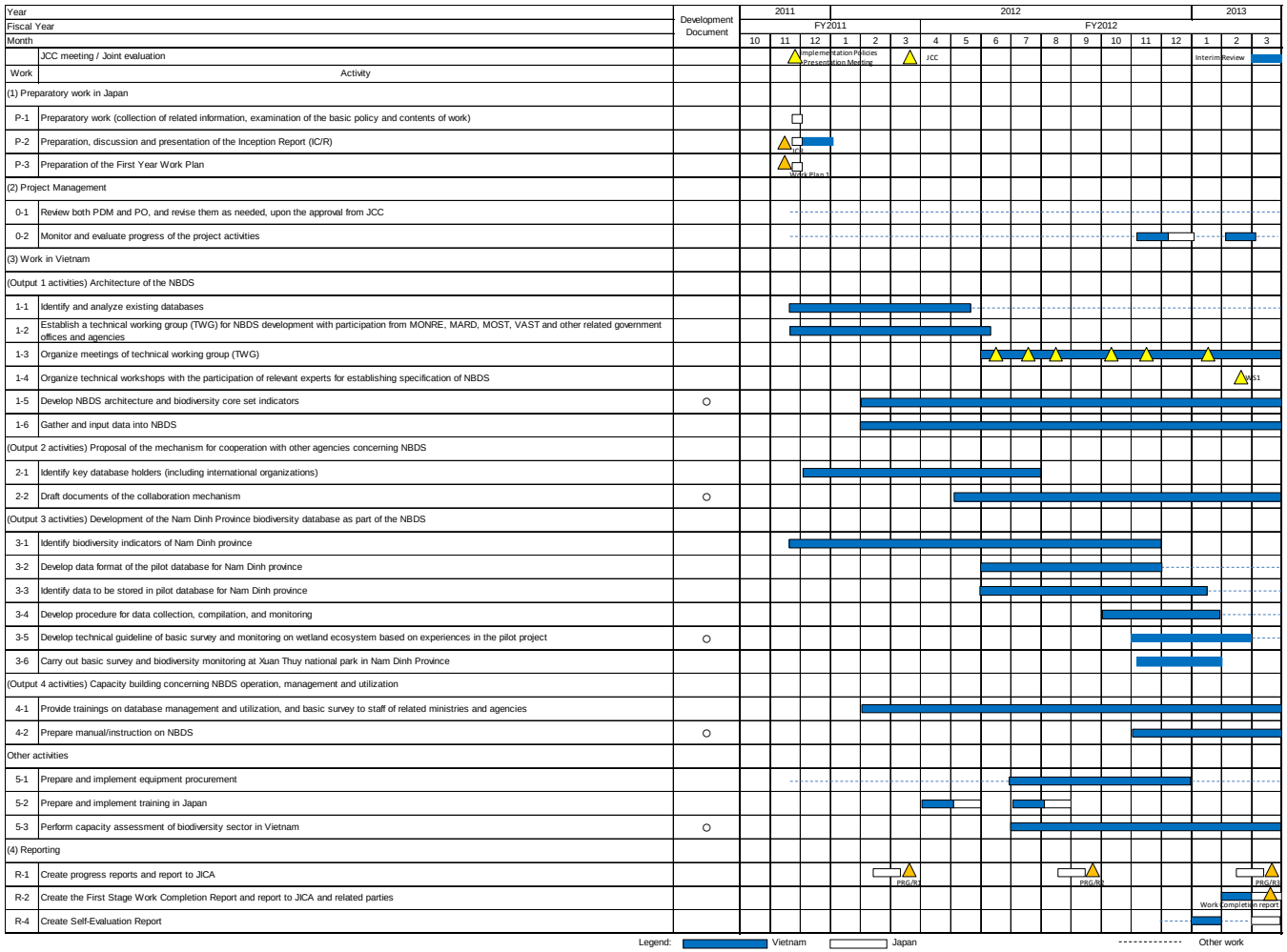


(2) 2nd Stage (April 2013~March 2015)



Appendix 3: Work Plan

(1) 1st Stage (November 2011~March 2013)



(2) 2nd Stage (April 2013~March 2015)

Year		Development Document	2013												2014												2015					
Fiscal Year			FY2013												FY2014												FY2015					
Month			4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6			
	JCC meeting / Joint evaluation				Joint Mid-term Review											Internal Review			Joint Terminal Evaluation													
					JCC											JCC									JCC								
Work	Activity																															
(1) Preparatory work in Japan																																
P-1	Preparation of the Second Year Work Plan and discussions with JICA				Work Plan2								Work Plan2.1																			
(2) Project Management																																
0-1	Review both PDM and PO, and revise them, as needed, upon the approval from JCC																															
0-2	Monitor and evaluate progress of the project activities																															
(3) Work in Vietnam																																
(Output 1 activities) Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.																																
1-1	Identify and analyze existing databases																															
1-3	Organize meetings of technical working group (TWG)																															
1-3-1	Establish 5 core groups of Master Scheme, National indicator guideline, System Architecture, Wetland Monitoring Guideline and Legal Document.																															
1-3-2	Organize meetings and workshop for core groups																	WS3		WS6		WS7	WS8	WS9								
1-4	Organize technical workshops with the participation of relevant experts for establishing specification of NBDS											WS2						WS4, 5							WS10.1							
1-5	Prepare Proposal (Master Scheme) and a draft Architecture of NBDS, and national core set of indicators for biodiversity monitoring with the agreement among TWG members	○																														
1-6	Develop a Guideline for biodiversity indicator development and utilization	○																														
1-7	Gather and input data in NBDS																															
1-8	Modify NBDS architecture based on experiences from the pilot project																															
1-9	Submit the final draft Architecture of NBDS to MONRE																															
(Output 2 activities) Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended																																
2-2	Assess the data availability, formats and capacity for data sharing and database management amongst the database holders																															
2-3	Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS	○																														
(Output 3 activities) A database for Nam Dinh Province is developed as a part of NBDS																																
3-4	Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park (XTNP)																															
3-5	Carry out basic survey and biodiversity monitoring at Xuan Thuy national park in Nam Dinh Province																															
3-6	Compile data collected from basic survey																															
3-7	Input gathered data to the pilot database																															
3-8	Develop technical guideline of basic survey and monitoring of coastal wetlands based on experiences in the pilot project including an indicator development and use in XTNP	○																														
(Output 4 activities) Capacity on management and awareness of utilization of NBDS are strengthened.																																
4-1	Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies																															
4-2	Prepare Administrator's manual and Users' manual on 1st generation of NBDS	○																														
4-3	Develop sample materials for reporting and publication based on the data collected in XTNP																															
4-4	Conduct workshop/ seminar to introduce NBDS to policy makers, and central/ provincial officers concerned																															
Other activities																																
5-1	Prepare and implement equipment procurement																															
5-3	Perform capacity assessment of biodiversity sector in Vietnam	○																														
5-4	Develop enlightment and promotion tools for NBDS	○																														
5-5	Propose roadmap to the second generation NBDS																															
5-6	Convert existing biosafety database to Web database																															
5-7	Prepare and implement training in Japan and the third country																															
(4) Reporting																																
R-1	Preparation of the Progress Report and progress reporting to JICA							PRG/RE						PRG/RE							PRG/RE											
R-3	Preparation of the Project Completion Report (Final Report)																												F/R			
R-4	Create Self-Evaluation Report																															

Legend: Vietnam Japan Other work

Appendix 4: Human Resource Assignment

(1) First Stage (November 2011~March 2013)

Human Resource Assignment (Plan / Actual) As of March 30, 2013

	Title	Name	Organization	Rank	First Stage	Man Month (Total)		
					2011 12 1 2 3 4 5 6 7 8 9 10 11 12 2012 1 2 3 2013	in VN	in JP	JDS
Work in Vietnam	Chief Advisor	Yoichi KOGURE	Japan Development Service Co., Ltd.	2	11/18 12/27 2/15 3/17 6/3 7/28 9/2 10/28 2/18 (3/4)	6.67		
	Deputy Chief Advisor / Database Development 1	Yasumitsu ISHIKAWA	Japan Development Service Co., Ltd.	3	12/21 2/9 3/25 5/22 10/29 12/27	5.67		
	Database Development 2	Yukiyo YAMADA	Japan Development Service Co., Ltd.	3	12/4 12/24 10/21 11/21 12/19 1/31 2/18 (3/4)	3.73		
	Database Development 3	Tsutomu ONO	Japan Development Service Co., Ltd.	3	6/5 8/18 9/23 10/27 9/29 10/20	(2.93)		0.73
	Vegetation Survey 1	Masahiro OTSUKA	Japan Development Service Co., Ltd.	3	2/5 4/4 5/20 7/18 9/9 11/6 11/25 1/23 2/19 (3/4)	8.43		
	Vegetation Survey 2	Nguyen Duc TU	IUCN	3	2/6 60d 2/26	2.00		
	Ecological Survey 1	Nguyen Duc TU	IUCN	3	12/13 98d 2/28	3.27		
	Ecological Survey 2	Choshin HANEJI	Japan Development Service Co., Ltd.	3	11/30 12/31 1/29 2/28 4/22 6/20 11/18 12/1	4.57		
	Database Development Assistant 1	Kentaro SAKAI	Japan Development Service Co., Ltd.	4	12/5 12/14	0.33		
	Database Development Assistant 2	Mayuka KOBAYASHI	Japan Development Service Co., Ltd.	4	10/1 10/10	0.33		
	Coordinator 1	Mayuka KOBAYASHI	Japan Development Service Co., Ltd.	4	5/10 6/23 5/16 6/16 9/10 11/3 11/12 12/1 9/26 10/17 11/14 11/29 1/6 1/26 2/17 (3/6) 1/11 1/20 2/21 (3/2)	(2.40)		2.90
	Coordinator 2	Kentaro SAKAI	Japan Development Service Co., Ltd.	4	11/18 12/27 2/1 3/31 11/27 12/18 2/16 3/16	(1.60)		1.73
						37.93		5.37
Work in Japan	Chief Advisor	Yoichi KOGURE	Japan Development Service Co., Ltd.	2	12/28 1/5 5/27 6/2 8/20 9/1 (3/5) (3/16)		1.37	
	Deputy Chief Advisor / Database Development 1	Yasumitsu ISHIKAWA	Japan Development Service Co., Ltd.	3	12/18 12/20 3/20 3/21 (3/5) (3/9)		0.33	
	Vegetation Survey 1	Masahiro OTSUKA	Japan Development Service Co., Ltd.	3	(3/5) (3/9)		0.17	
							1.87	
	Meetings / Workshops				JCC/Pre-TWG TWG1 TWG2 TWG3B TWG3A TWG4 TWG5A TWG5B XTNP Survey Preliminary Report TWG6 TWG6.1B WS1			
	Reports				IC/R (Draft) IC/R (Final) PRGR1 PRGR2 PRGR3			
						in VN 37.93	in JP 1.87	JDS 5.37
						Total 39.80		

Legend: in Vietnam; in Japan; expense by JDS **Note**: Numbers in parentheses are plan

(2) Second Stage (April 2013~March 2015)

Human Resource Assignment (Plan / Actual)

Project Name: The Project for Development of the National Biodiversity Database System in the Socialist Republic of Vietnam

1. Work in Vietnam

Name (Title)	Rank		#Dispatch	2013 4	5	6	7	8	9	10	11	12	2014 1	2	3	4	5	6	7	8	9	10	11	12	2015 1	2	3	Days	M/M
Yoichi KOGURE (Chief Advisor)	2	Plan	7		(48)								(21)			(38)			(13)			(46)				(21)		(6)	175	5.83
		Actual	7		5/12 (48)	6/28							12/29 (21)	1/18		4/15 (38)	5/22		7/21 (13)	8/2	9/21 (46)		11/5			1/11 (21)	1/31	3/22-27 (6)	183	6.10
Yukiyo YAMADA (Database Development 2)	3	Plan	5		(35)								(49)						(7)			(35)				(21)			171	5.70
		Actual	5		5/12 (35)	6/15							12/1 (49)	1/18					7/27 (7)	8/2	9/21 (35)		10/25			1/11 (21)	1/31		147	4.90
Tsutomu ONO (Database Development 3)	3	Plan	5							(33)						(26)			(9)	(14)		(33)							99	3.30
		Actual	5						9/22 (33)	10/24						4/1 (26)	4/26		6/29 (9)	7/7	7/20 (14)	8/2	9/16 (33)	10/18					115	3.83
Masahiro OTSUKA (Vegetation Survey1／ Biodiversity1)	3	Plan	2		(75)					(49)																			124	4.13
		Actual	2		5/12 (75)		7/25		9/15 (49)		11/2																		124	4.13
Haruo MIYATA (Invited Lecturer)	3	Plan	2																										(0)	(0.00)
		Actual	2																										(0)	(0.00)
Masakazu KASHIO (Vegetation Survey3／ Biodiversity2)	3	Plan	5										(12)	(5)			(28)			(35)			(42)						122	4.07
		Actual	5										12/23-1/3 (12)	1/9-14 (6)		4/13 (28)	5/10	6/1 (35)	7/5		9/15 (41)	10/25							122	4.07
Choshin HANEJI (Ecological Survey2/Biodiversity4)	3	Plan	8		(40)		(31)			(23)			(11)			(5)	(21)		(28)	(13)									172	5.73
		Actual	8		5/5 (40)	6/13	7/4 (31)	8/3		10/20 (23)	11/11		12/23-1/2 (11)			3/11-15 (5)	4/6 (21)	4/26	6/8 (28)	7/5	7/13-25 (13)								172	5.73
Mayuka KOBAYASHI (Database Development Assistant2)	4	Plan	2							(7)			(3)																10	0.33
		Actual	2							10/5-11 (7)			1/16-18 (3)																10	0.33
Takahiro YASUDA (Database Development Assistant3)	4	Plan	1														(9)												9	0.30
		Actual	1														4/14-22 (9)												9	0.30
Mayuka KOBAYASHI (Work Coordination1)	4	Plan	8		(18)					(4)			(10)					(7)		(18)		(11)			(8)		(18)		(75)	(2.50)
		Actual	8		5/22 (18)	6/8				10/1-11 (4)			1/6-18 (10)					5/11-17 (7)		7/16 (18)	8/2	9/10-20 (11)			12/1-13 (8)		1/14 (18)	1/31		(69)	(2.30)
Takahiro YASUDA (Work Coordination3)	4	Plan	2														(1)												(45)	(1.50)
		Actual	2														4/13-22 (1)												(52)	(1.73)
																												Total in Vietnam	Plan	882	29.39
																													Actual	882	29.39

2. Work in Japan

Name (Title)	Rank		#Work	2013 4	5	6	7	8	9	10	11	12	2014 1	2	3	4	5	6	7	8	9	10	11	12	2015 1	2	3	Days	M/M
Yoichi KOGURE (Chief Advisor)	2	Plan	11		(3)				(1)(7)				(1)				(1)			(1)					(2)	(12)	(4)(3)(4)	18	0.90
		Actual	11		5/8-10 (3)				9/18 (1)(7)	9/24-30			1/20 (1)				5/23 (1)			8/6 (1)					1/5-6 (2)	2/16-27 (12)	3/9-12,19-21,28-31 (4)(3)(4)	18	0.90
Yukiyo YAMADA (Database Development 2)	3	Plan	5		(2)						(1)		(1)							(1)						(2)		7	0.35
		Actual	5		5/8-9 (2)						11/23 (1)		1/20 (1)							8/18 (1)						2/2-3 (2)		7	0.35
Tsutomu ONO (Database Development 3)	3	Plan	2		(2)																				(5)			2	0.10
		Actual	2		5/8-9 (2)																				1/7-11 (5)			2	0.10
Masahiro OTSUKA (Vegetation Survey1／ Biodiversity1)	3	Plan	5		(2)				(1)			(3)	(3)				(3)											12	0.60
		Actual	5		5/8-9 (2)				9/14 (1)			12/15-17 (3)	1/20-22 (3)				5/17-19 (3)											12	0.60
NGUYEN DUC TU (Vegetation Survey2)	3	Plan	1												(14)													14	0.70
		Actual	9				8/1 (1)	8/19 (1)			11/11-12 (2)	12/3-4 (2)	1/12-13 (2)		3/13 (1)		4/24 (1)		7/22 (1)						1/25-27 (3)			14	0.70
NGUYEN DUC TU (Ecological Survey1)	3	Plan	1												(30)													30	1.50
		Actual	14		5/16-19 (4)	6/1-4 (4)	7/14-17 (4)		9/26 (1)	10/17-22 (6)		12/11-12 (2)	1/10 (1)				4/16 (1)	5/15 (1)	6/13 (1)			9/17-18 (2)	10/9 (1)	10/22 (1)	11/13 (1)				30	1.50
(Coordination for Training in Japan / the third country)	3	Plan	1							(17)																		17	0.85
		Actual	1							10/21 11/9 (17)																		17	0.85
																										Total in Japan	Plan	100	5.00
																											Actual	100	5.00

Legend: Actual Plan Expense by JDS

Grand Total	Plan	34.39
	Actual	34.39

Meetings / Workshops	JCC2, CG, CG/WS2, CG/JCC3, WS3,4,5, CG, WS6, CG, CG, WS7, WS8, WS9, WS10/WS11/JCC4
Reports	Work Plan 2, PRGR4, PRGR5, PRGR6, FR
Other Activities	Mid-term Review, Training in Japan/Malaysia, Self Evaluation, Terminal Evaluation

Appendix 5: Training in Japan and Malaysia

Trainee list and schedule of C/P training in Japan and Malaysia

(1) Training program for the managers in the project of development of the national biodiversity database system (Duration: From May 27th to June 2nd, 2012)

Trainee list:

	Name	Organization	Relation with project
MONRE			
1	Mr. Nguyen The Dong (Dr.) (Team Leader)	Deputy Director General of Vietnam Environment Administration (VEA)	Project Director
2	Ms. Hoang Thi Thanh Nhan	Deputy Director of Biodiversity Conservation Agency (BCA), VEA	Project Deputy Director
3	Ms. Nguyen Thi Hong Minh	Official of Department of Personnel and Organization, MONRE	Member department of TWG
4	Mr. Nguyen Quoc Khanh (Dr.)	Director of Center for Environment Information and Data (CEID), VEA, MONRE	Member organization of TWG
Other organization			
5	Mr. Tran The Lien (Dr.)	Director of Department of Nature Conservation, Vietnam Administration of Forestry, Ministry of Agriculture and Rural Development (MARD)	Member organization of JCC
6	Mr. Le Xuan Canh (Dr.)	Director of Institute of Ecology and Biological Resources (IEBR), Vietnam Academy of Science and Technology (VAST)	Member organization of JCC
Local government			
7	Mr. Phan Van Phong	Deputy Director of Department of Natural Resources and Environment (DONRE), PPC Nam Dinh	Member of JCC
8	Mr. Nguyen Viet Cach	Director of Xuan Thuy National Park, Nam Dinh Province (XTNP), Department of Agriculture and Rural Development (DARD), PPC Nam Dinh	Project Pilot Site

略語：People's Committee of Nam Dinh Province（PPC、ナムディン省人民委員会）

Schedule:

Date		Time	Location	Organization/Agency and Purpose
5/27	Sun		Hanoi - Tokyo	Noi Bai / Hanoi – Narita/Tokyo (Departure at midnight May 26 – Arrival in the morning May 27)
5/28	Mon	AM	JICA / Tokyo	Orientation
		PM	Tokyo	(1) Nature Conservation Bureau, Ministry of the Environment (MOE) - Relations between International Treaty(CBD) and National Strategy, administration - Coordination with related ministries and agencies for policy administration on biodiversity conservation - Coordination with local government and research institute for research and monitoring - Biodiversity indicator operation - Information usage for formulation of policy on biodiversity conservation and environmental assessment in central government, local government - Coordination of the meeting of related ministries to the Convention on Biological Diversity (2) Forest Agency, Ministry of Agriculture, Forestry and Fisheries (MAFF) - Formulation of forest and forestry policy for biodiversity conservation and about biodiversity monitoring - Coordination with related ministries including MOE
5/29	Tue	AM	Tokyo	Move to Yamanashi Prefecture
		PM	Yamanashi PRF	Biodiversity Center of Japan, Nature Conservation Bureau, MOE - Management and operation of Information System and Database on Biodiversity in Japan

Date		Time	Location	Organization/Agency and Purpose
5/30	Wed	AM	Yamanashi PRF	Move to Chiba Prefecture
			Chiba PRF	Chiba Biodiversity Center - Example of management and operation of Biodiversity Conservation activity by local government
		PM	Tokyo	National Museum of Nature and Science - The biggest repository of taxonomical and biological database in Japan
5/31	Thu	AM	Tokyo	Move to Tsukuba city, Ibaraki Prefecture
			Tsukuba city, Ibaraki PRF	National Institute for Environmental Studies - Methods to assess the conditions of biodiversity and evaluation tools based on observational data being developed under Biodiversity Research Program
		PM	Tsukuba city, Ibaraki PRF	Forestry and Forest Products Research Institute - Monitoring and research on forest biodiversity, ecosystem, REDD+ and so on
6/1	Fri	AM	JICA / Tokyo	Reporting and discussion on the result of the study trip to JICA
6/2	Sat		Tokyo - Hanoi	Narita/Tokyo – Noi Bai/Hanoi

(2) Training program for the counterparts in the project of development of the national biodiversity database system (Duration: From August 19th to September 1st, 2012)

Trainee list:

	Name	Organization	Relation with project
Biodiversity Conservation Course			
1	Ms. PHAN Binh Minh	Official, Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA)	Staff of C/P organization
2	Mr. TRAN Nam Binh	Officer, Department of Social and Natural Science, Ministry of Science and Technology (MOST)	Member of TWG
3	Mr. BUI Cong Mau	Director, Environment Protection Agency, Department of Natural Resources and Environment (DONRE), Nam Dinh province	Staff of local C/P organization
4	Mr. LE Van Tan	Head of Environmental Management Division, Department of Science, Technology and Environment, Ministry of Agriculture and Rural Development (MARD)	Member of TWG
5	Ms. PHUNG Thu Thuy	Official, Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA)	Staff of C/P organization
6	Ms. NGUYEN Thi Van Anh	Official, Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA)	Staff of C/P organization
Biodiversity Database Maintenance and Administration Course			
1	Mr. Nguyen Xuan Thuy	Director of Information Technology Centre (ITC), Administration Office, Vietnam Environment Administration (VEA)	Staff of database C/P organization
2	Ms. Vu Thi Minh Tram	Manager of Remote Sensing Application Department, Centre for Environmental Information and Documentation (CEID), Vietnam Environment Administration (VEA)	Staff of database C/P organization
3	Mr. Luong Hoang Tung	Data and Information System Section, Center for Environmental Monitoring (CEM), Vietnam Environment Administration (VEA)	Staff of database C/P organization

Schedule: Biodiversity Conservation Course

Date		City	Time	Venue and Content
8/19	Sun	→Naha	Arrive at Naha, Okinawa PRF	
8/20	Mon	Naha	9:30-11:30	Briefing (JICA Okinawa) (2F seminar room 200B)
		Iriomote	PM	Move to Iriomote Island
8/21	Tue	Iriomote →Ishigaki	09:00-12:00 13:00-16:00	Iriomote Island Ecotourism Association (IIEA) - Present situation of wild animal conservation activities through lecture and site visit - Sustainable management and conservation for Mangrove Ecosystems , and biological feature development in tropical and subtropical area through lecture and site visit
8/22	Wed	Ishigaki→ Miyako→ Naha→Tokyo	10:00-12:00	"Ishigaki Nature Conservation Office Coral Reef Research and Monitoring center (Ministry of the Environment)" Move to Tokyo
8/23	Thu	Tokyo	10:00-12:00 14:00-16:00	Introduction of example of databases related on environment in Japan (JICA Tokyo) National Museum of Nature and Science - Observation: Exhibition of plants, birds and specimen etc.
8/24	Fri	Tokyo	11:00-12:00 13:00-16:00	Museum park Ibaraki Nature Museum - Lecture: Example of the museum for biodiversity conservation - Observation: Storage room, out and in door exhibition, explanation of practical use of database
8/25	Sat	Tokyo		
8/26	Sun	Tokyo		
8/27	Mon	Yamanashi →Tokyo	11:00-17:00	Biodiversity Centre of Japan (Nature Conservation Bureau, Ministry of the Environment) - Database development and its maintenance through its practical experiences in making and management of the national biodiversity database (1 day)
8/28	Tue	Chiba	9:30-11:15	Yatsu Higata(tidal flat) Nature Observation Center - Observing incoming birds at the registered wetland under the Ramsar Convention. This is the only registered wetland in the Greater Tokyo Area
			13:00-16:00	Natural History Museum and Institute, Chiba, and Chiba Biodiversity Center - Database development and its maintenance through its practical experiences in making and management of the prefecture-level biodiversity database (0.5 day)
8/29	Wed	Yokohama	09:00-16:00	Orkney, Inc. - Latest practices in utilizing database which are developed by open source that assumes TWG utilizing/collaborating through lectures (2 days)
			16:30-18:30	Action plan meeting /questionnaire fill in (JICA Yokohama seminar room)
8/30	Thu	Tokyo	9:30-11:30	Wild bird society of Japan / Public Interest Incorporated Foundation - National survey trend on biodiversity field. Example of collaboration with monitoring site 1000 as participatory monitoring managed by Japanese MOE.
		Tsukuba	14:30-17:30	National Museum of Nature and Science - Operation example of the Japanese largest database of classification and organism field. Mainly management of data, specimen, collaboration with other organization's database information sharing, human resource management technical and system management of the database.
8/31	Fri	Tokyo	10:00-12:00	Training evaluation (TIC Seminar room12)
9/1	Sat	Hanoi	Move to / Arrive at Hanoi	

Schedule: Biodiversity Database Maintenance and Administration Course

Date		City	Time	Venue and Content	
8/19	Sun	→Kobe	Arrive at Kobe, Hyogo PRF JL752 (HAN22:30(8/18)-NRT06:55), JL113(HND10:30-ITM11:35)		
8/20	Mon	Kobe	10:00-12:00	Briefing (JICA Kansai)	
		→Kyoto	PM	Move to Kyoto after an orientation	
8/21	Tue	Kyoto	09:30-12:40 13:30-16:40	Kyoto Computer Gakuin - Maintenance of Windows Server 2008 and Basics of PostgreSQL	Windows Server 2008 / Active Directory
8/22	Wed		09:30-12:40 13:30-16:40		Operation management of user and client using Active Directory, Service based on Internet Information Services
8/23	Thu		09:30-12:40 13:30-16:40		Introduction to PostgreSQL (installation, administration tool, creating database, etc.)
8/24	Fri		09:30-12:40 13:30-16:40		PostgreSQL (Table creation, Query, Security control, etc.)
8/25	Sat		09:30-12:40 13:30-16:40		PostgreSQL (Transaction, configuration files, backup and snapshot)
8/26	Sun	→Tokyo	Move to Tokyo		
8/27	Mon	Yamanashi →Tokyo	11:00-17:00	Biodiversity Centre of Japan (Nature Conservation Bureau, Ministry of the Environment) - Database development and its maintenance through its practical experiences in making and management of the national biodiversity database (1 day)	
8/28	Tue	Chiba	9:30-11:15	Yatsu Higata(tidal flat) Nature Observation Center - Observing incoming birds at the registered wetland under the Ramsar Convention. This is the only registered wetland in the Greater Tokyo Area	
			13:00-16:00	Natural History Museum and Institute, Chiba, and Chiba Biodiversity Center - Database development and its maintenance through its practical experiences in making and management of the prefecture-level biodiversity database (0.5 day)	
8/29	Wed	Yokohama	09:00-16:00	Orkney, Inc. - Latest practices in utilizing database which are developed by open source that assumes TWG utilizing/collaborating through lectures (2 days)	
			16:30-18:30	Action plan meeting /questionnaire fill in (JICA Yokohama seminar room)	
8/30	Thu		09:00-16:00	Orkney, Inc. - Latest practices in utilizing database which are developed by open source that assumes TWG utilizing/collaborating through lectures (2 days)	
8/31	Fri	Tokyo	10:00-12:00	Training evaluation (TIC Seminar room12)	
9/1	Sat	Hanoi	Move to / Arrive at Hanoi JL751(NRT17:55-HAN21:40)		

(3) Training program for the counterparts in the project of development of the national biodiversity database system (Duration: From October 27th to November 9th, 2013)

Trainee list:

	Name	Organization	Relation with project
Biodiversity Conservation Course			
1	Mr. Hoang Trong Nghia	Vice Deputy of Environmental Protection Agency, Department of Natural resources and Environment of Nam Dinh Province (DONRE Nam Dinh)	C/P
2	Mr. Le Hung Anh	Head of Department of Aquatic Ecology Environment, Institute of Ecology and Biological Resources (IEBR), VAST	Member of TWG Pertinent organizations
3	Ms. Nguyen Thi Hong Thanh	Staff of Administration Office, Department of Science, Technology and Environment, MARD	Member of TWG Pertinent organizations
4	Ms. Nguyen Thi Nhu Quynh	Official of Administration Office, Department of Organization and Personnel (DOOP), MONRE	Member of TWG Pertinent organizations
5	Mr. Nguyen Xuan Dung	Chief of Administration Office, Biodiversity Conservation Agency (BCA), VEA, MONRE	C/P of pilot site
6	Mr. Phan Van Truong	Staff of Resource Management Division, Xuan Thuy National Park (XTNP)	C/P of pilot site

Schedule:

Date	Place	Time	Receiving organization/Content
10/27	Hanoi → Kota Kinabalu		
10/28	Kota Kinabalu	9:00 - 12:00	Orientation (0.5 day) [Mr. Ono]
		PM	Project on Sustainable Development for Biodiversity and Ecosystems Conservation in Sabah (SDBEC) (0.5 day) Briefing and Discussion ・ Sabah Tourism Board, SDBEC, SaBC: General information on Sabah, project outline and past experience ・ Vietnamese trainees: Project outline Have the project staff explain outlines and outcomes of project activities particularly on ecosystem monitoring and surveys with discussions with trainees. Make an observation, information gathering and opinion exchange on C/Ps' tasks in the project. Information gathering on the concept the Sabah Biodiversity Centre Explain the outline of the NBDS Project. Introduce activities of the NBDS Project related to surveys and database, sharing objectives and needs of both projects.
10/29	Kota Kinabalu	8:00-12:00	Project on Sustainable Development for Biodiversity and Ecosystems Conservation in Sabah (SDBEC) (1 day) Briefing/Discussion and Field trip (biodiversity monitoring/survey site) Croker Range Park HQ Office
		13:00-17:30	Field trip (biodiversity monitoring/survey site) Kimanis (Permanent plot site) → Beaufort Field visit/observation (Field visit to the site for biodiversity surveys and monitoring in the Crocker Range Park and Kimanis: plot establishment, an outline of survey/ monitoring activities, and discussions/ Q&A with field staff/survey assistants, etc.)
10/30	Kota Kinabalu	AM	Project on Sustainable Development for Biodiversity and Ecosystems Conservation in Sabah (SDBEC) (1 day) Briefing/Discussion and Field trip at Klias Forest Reserve
		PM	Field Visit (Klias Ecotourism Site, cruising) Field visit/observation (Field visit to the site for biodiversity surveys and monitoring in the Klias: plot establishment, an outline of survey/monitoring activities, and discussions/Q&A with field staff/survey assistants, etc.)
10/31	Kota Kinabalu	AM	Project on Sustainable Development for Biodiversity and Ecosystems Conservation in Sabah (SDBEC) (0.5 day) Briefing/Discussion and Field trip at Padang Teratak Wildlife Sanctuary (monitoring system of wildlife and information management)
		PM	Back to Kota Kinabalu
11/1	Kota Kinabalu	AM	Institute for Tropical Biology & Conservation, University Malaysia Sabah (ITBC/UMS) (0.5 day) Briefing/Discussion on information management and research, facility/ campus tour) Visit the Sabah University of Malaysia (collection information on surveys and research in biodiversity, data collection, linkages and sharing with government agencies, etc., and exchange opinions).
		PM	Project on Sustainable Development for Biodiversity and Ecosystems Conservation in Sabah (SDBEC) (0.5 day) Wrap-up and Synthesis (JICA-SDBEC) Drafting "Action Plan" [Mr. Kogure] Synthesis: discuss challenges to promoting future biodiversity monitoring and surveys together with Vietnamese trainees.
11/2	Kota Kinabalu → Tokyo		
11/3	Hanoi → Tokyo (Mr. Dung)		
11/4	Chichibu, Saitama	10:00-15:00	The Experiment Forest in Chichibu, Graduate School of Agricultural and Life Sciences, The University of Tokyo (1 day) Learn an overview of plots survey areas for the Monitoring 1000 sites commissioned by the Ministry of Environment within the experiment forest, survey activities, and data analyses.
11/5	Tokyo	9:00-9:30	Orientation (0.1 day)@JICA Tokyo
		10:30-12:00	Nagao Natural Environment Foundation (0.4 day) @Nagao Nature Environment Foundation
		14:00-16:00	Wild Bird Society of Japan, Chiba Branch (0.5 day) @JICA Tokyo Learn an outline of WCSJ-sponsored information gathering on bird conservation, surveys on bird protection, and bird-watching events as well as its database management, application of data to nature conservation activities, and linkages with government administrations (0.5 days)

Date	Place	Time	Receiving organization/Content
11/6	Chiba	9:00-12:00	Natural History Museum and Institute, Chiba, and Chiba Biodiversity Center (0.5 day) Learn know-hows of on-going database development, operation and maintenance through observing cases and site visits on biodiversity surveys and information gathering at the prefectural level, an outline of the museum (research, educational and extension activities) and operation of database for biodiversity conservation (0.5day).
		14:00-16:00	(JF) Nature Conservation Society of Japan (NACS-J) (0.5 day) Learn about outlines and outcomes of nature conservation activities and monitoring/surveys implemented by this association as well as linkages with government agencies, research institutes, and the general public.
11/7	Yamanashi	10:00-14:30	Biodiversity Center of Japan, the Ministry of Environment (Yamanashi) (1 day) Learn outlines and cases of survey and monitoring activities and how to utilize them, including survey programs sponsored by the Ministry of Environment (Monitoring 1000, National Survey on the Natural Environment, etc.) and application of indicators (report on biodiversity indicators, etc.). In addition, learn know-hows of on-going development, operation, and maintenance of database through observing cases of construction and operation of national biodiversity database and site visits. Furthermore, understand the status of international cooperation related to monitoring and database particularly in the Asian region, including ESABII and AP-BON.
		16:00-17:30	Preparing presentation and “Action Plan”
11/8	Tokyo		Presentation by trainees and evaluation by JICA and JICA experts (0.5 day)
11/9	Tokyo → Hanoi		

Appendix 6: Procured Equipment list and Handover Documents

Supply equipment 供与機材リスト（RD記載）

* 1 Use: A-Frequently (almost ever day), B-Sometines (1-3 a week), C-Use concentrated on particular period, D-Rarely (1-3 times a year), E- No use due to particular reasons

英語名:Machinery and Equipment to be provided by Japanese side within the budget allocated for technical cooperation as defined in Record of Discussion dated 22nd April, 2011

* 2 Mgt: A: Always possible to use with sufficient maintenance, B-Almost no problem in use, C-Possible to use if repaired, D-Difficult to use

算出使用レート：JICA 統制レート（2012 年 9 月） リスト総額：											TOTAL	Date of Delivery	International /National	Operation and Cost Management					Use (*1)	Mgt (*2)	# of disposed eqpt	# of available eqpt	Relevant major activity # of PDM	Remark
														Until Mar 2015			After Apr 2015							
		Items	費目	Spec	Model	Unit Price (JPY)	Unit Price (USD)	Unit Price (VND)	Qty	Total (JPY)				Location to set up	Ownership	Maintenance and Operation (update)	Ownership/ Location	Maintenance and Operation (update)						
A-1	A-1-1 A-1-2	Server set (2 servers)	サーバ set (2 servers)	Server computer (Web server) (Database server) - Form factor: Rack (19 inch) mount 1U or 2U - 1 CPU: Intel Xeon or AMD Opteron / 2.4GHz or better - RAM: 8GB or more RDIMM or DDR3 ECC UDIMM - HDD: SATA or SAS RAID 1 or 5 Disk Array. Combined capacity 1TB or larger. Hot pluggable. - LAN: 1000Base-T (Gigabit) x 2 ports - Redundant Power Supply - Mouse and Keyboard - Must have "Certificate of Origin" and "Certificate of Quality"	IBM System x3250 M4	¥274,074	$3,485.62		2	¥548,148	¥766,081	11 Dec 2012	National	ITC	ITC	NBDS-Project (BCA-JICA)	ITC	VEA/MONRE	A	A	0	2		
				Software	Software Windows Server Std 2012 SNGL OLP NL 2Proc * downgrade rights or 2008 Web Edition included	¥67,954	$864.23		2	¥135,908			National						A	A	0	2		
				Software	Software WinSVrCAL 2012 SNGL OLP NL UserCAL *minimum order: 5 license	¥2,356	$29.96		3	¥7,068			National						A	A	0	3		
	A-1-3			Basic Monitor LCD - LCD size: 15 inch or larger - Resolution: 1024x768 or larger - Must be connectable to the server computer (Delivery and installation)	Monitor LCD Dell E1709WFP 17"/1440*900/VGA	¥74,957	$953.29		1	¥74,957			National						A	A	0	1		
A-2	A-2-1	Software1: Server	ソフトウェア 1: サーバ	SSL server certificate - Must be issued from "Trusted" CA (Certificate Authority) that has its own trusted root certificate - Valid for 3 years	Verisign Secure Server ID (license)	¥73,519	$935.00		1	¥73,519	¥194,215	11 Dec 2012	National	ITC	ITC	NBDS-Project (BCA-JICA)	ITC	VEA/MONRE	A	A	0	1		
				Anti-Virus Software for servers - Can protect from Virus, Trojan Horse, Rootkit, etc. - Includes 3 years subscription	Stnabtec SYMC ENDPOINT PROTECTION 12.1 PER USER BNDL STD LIC	¥2,752	$35.00		5	¥13,760		01 May 2013	National	ITC	ITC	NBDS-Project (BCA-JICA)	ITC	VEA/MONRE	A	A	0	5		
				Delivery	Delivery	¥25,948	$330.00		1	¥25,948			National	ITC	ITC	NBDS-Project (BCA-JICA)	ITC	VEA/MONRE	A	A	0	1		
	A-2-2 A-2-3	Software2: DB	ソフトウェア 2:DB	Database Web application development tool - Native support for major SQL99 compatible RDBMS - Ability to generate native application for Windows server - RAD capability with no or few programming for Web applications - Support mainstream language (either of C#, Java, PHP, Ruby, etc.)	Microsoft Visual Pro 2012 SNGL OLP NL	¥40,494	$515.00		2	¥80,988		27 Dec 2012	National	BCA	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	2		Workstation/ PC1
A-3	A-3-1	Workstation	ワークステーション	- Form factor: Desktop (Tower) - CPU: Intel CORE i7 (Quad core, Sandy Bridge) or better - GPU: NVidia or ATI(AMD), VRAM 2GB or larger, DirectX 11 compatible - RAM: 8GB DDR3 or better - HDD: SATA RAID 1 or 5 Disk Array. Combined capacity 1TB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-T (Gigabit) or faster - USB3 port: 1 or more - USB2 port: 2 or more - OS: Windows 7 Professional or Ultimate 64bit - USB Keyboard - USB or Wireless Mouse - Display: LCD 24 inch or larger, Resolution 1920x1080 or larger, Supports DVI and HDMI interface - External USB HDD for backup 1TB or larger - Compact stereo speaker - Monitor	HP PC A3J44AV Base unit A3J44AV HP Z220 CMT	¥256,884	$3,267.00		1	¥256,884	¥256,884	27 Dec 2012	National	BCA	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		

算出使用レート：JICA 統制レート（2012 年 9 月） リスト総額：											TOTAL	Date of Delivery	International /National	Operation and Cost Management					Use (*1)	Mgt (*2)	# of disposed eqpt	# of available eqpt	Relevant major activity # of PDM	Remark
														Until Mar 2015			After Apr 2015							
		Items	費目	Spec	Model	Unit Price (JPY)	Unit Price (USD)	Unit Price (VND)	Qty	Total (JPY)				Location to set up	Ownership	Maintenance and Operation (update)	Ownership/ Location	Maintenance and Operation (update)						
A-4	A-4-1	PC1	コンピュータ 1	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, Sandy Bridge) or better - GPU: NVidia or ATI (AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless Mouse - Monitor	HP QV994AV Compaq Elite 8300 MT	¥81,303	$1,034.00		1	¥81,303	¥162,606	27 Dec 2012	National	NBDS-Project office→ BCA (March 2013)	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		
	A-4-2	PC2	コンピュータ 2	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, Sandy Bridge) or better - GPU: NVidia or ATI(AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless Mouse - Monitor	HP QV994AV Compaq Elite 8300 MT	¥81,303	$1,034.00		1	¥81,303			National	DONRE, NamDinh	DONRE, NamDinh	NBDS-Project (BCA-JICA) DONRE, NamDinh	DONRE, NamDinh	DONRE, NamDinh	A	A	0	1		
A-5	A-5-1	Printer: LS1	モノクロレーザープリンター 1（兼コピー、スキャナー）	Monochrome laser printer with scanner and photocopy machine Printer - Monochrome Laser - Paper size: A4 - Resolution: 600dpi - Printing speed: 25 / 26cpm - Duplex capability - 1 or more paper tray of capacity 100 sheets or more Photo Copier - Up to A4 monochrome copying capability Scanner - Up to A4 color scanning capability Interface - Ethernet (100Base-TX or better) or Network - USB	Canon Image CLASS MF 4580DW	¥43,890		11,550,000	1	¥87,780	¥108,262	12 Sep. 2012	National	NBDS-Project office→ BCA (March2015)	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		
	A-5-2	Printer: LS2	モノクロレーザープリンター 2（兼コピー、スキャナー）	Monochrome laser printer with scanner and photocopy machine Printer - Monochrome Laser - Paper size: A4 - Resolution: 600dpi - Printing speed: 25 / 26cpm - Duplex capability - 1 or more paper tray of capacity 100 sheets or more Photo Copier - Up to A4 monochrome copying capability Scanner - Up to A4 color scanning capability Interface - Ethernet (100Base-TX or better) or Network - USB	Canon Image CLASS MF 4580DW	¥43,890		11,550,000	1				National	DONRE, NamDinh	DONRE, NamDinh	NBDS-Project (BCA-JICA) DONRE, NamDinh	DONRE, NamDinh	DONRE, NamDinh	A	A	0	1		
	A-5-3	Printer: IJ1	カラーインクジェットプリンター 1	Printer - Color inkjet - Paper size: A3+, A3, A4, A5, B4, B5, Letter, Legal, Ledger, 4 x 6", 5 x 7", 8 x 10", 10 x 12", Envelopes (DL, COM10) - Resolution: 9600 (horizontal)*1 x 2400 (vertical) dpi - Printing speed: Document: Color*2: ESAT / Simplex Approx. 8.8ipm Document: B/W*2: ESAT / Simplex Approx. 11.3ipm Photo: (4x6")*2: PP-201 / Borderless Approx. 36secs. - 1 or more paper tray of capacity 100 sheets or more	Canon Color Printer Pixma iX6560	¥20,482		5,390,000	1	¥20,482			National	NBDS-Project office→ BCA (March 2015)	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		

算出使用レート：JICA 統制レート（2012 年 9 月） リスト総額：											TOTAL	Date of Delivery	International /National	Operation and Cost Management					Use (*1)	Mgt (*2)	# of disposed eqpt	# of available eqpt	Relevant major activity # of PDM	Remark
														Until Mar 2015			After Apr 2015							
		Items	費目	Spec	Model	Unit Price (JPY)	Unit Price (USD)	Unit Price (VND)	Qty	Total (JPY)				Location to set up	Ownership	Maintenance and Operation (update)	Ownership/ Location	Maintenance and Operation (update)						
A-6	A-6-1	UPS1	UPS1	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	¥14,704	$187.00		1	¥14,704	¥44,112	27 Dec 2012	National	BCA	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		WS
	A-6-2	UPS2	UPS2	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	¥14,704	$187.00		1	¥14,704			National	NBDS-Project office→ BCA (March2013)	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		PC1
	A-6-3	UPS3	UPS3	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	¥14,704	$187.00		1	¥14,704			National	DONRE, NamDinh	DONRE, NamDinh	NBDS-Project (BCA-JICA) DONRE, NamDinh	DONRE, NamDinh	DONRE, NamDinh	A	A	0	1		PC2
A-7	A-7-1	OA software1 (CD-R)	OA ソフト 1	Office software suite - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	¥41,281	$525.00		1	¥41,281	¥123,843	14 Dec 2011	National	BCA	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		WS
		OA software2	OA ソフト 2	Office software suite - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	¥41,281	$525.00		1	¥41,281			National	BCA	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	A	A	0	1		PC1
	A-7-2	OA software3 (CD-R)	OA ソフト 3	Office software suite - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	¥41,281	$525.00		1	¥41,281			National	DONRE, NamDinh	DONRE, NamDinh	NBDS-Project (BCA-JICA) DONRE, NamDinh	DONRE, NamDinh	DONRE, NamDinh	A	A	0	1		PC2
A-8	A-8-1A-8-2A-8-3	Digital camera1,2,3(include camera case and 16GB SD card)	デジタルカメラ 1,2,3	High-zoom ratio Digital Camera- SLR-like design (not slim or compact) with good holding grip- Resolution: 12M pixels or more- Zoom range: 28-500mm equivalent or more- Vibration reduction system- Maximum sensitivity: ISO 3200 or more- Full HD (1920x1080) movie recording capability with sound- Battery life (CIPA): 240 or moreCamera case- Weather proof (Must protect camera from rains)- Must be able to fit well to the human body so that it will not interfere in off-road walking or trekking	*Nikon CoolPix P510*Panasonic DMC-FZ150Canon PowerShot SX40 HSSony DSC-HX200VFujifilm FinePix S4500	¥32,870		8,650,000	3	¥98,610	¥104,310	23 Oct. 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	B	A	0	3		
				SD memory card - 16GB SDHC	Transcend 16 GB Class 10 SDHC Flash Memory Card TS16GSDHC10E	¥1,900		500,000	3	¥5,700			National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	B	A	0	3		
A-9	A-9-1 A-9-2 A-9-3	Handheld GPS1,2,3	携帯型 GPS1,2,3	High-precision GPS receiver circuit: SiRF Star III or better Location precision: Within 15m nominal with altitude and time Battery durability for operation: 10 hours or more for single charge Number of log points: 10,000 or more Number of way points: 500 or more Waterproof: IPX7 or better Interface: USB Backpack Tether or other attaching tool to backpacks 4 AA NiMH high-grade rechargeable batteries with charger	Garmin eTrex 10	¥22,410	$285.00		3	¥67,230	¥67,230	25 Dec. 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	3		

算出使用レート：JICA 統制レート（2012 年 9 月）														Operation and Cost Management										
リスト総額：														Until Mar 2015			After Apr 2015							
		Items	費目	Spec	Model	Unit Price (JPY)	Unit Price (USD)	Unit Price (VND)	Qty	Total (JPY)	TOTAL	Date of Delivery	International /National	Location to set up	Ownership	Maintenance and Operation (update)	Ownership/ Location	Maintenance and Operation (update)	Use (*1)	Mgt (*2)	# of disposed eqpt	# of available eqpt	Relevant major activity # of PDM	Remark
A-10	A-10-1	Binocular1	双眼鏡 1	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 7x35 WP II	¥29,486	$375.00		1	¥29,486	¥137,131	25 Dec. 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	1		
	A-10-2	Binocular2	双眼鏡 2	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 8x42 WP II	¥48,279	$614.00		1	¥48,279			National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	1		
	A-10-3	Binocular3	双眼鏡 3	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 10x42 WP II	¥59,366	$755.00		1	¥59,366			National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	1		
A-11	A-11-1 A-11-2 A-11-3	Clinometer with compass1,2,3	コンパス付クリノメータ 1,2,3	Clinometer, compass with degrees and secant, leather case	SPUME-5/360S Suunto Clinometer, Degrees & Secant.$155.00	¥31,059	395.0		3	¥93,177	¥93,177	25 December 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	3		
A-12	A-12-1 A-12-2 A-12-3	Hypsometer1, 2,3	測高計 1,2,3	measuring height, diameter, lean, log volume, etc. with multifunction computer and data storage.	LaserAce Hypsometer	¥306,814	3,902.0		3	¥920,442	¥920,442	25 December 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	3		
A-13	A-13-1 A-13-2	Current meter1.2	流量計 1,2	Measuring range: 0.100- 9.999 m/s Resolution: 0,001 m/s Accuracy : ± 5% (0.100-0.499 m/s); ± 1% (0.500-9.999 m/s)	Hydro Bios Rod Held Current Meter RHCM	¥389,533	4,954.0		2	¥779,066	¥779,066	25 December 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	2		
A-14	A-14-1 A-14-2	Portable pH, Conductivity, Dissolved Oxygen, ORP Multi-Parameter Meter1,2	水質計 1,2 要調整試薬 Reagent	Conductivity range: 0.01 µS/cm to 400 µS/cm DO range: 0.01 to 20 mg/L (0 to 200%) mV measurement range: -1500 to 1500 mV	Hach HQ30d	¥248,471	3,160.0		2	¥496,942	¥496,942	25 December 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	2		
A-15	A-15-1 A-15-2 A-15-3 A-15-4 A-15-5	Soil test kit1,2,3,4,5	土壌質測定キット 1,2,3,4,5	to test levels of N, P, K, pH with color comparators and test capsules	Rapitest Soil Test Kit, Model 1601	¥12,974	165.0		5	¥64,870	¥64,870	25 December 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	5		
A-16	A-16-1 A-16-2	Soil Ph Moisture tester1,2	土壌酸度湿度測定計 1,2	To test levels of pH and moisture - Range: pH: 3-8 pH ; Moisture: 1-8	Zd-05 Soil Ph Moisture tester	¥15,883	202.0		2	¥31,766	¥31,766	25 December 2012	National	NBDS-Project office	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	2		
A-17	A-17-1	GIS software1	GIS ソフトウェア 1		Arc-view single use 9.3.1	¥235,104	2,990.0		1	¥235,104	¥470,208	25 December 2012	National	BCA	BCA	NBDS-Project (BCA-JICA)	BCA	VEA/MONRE	C	A	0	1		PC1
A-17	A-17-2	GIS software2	GIS ソフトウェア 2		Arc-view single use 9.3.1	¥235,104	2,990.0		1	¥235,104			National	DONRE, NamDinh	DONRE, NamDinh	NBDS-Project (BCA-JICA) DONRE, NamDinh	DONRE, NamDinh	DONRE, NamDinh	C	A	0	1		PC2

Hand carry equipment 携行機材

英語名:Equipment Accompanied by Expert Dispatch

算出使用レート：JICA 統制レート（2012 年 2 月） リスト総額：											TOTAL	調達日 Date of Delivery	International /National	Operation and Cost Management Until Mar 2015			After Apr 2015		Use (*1)	Mgt (*2)	# of disposed eqpt	# of available eqpt	Relevant major activity # of PDM	Remark
		Items	（費目）	Spec	Model	Unit Price (JPY)	Unit Price (USD)	Unit Price (VND)	Qty	Total (JPY)				Location to set up	Ownership	Maintenance and Operation(up date)	Ownership/ Location	Maintenance and Operation(update)						
B-1	B-1-1 B-1-2	Tablet PC	タブレット PC	LCD: 7 inch touch panel Resolution: 800x480 or better OS: Android 2.2 or later WiFi: 802.11g or better Battery Life: 10 hours or more operating time in single charge USB 2.0 port, Camera, GPS	Samsung GALAXY Tab 7.1 Plus 16GB	¥37,050		9,750,000	2	¥74,100	¥74,100	16 May 2012	National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	C	A	0	2		
B-2	B-2-1 B-2-2	Case for tablet PC	タブレット PC ケース	Case for the above tablet PC	Samsung GALAXY Tab 7.1 Plus	¥0		0	2	¥0	¥0	16 May 2012	National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	C	A	0	2		
B-3	B-3-1 B-3-2	External HDD	外付けハードディスク	USB2 or USB3 interface Capacity: 1TB or bigger	Toshiba TSB 1TB 2.5	¥11,913		3,135,000	2	¥23,826	¥23,826	10 Jan. 2012	National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	A	A	0	2		
B-4		Books (JP)	書籍	Book list		¥53,500			1	¥53,500	¥153,987	12 Nov.2012	National	Cabinet with lock in meeting room	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	B	A	0	1		
		Books (VN)	書籍	Book list		¥100,487		26,444,000	1	¥100,487		30 Oct. 2012 02 Jan. 2013	National	Cabinet with lock in meeting room	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	B	A	0	1		
B-5	B-5-1	Spotting scope (Field scope) for bird watching with tripod	望遠鏡	Lens Diameter: 80mm or bigger Lens is multi-coated Zoom: x20~x60 or better Max. eye relief: 12mm or bigger Waterproof Tripod: Max height 1.5m or taller	Scope Nikon ED82—A 13-40/20-60/25-75 XMC Tripod Nikon FT-1200	¥185,692		48,866,316	1	¥185,692	¥185,692	09 Aug. 2012	International	Cabinet with lock in meeting room	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	A	A	0	1		
B-6	B-6-1	Desktop PC with LCD Monitor	デスクトップパソコン	CPU: Intel Core i3 or better RAM: 4GB or better HDD: 500GB or better LCD: 20 inch XGA or better Windows 7 (English version) Office 2010 (English version)	HP Pro3330 (A3L22PA) Monitor LCD 20*20 LED Keyboad and mouse	¥95,239		25,063,000	1	¥95,239	¥97,705	10 Jan. 2012	National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	A	A	0	1		
	B-6-2		UPS		AS APC 500 V A230V	¥2,466		649,000	1	¥2,466			National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	A	A	0	1		

Other equipment その他の機材

英語名:Other additional equipment

算出使用レート：JICA 統制レート（2012 年 2 月） リスト総額：												調達日	International /National	Operation and Cost Management Until Mar 2015			After Apr 2015		Use (*1)	Mgt (*2)	# of disposed eqpt	# of available eqpt	Relevant major activity # of PDM	Remark
		Items	（費目）	Spec	Model	Unit Price (JPY)	Unit Price (USD)	Unit Price (VND)	Qty	Total (JPY)				Location to set up	Ownership	Maintenance and Operation(up date)	Ownership/ Location	Maintenance and Operation(update)						
C-1	C-1-1	Map of XTNP	地図		Converting the format (shapefile), inputting the subject data of Topographic map ratio 1:25,000 per request; Converting the data format of Digital data of combined map of 5 communes (shapefile), Landuse situation, Scale is 1: 5 000.	¥89,870		23,650,000	1	¥89,870	¥89,870	28 Nov. 2012	National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	C	A	0	1		
C-2	C-2-1	Remote sensing image of XTNP	リモートセンシング画像		Satellite images SPOT 5 Pan processed level 2A (According to TT 70/2012/BTC) 2,5 m 2010-2011 Scene Satellite images SPOT 5 XS processed level 2A (According to TT 70/2012/BTC) 10 m 2010-2011 Scene	¥174,625		45,954,000	1	¥174,625	¥174,625	06 Dec. 2012	National	NBDS-Project office	NBDS-Project (BCA-JICA)	NBDS-Project (BCA-JICA)	BCA	BCA/VEA /MONRE	C	A	0	1		

CỘNG HÒA XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

SOCIALIST REPUBLIC OF VIETNAM

Independence - Freedom - Happiness

BIÊN BẢN BÀN GIAO THIẾT BỊ ĐƯỢC TRANG BỊ BỞI DỰ ÁN JICA - NBDS

MINUTES OF USE OF EQUIPMENT/ASSETS PROCURED BY THE JICA-NBDS PROJECT

Trong khuôn khổ dự án "Xây dựng cơ sở dữ liệu Đa dạng sinh học Quốc gia" (dưới đây gọi tắt là "Dự án"), các thiết bị theo danh mục đính kèm được mua sắm cho cán bộ Dự án để triển khai các hoạt động của dự án. Ngày 30/01/2015, JICA và Ban quản lý Dự án bàn giao chính thức các thiết bị cho Cục Bảo tồn đa dạng sinh học, Tổng cục Môi trường, Bộ Tài nguyên và Môi trường (BCA,VEA, MONRE) (dưới đây gọi tắt là "BCA"). JICA thỏa thuận các điều kiện đối với số thiết bị này như sau.

Under the Project for "Development of the National Biodiversity Database System in the Socialist Republic of Vietnam" (hereinafter, referred to as "the Project"), the attached equipments were procured for implementing the project works by the Project staff members. Due to the termination of the Project, 30th of January,2015, JICA and the Project Management Board officially handed over the equipments to Biodiversity Conservation Agency, Viet Nam Environment Administration, Ministry of Natural Resources and Environment (BCA, VEA, MONRE) (hereinafter, referred to as "BCA"). JICA would like to agree use condition of the equipments as follows.

1. Thiết bị sẽ được sử dụng để tiếp tục và phát triển các hoạt động của Dự án sau khi Dự án kết thúc

The equipments shall be used for continuation and further development of the Project activities after the termination of the Project.

2. Thiết bị sẽ được sử dụng cho Dự án "Quản lý tài nguyên thiên nhiên bền vững"

The equipment shall be used for the Project of "Sustainable Natural Resource Management".

3. BCA sẽ chịu trách nhiệm đảm bảo thiết bị được sử dụng hợp lý, đúng mục đích. Các thiết bị không được phép sử dụng cho mục đích cá nhân hoặc bởi bên Thứ ba.

BCA shall be responsible for the proper use of the equipments for the right purpose. The equipments shall not be used for personal purpose or by third parties.

Biên bản được thống nhất và lập thành hai bản có giá trị tương đương. /The minute is agreed and made in two copies with the same validity.

Hôm nay, ngày 25 tháng 3 năm 2015
Today, 25th March, 2015

ĐẠI DIỆN BCA/VEA/MONRE	**ĐẠI DIỆN DỰ ÁN JICA**
REPRESENTATIVE OF BCA/VEA/MONRE	**RERENTATIVE OF JICA**
Dr.:Pham Anh Cuong	Mr. Yoichi KOGURE
Project Deputy Director of the Project Director of BCA, VEA, MONRE Phó Giám đốc dự án Cục trưởng Cục Bảo tồn đa dạng sinh học	Chief Advisor of the Project Cố vấn trưởng dự án

			- Compact stereo speaker - Monitor							
A-4	A-4-1	Máy tính/ PC1	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, SandyBridge) or better - GPU: NVidia or ATI(AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless Mouse - Monitor	HP QV994AV Compaq Elite 8300 MT	21,640,586	1	21,640,586.0	27/12/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE

Phụ lục 1: Danh sách thiết bị
Attachment 1 List of equipment

A. Máy móc và Thiết bị/ Machinery and Equipment

Mã thiết bị/ Code		Tên hạng mục/ Items	Mô tả/ Spec	Cấu hình/ Model	Đơn giá/ Unit Price (VND)	Slg/ Qty	Thành tiền/ Total (VND)	Năm đưa vào sử dụng/ Year	Cài đặt và Hiện Trạng/ Location /Status	Vận hành và Bảo trì (cập nhật)/ Maintenance and Operation(update)
A-2	A-2-2 A-2-3	Phần mềm/Software 2: DB	**Công cụ phát triển ứng dụng Web Database/ Database Web application development tool** - Native support for major SQL99 compatible RDBMS - Ability to generate native application for Windows server - RAD capability with no or few programming for Web applications - Support mainstream language (either of C#, Java, PHP, Ruby, etc.)	Microsoft Visual Pro 2012 SNGL OLP NL	10,778,435	2	21,556,870.0	27/12/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-3	A-3-1	Workstation	- Form factor: Desktop (Tower) - CPU: Intel CORE i7 (Quad core, SandyBridge) or better - GPU: NVidia or ATI(AMD), VRAM 2GB or larger, DirectX 11 compatible - RAM: 8GB DDR3 or better - HDD: SATA RAID 1 or 5 Disk Array. Combined capacity 1TB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-T (Gigabit) or faster - USB3 port: 1 or more - USB2 port: 2 or more - OS: Windows 7 Professional or Ultimate 64bit - USB Keyboard - USB or Wireless Mouse - Display: LCD 24 inch or larger, Resolution 1920x1080 or larger, Supports DVI and HDMI interface - External USB HDD for backup 1TB or larger	HP PC A3J44AV Base unit A3J44AV HP Z220 CMT	68,375,043	1	68,375,043	27/12/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE

Phụ lục 1: Danh sách thiết bị
Attachment 1 List of equipment

A-6	A-6-1	Bộ lưu điện/ UPS1	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27/12/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
	A-6-2	Bộ lưu điện/ UPS2	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27/12/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-7	A-7-1	Phần mềm/ OA software1(CD-R)	**Office software suite** - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14/12/2011	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
		Phần mềm/ OA software2	**Office software suite** - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14/12/2011	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-8	A-8-1 A-8-2 A-8-3	Máy ảnh kỹ thuật số/ Digital camera1,2,3 (include camera case and 16GB SD	**Máy ảnh kỹ thuật số/ High-zoom ratio Digital Camera** - SLR-like design (not slim or compact) with good holding grip - Resolution: 12M pixels or more - Zoom range: 28-500mm equivalent or more	*Nikon CoolPix P510*	8,650,000	3	25,950,000.0	23/10/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE

Phụ lục 1: Danh sách thiết bị
Attachment 1 List of equipment

A-5	A-5-1	Máy in/ Printer: LS1	**Máy in đa chức năng/ Monochrome laser printer with scanner and photocopy machine** **Máy in/ Printer** - Monochrome Laser - Paper size: A4 - Resolution: 600dpi - Printing speed: 25 / 26cpm - Duplex capability - 1 or more paper tray of capacity 100 sheets or more **Máy Photocopy/ Photo Copier** - Up to A4 monochrome copying capability Scanner - Up to A4 color scanning capability **Giao diện/ Interface** - Ethernet (100Base-TX or better) or Network - USB	Canon ImageCLASS MF 4580DW	11,550,000	1	11,550,000.0	12/9/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
	A-5-3	Máy in/ Printer: IJ1	**Máy in màu/ Printer** - Color inkjet - Paper size: A3+, A3, A4, A5, B4, B5, Letter, Legal, Ledger, 4 x 6", 5 x 7", 8 x 10", 10 x 12", Envelopes (DL, COM10) - Resolution: 9600 (horizontal)*1 x 2400 (vertical) dpi - Printing speed: Document: Color*2: ESAT / Simplex Approx. 8.8ipm Document: B/W*2: ESAT / Simplex Approx. 11.3ipm Photo: (4x6")*2: PP-201 / Borderless Approx. 36secs. - 1 or more paper tray of capacity 100 sheets or more	Canon Color Printer Pixma iX6560	5,390,000	1	5,390,000.0	12/9/2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE

			Anti-reflection Coating Lens Roof prism (Dach prism) based							
	A-10-2	Ống nhòm/ Binocular2	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 8x42 WP II	12,850,345	1	12,850,344.6	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
	A-10-3	Ống nhòm/ Binocular3	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 10x42 WP II	15,801,320	1	15,801,319.5	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-11	A-11-1 A-11-2 A-11-3	Máy đo độ nghiêng/ Clinometer with compass1,2,3	Clinometer, compass with degrees and secant, leather case	SPUME-5/360S Suunto Clinometer, Degrees & Secant.....$1 550	8,266,916	3	24,800,746.5	25/12/ 2012	BCA/ 02 (A-11-1 A-11-2) thiết bị đang hoạt động 01 (A-11-3) bị mất do nhóm điều tra IEBR trong chuyến điều tra mùa hè 2014 BCA/ (A-11-1 A-11-2) Available (A-11-3) is lost in the summer survey 2014 by LC/IEBR	VEA/MONRE

Phụ lục 1: Danh sách thiết bị
Attachment 1 List of equipment

		card)	- Vibration reduction system - Maximum sensitivity: ISO 3200 or more - Full HD (1920x1080) movie recording capability with sound - Battery life (CIPA): 240 or more **Túi đựng/ Camera case** - Weather proof (Must protect camera from rains) - Must be able to fit well to the human body so that it will not interfere in off-road walking or trekking							
			Thẻ nhớ/ SD memory card - 16GB SDHC	Transcend 16 GB Class 10 SDHC Flash Memory Card TS16GSDHC10E	500,000	3	1,500,000.0	23/10/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-9	A-9-1 A-9-2 A-9-3	GPS cầm tay/ Handheld GPS1,2,3	High-precision GPS receiver circuit: SiRF Star III or better Location precision: Within 15m nominal with altitude and time Battery durability for operation: 10 hours or more for single charge Number of log points: 10,000 or more Number of way points: 500 or more Waterproof: IPX7 or better Interface: USB Backpack Tether or other attaching tool to backpacks 4 AA NiMH high-grade rechargeable batteries with charger	Garmin eTrex 10	5,964,737	3	17,894,209.5	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-10	A-10-1	Ống nhòm/ Binocular1	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief)	Olympus Magellan 7x35 WP II	7,848,338	1	7,848,337.5	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE

B. Thiết bị cầm tay/ Hand carry equipment

Mã thiết bị/ Code		Tên hạng mục/ Items	Mô tả/ Spec	Cấu hình/ Model	Đơn giá/ Unit Price (VND)	Slg/ Qty	Thành tiền/ Total (VND)	Năm đưa vào sử dụng/ Year	Cài đặt và Hiện Trạng/ Location /Status	Vận hành và Bảo trì (cập nhật)/ Maintenance and Operation(update)
B-1	B-1-1 B-1-2	Máy tính bảng/ Tablet PC	LCD: 7 inch touch panel Resolution: 800x480 or better OS: Android 2.2 or later WiFi: 802.11g or better Battery Life: 10 hours or more operating time in single charge USB 2 port, Camera, GPS	Samsung GALAX Y Tab 7.1 Plus 16GB	9,750,000	2	19,500,000	16/5/ 2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
B-2	B-2-1B-2-2	Vỏ bao cho máy tính bảng/ Case for tablet PC	Case for the above tablet PC	Samsung GALAX Y Tab 7.1 Plus	0	2	0	16/5/ 2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
B-3	B-3-1 B-3-2	Ổ cứng di động/ External HDD	USB2 or USB3 interface Capacity: 1TB or bigger	Toshiba TSB 1TB 2.5	3,135,000	2	6,270,000	10/01/ 2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
B-4		Sách/ Books (JP)	Danh sách (phụ lục 2) Book list (Appendix 2)		14,754,337	1	14,754,337	12 /11/ 2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
		Sách/ Books (VN)	Danh sách (phụ lục 3) Book list (Appendix 3)		26,104,702	1	26,104,702	30 /10/2012 02/01/ 2013	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
B-5	B-5-1	Thiết bị quan sát chim/ Spotting scope (Field scope) for bird watching with tripod	Lens Diameter: 80mm or bigger Lens is multi-coated Zoom: x20~x60 or better Max. eye relief: 12mm or bigger Waterproof Tripod: Max height 1.5m or taller	Scope Nikon ED82--A 13-40/20-60/25-75 XMC	48,866,316	1	48,866,316	09/8/ 2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE

Phụ lục 1: Danh sách thiết bị
Attachment 1 List of equipment

A-12	A-12-1 A-12-2 A-12-3	Thiết bị đo độ cao/ Hypsometer1, 2,3	Measuring height, diameter, lean, log volume, etc. with multifunction computer and data storage.	LaserAce Hypsometer	81,664,568	3	244,993,703.4	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-13	A-13-1 A-13-2	Thiết bị đo tốc độ dòng chảy/ Current meter1.2	Measuring range: 0.100- 9.999 m/s Resolution: 0,001 m/s Accuracy : ± 5% (0.100-0.499 m/s); ± 1% (0.500-9.999 m/s)	Hydro Bios Rod Held Current Meter RHCM	103,681,771	2	207,363,541.2	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-14	A-14-1 A-14-2	Thiết bị đo cầm tay/Portable pH, Conductivity, Dissolved Oxygen, ORP Multi-Parameter Meter1,2	Conductivity range: 0.01 µS/cm to 400 µS/cm DO range: 0.01 to 20 mg/L (0 to 200%) mV measurement range: -1500 to 1500 mV	Hach HQ30d	66,135,324	2	132,270,648.0	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-15	A-15-1 A-15-2 A-15-3 A-15-4 A-15-5	Bộ thử mẫu đất/ Soil test kit1,2,3,4,5	to test levels of N, P, K, pH with color comparators and test capsules	Rapitest Soil Test Kit, Model 1601	3,453,269	5	17,266,342.5	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-16	A-16-1 A-16-2	Đo độ ẩm đất/ Soil Ph Moisture tester1,2	To test levels of pH and moisture - Range: pH: 3-8 pH ; Moisture: 1-8	Zd-05 Soil Ph Moisture tester	4,227,638	2	8,455,275.6	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
A-17	A-17-1	Phần mềm GIS/ GIS software1		Arc-view single use 9.3.1	62,577,411	10	62,577,411.0	25/12/ 2012	BCA/Đang hoạt động BCA/ Available	VEA/MONRE
Tổng (1)/ Sub-Total (1)							**937,887,274.30**			

				1: 5 000.						
C-2	C-2-1	**Ảnh viễn thám khu vực Vườn quốc gia Xuân Thủy/ Remote sensing image of XTNP**		Satellite images SPOT 5 Pan processed level 2A (According to TT 70/2012/BTC) 2,5 m 2010-2011 Scene Satellite images SPOT 5 XS processed level 2A (According to TT 70/2012/BTC) 10 m 2010-2011 Scene	45,954,000	1	45,954,000	06/12/2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
	Tổng (3)/ Sub-Total (3)						**69,604,000**			
	TỔNG CỘNG/ TOTAL (1+2+3)						**1,148,698,629.30**			

Phụ lục 1: Danh sách thiết bị
Attachment 1 List of equipment

				Tripod Nikon FT-1200						
B-6	B-6-1	**Máy tính để bàn với màn hình LCD/ Desktop PC with LCD Monitor**	CPU: Intel Core i3 or better RAM: 4GB or better HDD: 500GB or better LCD: 20 inch XGA or better Windows 7 (English version) Office 2010 (English version)	HP Pro3330 (A3L22PA) Monitor LCD 20*20 LED Keyboad and mouse	25,063,000	1	25,063,000	10/01/2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
	B-6-2			AS APC 500 V A230V	649,000	1	649,000	10/01/2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE
	Tổng (2)/ Sub-Total (2)						**141,207,355**			

C. Thiết bị khác/ Other additional equipment

Mã thiết bị/ Code		**Tên hạng mục/ Items**	**Mô tả/ Spec**	**Cấu hình/ Model**	**Đơn giá/ Unit Price (VND)**	**Slg/ Qty**	**Thành tiền/ Total (VND)**	**Năm đưa vào sử dụng/ Year**	**Cài đặt và Hiện Trạng/ Location /Status**	**Vận hành và Bảo trì (cập nhật)/ Maintenance and Operation(update)**
C-1	C-1-1	**Bản đồ Vườn quốc gia Xuân Thủy/ Map of XTNP**		Converting the format (shapefile), inputting the subject data of Topographic map ratio 1:25,000 per request; Converting the data format of Digital data of combined map of 5 communes (shapefile), Landuse situation, Scale is	23,650,000	1	23,650,000	28/11/2012	BCA/Đang hoạt động BCA/ Available	BCA/VEA/MONRE

Phụ lục 2: Danh mục sách 1/ Attachment 2:
Book list 1

STT/ No.	Phân loại/ Category	Tên sách/ Title			Số hiệu/ ISBN	Slg/ Qty	Tình trạng/ Status	Giá tiền/ Price (VND)
1	Server và Cơ sở dữ liệu/ Server and Database	PostgreSQL: Up and Running	Regina Obe	O'Reilly Media (July 18, 2012)	1449326331	1	Đang sử dụng/ Available	717,033.20
2		PostgreSQL 9 Admin Cookbook	Simon Riggs	Packt Publishing (October 26, 2010)	1849510288	1	Đang sử dụng/ Available	1,765,004.80
3		PostGIS in Action	Regina Obe	Manning Publications; Pap/Psc edition (April 28, 2011)	1935182269	1	Đang sử dụng/ Available	717,033.20
4		Windows Server 2012 Unleashed		9/26/2012	0672336227	1	Đang sử dụng/ Available	2,123,521.40
5		Beginning PHP 5.3 (Wrox Programmer to Programmer)	Matt Doyle	0470413964			Đang sử dụng/ Available	1,406,488.20
6	Nghiên cứu đa dạng sinh học/ Biodiversity Research	A Guide to the Mammals of Southeast Asia	Charles M. Francis	Princeton University Press (April 17, 2008)	0691135517	1	Đang sử dụng/ Available	1,930,474.00
7		A Field Guide to the Amphibians And Reptiles of Bali	J. Lindley McKay	Krieger Pub Co (January 30, 2006)	1575241900	1	Đang sử dụng/ Available	1,958,052.20
8		A Guide to Medicinal Plants: An Illustrated, Scientific and Medicinal Approach	Hwee-ling Koh	World Scientific Publishing Company; 1 edition (February 20, 2009)	9812837094	1	Đang sử dụng/ Available	4,136,730.00
TỔNG CỘNG/ TOTAL						**7**		**14,754,337.00**

Phụ lục 3: Danh mục sách 2/ Attachment 3:
Book list 2

STT/ No.	Phân loại/ Category	Tên sách/ Title			Số hiệu/ ISBN	Slg/ Qty	Tình trạng/ Status	Giá tiền/ Price (VND)
1	Nghiên cứu đa dạng sinh học/ Biodiversity Research	A Guide to the Birds of Southeast Asia	Craig Robson	Princeton University Press; 1ST edition (January 10, 2000)	1847733417	1	Đang sử dụng/ Available	4,169,823.84
2		A Field Guide to the Reptiles of South-East Asia	Indraneil Das	New Holland Publishers Ltd (February 26, 2010)	1847733476	1	Đang sử dụng/ Available	4,169,823.84
3		Fascinating Insects of Southeast Asia	L E O Braack	Marshall Cavendish Trade (November 1, 2010)	981204471X	1	Đang sử dụng/ Available	2,647,507.20
4		Trees and Fruits of Southeast Asia: An Illustrated Field Guide (Orchid Guides)	Michael Jensen	Orchid Pr (July 2001)	9748304671	1	Đang sử dụng/ Available	2,084,911.92
5		A Guide to Families of Common Flowering Plants in the Philippines	Irma Remo Castro	University of Philippines Press (June 2007)	9715425259	1	Available	3,750,635.20
6	ĐỘNG VẬT VIỆT NAM/ FAUNA OF VIETNAM	Tôm biển/ Penaeoidea, Nephropoidea, Palimoroidea,Gonodactyloidea,...			Tập/Vol 1	1	Đang sử dụng/ Available	100,000
7		Cá biển/ Gobioidei			Tập/Vol 2	1	Đang sử dụng/ Available	70,000
8		Ong và ký sinh trùng/ Scelionidae			Tập/Vol 3	1	Đang sử dụng/ Available	150,000
9		Tuyến trùng ký sinh thực vật/ Plant parasitic nematodes			Tập/Vol 4	1	Đang sử dụng/ Available	160,000
10		Giáp xác nước ngọt/ Palaemonidae, Parathephusidae, Cladocera, Copepoda, ...			Tập/Vol 5	1	Đang sử dụng/ Available	100,000
11		Họ châu chấu Họ cào cào Họ bọ xít/ Orthoptera,			Tập/Vol 7	1	Đang sử dụng/	140,000

		Acrididae, Heteroptera					Availab le	
12		Sán lá ký sinh ở người và động vật/ Animal and man parasitic trematodes			Tập/Vol 8	1	Đang sử dụng/ Availab le	150,000
13		Bộ cháo biển Bộ cá / Perciformes			Tập/Vol 10	1	Đang sử dụng/ Availab le	140,000
14		Sán dây ký sinh ở người và động vật / Cestoda			Tập/Vol 13	1	Đang sử dụng/ Availab le	140,000
15		Phân bộ rắn /Serpentes			Tập/Vol 14	1	Đang sử dụng/ Availab le	260,000
16		Mối – Bộ cánh đều / Isoptera			Tập/Vol 15	1	Đang sử dụng/ Availab le	320,000
17		Họ mò đỏ Bộ bọ chét / Trombiculidae, Siphonaptera			Tập/Vol 16	1	Đang sử dụng/ Availab le	250,000
18		Cá biển/Bộ cá vược Perciformes			Tập/Vol 17	1	Đang sử dụng/ Availab le	320,000
19		Lớp chim / Aves			Tập/Vol 18	1	Đang sử dụng/ Availab le	730,000
20		Cá biển/Bộ cá vược Perciformes			Tập/Vol 19	1	Đang sử dụng Availab le	500,000
21		Cá biển / Perciformes			Tập/Vol 20	1	Đang sử dụng Availab le	260,000
22		Bộ ve giáp / Oribatida			Tập/Vol 21	1	Đang sử dụng Availab le	270,000
23		Giun tròn sống tự do / Monhysterida, Araeolaimida, Chormadorida, Rhabditida,..			Tập/Vol 22	1	Đang sử dụng /Availa ble	300,000
24		Sán lá ký sinh /Paramphistomatida, Plagiorchiida			Tập/Vol 23	1	Đang sử dụng /Availa ble	260,000
25		Họ bọ rùa /Cocinellidaecoleoptera			Tập/Vol 24	1	Đang sử dụng /Availa ble	320,000
26		Lớp thú /Mammalia			Tập/Vol 25	1	Đang sử dụng /Availa ble	600,000
27	**THỰC VẬT VIỆT NAM/ FLORA OF VIETNAM**	Họ na/ Fam. Annonaceae			Tập/Vol 1	1	Đang sử dụng /Availa ble	130,000
28		Họ bạc hà/ Fam. Lamiaceae			Tập/Vol 2	1	Đang sử dụng /Availa ble	52,000
29		Họ cói/ Fam. Cyperaceae			Tập/Vol 3	1	Đang sử dụng /Availa ble	220,000
30		Họ đơn nem/ Fam. Myrsinaceae			Tập/Vol 4	1	Đang sử dụng /Availa ble	100,000
31		Họ trúc đào/ Fam. Apocynaceae			Tập/Vol 5	1	Đang sử dụng /Availa ble	340,000
32		Họ cỏ roi ngựa/ Fam. Verbenaceae			Tập/Vol 6	1	Đang sử dụng /Availa ble	340,000
33		Họ cúc/ Fam. Asteraceae			Tập/Vol 7	1	Đang sử dụng /Availa ble	600,000
34		Họ hoa loa kèn/ Ordo. Liliales			Tập/Vol 8	1	Đang sử dụng	500,000

							/Availa ble	
35		Họ lan/ Fam. Orchidaceae			Tập/Vol 9	1	Đang sử dụng /Availa ble	700,000
36		Ngành rong lục/ Phyl. Chlorophyta			Tập/Vol 10	1	Đang sử dụng /Availa ble	380,000
37		Bộ rong mơ Họ rau răm / Ordo. Fucales& Fam. Polygonaceae			Tập/Vol 11	1	Đang sử dụng /Availa ble	380,000
TỔNG CỘNG/ TOTAL						**37**		**26,104,7020**

SOCIALIST REPUBLIC OF VIETNAM

Independence - Freedom - Happiness

MINUTES OF RECEIPT OF EQUIPMENT/ASSETS

BETWEEN

JAPANESE INTERNATIONAL COOPERATION AGENCY (JICA)

AND

THE VIETNAM ENVIRONMENT ADMINISTRATION (VEA), MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT OF VIETNAM

FOR

THE PROJECT FOR DEVELOPMENT OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM IN VIETNAM

Today, 30th January, 2015, we are:

- Representative of Transferor: JICA

Mr. Yoichi KOGURE Title: Chief Advisor of the Project

- Representative of Transferee: VEA/MONRE

Dr.: Pham Anh Cuong Title: Project Deputy Director of the Project
Director / Biodiversity Conservation Agency,
Viet Nam Environment Administration,
Ministry of Natural Resources and Environment
(BCA, VEA, MONRE)

REPRESENTATIVE OF JICA

(Sign)

REPRESENTATIVE OF VEA/MONRE

(Sign)

The assets for transferring are attached.

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
			- Monitor							
A-4	A-4-1	PC1	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, SandyBridge) or better - GPU: NVidia or ATI(AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless Mouse - Monitor	HP QV994AV Compaq Elite 8300 MT	21,640,586	1	21,640,586.0	27 Dec 2012	BCA/ Available	VEA/MONRE
A-5	A-5-1	Printer: LS1	**Monochrome laser printer with scanner and photocopy machine** **Printer** - Monochrome Laser - Paper size: A4 - Resolution: 600dpi - Printing speed: 25 / 26cpm - Duplex capability - 1 or more paper tray of capacity 100 sheets or more **Photo Copier** - Up to A4 monochrome copying capability Scanner - Up to A4 color scanning capability **Interface** - Ethernet (100Base-TX or better) or Network - USB	Canon ImageCLASS MF 4580DW	11,550,000	1	11,550,000.0	12 September 2012	BCA/ Available	VEA/MONRE

Attachment 1 List of equipment

A. Machinery and Equipment

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
A-2	A-2-2 A-2-3	Software2: DB	**Database Web application development tool** - Native support for major SQL99 compatible RDBMS - Ability to generate native application for Windows server - RAD capability with no or few programming for Web applications - Support mainstream language (either of C#, Java, PHP, Ruby, etc.)	Microsoft Visual Pro 2012 SNGL OLP NL	10,778,435	2	21,556,870.0	27 Dec 2012	BCA/ Available	VEA/MONRE
A-3	A-3-1	Workstation	- Form factor: Desktop (Tower) - CPU: Intel CORE i7 (Quad core, SandyBridge) or better - GPU: NVidia or ATI(AMD), VRAM 2GB or larger, DirectX 11 compatible - RAM: 8GB DDR3 or better - HDD: SATA RAID 1 or 5 Disk Array. Combined capacity 1TB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-T (Gigabit) or faster - USB3 port: 1 or more - USB2 port: 2 or more - OS: Windows 7 Professional or Ultimate 64bit - USB Keyboard - USB or Wireless Mouse - Display: LCD 24 inch or larger, Resolution 1920x1080 or larger, Supports DVI and HDMI interface - External USB HDD for backup 1TB or larger - Compact stereo speaker	HP PC A3J44AV Base unit A3J44AV HP Z220 CMT	68,375,043	1	68,375,043	27 Dec 2012	BCA/ Available	VEA/MONRE

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
			database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)							
		OA software2	**Office software suite** - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14 Dec 2011	BCA/ Available	VEA/MONRE
A-8	A-8-1 A-8-2 A-8-3	Digital camera1,2, 3 (include camera case and 16GB SD card)	**High-zoom ratio Digital Camera** - SLR-like design (not slim or compact) with good holding grip - Resolution: 12M pixels or more - Zoom range: 28-500mm equivalent or more - Vibration reduction system - Maximum sensitivity: ISO 3200 or more - Full HD (1920x1080) movie recording capability with sound - Battery life (CIPA): 240 or more **Camera case** - Weather proof (Must protect camera from rains) - Must be able to fit well to the human body so that it will not interfere in off-road walking or trekking	*Nikon CoolPix P510*	8,650,000	3	25,950,000.0	23 October 2012	BCA/ Available	VEA/MONRE
			SD memory card - 16GB SDHC	Transcend 16 GB Class 10 SDHC Flash Memory	500,000	3	1,500,000.0	23 October 2012	BCA/ Available	VEA/MONRE

Attachment 1 List of equipment

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
	A-5-3	Printer: IJ1	**Printer** - Color inkjet - Paper size: A3+, A3, A4, A5, B4, B5, Letter, Legal, Ledger, 4 x 6", 5 x 7", 8 x 10", 10 x 12", Envelopes (DL, COM10) - Resolution: 9600 (horizontal)*1 x 2400 (vertical) dpi - Printing speed: Document: Color*2: ESAT / Simplex Approx. 8.8ipm Document: B/W*2: ESAT / Simplex Approx. 11.3ipm Photo: (4x6")*2: PP-201 / Borderless Approx. 36secs. - 1 or more paper tray of capacity 100 sheets or more	Canon Color Printer Pixma iX6560	5,390,000	1	5,390,000.0	12 September 2012	BCA/ Available	VEA/MONRE
A-6	A-6-1	UPS1	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27 Dec 2012	BCA/ Available	VEA/MONRE
	A-6-2	UPS2	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27 Dec 2012	BCA/ Available	VEA/MONRE
A-7	A-7-1	OA software1(CD-R)	**Office software suite** - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14 Dec 2011	BCA/ Available	VEA/MONRE

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
			Anti-reflection Coating Lens Roof prism (Dach prism) based							
A-11	A-11-1 A-11-2 A-11-3	Clinometer with compass1, 2,3	Clinometer, compass with degrees and secant, leather case	SPUME-5/360S Suunto Clinometer, Degrees & Secant.....\$1550	8,266,916	3	24,800,746.5	25 December 2012	BCA/ (A-11-1 A-11-2) Available (A-11-3) is lost in the summer survey 2014 by LC	VEA/MONRE
A-12	A-12-1 A-12-2 A-12-3	Hypsometer1,2,3	Measuring height, diameter, lean, log volume, etc. with multifunction computer and data storage.	LaserAce Hypsometer	81,664,568	3	244,993,703.4	25 December 2012	BCA/ Available	VEA/MONRE
A-13	A-13-1 A-13-2	Current meter1.2	Measuring range: 0.100- 9.999 m/s Resolution: 0,001 m/s Accuracy : ± 5% (0.100-0.499 m/s); ± 1% (0.500-9.999 m/s)	Hydro Bios Rod Held Current Meter RHCM	103,681,771	2	207,363,541.2	25 December 2012	BCA/ Available	VEA/MONRE
A-14	A-14-1 A-14-2	Portable pH, Conductivity, Dissolved Oxygen, ORP Multi-Parameter Meter1,2	Conductivity range: 0.01 µS/cm to 400 µS/cm DO range: 0.01 to 20 mg/L (0 to 200%) mV measurement range: -1500 to 1500 mV	Hach HQ30d	66,135,324	2	132,270,648.0	25 December 2012	BCA/ Available	VEA/MONRE

Attachment 1 List of equipment

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
				Card TS16GSD HC10E						
A-9	A-9-1 A-9-2 A-9-3	Handheld GPS1,2,3	High-precision GPS receiver circuit: SiRF Star III or better Location precision: Within 15m nominal with altitude and time Battery durability for operation: 10 hours or more for single charge Number of log points: 10,000 or more Number of way points: 500 or more Waterproof: IPX7 or better Interface: USB Backpack Tether or other attaching tool to backpacks 4 AA NiMH high-grade rechargeable batteries with charger	Garmin eTrex 10	5,964,737	3	17,894,209.5	25 December 2012	BCA/ Available	VEA/MONRE
A-10	A-10-1	Binocular1	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 7x35 WP II	7,848,338	1	7,848,337.5	25 December 2012	BCA/ Available	VEA/MONRE
	A-10-2	Binocular2	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 8x42 WP II	12,850,345	1	12,850,344.6	25 December 2012	BCA/ Available	VEA/MONRE
	A-10-3	Binocular3	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief)	Olympus Magellan 10x42 WP II	15,801,320	1	15,801,319.5	25 December 2012	BCA/ Available	VEA/MONRE

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
B-3	B-3-1 B-3-2	**External HDD**	USB2 or USB3 interface Capacity: 1TB or bigger	Toshiba TSB 1TB 2.5	3,135,000	2	6,270,000	10 January 2012	BCA/ Available	BCA/VEA/MONRE
B-4		**Books (JP)**	Book list (Appendix 1)		14,754,337	1	14,754,337	12 November 2012	BCA/ Available	BCA/VEA/MONRE
		Books (VN)	Book list (Appendix 2)		26,104,702	1	26,104,702	30 October 2012 02 January 2013	BCA/ Available	BCA/VEA/MONRE
B-5	B-5-1	**Spotting scope (Field scope) for bird watching with tripod**	Lens Diameter: 80mm or bigger Lens is multi-coated Zoom: x20~x60 or better Max. eye relief: 12mm or bigger Waterproof Tripod: Max height 1.5m or taller	Scope Nikon ED82--A 13-40/20-60/25-75 XMC Tripod Nikon FT-1200	48,866,316	1	48,866,316	09 August 2012	BCA/ Available	BCA/VEA/MONRE
B-6	B-6-1	**Desktop PC with LCD Monitor**	CPU: Intel Core i3 or better RAM: 4GB or better HDD: 500GB or better LCD: 20 inch XGA or better Windows 7 (English version) Office 2010 (English version)	HP Pro3330 (A3L22PA) Monitor LCD 20*20 LED Keyboad and mouse	25,063,000	1	25,063,000	10 January 2012	BCA/ Available	BCA/VEA/MONRE
	B-6-2			AS APC 500 V A230V	649,000	1	649,000	10 January 2012	BCA/ Available	BCA/VEA/MONRE
	Sub-Total (2)						**141,207,355**			

Attachment 1 List of equipment

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
A-15	A-15-1 A-15-2 A-15-3 A-15-4 A-15-5	Soil test kit1,2,3,4,5	to test levels of N, P, K, pH with color comparators and test capsules	Rapitest Soil Test Kit, Model 1601	3,453,269	5	17,266,342.5	25 December 2012	BCA/ Available	VEA/MONRE
A-16	A-16-1 A-16-2	Soil Ph Moisture tester1,2	To test levels of pH and moisture - Range: pH: 3-8 pH ; Moisture: 1-8	Zd-05 Soil Ph Moisture tester	4,227,638	2	8,455,275.6	25 December 2012	BCA/ Available	VEA/MONRE
A-17	A-17-1	GIS software1		Arc-view single use 9.3.1	62,577,411	10	62,577,411.0	25 December 2012	BCA/ Available	VEA/MONRE
Sub-Total (1)							**937,887,274.30**			

B. Hand carry equipment

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location/ Status	Maintenance and Operation(update)
B-1	B-1-1 B-1-2	**Tablet PC**	LCD: 7 inch touch panel Resolution: 800x480 or better OS: Android 2.2 or later WiFi: 802.11g or better Battery Life: 10 hours or more operating time in single charge USB 2 port, Camera, GPS	Samsung GALAXY Tab 7.1 Plus 16GB	9,750,000	2	19,500,000	16 May 2012	BCA/ Available	BCA/VEA/MONRE
B-2	B-2-1B-2-2	**Case for tablet PC**	Case for the above tablet PC	Samsung GALAXY Tab 7.1 Plus	0	2	0	16 May 2012	BCA/ Available	BCA/VEA/MONRE

Attachment 2: Book list 1

No.	Category	Title			ISBN	Qty	Status	Price (VND)
1	**Server and Database**	PostgreSQL: Up and Running	Regina Obe	O'Reilly Media (July 18, 2012)	144932633 1	1	Available	717,033.20
2		PostgreSQL 9 Admin Cookbook	Simon Riggs	Packt Publishing (October 26, 2010)	184951028 8	1	Available	1,765,004.80
3		PostGIS in Action	Regina Obe	Manning Publications; Pap/Psc edition (April 28, 2011)	193518226 9	1	Available	717,033.20
4		Windows Server 2012 Unleashed		9/26/2012	067233622 7	1	Available	2,123,521.40
5		Beginning PHP 5.3 (Wrox Programmer to Programmer)	Matt Doyle	047041396 4			Available	1,406,488.20
6	**Biodiversity Research**	A Guide to the Mammals of Southeast Asia	Charles M. Francis	Princeton University Press (April 17, 2008)	069113551 7	1	Available	1,930,474.00
7		A Field Guide to the Amphibians And Reptiles of Bali	J. Lindley McKay	Krieger Pub Co (January 30, 2006)	157524190 0	1	Available	1,958,052.20
8		A Guide to Medicinal Plants: An Illustrated, Scientific and Medicinal Approach	Hwee-ling Koh	World Scientific Publishing Company; 1 edition (February 20, 2009)	981283709 4	1	Available	4,136,730.00
TOTAL						7		14,754,337.00

Attachment 2: Book list 2

No.	Category	Title			ISBN	Qty	Status	Price (VND)
1	**Biodiversity Research**	A Guide to the Birds of Southeast Asia	Craig Robson	Princeton University Press; 1ST edition (January 10, 2000)	1847733417	1	Available	4,169,823.84

Attachment 1 List of equipment

Code	Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)

C. Other additional equipment

		Items	Spec	Model	Unit Price (VND)	Qty			Location/ Status	Maintenance and Operation(update)
C-1	C-1-1	**Map of XTNP**		Converting the format (shapefile), inputting the subject data of Topographic map ratio 1:25,000 per request; Converting the data format of Digital data of combined map of 5 communes (shapefile), Landuse situation, Scale is 1: 5 000.	23,650,000	1	23,650,000	28 November 2012	BCA/ Available	BCA/VEA/MONRE
C-2	C-2-1	**Remote sensing image of XTNP**		Satellite images SPOT 5 Pan processed level 2A (According to TT 70/2012/BTC) 2,5 m 2010-2011 Scene Satellite images SPOT 5 XS processed level 2A (According to TT 70/2012/BTC) 10 m 2010-2011 Scene	45,954,000	1	45,954,000	06 December 2012	BCA/ Available	BCA/VEA/MONRE
	Sub-Total (3)						**69,604,000**			
	TOTAL (1+2+3)						**1,148,698,629.30**			

No.	Category	Title			ISBN	Qty	Status	Price (VND)
2		A Field Guide to the Reptiles of South-East Asia	Indranel Das	New Holland Publishers Ltd (February 26, 2010)	1847733476	1	Available	4,169,823.84
3		Fascinating Insects of Southeast Asia	L E O Braack	Marshall Cavendish Trade (November 1, 2010)	981204471X	1	Available	2,647,507.20
4		Trees and Fruits of Southeast Asia: An Illustrated Field Guide (Orchid Guides)	Michael Jensen	Orchid Pr (July 2001)	9748304671	1	Available	2,084,911.92
5		A Guide to Families of Common Flowering Plants in the Philippines	Irma Remo Castro	University of Philippines Press (June 2007)	9715425259	1	Available	3,750,635.20
6	**FAUNA OF VIETNAM**	Penaeoidea, Nephropoidea, Palimoroidea,Gonodactyloidea,…			Vol 1	1	Available	100,000
7		Gobioidei			Vol 2	1	Available	70,000
8		Scelionidae			Vol 3	1	Available	150,000
9		Plant parasitic nematodes			Vol 4	1	Available	160,000
10		Palaemonidae, Parathephusidae, Cladocera, Copepoda, …			Vol 5	1	Available	100,000
11		Orthoptera, Acrididae, Heteroptera			Vol 7	1	Available	140,000
12		Animal and man parasitic trematodes			Vol 8	1	Available	150,000
13		Perciformes			Vol 10	1	Available	140,000
14		Cestoda			Vol 13	1	Available	140,000
15		Serpentes			Vol 14	1	Available	260,000
16		Isoptera			Vol 15	1	Available	320,000
17		Trombiculidae, Siphonaptera			Vol 16	1	Available	250,000
18		Perciformes			Vol 17	1	Available	320,000
19		Aves			Vol 18	1	Available	730,000
20		Perciformes			Vol 19	1	Available	500,000
21		Perciformes			Vol 20	1	Available	260,000
22		Oribatida			Vol 21	1	Available	270,000
23		Monhysterida, Araeolaimida, Chormadorida, Rhabditida,..			Vol 22	1	Available	300,000
24		Paramphistomatida, Plagiorchiida			Vol 23	1	Available	260,000
25		Cocinellidae coleoptera			Vol 24	1	Available	320,000
26		Mammalia			Vol 25	1	Available	600,000
27	**FLORA OF VIETNAM**	Fam. Annonaceae			Vol 1	1	Available	130,000
28		Fam. Lamiaceae			Vol 2	1	Available	52,000
29		Fam. Cyperaceae			Vol 3	1	Available	220,000
30		Fam. Myrsinaceae			Vol 4	1	Available	100,000
31		Fam. Apocynaceae			Vol 5	1	Available	340,000
32		Fam. Verbenaceae			Vol 6	1	Available	340,000
33		Fam. Asteraceae			Vol 7	1	Available	600,000
34		Ordo. Liliales			Vol 8	1	Available	500,000
35		Fam. Orchidaceae			Vol 9	1	Available	700,000
36		Phyl. Chlorophyta			Vol 10	1	Available	380,000
37		Ordo. Fucales & Fam. Polygonaceae			Vol 11	1	Available	380,000
TOTAL						**37**		**26,104,7020**

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN TIẾP NHẬN TÀI SẢN

GIỮA

CƠ QUAN HỢP TÁC QUỐC TẾ NHẬT BẢN (JICA)

VÀ

TỔNG CỤC MÔI TRƯỜNG, BỘ TÀI NGUYÊN MÔI TRƯỜNG

CHO DỰ ÁN XÂY DỰNG CƠ SỞ DỮ LIỆU ĐA DẠNG SINH HỌC QUỐC GIA TẠI VIỆT NAM

Hôm nay, ngày 30 tháng 01 năm 2015, chúng tôi gồm:

A- Đại diện bên giao:

Ông : Yoichi KOGURE Chức vụ: Cố vấn trưởng Dự án

B- Đại diện bên nhận:

Ông : Phạm Anh Cường Chức vụ: Phó Giám đốc Dự án, Cục trưởng Cục Bảo tồn đa dạng sinh học, Tổng cục Môi trường, Bộ Tài nguyên và Môi trường

ĐẠI DIỆN JICA **ĐẠI DIỆN TỔNG CỤC MÔI TRƯỜNG**

Thực hiện bàn giao và tiếp nhận tài sản bao gồm:

A-47

A. Máy móc và thiết bị

Mã thiết bị	Danh mục thiết bị	Cấu hình	Đơn giá (VND)	Slg	Thành tiền (VND)	Năm đưa vào sử dụng	Cài đặt/Tình trạng	Vận hành và bảo trì
A-2	Phần mềm ứng dụng Database Web	Microsoft Visual Pro 2012 SNGL OLP NL	10,778,435	2	21,556,870.0	27 Dec 2012	BCA/Đang hoạt động (Cài vào máy nào?)	VEA/MONRE
A-2-2 A-2-3	Phần mềm 2: DB							
A-3	Workstation	HP PC A3J44AV Base unit A3J44AV HP 2220 CMT	68,375,043	1	68,375,043	27 Dec 2012	BCA/Đang hoạt động	VEA/MONRE
A-3-1	- Form factor: Desktop (Tower) - CPU: Intel CORE i7 (Quad core, SandyBridge) or better - GPU: NVidia or ATI(AMD), VRAM 2GB or larger, DirectX 11 compatible - RAM: 8GB DDR3 or better - HDD: SATA RAID 1 or 5 Disk Array. Combined capacity 1TB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-T (Gigabit) or faster - USB3 port: 1 or more - USB2 port: 2 or more - OS: Windows 7 Professional or Ultimate 64bit - USB Keyboard - USB or Wireless Mouse - Display: LCD 24							

			inch or larger, Resolution 1920x1080 or larger, Supports DVI and HDMI interface - External USB HDD for backup 1TB or larger - Compact stereo speaker - Monitor							
A-4	A-4-1	Máy tính 1	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, SandyBridge) or better - GPU: NVidia or ATI(AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless	HP QV994AV Compaq Elite 8300 MT	21,640,586	1	21,640,586.0	27 Dec 2012	BCA/Đang hoạt động	VEA/MONRE

			Mouse - Monitor							
A-5	A-5-1	Máy in LS1	**Máy in đa chức năng**	Canon ImageCLASS MF 4580DW	11,550,000	1	11,550,000.0	12 September 2012	BCA/Đang hoạt động	VEA/MONRE
	A-5-3	Máy in IJ1	**Máy in**	Canon Color Printer Pixma iX6560	5,390,000	1	5,390,000.0	12 September 2012	BCA/Đang hoạt động	VEA/MONRE
A-6	A-6-1	Bộ lưu điện UPS1	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27 Dec 2012	BCA/Đang hoạt động	VEA/MONRE
	A-6-2	Bộ lưu điện UPS2	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27 Dec 2012	BCA/Đang hoạt động	VEA/MONRE

			- Maximum sensitivity: ISO 3200 or more - Full HD (1920x1080) movie recording capability with sound - Battery life (CIPA): 240 or more **Túi đựng**							
			Thẻ nhớ SD - 16GB SDHC	Transcend 16 GB Class 10 SDHC Flash Memory Card TS16GSDHC10E	500,000	3	1,500,000.0	23 October 2012	BCA/Đang hoạt động	VEA/MONRE
A-9	A-9-1 A-9-2 A-9-3	GPS cầm tay 1,2,3	High-precision GPS receiver circuit: SiRF Star III or better Location precision: Within 15m nominal with altitude and time Battery durability for operation: 10 hours or more for single charge Number of log points: 10,000 or more Number of way points: 500 or more Waterproof: IPX7 or better Interface: USB Backpack Tether or other attaching tool to backpacks 4 AA NiMH high-grade rechargeable batteries with charger	Garmin eTrex 10	5,964,737	3	17,894,209.5	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
A-10	A-10-1	Ống nhòm 1	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens	Olympus Magellan 7x35 WP II	7,848,338	1	7,848,337.5	25 December 2012	BCA/Đang hoạt động	VEA/MONRE

A-7	A-7-1	Phần mềm OA 1(CD-R)	- Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14 Dec 2011	BCA/Đang hoạt động	VEA/MONRE
		Phần mềm OA 2	- Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14 Dec 2011	BCA/Đang hoạt động	VEA/MONRE
A-8	A-8-1 A-8-2 A-8-3	Máy ảnh kỹ thuật số 1,2,3 (include camera case and 16GB SD card)	**Máy ảnh kỹ thuật số** - SLR-like design (not slim or compact) with good holding grip - Resolution: 12M pixels or more - Zoom range: 28-500mm equivalent or more - Vibration reduction system	*Nikon CoolPix P510*	8,650,000	3	25,950,000.0	23 October 2012	BCA/Đang hoạt động	VEA/MONRE

A-11	A-11-1 A-11-2 A-11-3	Máy đo độ nghiêng 1,2,3	Clinometer, compass with degrees and secant, leather case	SPUME-5/360S Suunto Clinometer, Degrees & Secant.....$1550	8,266,916	3	24,800,746.5	25 December 2012	BCA/ 02 (A-11-1 A-11-2) thiết bị đang hoạt động 01 (A-11-3) bị mất trong chuyến điều tra mùa hè 2014 do nhóm điều tra IEBR	VEA/MONRE (bổ sung biên bản mất thiết bị)
A-12	A-12-1 A-12-2 A-12-3	Thiết bị đo độ cao 1,2,3	Measuring height, diameter, lean, logs volume, etc. with multifunction computer and data storage.	LaserAce Hypsometer	81,664,568	3	244,993,703.4	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
A-13	A-13-1 A-13-2	Thiết bị đo tốc độ dòng chảy 1.2	Measuring range: 0.100- 9.999 m/s Resolution: 0,001 m/s Accuracy : ± 5% (0.100-0.499 m/s); ± 1% (0.500-9.999 m/s)	Hydro Bios Rod Held Current Meter RHCM	103,681,771	2	207,363,541.2	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
A-14	A-14-1 A-14-2	Thiết bị đo các chỉ số pH, Conductivity, Dissolved Oxygen, ORP cầm tay 1,2	Conductivity range: 0.01 µS/cm to 400 µS/cm DO range: 0.01 to 20 mg/L (0 to 200%) mV measurement range: -1500 to 1500 mV	Hach HQ30d	66,135,324	2	132,270,648.0	25 December 2012	BCA/Đang hoạt động	VEA/MONRE

			diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based							
	A-10-2	Ống nhòm 2	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 8x42 WP II	12,850,345	1	12,850,344.6	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
	A-10-3	Ống nhòm 3	Magnification: At least 8x and not more than 12x (No Zoom) Objective lens diameter: 25mm or larger Water proof / Nitrogen-gas filled High eye-point (Long eye-relief) Anti-reflection Coating Lens Roof prism (Dach prism) based	Olympus Magellan 10x42 WP II	15,801,320	1	15,801,319.5	25 December 2012	BCA/Đang hoạt động	VEA/MONRE

			single charge USB 2 port, Camera, GPS							
B-2	B-2-1 B-2-2	**Vỏ bao máy tính bảng PC**	Vỏ bao máy tính bảng PC	Samsung GALAXY Tab 7.1 Plus	0	2	0	16 May 2012	BCA/Đang hoạt động	BCA/VEA/MONRE
B-3	B-3-1 B-3-2	**Ổ cứng ngoài HDD**	USB2 or USB3 interface Capacity: 1TB or bigger	Toshiba TSB 1TB 2.5	3,135,000	2	6,270,000	10 January 2012	BCA/Đang hoạt động	BCA/VEA/MONRE
B-4		**Sách (JP)**	Danh sách (Appendix 1)		14,754,337	1	14,754,337	12 November 2012	BCA/Đang sử dụng	BCA/VEA/MONRE
		Sách (VN)	Danh sách (Appendix 2)		26,104,702	1	26,104,702	30 October 2012 02 January 2013	BCA/Đang sử dụng	BCA/VEA/MONRE
B-5	B-5-1	**Thiết bị quan sát chim**	Lens Diameter: 80mm or bigger Lens is multi-coated Zoom: x20~x60 or better Max. eye relief: 12mm or bigger Waterproof Tripod: Max height 1.5m or taller	Scope Nikon ED82--A 13-40/20-60/25-75 XMC Tripod Nikon FT-1200	48,866,316	1	48,866,316	09 August 2012	BCA/Đang hoạt động	BCA/VEA/MONRE

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A-15	A-15-1 A-15-2 A-15-3 A-15-4 A-15-5	Bộ thử mẫu đất 1,2,3,4,5	to test levels of N, P, K, pH with color comparators and test capsules	Rapitest Soil Test Kit, Model 1601	3,453,269	5	17,266,342.5	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
A-16	A-16-1 A-16-2	Đô độ ẩm đất 1,2	To test levels of pH and moisture - Range: pH: 3-8 pH ; Moisture: 1-8	Zd-05 Soil Ph Moisture tester	4,227,638	2	8,455,275.6	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
A-17	A-17-1	Phần mềm GIS 1		Arc-view single use 9.3.1	62,577,411	10	62,577,411.0	25 December 2012	BCA/Đang hoạt động	VEA/MONRE
Sub-Total (1)							**937,887,274.30**			

B. Thiết bị cầm tay

Mã thiết bị		**Danh mục thiết bị**		**Cấu hình**	**Đơn giá (VND)**	**Slg**	**Thành tiền (VND)**	**Năm đưa vào sử dụng**	**Cài đặt/Tình trạng**	**Vận hành và bảo trì**
B-1	B-1-1 B-1-2	**Máy tính bảng PC**	LCD: 7 inch touch panel Resolution: 800x480 or better OS: Android 2.2 or later WiFi: 802.11g or better Battery Life: 10 hours or more operating time in	Samsung GALAXY Tab 7.1 Plus 16GB	9,750,000	2	19,500,000	16 May 2012	BCA/Đang hoạt động	BCA/VEA/MONRE

				2A (According to TT 70/2012/BTC) 10 m 2010-2011 Scene						
	Tổng (3)						**69,604,000**			
	TỔNG CỘNG (1+2+3)						**1,148,698,629.30**			

B-6	B-6-1	**Máy tính để bàn và màn hình LCD**	CPU: Intel Core i3 or better RAM: 4GB or better HDD: 500GB or better LCD: 20 inch XGA or better Windows 7 (English version) Office 2010 (English version)	HP Pro3330 (A3L22PA) Monitor LCD 20*20 LED Keyboad and mouse	25,063,000	1	25,063,000	10 January 2012	BCA/Đang hoạt động	BCA/VEA/MONRE
	B-6-2			AS APC 500 V A230V	649,000	1	649,000	10 January 2012	BCA/Đang hoạt động	BCA/VEA/MONRE
	Tổng (2)						**141,207,355**			

C. Thiết bị khác

Mã thiết bị		**Danh mục thiết bị**		**Cấu hình**	**Đơn giá (VND)**	**Slg**	**Thành tiền (VND)**	**Năm đưa vào sử dụng**	**Cài đặt/Tình trạng**	**Vận hành và bảo trì**
C-1	C-1-1	**Bản đồ XTNP**		Bản đồ địa hình phân mảnh tỷ lệ 1:25,000, Bản đồ hiện trạng sử dụng đất tỷ lệ 1: 5 000 cho 5 xã vùng đệm	23,650,000	1	23,650,000	28 November 2012	BCA/Đang hoạt động	BCA/VEA/MONRE
C-2	C-2-1	**Bản đồ viễn thám XTNP**		Ảnh vệ tinh SPOT 5 Pan processed level 2A (According to TT 70/2012/BTC) 2,5 m 2010-2011 Scene Ảnh vệ tinh SPOT 5 XS processed level	45,954,000	1	45,954,000	06 December 2012	BCA/Đang hoạt động	BCA/VEA/MONRE

Phụ lục:

Phụ lục 1: Danh mục sách 1

STT	Phân loại	Tên sách			Số hiệu	Slg	Tình trạng	Đơn giá (VND)
1	**Server và cơ sở dữ liệu**	PostgreSQL: Up and Running	Regina Obe	O'Reilly Media (July 18, 2012)	1449326331	1	Đang sử dụng	717,033.20
2		PostgreSQL 9 Admin Cookbook	Simon Riggs	Packt Publishing (October 26, 2010)	1849510288	1	Đang sử dụng	1,765,004.80
3		PostGIS in Action	Regina Obe	Manning Publications; Pap/Psc edition (April 28, 2011)	1935182269	1	Đang sử dụng	717,033.20
4		Windows Server 2012 Unleashed		9/26/2012	0672336227	1	Đang sử dụng	2,123,521.40
5		Beginning PHP 5.3 (Wrox Programmer to Programmer)	Matt Doyle	0470413964			Đang sử dụng	1,406,488.20
6	**Nghiên cứu đa dạng sinh học**	A Guide to the Mammals of Southeast Asia	Charles M. Francis	Princeton University Press (April 17, 2008)	0691135517	1	Đang sử dụng	1,930,474.00
7		A Field Guide to the Amphibians And Reptiles of Bali	J. Lindley McKay	Krieger Pub Co (January 30, 2006)	1575241900	1	Đang sử dụng	1,958,052.20
8		A Guide to Medicinal Plants: An Illustrated, Scientific and Medicinal Approach	Hwee-ling Koh	World Scientific Publishing Company; 1 edition (February 20, 2009)	9812837094	1	Đang sử dụng	4,136,730.00
TỔNG CỘNG						7		**14,754,337.00**

Phụ lục 2: Danh mục sách 2

STT	Phân loại	Tên sách			Số hiệu	Slg	Tình trạng	Đơn giá (VND)

1	**Biodiversity Research**	A Guide to the Birds of Southeast Asia	Craig Robson	Princeton University Press; 1ST edition (January 10, 2000)	1847733417	1	Đang sử dụng	4,169,823.84
2		A Field Guide to the Reptiles of South-East Asia	Indraneil Das	New Holland Publishers Ltd (February 26, 2010)	1847733476	1	Đang sử dụng	4,169,823.84
3		Fascinating Insects of Southeast Asia	L E O Braack	Marshall Cavendish Trade (November 1, 2010)	981204471X	1	Đang sử dụng	2,647,507.20
4		Trees and Fruits of Southeast Asia: An Illustrated Field Guide (Orchid Guides)	Michael Jensen	Orchid Pr (July 2001)	9748304671	1	Đang sử dụng	2,084,911.92
5		A Guide to Families of Common Flowering Plants in the Philippines	Irma Remo Castro	University of Philippines Press (June 2007)	9715425259	1	Đang sử dụng	3,750,635.20
6	**FAUNA OF VIETNAM**	Tôm Biển			Vol 1	1	Đang sử dụng	100,000
7		Cá biển			Vol 2	1	Đang sử dụng	70,000
8		Ong ký sinh trùng			Vol 3	1	Đang sử dụng	150,000
9		Tuyến trùng ký sinh thực vật			Vol 4	1	Đang sử dụng	160,000
10		Giáp xác nước ngọt			Vol 5	1	Đang sử dụng	100,000
11		Họ châu chấu Họ cào cào Họ bọ xít			Vol 7	1	Đang sử dụng	140,000
12		Sán lá ký sinh ở người và động vật			Vol 8	1	Đang sử dụng	150,000
13		Bộ cháo biển Bộ cá			Vol 10	1	Đang sử dụng	140,000
14		Sán dây ký sinh ở người và động vật			Vol 13	1	Đang sử dụng	140,000

15		Phân bộ rắn			Vol 14	1	Đang sử dụng	260,000
16		Mối – Bộ cánh đều			Vol 15	1	Đang sử dụng	320,000
17		Họ mò đỏ Bộ bọ chét			Vol 16	1	Đang sử dụng	250,000
18		Cá biển/Bộ cá vược			Vol 17	1	Đang sử dụng	320,000
19		Lớp chim			Vol 18	1	Đang sử dụng	730,000
20		Cá biển/Bộ cá vược			Vol 19	1	Đang sử dụng	500,000
21		Cá biển			Vol 20	1	Đang sử dụng	260,000
22		Bộ ve giáp			Vol 21	1	Đang sử dụng	270,000
23		Giun tròn sống tự do			Vol 22	1	Đang sử dụng	300,000
24		Sán lá ký sinh			Vol 23	1	Đang sử dụng	260,000
25		Họ bọ rùa			Vol 24	1	Đang sử dụng	320,000
26		Lớp thú			Vol 25	1	Đang sử dụng	600,000
27	**FLORA OF VIETNAM**	Họ na			Vol 1	1	Đang sử dụng	130,000
28		Họ bạc hà			Vol 2	1	Đang sử dụng	52,000
29		Họ cói			Vol 3	1	Đang sử dụng	220,000
30		Họ đơn nem			Vol 4	1	Đang sử dụng	100,000
31		Họ trúc đào			Vol 5	1	Đang sử dụng	340,000
32		Họ cỏ roi ngựa			Vol 6	1	Đang sử dụng	340,000
33		Họ cúc			Vol 7	1	Đang sử	600,000

							dụng	
34		Họ hoa loa kèn			Vol 8	1	Đang sử dụng	500,000
35		Họ Lan			Vol 9	1	Đang sử dụng	700,000
36		Ngành rong lục			Vol 10	1	Đang sử dụng	380,000
37		Bộ rong mơ Họ rau răm			Vol 11	1	Đang sử dụng	380,000
TOTAL						**37**		**26,104,7020**

SOCIALIST REPUBLIC OF VIETNAM

Independence - Freedom - Happiness

MINUTES OF RECEIPT OF EQUIPMENT/ASSETS

BETWEEN

JAPANESE INTERNATIONAL COOPERATION AGENCY (JICA)

AND

THE VIETNAM ENVIRONMENT ADMINISTRATION (VEA), MINISTRY OF NATURAL RESOURCES AND ENVIRONMENT OF VIETNAM

FOR

THE PROJECT FOR DEVELOPMENT OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM IN VIETNAM

Today, 30th January, 2015, we are:

- Representative of Transferor: Project Management Board of NBDS Project

Mr. Yoichi Kogure — Title: Chief Advisor of the Project

Dr.: Pham Anh Cuong — Title: Project Deputy Director of the Project

Director / Biodiversity Conservation Agency, Viet Nam Environment Administration, Ministry of Natural Resources and Environment (BCA, VEA, MONRE)

- Representative of Transferee: ITC/VEA/MONRE

Mr. Nguyen Xuan Thuy — Title: Director / Information Technology Center

Vietnam Environment Administration, Ministry of Natural Resources and Environment (ITC/VEA/MONRE)

REPRESENTATIVE OF JICA	REPRESENTATIVE OF BCA/VEA/MONRE	REPRESENTATIVE OF ITC/VEA/MONRE

The assets for transferring are attached

Code	Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
A-1									
A-1-1	Server set (2 servers)	**Server computer (Web server)(Database server)** - Form factor: Rack (19 inch) mount 1U or 2U - 1 CPU: Intel Xeon or AMD Opteron / 2.4GHz or better - RAM: 8GB or more RDIMM or DDR3 ECC UDIMM - HDD: SATA or SAS RAID 1 or 5 Disk Array. Combined capacity 1TB or larger. Hot pluggable. - LAN: 1000Base-T (Gigabit) x 2 ports - Redundant Power Supply - Mouse and Keyboard - Must have "Certificate of Origin" and "Certificate of Quality"	IBM System x3250 M4	72,950,541	2	145,901,082	11 Dec 2012	ITC/ Available	VEA/MONRE
A-1-2		Software	Software Windows Server Std 2012 SNGL OLP NL 2Proc * downgrade rights or 2008 Web Edition included	18,087,470	2	36,174,939.3	11 Dec 2012	Available	
		Software	Software WinSvrCAL 2012 SNGL OLP NL UserCAL *minimum order: 5 license	627,033	3	1,881,098.5	11 Dec 2012	Avaliable	

Code	Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
A-1-3		**Basic Monitor LCD** - LCD size: 15 inch or larger - Resolution: 1024x768 or larger - Must be connectable to the server computer **(Delivery and installation)**	Monitor LCD Dell E1709WFP 17"/1440*900/VGA	19,951,406	1	19,951,406.4	11 Dec 2012	Available	
A-2									
A-2-1	Software1 : Server	**SSL server certificate** - Must be issued from "Trusted" CA (Certificate Authority) that has its own trusted root certificate - Valid for 3 years	Verisign Secure Server ID (license)	19,568,615	1	19,568,615	11 Dec 2012	ITC/ Available	VEA/MONRE
		Anti-Virus Software for servers - Can protect from Virus, Trojan Horse, Rootkit, etc. - Includes 3 years subscription	Stnabtec SYMC ENDPOINT PROTECTION 12.1 PER USER BNDL STD LIC	732,515	5	3,662,575	01 May 2013	ITC/ Available	VEA/MONRE
		Delivery	**Delivery**	6,906,570	1	6,906,570.0	01 May 2013	ITC/ Available	VEA/MONRE
Total				**234,046,286**					

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN TIẾP NHẬN TÀI SẢN

GIỮA

CƠ QUAN HỢP TÁC QUỐC TẾ NHẬT BẢN (JICA)

VÀ

TỔNG CỤC MÔI TRƯỜNG, BỘ TÀI NGUYÊN MÔI TRƯỜNG

CHO DỰ ÁN XÂY DỰNG CƠ SỞ DỮ LIỆU ĐA DẠNG SINH HỌC QUỐC GIA

TẠI VIỆT NAM

Hôm nay, ngày 30 tháng 01 năm 2015, chúng tôi gồm:

- Đại diện bên giao: Ban quản lý dự án "Xây dựng cơ sở dữ liệu đa dạng sinh học quốc gia"

Ông Yoichi KOGURE — Chức vụ: Cố vấn trưởng Dự án, Đại diện Cơ quan hợp tác quốc tế Nhật Bản (JICA)

Ông Phạm Anh Cường — Chức vụ: Phó Giám đốc Dự án, Cục trưởng Cục Bảo tồn đa dạng sinh học, Tổng cục Môi trường, Bộ Tài nguyên và Môi trường

- Đại diện bên nhận: Trung tâm tin học, Văn phòng Tổng cục Môi trường

Ông Nguyễn Xuân Thủy — Chức vụ: Giám đốc/ Trung tâm tin học Tổng cục Môi trường, Bộ Tài nguyên và Môi trường (ITC/VEA/MONRE)

ĐẠI DIỆN JICA | **ĐẠI DIỆN CỤC BẢO TỒN ĐA DẠNG SINH HỌC** | **ĐẠI DIỆN TRUNG TÂM TIN HỌC**

Thực hiện bàn giao và tiếp nhận tài sản bao gồm:

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Viet Nam Environment Administration,
Ministry of Natural Resources and Environment
(BCA, VEA, MONRE)

- Representative of Transferee: DONRE/NAM DINH

Mr. Phan Van Phong Title: Deputy Director

Department of Natural Resources and Environment,

Nam Dinh province (DONRE Nam Dinh)

REPRESENTATIVE OF JICA	REPRESENTATIVE OF BCA/VEA/MONRE	REPRESENTATIVE OF DONRE/NAM DINH

The assets for transferring are attached

KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC
PHAN VĂN PHONG

Mã thiết bị		Danh mục thiết bị	Cấu hình	Đơn giá (VND)	Sl	Thành tiền (VND)	Năm đưa vào sử dụng	Cài đặt/Tình trạng	Vận hành và bảo trì
A-1									
	A-1-1	Server (2 bộ)	IBM System x3250 M4	72,950,541	2	145,901,082	11 Dec 2012	ITC/Đang hoạt động	VEA/MONRE
	A-1-2	**Server computer (Web server) và (Database server)**							
		Phần mềm	Software Windows Server Std 2012 SNGL OLP NL 2Proc * downgrade rights or 2008 Web Edition included	18,087,470	2	36,174,939.3	11 Dec 2012	/Đang hoạt động	
		Phần mềm	Phần mềm WinSvrCAL 2012 SNGL OLP NL UserCAL *minimum order: 5 license	627,033	3	1,881,098.5	11 Dec 2012	/Đang hoạt động	
	A-1-3	**Màn hình LCD**	Màn hình LCD Dell E1709WFP 17"/1440*900/VGA	19,951,406	1	19,951,406.4	11 Dec 2012	/Đang hoạt động	
A-2									
	A-2-1	Phần mềm 1: Server	**Chứng chỉ SSL cho server** - Giá trị 3 năm	Verisign Secure Server ID (license)	19,568,615	1	19,568,615	11 Dec 2012	ITC/Đang hoạt động	VEA/MONRE
			Phần mềm Anti-Virus cho server - Thuê bao 3 năm	Smabtec SYMC ENDPOINT PROTECTION 12.1 PER USER BNDL STD LIC	732,515	5	3,662,575	01 May 2013	ITC/Đang hoạt động	VEA/MONRE
		Phí vận chuyển	**Phí vận chuyển**	6,906,570	1	6,906,570.0	01 May 2013	ITC Đang hoạt động	VEA/MONRE
Sub-Total (1)						**234,046,286**			

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
A-6	A-6-3	UPS3	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27 Dec 2012	DONRE, NamDinh/ Available	DONRE, NamDinh
A-7	A-7-2	OA software3 (CD-R)	**Office software suite** - Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14 Dec 2011	DONRE, NamDinh/ Available	DONRE, NamDinh
A-17	A-17-2	GIS software2		Arc-view single use 9.3.1	62,577,411	1	62,577,411.0	25 December 2012	DONRE, NamDinh/ Available	DONRE, NamDinh
Sub-Total (1)							**110,669,445.00**			

Code		Items	Spec	Model	Unit Price (VND)	Qty	Total (VND)	Year	Location /Status	Maintenance and Operation(update)
A-4	A-4-2	PC2	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, SandyBridge) or better - GPU: NVidia or ATI(AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless Mouse - Monitor	HP QV994AV Compaq Elite 8300 MT	21,640,586	1	21,640,586.0	27 Dec 2012	DONRE, NamDinh/ Available	DONRE, NamDinh
A-5	A-5-2	Printer: LS2	**Monochrome laser printer with scanner and photocopy machine** **Printer** - Monochrome Laser - Paper size: A4 - Resolution: 600dpi - Printing speed: 25 / 26cpm - Duplex capability - 1 or more paper tray of capacity 100 sheets or more **Photo Copier** - Up to A4 monochrome copying capability Scanner - Up to A4 color scanning capability **Interface** - Ethernet (100Base-TX or better) or Network - USB	Canon ImageCLASS MF 4580DW	11,550,000	1	11,550,000.0	12 September 2012	DONRE, NamDinh/ Available	DONRE, NamDinh

CỘNG HOÀ XÃ HỘI CHỦ NGHĨA VIỆT NAM

Độc lập – Tự do – Hạnh phúc

BIÊN BẢN TIẾP NHẬN TÀI SẢN

GIỮA

CƠ QUAN HỢP TÁC QUỐC TẾ NHẬT BẢN (JICA)

VÀ

TỔNG CỤC MÔI TRƯỜNG, BỘ TÀI NGUYÊN MÔI TRƯỜNG

CHO DỰ ÁN XÂY DỰNG CƠ SỞ DỮ LIỆU ĐA DẠNG SINH HỌC QUỐC GIA

TẠI VIỆT NAM

Hôm nay, ngày 30 tháng 01 năm 2015, chúng tôi gồm:

- Đại diện bên giao: Ban quản lý dự án "Xây dựng cơ sở dữ liệu đa dạng sinh học quốc gia"

Ông : Yoichi KOGURE — Chức vụ: Cố vấn trưởng Dự án, Đại diện Cơ quan hợp tác quốc tế Nhật Bản (JICA)

Ông : Phạm Anh Cường — Chức vụ: Phó Giám đốc Dự án, Cục trưởng Cục Bảo tồn đa dạng sinh học, Tổng cục Môi trường, Bộ Tài nguyên và Môi trường

- Đại diện bên nhận: Sở Tài nguyên và Môi trường Nam Định

Ông Phan Văn Phong — Chức vụ: Phó Giám đốc Sở Tài nguyên và Môi trường, Tỉnh Nam Định (DONRE Nam Định)

ĐẠI DIỆN JICA	**ĐẠI DIỆN**	**ĐẠI DIỆN**
	CỤC BẢO TỒN ĐA DẠNG SINH HỌC	**SỞ TÀI NGUYÊN VÀ MÔI TRƯỜNG NAM ĐỊNH**

KT. GIÁM ĐỐC
PHÓ GIÁM ĐỐC
PHAN VĂN PHONG

Thực hiện bàn giao và tiếp nhận tài sản bao gồm:

A-59

A. Máy móc và thiết bị

Mã thiết bị	Danh mục thiết bị	Cấu hình	Đơn giá (VND)	Slg	Thành tiền (VND)	Năm đưa vào sử dụng	Cài đặt/Tình trạng	Vận hành và bảo trì
A-4-2	Máy tính 2	- Form factor: Desktop (Tower) - CPU: Intel CORE i3 (Dual core, SandyBridge) or better - GPU: NVidia or ATI(AMD) or Intel HD3000 graphics. VRAM 500MB or larger - RAM: 4GB DDR3 or better - HDD: SATA 500GB or larger - Optical drive: DVD-ROM/R/RW - LAN: 1000Base-TX (Gigabit) or faster - USB2 or USB3 port: 4 or more - OS: Windows 7 Professional 64bit - Display: LCD 19 inch or larger, Resolution 1440x900 or larger - USB Keyboard - USB or Wireless Mouse - Monitor	HP QV994AV Compaq Elite 8300 MT	21,640,586	1	21,640,586.0	27 Dec 2012	DONRE, NamDinh/ Đang hoạt động	DONRE, NamDinh

	A-5-2	Máy in LS2	**Máy in đa chức năng**	Canon ImageCLASS MF 4580DW	11,550,000	1	11,550,000.0	12 September 2012	DONRE, NamDinh/ Đang hoạt động	DONRE, NamDinh
	A-6-3	Bộ lưu điện UPS3	- Capacity: 1000VA or more - Input / Output voltage: 220V - Plug shape: Must comply with Vietnam standard - Surge and lightning protection - Circuit breaker - Audible alarm	APC Back-UPS 1100VA	3,913,723	1	3,913,723	27 Dec 2012	DONRE, NamDinh/ Đang hoạt động	DONRE, NamDinh
	A-7-2	Phần mềm OA 3(CD-R)	- Supports UNICODE (Native mixture of International languages) - Word processor - Spreadsheet (supports OLAP function of database software) - Presentation software - Desktop database (Must be compatible with Microsoft Access)	Microsoft Office Pro Plus 2010 SNGL OLP NL	10,987,725	1	10,987,725	14 Dec 2011	DONRE, NamDinh/ Đang hoạt động	DONRE, NamDinh
A-17	A-17-2	Phần mềm GIS 2		Arc-view single use 9.3.1	62,577,411	1	62,577,411.0	25 December 2012	DONRE, NamDinh/ Đang hoạt động	DONRE, NamDinh
Sub-Total (1)							**110,669,445.00**			

Appendix 7: Meeting minutes of JCC meetings

AGENDA
FOR THE FIRST JOINT COORDINATING COMMITTEE MEETING,
THE PROJECT FOR DEVELOPMENT
OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM
IN THE SOCIALIST REPUBLIC OF VIETNAM

Time : 9:00 am –12:00 am, March 14, 2012

Venue : Fortuna Hotel (Sentosa Meeting Room)

Time	Content	By
9:00-9:30	**Registration**	
9:30-9:40	**Introduction of Participants and Agenda**	Mr. Pham Anh Cuong, Director of Biodiversity Conservation Agency (BCA), Project Deputy Director
9:40-9:50	**Opening Speech**	Mr. Nguyen The Dong, Deputy Director General, Vietname Enviroment Administration(VEA), Ministry of Natural Resources and Environment/ Project Director
9:50-10:00	**Opening Speech**	Mr. Nguyen Viet Hung, Vice Chairman of People's Committee of Nam Dinh Province
10:00-10:10	**Opening Speech**	Mr. Akira Shimizu, Senior Representative, JICA Vietnam Office
10:10-10:25	**Introduction to the project** - Objective, Scope, Content, Implementation mechanism	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director
10:25-10:40	**Explanation of the Inception Report** - Plan of Operation, updated Project Design Matrix (PDM), Work plan	Mr.Yoichi Kogure, JICA Expert / Chief Advisor of the Project
10:40-10:55	**Tea Break**	
10:55-11:50	**General Discussion / approve of the Inception Report**	All participants, chaired by Mr. Nguyen The Dong, Project Director
11:50-12:00	**Conclusion**	Mr. Nguyen The Dong, Project Director
12:00-13:30	**Lunch**	

ANNEX:

i. Inception Report
ii. Work Plan
iii. Needs Survey on National Biodiversity Database System in Vietnam
iv. Project Brochure

MINUTES
OF THE FIRST JOINT COORDINATING COMMITTEE MEETING
ON THE PROJECT FOR DEVELOPMENT OF
THE NATIONAL BIODIVERSITY DATABASE SYSTEM
IN THE SOCIALIST REPUBLIC OF VIETNAM

The first Joint Coordinating Committee Meeting on the "Project for Development of the National Biodiversity Database System" (hereinafter referred to as "the Project") was held on March 14, 2012 chaired by Dr. Nguyen The Dong, Project Director of the project.

As a result of the discussions, the Project agreed to summarize the matters referred to in the document attached hereto.

Hanoi, March 14th, 2012

Dr. Nguyen The Dong
Deputy Director General
Vietnam Environment Administration
Project Director

Mr. Yoichi Kogure
Chief Advisor

Mr. Akira Shimizu
Senior Representative
Vietnam Office
Japan International Cooperation Agency

THE ATTACHED DOCUMENT

I. Introduction of Participants and Agenda

The opening speech of the first JCC Meeting was made by Dr. Pham Anh Cuong, Director of BCA, and Project Deputy Director. He introduced the members of the meeting including Japanese side (Mr. Akira Shimizu, Senior Representative of JICA Vietnam Office), Vietnamese side (Mr. Nguyen The Dong, Deputy Director General of VEA, Project Director and Mr. Nguyen Viet Hung, Vice Chairman of Provincial People's Committee of Nam Dinh Province) and other organizations. Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director was the chairman of the meeting. The aim of the meeting was to gain an insight into the progress of the project as well as some issues raised during the implementation of the project. Besides, this is the opportunity to introduce the project to relevant agencies as a project launching workshop.

II. Opening Speech

On behalf of VEA leader, Mr. Dong expressed his thankfulness to the distinguished attendants from national and international organizations who attended the 1st JCC meeting of "The project for Development of National Biodiversity Database System".

He was glad that this meeting had received the attention of the people who express their concern regarding information management and biodiversity data/information.

He introduced the major information of the project such as:

1. The Project implements activities as the unified nation-wide management of biodiversity data as well as national implementation responsibilities and international obligations for participating in conventions related to biodiversity database management. The collaboration between MONRE/VEA and stakeholders have built the project, "The project for Development of National Biodiversity Database System", which funded by JICA. The project has been approved in Decision 1607/QD-BTNMT dated 18 August 2011 and implemented by VEA.
2. The project has implemented during 4 years with its over goal: development of NBDS is unified, and met the requirements of state management with target area of Vietnam and Pilot Project Nam Dinh Province.
3. The project has 4 major outputs:
   (1) Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST, IEBR and other relevant agencies, institutes, etc
   (2) Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended.
   (3) On the 1st stage of project, a pilot database for Nam Dinh Province is developed as a part of NBDS. And after that, the database system will be applied and expanded in provincial level and national level.
   (4) Capacity for management and utilization of NBDS is strengthened.
4. NBDS project will contribute positively to the activities for National-level biodiversity information management as well as specific implementation of official documents on biodiversity study: Environment Protection Law, Biodiversity Law, Action Plan on Biodiversity of Vietnam by 2020 and implementation of obligations to international agreements and accords on biodiversity, which Vietnam signed to participate in.

Following Mr. Nguyen The Dong, Mr. Akira Shimizu expressed his great pleasure to present and attend the first meeting of JCC for NBDS Project in Vietnam.

He said that this project aims to enhance the capacity of Vietnam on biodiversity conservation through development of national-scale biodiversity database system.

He was happy to know that, within a short period, JICA experts and the Vietnamese counterparts had made good progress, such as finalization of the inception report, identifying key holders of biological information, etc. and appreciated the gradual involvement of the parties and organizations presenting here today, which were expected to play important roles in delivering and sustaining the project objectives.

He also expressed that the challenges and existing obstacles, which would likely to hinder the performance of the project, had been also revealed, and should receive adequate attention to secure the achievement of the project goal.

And, the biggest challenge is the fact that the mechanism for collaboration and sharing of information and data, especially among the related ministries and organizations had yet been in place. He mentioned that having this JCC meeting in the beginning time of the project was an extremely valuable opportunity, to discuss and agree on the steps to be taken, and re-assure the strong commitment by the concerned parties to an effective and close cooperation for this Project.

III. INTRODUCTION OF OVERVIEW OF PROJECT

On behalf of BCA and Project Management Unit, Ms. Hoang Thi Thanh Nhan – Project Deputy Director - presented the overview of project.

Her presentation consisted of the following contents:

- **Project background:**
  1. Vietnam has participated in several international conventions related to biodiversity conservation such as the Convention on Biodiversity (CBD), CITES convention, the Convention on the Conservation of wetlands (Ramsar), which emphasizes building a national biodiversity database. The biodiversity database is an essential tool to serve the conservation and sustainable use of biodiversity.
  2. Currently, the database on biodiversity of Vietnam is highly fragmented, lacking uniform systems. The information/data are scattered in many branches and local offices, not at the level of centralized management of information processing, and not of high quality; data sharing is not guaranteed among related organizations, etc.
  3. In Paragraph 5, Article 71 of Biodiversity Law, the basic survey, scientific research, management of data/information on biodiversity are regulated: "MONRE shall specify basic survey activities and the supply; exchange and management of biodiversity information; and uniformly manage the national database on biodiversity"
- **The progress of project implementation:**
  1. July 2009 – March 2010: MONRE/VEA in collaboration with JICA has formulated a project "The Project for Development of National Biodiversity Database System in Vietnam".
  2. On 22 April 2011: the signing ceremony was held to discuss the minutes of the Technical Cooperation Project "The Project for Development of National Biodiversity Database System in Vietnam".
  3. On 18 August 2011: MONRE has signed Decision No. 1607/QĐ-BTNMT on the approval of the project and delivered to VEA to implement the project.

4. On 17 October 2011: the Minister of MONRE issued Decision No. 1911/ QĐ-BTNMT establishment of Project Management Unit.
5. On 17 January 2012: the Minister of MONRE issued Decision No. 65/ QĐ-BTNMT established the Joint Coordinating Committee of project.
6. November 2011: JICA Experts began implementing the project.

- General information on the project:

+ Title: The project for Development of National Biodiversity Database System in Vietnam
+ Name of Donor: JICA
+ Line Agency: MONRE
+ Project Owner: VEA
+ Implementing Agency: BCA
+ Project Period: 11/2011 – 03/2015
+ Implementing Areas: Target areas – Entire area of Vietnam, Pilot Project – Nam Dinh Province.
+ Funds:

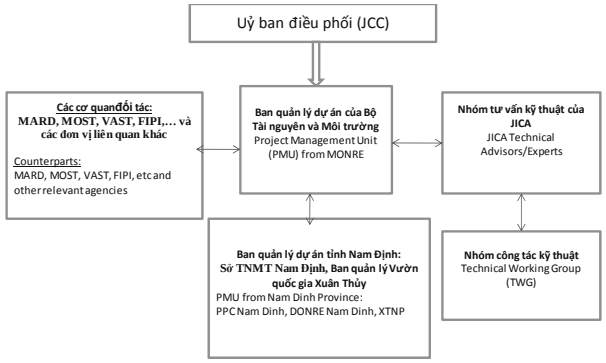
- Funds provided by JICA : 301,320,685 JPY (approximately VND 79,599 million)
- Reciprocal capital of Vietnam (Counterpart funds): VND 10,304 million (converted at the exchange rate inter-bank average: $1 = VND 20,608) in cash and in kind.

- Project activities:

Output 1: Develop architecture of the NBDS
1-1: Identify and analyze existing databases
1-2: Establish a technical working group (TWG) for NBDS development with participation from MONRE, MARD, MOST, VAST and other related government offices and agencies
1-3: Organize meetings of technical working group (TWG)
1-4: Organize technical workshops with the participation of relevant experts for establishing specification of NBDS
1-5: Develop the NBDS architecture and a core set of indicators for biodiversity
1-6: Gather and input data into NBDS
1-7: Modify the NBDS architecture based on experiences from the pilot project
Output 2: Propose the collaboration mechanism with other agencies on managing and utilizing NBDS
2-1: Identify key database holders (including international organizations)
2-2: Draft documents of the collaboration mechanism
Output 3: Develop database for Nam Dinh Province as a part of NBDS
3-1: Identify biodiversity indicators of Nam Dinh Province
3-2: Develop data format of the pilot database for Nam Dinh Province
3-3: Identify data to be stored in the pilot database for Nam Dinh Province
3-4: Develop procedure for data collection, compilation, and monitoring.
3-5: Develop technical guidelines forbasic survey and monitoring of wetland ecosystems based on experiences in the pilot project
3-6: Carry out basic survey and biodiversity monitoring at Xuan Thuy national park in Nam Dinh Province
3-7: Compile data collected from basic survey
3-8: Input gathered data to the pilot database

3-9: Use data collected from basic survey in Nam Dinh Province to test and modify NBDS
Output 4: Strengthen the capacity for management and utilization of NBDS
4-1: Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies
4-2: Prepare manual(s)/instruction(s) on NBDS
4-3: Introduce NBDS to central and provincial officers related to biodiversity conservation

- **Organization structure of Project**



- **JCC members:**

Vietnamese side:

1. Mr. Bui Cach Tuyen, Vice Minister of MONRE, General Director of VEA, Chairman of JCC
2. Mr. Nguyen The Dong, Deputy Director General of VEA, Project Director
3. Mr. Nguyen Viet Hung, Vice Chairman of Provincial People's Committee of Nam Dinh Province
4. Mr. Nguyen Tuan Anh, Deputy Director of Department for Science, Education, Natural Resources and Environment, Ministry of Planning and Investment (MPI)
5. Ms. Nguyen Thi Thanh Ha, Deputy Director - General, Department of Social and Natural Sciences, Ministry of Science and Technology (MOST)
6. Ms. Nguyen Thi Thanh Thuy, Deputy Director of Science, Technology and Environment Department, MARD
7. Mr. Phan Van Phong, Deputy Director of Department of Natural Resources and Environment, Nam Dinh Province
8. Mr. Nguyen Trung Minh, Deputy Director of Planning and Finance Department, VAST
9. Mr. Pham Anh Cuong, Director of BCA, Deputy Director of Project

Japanese side: JICA Vietnam Office, JICA Expert Team

- Technical Working Group (TWG)

: JICA experts, BCA, CIED, CIT, CEM, Nam Dinh DONRE, XTNP, MARD, IEBR.

IV. INTRODUCTION OF PROJECT DESIGN MATRIX, WORK PLAN AND INCEPTION REPORT

Mr. Yoichi Kogure, Chief Advisor of the Project, made a presentation on the Project Design Matrix (PDM), Work Plan, and Inception Report (ICR) for the project. His presentation consisted of the following portions:

Project Design Matrix (PDM):

- **Project purpose: Develop the 1st generation of NBDS.**
- **Overall goal: Develop the 2nd generation of NBDS.**

1. The first generation has 3-4 databases that consist of information about species and survey, monitoring data in every province in Vietnam. However, in the 1st stage, we have only selected Nam Dinh to survey and collect data.

    - NBDS with international standard architecture is properly developed, operated and maintained in MONRE BCA/VEA.
    - Basic data on the fauna and flora species, including all species on Vietnam Red List, are inputted into the NBDS.

2. The second generation of national biodiversity database system (NBDS) is developed.

    - GIS linked NBDS for Nam Dinh Province is developed.
    - Utilization method of NBDS for specific application is developed (in EIA etc.), with the pilot project in Nam Dinh Province.

- **Four outputs:**

1. Develop architecture of the NBDS

    This output supposes much cooperation from relevant organizations such as MARD, VAST, etc.

2. Propose a collaboration mechanism with other agencies on managing and utilizing NBDS

    This is the biggest output of this project. Biodiversity-related activities are very much related to many ministries, agencies and organizations. An appropriate mechanism is needed to share, exchange data among ministries.

3. Develop database for Nam Dinh province as a part of NBDS

    We will conduct surveys and monitoring at XTNP, Nam Dinh Province.

4. Strengthen the capacity on management and utilization of NBDS

    This is the very important output. After the project ends, MONRE/VEA/BCA should still be able to manage and improve this database system itself.
    Those are the basic targets of this project.

- **Inputs:**

Japanese side has provided experts in 5 fields, equipment, machinery, and training in Japan, etc.

Work Plan, and Inception Report (ICR)

He explained the diagram in Article 4 – Overall Work Flow in ICR (page 9-11). This Project has been divided into to two stages: 1st stage (11/2011 – 3/2013) and 2nd stage (4/2013 – 3/2015). In the 1st stage, the database system will be completed. In the 2nd stage, this system will be improved. The project has to define how to maintain this system effectively.

He presented the Flow for Development of the National Biodiversity Database System (diagram in Annex 1 in ICR). He hoped that the project can collect uniformly all of the existing information from relevant agencies of Vietnam into NBDS. He also introduced the Detail Work Plan.

Activities in 2012:

1. Major activities: Implement TWG meetings every month (discussion of specifications for the biodiversity DB and maintenance techniques such as a core indicator set on biodiversity)
2. Conduct the survey and monitoring at XTNP in May to design survey methods. And the first survey campaign will be conducted at XTNP in December.
3. TWG meetings should discuss to create the technique guideline/manual for survey which can be applied in the future.
4. At the 1st stage, we will survey four times: two in winter and two in summer.
5. At the 2nd stage, we will improve the survey methods at 1st stage.

V. OTHER PRESENTATION

On behalf of Nam Dinh Province, Mr. Nguyen Viet Hung – Vice Chairman of Provincial People's Committee of Nam Dinh Province - expressed the variety of species in Nam Dinh. He said that Nam Dinh province had been committed to coordinate with project management to achieve targets and objects of the project effectively. Nam Dinh Province considered that this would be a good opportunity for them to survey species in Nam Dinh and also develop the provincial database system matched with a national scale.

Advantages of Nam Dinh as follows:

+ Nam Dinh is nearby Hanoi, convenient for transportation.
+ XTNP has been equipped with facilities through supports by other organizations.
+ XTNP is developed as a national biosphere reserve area.

Meanwhile, there are many constraints:

+ Their knowledge of database systems is limited.
+ Their experience is not enough to monitor biodiversity and establish biodiversity database.

Recommendations:

- The Project should create favorable conditions, especially in providing equipment, machinery, and trainings so that after completion of the project, Nam Dinh can use and develop this database system effectively.
- He suggested that project soon have the Detail Work Plan in Nam Dinh so that Nam Dinh Province can mobilize departments to cooperate with the project.

Finally, on behalf of the Head of Nam Dinh Province, he mentioned that he would like to invite Mr. Akira Shimizu to Nam Dinh and conservation areas.

VI. DISCUSSION

(1) **Prof. Dang Huy Huynh, Institute of Ecology and Biological Resources (IEBR), VAST**, – gave some recommendations as follows:

1. To assess the result of project activities, the project should determine the criteria of NBDS so that effects of the project could be assessed after the projet is completed.
2. The project should aim to develop a good taxonomical methodology. The Vietnamese scientists are willing to work with Japanese scientists in this issue because it is not only the responsibilities of MONRE but also of Vietnam as a whole.

To support Mr. Huynh's idea, the chairman (Mr. Dong) asked Mr Kogure of two questions:

1. It was mentioned in the inception report that the database would meet an international standard. Which standard was mentioned?
2. Could it be understood that after the completion of the project, Nam Dinh Province would have a complete database?

In response to the chairman's questions, Mr. Yoichi Kogure, Chief Advisor of the Project, confirmed, "there are many international standards for biodiversity database now. We have to discuss among members of TWG in order to decide which standard to be selected. However, we should use the standard that is appropriate for the situation in Vietnam and can be exchanged and compatible in global databases." He hoped that TWG would unify the criteria for implementation soon.

Regarding the second question, he said that the project brought the development of database system in Nam Dinh. The completion of database system would be managed by the Vietnamese side after the project. This system would be managed by VEA, and applied in other provinces and then utilized subsequently at a national authority level.

(2) **Mr. Le Thac Can – Institute of Environment and Sustainable Development (IESD)** – had one question for JCC:

Each province has different ecosystems. Therefore, could the (database) system built from experience in Nam Dinh be applied to other provinces,?

In response to this question, Mr. Kogure answered that a database system was not fixed in every province. The Project hopes that each province will develop a system based on the frame of database system in pilot project, Nam Dinh province.

(3) **Mr. Tran Tuan Ngoc – National Remote Sensing Center (RSC)** – had comments to this session.

The Center had run many satellite stations such as SPOT of France and Vinasat-1 satellite of Vietnam. He said that the RSC had many kinds of GIS data/information so they were willing to cooperate with experts in building and developing this project.

(4) **Mr. Hoang Van Thang – CRES, HUS** – expressed his opinions.

Nam Dinh consists of the sea, plain and islands therefore it is difficult to conduct surveys. Besides fauna and flora, biodiversity consists of ecosystem, genetic, taxonomy, habitats, etc.. though this project didn't mention them. Habitats are also very important. The cooperation and information sharing mechanisms need to be facilitated through clarification among counterparts.

(5) **Ms. Rosmarie Metz – GIZ, Chief Technical Advisor of project "Preservation of Biodiversity in Forest Ecosystems"** –contributed some points for this project work plan.

1. The biggest barrier is that database was scattered from many different agencies.
2. The second challenge is how to coordinate and share information resources among the counterparts.
3. The third challenge is how to best utilize the database after its completion. Collected data are not utilized for biodiversity conservation. .Information flows are not yet well organized to provide relevant information to decision makers, causing information gaps..
4. The GIZ project is focusing on improvement of information system for protected areas in Vietnam. There are some difficulties in the GIZ project as well as the NBDS project, such as: complex separated systems; sometimes they don't know which agency is responsible for reporting and managing. In its detailed work plan, the project has not made it clear about how to deal with the complex relationships between agencies and ministries in Vietnam.
5. Nam Dinh will not reflect the entire ecosystems of Vietnam. Nam Dinh is situated mainly in wetland ecosystems, and does not reflect other terrestrial ecosystems such as forest ecosystems that could be found in Vietnam.

She also suggested that there be some biodiversity databases that had been developed by other projects in MARD and the Vietnam Forest University. Project managers should contact and link those projects in order to share and exchange relevant information.

(6) **Mr. Vu Van Dung comes from MARD, DOF.** –said that database development by unifying general databases across the country would be essential.

He said that the project should apply different methods specific to each species group regarding investigations in view of varied species composition. He expected that the forest ecosystem could be surveyed.

Responding to this issue, Mr. Kogure said that the project is looking forward to cooperating with other related organizations in biodiversity conservation. The project management unit and JICA experts should share information on other ecosystems from other agencies.

VII. CONCLUSIONS AND CLOSING REMARKS

In closing, Mr. Nguyen The Dong showed his gladness to participate in a constructive meeting; he acknowledged again the cooperation of JICA for this project, and announced the forthcoming finalization of the Inception Report together with Nam Dinh Province and XTNP. He also gave some comments on completing the ICR as follows:

1. The structure of NBDS should be very general to be applied to ecosystems in Vietnam.
2. The structure of NBDS should have contents such as: eco-diversity, species diversity and genetic diversity in Vietnam.
3. The project needs to list major assessment criteria so that its level of completion can be objectively assessed when the project ends.
4. We also should determine and clarify project's criteria as well as the implementing level related in biodiversity in Nam Dinh.

5. Information on project activities should be exchanged and clarified with counterparts, relevant ministries, and other projects.
6. We need to clarify a sharing mechanism on this database. At the same time, during the process of demo building, the project shoulddevelop the manual/guideline on surveys in order to implement and complete the project effectively.

He also appreciated the role of the JCC members and hoped that NBDS system can be expanded and applied uniformly throughout Vietnam after the project ends.

On behalf of the session, he confirmed that the meeting adopted the project inception report as well as the project work plan accompanied by more detailed explanations as described above.

He congratulated the BCA/JICA team for the successful meeting and thanked distinguished guests from ministries, Nam Dinh Province, XTNP, JICA experts and other organizations for their attendance.

ANNEX Ⅰ: PROGRAM OF 1st JCC

1. Objective

- Introduction to the Project: Objective, Scope, Content, Implementation mechanism;
- Explanation of the Inception Report: Plan of Operation; updated Project Design Matrix (PDM), Work Plan;
- General Discussion / approve of the Inception Report.

2. Date and Venue

Date: March 14th 2012
Time: 09.00 – 12.00
Venue: Sentosa Meeting Room, Fortuna Hotel Hanoi, 6B Lang Ha, Hanoi, Vietnam

3. Language used

English and Vietnamese

4. Agenda

Time	Content	By
9:00-9:30	**Registration**	
9:30-9:40	**Introduction of Participants and Agenda**	Mr. Pham Anh Cuong, Director of Biodiversity Conservation Agency (BCA), Project Deputy Director
9:40-9:50	**Opening Speech**	Mr. Nguyen The Dong, Deputy Director General, Vietname Enviroment Administration(VEA), Ministry of Natural Resources and Environment/ Project Director
9:50-10:00	**Opening Speech**	Mr. Akira Shimizu, Senior Representative, JICA Vietnam Office
10:00-10:20	**Introduction to the project** - Objective, Scope, Content, Implementation mechanism	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director
10:20-10:40	**Explanation of the Inception Report** - Plan of Operation, updated Project Design Matrix (PDM), Work plan	Mr.Yoichi Kogure, JICA Expert / Chief Advisor of the Project
10:40-11:00	**Tea Break**	
11:00-11:10	**Opening Speech**	Mr. Nguyen Viet Hung, Vice Chairman of People's Committee of Nam Dinh Province
11:10-11:50	**General Discussion / approve of the Inception Report**	All participants, chaired by Mr. Nguyen The Dong, Project Director
11:50-12:00	**Conclusion**	Mr. Nguyen The Dong, Project Director
12:00-13:30	**Lunch**	

5. Distributed materials:

Agenda of the meeting (English and Vietnamese)
Inception Report (English and Vietnamese)

Work Plan (English and Vietnamese)
Needs survey on NBDS project (English and Vietnamese)
Project brochures (English and Vietnamese)

ANNEX Ⅱ： LIST OF PARTICIPANTS

From Japanese side: (8 persons)

No	Name	Title
1	Mr. Akira Shimizu	Senior Representative of JICA Vietnam Office
2	Mr. Eiji Egashira	Senior Project Formulation Advisor, JICA Vietnam Office
3	Mr. Nguyen Vu Tiep	Program Officer, JICA Vietnam Office
4	Mr. Yoichi Kogure	Chief Advisor
5	Mr. Masahiro Otsuka	Vegetation Survey 1
6	Mr. Nguyen Duc Tu	Vegetation Survey 2 / Ecological Survey 1
7	Mr. Kentaro Sakai	Work Coordination 2 / Database Development Assistant 1
8	Ms. Nguyen Thi Sinh	Project Secretary Assistant

From Vietnamese side (60 persons)

No	Name	Title
1	Dr. Nguyen The Dong	Deputy Director General of VEA, Project Director
2	Ms. Nguyen Thi Thanh Ha	Deputy Director - General, Department of Social and Natural Sciences, Ministry of Science and Technology (MOST)
3	Ms. Nguyen Thi Thanh Thuy	Deputy Director of Science, Technology and Environment Department, MARD
4	Mr. Pham Anh Cuong	Director of BCA, Deputy Director of Project
5	Mr. Nguyen Trung Minh	Deputy Director of Planning and Finance Department, VAST
6	Mr. Nguyen Viet Hung	Vice President of Provincial People's Committee of Nam Dinh Province
7	Mr. Phan Van Phong	Deputy Director of DONRE Nam Định
8	Ms. Hoang Thi Thanh Nhan	Deputy Director of BCA, Project Deputy Director
9	Mr. Nguyen Xuan Dung	Chief of Administration Office, BCA
10	Ms. Phung Thu Thuy	Administration Office, BCA
Observer		
11	Mr. Nguyen Manh Trung	Department of Planning, MONRE
12	Mr. Phan Thanh Tung	Department of Planning, MONRE
13	Mr. Nguyen Xuan Thuy	Administration Office of VEA

No	Name	Title
14	Mr. Ho Vinh Son	ICD, VEA
15	Mr. Nguyen Minh Cuong	ICD, VEA
16	Ms. Nguyen Thu Trang	ICD, VEA
17	Ms. Vu Thi Minh Tram	Center for Environmental Information and Data, VEA
18	Mr. Nguyen Quoc Khanh	Center for Environmental Information and Data, VEA
19	Ms. Nguyen Thuy Quynh	Center for Environmental Monitoring, VEA
20	Ms. Pham Thi Vuong Linh	Center for Environmental Monitoring, VEA
21	Mr. Nguyen Viet Cach	Xuan Thuy National Park
22	Mr. Doan Cao Cuong	Xuan Thuy National Park
23	Mr. Ngo Van Chien	Xuan Thuy National Park
24	Mr. Bui Cong Mau	Director of Environment Protection Department, DONRE Nam Dinh
25	Mr. Pham Anh Chien	Environment Protection Department, DONRE Nam Dinh
26	Ms. Nguyen Ngoc Linh	Chief of Division of Biodiversity Conservation Planning, BCA
27	Ms. Tran Kim Tinh	Representative of Division of Ecology, BCA
28	Mr. Tran Ngoc Cuong	Chief of Division of Ecology, BCA
29	Mr. Tran Trong Anh Tuan	Vice chief of Division of Species conservation, BCA
30	Mr. Le Van Hung	Chief of Division of Genetic and Bio-Safe, BCA
31	Ms. Phan Quynh Le	Administration office of BCA
32	Ms. Tran Thi Nguyet	Administration office of BCA

No	Name	Title
33	Ms. Nguyen Huyen Nhung	Administration office of BCA
34	Ms. Ngo Thi Thu Hien	Administration office of BCA
35	Ms. To Lan Huong	Administration office of BCA
36	Ms. Tran Huyen Trang	PA Project, BCA
37	Ms. Kieu Thi Thao	PA Project, BCA
38	Ms. Do Thi Huyen	UNDP
39	Mr. Tristan Skinner	ICEM in Vietnam
40	Mr. Simon Tiugarn	ICEM in Vietnam
41	Mr. Chris Dickinso	ICEM in Vietnam
42	Ms. Tham Thi Hong Phuong	GIZ in Vietnam
43	Ms. Rosmarie Metz	GIZ in Vietnam
44	Mr. Pham Binh Quyen	Vietnam Association for Conservation of Nature and Environment (VACNE)
45	Mr. Tran Tuan Ngoc	National Center for Remote Sensing
46	Mr. Dang Thang Long	Forest Inventory and Planning Institute (FIPI)
47	Mr. Hoang Van Thuong	Center for Resources and Environment (CRES), VNU
48	Mr. Dang Huy Huynh	Institute of Ecology and Biological Resources (IEBR)
49	Mr. Le Thac Can	Institute for Environment and Sustainable Development
50	Mr. Nguyen Duc Tung	Institute for Environment and Sustainable Development (VESDI)
51	Mr. Mai Dinh Yen	Hanoi University of Science (HUS), VNU

No	Name	Title
52	Mr. Vu Van Dung	DOF - MARD
53	Mr. Le Van San	WWF
54	Mr. Luu Thanh Tuan	Vietnam News Agency
55	Ms. Nguyen Ngoc Mai	VTC 8, VTC Digital Television
56	Mr. Nguyen Minh Ha	VTC 8, VTC Digital Television
57	Ms. Thieu Phuong Hoa	VTC 8, VTC Digital Television
58	Mr. Nguyen Lam Phuc	The Radio and Television Hanoi
59	Mr. Nguyen Quang Quy	The Radio and Television Hanoi
60	Mr. Nguyen Trung Kien	The Radio and Television Hanoi

AGENDA
FOR THE SECOND JOINT COORDINATING COMMITTEE MEETING,
THE PROJECT FOR DEVELOPMENT
OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM
IN THE SOCIALIST REPUBLIC OF VIETNAM

Time : 8:30 am –12:00 am, Thursday, May 30, 2013

Venue : Room No 7, 2th floor, B Building, La Thanh Hotel, 218 Doi Can street, Ba Dinh, Hanoi

Time	Content	By
8:00-8:30	**Registration**	
8:30-8:35	**Introduction on Participants and Agenda**	Ms. Dang Thuy Van, Deputy Chief of Office, Biodiversity Conservation Agency
8:35-8:40	**Opening Speech**	Assoc.Prof. Bùi Cách Tuyến, Vice Minister of MONRE, General Director of VEA, Chairman of JCC
8:40-8:45	**Welcome remark**	Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
8:45-8:50	**Remark**	Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office
8:50 – 8:55	**Remark**	Mr. Phan Van Phong, , Deputy Director General Department of Natural Resources and Environment of Nam Dinh
8:55-9:20	**Progress report of the first stage of the project**	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director
9:20-9:45	**Report and discussion on the result of mid-term review**	Mr. Shigeki Hata, Executive Technical Advisor to the Director General, Global Environment Department, JICA Headquarter, Leader of Japanese review team Mr. Nguyen Minh Cuong, Deputy Director, Department of International Cooperation and Science, Technology, VEA, Leader of Vietnamese review team
9:45-9:55	**Signing Ceremony of mid-term review report**	Mr. Shigeki Hata, Leader of Japanese review team Mr. Nguyen Minh Cuong, Deputy Director, Department of International Cooperation and Science, Technology, VEA, Leader of Vietnamese review team
9:55-10:10	**Tea Break**	
10:10-10:30	**Plan for the activities in the second stage of the project**	Mr. Yoichi Kogure, Chief Advisor, JICA expert team
10:30-11:40	**Discussion on the planned activities in the second stage**	All participants, chaired by Dr. Nguyen The Dong, Project Director

11:40-11:50	**Conclusion of the discussion**	Assoc.Prof. Bùi Cách Tuyến, Vice Minister of MONRE, General Director of VEA, Chairman of JCC
11:50-12:00	**Signing Ceremony of Minutes of the Meeting for Midterm Review Report**	Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office Assoc.Prof. Bùi Cách Tuyến, Vice Minister of MONRE, General Director of VEA, Chairman of JCC
12:00-13:30	**Lunch**	

ANNEX:

i. Evaluation report
ii. Revised PDM
iii. Work plan for the second stage of the project

MINUTES
OF THE SECOND JOINT COORDINATING COMMITTEE MEETING
Of THE PROJECT FOR DEVELOPMENT OF
THE NATIONAL BIODIVERSITY DATABASE SYSTEM
IN THE SOCIALIST REPUBLIC OF VIETNAM

The second Joint Coordinating Committee Meeting of the "Project for Development of the National Biodiversity Database System" (hereinafter referred to as "the Project") was held on May 30, 2013 chaired by Dr. Nguyen The Dong, Project Director.

As a result of the discussion, the Project agreed to summarize the matters referred to in the document attached hereto.

Hanoi, May 30th 2013

Mr. Yoichi Kogure
Chief Advisor
JICA Team of Expert

Dr. Nguyen The Dong
Deputy Director General
Vietnam Environment Administration (VEA)
Ministry of Natural Resources and Environment (MONRE)

Mr. Fumihiko Okiura
Senior Representative
JICA Vietnam Office
Japan International Cooperation Agency (JICA)

ATTACHED DOCUMENT

I. Introduction of Participants and Agenda

The introduction of participants was made by Ms. Hoang Thi Thanh Nhan, Deputy Director of Biodiversity Conservation Agency (BCA), Project Deputy Director. Attending the meeting, there were Dr. Nguyen The Dong, Deputy Director General of Vietnam Environment Administration (VEA), Project Director; Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office; Mr. Shigeki Hata, Executive Technical Advisor to the Director General, Global Environment Department, JICA Headquarter, representatives of the Mid-term Review Mission and representatives of JICA Vietnam Office, Joint Coordinating Committee (JCC), Nam Dinh province, ministries, sectors and technical working groups.

The aim of the meeting was to review the progress of the project, to discuss the mid-term review report and to plan for the activities in the second stage of the project.

II. Opening Speech

On behalf of VEA leader/ chairman of JCC, Dr. Nguyen The Dong gave an opening remark introducing the objectives of the NBDS project as well as the importance of biodiversity database. He stressed the importance of this meeting to review the achievements in the first stage and to propose recommendations for the second stage of the project. On this occasion, he would like to thank the support of JICA, ministries and sectors as well as Nam Dinh province during the implementation of the project.

Following Dr. Dong, Mr. Fumihiko Okiura gave a remark. He reiterated the importance of the Mid-term review mission. This is an opportunities to define achievements of 1st stage, to review and propose strategic actions to ensure the successful completion of the project.

Lastly, Mr. Phan Van Phong, Deputy Director of Nam Dinh Department of Natural Resources and Environment (DONRE) delivered a speech on behalf of Nam Dinh province. He confirmed the commitments of Nam Dinh DONRE as well as Nam Dinh Provincial People's Committee (PPC) to participate in the project. The province highly appreciated the importance and role of NBDS project, in particular, in capacity building and development of database on biodiversity for the province. He proposed to continue to participate in project activities in the second stage and requested the early availability of the work plan so PPC can instruct the implementation of the project.

III. Progress report of the first stage of the Project

Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director presented the progress report of the first stage of the project. She went through the achievements by each component, main results of the project were:

- Establishment of technical working group (TWG): two TWGs were established, group A on biodiversity and group B on database. The former met six times and the latter met seven times.
- Development of indicator of biodiversity monitoring: indicators at national level and at site level. At the national level, BCA in collaboration with TWG and JICA developed the methodology to identify these indicators. At site level, the process is similar; draft reports on development of indicator for Xuan Thuy National Park (XTNP) are available.

- Development of NBDS: the framework is proposed, based on GBIF structure.
- Collaboration mechanism: are on-going.
- Pilot survey in XTNP: the first survey was organized in December 2012 and achieved a lot of good outcomes. The next survey will be organized in June 2013.
- Technical guideline of wetland survey: draft guideline has been developed.
- Training on database and biodiversity survey: trainings were taken place; two trainings were organized in Japan and four in Vietnam.

Ms. Hoang Thi Thanh Nhan also presented the lessons learnt from the first stage of the project: It took a long time to achieve mutual understanding about PDM. Another lesson learnt is to strengthen consultative process. It is necessary to have the engagement of counterparts and local experts to allow the application of new world technology into Vietnam's context.

Recommendations for the second stage were also proposed:
- Structure of NBDS should meet country purpose for management of biodiversity, to support Ministry of Natural Resources and Environment (MONRE) to fulfill its obligations to CBD, RAMSAR Convention and Law on Biodiversity.
- To develop a master scheme for the development and operation of the national biodiversity database approved by MONRE as well as identify a department under MONRE to be responsible for operating the database as well as the selection of technology for the development of national database.
- To develop a legal document by MONRE on information sharing, management and reporting on biodiversity
- Guidelines for management and use of NBDS should be published
- Procedure and methods for the selection and monitoring of relevant biodiversity indicators should be published
- Schemes for the validation of data in NBDS should be published
- Counterpart staffs should be trained on the above subjects.
- Working mechanism: promote the involvement of counterpart and local experts and more consultation.
- The PDM: should be revised according to recommendations proposed in the midterm evaluation report discussed and got consensus among JICA and Vietnam.

IV. Report and discussion on the result of mid-term review

Mr. Shigeki Hata, Executive Technical Advisor to the Director General, Global Environment Department, JICA Headquarter, Leader of Japanese review team presented the results of the mid-term review mission.

He thanked all relevant stakeholders to support the review mission. He introduced the members of the Mid-term Review Mission from Vietnamese and Japanese sides. Methodology of the mid-term review was also presented. Five review criteria were: relevance, effectiveness, efficiency, impact, and sustainability.

- Review of inputs
  - Inputs were provided by Japanese and Vietnamese sides as planned.
  - Procured equipment is functioning well and maintained by Vietnamese Project Personnel.

- Review of outputs

- 4 outputs to be achieved in the project.
- Activities are in progress.
- Minor delay.
- All outputs are partly achieved.
- Achievement of Project purpose: Partly achieved.
- The project purpose is expected to be achieved by the end of the Project period, but requires both Vietnamese and Japanese sides to agree on the some points.
  - ➢ Architecture + Users/ Uses/ Maintenance etc.
  - ➢ Indicators
  - ➢ Recommendations for Collaboration Mechanism
  - ➢ Guidelines - Instructions

Mr. Nguyen Minh Cuong, Deputy Director, Department of International Cooperation and Science, Technology, VEA, Leader of Vietnamese review team presented the recommendations of the mid-term review mission.

Recommendations to the JCC: Output 4 should be revised as well as the definition of OVI (Objectively Verifiable Indicator) and MOV (Means of Verifications) should be made clearer.

Recommendations to the Project:

- Enhanced capacity development activities for Vietnamese Project Personnel.
- Enhanced coordination with other related organizations, donors and programs, e.g. through newsletter and workshops.
- Thematic seminars for policy makers and other stakeholders.
- Documentation of the project: filing projects documents and outputs.
- Confirmation of definition of the term "Architecture" and proposal (Master Scheme).
- Clarification of the scope of pilot survey in XT NP.
- Monitoring of counter-actions to the recommendations.
- Collaboration with national and international organizations.

Recommendations to VEA:

- Selection of indicators: indicators for biodiversity monitoring need to be reviewed, refined or revised from time to time.
- Formulation of legal framework.
- Assignment of a focal point for NBDS within BCA.
- Adaptation of the review process to enhance technical decision making of the Project.
- Allocation of counterpart budget and staff: has been available but limited.

Recommendations to MONRE:

- Securing budget for sustainability of NBDS.

Recommendations to JICA:

- Resource mobilization and coordination.

After the presentation of the Mid-term Review results and recommendations, The Joint Mid-term Review Report on the Project for Development of the National Biodiversity Database System has been signed between Mr. Shigeki Hata, Leader of Japanese Mid-term Review Team, Executive Technical Advisor to the Director General, Global Environment Department, JICA and Mr. Nguyen Minh Cuong, Leader of Vietnamese Mid-term Review Team, Deputy Director, Department of International Cooperation and Science, Technology, VEA.

V. Plan for Activities in second stage of the Project

Mr. Yoichi Kogure, Chief Advisor, JICA expert team presented the plan for activities in the second stage of the project.

- Added activities
  - ➢ Create a proposal (Master scheme) of future NBDS
  - ➢ Create system architecture of future NBDS
  - ➢ Add new data structures to NBDS based on the architecture
  - ➢ Create National-level biodiversity monitoring indicators and guideline
- Modified activities
  - ➢ Technical review procedure
  - ➢ Composition and content of pilot surveys in XTNP
  - ➢ Awareness raising workshops / materials for NBDS
- Proposal of master scheme of NBDS
  - ➢ Target reader: Higher officials in Vietnam government
  - ➢ Based on:
    - ▪ The biodiversity law/circular/decree/master plan in Vietnam
    - ▪ National-level biodiversity indicators (to be determined before Jan. 2014)
  - ➢ Possible Contents (need further discussion):
    - ▪ Objectives of establishing NBDS
    - ▪ Content of NBDS (overall data structure / functions)
    - ▪ Collaboration mechanism with other organizations
    - ▪ Required human resources & budget for operation / maintenance
    - ▪ Scope of JICA project to implement (part of grand design)
    - ▪ Others (Justification, Reference, etc.)

Technical review procedure was also proposed to change; a core group would be established consisting of Japanese experts, BCA and local experts.

Revision in pilot survey in XTNP was proposed; two baseline surveys will be carried out, instead of one baseline survey as in original plan. And there will be also two monitoring surveys.

Remarks: Currently authorized budget is not enough to implement these added activities. It is difficult to implement without additional budget allocation.

VI. Discussion

1. Mr. Eiji Egashira, JICA Vietnam Office had some comments:

- As we are all aware of, sustainability of the database system is the biggest concern for everyone. The master scheme and the legal document for data sharing are the two key benchmarks to assess the sustainability. The master scheme for the NBDS should be adopted by MONRE or higher authority. In terms of data sharing, the project would support the drafting of the legal document but it is the government role to get the legal document to be approved. Having these two items accomplished will give confidence to JICA on the sustainability of our support. Strong commitment is needed to achieve this during project period.

- The review assessed that the involvement of counterparts has not been enough. Much more involvement is needed so that Japanese experts can transfer their technology appropriately. Also, it is clear that VEA/BCA needs a larger team with sufficient capacity, to manage the database after the project termination. Therefore, apart from the increased involvement of the counterparts in the project, establishment of such team in VEA/BCA is also recommended.

- The process to decide each item, especially the "architecture" and "indicators", has been unclear. Same discussions were repeated, resulted in waste of time. As the lesson learnt, it is important to clearly agree and fix the steps and the timeframe, since the project has no time to loose anymore.

- It is natural that the needs for database system would change from time to time. Going back to the time of project formulation, we agreed to work on the original database design by targeting the species level. Now VEA/BCA thinks that addressing only the species level may not meet the diverse needs of BCA/VEA/MONRE. I acknowledge such growing needs, and it is important to agree on the overall design first, and then discuss the demarcation; which parts should be covered by the Project and which parts should be conducted after the end of the Project by the Vietnamese side. I hope this exercise will be carried out very soon, through the development of the master scheme.

2. Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office

- Counterpart involvement: Vietnamese side is the owner of the project, and the Japanese experts are contributor. Why does the Vietnamese side suggest the need to promote the involvement of C/Ps? The Vietnamese side should reconsider their basic understanding on the Project.

- The Mid-term Review recommends the assignment of specific persons or division to the Project. JICA would like to know Vietnamese side's ideas on how to follow the recommendation by the MTR.

- The Project will complete in 2 years. However the NBDS will remain. How does the Vietnamese side secure the budget to operate NBDS after the project finished?

- This project is not a financial project. Japanese experts are technical contributor. JICA would like to ask for the commitment of Vietnamese side on the sustainability of activities.

3. Ms. Nguyen Thi Thanh Ha, MOST, JCC member

- The collaboration with other stakeholders should be strengthened. The stakeholders such as IEBR should involve with the project in the beginning such as developing indicators for monitoring from the design steps.

- What is the operation/maintenance plan of the database after the project finish? A proposal has been made. Centralized database will be a burden for BCA/VEA because their human resource is limited. Decentralized database will reduce the burden for BCA/VEA.

4. Mr. Nguyen Xuan Thuy, ITC/VEA

- Human resources for operation/maintenance of the database are limited; hence, more training for Vietnamese side will be needed. It is necessary to identify which agency within VEA will be responsible for maintenance of NBDS. The administration of the system needs to be considered as well.

5. Ms. Nguyen Hong Thanh, MARD

- The role of MONRE is important in developing the NBDS. The data are scattered. The collaboration mechanism: a legal document by the Government is needed for data provision and sharing. This is the base for MARD, e.g. to provide the data required by MONRE.

6. Mr. Bui Ngoc Anh, Member of Vietnamese Midterm Review Team

- It is necessary to conduct the training and technology transfer to relevant agencies that will be responsible for operation and maintenance of the NBDS. An assessment on capacity should be carried out in order to make decision on which database software should be used, such as open source software or Microsoft software. This will ensure the sustainability of the project.

- As for the design of NBDS, it should be considered the compatibility with other elements. NBDS should be flexible to incorporate other functions.

- As for the master scheme of NBDS, it should be considered the connectivity of different stakeholders. Equipment should be expanded not only computers, desktops, laptops but also smart devices connected to the system to enhance the sustainability of the system. Data access should be discussed.

7. Mr. Nguyen Trung Minh, VAST, JCC member

- VAST has different institutes involving in biodiversity activities and has many biodiversity data. The data is managed by institutes. Experts if invited as individual to involve in the project, they are not allowed to provide the data of institutes; they can only provide their expertise. Hence, it is better to invite the agency/institute to involve in the project so the data can be provided officially

8. Mr. Kotaro TANIGUCHI, JICA headquarter, Mid-term review member

- The selection of open source software was agreed between Japanese experts and Vietnamese C/Ps. The open source software has advantage, and has consistency with the current system in BCA/VEA.

- As far as I know, in order to maintain NBDS, it is necessary to use production version (not free version) if you use Microsoft software. However, it is difficult to get users' license for the production version in Viet Nam.

- Some counterparts have been trained in Japan for using open source software.

- Do you have any legal status on using Microsoft products in MONRE?

9. Mr. Nguyen Xuan Thuy, ITC/VEA

- There is no legal document on using Microsoft products in MONRE. The Vietnamese government uses the free version of Microsoft products. It is difficult to

get the higher version. Open source software is not popular in Vietnam. If MONRE adapts open source software, more training to get high skills of maintenance will be needed.

- The usage of open source software may be simple for users, but the administration is more complicated. Writing software for the whole country is a difficult task.

10. Mr. Yoichi Kogure, JICA expert team

- The selection of open source software is quite popular in the world.

- It is possible to switch software from current PostgreSQL to Microsoft. However it is not recommended. It will be needed huge cost to maintain the higher version of Microsoft. Changing from open source code to Microsoft is a waste of time.

- In charge of GIS function, we planned to have GIS function into system in the future with PostGIS, so we have selected and agreed this open source which can be better accessed GIS.

11. Ms. Hoang Thi Thanh Nhan, BCA

- Selection of technology type has been discussed in different meetings. The development of master scheme is important to identify what kind of technology is the most suitable for Vietnam. Selection of open source software or Microsoft should be described in the written form. A mechanism regulation is also needed. The database is for MONRE or for the whole country. The project only supports one part of the master plan; hence, to avoid the outcome of project lies outside the master plan. A roadmap is needed, what is 1st, 2nd generation?

- Cooperation, collaboration: want cooperation, collaboration not only in MONRE but from other ministries, sectors. There is no regulation that agencies have to provide information to MONRE.

- Recommendation from the Mid-term review report in terms of a focal point of BCA to the project is not appropriate. Currently, a division within BCA participated in this project; In addition, the agency to be responsible for database management might not be BCA. This will be decided in the master scheme.

12. Dr. Nguyen The Dong, VEA replied to the comments by participants:

- Regarding comments by Ms. Ha from MOST, he confirmed that IEBR has been involving in the project from the beginning.

- Regarding comments by Mr. Fumihiko Okiura, he explained that 'counterpart", in this case, consists of different of stakeholders from different ministries and sectors. But this point still needs to be carefully considered.

- Concerning the data sharing and management, this needs to follow the Law on Biodiversity.

- Regarding Mr. Minh's comments, ministries and sectors should be involved and are responsible to involve. This will be further discussed during the preparation of the master scheme, mechanism for data provision and sharing.

- Regarding Mr. Eiji Egashira and Mr. Fumihiko Okiura comments, he strongly confirmed that the commitments of VEA/MONRE includes all of sections related to project, in particular, after project finish, such as: management, utilization, information sharing, operation, etc., are the responsibilities of Vietnamese side clearly.

- Counterparts: from VEA; from other departments. More collaboration is needed from outside.

- In addition, this was the important recommendation from Mr. Egashira about "decision-making process". Mr. Dong assigned to BCA draft and submits to JCC the process. He also assigned BCA to be in charge of the focal point. If there are any issues that may arise during project implementation, the direction will be resolved.

- In terms of the selection of open source software or Microsoft, the project has already agreed to adapt open source software. Vietnam will follow the recommendations of Japanese experts.

- Finally, all recommendations by JCC will be reported to Dr. Bui Cach Tuyen, Vice Minister of MONRE.

13. Mr. Kotaro TANIGUCHI, JICA headquarter, Mid-term review member

- Approval of master scheme of NBDS and legal document is the matter of Vietnamese side, and it is beyond control of Japanese side, therefore we JICA expect strong commitment and ownership of Vietnamese side. Even though the Japanese side are not be involved with the procedure of approval, JICA would like to know concretely how and when the approval will be obtained.

14. Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office replied to the comments by participants

- JICA expects the strong leadership of VEA. The Japanese side does not decide whole activities of the Project. It is Vietnamese side's role to make the final decision after thorough discussion. Continuously discussion will be welcomed.

VII. CONCLUSIONS

In closing, Dr. Nguyen The Dong reaffirmed that the meeting had discussed all relevant issues. The results and recommendations of the Mid-term review Mission are important and will be taken into consideration during the second stage of the project. All the comments at the meeting will be reviewed and followed. On behalf of two sides, Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office and Mr. Nguyen The Dong, Deputy Director General VEA signed the Minutes of the meeting for Midterm Review Report.

VIII. ADDITIONAL POINTS AGREED *(proposed by JICA)*

After the JCC meeting, the Vietnamese side and the Japanese side had agreed on the following points:

1. The project should aim to obtain the approval from the competent Vietnamese authority on the following two items, within the project period
   a. master scheme,
   b. legal document for data sharing,.

This will provide key foundations for the sustainability of the NBDS;

2. The JICA experts should provide technical support to this process;
3. VEA/BCA should prepare the documents required for the above two items in appropriate format, and take necessary steps toward approval;

4. By reflecting the above points, the MOU, memorandum of understandings on the drafting and approval process for the legal documents in the 2nd stage of the Project for

EOF

ANNEX

I. PROGRAM OF 2nd JCC
II. LIST OF PARTICIPANTS
III. PDM Ver.2.0
IV. MoU of the drafting and approval process for the legal documents
V. Distributed Materials

ANNEX I : PROGRAM OF 2nd JCC

1. **Objective**

- Review the progress report of the first stage of the project.
- Discussion of the results and recommendations of the Mid-term review Mission.
- Discussion on the planned activities in the second stage of the project.
- Signing of the mid-term review report and minutes of meeting for midterm review report.

2. **Date and Venue**

Date: May 30th 2013
Time: 08.30 – 12.00
Venue: Room #07, 2nd Floor, Building B, La Thanh Hotel, 218 Doi Can, Ba Dinh, Hanoi, Vietnam

3. **Language used**

English and Vietnamese

4. **Agenda**

Time	Content	By
8:00-8:30	**Registration**	
8:30-8:35	**Introduction on Participants and Agenda**	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director
8:35-8:45	**Opening Speech**	Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
8:45-8:50	**Remark**	Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office
8:50 – 8:55	**Remark**	Mr. Phan Van Phong, Deputy Director General Department of Natural Resources and Environment of Nam Dinh
8:55-9:20	**Progress report of the first stage of the project**	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director
9:20-9:45	**Report and discussion on the result of mid-term review**	Mr. Shigeki Hata, Executive Technical Advisor to the Director General, Global Environment Department, JICA Headquarter, Leader of Japanese review team Mr. Nguyen Minh Cuong, Deputy Director, Department of International Cooperation and Science, Technology, VEA, Leader of Vietnamese review team
9:45-9:55	**Signing Ceremony of mid-term review report**	Mr. Shigeki Hata, Leader of Japanese review team

		Mr. Nguyen Minh Cuong, Deputy Director, Department of International Cooperation and Science, Technology, VEA, Leader of Vietnamese review team
9:55-10:10	**Tea Break**	
10:10-10:30	**Plan for the activities in the second stage of the project**	Mr. Yoichi Kogure, Chief Advisor, JICA expert team
10:30-11:40	**Discussion on the planned activities in the second stage**	All participants, chaired by Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
11:40-11:50	**Conclusion of the discussion**	Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
11:50-12:00	**Signing Ceremony of Minutes of the Meeting for Midterm Review Report**	Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
12:00-13:30	**Lunch**	

5. Distributed materials:

- Agenda
- List of participants (Japanese side only)
- The Progress Report of the 1st stage of NBDS Project
- JICA Mid Term Review
- Joint Mid-Term Review Report on Project for Development of National Biodiversity Database System in Socialist Republic of Vietnam
- Plan for the activities in the second stage of the project

ANNEX II : LIST OF PARTICIPANTS

LIST OF ATTENDANCE
THE SECOND JOINT COORDINATION COMMITTEE MEETING
"THE PROJECT FOR DEVELOPMENT OF NATIONAL BIODIVERSITY DATABASE SYSTEM IN VIETNAM"

Hanoi, 30th May 2013

Time: 08:30 – 12:00

Venue: Room #07, 2nd Floor, Building B, La Thanh Hotel, 218 Doi Can, Ba Dinh, Hanoi

From Japanese side: (18 persons)

No	Name	Title
JCC members		
1	Mr. Fumihiko OKIURA	Senior Representative of JICA Vietnam Office
2	Mr. Eiji EGASHIRA	Senior Project Formulation Advisor, JICA Vietnam Office
Project Mid-term Review Team		
3	Shigeki HATA (Mr)	Leader of Japanese review team, Executive Technical Advisor to the Director General, Global Environment Department, JICA Headquarter
4	Masaaki YONEDA (Dr.)	Biodiversity Information System, Visiting Senior Advisor, JICA Headquarter
5	Susumu TAKAHASHI (Prof.)	Biodiversity Conservation Administration Professor, Faculty of Education, Kyoei University
6	Kotaro TANIGUCHI (Mr.)	Cooperation Planning / Aid Strategy Deputy Director, Forestry and Nature Conservation Division 1, Global Environment Department, JICA Headquarter
7	Michiko EBATO (Dr.)	Evaluation Analysis Environmental Science & Engineering Dept., Overseas Consulting Administration, Nippon Koei Co., Ltd.
Japanese Expert Team		
8	Mr. Yoichi Kogure	Chief Advisor
9	Ms. Yukiyo Yamada	Database Development
10	Mr. Masahiro Otsuka	Vegetation Survey
11	Mr. Nguyen Duc Tu	Vegetation Survey / Ecological Survey
12	Mr. Choshin Haneji	Ecological Survey

13	Ms. Mayuka Kobayashi	Work Coordination/ Database Development Assistant
14	Ms. Nguyen Thi Sinh	Project Secretary Assistant
Observer		
15	Mr.Ryuji TOMISAKA	Environmental Policy Advisor, MONRE
16	Mr. Yasuhiro INOUE	JICA Forestry Program Advisor to MARD
17	Ms. Do Thi Thu Thuy	JICA Forestry Program National Coordinator
18	Mr. Nguyen Vu Tiep	Program Officer, JICA Vietnam Office

From Vietnamese side (24 persons)

No	Name	Title
JCC members		
1	Dr. Nguyen The Dong	Deputy Director General of VEA, Project Director
2	Ms. Nguyen Thi Thanh Ha	Deputy Director - General, Department of Social and Natural Sciences, Ministry of Science and Technology (MOST)
3	Mr. Nguyen Trung Minh	Deputy Director of Planning and Finance Department, VAST
4	Mr. Phan Van Phong	Deputy Director of DONRE Nam Định
Project management Board		
5	Ms. Hoang Thi Thanh Nhan	Deputy Director of BCA, Project Deputy Director
6	Ms. Phung Thu Thuy	Administration Office, BCA
Vietnames Midterm Review Team		
7	Mr. Nguyen Minh Cuong	The leader of Vietnamese Review Team, ICD, VEA
8	Mr. Nguyen Manh Trung	Vietnamese Review Team, Department of Planning, MONRE
9	Mr. Bui Ngoc Anh	Vietnamese Review Team
10	Ms. Phan Thi Thanh Hoi	Vietnamese Review Team, HNUE
Observer		
11	Mr. Nguyen Xuan Thuy	Administration Office of VEA
12	Ms. Vu Thi Minh Tram	Center for Environmental Information and Data, VEA
13	Mr. Nguyen Quoc Khanh	Center for Environmental Information and Data, VEA

14	Ms. Bui Hoa Binh	BCC Project
15	Mr. Pham Xuan Hoang	Representative of Division of Ecology, BCA
16	Ms. Kieu Thi Thao	PA Project
17	Mr. Le Anh Dung	PA Project
18	Mr. Pham Ngoc Son	Administration Office of VEA
19	Mr. Tran Duc Luong	IEBR
20	Mr. Dang Xuan Phong	Planning and Finance Department, VAST
21	Ms. Ly Thanh Huong	Vietnam Plus
22	Ms. Nguyen Hong Thanh	MARD
23	Mr. Nguyen Thanh Tung	Interpreter
24	Ms. To Thu Huong	Interpreter

Project Design Matrix (PDM) (DRAFT/ PROPOSED)

Project Title: Project for Development of the National Biodiversity Database System
Project period: November 2011 – March 2015 (3 years and 5 months)
Target area: Hanoi, Nam Dinh Province, and Vietnam countrywide
Target group: VEA (Mainly counterpart staffs of BCA, VEA,CEID, CEM, and ITC) and Nam Dinh DONRE

Executing agency: Vietnam Environment Administration (MONRE)

PDM Version 2
30 May 2013

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Overall Goal			
The second generation of national biodiversity database system is developed.	1. GIS-linked NBDS for Nam Dinh Province is developed. 2. Utilization method of NBDS for specific application is developed with Nam Dinh Province in mind.	Roadmap for fulfillment of NBDS	Additional financial and human resources are mobilized.
Project Purpose			
The first generation of national biodiversity database system is developed.	1. NBDS Architecture is approved by VEA/ MONRE. 2. Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS. 3. 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.	1-1 Entity Relationship Diagram (Note 1) 1-2 Letter of Approval from VEA/ MONRE 2-1 Print out of all species data entered into NBDS by the project 3-1 Report of Acceptance Test (Note 2) 3-2 Maintenance record 3-3 Number of Account holders	• Annual state budget for operation and management of NBDS is appropriately allocated. • MONRE legislates mechanism for collaboration based on the submitted recommendation. • Trained staffs are not displaced.

Ⅲ. PDM Ver.2.0

4. Capacity on management and awareness of utilization of NBDS are strengthened.	4.1 BCA/ VEA/ DONRE staff gained skills to manage NBDS. 4.2 Manual for management and utilization of 1st generation NBDS is developed. 4.3 Awareness raising workshops are conducted.	4-1 (i) Training Records (Number of trainee, training days, training materials used) 4-1 (ii) Number of trained staff passed the test 4-2 (i) Administrator's Manual 4-2 (ii) Users' Manual 4-3 (i) Materials prepared for awareness raising including sample materials for reporting and publication based on the data collected in Xuan Thuy National Park 4-3 (ii) Number of participants/ Number of workshops conducted/ Number of materials distributed	

Outputs			
1. Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.	1.1 Specification of data format, software, and hardware of NBDS are identified. 1.2 The proposed architecture for NBDS based on the available information/ condition is submitted to MONRE.	1-1 (i) List of procured equipments 1-1(ii) Type of software (Note 3) 1-2 (i) Proposal (Master Scheme) (Note 4) 1-2 (ii) A document – Architecture of NBDS (Note 4) 1-2 (iii) Guideline for developing National Level indicators for biodiversity monitoring(Note 5)	• VEA/ MONRE facilitates the dialogue between the stakeholders to establish consensus on the architecture of NBDS. • BCA will decide the core-set of national biodiversity monitoring indicators before January 2014
2. Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended	2.1 Existing data and formats in various agencies is assessed. 2.2 Recommendations as a draft legal document are prepared.	2-1 Assessment Report on related organizations 2-2 Draft legal document	
3. A database for Nam Dinh Province is developed as a part of NBDS (Note 6).	3.1 The entry of data of pilot survey in Xuan Thuy National Park into NBDS is completed. 3.2 The pilot database for Nam Dinh Province is ready to be regularly updated. 3.3 Technical Guideline of basic survey and monitoring on wetland ecosystem is completed. 3.4 The staff of DONRE is trained to use and maintain the database for Nam Dinh Province.	3.1 Survey Report (Note 7) 3-2 Manual for maintenance and usage of database (Same as in 4.2 (i) and 4.2 (ii)) 3.3 Technical Guideline for basic survey and monitoring on wetland ecosystem (Note 8) 3.4 Record of training programs conducted	

3-7. Input gathered data to the pilot database.			
3-8. Develop technical guideline of basic survey and monitoring on wetland ecosystem based on experiences in the pilot survey including an indicator development and use in XTNP.			
4-1. Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies.			
4-2. Prepare Administrator's manual and User's manual on 1st generation of NBDS.			
4-3. Develop sample materials for reporting and publication based on the data collected in Xuan Thuy National Park.			
4-4. Conduct workshop/ seminar to introduce NBDS to policy makers, and central/ provincial officers concerned.			

Note 1: Entity Relationship Diagram gives an overview of the structure of NBDS. The print out can be obtained from the project for verification.
Note 2: The acceptance test is to be done jointly done by Japanese Expert Team and BCA with the users.
Note 3: The type of software used can be verified in the Administrator's manual.
Note 4: Architecture does not include the institutional mechanism of database management. However, the Project will prepare "Proposal (Master Scheme)" to elaborate on that aspect.
Note5: In the Guideline for National Level- Biodiversity Monitoring Indicators, the process of indicator development in Xuan Thuy National Park, the process of selection of national indicators, rationale, selection criteria will also be included.
Note 6: The pilot survey has been planned mainly for the purpose of generating data to be used to test and verify the data structure of and data entry procedure for NBDS. Thus, it has been planned in a limited scale and scope. The project has selected Xuan Thuy National Park as the pilot site and does not have a plan to carry out the similar survey to cover the entire Nam Dinh Province.
Note 7: The contents will include the actual survey design, data collection and analysis methods, and the results of the pilot survey conducted in Xuan Thuy National Park.
Note 8: The contents may include; design of a basic survey and monitoring methods for wetland eco system. Further details can be discussed between BCA and Japanese Expert Team.

Activities	Inputs		
	Japanese side	Vietnamese side	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC.	Japanese Experts • Chief Technical Advisor • Database Development • Biodiversity • Vegetation Survey • Ecological Survey • Coordinator Machinery and equipment • Server • Database software • Workstation • PC • Color laser printer and photocopy machine • Scanner • UPS • OA software • Camera trap • Digital camera • Handheld GPS • Binocular • Clinometer with compass • Hypsometer • Others Training • Training in Japan or third country Project budget	Counterpart • Project Director • Project Manager • Other staff Facility, machinery and equipment Project office, meeting room, necessary machinery and equipment, establishment of internet infrastructure and registration of domain for NDBS Project counterpart budget	
0-2. Monitor and evaluate progress of the project activities.			
1-1. Identify and analyze existing databases.			
1-2. Establish a technical working group for NBDS development with the participation of MONRE, MARD, MOST, VAST, etc.			
1-3. Organize meetings of technical working group (TWG).			
1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS.			
1-5. Prepare Proposal (Master Scheme) and a draft Architecture of NBDS, and national core set of indicators for biodiversity monitoring with the agreement among TWG members.			
1-6. Develop a Guideline for developing National indicators for biodiversity monitoring			
1-7. Gather and input data in NBDS.			
1-8. Modify NBDS architecture based on experiences from the pilot survey.			
1-9. Submit the final draft Architecture of NBDS to MONRE.			
2-1. Identify key database holders.			
2-2. Assess the data availability, formats and capacity for data sharing and database management amongst the database holders.			
2-3. Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS.			
3-1. Identify biodiversity indicators of Xuan Thuy National Park, Nam Dinh Province.			
3-2. Develop data format of the pilot database for Nam Dinh Province.			
3-3. Identify data of the pilot database for Nam Dinh Province.			
3-4. Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park.			
3-5. Carry out basic survey and biodiversity monitoring at Xuan Thuy National Park in Nam Dinh Province.			
3-6. Compile data collected from basic survey.			

Pre-conditions
MARD, MOST, VAST and other related organizations support the project implementation.

MEMORANDUM OF UNDERSTANDINGS
ON
THE PROJECT FOR DEVELOPMENT OF
THE NATIONAL BIODIVERSITY DATABASE SYSTEM

PROJECT FOR DEVELOPMENT OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM

According to the result of Mid-term review for the "Project for Development of the National Biodiversity Database System" (hereinafter referred to as "the Project"), the Japan International Cooperation Agency (hereinafter referred to as "JICA") and the Biodiversity Conservation Agency (hereinafter referred to as"BCA"), the Vietnam Environment Administration (hereinafter referred to as"VEA"), the Ministry of Natural Resources and Environment (hereinafter referred to as"MONRE") of the Socialist Republic of Vietnam have agreed to implement additional activities in the second stage after the Mid-term review of the Project. In order to ensure the sustainability of ongoing Project activities, both parties have discussed and agreed on the establishment of approval processes required for the legal documents that will be produced as the principal output of the Project, as referred to in the document attached hereto.

Hanoi, 22th July, 2013

Dr. Nguyen The Dong
Deputy Director General
Vietnam Environment Administration
Project Director

Mr. Yoichi Kogure
Chief Advisor
JICA Expert Team

Mr. FumihikoOkiura
Senior Representative
Vietnam Office
Japan International Cooperation Agency

THE ATTACHED DOCUMENT

I. Outputs of the Project which require approval as legal document

The following outputs of the Project should have legal status in Vietnamese government:

1. Proposal (Master scheme) of NBDS (National Biodiversity Database System)
2. Legal document for collaboration mechanism

The former document should be approved by the MONRE as a "Master Scheme." The latter document should be approved by the MONRE as a "Circular."

II. The scope of the Project activities for the legal documents

The scope of the Project will cover activities required to produce the "Final Draft" of the said two legal documents within the period of the Project implementation, as described in the proposed Project Design Matrix (PDM 2.0) attached in the Mid-term Review Report.

III. Responsibilities of the Vietnamese side for the approval of the legal documents

The Vietnamese side is committed to perform the following efforts regarding the drafting and approval processes of the said two legal documents.

- Actively participate in drafting processes of the abovementioned two legal documents during the Project period, by taking leading roles in managing the progress of drafting of the said documents performed by designated local experts hired for this purpose with technical advice and cooperation from the JICA experts.
- Make the two legal documents approved by the corresponding agencies in charge within the Government of Vietnam by taking all necessary procedures and actions for the approval processes.
- The approval of the said two documents should be completed within the Project period before the end of March 2015 as far as possible. Should the approval processes take longer than the said time frame, the Vietnamese will continue to follow up with the said process after the closing of the Project in order to make the legal documents approved officially by the Government of Vietnam.
- The Vietnamese side should report the progress of the approval processes within the Government of Vietnam to the JICA side (JICA Vietnam Office and the JICA expert team) on a regular basis until their final approval.

IV. Support of the Japanese side to assist the development and approval of the legal documents

The Japanese side ensures the provision of technical assistance to the Vietnamese side to assist the development and approval of the two legal documents during the remaining period of the project implementation.

(End of Attachment)

AGENDA
FOR THE THIRD JOINT COORDINATING COMMITTEE MEETING,
THE PROJECT FOR DEVELOPMENT
OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM
IN THE SOCIALIST REPUBLIC OF VIETNAM

Time: 8:00 am –12:00 am, Friday, May 16, 2014

Venue: Center for Women and Development, No. 20 Thuy Khue street, Tay Ho Distric, Hanoi

Time	Content	By
08:00 - 08:30	**Registration**	BCA
08:30 – 08:40	**Introduction on Participants and Agenda**	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA
08:40 – 08:45	**Opening Speech**	Assoc.Prof. Bui Cach Tuyen, Vice Minister of MONRE, General Director of VEA, Chairman of JCC
08:45 – 08:50	**Opening Speech**	Mr. Nguyen Viet Hung, Vice Chairman of People's Committee of Nam Dinh Province
08:50 – 09:00	**Opening Speech**	Mr. Fumihiko OKIURA, Senior Representative of JICA Vietnam Office
09:00 – 10:00	**Progress report of the project and plan for the activities until project end**	Dr. Pham Anh Cuong, Director of BCA, Deputy Director of project
10:00 – 10:15	**Tea Break**	
10:15 – 11:30	**Report on the draft of Master Scheme (Road map), National Biodiversity Indicator Set and System Architecture of NBDS**	Mr. Yoichi Kogure, Chief Advisor
	Discussion	All participants
11:30 - 11:45	**Conclusion and Closing remark**	Assoc.Prof. Bui Cach Tuyen, Vice Minister of MONRE, General Director of VEA, Chairman of JCC
11:45	**Lunch**	All participant

MINUTES
OF THE THIRD JOINT COORDINATING COMMITTEE MEETING
Of THE PROJECT FOR DEVELOPMENT OF
THE NATIONAL BIODIVERSITY DATABASE SYSTEM
IN THE SOCIALIST REPUBLIC OF VIETNAM

The second Joint Coordinating Committee (hereinafter referred to as "JCC") Meeting of the "Project for Development of the National Biodiversity Database System" (hereinafter referred to as "the Project") was held on May 16, 2014 and chaired by Prof. Dr. Bui Cach Tuyen, Chairman of JCC of the Project.

As a result of the discussion, the Project agreed to summarize the matters referred to in the document attached hereto.

Hanoi, May 16th, 2014

Mr. Yoichi Kogure
Chief Advisor
JICA Team of Expert

Dr. Nguyen The Dong
Deputy Director General
Vietnam Environment Administration (VEA)
Ministry of Natural Resources and Environment (MONRE)

Mr. Fumihiko Okiura
Senior Representative
JICA Vietnam Office
Japan International Cooperation Agency (JICA)

ATTACHED DOCUMENT

I. Participants

- Prof. Dr. Bui Cach Tuyen, Vice Minister of MONRE, General Director of VEA, Chairman of JCC of the Project;

- Dr. Nguyen The Dong, Deputy Director General of Vietnam Environment Administration (VEA), Project Director;

- Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office;

- Representatives of JICA Vietnam Office: Mr. Egashira and Mr. Tiep;

- The member of JICA expert team

- BCA: Dr. Pham Anh Cuong, Director of Biodiversity Conservation Agency (BCA), Deputy Director of the project; Ms. Hoang Thi Thanh Nhan, Deputy Director of Biodiversity Conservation Agency (BCA); Mr. Nguyen Xuan Dung and other staff form BCA.

- Member of Joint Coordinating Committee (JCC) from MARD and MOST; Xuan Thuy National Park; Nam Dinh DONRE, VEA staff, technical working groups, and core groups.

II. Opening Speech

- Prof. Dr Bui Cach Tuyen, Vice Minister cum General Director- the Chairman of JCC delivered the opening speech to the meeting. He covered the milestones of the project, the expected products/output and the achievements of the project, as well as the major activities that need to be promoted in remaining time of project. In addition, he also emphasized the importance of the coordination mechanism between ministries, agencies as regards to relevant issues after the project closure.

- Mr. Fumihiko OKIURA, Senior Representative of JICA Vietnam Office acknowledged the achievements as well as challenges in developing NBDS for Vietnam. He also confirmed that the project has to make use of time to achieve expected outputs and this meeting would be the last chance for stakeholders to discuss about the project implementation for remaining time, giving solutions and promoting the stakeholders' participation. Mr. Okiura also emphasized the importance of the terminal evaluation and the involvement of stakeholders after the project closure.

- Dr. Nguyen The Dong, Deputy General Director of VEA cum Project Director acknowledged the achievements but noticed that there would have many must-do activities in the short time so as to finish the project as planned with expected output.

III. Progress report of the project and plan for the activities until project ends

Presentation

Dr. Pham Anh Cuong, Director of Biodiversity Conservation Agency (BCA), Deputy Director of the project presented the progress to the targets of the projects and main duties for remaining project time, covering: the achievements, especially the 1st generation of NDBS; expected outputs of the project; the Schedule of major activities; progress of the project; and the current schedule of project activities.

- Vietnamese technical coordinator was assigned for coordination among CGs and project.
- To gather comprehensive information for each output.
- Additional workshops are needed.

Discussions

- *Mr Eiji EGASHIRA, Senior Project Formulation Advisor, JICA Vietnam Office:*
  - This project is showing a good progress especially since the mid-term review, and I really appreciate the dedication of all stakeholders both from Vietnam and Japan. At the same time, within the remaining time the project needs to keep this momentum and make all effort to achieve the expected outputs and close the projects as planned.
  - JICA expects strategic idea and plan for the management of the project by MONRE for the remaining period. It is the fact that assignment of Japanese experts is limited. JICA expects strong involvement of VEA and BCA as the project owner.
  - Master scheme and the legal document for collaboration mechanism are the two important outputs of the project. JICA would like to know about the form of institutionalization of these two after the project finish. For example, how will the master scheme authorized? Will the legal document for collaboration mechanism as a MONRE circular effective enough to create a real collaboration with other data holders?
  - In addition, now we have effective partnership with local experts through the TWGs, Core Groups and so on. It is an asset of the project, and I recommend MONRE to maintain this partnership with local experts in the operating NBDS even after the project is finished, for example by receiving technical advisories.

- *Mr. Nguyen Quoc Nghi, Science Technology and Environment for Agriculture and Rural Development, Ministry of Agriculture and Rural Development (MARD)*

  According to Mr. Cuong's presentation, I found that the project's 3rd result is to develop

the database system for wetlands monitoring in Xuan Thuy National Park (XTNP), Nam Dinh. Aside from wetlands, will the other elements, i.e. fishery, agriculture, forest land, other ecosystems, etc. be included in the Master Scheme (the final product)?

- *Mr. Kogure answered:*
  - The Master Scheme includes a set of indicators covering a variety of biodiversity including wetlands.
- *Mr. Nguyen Viet Cach - Director of XTNP:*
  - In addition to NBDS project, XTNP has been cooperating with other entities, for example FIPI and IUCN.
  - Pilot surveys were carried out but not enough to cover all biodiversity aspects of the park because of time limited. I recommend more surveys to collect more completed information.
  - He also recommend the Project to consider a more feasible monitoring mechanism for the site because the proposed one require huge resources (human and finance) that is not always available in the park. It would be very difficult for local national parks to continue the monitoring after finishing the project. They request to maximize resources to complete the monitoring process.
- *Dr. Dong:*

  The Project still have the one more field trip in XTNP and Mr. Cach can directly discuss with the project.

- *Ms. Hoang Thi Thanh Nhan:*
  - For the sustainability of the project, BCA is developing a proposal on implementation plan in short term and long term as well.
  - The proposal will be approved by the Minister of Natural Resources and Environment. BCA recommends JICA to pay attention and jointly promote the approval.
  - Due to project's short time left, We expect to promote the collaboration with relevant stakeholders. BCA hopes that Japanese experts would work more closely with BCA and relevant stakeholders, and provide more technical support to develop the Master Scheme.

- *Mr. Eiji EGASHIRA - Senior Project Formulation Advisor, JICA Vietnam Office:*

  XTNP's case is a good example showing that cooperation among central level agencies is more difficult than at local level. There are many projects implemented by many other agencies in the central level, but information are scattered among agencies.

Needs of information sharing mechanism is even more rising. We should promote the cooperation among MONRE, MARD, MOST and so on.

- *Dr. Dong:*

  During the project implementation, MONRE have usually consulted with other ministries, agencies and local experts.

- *Ms. Vu Thi Minh Tram, Center for Environment Information and Data (CEID), VEA, MONRE:*

  We have piloted to input data into the database system. I hope that the database and system structure will fulfill the requirement of Vietnam (BCA).

- *Mr. Nguyen Trung Minh, The Vietnam Academy of Science and Technology (VAST):*

  The first exhibition of ecosystems at Museum of Nature and exhibition Vietnam was opened. I found that the development of NBDS also supports the related its activities.. We would highly appreciate if the results of project can be transferred to VAST and commit to promote the results of project to other fields.

IV. Report on the draft of Master Scheme (Road map), National Biodiversity Indicator Set and System Architecture of NBDS_

Presentations

Mr. Yoichi Kogure, Chief Advisor of project brought to the meeting the report on draft outputs from Core groups including the Biodiversity Monitoring Indicator Guideline, Master Scheme and System Architecture of NBDS, Technical guideline for wetland survey and Draft legal document for collaboration mechanism.

- JICA expert team expects positive promotion to gather biodiversity data by BCA to develop collaboration mechanism.
- For System Architecture, in according to ideas from all leaders of BCA's divisions It should find out the needs of management function. However it is impossible to cover all function during the project term.

Discussion:

- *Mr. Nguyen Vu Tiep, Program Officer, JICA Vietnam Office:*
  - Firstly, I would like to comment on DB development progress and performance. One of the project products is the national biodiversity database piloted in Nam Dinh. However particular information on biodiversity of Nam Dinh hasn't been shown clearly yet.
  - Secondly, should we include the data on socio-economic development in our national biodiversity database?

- Thirdly, to avoid the duplication and waste of time, we should consider to existing reporting formats on environmental data (from DONRE to MONRE) when we develop new reporting format on biodiversity.

- *Mr. Cuong, BCA answered on the legal documents:*

It is principle that we have fully reviewed our legislation system to ensure that there is no duplication in legal documents.

- *Ms. Nhan, BCA*:

Today is the chance for experts of Vietnam and Japan to discuss about the level of socio-economic information in NBDS. In terms of management, we have to manage on the biodiversity status. The socio-economic aspects have impacts on biodiversity. What kinds of socio-economic aspects included must be considered. We don't build a single database. The NBDS will be also connected to other database systems.

- *Mr. Nguyen Duc Tu, Expert in Vegetation Survey/Ecological Survey:*

Socio-economic information is important because it one of the key biodiversity elements.

- *Mr. EGASHIRA:*

According to the MoU signed after the mid-term review, the legal document for collaboration mechanism shall take form of as a 'MONRE circular'. The important thing is that, we have to ensure the circular of MONRE have enough validity for other agencies to collaborate. As other cases of JICA projects, such as the GHG Inventory project, our counterpart MONRE-DMHCC plans to develop a Prime Minister decision on GHG National System, which is a system to develop the GHG Inventory in collaboration with other ministries and agencies. We can consider the other options, for example the approval by the Prime Minister in order to gain a stronger impact on other agencies.

- *Dr. Cuong* :

Biodiversity Law stipulates that MONRE have responsibility for developing the national biodiversity database. It does not mean we force other ministries to provide information and utilize our database but we provide this well-operated system for other agencies to use.

- *Mr. Dong:*

Our database is on open basis. Hence, the operators, managers and users are very diverse. Has the security been taken into account?

- *Mr. Kogure:*

We have a free and open code and can set up the different security levels for different users group.

- *Mr. Nguyen Duc Tu*: added more about Dr. Cuong answer:

In the 1st meeting, we all have considered about that whether a Minister' Circular have enough impact on local authorities. And we came to a consensus that under project, a circular is feasible. In future, with more condition enabled, the legal statute can be upgraded. For Mr Dong's question, an authorization system will be design to give different levels of data access and modification.

- *Mr. Tiep:*

I agree with Mr. Cuong's answer. It is right in theory that all legal normative documents have certain impact but should we develop a joint circular between ministries, such as between MONRE and MARD, to enhance the enforcement of circular?

- *Ms. Nhan:*

Regarding information sharing, besides responsibility, we need to show some incentives to users. Now, MONRE cooperate with the MOF to build a joint Circular on finance for biodiversity because we also have to ensure the resources and guidance to implement. There are a lot of conditions to ensure the enforcement of a normative guideline for practical implementation besides forceful responsibility.

- *Mr. Phan Van Phong, Nam Dinh Department of Natural resources and Environment:*
  - It is necessary to integrate socio-economic data into our database. For example: the density aquaculture also affects to biodiversity. However, I also recommend that the integration of socio-economic information should be taken into account in the beginning of system development.
  - About the impact of normative legal document, I think it is enough when MONRE issues its Circular because it is stipulated in Law. However for the budget allocation for NBDS, we can request MOST to join the circular.
  - Last, I request more explanation about how data of XTNP survey is integrated into the NBDS architecture when there is continuous change in biodiversity status of Nam Dinh. Is this information noted in Mr. Kogure's presentation?
- *Mr. Kogure*:
  - About the last question, we have to identify clearly what data is needed to be input to NBDS, including socio-economic data as well as future budget allocation. Plus, how to quantify and manage should be more considered by Project.
  - Our database has already included the data on surveys in XTNP. System

Architecture will be drafted until July. Then, we are planning to hold trainings on how to access and use the data from the surveys.

- The database system would be flexible for users. In case DoNRE, XTNP or other local authorities want to use statistics from system, they can also edit. The picture design of the database is also set flexibly. Familiar design can be shown for DoNRE. However, in the original core system, our designation bases on international standards.

- *Ms. Nhan:*

- The objective to use the NBDS is management of Biodiversity conservation. It's necessary to identify what the general socio economic aspect is and why socio economic aspect is needed in the NBDS. International principles about these matters should be also considered.
- In fact, low quality output will not be approved by MONRE. There will be a lot number of remaining workload for NBDS. I wish to listen to the opinions from Japanese experts about options and solutions for our final products.

- *Mr. Kogure:*

- We have to define and ensure feasible and practical way for NBDS. It is unable to input all demand from Vietnam to the NBDS system. However we think local experts can complete all outputs by the end of the project because of local experts and BCA's active working these days.
- Our project has a terminal evaluation in July by Japan and Vietnam side. More assessment of our project activities will be needed with our self-evaluation.

- Mr. *EGASHIRA:*

- There are some remaining issues on Legal Document, collaboration mechanism and System Architecture so that the management and demarcation for future will be made clearly.
- There will be a joint terminal evaluation mission in July to assess the project outcomes.. JICA hopes that project can present the ideas on how to manage and use the NBDS for future during the terminal evaluation.

- *Mr. Kogure:*

About the progress of project, now, we are quite positive because we have data 1st generation. Now, we focus on the working of core groups.

V. Conclusion and Closing remark

1. Mr. Okiura appreciated the effort of both sides, of stakeholders and the progress. He

thanked Vietnamese and Japanese experts for their active participation. JICA office will try to ensure the resources (human resources and finance) under the given scope to achieve the targets. However, how to institutionalize this Master Scheme, legal document for collaboration mechanism, and other project outputs, totally depends on Vietnam context, and MONRE should seriously consider how to enable this, otherwise the project can be regarded as a failure.. He promised to continuously support.

2. Dr. Dong totally agreed with the opinion of Mr. Okiura. He appreciated the effort of stakeholders, especially the Japanese experts for their direct technical support. He affirmed that now we have clearer view on the progress of Project.

- For upcoming time, we have to try to develop the regulations on NBDS management and utilization.
- He noticed that project only left short time to finish. Therefore, JCC hope that the core groups will work closely with MONRE/ BCA to sort out particular activities, aiming to finish project at the beginning of March, next year before the due time. To gain that, JCC notice and recommend that base on the signed documents and meeting minutes, projects have got well preparation for last evaluation.
- Moreover, to ensure the sustainability of project output, BCA and VEA are developing legal documents stipulating about the database operation and management. Regarding the legal document for collaboration mechanism, MONRE can issue a Circular but if necessary; MONRE can request higher level for issuing to have higher legal impact. About the necessity of Prime Minister Decision of joint circular, MONRE will further consider.
- He totally agreed with Mr Okiura that the operation and exploitation of NBDS is on the duty of VN.
- Finally, on behalf of JCC, he expressed the deep thank to JICA VN office for their close cooperation and support during project implementation and hope for the continuing support from JICA.

LIST OF PARTICIPANT

THE THIRD JOINT COORDINATION COMMITTEE MEETING

"The project for Development of National Biodiversity Database System in Vietnam"

Time: 08:00 – 12:00, Friday, 16th May 2014

Venue: Center for Women and Development, No. 20 Thuy Khue, Tay Ho, Hanoi

No.	Name	Organization	Sign
I	**JCC members**		
1	Assoc.Prof. Bui Cach Tuyen	Vice Minister of MONRE, General Director of VEA, Chairman of JCC	
2	Dr. Nguyen The Dong	Deputy Director General of VEA, Project Director	
3	Dr. Pham Anh Cuong	Director of BCA, Deputy Director of Project	
4	Mr. Nguyen Trung Minh	Deputy Director of Planning and Finance Department, VAST	
5	Mr. Phan Van Phong	Deputy Director of DONRE Nam Định	
6	Mr. Fumihiko OKIURA	Senior Representative of JICA Vietnam Office	
7	Mr. Eiji EGASHIRA	Senior Project Formulation Advisor, JICA Vietnam Office	
8	Mr. Nguyen Vu Tiep	Program Officer, JICA Vietnam Office	
II	**PMU members**		
9	Ms. Hoang Thi Thanh Nhan	Deputy Director of BCA, Project Deputy Director	
10	Mr. Nguyen Xuan Dung	Chief of Administration Office, BCA	
11	Mr. Le Anh Dung	Administration Office, BCA	
III	**JICA Expert Team**		
12	Mr. Yoichi Kogure	Chief Advisor	
13	Mr. Nguyen Duc Tu	Vegetation Survey/ Ecological Survey	

14	Ms. Mayuka Kobayashi	Work Coordination/ Database Development Assistant	
15	Ms. Nguyen Thi Sinh	Project Secretary Assistant	
IV	**VEA**		
16	Ms. Vu Thi Nhung	Environment Magazine, VEA	
17	Ms. Nguyen Khanh Phuong	ITC/VEA	
18	Ms. Vu Thi Minh Tram	CEID/VEA	
19	Mr. Nguyen Si Cuong	Environnemental Ressources Press, VEA	
20	Mr. Le Phu Cuong	CEID/VEA	
21	Mr. Pham Ngoc Son	ITC/VEA	
V	**MARD**		
22	Mr. Vu Manh Hiep	Departure of Nature Conservation , Vietnam Forest Administration, MARD	
23	Mr. Nguyen Quoc Nghi	Science Technology and Environment for Agriculture and Rural Development, Ministry of Agriculture and Rural Development (MARD)	
VI	**Nam Dinh Province**		
24	Mr. Nguyen Viet Cach	Director off XTNP	
25	Mr. Doan Cao Cuong	Staff off XTNP	
26	Mr. Pham Van Son	Director of environmental Protection Agency, DONRE Nam Dinh	
27	Ms. Tran Thi Thanh Tung	Director of environmental Protection Agency, DONRE Nam Dinh	
VII	**Local experts on Core Groups**		
28	Dr. Do Van Tu	Local consultant on wetland survey/monitoring	
29	Dr. Phan Thi Thanh Hoi	Local expert on Biodiversity Indicator	

30	Mr. Tran Thanh Than	Local expert on Legal Document	
31	Dr. Duong Le Minh	Local expert on Master scheme	
32	Dr. Bui Quang Hung	Local expert on Master scheme	
33	Prof. Mai Trong Nhuan	Local expert on Master scheme	
34	Dr. Vo Thanh Son	Local expert on Biodiversity Indicator	
35	Dr. Ho Thanh Hai	Local expert on Biodiversity Indicator	
VIII	**Japanese experts**		
36	Mr. Yasuyuki INOUE	JICA Forestry Program Advisor to MARD	
37	Ms. Do Thi Thu Thuy	JICA Forestry Program National Coordinator	
IX	**BCA**		
38	Mr. Le Ngoc Hung	BCA	
39	Ms. Truong Quynh Trang	BCA	
40	Ms. Phan Thi Quynh Le	BCA	
41	Ms. Tran Thi Nguyet	BCA	
42	Mr. Tran Trong Anh Tuan	BCA	
X	**MOST**		
43	Mr. Tran Nam Binh	Department of Social and Natural Sciences, Ministry of Science and Technology (MOST)	
XI	**Others**		
44	Ms. Nguyen Thuy Chi	Vietnam Television	

AGENDA
FOR THE FOURTH JOINT COORDINATING COMMITTEE MEETING

THE PROJECT FOR DEVELOPMENT OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM IN THE SOCIALIST REPUBLIC OF VIETNAM

(MONRE/VEA/BCA - JICA/JDS)

1. Background

Biodiversity Conservation Agency (BCA), VEA[1], MONRE[2], with the technical support from Japan International Cooperation Agency (JICA), has initiated joint project to develop the National Biodiversity Database System (NBDS) in Vietnam. The project duration is from November 2011 to March 2015, and the following target outcomes are expected in this project.

- Develop NBDS that is capable of storing biodiversity data in Vietnam including taxonomy data of Fauna and Flora in Vietnam, provincial-level survey and monitoring data on biodiversity, and so on. The data structure is determined by the Master Scheme of NBDS and biodiversity monitoring indicators, as well as by the system architecture document.
- Implement pilot surveys at Xuan Thuy National Park (XTNP) in Nam Dinh province in order to develop a technical guideline for wetland survey and monitoring including the procedures to store obtained data from the survey into NBDS.
- Develop a mechanism for collaboration with other agencies (MARD[3], MOST[4], VAST[5], etc.) and related organizations in sharing, managing, exploiting and utilizing data and information of NBDS. The output is expected in the format of legal document.
- Strengthen the capacity on management and utilization of NBDS by technology transfer.

The JICA/BCA project team has been cooperatively designing NBDS architecture as well as drafting biodiversity monitoring indicators for Vietnam and XTNP through discussions in Core Groups and pilot surveys at XTNP.

2. Objectives

Objectives of this Joint Coordination Committee meeting are as follows:

- Report on the activities and achievements of the project
- Demonstration of the first generation of NBDS
- Introduction of collaboration mechanism on data sharing for NBDS
- Discussion on the future activities and sustainability after the completion of the project

3. Date/time and Place

Date: 27 January 2015,
Time: 13:00-16:00
Place: Bao Son Hotel, No. 50 Nguyen Chi Thanh, Dong Da, Hanoi

[1] Vietnam Environment Administration
[2] Ministry of Natural Resources and Environment
[3] Ministry of Agriculture and Rural Development
[4] Ministry of Science and Technology
[5] Vietnam Academy of Science and Technology

4. Program:

Time	Contents	Speaker (Facilitator)
12:30 - 13:00 (30 min.)	**Registration**	
13:00 – 13:10 (10 min.)	Introduction on Participants and Agenda	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA
13:10 – 13:30 (20 min.)	Opening Speech	Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
	Opening Speech	Mr. Fumihiko OKIURA, Senior Representative of JICA Vietnam Office
13:30 –13:50 (20 min.)	Summary of achievements in the project	Dr. Pham Anh Cuong, Director of BCA, Deputy Director of project
13:50 –14:00 (10 min.)	Plan for future activities after the project completion Roadmap for future generations of NBDS	Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA
14:00 –14:30 (30 min.)	Discussion on the achievement of the project and the future activities	Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
14:30 –14:40 (10 min.)	Conclusion and closing remark	Dr. Nguyen The Dong, Deputy Director General of VEA, Project Director
14:40 –15:10 (30 min.)	Press release of the successful termination of the project - Announcement of the press release - Q & A session for the press	Leaders of Biodiversity Conservation Agency JICA representatives
15:10 –15:30	**Break**	

We acknowledge that this workshop plan was endorsed by both parties of the NBDS Project (BCA and JICA).

Ha Noi, 26 January 2015

Yoichi Kogure
Chief Technical Advisor
Japan Development Service/
Japan International Cooperation Agency

Hoang Thi Thanh Nhan, Dr.
Deputy Director
Agency for Biodiversity Conservation
Vietnam Environment Administration
Ministry of Natural Resources and Environment (MONRE)

MINUTES
OF THE FORTH JOINT COORDINATING COMMITTEE MEETING Of THE PROJECT FOR DEVELOPMENT OF THE NATIONAL BIODIVERSITY DATABASE SYSTEM IN THE SOCIALIST REPUBLIC OF VIETNAM

The forth Joint Coordinating Committee (hereinafter referred to as "JCC") Meeting of the "Project for Development of the National Biodiversity Database System" (hereinafter referred to as "the Project") was held on January 27, 2015 and chaired by Dr. Nguyen The Dong, Director of the Project.

As a result of the discussion, the Project agreed to summarize the matters referred to in the document attached hereto.

Hanoi, January 27th, 2015

Mr. Yoichi Kogure
Chief Advisor
JICA Team of Expert

Dr. Nguyen The Dong
Deputy Director General
Vietnam Environment Administration (VEA)
Ministry of Natural Resources and Environment (MONRE)

Mr. Fumihiko Okiura
Senior Representative
JICA Vietnam Office
Japan International Cooperation Agency (JICA)

ATTACHED DOCUMENT

I. Introduction of Participants and Agenda

The introduction of participants was made by Dr. Pham Anh Cuong, Director of Biodiversity Conservation Agency (BCA), and Deputy Director of the project. Attending the meeting, there were Dr. Nguyen The Dong, Deputy Director General of Vietnam Environment Administration (VEA), Project Director; Mr. Fumihiko Okiura, Senior Representative, JICA Vietnam Office; Mr. Hiro Miyazono, representative of mission team from JICA Headquarter; Joint Coordinating Committee (JCC), Nam Dinh province, ministries, sectors and local expert team.

II. Opening Speech

On behalf of VEA leader/ chairman of JCC, Dr. Nguyen The Dong gave an opening remark. Following Dr. Dong, Mr. Fumihiko Okiura gave a remark.

III. Summary report of the project and roadmap for future generations of NBDS

Dr. Pham Anh Cuong, Director of BCA, Project Deputy Director presented the summary of achievements in the project.

Ms. Hoang Thi Thanh Nhan, Deputy Director of BCA, Project Deputy Director presented the plan for future activities after the project completion and the roadmap for future generations of NBDS

IV. Discussion

1. Mr.Tsuyoshi Kanda, JICA Vietnam

- JICA request BCA to explain Vietnamese financial plan for operation of NBDS in the future, especially this year and next year. Although the frame of database system has been established, how to store more information to NBDS? How to expand the outputs from the project?

  - Ms.Hoang Thi Nhan respond; After Master Scheme (MS) is approved and Circular on information sharing mechanism(Legal Document) is issued by MONRE, BCA will be able to engage information sharing between MONRE and other organization and work with local provinces more. The guidelines will be issued. Online report from local provinces will be started. However the work need to be facilitated to train the locals. Without continuous support by JICA or other fund, there is a risk of losing the interest to NBDS.

2. Mr. Hiro Miyazono, JICA Headquarter:

- For operation of NBDS, BCA need to identify the regular administrative responsibility and integrate the database system into existing systems in MONRE. Plus MONRE should maximize the available resources and mobilize other potential resources

- To establish the linkage between input data and to set up an online reporting mechanism/channel training for NBDS operation will be needed. At present, Vietnamese government has requested JICA's support. Collecting information and information sharing can be supported by next coming project between JICA and MARD. Vietnamese Government should officially ask the Japanese government to maintain the support for the next stage of the project.

3. Mr. Nguyen Viet Cach, Director of Xuan Tthuy National Park (XTNP)

- Hope that the 1st generation of the system will be fully developed and upgraded to the 2nd generation in the near future. The development of the system is an important tool for establishing the management plan, effective use of resources and creating sustainable livelihoods for XTNP. More detail information have to be stored to NBDS.

- I hope that in the future, we will get further support from JICA or other fund for effectively manage and operate the system.

4. Mr. Nguyen Quoc Khanh, Director of CEID/VEA

- The project objectives have been properly achieved and these outcomes and achievements should be published on media. I hope that BCA upgrade NBDS as 2nd generation to integrate GIS into the system in order to increase utilization of NBDS. CEID will cooperate with NBDS more than 1st generation development.

- Regarding information sharing, we also face many challenges in collecting information for environment monitoring due to the limited resources from provinces. It should have a specific guidance dedicated for biodiversity database system use and development (the Circular etc.)

- Vietnam can learn from Japanese experience in mapping flora and wetlands... (i.e: integrating GIS application)

5. Mr. Fumihiko Okiura, Senior Representative of JICA Vietnam Office:

- Up to now, the 1st generation of the system has just been developed and some outputs including the legal basis for the system has been made. Vietnam side must have a detail action plan to maintain and improve the project outcomes. Now, JICA is unlikely to confirm the continuing support for Vietnam after the project. If Vietnamese government wishes to continue getting the further support from JICA, MONRE has to make clear priorities and real plan to fully operate NBDS by MONRE itself. Which resource, for example financial resource or human resource will be really needed, etc.

- We would like to know Vietnamese detail plan for utilization of NBDS as well as the follow-up activities. The master scheme should provide more clarification about complementing and integrating biodiversity data into the system.

6. Dr. Pham Anh Cuong response:

- BCA confirm the necessity for allocating resources (including personnel, finance and infrastructure) for operating the system and other activities such as training.

- The NBDS is certainly integrated into the existing MONRE's system because after the project finish, the operation of NBDS primarily depends on MONRE.

- In 2015, we plan for enabling the legal basis of the system by the approval of Circular by Government. Particularly at present, the Ministry of Information and Communications is developing the list of national database system as assigned by Prime Minister, MONRE will propose NBDS to be integrated into the system of the country.

7. Mr. Yasuyuki Inoue, JICA/VN-Forest

- In the future, there must be the connection between NBDS and other existing systems in other organization, for example, FOMIS-2 project to develop information management system of forest is being implemented. NBDS may connect to this system of VNFOREST for sharing information. JICA can provide support for this linkage.

8. Mr. Nguyen Duc Tu:

- The 2 most important factors that make a success database are good data (quantity and quality) and a large number of users. I recommend that JICA and MONRE should encourage every relevant projects and stakeholders to use and import their data into the system.

9. Dr. Nguyen The Dong:

- After the Master Scheme is approved, it will be possible that all ministries and relevant organization are facilitated to connect and utilize NBDS.

10. Mr. Tsuyoshi Kanda, JICA Vietnam Office:

- When are the MS and Circular expected to be approved?

11. Dr. Nguyen The Dong:

- We expect that MS will be approved in 1st Quarter of 2015. It means by March of 2015. The approval will promise to allocate resources for MONRE to operate the system. We can operate the system with available resources in combination with mobilizing other resources and support by JICA.
- The government of Vietnam is now requiring all ministries/sectors to report on the available databases in the country in order to announce a full list of "official" databases for Vietnam. NBDS will be submitted by MONRE to be included in this list. It is also expected to propose the NBDS for the list in March 2015.
- It's not clear when the circular will be approved because it depends on the response from stakeholders, but we hope it will be approved by March 2015.
- At central level, the resources for the system are properly allocated. However, there is a high need for more training on technology and operating experience.
- Due to the limit resources of the Government, we hope to receive the support and assistance from international organization after the project.
- The project pilot site - Xuan Thuy National Park cannot be a typical reflection of all ecosystem types across the country, so it is necessary to select one more pilot site and mainstreaming it into a new program of JICA to fulfil the shortcomings of the project. MONRE is ready for connecting and supporting new activities.

V. Conclusion:

- Dr. Nguyen The Dong concluded the meeting:
- The Joint Coordinating Committee appreciates the achievements of the project which will actively support for biodiversity conservation of the country
- During remaining period of the project, JCC recommends implementation agency (BCA) to continue closely working with JICA to improve the outcomes and precede closure of project.
- To maintain and promote the project's results, JCC proposes that MONRE provide strong support for VEA in :

+ Approving MS and issuing Circular

+ Developing plan to improve staff capacity and technology in operation and management the NBDS;

+ Developing detailed plan to deploy the database system at local level;

- The implementation agency is strongly recommended to disseminate and communicate the project's outputs among relevant stakeholders as well as to submit MONRE a roadmap to implement the follow-up activities after the project.
- Highly appreciate and send a thank to Japan, especially JICA experts for their valuable support
- Vietnam is looking forwards to continue cooperation, information exchange and new cooperation opportunities for enhancing the project's outcomes as much as possible.

Appendix 1: List of participant

LIST OF PARTICIPANT

THE THIRD JOINT COORDINATION COMMITTEE MEETING

"The project for Development of National Biodiversity Database System in Vietnam"

Date and Time: 13:30 – 17:00 on Tuesday, 27th January 2015

Venue: Bao Son Hotel, No.50 Nguyen Chi Thanh, Dong Da, Hanoi

No.	Name	Organization	Sign
I	**Joint Coordinating Committee members**		
1	Dr. Nguyen The Dong	Deputy Director General of Vietnam Environment Administration (VEA), Project Director	
2	Dr. Pham Anh Cuong	Director of Biodiversity Conservation Agency (BCA), Deputy Director of Project	
3	Mr. Phan Van Phong	Deputy Director of DONRE Nam Định	
4	Mr. Fumihiko OKIURA	Senior Representative of JICA Vietnam Office	
5	Mr. Tsuyoshi Kanda	Project Formulation Advisor, JICA Vietnam Office	
II	**Project Management Unit members**		
6	Ms. Hoang Thi Thanh Nhan	Deputy Director of BCA, Project Deputy Director	
7	Mr. Nguyen Xuan Dung	Chief of Administration Office, BCA	
8	Mr. Le Anh Dung	Administration Office, BCA	
III	**JICA Expert Team**		
9	Mr. Yoichi Kogure	Chief Advisor	
10	Mr. Nguyen Duc Tu	Vegetation Survey/ Ecological Survey	
11	Ms. Yukiyo Yamada	Database Development Expert	
12	Ms. Mayuka Kobayashi	Work Coordination/ Database Development Assistant	
13	Ms. Nguyen Thi Sinh	Project Secretary Assistant	
IV	**Ministry of Natural Resources and Environment (MONRE)**		
14	Mr. Nguyen Quoc Khanh	Director of Center for Environmental Information and Documentation (CEID)/VEA	
15	Mr. Le Xuan Tuan	Vietnam Administration of Seas and Islands	
V	Ministry of Agriculture and Rural Development **(MARD)**		
16	Mr. Nguyen Huy Thang	Forest Inventory and Planning Institute (FIPI)	
VI	**Nam Dinh Province**		
17	Mr. Nguyen Viet Cach	Director of Xuan Thuy National Park (XTNP)	
18	Mr. Phan Van Phong	Deputy Director of DONRE Nam Dinh	
VII	**Local experts on Core Groups**		
19	Dr. Ho Thanh Hai	Local expert on Biodiversity Indicator	
20	Dr. Do Van Tu	Institute of Ecology and Biological Resources (IEBR)/Vietnam Academy of Science and Technology (VAST)	
VIII	**JICA experts**		
21	Mr. Noriaki Sakaguchi	Ministry of Environment in Japan	
22	Mr. Shingo Kamiyama	JICA Headquarters	
23	Ms. Etsuko Masuko	JICA Headquarters	
24	Ms. Tomoko Taira	JICA Headquarters	
25	Mr. Hideki Imai	Nippon Koei	
26	Mr. Hiroki Miyazono	JICA Headquarters	

27	Mr. Yasuyuki INOUE	JICA Forestry Program Advisor to Ministry of Agriculture and Rural Development (MARD)	
28	Ms. Do Thi Thu Thuy	JICA Forestry Program National Coordinator	
29	Nguyen Hai Yen	JICA, Nakamura-san's assistant	
IX	**Biodiversity Conservation Agency (BCA)**		
30	Dang Thuy Van	Administration Office, BCA	
31	Phan Thi Quynh Le	Administration Office, BCA	
32	Phung Thu Thuy	Administration Office, BCA	

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Appendix 2: PDM Version.4

PDM Version 4 was approved by JCC members.

Outputs			
1. Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.	1.1 Specification of data format, software, and hardware of NBDS are identified. 1.2 The proposed architecture for NBDS based on the available information/ condition is submitted to MONRE.	1-1 (i) List of procured equipments 1-1(ii) Type of software (Note 3) 1-2 (i) Proposal (Master Scheme) (Note 4) 1-2 (ii) A document – Architecture of NBDS (Note 4) 1-2 (iii) **Guideline for biodiversity indicator development and utilization** monitoring(Note 5)	・ VEA/ MONRE facilitates the dialogue between the stakeholders to establish consensus on the architecture of NBDS. ・ BCA will decide the core-set of national biodiversity monitoring indicators before January 2014
2. Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended	2.1 Existing data and formats in various agencies is assessed. 2.2 Recommendations as a draft legal document are prepared.	2-1 Assessment Report on related organizations 2-2 Draft legal document	
3. A database for Nam Dinh Province is developed as a part of NBDS (Note 6).	3.1 The entry of data of pilot survey in Xuan Thuy National Park into NBDS is completed. 3.2 The pilot database for Nam Dinh Province is ready to be regularly updated. 3.3 **Technical Guideline for basic survey and monitoring of coastal wetlands** is completed. 3.4 The staff of DONRE is trained to use and maintain the database for Nam Dinh Province.	3.1 Survey Report (Note 7) 3-2 Manual for maintenance and usage of database (Same as in 4.2 (i) and 4.2 (ii)) 3-3 **Technical Guideline for basic survey and monitoring of coastal wetlands** (Note 8) 3-4 Record of training programs conducted	
4. Capacity on management and awareness of utilization of NBDS are strengthened.	4.1 BCA/ VEA/ DONRE staff gained skills to manage NBDS. 4.2 Manual for management and utilization of 1st generation NBDS is developed. 4.3 Awareness raising workshops are conducted.	4-1 (i) Training Records (Number of trainee, training days, training materials used) 4-1 (ii) Number of trained staff passed the test 4-2 (i) Administrator's Manual 4-2 (ii) Users' Manual 4-3 (i) Materials prepared for awareness raising including in Xuan Thuy National Park 4-3 (ii) Number of participants/ Number of workshops conducted/ Number of materials distributed	

Project Design Matrix (PDM)

Project Title: Project for Development of the National Biodiversity Database System
Project period: November 2011 – March 2015 (3 years and 5 months)
Target area: Hanoi, Nam Dinh Province, and Vietnam countrywide
Target group: VEA (Mainly counterpart staffs of BCA, VEA,CEID, CEM, and ITC) and Nam Dinh DONRE

Executing agency: Vietnam Environment Administration (MONRE)

PDM Version 4
27 January 2015

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
Super Goal (2025)			
The 2nd generation of national biodiversity database system is developed.	1. The 2nd generation of NBDS with data of provinces and related organizations is used for monitoring national biodiversity. 2. Utilization method of NBDS for management purposes such as EIA is developed in provinces.	1. Master Scheme 2. Number of access to NBDS from ministries and academic organizations.	・ Biodiversity-related policies do not change.
Overall Goal（2020）			
The second generation of national biodiversity database system is developed and piloted in selected protected areas and provinces.	1. Utilization method of NBDS for management purpose is developed in Nam Dinh Province. 2. The GIS-liked NBDS is used for a selected protected areas and province in a province other than Nam Dinh. 3. NBDS is used for the preparation of biodiversity-related national reports.	1. Master Scheme 2. Annual Reports by Nam Dinh PPC 3. Annual Reports by targeted PPC 4. The biodiversity-related national reports to be submitted to the Ramsar Secretariat, SBCD, and others.	・ Collaborative mechanism with ministries and academic organizations endorsed. ・ Provinces implement the biodiversity monitoring survey.
Project Purpose			
The first generation of national biodiversity database system is developed.	1. NBDS Architecture is approved by VEA/ MONRE. 2. Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS. 3. 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.	1-1 Entity Relationship Diagram (Note 1) 1-2 Letter of Approval from VEA/ MONRE 2-1 Print out of all species data entered into NBDS by the project 3-1 Report of Acceptance Test (Note 2) 3-2 Maintenance record 3-3 Number of Account holders	・ Annual state budget for operation and management of NBDS is appropriately allocated. ・ MONRE legislates mechanism for collaboration based on the submitted recommendation. ・ Trained staffs are not displaced.

4-1. Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies.			
4-2. Prepare Administrator's manual and User's manual on 1st generation of NBDS.			
4-3. Develop sample materials for reporting and publication based on the data collected in Xuan Thuy National Park.			
4-4. Conduct workshop/ seminar to introduce NBDS to policy makers, and central/ provincial officers concerned.			

Note 1: Entity Relationship Diagram gives an overview of the structure of NBDS. The print out can be obtained from the project for verification.
Note 2: The acceptance test is to be done jointly done by Japanese Expert Team and BCA with the users.
Note 3: The type of software used can be verified in the Administrator's manual.
Note 4: Architecture does not include the institutional mechanism of database management. However, the Project will prepare "Proposal (Master Scheme)" to elaborate on that aspect.
Note5: In the **Guideline for biodiversity indicator development and utilization**, the process of indicator development in Xuan Thuy National Park, the process of selection of national indicators, rationale, selection criteria will also be included.
Note 6: The pilot survey has been planned mainly for the purpose of generating data to be used to test and verify the data structure of and data entry procedure for NBDS. Thus, it has been planned in a limited scale and scope. The project has selected Xuan Thuy National Park as the pilot site and does not have a plan to carry out the similar survey to cover the entire Nam Dinh Province.
Note 7: The contents will include the actual survey design, data collection and analysis methods, and the results of the pilot survey conducted in Xuan Thuy National Park.
Note 8: The contents may include; design of a basic survey and monitoring methods for wetland eco system. Further details can be discussed between BCA and Japanese Expert Team.

Activities	Inputs		
	Japanese side	Vietnamese side	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC. 0-2. Monitor and evaluate progress of the project activities. 1-1. Identify and analyze existing databases. 1-2. Establish a technical working group for NBDS development with the participation of MONRE, MARD, MOST, VAST, etc. 1-3. Organize meetings of technical working group (TWG). 1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS. 1-5. Prepare Proposal (Master Scheme) and a draft Architecture of NBDS, and national core set of indicators for biodiversity monitoring with the agreement among TWG members. 1-6. Develop a **Guideline for biodiversity indicator development and utilization** 1-7. Gather and input data in NBDS. 1-8. Modify NBDS architecture based on experiences from the pilot survey. 1-9. Submit the final draft Architecture of NBDS to MONRE. 2-1. Identify key database holders. 2-2. Assess the data availability, formats and capacity for data sharing and database management amongst the database holders. 2-3. Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS. 3-1. Identify biodiversity indicators of Xuan Thuy National Park, Nam Dinh Province. 3-2. Develop data format of the pilot database for Nam Dinh Province. 3-3. Identify data of the pilot database for Nam Dinh Province. 3-4. Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park. 3-5. Carry out basic survey and biodiversity monitoring at Xuan Thuy National Park in Nam Dinh Province. 3-6. Compile data collected from basic survey. 3-7. Input gathered data to the pilot database. 3-8. Develop **technical guideline for basic survey and monitoring of coastal wetland**s based on experiences in the pilot survey including an indicator development and use in XTNP.	Japanese Experts ・ Chief Technical Advisor ・ Database Development ・ Biodiversity ・ Vegetation Survey ・ Ecological Survey ・ Coordinator Machinery and equipment ・ Server ・ Database software ・ Workstation ・ PC ・ Color laser printer and photocopy machine ・ Scanner ・ UPS ・ OA software ・ Camera trap ・ Digital camera ・ Handheld GPS ・ Binocular ・ Clinometer with compass ・ Hypsometer ・ Others Training ・ Training in Japan or third country Project budget	Counterpart ・ Project Director ・ Project Manager ・ Other staff Facility, machinery and equipment Project office, meeting room, necessary machinery and equipment, establishment of internet infrastructure and registration of domain for NDBS Project counterpart budget	**Pre-conditions** MARD, MOST, VAST and other related organizations support the project implementation.

APPLOVAL OF OUTPUTS FROM THE JICA-NBDS PROJECT

Under the Project for "Development of the National Biodiversity Database System in the Socialist Republic of Vietnam" (hereinafter, referred to as "the Project"), the following output were produced for implementing the project works by the Project staff members. Due to the termination of the Project, 27th of January,2015, the Project officially submitted the output to Biodiversity Conservation Agency, Viet Nam Environment Administration, Ministry of Natural Resources and Environment (BCA, VEA, MONRE) (hereinafter, referred to as "BCA") and Viet Nam Environment Administration, Ministry of Natural Resources and Environment (VEA, MONRE) (hereinafter, referred to as "VEA"). BCA and VEA approved the output in the 4th JCC meeting.

1. Draft of Research Proposal (Master Scheme)
2. System Architecture
3. Guideline for biodiversity indicator development and utilization
4. Technical Guideline for basic survey and monitoring of coastal wetlands
5. Circular (Legal Document)

Dr.:Pham Anh Cuong	Mr. Yoichi KOGURE
Project Deputy Director of the Project Director of BCA, VEA, MONRE	Chief Advisor of the Project

Appendix 8: List of biodiversity data input into the first generation of NBDS

Taxonomy (Species) Data

No.	Title of Dataset	# of data
1	Checklist of A Tentative List for Birds of Vietnam	900
2	Checklist of Amphibian and Reptile of Xuan Thuy National Park	30
3	Checklist of Bird of Xuan Thuy National Park	222
4	Checklist of BỘ CÁ CHÁO BiỂN - Elopiformes; BỘ CÁ CHÌNH - Anguilliformes; BỘ CÁ TRÍCH - CLUPEIFORMES; BỘ CÁ SỮA - Gonorynchiformes of Vietnam	127
5	Checklist of BỘ HOA LOA KÈN - Liliales Perleb of Vietnam	267
6	Checklist of BỘ RONG MƠ - FUCALES Kylin; BỘ RAU RĂM - Polygonaceae Juss. of Vietnam	115
7	Checklist of BỘ VE GIÁP - Oribatida of Vietnam	150
8	Checklist of CÁ BiỂN - Beloniformes, Cyprinodontiformes, Atheriniformes, Salmonitiformes, Gadiformes, Lampridiformes, Zeiformes, Beryciformes, Mugiliformes, Pegasiformes, Lophiiformes, Syngnathiformes of Vietnam	179
9	Checklist of CÁ BiỂN - Goibioidei of Vietnam	92
10	Checklist of CÁ BiỂN - Perciformes of Vietnam	226
11	Checklist of CÁ BiỂN (BỘ CÁ VƯỢC) - Perciformes (Carangidae, Mullidae, Chaetodontidae, Labridae, Scombridae) of Vietnam	183
12	Checklist of DANH MỤC CÁC LOÀI THÚ HOANG DÃ ViỆT NAM- Wild Mammal Species of Vietnam	303
13	Checklist of Fish of Xuan Thuy National Park	208
14	Checklist of GIÁP XÁC NƯỚC NGỌT - Palaemonidae, Parathelphusidae, Potamidae, Cladocera, Copepoda, Calanoida	124
15	Checklist of GIUN TRÒN SỐNG TỰ DO - Monhysterida, Araeolaimida, Chromadorida, Rhabditida, Enoplida, Mononchida, Dorylaimida of Vietnam	154
16	Checklist of HỌ BẠC HÀ - Lamiaceae Lindl. of Vietnam	155
17	Checklist of HỌ BỌ RÙA - Cocinellidae- Coleoptera of Vietnam	256
18	Checklist of HỌ CHÂU CHẤU, CÀO CÀO - Orthoptera, Acrididae & HỌ BỌ XÍT - Coreidae (HETEROPTERA) of Vietnam	161
19	Checklist of HỌ CỎ ROI NGỰA - Verbenaceae Jaume of Vietnam	161
20	Checklist of HỌ CÓI - Cyperaceae Juss. of Vietnam	389
21	Checklist of HỌ ĐƠN NEM - Myrsinaceae R. Br of Vietnam	147
22	Checklist of HỌ LAN - Orchidaceae Juss. of Vietnam	102
23	Checklist of HỌ MỒ ĐỎ - Trombiculidae - Acarina; BỘ BỌ CHÉT - Siphonaptera of Vietnam	115
24	Checklist of HỌ NA - Annonaceae Juss of Vietnam	200
25	Checklist of HỌ TRÚC ĐÀO - Apocynaceae Juss. of Vietnam	154
26	Checklist of HỌC CÚC - Asteraceae Dumort. of Vietnam	376
27	Checklist of Insect of Xuan Thuy National Park	538
28	Checklist of Macroinvertebrate of Xuan Thuy National Park	358
29	Checklist of mangrove species in Vietnam	152
30	Checklist of MỐI - ISOPTERA of Vietnam	101
31	Checklist of NGÀNH RONG LỤC - Chlorophyta Pascher of Vietnam (CÁC TAXON VÙNG BiỂN)	161
32	Checklist of ONG KÍ SINH TRỨNG - Scelionidae of Vietnam	219
33	Checklist of PHÂN BỘ RẮN - Serpentes of Vietnam	149
34	Checklist of Phytoplankton of Xuan Thuy National Park	92
35	Checklist of Plant of Xuan Thuy National Park	118
36	Checklist of SÁN DÂY (CESTODA) KÝ SINH Ở NGƯỜI VÀ ĐỘNG VẬT - PSEUDOPHYLLIDEA, Cyclophyllidea of Vietnam	156
37	Checklist of SÁN LÁ KÝ SINH - Paramphistomatida, Plagiorchiida of Vietnam	190
38	Checklist of SÁN LÁ KÝ SINH Ở NGƯỜI VÀ ĐỘNG VẬT - Animal and Man Parasitic Trematodes: Fascioida, Brachylaimida, Clinostomida, Cycloelida, Notocotylida, Opisthorchida, Renicolida, Schistosomatida, and Strigeidida of Vietam	163
39	Checklist of TÔM BIỂN - Penaeoidea, Nephropoidea, Palinuroidea, Gonodactyloidea, Lysiosquilloidea, Squilloidea of Vietnam	132
40	Checklist of TUYẾN TRÙNG KÍ SINH THỰC VẬT - Plant Parasitic Nematodes	160
41	Checklist of Zooplankton of Xuan Thuy National Park	87
42	Vietnam Red data book 2003	715
43	Vietnam Red data book 2007	856
44	Vietnam Red list 2007	883

Occurrence (Survey) Data

No.	Title of Dataset	# of data
1	Field Survey in Xuan Thuy National Park (2012 winter) - Amphibian and Reptile	34
2	Field Survey in Xuan Thuy National Park (2012 winter) - Bird	72
3	Field Survey in Xuan Thuy National Park (2012 winter) - Fish	241
4	Field Survey in Xuan Thuy National Park (2012 winter) - Insect	436
5	Field Survey in Xuan Thuy National Park (2012 winter) - Macroinvertebrate	181
6	Field Survey in Xuan Thuy National Park (2012 winter) - Plant	84
7	Field Survey in Xuan Thuy National Park (2013 summer) - Amphibian and Reptile	40
8	Field Survey in Xuan Thuy National Park (2013 summer) - Bird	136
9	Field Survey in Xuan Thuy National Park (2013 summer) - Fish	445
10	Field Survey in Xuan Thuy National Park (2013 summer) - Insect	458
11	Field Survey in Xuan Thuy National Park (2013 summer) - Macroinvertebrate	373
12	Field Survey in Xuan Thuy National Park (2013 summer) - Phytoplankton	622
13	Field Survey in Xuan Thuy National Park (2013 summer) - Plant	76
14	Field Survey in Xuan Thuy National Park (2013 summer) - Zooplankton	388
15	Field Survey in Xuan Thuy National Park (2013 winter) - Amphibian and Reptile	33
16	Field Survey in Xuan Thuy National Park (2013 winter) - Bird	102
17	Field Survey in Xuan Thuy National Park (2013 winter) - Fish	53
18	Field Survey in Xuan Thuy National Park (2013 winter) - Macroinvertebrate	126
19	Field Survey in Xuan Thuy National Park (2013 winter) - Plant	30
20	Second monitoring in Xuan Thuy National Park (2014 Summer) - Amphibian and Reptile	36
21	Second monitoring in Xuan Thuy National Park (2014 Summer) - Bird	121
22	Second monitoring in Xuan Thuy National Park (2014 Summer) - Fish	40
23	Second monitoring in Xuan Thuy National Park (2014 Summer) - Insect	240
24	Second monitoring in Xuan Thuy National Park (2014 Summer) - Macroinvertebrate	101
25	Second monitoring in Xuan Thuy National Park (2014 Summer) - Plant	55

Appendix 9: Major achievements of the project in chronological order

Date	Achievements
Nov. 17, 2011	Presentation on the draft Inception Report (IC/R) at JICA Headquarter
Nov. 18, 2011	Official commencement date of project activity
Nov. 18, 2011	The first dispatch of expert (Kogure, Sakai) to Vietnam
Nov. 21, 2011	Courtesy call to JICA Vietnam office
Nov. 21, 2011	Courtesy call to MONRE International Cooperation Department
Nov. 21, 2011	Courtesy call to BCA
Nov. 22, 2011	Visit CEID (Centre for Environmental Information and Documentation), MONRE
Dec. 2, 2011	Courtesy call to VEA, MONRE
Dec. 7, 2011	Visit IEBR (Institute of Ecology and Biological Resources), VAST
Dec. 9, 2011	Courtesy call to Xuan Thuy National Park and Provincial People's Committee at Nam Dinh Province
Dec. 21, 2011	Courtesy call to MOST
Dec. 22, 2011	Courtesy call to MARD
Dec. 26, 2011	Completion of detailed Work Plan for the Project (English / Vietnamese)
Jan. 16, 2012	Completion of Inception Report (IC/R) (English / Japanese / Vietnamese)
Feb. 7, 2012	Visit ITC (Information Technology Center), VEA
Feb. 16, 2012	Completion of Project brochure (English / Vietnamese)
Mar. 14, 2012	The 1st JCC (Joint Coordinating Committee) Meeting
Mar. 14, 2012	Preparatory meeting for TWG (Technical Working Group)
Mar. 21, 2012	Visit and discuss GIZ
Mar. 21, 2012	Visit FORMIS (Development of Management Information System for Forestry Sector in Vietnam)
Apr. 19, 2012	Visit CEM (Center for Environmental Monitoring, VEA, MONRE)
May 21, 2012	Visit IEBR (Institute of Ecology and Biological Resources), VAST
May 21, 2012	Visit CEM (Center for Environmental Monitoring, VEA, MONRE)
From May 21 to Jul. 13, 2012	Implement preliminary survey at XTNP (3 times)
From May 27 to Jun. 2, 2012	Training in Japan for Managers
From Jun. 12 to 13, 2012	Visit and discuss related departments in Nam Dinh province as follows. - Department of Natural Resources and Environment (DONRE) - Department of Science and Technology (DOST) - Department of Agriculture and Rural Development (DARD) Department of Industry and Trade (DIT)
Jun. 14, 2012	Hold 1st TWG meeting (Group A and B)
Jun. 18, 2012	Visit CRES
From Jun., 20 to 21, 2012	Technology transfer on Web-based database development technology
Jun. 25, 2012	Visit the World Bank
Jul. 9, 2012	Visit Forest Inventory and Planning Institute (FIPI)
Jul. 10, 2012	Implement internal seminar on Biodiversity monitoring indicators
Jul. 10, 2012	Visit General Statistical Office (GSO)
Jul. 14, 2012	Hold 2nd TWG meeting (Group A)

Date	Achievements
From Jul. 18 to, 20, 2012	Visit and discuss with related organizations in southern Vietnam as follows. - Institute of Oceanography (VNIO - Nha Trang) - Center for Biodiversity and Development (CBD - Ho Chi Minh city) - Institute of Tropical Biology (ITB - Ho Chi Minh city) - Can Tho University (CTU - Can Tho) - Nong Lam University (NLU - Ho Chi Minh city)
Jul. 25, 2012	Hold 2nd TWG meeting (Group B)
Aug. 17, 2012	Hold 3rd TWG meeting (Group B)
From Aug. 19 to Sep. 1, 2012	Training in Japan for C/P
Sep. 12-14, 2012	Attended and presented the project activities VNIO international conference at Nha Trang
Sep. 15, 2012	The 3rd Technical Working Group (TWG) meeting
Sep. 24-25, 2012	Visit XTNP for the discussion on BD indicator matrix and questionnaire
Oct. 10, 2012	The 4th Technical Working Group (TWG) meeting
Nov. 2, 2012	The 5th Technical Working Group (TWG) meeting, Group A
Nov. 9, 2012	Explanation of project progress and upcoming plan to project director
Nov., 20, 2012	The 5th Technical Working Group (TWG) meeting, Group B
Nov. 28, 2012	Discussion with GIZ, FORMIS on data sharing issues
Dec. 10 to 21, 2012	Implementation of the survey at XTNP
Jan. 17, 2013	The 6th Technical Working Group (TWG) meeting
Jan. 25, 2013	The 6th Technical Working Group (TWG) meeting (Continued)
Feb. 27	The 1st Technical Workshop
From May 15 to 30, 2013	Mid-term review
May 30, 2013	The 2nd JCC meeting
From Jun. 1st to 25, 2013	Create detailed plan and schedule of the Core Group for the additional / modified outputs of the project
From Jul. 10 to 21, 2013	The 2nd pilot survey at Xuan Thuy National Park
Jul. 24, 2013	Signing of TOR for the Core Group
Jun. 25, 2013	Start activity of core group for national-level biodiversity indictors and guideline
Jun. 27, 2013	Start activity of core group for master scheme of NBDS
Sep. 26, 2013	Submission of report on the 1st monitoring survey at XTNP
From Oct. 27 to Nov. 9, 2013	Training in Malaysia and Japan
Dec. 23, 2013	Assignment of new Japanese experts
Jan. 14, 2014	Assignment of Technical Coordinator
Jan. 15, 2014	The 2nd Workshop on Biodiversity Monitoring Indicators
Apr. 27, 2014	Completion of final draft of National-level Biodiversity Indicators and guideline
Apr. 28, 2014	Completion of the first draft of Master Scheme of NBDS
May 16, 2014	3rd JCC meeting
Jun. 29, 2014	Completion of the first draft of System Architecture of NBDS
Jul. 31, 2014	Completion of first draft of Wetland Survey Monitoring Guideline
Aug. 1, 2014	Completion of the Terminal Evaluation of the project
Sep. 9, 2014	The 7th Technical Workshop on the System Architecture of NBDS
Oct. 15, 2014	Technical Training for NBDS administrators
Oct. 22, 2014	Technical Seminar on Awareness Raising Material of NBDS

Date	Achievements
Oct. 23, 2014	Technical Training for NBDS users in Hanoi
Oct. 24, 2014	Technical Training for NBDS users in Nam Dinh province
Nov. 13, 2014	The 8th Technical Workshop on the Legal Document in Quang Binh province
Dec. 9, 2014	Completion of System Architecture of NBDS
Dec. 10, 2014	The 9th Technical Workshop on the Legal Document in Hanoi
Dec. 10, 2014	Completion of Technical Guideline for Wetland Survey
Dec. 12, 2014	Completion of Awareness Raising Material of NBDS
Dec. 22, 2014	Completion of National-level Biodiversity Indicators and guideline
Dec. 26, 2014	Completion of final draft of Master Scheme of NBDS
Dec. 26, 2014	Completion of final draft of Legal Document on Collaboration Mechanism
Jan., 20, 2015	Final Workshop on the Achievement and Conclusion of the project in HCMC
Jan. 27, 2015	Final Workshop on the Achievement and Conclusion of the project in Hanoi
Jan. 27, 2015	Official launch of NBDS Web site (the 1st generation)
Mar. 24, 2015	Final training on the NBDS administration for BCA/VEA C/P in charge

Appendix 10: List of organization visited and existing databases related to biodiversity in Vietnam

(1) List of organization visited

No.	Organization / Persons met	Date (Y-M-D)	Main Points of Discussion
1	IEBR (Institute of Ecology and Biological Resources), VAST ➢ Dr. Le Xuan Canh (Director) ➢ Dr. Ha Quy Quynh (Department of Remote Sensing Ecology)	2011-12-7	➢ IEBR has about 180 researchers mostly in ecology and biology. ➢ Published total of 36 volumes (Fauna 25, Flora 11) of almanac of Vietnam as of 2007. ➢ The almanac covers about 30% of species in Vietnam. ➢ Has once had a digital database of fauna and flora that covers about 80% of found species in Vietnam (12,000 floras, 6,000 insects, etc.), but the PC has broken and about 40% of data has been lost. ➢ Constructing digital database takes long time. Based on the experience at IEBR, NBDS would take at least 5 years to construct.
2	MOST (Ministry of Science and Technology) ➢ Dr. Nghiem Vu Khai, (Vice Minister) ➢ Dr. Nguyen Thi Thanh Ha, (Deputy Director, General of Department of Social and Natural Sciences)	2011-12-21	➢ In MOST, departments related to biodiversity are 1) Department of Social and Natural Sciences, 2) Department for sector industry. ➢ We already assigned Ms. Ha, Deputy Director General of Department of Social and Natural Sciences, for JCC member of NBDS project. We will assign another person for TWG member. ➢ The data format is important. In Vietnam, we already have some biodiversity databases. I hope the project will update the data format in the same way as Japan.
3	MARD (Ministry of Agriculture and Rural Development) ➢ Mr. Tran Kim Long (Deputy Director General, ICD) ➢ Mr. Nguyen Anh Minh (ICD) ➢ Ms. Vu Van Thang (Deputy Director General, Directorate of Water Resources) ➢ Ms. Nguyen Tuong Van (Deputy Director, VNFOREST) ➢ Mr. Nguyen Manh Hiep (VNFOREST)	2011-12-22	➢ We don't understand why JICA didn't choose MARD as the focal point of this project. ➢ BCA should explain about collaboration mechanism by using project document, and MONRE and MARD should have the discussion on how to collaborate on this project. ➢ All national parks and national reserves in Vietnam are under MARD, not MONRE. MARD has all biodiversity data of these areas. It is good for Vietnam to start such project, but MONRE should come to MARD to discuss cooperation mechanism first. ➢ MARD would send up to 4 representatives to participate TWG, from water resource, fishery, forestry, and crop divisions.
4	CRES (Centre for Natural Resources and Environmental Studies) , VNU ➢ Dr. Vo Thanh Son (Deputy Director) ➢ Ms. Le Huong Giang (Researcher)	2012-6-18	➢ CRES coordinates with other research institutes such as IEBR to conduct joint studies, mobilizing suitable researchers and sharing research information. ➢ Biodiversity issues are closely linked to socio-economic aspects, so official data are important such as national statistics. ➢ It is important to enhance biodiversity assessment and database development at national, regional and site (protected area) levels. The overall biodiversity assessment framework must be determined by related organizations at the national level, and then applied to field sites. At the site level such as XTNP, it is important to review existing data (classified by time, location and content), and improve the survey methodology to increase data reliability. ➢ Five sets of database were already elaborated in XTNP by different projects, but their consistency needs to be examined.

No.	Organization / Persons met	Date (Y-M-D)	Main Points of Discussion
5	The World Bank ➢ Mr. Douglas J. Graham (Environment Sector Coordinator)	2012-6-25	➢ If you plan to develop a biodiversity DB, you should consider its very high maintenance cost. There have been many biodiversity DBs developed in the world, but almost all of them (including US) have failed (could not sustain / were closed) due to discontinued budget. ➢ Based on these experiences, international collaboration mechanism such as GBIF is very important, and it should be used for mutual data-backup system in case a DB has to be shut down because of discontinued budget. ➢ I have to say that making collaboration mechanism for data sharing in Vietnam is extremely difficult. Applying legal method is the worst case, because there are way too many laws in Vietnam but most of them don't have enforcing power. Collaboration mechanism should be considered from the viewpoint of merits / advantages for data owner. ➢ MARD is now requesting very similar project as NBDS, but WB is rejecting because it is ridiculous to have similar DBs in 2 different ministries.
6	VNIO (Institute of Oceanography, Nha Trang) ➢ Mr. Do Minh Thu (Director) ➢ Dr. Vo Si Tuan (Vice Director)	2012-7-18	➢ VNIO has 90 years of history since French colonial era. ➢ Has about 20,000 specimen of 10,000 marine species. ➢ Has database of specimen collection (MS-Access) and Web-based database on ocean survey. ➢ Has many international cooperation with TMMP, Nippon-POGO, ICRI, etc.
7	Center for Biodiversity and Development (CBD), Institute of Tropical Biology (ITB – Ho Chi Minh City) ➢ Dr. Vu Ngoc Long (Director) ➢ Dr. Luu Hong Truong (Executive Vice Director)	2012-7-18	➢ Implements biodiversity survey based on the fund from provinces and foreign donors. ➢ Published many high-quality photo book on tropical species. Number of photo data taken so far is more than100,000. ➢ Also engage in ecological education program for ethnic people. ➢ Has plant database based on BRAHMS software
8	Can Tho University (CTU – Can Tho) ➢ Dr. Nguyen Van Be (Director, Department of International Relations) ➢ Dr. Tran Dac Dinh (Head of Department, College of Aquaculture & Fisheries) ➢ Dr. Nguyen Van Cong (Deputy Head, Aquaculture, EIA, Ecotoxicology)	2012-7-19	➢ In southern Vietnam, most provinces implements biodiversity surveys by provincial budget. There are also many projects by foreign donors. ➢ One example is Mekhong Fish Database supported by Nagao Natural Environment Foundation (http://ffish.asia/) which collected 300 fish species including 79 newly identified species. ➢ Possible biodiversity-related research topics includes species in 7 river-mouth of Mekhong, ecosystem conservation at gene level, ecosystem conservation database that is accessible to farmers.
9	Nong Lam University (NLU – Ho Chi Minh City) ➢ Dr. Vu Cam Luong (Lecturer - Web admin, Faculty of Fisheries) ➢ Dr. Bùi Minh Trí (Department of Plant Biotechnology)	2012-7-20	➢ Dr. Luong has created ornamental fish database (http://fishviet.com/) that covers about 120 fresh water fish species, but will add 200 more sea fish as the 2nd phase. ➢ Data collaboration mechanism planned in NBDS would be difficult because each database has its own data structure and format.
10	Forest Inventory and Planning Institute (FIPI) ➢ Dr. Nguyen Huy Dung (Deputy Director) ➢ Ms. Quach Quynh Nga (Director, Vietnam Forest Museum) ➢ Mr. Nguyen Cao Tung (Director, Center for Forestry Information and Consultation)	2012-7-9	➢ FIPI implements biodiversity survey at 126 protected areas (which includes 30 national parks). ➢ The survey data will be sent to Forest Protection Department (FPD) and Nature Conservation Department (NCD) for the management of biodiversity. ➢ Satellite images (SPOT5 and Landsat TM) are processed by GIS (ERDAS + Mapinfo, ArcView, Arc GIS) for the analysis of forest structure. ➢ FIPI has a museum on forest which has specimen of 16,000 plants and 332 animals. These specimen data is managed by Excel.

No.	Organization / Persons met	Date (Y-M-D)	Main Points of Discussion
11	General Statistical Office (GSO) ➢ Mr. Bui Ngoc Tan (Foreign Statistics and International Cooperation Dept.)	2012-7-10	➢ GSO (under MPI) is in charge of creating national-level statistics information based on national-level indicators. This statistics includes agriculture, forestry, fishery, environment, etc. Each data should come from responsible ministries. ➢ Statistics in Vietnam has 3 categories: national-level (with 350 indicators), provincial-level (42 indicators), and district-level (88 indicators). ➢ If the NBDS project requires socio-economic data of XTNP, you must visit district office of Xuan Thuy. GSO does not have district-level data.
12	GIZ ➢ Ms. Rosmarie Metz (Chief Technical Advisor, Preservation of Biodiversity in Forest Ecosystems) ➢ Ms. Tham Thi Hong Phuong (Expert for Capacity Development)	2012-3-21	➢ The three-year project of GIZ aims at capacity development, development of a policy-level framework between MARD and MONRE and creating a financial mechanism on biodiversity and protected areas. ➢ The critical concern is about the different information management system between the MARD and the MONRE. ➢ The GIZ project established pilot sites at 5 protected areas (Ba Be National Park, Na Hang Nature Reserve, Bach Ma National Park, and Pu Luong / Pu Hu Nature Reserves) to try the development of common information portals in a harmonized and consistent format for effective and equalized sharing and exchange of information, linking to the FORMIS. ➢ The GIZ project highlights the empowerment of the DoNC with DONRE and DARD, but their relationship is quite complex and divergent among provinces and sites. Information is often shortcut between central/local offices and the DoNC. The DoNC tends to be regulated under the Forest Administration (especially the Forest Protection Division), whereas they may require coordination with the Ministry of Fisheries for marine conservation. More holistic information flows should be developed to support overall biodiversity conservation under DoNC.
		2012-11-28	➢ The project “Preservation of Biodiversity in Forest Ecosystems”. ➢ The results of an analysis of existing resources, capabilities, the institutional and legal framework and the financial situation in the protected areas are taken into consideration and guide the further development of the overall framework for conserving biodiversity. ➢ Reforms are currently being implemented, both within institutions and in the management of protected areas, and strategic plans are being drawn up. With support from the project, the mandates, roles and coordinating mechanisms of the two ministries involved (MARD and MONRE) are being reviewed and reformed. ➢ Focuses on improved reporting and use of biodiversity-related information for effective decision making in addition to international reporting (and capacity development of national park offices for this purpose). ➢ Also elaborating on biodiversity indicators for protected areas, and in this regard, they feel a need for close coordination with the NBDS project for harmonized indicator development. Each of the projects will need to compare its own indicator set in its format for mutual adjustment.

No.	Organization / Persons met	Date (Y-M-D)	Main Points of Discussion
13	FORMIS project ➢ Mr. Tapio Leppanen (Chief technical Advisor)	2012-3-21	➢ FORMIS is a platform to deliver metadata catalog, working as a distributing channel of exiting information resources covering external Databases and legacy systems. (Regarding data input, FORMIS does not require an installation of a new peculiar procedure.) ➢ FORMIS does not aim to create new data, but facilitate uploading of information on a common platform for easier information exchange among users as the forestry portal in Vietnam. ➢ Authorized data are provided by MARD and its decentralized agencies. The degree of information access is differentiated between government/ internal users and public users, setting different levels of ID/passwords ➢ Mapping information is described in metadata catalogs. Each of the information is indicated on a specific map provided by MARD. ➢ Technically, FORMIS will position NBDS as one of external Databases when FORMIS has a linkage to NBDS.
	FORMIS project ➢ Mr. Tapio Leppanen (Chief technical Advisor) ➢ Dr. Ha Hai Nam (Local ICT Expert)	2013-1-16	➢ The VNFOREST portal (http://formisvietnam.com/) consists of many applications, including FORMIS. ➢ Dr. Nam showed three major applications of VNFOREST portal. (1) Maps application (Portal -> Data -> Maps) (2) Data sharing application (Portal -> Data -> Data sharing) (3) Forest monitoring application ➢ All applications of VNFOREST portal were developed by local consultant of FORMIS project. The contents of the portal are provided by VNFOREST, but the system is maintained by FORMIS project. The staff of VNFOREST doesn't have enough IT capacity. ➢ For the 1st step of data sharing between NBDS project and FORMIS project, it was agreed that FORMIS provide the following data to NBDS (1) Tree species name data (1076 species name) (2) Administrative code (Province code and District code)
14	UNESCO MAB program office (Hanoi National University of Education) ➢ Prof. Dr. Nguyen Hoang Tri	2013-1-9	➢ The MAB biosphere reserve was created in the Red River Delta (RRD) in 2004 as one of the eight reserves in Vietnam. ➢ The MAB program in the RRD reserve aims at biodiversity conservation, economic development and logistic support, highlighting local cultural aspects, livelihood improvements, and education. The program focuses on impacts of climate change and storms and effects of mangrove plantations in coastal ecosystems (especially mangrove ecosystems) in their biodiversity monitoring. ➢ The MAB committee is concerned with using survey data for conservation.

No.	Organization / Persons met	Date (Y-M-D)	Main Points of Discussion
15	FSIV (Vietnam Academy of Forest Science) ➢ Dr. Vu Tan Phuong (Director, Postgraduate training – International Cooperation Department) ➢ Dr. Tran Van Can (Director, Silvicultural Research Institute) ➢ Mr. Nguyen Viet Xuan (Researcher, Research Institute of Forest Ecology and Environment) ➢ Mr. Doan Dinh Tan (Reseacher, RIFEE) ➢ Ms. Hoang Nguyen Viet Hoa (Post Graduate Training – International Cooperation Department)	2013-1-18	➢ The Forest Science Institute of Vietnam (FSIV) was established in 1988 taking over the former Forest Research Institute founded in 1961. ➢ FSIV carries out scientific research, technology transfer and advisory, post-graduate training, and international cooperation. The FSIV initiates research activities with the national budget as well as donor support. ➢ The FSIV has established a permanent plot system to study stand structure and forest dynamism in Vietnam, maintaining 2017 plots in total. 10 sample plots were established in mangrove areas in 2007, out of which 6 plots are in XTNP and 4 plots area in Camau. ➢ Participants also presented various mangrove research programs of the Research Institute for Forest Ecology and Environment (RCFEE) under the FSIV. ➢ The FSIV generally accepts data sharing with the NBDS project when their copyright is indicated in the database.
16	National University of Hanoi – Herbarium (HNUH) ➢ Dr. Nguyen Trung Thanh (Head of Department) ➢ Mr. Phan Ke Loc	2012-2-21	➢ The HNU-Herbarium (HUNH) stores 35,000 specimens that have been collected since the French colonial period in the 1930s. ➢ Out of the 35,000 species, about 27,000 species were identified at the species level, while the remaining 8,000 species are still unknown. Their collection covers 5,000 plant species while the number of plant species in Vietnam is 12,000. ➢ HNUH stores data on all identified specimens in the Excel sheet with columns of book no., family, genera, species, location, code number, date of collection, identifier, herbarium code, number of samples, etc. In case VMM, they use BRAHMS.

(2) Existing databases related to biodiversity in Vietnam

No	Organization	Database name	Data contents	Geographic coverage	Time coverage	Taxonomic coverage	Data amount	Data structure	Language	Data format	Software	Availability of metadata	Organization's view of data sharing	Other information	Source
1	The Institute of Ecology and Biological Resources (IEBR)	Genetic Database for Rare, Threatened & Endangered Species of Vietnam	Database with information on biology, ecology, habitat, and status of rare, threatened and endangered species of animal and mammals of Vietnam	Vietnam	2006 - present	- Mamamlia: 70 species - Avec: 27 species; - Pisces: 0; - Reptilia – Amphibia: 21 species, - Crustacea: 1 species. - Insecta: 0	- Mamamlia: 70 species - Avec: 27 species; - Pisces: 0; - Reptilia – Amphibia: 21 species, - Crustacea: 1 species. - Insecta: 0	One record has 9 separate data fields: species distribution, population levels/density, description, values, endangered level, conservation activities, surveys, summary data, and museum collections.	Vietnamese, English	Web-based database				Geographical reference is low resolution. Image of Species is low resolution	Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
2	Hanoi University of Sciences - Herbarium	Plant specimen database	Plant specimen data	Mainly in North Vietnam areas, mostly in inland areas	1930s - present	5,000 plant species	35,000 specimen 40,000 photos	Excel sheet has columns of book no., family, genera, species, location, code number, date of collection, identifier, herbarium code, number of samples, etc.	Vietnamese	Paper, Excel	Excel		Interested to collaborate with the NBDS for sharing plant information and database in Vietnam		Meeting record of 21-Feb-2013
3	National Institute of Animal Husbandry	Livestock genetic resources Database	Conservation of animal husbandry genetic resources, Atlas of animal husbandry	Vietnam	2008 -present.	56 species	56 species	Database provides a list of species. Species information is included in 6 fields: Name, Classification, Source, Distribution, Features, and Production. Geographical reference is low resolution, small scale maps. Image of Species is high resolution.	Vietnamese.	Web-based database					Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
4	Research Institute for Aquaculture No.3.	FISHINFO	Database on economic valued fish species in central areas of Vietnam.	Central area of Vietnam	2008 -present.	33 fish species	33 fish species	Data tructure of fishinfo follows the model of FishBase database (FAO, WFC). Fishinfo database has 4 modules: Searching, Fish library, Registration and Copyright information.	Vietnamese	Web-based database	PHP & My SQL	Current database form available: Local assess at present, Online in future on http://www.ria3.org.vn		Species information on taxonomy, features, distribution, growth, aquaculture conditions with images. Information can be search by name (vietnamese and english, scientific), taxonomy category or can assess directly to specific species by fish library. Local assess Geographical reference is not available. Image of Species is high resolution.	Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
5	Institute of Oceanography Nha Trang	Vietnam Oceanographic Data Center (VODC)	VODC for PC was developed to manage the oceanogrpahic database in Vietnam, South China Sea and adjacent waters.The Institute of Oceanography is focused on setting up, developing and upgrading its Center of Oceanographic Data (with the headquarter at Nha Trang and two branches in Hanoi and Hai Phong)	Vietnam seas	2008- present	Coral reef: Reef type, mean depth, max depth, average cross section slope, present area, number of coral zone, hard coral diversity index, live coral cover. Seegrass bed: Substrate – mean particle size, class of seagrass-sandy coralline, present area, number of endemic species, number of indigenous species, number of rare species, number of migratory species, ecology, diversity, salinity fluctuation, water quality, suspended sediment	Coral reef: Reef type, mean depth, max depth, average cross section slope, present area, number of coral zone, hard coral diversity index, live coral cover. Seegrass bed: Substrate – mean particle size, class of seagrass-sandy coralline, present area, number of endemic species, number of indigenous species, number of rare species, number of migratory species, ecology, diversity, salinity fluctuation, water quality, suspended sediment	There are 2 main modules: Coral reef and Seegrass bed. Data on the diversity of species of zoobenthos, zooplankton, phytoplankton, benthic plant and fish larvae-eegs is provided by station. Biodiversity data are managed in general on the list of species of the station in South China Sea. Geographical reference is integrated. Image of Species is available.	Vietnamese	Web-based database		Local assess		VODC is a big project of Institute of Oceanography Nha Trang. The database management system of MS Access and MS SQL Server to establish a database, using Visual Basic (VB 6 and VB Net) to develop software, integrate with Mapinfo and MapX tools for map management.	Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010

No	Organization	Database name	Data contents	Geographic coverage	Time coverage	Taxonomic coverage	Data amount	Data structure	Language	Data format	Software	Availability of metadata	Organization's view of data sharing	Other information	Source
6	Fishery Information Center - FICEN	Common Aquatic Species of Vietnam CCOV-2002	This Database is an effort to support fishery and aquaculture research and production.	Vietnam seas	-2002			CCOV 2002 has 4 main modules: Searching, Sorting/Screening; Printing and Help; Database provides information on the common Crustacean of Vietnam: 100 crustacean species with image and information on taxonomy, biology features, habitat and ecology, distribution, exploring seasons, exploring size, culture possibility, exploring tools, product types. Detail information can be found by the list by order (3), family (19), genus (44) and species (100); or by Vietnamese, English or Scientific names/keyowords. Crustacean, species distribution, population levels/density, description, fishing, fishing tools, exploring method.	Vietnamese	Web-based database		Current database form available: Local assess by CDROM (560 M)			Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
7	Plant Resources Center - Vietnamese Academy of Agricultural Sciences	Plant Genetic Resource of Vietnam Database	Target on Conservation and utilization of plant genetic resources (PGR) for food and agriculture as follow: - In Socioeconomic aspect, PGR are conserved in long-term and satify for/to: + Sustainable agricultural development,+ Ensure food security,+ Environment protect.- About Science and Reality, PGR conservation contributes to:+ introduces plant germplasm as varieties to cultivate,+ provide material to create a new variety by cross-breeding,+ other goals of science research	Vietnam	2005 -present	18.000 plant genetic accession of 150 species (almost of them are cultivate plants,).	18.000 plant genetic accession of 150 species (almost of them are cultivate plants,).	This web-based database has been developed since 1996 by Plant Resources Center with a support of FAO, GMS database provided by International Plant Resource Institute and now Vietnamese/Internet connection available Data with media attributes can be managed. Database interface: Vietnamese and English with two main modules: Document and Genetic Meterial Management. Searching module is very flexible with options of searching by key words or defined filed: - Accession Number - Crop - Scientific name - Local name - Information In 2009, database served 9000 queries from institutes/universities and companies.	Vietnamese, English		SQL Server 2000, Server-Client, using Windows 9x, Vista.				Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
8	Lyons 1 University and University of Natural Science (Vietnam National University - Ho Chi Minh City (VNU-HCM)). J. Millet, ĐẶNG LÊ A. T., TRAN H. D., TRAN N., BONNET P., GRARD P.,	TANPHU	Database on 200 plant species in Tan Phu Forest.This database provide tools for indentifying/classification depending on 28 features with demonstrated images.	Tan Phu Forest, Vietnam.	2008 -present			The database includes indentication module and view module (by species list or identification result). Identifying results provides species information on a record with 13 major fields: - Phenology - Description - Distribution - Habitat - Status	Vietnamese, France (both interface and data)					Geographical reference: Yes, distribution map. Image of Species is Yes (very high solution inmage on all part of plant).	Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
9	Vietnam Environment Protection Agency - Ministry of Natural Resources and Environment	Vietnam Biosafety Clearing House	Vietnam Biosafety Clearing House is among tools to fullfil the member's obligates to Cartagena Protocol on Biosafety, sharing information and initiatives on biosafety. Recognizing the importance of the Cartagena Protocol on Biosafety, Vietnam's Government signed the Protocol on 19 January 2004 and became an official Party since 19 April 2004. The Ministry of Natural Resources and Environment has been designated by the Government as national focal point to the Protocol.	Vietnam	2008 -present			This web-based database Vietnam Biosafety Clearing House has the following modules: - News on Biosafety in Vietnam and internationally. - Law and regulation - Risk assessment report - Experiment licence - Safe certificate Vietnamese Biosafety experts Database provide expert information on 6 main data fields: Agency, Qualification, Research topic, Languages, Nationality, Keywords. Vietnamese Legal documents related to biosafety provide expert information on 3 main data fields: type of document, issued organization, subject, key words.	Vietnamese, English (interface)					Current database form available: online, http://www.antoansinhhoc.vn This database is under upgrading process with many protential items.	Preliminary Survey and Investigation for the Development OF National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010

No	Organization	Database name	Data contents	Geographic coverage	Time coverage	Taxonomic coverage	Data amount	Data structure	Language	Data format	Software	Availability of metadata	Organization's view of data sharing	Other information	Source
10	Viet Nam 's Information Centre of Natural Resources and Environment (CIREN)	Web-based map service	The service provides users with accurate information on national parks, conservation zones, mangrove forests, wetland areas, and environment observatory system in Viet Nam at Environmentally polluted sites, waste water system, underground water sources, water works, the national hydro-meteorology network are on display.	Vietnam	1970 -present			The National Integrated Natural Resources and Environment Database is an electronic contact point gathering many other databanks in the natural resources and environment sector. It will provide a mechanism for sharing data with different access levels to organizations and individuals in nationwide in this sector. The service also gives information on land use and plans to use land nationwide and especially at economic zones, as well as land maps and seabed topography at the 1/1,000,000 and 1/25,000 ratio.	Vietnamese, English (interface)					This on-line service is compatible with the OGC international standard (Open GIS Consortium) under format of WMS (Web Map Service), which allows end-user able to use with many different formality. ArcGIS Server 9.2 http://ciren.gov.vn.	Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
11	CIREN - Information and Communication Technology Department for Natural Resources and Environment	MONRELIB (Natural Resources and Environment Digital Library)	Natural Resources and Environment Digital Library:193829 documents, periodic documents: 1999, digital documents: 45590	Vietnam	1945 -present	- Land resources: 29639 - Water resources: 17236 - Marine resources: 3389 - Environment: 10599 - Meteology-hydrology: 3929 - Geology-Mineral: 5475 - Categrpahy: 96381	- Land resources: 29639 - Water resources: 17236 - Marine resources: 3389 - Environment: 10599 - Meteology-hydrology: 3929 - Geology-Mineral: 5475 - Categrpahy: 96381	The National Integrated Natural Resources and Environment Database are established based on the spatial object-oriented model of Geographical Information System (GIS). Data are integrated based on the Vietnam Spatial Data Infrastructure (VSDI). Main functions of the system are updating, management, analysis, representation and distribution of resources and environment information. Documents: - Land resources: 29639 - Water resources: 17236 - Marine resources: 3389 - Environment: 10599 - Meteology-hydrology: 3929 - Geology-Mineral: 5475 - Categrpahy: 96381	Vietnamese				Searching module provides option in retrieving by name, keyword, publishing years, organization, document types.	Current database form available: online, http://monrelib.ciren.vn/OPAC/WIndex.aspx	Preliminary Survey and Investigation for the Development of National Biodiversity Database System by Centre for Natural Resources and Environmental Studies (CRES), March, 2010
12	VNIO (Institute of Oceanography, Nha Trang)	Specimen database	Marine Species Specimen	Vietnam	1922 -present	Marine species	10,000 species	Occurrence data of each specimen (Scientific name, date, dimension, etc.)	Vietnamese	Desktop database	Microsoft Access		Need to be discussed		Meeting record of 18 July 2012
13	Center for Biodiversity and Development (CBD), Institute of Tropical Biology (ITB – Ho Chi Minh City)	Photobook	Photography of species in southern Vietnam	Southern Vietnam	2006 -present		100,000 photos	Taxonomy data of each species (Scientific name, dimension, habitat, etc.), Photo	Vietnamese	Book	BRAHMS		Possible if official request is made		Meeting record of 18 July 2012
14	Can Tho University (CTU – Can Tho)	Mekhong fish database	Freshwater fish in Mekhong river	Southern Vietnam	2010 -present	Fish	300 species	Taxonomy data of each species (Scientific name, dimension, habitat, etc.), Photo	Vietnamese / English	Web database			Need to be discussed	http://ffish.asia/	Meeting record of 19 July 2012
15	Nong Lam University (NLU – Ho Chi Minh City)	Fish viet	Ornamental fish in Vietnam	Southern Vietnam	2012 -present	Fish	320 species	Taxonomy data of each species (Scientific name, dimension, habitat, etc.), Photo	Vietnamese / English	Web database	PHP & My SQL		Need to be discussed	http://fishviet.com	Meeting record of 20 July 2012

Appendix 11: Capacity / needs assessment report

Collected data of the assessment is submitted by data only in Appendix 14(2).

Report of Capacity Assessment on Biodiversity Monitoring and Information Management in Vietnam

The Project for Development of the National Biodiversity Database System (NBDS)

Executing agency: Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA), Ministry of Natural Resources and Environment (MONRE)
Donor agency: Japan International Cooperation Agency (JICA)

(Project Report: No. 1)

June 2013

Hanoi, Vietnam

Project Profile

Project Name:
The Project for Development of the National Biodiversity Database System in the Socialist Republic of Vietnam

Project Purpose:
The first generation of national biodiversity database system is developed.

Project Period:
3 years and 5months (November 2011 ~ March 2015)

Project Implementing Agency:
Biodiversity Conservation Agency (BCA) / Vietnam Environment Administration (VEA) / Ministry of Natural Resources and Environment (MONRE)

Related Ministries in Vietnam:
Ministry of Agriculture and Rural Development (MARD) / Ministry of Science and Technology (MOST) / Vietnam Academy of Science and Technology (VAST) / Ministry of Planning and Investment (MPI) / Nam Dinh Province Department of Natural Resources and Environment (DONRE)

Donor Agency:
Japan International Cooperation Agency (JICA)

Expected Outputs:
i) Architecture of NBDS is developed in VEA with the cooperation of MARD, MOST, VAST and other relevant agencies, institutes, etc.
ii) Mechanism for collaboration with other agencies in sharing, managing, exploiting and utilizing data and information of NBDS is recommended.
iii) A database for Nam Dinh Province is developed as a part of NBDS.
iv) Capacity on management and utilization of NBDS is strengthened.

Project Area:
All over Vietnam (the major part of the activities in Hanoi and Nam Dinh Province (Xuan Thuy National Park).

[NOTE]The Project is implemented in accordance with the Record of Discussions between JICA and the Vietnamese Government which took place in Hanoi on 22nd April 2011.

Acknowledgments

The Project for Development of the National Biodiversity Database System (NBDS) would like to express its sincere gratitude to all organizations and individuals involved in this capacity assessment for their great cooperation and support.

For any comments on this report, please write to:
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No. 8, To That Tuyet, Cau Giay, Hanoi, Vietnam
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Capacity/Needs Assessment on National Biodiversity Database System in Vietnam

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Introduction

This report documents is the result of questionnaire surveys for assessing capacities of organizations concerned with biodiversity monitoring and information management in Vietnam. The NBDS Project initiated the capacity assessment with specific questionnaires to comprehend actual situations and institutional capacities for biodiversity monitoring and information management.

The report is comprised of two parts. PART I summarizes overall results of the questionnaire survey in an aggregate way. PART II describes in-depth analysis of biodiversity situations in Vietnam and breaks down questionnaire survey results into each responding organization.

We hope that the reader will get an overall picture as well as detailed information on the institutional capacities for biodiversity monitoring and information management in this report.

PART I Results of Capacity/Needs Assessment (Questionnaire Survey) on Biodiversity Monitoring and Information Management in Vietnam

(A) Outline of the Capacity Assessment

(a) Introduction

The Project for Development of the National Biodiversity Database System (NBDS) in Vietnam is implemented by the Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA), Ministry of Natural Resources and Environment (MONRE) in cooperation with the Japan International Cooperation Agency (JICA) and other related organizations participating in its Technical Working Group (TwG) in order to develop NBDS as a versatile database system and to elaborate effective biodiversity monitoring systems. In implementing its activities, the project requires collaboration with a number of national and international organizations involved in biodiversity conservation and monitoring in Vietnam to ensure effective, efficient and harmonious collection and management of national biodiversity information. The project has been engaged in developing a national biodiversity monitoring indicator system with related organizations, for which their contributions are essential.

In this context, the project initiated a questionnaire survey for the assessment of capacities and needs of related organizations involved in biodiversity monitoring indicators to explore feasible institutional mechanisms of NBDS development on the basis of survey results.

(b) Objectives of the survey

Objectives of the survey are:

- To recognize current situations of the management and collection of data and information concerning biodiversity in Vietnam; and
- To identify major roles of relevant Vietnamese institutions in the proposed NBDS collaboration mechanism.

(c) Method of the survey

The questionnaire survey was conducted in the following method:

- Request a representative of each organization to fill out a questionnaire by providing suitable information for each question.
- Make analysis and evaluation of responses using particular parameters or indicators.

The questionnaire was comprised of the following parts (See **Appendix 1**):

- Part A: General information – 7 main questions on types of responding organizations, general aspects of biodiversity conservation (programs), etc.;
- Part B: Biodiversity monitoring/surveys and indicators – 6 main questions on biodiversity monitoring and surveys with a number of additional questions; and
- Part C: Biodiversity database management/data sharing mechanisms – 8 main questions on database management for biodiversity information with some additional questions

(d) Target Vietnamese institutions

The questionnaire was distributed to the following organizations for receiving their responses:

- Governmental institutions that manage/process data and information on biological and environmental behavior
- Universities and research institutions that generate/record data and information on biological and environmental behavior
- Private sector institutions and NGOs that survey/record data and information on biological and environmental behavior
- Donor agencies and international/regional organizations as well as their projects that support biodiversity information management.

The Survey was conducted between September 2012 and January 2013, including the distribution of questionnaires, collection of the answered questionnaires, and

compilation and evaluation of survey results.

(B) Results of the questionnaire survey

Part A Basic component

This section summarizes results of questionnaire analysis on basic items in Part A.

(1) Respondent organizations

Responses were obtained from 128 organizations (39.6 % of the 323 organizations that the questionnaire was sent) (See **Appendix 2** for details of respondent organizations). Their responses were received in hard copy (127 organizations) and by e-mail (1 organization). No responses were received through the web forms.

(2) Composition of respondent organizations

Figure 1 shows the composition of the respondent organizations. All were Vietnamese organizations, out of which the DONRE shared 30 %, followed by protected area offices (including national parks, special use forests, and other protected areas, 23 %), DARD (19 %), DOST (17 %), management boards for protected areas (including national parks and special use forests, 9 %), research institutes (1 %), etc.

(2) Types of respondent organizations

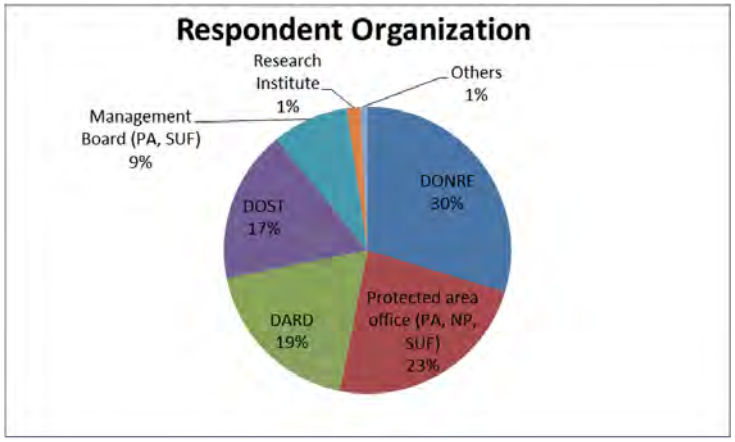


Figure 1 Composition of respondent organizations

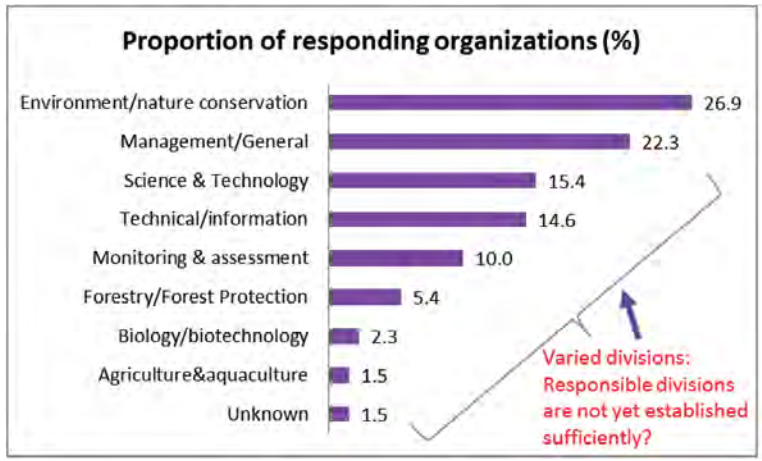


Figure 2 Responsible divisions for biodiversity conservation in the respondent organizations

Figure 2 clarifies the proportion of the respondent organizations by their professional type. Conservation/environmental agencies account for the largest proportion of the respondent organizations (26.9 %), followed by general administrative offices (22.3 %), science and technology divisions (15.4 %), technical and information divisions (14.6 %), monitoring and assessment divisions (10.0 %), etc. Dispersion of offices charged with biodiversity conservation in various divisions may suggest the lack of a uniform body for that purpose.

(3) Staff composition

Figure 3 shows the composition of staff in the respondent organizations as a whole. The average number of employees per organization is 52.5 persons. Though the larger number of staff is not adequately categorized, rangers of protected areas certainly share the significant role in biodiversity monitoring and information management. Respondent organizations are spread over varied divisions, which may imply that responsible divisions are not yet established sufficiently and that various organizations share the function of biodiversity monitoring and information management.

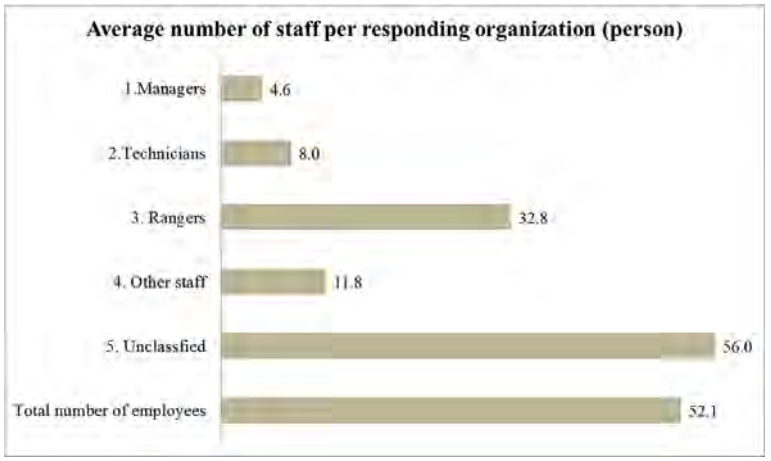


Figure 3 Composition of staff in the respondent organizations

(4) Expertise of the staff

Figure 4 lists the expertise of staff of the respondent organizations involved in

Figure 4 Expertise of staff

(Note)

1. Other biology includes microbiology, mycology, parasitology, marine (ocean) biology, hydrobiology, phylogenetics/taxonomy, and other general biology (unclassified).

2. Others include office administration/engineering (including IT), remote sensing/GIS, tourism, etc.

biodiversity monitoring and information management. More staff have the expertise of biology and ecology (39 %) as well as socioeconomics (22 %), and forestry (19 %). It appears that very few taxonomic specialists work in these organizations, but other biological specialist may substitute for taxonomic functions. It appears that rangers of protected areas or forest areas are involved actively in biodiversity monitoring and surveys in the field. Personnel contributions from the forestry sector appear to be important for biodiversity conservation.

(5) Available means of communications

Most (94.5 %) of the respondent organizations have office phones, though a few (7 organizations) have no office phones. The majority (98.4 %) of them can be phoned through their responsible officers. Many (68.0 %) of them can also be contacted through their responsible officers by e-mail, but some field offices may also be difficult to contact.

(6) Recorded species in the statistics

Figure 5 shows the average number of species that are included in the statistics owned by the respondent organizations. The average number of species that are compiled in each statistics is 458, about 60 % of which are terrestrial plants, contributed presumably from existing survey data sources such as forest inventories. More species are included for terrestrial insects and birds, whereas less aquatic species are compiled in their statistics.

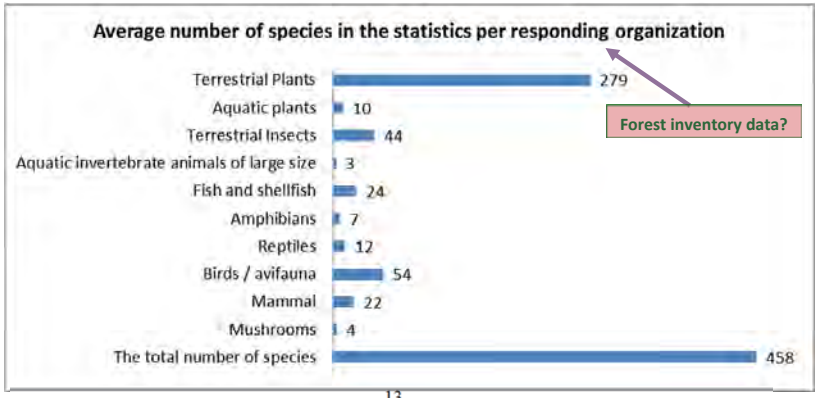


Figure 5 Average number of species in the statistics

Figure 6 Proportion of respondent organizations that contain each type of species in their statistics by classification

(6) Species types in the statistics

Figure 6 clarifies the proportion of organizations that include each type of species compiled in the statistics. Though a considerable number of the respondent organizations still lack the categorization of species in their statistics, some of them have information on endemic species, rare species and endangered species. A few organizations also indicate keystone species and dominant species.

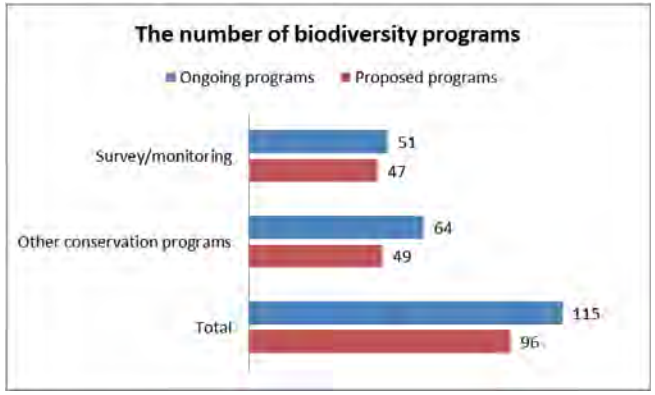


Figure 7 Number of biodiversity-related programs implemented or proposed by respondent organizations

(7) Conservation programs

Figure 7 aggregates the number of on-going and proposed programs on biodiversity surveys/monitoring and other conservation programs in the respondent organizations. A considerable number of the organizations implement or plan biodiversity survey and monitoring programs as well as other biodiversity conservation programs, showing high needs for biodiversity monitoring in different areas.

Part B Biodiversity monitoring/surveys

This section describes results of questionnaire analysis on biodiversity monitoring / surveys in Part B.

(1) Implementing organizations of biodiversity monitoring

Figure 8 illustrates the proportion of the respondent organizations that have conducted biodiversity monitoring/surveys. Out of the total 128 organizations, 50 organizations (39.1 %) have ever conducted biodiversity monitoring/surveys. Protected area offices and the DONRE are involved mainly in biodiversity monitoring/surveys, followed by management boards for protected areas/special use forests, DARD, DOST, etc.

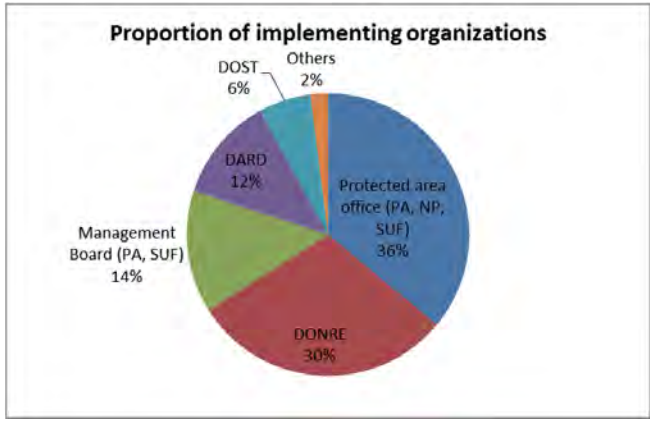


Figure 8 Proportion of respondent organizations that conducted biodiversity monitoring/surveys

(2) Types of ecosystems monitored

Figure 9 illustrates how much the respondent organizations monitored each type of ecosystems. More respondent organizations (32.8 %) conducted monitoring in natural forest ecosystems, and then freshwater ecosystems, agro-ecosystems, mountainous/highland ecosystems, wetland ecosystems, etc., whereas few monitored coastal/marine ecosystems. Monitoring of natural forest ecosystems may be associated

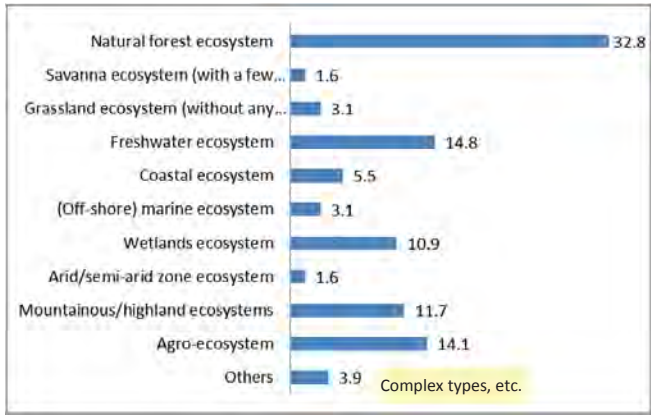


Figure 9 Proportion of respondent organizations that monitored each type of ecosystems (%)

closely with existing national forest inventory systems or protected area monitoring with more research and field staff.

(3) Taxonomic groups monitored

Figure 10 provides information on specifications of taxonomic groups that the respondent organizations monitored. More organizations collected data on mammals, terrestrial plants, birds/avifauna, reptiles, and then amphibians in their biodiversity monitoring, whereas fewer organizations collected data on aquatic life, microorganisms, and smaller animals. In particular, it appears that marine life is not sufficiently covered in their monitoring activities.

(4) Other data types in biodiversity monitoring

Figure 11 illuminates other types of data that the respondent organizations collected in their biodiversity monitoring. A considerable number of respondent organizations collected topographic data, hydrological data and socioeconomic data in their biodiversity monitoring as baseline or supplementary data. Fewer organizations collected geological data or environmental/abiotic data, though these data would also be required in the overall assessment of ecological conditions.

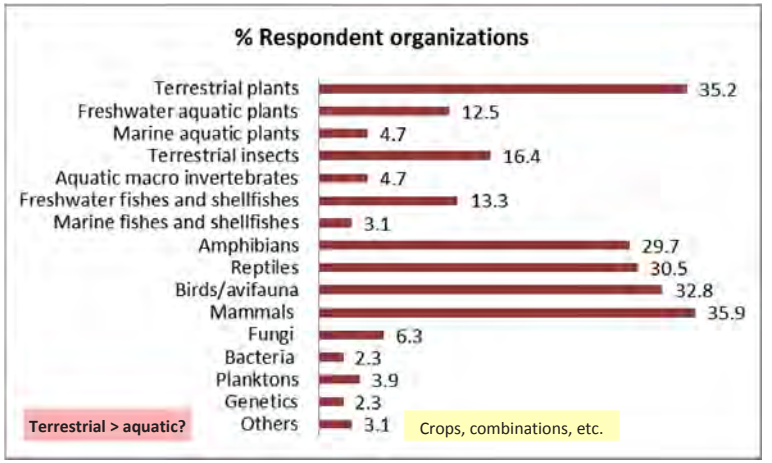


Figure 10 Proportion of respondent organizations that collected other types of data

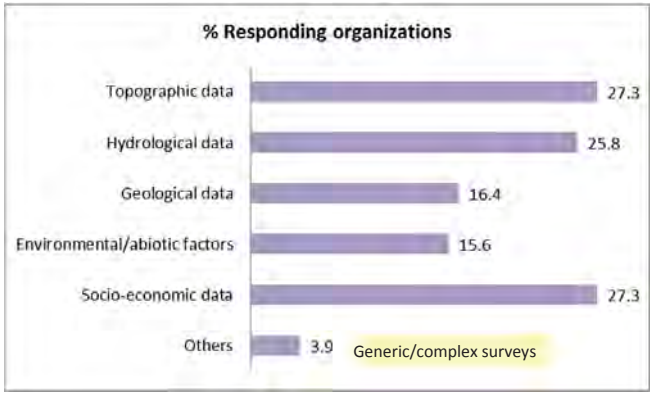


Figure 11 Proportion of respondent organizations that collected other types of data

(5) Target monitoring areas

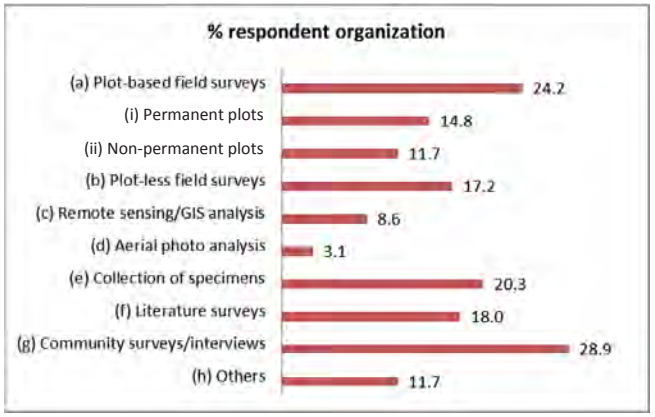
Figure 12 clarifies the breakdown of target areas of monitoring conducted by the respondent organizations that ever implemented biodiversity monitoring. 22 % of the implementing organizations conducted biodiversity monitoring in national park areas, whereas half of the organizations initiated the monitoring in other areas, including

Figure 12 Area monitored by the respondent organizations

special use forests. Some other areas were also selected for biodiversity monitoring, including development areas such as agricultural zones.

(6) Methods of biodiversity monitoring

Figure 13 specifies methods of biodiversity monitoring that these respondent organizations applied in their programs. A larger number of organizations applied community surveys/interviews (28.9 %) and (permanent or non-permanent) plot-based



(Note) Others include Expert estimate, casual observation, specimens, documents, interviews, hydrological surveys, etc.

Figure 13 Monitoring methods employed by the respondent organizations

field surveys (24.2 %) along with specimen collections. Utilization of remote sensing/GIS techniques or aerial photos still appears limited in biodiversity monitoring presumably because of constraints on the availability of data or financial resources. Some organizations rely on plot-less field surveys or expert estimate methods due to the lack of reliable methods. Opportunities for literature surveys or secondary data collection may also be limited.

(7) Analytical methods of biodiversity monitoring

Figure 14 shows types of analytical methods applied by the implementing organizations in their biodiversity monitoring. A larger number of organizations applied qualitative or descriptive trend analyses, though some adopted statistical/quantitative trend analysis and visual trend analysis. It seems that these analyses focus on the trends of biodiversity up to the time of monitoring/surveys based on collected data, but information may still

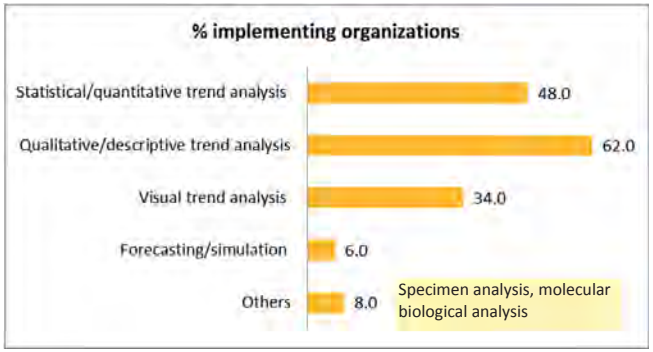


Figure 14 Proportion of implementing organizations that adopted each type of analytical methods

be lacking to forecast the future biodiversity trends.

(8) Budgetary sources of biodiversity monitoring

Figure 15 clarifies sources of funds to implement biodiversity monitoring acquired by the responding organizations. It is noted that a considerable number of implementing organizations made use of provincial/local government budgets rather than national government budgets, suggesting greater opportunities for decentralized management of biodiversity monitoring. Some organizations also received contributions from national

NGOs as well as from local communities (the latter may be mostly in the form of

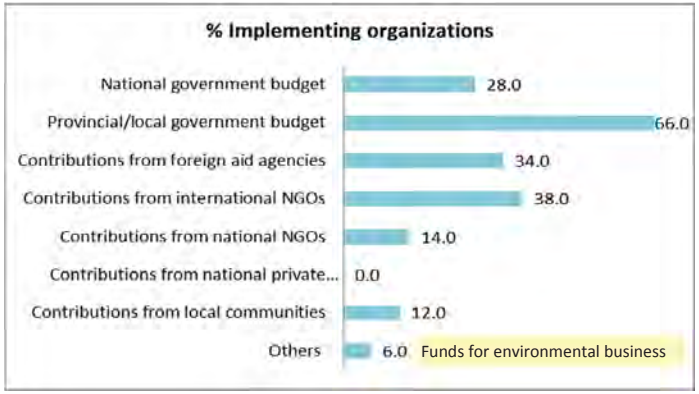
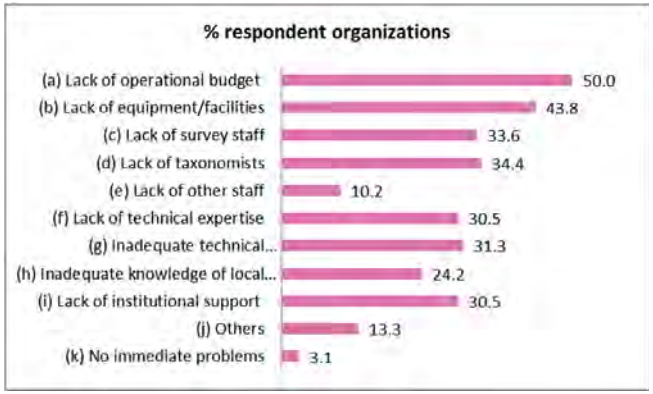


Figure 15 Budgetary sources of biodiversity monitoring

in-kind support). Nevertheless, roles of international NGOs and foreign aid agencies are crucial to support biodiversity monitoring in Vietnam.

(9) Issues on biodiversity monitoring

Figure 16 summarizes issues on biodiversity monitoring that the respondent organizations encountered. Half of the respondent organizations pointed out the lack of operational budgets and their effective allocation as well as equipment or facilities for



(Note) Others include: Pressures from people, weak coordination (DARD - DONRE, etc.), budget execution, etc.

Figure 16 Issues on biodiversity monitoring

biodiversity monitoring, and a considerable number of organizations also mentioned the lack of technical expertise (survey skills, etc.), local knowledge or professional staff (survey staff, taxonomists, etc.) in supporting biodiversity monitoring. Another problem is also the lack of institutional support to facilitate biodiversity monitoring such as training, coordination, or technical/administrative support. A few organizations are also concerned about conflicts with local communities in conducting biodiversity monitoring.

Other constraints on biodiversity monitoring include: hard or unclear procedures for biodiversity monitoring (9.4 % of the respondent organizations); lack of guidelines / manuals (15.6 %); and lack of training opportunities/experiences in biodiversity monitoring (21.1 %).

(10) Comments/requests on biodiversity monitoring

The respondents made some comments or requests to enhance biodiversity monitoring activities, such as:

- Coordination/uniformity: DONRE – DARD, etc. ;
- Creation of specialized biodiversity division in MONRE (It should be the BCA?);
- Development of criteria and indicators for each region with attention to the unity in the country;
- Creation of regulations for compulsory biodiversity monitoring;
- Implementation of training on objective biodiversity monitoring/surveys, indicators, taxonomy, etc.;
- Secured dissemination of information from national parks/protected areas; and
- Strengthening of planning, budgeting, equipment provision, and recruitment of local personnel in high biodiversity areas, including special use forests.

Part C Information management on biodiversity

This section presents results of questionnaire analysis in the aspect of biodiversity information management in Part C.

(1) Data sharing

With regard to the sharing of data on biodiversity, 65.1 % of the respondent organizations answered that all data could be shared, and 23.8 % said that some data could be shared, while there were no organizations saying that no data could be shared at all (11.1 % of the organizations: "no response or unknown"). In terms of types of data sharing, they added that general data could be shared on protected areas, species, socioeconomic aspects, etc. as well as authorized data, whereas more specific information/data could not be shared, including survey methods, new ideas, project progress, area/habitat distribution (that could be shared only with protected area offices), specific location (GPS), safety matters/law enforcement, rare species, detailed biodiversity information, etc. as well as unauthorized data.

(2) Cost of data sharing

Figure 17 specifies the cost sharing policy for sharing of biodiversity data determined by the respondent organizations. More than half (53.9 %) of the organizations are ready to share data with all other organizations freely without any payments, and 19.5 % share data freely with some other organizations. Only 5.5 % requested payments from all other organizations for data sharing, though 23.4 % answered "unknown" on the data

Figure 17 Cost of data sharing

sharing policy. Three organizations mentioned the gratuitous data sharing policy may be applied to all or some organizations, depending on cases.

For the respondent organizations allowing free data sharing with some organizations, types of recipient organizations allowed to receive data freely are government offices, protected areas, data management offices, public research institutes, public offices within the target area, etc., which would be able to keep national confidential information on biodiversity conditions as partner organizations. Conversely, organizations requested to make payments for data are NGOs, consulting agencies (firms), research agencies for their own benefits, agencies outside the target area, etc., which are private organizations or have no direct linkages with providing organizations. Which organizations are exempted from payment or not would also depend on organizations' regulations or leaders' approvals as well as requesters' demands and purposes of requesting organizations.

The policy of charging data sharing costs to all external organizations arises from government regulations, purposes of the national budget used only for the national system, or the motivation to collect fees for supporting data storage or exploitation and covering costs of budget execution.

(3) Media of biodiversity data

Figure 18 illustrates the media of publication on biodiversity information prepared by

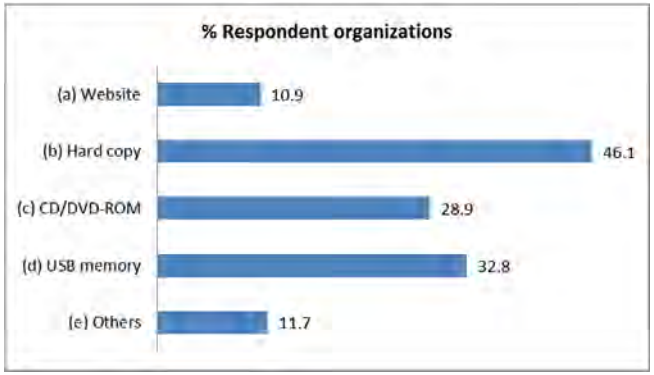


Figure 18 Available data media on biodiversity

the respondent organizations. About half of the responding organization published biodiversity data in hard copy, while about 60 % prepared data in digitized formats (CD/DVD-ROM or USB memory). A few organizations established their own websites, but web-based information exchange/sharing is still limited among the respondent organizations.

(4) Types of biodiversity data

Figure 19 shows types of data on biodiversity that the respondent organizations prepared. A larger number of organizations (46.1 %) prepared data on biodiversity in numerical or linguistic data through qualitative or quantitative analysis. Some

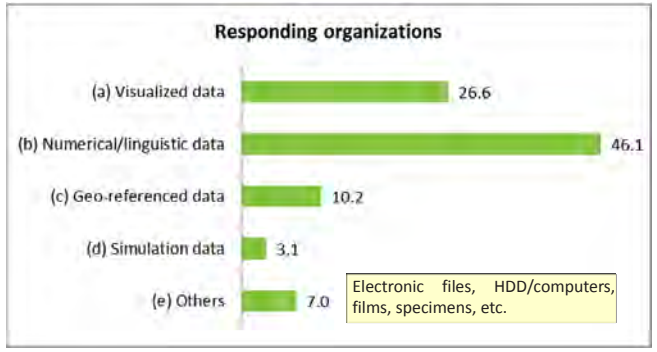


Figure 19 Types of biodiversity data

organizations (26.6 %) prepared more visualized data (in maps, with graphics/charts, etc.), but only a few linked them to geo-referenced data. Simulation of biodiversity trends is still very limited among the respondent organizations, presumably due to the lack of past data or reference/baseline data and standards as well as the suitable simulation methodology.

(5) Available language(s) of biodiversity information

Figure 20 presents available language versions of data or publications on biodiversity prepared by the respondent organizations. Most of them prepared data or publications on biodiversity in Vietnamese only, while only the limited proportion of materials is available in foreign languages, mostly English.

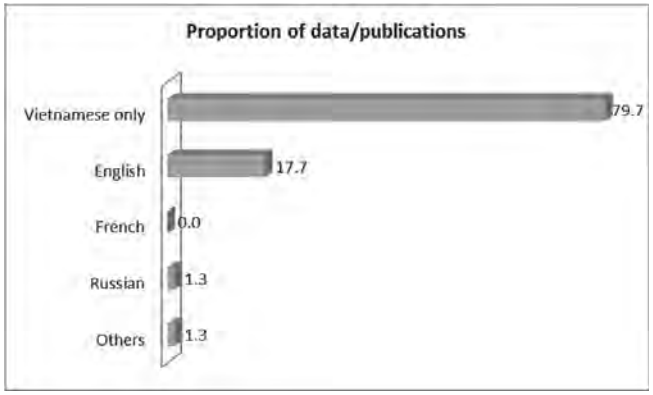


Figure 20 Available languages of data/publications prepared by the respondent organizations

(6) Formats of data (used software)

Figure 21 shows formats of data prepared by the respondent organizations in applied software. Many of them (54.1 %) used MS Word to prepare biodiversity information in the form of reports. Some (26.7 %) used Excel for compiling data, and only a few used GIS software, database software (Access), websites, etc.

(7) Use of biodiversity information

Only 8 respondent organizations (6.3 %) stated the use of biodiversity data, while no others suggested the information use. A few organizations used 1 to 10 biodiversity

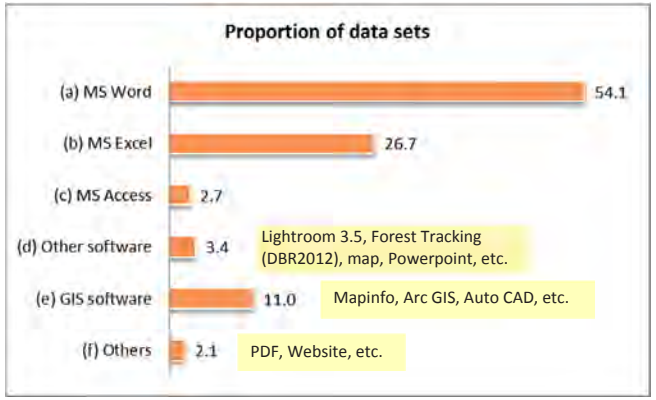


Figure 21 Formats of data sets (used software)

indicators for better interpreting collected data for their use (e.g. number of species (per area), list/distribution of plants/animals (rare, endangered, etc.), species characteristics, pressure, NTFP situations, forest encroachment/exploitation, BOD/COD, diversity indicator, etc.). Such organizations made use of existing indicators without creating new indicators. Three organizations (2.3 %) developed metadata. In another case, new software was built for interpreting results of survey data in the project. There was also the case where geographic information sites of ancient trees in protected areas were constructed. Despite a few interesting cases of data use, collected data appeared to be rarely used effectively for enhancing policies or programs of biodiversity conservation.

(8) Comments/requests

In this section, some organizations provided comments or requests on management and sharing of biodiversity information as follows:

- Promotion of the systematic sharing of biodiversity information in general;
- Strengthening of coordination between central and local governments;
- Development of collaboration mechanisms among relevant sectors;
- Establishment of public biodiversity database for data management by qualified departments in the forms of papers, software, websites, specimens, etc.;
- Preparation of software and guides for effective analysis and use of biodiversity data (including feature extraction software, etc.);
- Raising awareness of local people for biodiversity conservation and cooperation for information provision;
- Building and updating provincial database systems, connected to the national database structure;
- Instituting a national biodiversity monitoring and management system, while synchronized with the government hierarchy;
- Establishment of regulations and guides for biodiversity monitoring and information management, guaranteeing staff, budget, etc.;
- Provision of general biodiversity indicators while providing support for local people;
- Creation of an effective data provision system from local offices to central offices; and
- Organization of workshops/training courses for provincial forest rangers; and

There was also a request for initiating a more scientific questionnaire survey rather than a generic survey to allow deep investigations on biodiversity monitoring and information management.

Conclusions and Recommendations

This questionnaire survey with 126 respondent organizations mostly from the government sector illustrated that they have some experiences in monitoring/surveys and information management on biodiversity (particularly terrestrial forest ecosystems), but that their activities are not yet sufficient to ensure continuous and intensive biodiversity monitoring and information management for facilitating analysis of biodiversity trends and their changes in terms of their technical, organizational, and operational capacities. Little information has been effectively used for actual biodiversity-related actions. Though many organizations accept free information sharing with other organizations, no effective networking or coordination mechanisms have been yet observed in the biodiversity sector. Many of these organizations requested more technical and institutional support to build up biodiversity monitoring and information management work, or create a new mechanism to strengthen it.

Seeing these results, the following issues will need to be attentively considered to enhance biodiversity monitoring and information management at the next steps:

- Conceive an effective method to build up ongoing efforts in the fields of biodiversity monitoring, indicator development, information sharing, database development, etc., while preparing guidelines and conducting training to essential partners;
- Create a sustainable mechanism to facilitate networking of existing actors preferably through the NBDS platform;
- Elaborate a process for balancing central-level development as a national standard and regional initiatives for effective information gathering and sharing through building coordination mechanisms
- Recapitalize and replicate existing outcomes within the country?: Good practices

Intensive collaborations with several potential organizations would be explored to enhance the NBDS coupled with biodiversity monitoring and database management as pilot cases. On the other hand, more questionnaire surveys may be desired to obtain more complete and advanced information with other potential organizations (including

donors, NGOs, research institutes, etc.), depending on the availability of the budget/funds.

PART II Detailed analysis of capacity assessment for the biodiversity sector in Vietnam

(A) Background on Biological Diversity Data

The meaning and content of the term “Biodiversity” in recent years have been expanding not only to biological field but also to socioeconomic or political fields. Still, the core meaning of the term is related to biology, and there have been global efforts to compile and share data related to biological diversity. One of the inherent problems of the effort to building global-level information resource on biological diversity is “taxonomic impediment” to the sound management of biodiversity. Governments, through the Convention on Biological Diversity (CBD), have acknowledged the existence of this problem. The purpose of the Global Taxonomic Initiative[1] is to remove or reduce this taxonomic impediment, in other words, the knowledge gaps in the taxonomic system, the shortage of trained taxonomists and curators, and the impact these deficiencies have on the ability to conserve, use and share the benefits of biological diversity.

Identification of the majority of organisms such as insects, plants, fungi and microorganisms, require expert skills for correct identification. Most of them have not been categorized or given formal scientific names. The inability to identify or obtain identifications of species is a major component of the taxonomic impediment. Simple-to-use identification guides for the non-taxonomist are rare and available for relatively few taxonomic groups and geographic areas. There are millions of species still lacking descriptions and there are far too few taxonomists to do the job, especially in biodiversity-rich countries, namely Vietnam.

Furthermore, although there has been extensive taxonomic work on various taxonomic groups such as birds, mammals and higher plants, little is known of their distribution, biology, and genetics. It is estimated that only 10% of vertebrates remain to be described, but greater than 50% of terrestrial arthropods and up to 95% of protozoa still

[1] https://www.cbd.int/gti/

lack descriptions. At the most conservative estimate there are more unknown species than known ones on earth.

Effective conservation and management of biodiversity depends in large part on the understanding of taxonomy. Unfortunately, inadequate taxonomic information and infrastructure, coupled with declining taxonomic expertise, hinder the ability to make informed decisions about conservation, sustainable use and sharing of the benefits derived from biotic resources. Governments, through the Convention on Biological Diversity, have acknowledged the existence of a “taxonomic impediment” to the sound management of biodiversity, and have developed the Global Taxonomic Initiative to remove or reduce the impediment.

Taxonomic knowledge is a key input in the management of all types of ecosystems, including marine areas, forests, and drylands. It is also a key to effectively addressing alien species, access and benefit-sharing, and the many other crosscutting issues. Each country and region, in addressing this wide range of biodiversity issues, has different needs and priorities regarding taxonomic support. Understanding those needs and priorities is the important first step to overcoming the “taxonomic impediment”.

Consequently, national taxonomic needs assessments, including related technical, technological and capacity needs, and establishment of priorities for taxonomic work that take into account country-specific circumstances, with particular regard to user needs and priorities should be regarded as an urgent issue, by way of their national biodiversity strategies and action plans as well as through their national reports.

Worldwide-covered Biodiversity Information Systems

As efforts coping with the aforementioned issue of taxonomic impediment, the following links provide taxonomy information over the architecture for sharing national, regional and global biodiversity databases:

1. **Biodiversity Heritage Library**[2]

The Biodiversity Heritage Library (BHL) is a consortium of natural history and botanical libraries that cooperate to digitize and make accessible the legacy literature of biodiversity held in their collections and to make that literature available for open access and responsible use as a part of a global "biodiversity commons." The BHL consortium works with the international taxonomic community, rights holders, and other interested parties to ensure that this biodiversity heritage is made available to a global audience through open access principles. The BHL has digitized millions of pages of taxonomic literature, representing tens of thousands of titles and over 100,000 volumes.

2. **Encyclopedia of Life**[3]

The Encyclopedia of Life (EOL) brings together information from resources across the world such as museums, learned societies, expert scientists, and others into one massive database in an online portal. These include commercially valuable species, invasive pests and disease organisms, charismatic and familiar animals, popular ornamental plants, newly discovered species, and plants, animals and fungi on which we rely for food, among other groups.

3. **Global Biodiversity Information Facility**[4]

The Global Biodiversity Information Facility (GBIF) was established by governments in 2001 to encourage free and open access to biodiversity data, via the Internet. Through a global network of countries and organizations, GBIF promotes and facilitates the mobilization, access, discovery and use of information about the occurrence of organisms over time and across the planet. Information on species and groups of plants, animals, fungi and microorganisms, including species occurrence records, as well as classifications and scientific and common names is available.

4. **Scratchpads**[5]

Scratchpads is an online virtual research environment for biodiversity, allowing anyone to share their data and create their own research networks. Sites are hosted

[2] http://www.biodiversitylibrary.org/
[3] http://eol.org/
[4] http://www.gbif.org/
[5] http://scratchpads.eu/

at the Natural History Museum London, and offered freely to any scientist that completes an online registration form. Sites can focus on specific taxonomic groups, or the biodiversity of a biogeographic region, or indeed any aspect of natural history. Key features of Scratchpads include: tools to manage biological classifications, bibliography management, media, rich taxon pages, and character matrices.

(B) Vietnam's Outlook on Biodiversity

In order to understand the situation of Vietnam in this scenario, it is essential to know the level of its biodiversity to imagine "quantitatively" the required efforts for the management of inherent data and information; the administrative structure and the duties of its conforming institutions related to the management of biodiversity, and in fact, the real situation of capabilities of those institutions.

(1) Ecoregions of Vietnam

Vietnam is a country of tropical lowlands, hills, and densely forested highlands, with level land covering no more than 20% of the area. The country is divided into the highlands and the Red River Delta in the north; and the Day Truong Son, the coastal lowlands, and the Mekong River Delta in the south. Concerning to its biodiversity, main ecoregions are as follows:

1. **Northern Indochina Subtropical Moist Forests**

This ecoregion with habitat type as of tropical and subtropical moist broadleaf forests is geographically located between southern China, northern Laos, Myanmar, Thailand, and Vietnam. Monsoon forests are distributed over a mountainous landscape create a broad range of habitat conditions from drought-deciduous savanna woodlands to montane evergreen forests.

This ecoregion has the highest species richness of birds among all ecoregions in the Indo-Pacific region and ranks third for mammal richness plus tree species diversity. The bird fauna here is very rich with around 707 species. Species of interest are Alexandrine Parakeet (*Psittacula eupatria*), Great Hornbill (*Buceros bicornis*), and the Green Dragontail Butterfly (*Meges virescens*). More than 183 mammal species are known to reside in this ecoregion, of which four are endemic and five near endemic.

Conservation status of this ecoregion is classified as vulnerable. The threats to biodiversity in this ecoregion stem from two main sources: land clearing for shifting cultivation, poppy cultivation, tourism, logging, and hunting for food and income. Almost all of the forest in various ecoregions that occur in Vietnam have been cleared for agricultural expansion. Extensive illegal hunting poses the greatest danger to the biodiversity in this ecoregion biodiversity. In its supply of a thriving Chinese market, hunting is indiscriminate, targeting all species, from large mammals to small birds, reptiles, amphibians, and invertebrates.

2. South China-Vietnam Subtropical Evergreen Forests

This ecoregion with habitat type as of tropical and subtropical moist broadleaf forests is geographically distributed between southeastern China and Vietnam.

A relatively stable climate over a long period of time has led to the development of a very diverse flora and fauna, including roughly 1,700 families of seed-bearing plants.

Some of the plants are endemic, monotypic (one species per family); others include ancient species, such as the Ginkgo Tree (*Ginkgo biloba*) or Dawn Redwood (*Metasequoia glyptostroboides*).

Mammals include Serow (*Cappricornis sumatrensis*), and Leopard (*Panthera pardus*). The ecoregion typically contains 400 or more bird species. They include the Pale-headed Woodpecker (*Gecinulus grantia*), Black-throated Parrotbill (*Paradoxornis nipalensis*), Red-tailed Laughing Thrush (*Garrulax milnei*), Great Barbet (*Megalaima virens*), Long-tailed Silver Pheasant (*Lophura nycthemera*), Cabot's Tragopan (*Tragopan caboti*), Collared Scops Owl (*Otus bakkamoena*), and Rufous Fantailed Warbler (*Cisticola juncidis*).

Other species, like Silver Oriole (*Oriolus mellianus*) have ranges that are partly or entirely restricted to this ecoregion. Endemic amphibians include the tiny Romer's Tree Frog (*Philautus romeri*), Hong Kong Newt (*Paramesotriton hongkongensis*), Asiatic Salamander (*Vibrissaphora liu*), Tree Frog (*Hyla sanchiangensis*), and the Horned Toad (*Megophrys kuatunensis*).

Conservation status of the ecoregion is classified among critical and endangered, in which threats include habitat loss through agricultural expansion with slash-and-burn cultivation as an added threat, excessive hunting, the collection of rare species for sale, development pressures caused by high population density, and a rapidly growing economy.

3. Annamite Range Moist Forests

This ecoregion with habitat type as of tropical and subtropical moist broadleaf forests is geographically distributed between Cambodia, Laos, and Vietnam. This region contains some of the last relatively intact moist forests in Indochina, formed as the moisture-laden monsoon winds blew in from the Gulf of Tonkin. This allowed the plants and animals adapted to moist conditions to seek refuge here and evolve into the specialized species that are found nowhere else on Earth.

This ecoregion is known for its globally outstanding biodiversity. These forests harbor large vertebrate faunas, including several newly discovered species. Has 15 to 16 species of conifers, representing the highest conifer diversity in Indochina.

The southern rain forests are home to 410 different bird species. Notable bird species include the endemic Sooty Babbler (*Stachyris herberti*), Imperial Pheasant (*Lophura imperialis*), and the Vietnamese Pheasant (*L. hatinhensis*). The dominant floristic elements in this forest are the Myrtaceae, Fagaceae, Elaeocarpaceae, and Lauraceae, with high levels of endemism.

Conservation status of this ecoregion is classified as vulnerable. Increased commercial logging, large hydropower projects, unsustainable levels of shifting cultivation, and intensive illegal hunting threaten the natural communities of the Annamite Range moist forests. Pressure on these mountain forests and the animals that live there is further increasing as people from the densely populated lowlands of Vietnam move into the region. The presence of unexploded ordnances similarly poses a severe threat to wildlife, researchers, and protected area staff.

4. Indochina Dry Forests

This ecoregion with habitat type as of tropical and subtropical dry broadleaf forests is geographically distributed between Cambodia, Laos, Thailand, and Vietnam. Although most of the original monsoon forests of this ecoregion have been degraded, especially in Vietnam, the fragments that remain contain an extraordinary diversity of life. These forests are adapted to dry periods of several months, followed by several months of torrential rain.

Most of the native tree species lose their leaves during part of the year, though all of them are not leafless at the same time, as is the case with the northern deciduous forests.

The Southeastern Indochina dry evergreen forests are globally outstanding for the large

vertebrate fauna it harbors within large intact landscapes. It also represents a rare instance of a nonmontane ecoregion with large expanses of intact habitat that can allow viable populations of these species to survive over the long term.

Southeastern Indochina dry evergreen forests are home to 455 bird species that include two near-endemic species and one endemic species, the endangered Orange-necked Partridge (*Arborophila davidi*).

Conservation status of this ecoregion is classified among critical and endangered. Much of the original monsoon forest, particularly in Vietnam, has been degraded through logging and clearing for agriculture. Some areas have been subjected to burning or conversion to teak plantations.

From small, homemade crossbows used to kill small mammals for local consumption to bombs hidden in baited traps to kill tigers and pitfall traps for elephants, hunting has taken a very heavy toll on wildlife. The ravages of war and conflict have also had lasting effects; mines and bombs scattered across the landscape and the easy availability of automatic weapons that have replaced the crossbows have had deadly consequences.

5. Mekong River

This ecoregion classified into large rivers is geographically distributed between Cambodia, China, Laos, Myanmar, Thailand, and Vietnam. The Mekong starts among the glaciers of Tibet and ends by flowing into the South China Sea. It is the longest river in Southeast Asia and the tenth longest in the world. The mighty Mekong is an important source of water for people in six countries and forms the border between three. The Mekong is also the source of life for many unusual species of fish and other animals.

Some of the Mekong's 240 species of fish migrate long distances against currents to reach other parts of the river to spawn. Among the numerous endemic fish species, one of the most imperiled and extraordinary is the Mekong Giant Catfish (*Pangasianodon gigas*), which can grow to over 300 kg and may have historically migrated up to 2,000 km. Other endemic fish that are under threat are Mae Khong Herring (*Tenualosa thibaudeaui*), Thicklip Barb (*Probarbus labeamajor*), and Cave Fish (*Barbus speleops*).

This ecoregion is a major wintering area for the endangered Siberian Crane (*Grus leucogeranus*) and Swan Goose (*Anser cygnoides*), and is home to Sarus Crane (Grus antigone).

Also found here are 100 endemic snail species. The Mekong basin also provides habitat for the endangered Irrawaddy Dolphin (*Orcaella brevirostris*).

Conservation status of this ecoregion is classified as vulnerable. The Mekong River system suffers from a wide range of serious threats such as deforestation that has changed runoff patterns and increased sedimentation; modification of the hydrologic regime by flood control schemes, water diversions, and a vast array of hydropower projects; impoundments that block the movements of numerous migratory fish species of the ecoregion; over fishing, particularly with the increased use of poisons; and, urban, industrial, and agricultural pollution that are largely untreated.

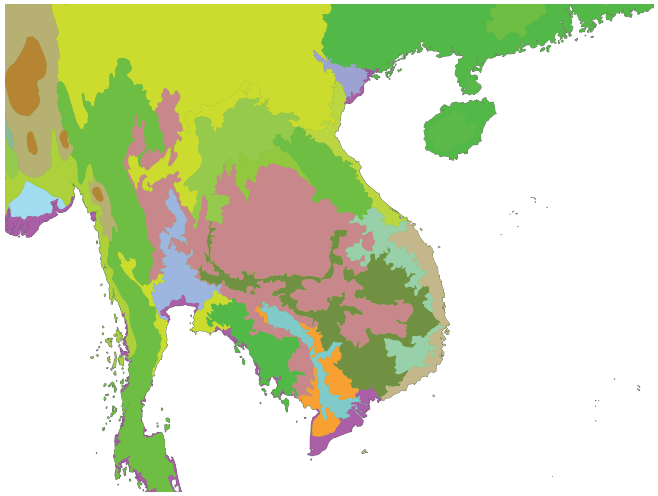


Figure 22 Distribution of eco-regions encompassing Vietnam

(2) Vietnam's Governance Structure

The Vietnam State and society are under the leadership of the Communist Party of Vietnam. The Party leads the state through resolutions, defining overall directions and policies. The State expresses those policies through a system of legal regulations. The highest leadership body is the Party Congress, which meets every five years to assess

the implementation of the resolutions of the last term and decide directions and policies of the Party during the coming term, to elect the Central Party Committee, and to supplement and modify the political program and rules of the Party if needed. The Central Committee is the Party leadership body during the period between Party Congresses. The Central Committee elects the Politburo and selects the General Secretary from the Politburo members.

The state system of governance has four levels: national, provincial, district and commune. Currently, Vietnam has 58 provinces and five municipalities (under the central government) with approximately 565 districts and 10,000 communes. The system of state agencies includes:

State organizations: The National Assembly is the legislative organization and People's Councils have state authority at local level. Meanwhile, State administrative organizations include the Government, ministries, ministerial-level departments, and specialized departments under the People's Committees; judicial organizations; and organizations of investigation.

The National Assembly is the supreme authority with primary legislation and constitutional functions. The Assembly makes decisions on principal domestic and foreign policies, socioeconomic issues, national defense and security of the country, major principles concerning the organization and functions of the state administrative system, and on societal and citizenship relationships. The National Assembly is the highest body which oversees all functions of the state.

The Government is the state supreme administrative organ and has the responsibility to execute and organize the implementation of the Constitution, legislation and the National Assembly's resolutions, as well as to manage the implementation of political, economic, cultural, social, national defense, security and foreign affairs tasks of the state. The Government conducts its affairs centrally through ministries and local authorities in a coordinated and unified manner.

People's Committees are executive organizations of People's Councils and are the state administrative organs with responsibility for steering socioeconomic development and administrative processes at local levels under the overall leadership of the Government.

At the provincial and district levels, national line ministries usually have specialized departments. Examples include the Department of Planning and Investment, Department of Natural Resources and Environment, Department of Agriculture and Rural Development, and Department of Science and Technology. These departments receive technical instructions from their national line ministries, but are accountable to the Provincial People's Committees.

(3) Legal Framework: Biodiversity Law

The National Assembly of The Socialist Republic of Vietnam in its 4th session of Legislature XII, had enacted the Biodiversity Law (Law No. 20/2008/QH12). The Law provides for biodiversity conservation and sustainable development and gives the concomitant rights and obligations of organizations, households and individuals in these matters. Moreover, the law details a number of prohibited acts against biodiversity conservation and also establishes provisions for biodiversity conservation planning at the national and provincial levels. It also defines the sources of funding for biodiversity conservation and sustainable development.

The law stipulates that the Ministry of Natural Resources and Environment shall take responsibility to the Government for performing the state management of biodiversity; other Ministries and ministerial-level agencies shall, within the scope of their duties and authorities, perform the state management of biodiversity to been assigned by the Government. Consequently, the People's Committees at all respective levels shall perform the decentralized management tasks.

The Law defined as Nature Conservation Area a geographical area that has delimited boundaries and functional sections for biodiversity conservation. And Buffer Zone the area surrounding and adjacent to a nature conservation area, having the function of preventing and reducing negative impacts therein.

Nature conservation areas encompass national parks, nature reserves, species/habitat conservation areas, and landscape conservation areas. And based on their biodiversity levels and values and sizes, nature conservation areas shall be classified as national- and provincial-level instances on which suitable management and investment policies will apply. Criteria of each category are shown in the following table.

Table 1 Criteria for the determination of nature conservation areas

Category	Criteria
National Park	1. Possessing a natural ecosystem which is nationally and internationally significant, specific to or representative of a natural ecoregion; 2. Being a permanent or seasonal natural habitat of at least one species on the list of threatened and/or rare species listed for their protection; 3. Having special scientific and educational values; 4. Having landscape and unique natural prettiness with ecotourism value.
National-level Nature Reserve	1. Possessing a natural ecosystem which is nationally and internationally important, specific to or representative of a natural ecoregion; 2. Having special scientific and educational values or ecotourism and recreational values.
Provincial-level Nature Reserve	Established under provincial-level biodiversity conservation plans for conserving natural ecosystems within the jurisdiction.
National-level Species/Habitat Conservation Area	1. Being a permanent or seasonal natural habitat of at least one species on the list of threatened and/or rare species listed for their protection; 2. Having special scientific and educational values.
Provincial-level Species/Habitat Conservation Area	Established under provincial-level biodiversity conservation plans for conserving wildlife within the jurisdiction.
National-level Landscape Conservation Area	1. Having a particular ecosystem; 2. Having landscape and unique natural beauty; 3. Having scientific, educational, ecotourism and recreational values.
Provincial-level Landscape Conservation Area	Established under provincial-level biodiversity conservation plans for protecting local landscape.

Within the State policies, on the biodiversity conservation and sustainable development, is appointed that assurance of funds for baseline survey, monitoring, inventory and building of databases on biodiversity and biodiversity conservation planning, investing material/technical foundations for conservation areas and biodiversity conservation facilities, should be established by the State.

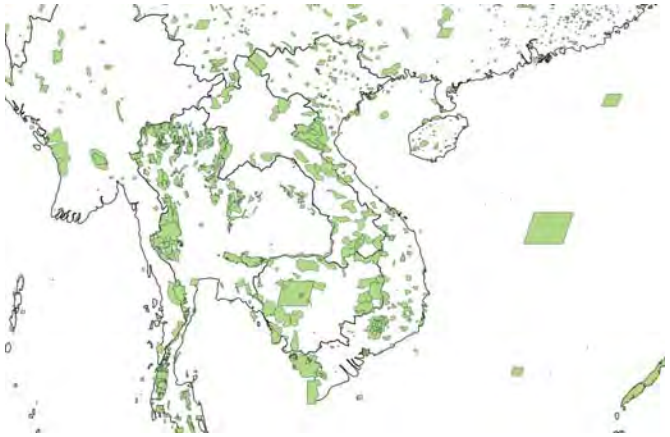


Figure 23 Distribution of conservation areas surrounding Vietnam

As the responsibilities of Conservation Area Management Units and Organizations assigned to manage conservation areas establishes that should manage scientific research activities and collect genetic resources and genetic specimens; and regarding to species/habitat conservation areas to monitor and collect information and data, and build a database and report on their status.

In its chapter of Mechanisms and Resources for Biodiversity Conservation and Sustainable Development stipulates that information from baseline surveys and scientific researches on biodiversity shall be compiled and managed onto the national database of biodiversity, relying in the Ministry of Natural Resources and Environment the responsibility to establish norms on baseline survey activities and its maintenance, exchange and management of biodiversity information; and also to manage the national database on biodiversity.

(C) Management of National Biodiversity Database System (NBDS)

Functions of main actors related to NBDS are described below.

(1) Vietnam Environment Administration (VEA)

The VEA was established under the Decision No. 132/2008/QĐ-TTg enacted by the Prime Minister in September of 2008. The VEA is a subsidiary body under the Ministry of Natural Resources and Environment (MoNRE) to advise and assist the Minister of MoNRE in the field of environmental management and to provide public services in compliance with the laws.

The VEA's relevant missions include: development of laws and regulations, policies, strategies, plans, programs and projects on environment at national level; control of environmental quality; assessment of environmental impacts; management of waste and violations of environmental laws; and performance of functions as focal points to international conventions on biodiversity, biosafety, wetlands of international importance, controlling the transboundary movement of hazardous wastes, persistent organic pollutants, etc.

Particularly, implementation of surveys, inventory preparations, monitoring, assessment of biodiversity; assessing trans-provincial or transboundary degraded ecosystems and proposing measures for conservation, rehabilitation and safeguarding of sustainable use of biological resources; development of national environmental monitoring network; development and management of national environmental data; and the development of environmental database and information system.

1. Biodiversity Conservation Agency (BCA)

The BCA was established in October of 2009 under the VEA to perform the tasks of state management on the conservation and sustainable use of biodiversity resources.

The BCA mandates consist on the formulation and implementation of policies, strategies, programs, plans and projects in the field of nature conservation and biodiversity. In order to fulfill those mandates, the BCA should advise and assist the

General Director of the VEA in order to guide ministries, branch agencies and local institutions in the use of funds for environmental affairs, economic and scientific trainings, and development and procurement of activities concerning to nature and biodiversity conservation.

Regarding conservation planning, the BCA should develop the master plan for biodiversity conservation in the country, and guide the institutional development and evaluation of biodiversity planning in provincial institutions.

Concerned to the conservation and sustainable use of ecosystems, the BCA should develop criteria for the classification and criteria for recognition and establishment of protected areas, regulations on the management of protected areas at national level, and the formulation of a classification system of wetlands.

With respect to the conservation of species and genetic resources, should develop specific regulations and guidance on the application of criteria to establish the threatened status of genetic resources of conservation priorities; legal provisions on access to genetic resources and benefit sharing.

The BCA should also assist the General Director of the VEA to establish a cross-sectoral council for the assessment of threatened species for the approval by the competent authorities, status of genetic resources with conservation priorities; chair and coordinate with the agencies of the ministries and related institutions for the compilation of Vietnam's Red Book.

Additional duties of the BCA include biosafety management for genetically modified organisms; to act as a focal point for the Convention on Biological Diversity, the Ramsar Convention on Wetlands of International Importance, the Cartagena Protocol on Biosafety and other international relevant agreements assigned by the General Director of the VEA.

And particularly, the BCA is responsible for the implementation of baseline studies on biodiversity, formulating criteria and parameters for monitoring biodiversity; develop and guide the implementation of plans and monitoring programs concerning biodiversity. Consequently, to build and unified database management and information exchange mechanism on biodiversity.

The structure assisting the BCA's Director are comprised of: the Administrative Office; the Planning Division of Biodiversity Conservation; the Ecology Division; and the Secretariat of Species Conservation, Genetic Resources and Biosafety.

2. Center for Environmental Monitoring (CEM)

CEM is a subsidiary body under VEA. CEM performs the function of assisting the Director General of VEA in organizing and implementing the national environmental monitoring, managing environmental monitoring data, applying information technology in environmental monitoring, preparing reports on the environment within the framework of VEA's functions and mandates; and to be the focal point of national monitoring network.

Main activities of CEM consist of:

Environmental monitoring: participating in preparing plans, designing and developing the national environmental monitoring network; performing the operation, supporting and providing technical guidelines for entire network's activities; organizing and implementing the national environmental monitoring programs (river basins, prioritized regions, trans-boundary environments, etc.).

Environmental analysis: implementation of environmental arbitration analysis; provision of guidelines and inspecting the implementation of procedures, technical guidelines, QA/QC, environmental analysis norm. The Environmental Laboratory is equipped with advanced and high accurate equipment, in where is conducted analysis of environmental quality: air, water, soil/sediment, etc.; analysis of pesticides and organic trace contaminants including: chlorophenols, PCBs, PAHs, etc. in environmental samples as soil, water, sediment, and biota; analysis of trace heavy metals. Organize annual inter-laboratories tests of environmental analysis; participating in assessing, certifying the environmental analysis.

Calibration of environmental monitoring equipment: implementation of calibrating environmental monitoring equipment for national and local environmental monitoring stations as well as for the units/organizations which implement environmental monitoring. Normalization Laboratory is equipped with modern and

high accurate equipment in order to calibrate and verify air and dust analysis module of fixed and mobile environmental monitoring stations of air and water.

Data analysis and process: management of environmental monitoring data and environmental inspection; responsible for the construction, management and development of databases, information system for environmental monitoring; build, manage and develop environmental information systems, Geographic Information System (GIS) on environment, environmental databases. To be mainly responsible for the construction and provide guidelines on collection, management and exploitation, usage of national environmental indicators, environmental statistics; preparation and provision of guidelines for national/ministerial/sectorial/local "State of the Environment Report" and other types of environment reports.

Information technology development and application: to act as a Center for Environmental Monitoring of the national network. Build IT infrastructure for a national environmental monitoring network; to build databases and software for management and exploitation of environmental monitoring data; to apply technologies of remote sensing, telecommunications, information technology in environmental monitoring; build and develop telemonitoring system software applied in environmental monitoring, encompasses its duties.

3. Center for Environment Information and Documentation (CEID)

CEID is a non-productive and public service entity under VEA that assists the General Director to carry out the duties of design, integration, process, management, storing, preservation, exploitation and development of databases, documentations and national environment information system for state and community management; supports to develop the applications of information technology, databases and environment information system for common use of the offices, departments under the VEA and the environment state-management agencies of the provinces, and cities.

Organizational structure of CEID consists of:

The management board of the Center consists of a Director and three Deputy

Directors.

Supporting apparatus consists of a) General Administrative Division; b) Environment Information Division; c) Environment Documentation Division; d) Remote Sensing Technology Application Division; g) HCMC Branch of the Center for Environment Information and Documentation.

By February 2012, CEID had 32 staffs (22 staffs excluding HCMC Branch). The data processing system is built with windows SQL server and was planned to install additional 10 servers soon and procuring ArcGIS platform.

(2) Situation of Databases related to Biodiversity in Vietnam

In order to implement national regulations on biodiversity and to fulfill national responsibilities to the international agreements related to biodiversity, BCA, along with CEID of VEA, proposes the project "National Biodiversity Database System", which aims to develop a biodiversity database with sufficient and updated information to support management and research activities related to biodiversity.

The biodiversity database development is extremely limited mainly due to constraints of fund allocation for this kind of activities. Lack of human resources and funding for activities related to collecting information and developing databases is also argued. Most of the institutions, which currently have biodiversity data, have developed their databases for certain groups of animals (such as fishes and crustaceans) or plants (such as mangrove and rice species) of their interest. In protected areas, most databases are in the form of species list or composition.

Many of available data sets are mainly kept and maintained by individuals, and are often not publicly accessible. In some institutions, data primarily under the form of project reports/documents are submitted to their libraries as isolated project products, but these data are not often structured systematically for further uses. Project reports/documents, however, are not always available at these institution libraries due to submission-related issues and/or subsequent losses. Although a large amount of biodiversity information exists at research institutions, universities, management agencies, and information centers, only a limited portion of the information is available

in electronic formats. Disparity of data formats makes it difficult to share data among biodiversity databases. For most databases, information is not updated regularly due to low priority and/or insufficient funding.

Only 30% of National Parks in Vietnam own websites with different levels of information content, organization, and maintenance/update. These websites provide only a few information categories, namely introduction, tourism and natural resources/biodiversity information. However, the provided information is cited from other sources or former report/documents and lack on species level information (only Phong Nha-Ke Bang National Park's website possesses a fauna and flora database, however with limited records). Some of national park websites structure is tourism oriented.

Most biodiversity databases that can be publicly accessed through the Internet are initiated and maintained either through international-funded projects (e.g., the Vietnam Sourcebook by the Birdlife International) or by individuals with interest (e.g., Vietnam Forest Creatures website). Existing biodiversity databases in Vietnam are relatively simple in structure, lacking essential elements, e.g., support tools, help for users, georeferenced data, and links to related websites. Databases often do not use metadata approach and other reference tools. The limited contents are usually outdated, unstandardized, and often unrevised. Spatial component is almost undeveloped.

Other information on species distribution and conservation status can be found in the Vietnam's Red Data Book and species checklists published by IEBR or other research institutions in Vietnam.

Below is shown a brief description of relevant main institutions of Vietnam involved in the management of biodiversity information.

Table 2 Main Vietnamese institutions involved in managing biodiversity information

Institution	Department	Relevant tasks
Ministry of Natural Resources and Environment (MONRE)		
VEA	BCA	Implementation of baseline studies on biodiversity, formulating criteria and parameters for monitoring biodiversity. Development and guidance on the implementation of plans and monitoring programs concerning

Institution	Department	Relevant tasks
		biodiversity. Development and integration of database management and information exchange mechanism on biodiversity.
	CEM	Designing and development of the national environmental monitoring network. Development of databases and software for management and exploitation of environmental monitoring data. Application of technology of remote sensing, telecommunications, information technologies for the environmental monitoring. Development of telemonitoring system applied to environmental monitoring.
	CEID	Designing, integration, processing, management, storing, preservation, exploitation and development of databases, documentations and national environmental information systems. Development of applications of information technologies, databases and environment information systems.
Information and Communication Technology Department for Natural Resources and Environment	Centre for Storage and Services on Natural Resources and Environment Information	Collection, processing, storing, managing, updating the national database on natural resources and environment (not biodiversity exclusively).
Vietnam Administration of Seas and Islands (VASI)	Vietnam Oceanographic Data and Information Centre	Development of data systems for seas and islands. Provision, exchange and management of data and information of seas and islands (including natural resources of seas and islands).
Ministry of Agriculture and Rural Development (MARD)		
Vietnam Administration of Forestry (VNFOREST)	Forest Protection Department (FPD)	Organization of statistics, inventories and monitoring of forest and forestland in the country.
	Forest Inventory and Planning Institute (FIPI)	Guidance on the investigation, protection planning and development, identification, demarcation of forest type, statistical methods of forest, forest inventory and monitoring of forest resources. Implementation of programs, basic research and applications, baseline surveys, detailed surveys, forestry planning, monitoring and evaluation of forest environments at national scale. Research and application of GIS technology, remote sensing image processing, and other technologies to develop and manage a database system of forests.

Institution	Department	Relevant tasks
		Compilation of forest inventory and monitoring. Management of the Center for Forestry Information and Consultancy (CFIC). Note. A Sub-Institute in Southern Vietnam exists (Sub-FIPI).
General Directorate of Fisheries	Department for Capture Fisheries and Resources Protection (DECAFIREP)	The state agency responsible for managing fishery resources including conservation and protection of endangered fish species, and inland habitats; managing marine protected areas.
	Fisheries Information Center	Operating in the field of information, statistics, forecasts, and information technology application service providing information and communication on fisheries.
Forest Science Institute of Vietnam (FSIV)		Organization and implementation of scientific and technological research in silviculture, forest industry, forest economics, forestry organization and management, serving the requirements in the development of the branch, and developing a tropical forest science of Vietnam; Training of researchers in various fields of forest science.
Ministry of Science and Technology (MoST)		
Department of Social and Natural Sciences		Management functions in terms of scientific research, technology development and in fields of social sciences, natural sciences (basic research; research on natural conditions, natural resources, environment, natural disasters and marine issues) and others.
National Agency for Scientific and Technological Information (NASATI)		Management functions and organization of activities regarding scientific and technological information, libraries and statistics.
Provincial People's Committees		
Departments of Natural Resources and Environment (DoNRE)		Management of natural resources and environment at the local level (including issues related to biodiversity).
Departments of Agriculture and Rural Development (DARD)		Management of economically-valuable species at the local level.
Departments of Science and Technology (DoST)		Management of scientific research activities and projects at the local level.
Research Institutes and Universities		
Vietnam Academy on Science and Technology (VAST)	Institute of Ecology and Biological Resources (IEBR)	Research activities on sustainable utilization of the biological resources and ecosystems for human livelihoods, and consumer goods.

Institution	Department	Relevant tasks
		Education and training of scientists in the field of ecology and biological resources.
	Institute of Oceanography	Fundamental studies on environment, living and non-living resources; hydrospheric, atmospheric and lithospheric processes in the coastal waters and East Sea. Training and education in marine sciences and technology.
	Institute of Marine Environment and Resources	Research activities in the fields of marine environment and resources. Organization of training courses on marine environment and resources.
	Institute of Tropical Biology	Research on biodiversity (at all levels, gene, species, and ecosystems) for conservation and management.
Vietnam National University, Hanoi	Centre for Natural Resources and Environmental Studies (CRES)	Scientific research, consulting and training services on natural resources and biodiversity conservation at level of species and ecosystems.
	Natural Sciences University, Faculty of Biology	Research mainly in northern provinces of Vietnam in the areas of biochemistry, animal and human physiology, plant physiology, cytology, microbiology, virology, genetics, botany, zoology, entomology, parasitology, ecology, hydrobiology, ichthyology and human biology.
Vietnam National University, Ho Chi Minh City	Institute for Environment and Resources	Research and training in the fields of environment and natural resources; in charge of the national environmental monitoring station No. 3 covering the entire southern region of Vietnam.
	Natural Sciences University, Faculty of Biology	Research and training on biodiversity in southern provinces of Vietnam.
Thu Duc University	Department of Forestry	Research and training on forest conservation, mainly mangrove forests.
	Department of Fishery	Research and training on conservation of fish species.
Can Tho University	Department of Environment and Natural Resources Management	Training researchers for the Mekong Delta and to conduct scientific research, technology transference in forest resource management, urban, industrial and coastal management.
Hue University	Institute for Resources and Environment	Scientific research and technology transfer for serving the development of the central and highland regions of Vietnam in the areas of natural resources, environment and climate change.

Institution	Department	Relevant tasks
	Faculty of Biology	Research on natural resources at levels of gene, species and ecosystems (mainly in central provinces).
Vinh University	Faculty of Biology	Assessment of natural resources in northern central part of Vietnam; specifically on variety of animal and botanical species, socioeconomic impact on natural resources; local agriculture situation.
Da Nang University	Faculty of Biology	Research on natural resources at levels of gene, species and ecosystems (mainly in central provinces).
International NGOs		
The World Conservation Union (IUCN) – Vietnam Office		Supported the government in the preparation of the first National Conservation Strategy in 1984. Since then, made contributions to biodiversity conservation and environmental protection, particularly through the development of laws and policies. Focuses its work on the following thematic programs: Business and Biodiversity, Forest Conservation, Protected Area and World Heritage, Marine and Coastal Ecosystems, Water and Wetlands and Environmental Governance.
The World Wildlife Fund (WWF) – Vietnam Office		WWF Vietnam is part of the WWF Greater Mekong Program, which works on environmental and conservation issues across Thailand, Cambodia, Lao PDR and Vietnam. Protection of biodiversity focusing on conservation of critical places and critical species that are particularly important for their habitats or for people's livelihoods.
Birdlife International - Indochina Program		Promotion of conservation in Cambodia, Laos, Myanmar, and Vietnam, especially concerning the status of birds and their habitats. Promotes of sustainable living as a means of conserving birds and biodiversity.
Flora and Fauna International (FFI)		The Fauna & Flora International (FFI) Vietnam Programme aims to save the unique and extremely threatened wildlife, much of which is teetering on the verge of global extinction, namely the endangered primates persisting in isolated pockets within the Northern Limestone Mountains and the Hoang Lien Mountains, in the north of the country.

(3) Results of In-depth Analysis of the Questionnaire Survey

With the purpose to recognize the current situation of stakeholder Vietnamese institutions for the future management of the database on its biodiversity, was conducted an inquiry survey targeting around 323 entities. Among them, feedbacks from 126 institutions were collected.

The questionnaire form was prepared both in paper format and digital format, which is shown in **Appendix 1**. Following are the categories of questions in the questionnaire:

- Name of the organization, responsible division, contact information such as institutional address, phone number, electronic mail address and the name of the contact persons.
- Data on staff assignment and specialties of professionals.
- The number of recognized species in their records classified by terrestrial/aquatic plants, terrestrial insects, aquatic invertebrates, fish and selfish, amphibians, reptiles, birds, mammals, and fungi.
- Information on endemic, dominant, rare, endangered, and keystone species.
- Names of ongoing, planned or proposed programs and projects.
- Types of ecosystems under the jurisdictional management and the number of taxa/species which are monitored, including information on recording time periods, some aspects on the methodology of monitoring surveys, schemes for financing the activities, and their constraints.
- Status of the availability of abiotic information such as topography, hydrology, geology, abiotic environmental factors, and socio-economy.
- Information on conditions related to the treatment of recorded data on biodiversity and status of recording forms and procedures.
- Information on experiences using biodiversity indicators as managerial tools, and their contexts.

Salient issues such as availability of human resources, and factors of magnitude of ecosystems and species to be managed and monitor are summarized in following tables classified by institutions in charge of conservation areas, local administrative entities,

and others.

Table 3 Current situations of institutions in charge of management of conservation areas[6]

Area	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
An Toàn SUF	20	0	6	0	847	0
Bình Châu - Phước Bửu NPA	67	0	10	1	1,121	1
Căng Bắc Mê SUF	10	0	5	3	800	5
Cát Bà NP	95	0	32	4	3,335	9
Cát Tiên NP	206	0	148	0	3,531	0
Chư Mom Ray NP	88	0	57	4	2,657	7
Chư Yang Sin NP	130	0	30	3	1,684	7
Côpia SUF	11	0	9	1	N/A	4
Đakrông NPA	32	0	0	2	2,002	8
Đồng Nai NP	292	0	112	4	3,155	9
Đồng Sơn - Kỳ Thượng NPA	25	0	0	3	1,081	5
Đồng Tháp Mười ECA	17	0	7	0	142	0
Hòn Bà NPA	33	0	9	0	847	0
Kim Hỷ NPA	N/A	0	29	0	N/A	0
Kon Chư Răng NPA	36	0	15	1	777	4
Lung Ngọc Hoàng NPA	48	0	4	3	374	8
Mường Nhé NPA	24	0	10	0	1,031	0
Na Hang NPA	25	0	19	0	91	0
Nam Hải Vân SUF	16	0	6	0	706	0
Nam Xuân Lạc SHCZ	N/A	0	10	0	N/A	0
Ngọc Linh	45	0	12	3	1,742	6

[6] Legend.: NP: National Park; NPA: Nature Protection Area; ECA: Ecology Conservation Area; SHCZ: Species and Habitat Conservation Zone; SUF: Special Use Forest.

Area	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
NPA						
Núi Ông NPA	56	0	6	0	1,359	2
Phong Điền NPA	36	0	3	0	1,153	6
Phong Quang NPA	27	0	3	3	1,356	5
Pù Hu NPA	44	0	35	1	762	5
Pù Luông NPA	33	0	24	2	1,603	8
Pù Mát NP	N/A	0	93	3	N/A	8
Phú Quốc NP	86	0	0	2	1,652	7
Sông Thanh NPA	38	0	30	1	1,156	1
Sơn Trà NPA	15	0	12	0	1,255	0
Tà Đùng NPA	33	0	7	2	1,449	5
Tây Côn Lĩnh NPA	14	0	5	1	1,009	6
Takou NPA	18	0	0	5	465	5
Tam Đảo NP	100	0	54	0	2,577	0
Tây Yên Tử NPA	37	0	3	1	1,158	5
Thượng Tiến NPA	13	0	8	1	888	5
Vũ Quang NP	72	N/A	N/A	2	2,685	9
Xuân Liên NPA	50	0	43	4	1,135	10
Xuân Nha NPA	17	0	5	0	1,371	0
Xuân Sơn NP	43	N/A	N/A	0	1,645	0
Xuân Thủy NP	20	0	10	N/A	537	0

Ten of the respondents correspond to administrators of national parks representing 29% in quantity and 42% of their total extension.

As can be shown in the above table, among the respondent institutions in charge of the management of conservation areas, strictly defined taxonomist is absent. Monitored

species achieved just 0.3% of the recognized. And, biotic scientists –including specialists in forestry and representing less than half of the total number of staffs– should deal individually with more than 62 species in average.

Table 4 Current situations of DoNREs[7]

Province/City	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
Bắc Giang	N/A	0	21	8	N/A	10
Bạc Liêu	28	0	1	7	344	7
Bà Rịa, Vũng tàu (DEP)	N/A	0	2	0	N/A	0
Bình Định (DEP)	N/A	0	3	0	N/A	0
Bình Dương	N/A	0	2	3	N/A	6
Cao Bằng (DEP)	N/A	0	3	0	N/A	0
Đắk Lắk	N/A	0	0	0	N/A	0
Đăk Nông (DEP)	N/A	0	3	3	N/A	4
Đà Nẵng city (DEP)	N/A	0	2	0	N/A	0
Điện Biên	N/A	0	6	0	N/A	0
Đồng Tháp	N/A	0	0	4	N/A	5
Hà Nam (DEP)	N/A	0	0	0	N/A	0
Hậu Giang	N/A	0	0	0	N/A	0
Hà Tĩnh	N/A	0	1	5	N/A	7
Hòa Bình	N/A	0	0	4	N/A	9
Khánh Hòa	N/A	0	0	0	N/A	0
Kiên Giang (DEP)	N/A	0	6	0	N/A	0
Kon Tum	N/A	0	1	0	N/A	0
Lai Châu	N/A	0	15	0	N/A	0
Lâm Đồng	N/A	0	2	0	N/A	0
Lạng Sơn	N/A	0	0	4	N/A	8
Lào Cai (DEP)	N/A	0	0	0	N/A	0
Nam Định	N/A	0	2	0	N/A	0
Ninh Bình	N/A	0	8	3	N/A	3
Phú Yên	N/A	0	2	4	N/A	3

[7] Legend.: DEP: Division of Environment Protection; CEMA: Center of Environmental Monitoring and Analysis.

Province/City	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
(DEP)						
Quảng Nam	N/A	0	3	0	N/A	0
Quảng Ngãi	N/A	0	0	0	N/A	0
Quảng Ninh (CEMA)	56	0	17	0	N/A	0
Quảng Trị	N/A	0	2	1	N/A	8
Sóc Trăng	N/A	N/A	N/A	1	N/A	7
Sơn La	N/A	1	0	0	N/A	0
Thái Nguyên	N/A	1	9	4	N/A	7
Thanh Hóa	N/A	1	5	3	N/A	4
Thừa Thiên Huế (DEP)	N/A	0	2	0	N/A	0
Tiền Giang	N/A	0	1	0	N/A	0
Trà Vinh	N/A	0	12	0	N/A	0
Vĩnh Long	N/A	0	3	1	N/A	5

Out of the 37 respondent DoNREs (59% of the total number of provinces and municipalities) only three taxonomists were found, and only one provincial DoNRE (Bạc Liêu) have been recognized the number of species within its jurisdictional ecosystems. Meanwhile, an average of four biotic scientists is assigned for monitoring around 2.5 species. It should be mentioned that 30% of respondents lack of taxonomist neither biotic scientist among their staffs.

Table 5 Current situations of DARDs[8]

Province/City	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
An Giang (DFR)	N/A	0	10	3	N/A	5
Bắc Ninh	N/A	N/A	N/A	N/A	N/A	N/A
Bến Tre	N/A	N/A	N/A	1	1,076	6
Bình Định (DFR)	N/A	0	0	0	N/A	0
Bình Định (DA)	N/A	N/A	N/A	1	N/A	3

[8] Legend.: DF: Division of Forestry; DFR: Division of Forest Ranger; DA: Division of Aquaculture.

Province/City	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
Bình Phước	111	0	25	3	1,026	7
Cần Thơ city	N/A	0	7	0	N/A	0
Cao Bằng	N/A	N/A	N/A	0	N/A	0
Đắk Lắk (DFR)	N/A	0	15	0	N/A	0
Đắk Nông (DFR)	59	0	50	0	1,300	0
Đà Nẵng city	N/A	0	2	0	N/A	0
Đồng Nai	N/A	0	5	0	N/A	0
Hà Nam	N/A	0	7	0	N/A	0
Hồ Chí Minh city (DF)	N/A	0	5	0	N/A	0
Khánh Hòa (DA)	N/A	0	17	0	N/A	0
Kon Tum (DFR)	N/A	0	17	0	N/A	0
Lai Châu	N/A	0	15	0	N/A	0
Lạng Sơn	N/A	0	0	0	N/A	0
Ninh Bình (DF)	64	0	48	1	1,193	8
Phú Thọ	N/A	0	111	0	N/A	7
Quảng Ninh	N/A	0	11	0	N/A	0
Thái Nguyên (DFR)	39	0	4	1	1,686	2
Thừa Thiên Huế (DFR)	N/A	0	200	1	N/A	2
Vĩnh Long (DFR)	N/A	N/A	N/A	0	N/A	0

Five DARDs out of 24 respondents (38% of the total number of provinces and municipalities) have recognized species in their jurisdictions; and seven of them are monitoring prioritized species within the correspondent ecosystems. Due to the lack of taxonomists, it is notorious that assigned biotic scientists (29 in average) exceed the number of DoNRE's nominee (4 on average).

Table 6 Current situations of DoSTs[9]

Province/City	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
Bac Giang (CCSTI)	N/A	5	14	0	N/A	0
Bắc Ninh	N/A	0	15	0	N/A	0
Bến Tre	N/A	0	14	0	N/A	0
Binh Duong	N/A	0	0	0	N/A	0
Bình Phước	N/A	0	6	0	N/A	0
Bình Thuận	N/A	0	0	1	N/A	2
Điện Biên	N/A	0	0	0	N/A	0
Đồng Nai	N/A	0	5	0	N/A	0
Đồng Tháp	N/A	0	0	0	N/A	0
Hải Phòng	N/A	0	21	0	N/A	0
Hà Nam (CSTAATA)	N/A	0	2	0	N/A	0
Kiên Giang	N/A	0	1	0	N/A	0
Lạng Sơn	N/A	0	0	2	N/A	8
Lào Cai	N/A	0	14	0	N/A	0
Nam Định	N/A	0	0	0	N/A	0
Ninh Thuận	N/A	0	3	0	N/A	0
Phú Thọ	N/A	0	0	0	N/A	0
Quảng Bình province	N/A	0	3	1	N/A	1
Quảng Nam	N/A	0	8	0	N/A	0
Soc Trang	N/A	0	24	0	N/A	0
Thanh Hóa	N/A	0	0	0	N/A	0
Thừa Thiên-Huế	N/A	0	0	0	N/A	0

Respondents from the DoSTs represent the 35% of the total number of provinces and municipalities. The DoSTs do not have the responsibility to manage ecosystems; nevertheless, relying on the scientific purpose, three of them are monitoring some species. Excepting the special case of the Bac Giang Province Center for Computing & Technological Scientific Information under the DoST, taxonomist is not considered in their nominee.

[9] Legend.: CCTSI: Center for Computing & Technological Scientific Information; CSTAATA: Center for Scientific & Technological Advance Application, Test and Analysis.

Table 7 Current situations of other institutions

Institution	Number of staffs	Number of taxonomists	Number of biotic scientists	Number of ecosystems under management	Number of recognized species	Number of monitored species
Hanoi Zoo Co., Ltd	N/A	0	24	0	N/A	4
Soils and Fertilizers Research Institute	N/A	0	13	0	N/A	0
VAST Gene Research Institute	N/A	0	15	0	N/A	0

(D) Synthesis and Recommendations

(1) Coping with taxonomic impediment

Insufficiency of taxonomists is a common barrier in all institutions involved upon the management of biodiversity in Vietnam. Institutions with responsibility to manage conservation areas and the DoNREs require additional assignment in order to conduct properly their functions of recognizing and monitoring species in their jurisdictions.

In a short-term, compilation works on recognition and monitoring species within the jurisdictional ecosystems, requires scientific and technical support from institutions in where taxonomist are available, namely institutions under the VAST and research centers associated with universities.

(2) Compilation of existing data on biodiversity and updating works

Based on the available information, the most important and comprehensive information on biodiversity pertained to the IEBR under the VAST. In consequent, sharing information with this institution is preponderant for the development of the NBDS in Vietnam.

Under the scenario, the NBDS Project is an opportunity to order and create an integrated mechanism for sharing data and information on biodiversity, leaded by the

VEA supported by BCA in applying the stipulations of Biodiversity Law.

In accordance with the Biodiversity Law, the criteria of classification and regulation of Natural Conservation Areas corresponds to the MoNRE. In fact, the aforementioned mechanism for sharing data and information on biodiversity should take into account relationships with the administrators of National Parks, Natural Reserves, Species/Habitat Conservation Areas, and Landscape Conservation Areas.

(3) Requirement of legal framework

According to the Biodiversity Law, within the State policies, on the biodiversity conservation and sustainable development, is appointed that assurance of funds for baseline survey, monitoring, inventory and building of databases on biodiversity and biodiversity conservation planning, investing material/technical foundations for conservation areas and biodiversity conservation facilities, should be established by the State. Understanding that in this case, the State is represented by the MoNRE and its dependent institutions, particularly, the VEA-BCA.

As the responsibilities of Conservation Area Management Units and Organizations assigned to manage conservation areas establishes that should manage scientific research activities and collect genetic resources and genetic specimens; and regarding to species/habitat conservation areas to monitor and collect information and data, and build a database and report on their status. In consequence, regarding regulations should be enacted in order to pursue the duties.

The Law also stipulates that information from baseline surveys and scientific researches on biodiversity shall be compiled and managed onto the national database of biodiversity, relying in MoNRE the responsibility to establish norms on baseline survey activities and its maintenance, exchange and management of biodiversity information; and to manage the national database on biodiversity. Mechanism for running those activities should regulate.

(4) Allocation of financial resources

Short-term and long-term activities regarding compilation of data on biodiversity should be allocated to the executive institutions such as administrators of conservation areas and DoNREs, in order to give sustainability to the created mechanism of management. Monitoring and updating works should be continuously maintained and a validation system supported by taxonomists and biotic scientists should be introduced, in order to comprise reliable information in the system.

Finally, experiences in NBDS Project will serve as references for the budgeting process of aforementioned requirement on financial resources in pair with respective technical procedures.

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Appendix 1 Questionnaire

Capacity/Needs Assessment on Biodiversity Monitoring Indicators in Vietnam

The Project for Development of the National Biodiversity Database System (NBDS)

Executing agency: Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA), Ministry of Natural Resources and Environment (MONRE)

Donor agency: Japan International Cooperation Agency (JICA)

Introduction

The Project for Development of the National Biodiversity Database System (NBDS) in Vietnam is implemented by the VEA, MONRE in cooperation with the JICA and other related organizations participating in its Technical Working Group (TwG) in order to develop NBDS as a suitable IT system and to elaborate effective biodiversity monitoring systems. In implementing its activities, the project requires collaboration with a number of national and international organizations involved in biodiversity conservation and monitoring in Vietnam to ensure effective, efficient and harmonious collection and management of national biodiversity information. The project is currently engaged in developing a national biodiversity monitoring indicator system with related organizations, for which their contributions are essential.

In this sense, the project initiated a questionnaire survey for assessment of capacities and needs of related organizations involved in biodiversity monitoring indicators to explore feasible institutional mechanisms of NBDS development on the basis of survey results.

Objectives of the survey

- Recognize current situations of the management and collection of data and information concerning biodiversity in Vietnam.
- Identify major roles of relevant Vietnamese institutions in the proposed NBDS collaboration mechanism.

Survey Method

- Request a representative of each organization to fill out a questionnaire by providing suitable information to each question.
- Make analysis and evaluation of responses using particular parameters or indicators.
- Structure of the questionnaire:
  - Part A: General information
  - Part B: Biodiversity monitoring/surveys and indicators
  - Part C: Biodiversity database management/data sharing mechanisms

Target Vietnamese institutions

- Governmental institutions that manage/process data and information on biological and environmental behavior
- Universities and research institutions that generate/record data and information on biological and environmental behavior
- Private sector institutions and NGOs that survey/record data and information on biological and environmental behavior
- Donor agencies and international/regional organizations as well as their projects that support biodiversity information management.

Survey Schedule

- Distribution of questionnaire form: September 2012
- Collection of questionnaire form: October 2012
- Compilation and evaluation of survey results: November 2012 (to be presented at the TwG meeting and the workshop of the NBDS project)

Instructions on description for respondents

- All corresponding organizations are kindly requested to fill in Parts A, B, and C as far as possible, based on their technical expertise and organizational responsibilities.
- ○ is a radio button for which only one choice can be made with the alternative choice method.
- □ is a check box for which several options can be chosen with the multiple choice system.
- [ ] is a field form in which a respondent can type relevant answers.
- The respondent is requested to send a saved Word file with a specific name to the Secretariat (nbdsprj_e@jds21.com), after describing in the questionnaire (in typing). For written responses, please print out the document and send or submit the filled questionnaires to the Secretariat (address: 3rd FL, Detech Tower, No.8, Ton That Thuyet, Cau Giay, Hanoi, Vietnam; Tel: 04 3995 4453)
- For any questions, please contact the Secretariat.
- Deadline for transmission to the Secretariat: 31 October 2012 (proposed)

Part A: General information (QA1 – QA7)

QA1. Name of the Organization:

QA2. Responsible Division:

QA3. Office/mailing address:

QA4. Office phone number:

QA5. Names/titles of contact person(s):

No	Name	Title	Phone/mobile	e-mail address
1				
2				
3				
4				

QA6. Please provide information on the number of personnel that have the following academic/technical backgrounds related to biodiversity in your organization:

Educational Background	Number of professionals	Educational Background	Number of professionals
(1) Biology		(1-4) Ecology	
(1-1) Terrestrial biology		(1-5) Phylogenetics/Taxonomy (not included in (1-1) – (1-4) above)	
(1-1-1) Botany		**(2) Abiotic environmental sciences (soil, water, air, etc.)**	
(1-1-2) Zoology		**(3) Remote sensing/GIS**	
(1-1-3) Microbiology		**(4) Socio-economics**	
(1-1-4) Mycology		**(5) Jurisprudence (laws)**	
(1-1-5) Parasitology		**(6) Others:**	
(1-2) Marine (ocean) biology			
(1-3) Hydrobiology			

QA7. Please provide titles and information sources (if any) of on-going or planned/proposed programs/projects for biodiversity conservation and monitoring/surveys in your organization:

(a) Ongoing programs/projects

Title	URL or other information sources

(b) Planned/proposed programs/projects

Title	URL or other information sources

Part B: Biodiversity monitoring/surveys and indicators (QB1 – QB6)

QB1. Does your organization conduct biodiversity monitoring/surveys?
○ Yes ○ No

QB1.1. If yes in QB1, in what types of ecosystems did you conduct the monitoring/surveys?

- ☐ (a) Natural forest ecosystem
- ☐ (b) Savanna ecosystem (with a few trees/bushes)
- ☐ (c) Grassland ecosystem (without any trees/bushes)
- ☐ (d) Freshwater ecosystem
- ☐ (e) Coastal ecosystem
- ☐ (f) (Off-shore) marine ecosystem
- ☐ (g) Wetlands ecosystem
- ☐ (h) Arid/semi-arid zone ecosystem
- ☐ (i) Mountainous/highland ecosystems
- ☐ (j) Agro-ecosystem
- ☐ (k) Others – Specify:

QB1.2. If yes in QB1, what types of taxa/species groups and/or genetic data did you monitor/survey?

- ☐ (a) Terrestrial plants
- ☐ (b) Freshwater aquatic plants
- ☐ (c) Marine aquatic plants
- ☐ (d) Terrestrial insects
- ☐ (e) Aquatic macroinvertebrates
- ☐ (f) Freshwater fishes and shellfishes
- ☐ (g) Marine fishes and shellfishes
- ☐ (h) Amphibians
- ☐ (i) Reptiles
- ☐ (j) Birds/avifauna
- ☐ (k) Mammals
- ☐ (l) Fungi
- ☐ (m) Bacteria
- ☐ (n) Planktons
- ☐ (o) Genetics
- ☐ (p) Others - Specify:

QB1.3. If yes in QB1, please specify any other survey items in your biodiversity monitoring/surveys.

- ☐ (a) Topographic data
- ☐ (b) Hydrological data
- ☐ (c) Geological data
- ☐ (d) Environmental/abiotic factors
- ☐ (e) Socio-economic data
- ☐ (f) Others - Specify:

QB1.4. If yes in QB1, in what areas have you conducted biodiversity monitoring/surveys?

- ☐ (a) National parks - Specify what park:
- ☐ (b) Other protected areas - Specify what area:
- ☐ (c) Other areas - Specify what area/province:

QB1.5. If yes in QB1, when were (was) the monitoring/surveys conducted within the past 30 years?

QB1.5.1. In QB1.5, Have you repeated the surveys in the same areas?

☐ Yes ☐ No

QB1.5.1 (a) If yes in QB1.5.1, could you compare results (trends) of biodiversity monitoring for these periods?

☐ Yes ☐ No

QB1.5.1 (b) If no in QB1.5.1, why did you change survey areas?

QB1.6. If yes in QB1, what methods have you applied for data collection in biodiversity monitoring?

- ☐ (a) Plot-based field surveys

Per☐ ıent plots Non-permanent p☐ s

- Specify any particular techniques applied:

- ☐ (b) Plot-less field surveys

- Specify any particular techniques applied:

☐ (c) Remote sensing/GIS analysis - Specify any particular techniques applied:

☐ (d) Aerial photo analysis - Specify any particular techniques applied:

☐ (e) Collection of specimens - Specify for what species:

☐ (f) Literature surveys - Specify any particular techniques applied:

☐ (g) Community surveys/interviews - Specify any particular techniques applied:

☐ (h) Others - Specify any particular techniques applied:

QB1.7. If yes in QB1, what methods have you applied for data analysis in biodiversity monitoring?

☐ (a) Statistical/quantitative trend analysis (analysis/synthesis in numerical/mathematical forms) - Specify any particular techniques applied:

☐ (b) Qualitative/descriptive trend analysis (analysis/synthesis in written forms/paragraphs) - Specify any particular techniques applied:

☐ (c) Visual trend analysis – analysis/synthesis using visual tools: GIS, maps, graphics, etc.) - Specify any particular techniques applied:

☐ (d) Forecasting/simulation with modeling - Specify any particular techniques applied:

☐ (e) Others - Specify any particular techniques applied:)

QB1.8. If yes in QB1, what are budgetary sources for biodiversity monitoring?

☐ (a) National government budget

☐ (b) Provincial/local government budget

☐ (c) Contributions from foreign aid agencies

☐ (d) Contributions from international non-governmental organizations

☐ (e) Contributions from national non-governmental organizations

☐ (f) Contributions from national private companies

☐ (g) Contributions from local communities (including in-kind/labor support)

☐ (h) Others - Specify:

QB2. Do you have or use any procedures on biodiversity monitoring/surveys (e.g. to be conducted every how many years, etc.)?

☐ Yes ☐ No

QB2.1. If yes in QB2, specify what procedures you have or use.

QB3. Do you have any technical guidelines/manuals for biodiversity monitoring?

☐ Yes ☐ No

QB3.1. If yes in QB3, specify what guidelines/manuals you have or use (titles, etc.).

QB4. Have you ever attended training on biodiversity monitoring/surveys?

☐ Yes ☐ No

QB4.1. If yes in QB4, please describe the content of training.

QB5.What are imminent challenges to biodiversity monitoring/surveys?

☐ (a) Lack of operational budget

☐ (b) Lack of equipment/facilities - Specify what equipment/facilities are required:)

☐ (c) Lack of survey staff - In what field you require more surveyors?

(d) Lack of taxonomists - In what field you require more taxonomists?

(e) Lack of other staff – Specify what staff are required:

(f) Lack of technical expertise on monitoring/survey methods – Specify what expertise is required:

(g) Inadequate technical guidelines/procedures – specify what types of guidelines/procedures are necessary.

(h) Inadequate knowledge of local biodiversity conditions – specify what knowledge is essential

(i) Lack of institutional support (collaboration, incentives, training, etc.) – specify what support is required

(j) Others - Specify:

(k) No immediate challenges (no problems)

QB6 (Optional). Please provide any comments or suggestions on biodiversity monitoring/surveys

Part C: Biodiversity database management/data sharing mechanisms (QC1 – QC8)

QC1. What is your organization's view of data sharing on biodiversity?

(a) All data can be shared with other organizations

(b) Some data can be shared with other organizations: Specify what data can be shared or not:

- (b.1) Data that can be shared:
- (b.2) Data that cannot be shared:

(c) No data can be shared with other organizations – Why?

QC1.1. If you choose (a) or (b) above (QC1.), can these data be shared freely with other organizations or are there any conditions/requirements for data sharing?

(i) Data can be shared freely.

(ii) There are conditions/requirements for data sharing
– Specify what conditions/requirements:

QC1.2. If you choose (a) or (b) above (QC1.), are your data on biodiversity free of charge (gratuitous) or onerous (requiring payment) for other organizations?

(i) Gratuitous to all other organizations

(ii) Gratuitous to some organizations - Specify to what kind organizations:

(iii) Onerous to all organizations - Describe why:

QC2. In what format(s) can your data on biodiversity be obtained?

(a) Website - Specify its address:

(b) Hard copy - Specify any Publication title(s):

(c) CD/DVD-ROM

(d) USB memory

(e) Others - Specify:

QC3. In what form(s) are your data available?

(a) Visualized data – Specify data types:

(b) Numerical/linguistic data - Specify data types:

(c) Geo-referenced data - Specify coordinate systems:

(d) Simulation data - Specify data types:

(e) Others - Specify:

QC4. In what language(s) are your data available in addition to the Vietnamese version?

(a) No foreign language version is available.

(b) English

(c) French

(d) Russian

(e) Other languages - Specify what language(s):

QC5. In what software are your biodiversity data stored?

(a) MS Word

(b) MS Excel

(c) MS Access

(d) Other database software - Specify:

(e) GIS software - Specify:

(f) Other software - Specify:

QC6. Do you utilize biodiversity indicators for related information management in your organization?

Yes No

QC6.1. If yes in QC6, how many biodiversity indicators are utilized?

QC6.2. If yes in QC6, specify five (5) major indicators you use in your organization.

QC6.3. If yes in QC6, have you ever elaborated or developed new biodiversity indicators?

Yes No

QC6.3.1. If yes in QC6.3, please provide information on your experience in how to develop and use biodiversity indicators and collect data for them.

QC7. Have you developed metadata to manage biodiversity information?

☐ Yes ☐ No

QC7.1. If yes in QC7, please provide information on what kinds of metadata systems/standards have you utilized.

QC8 (Optional). Please provide any comments or suggestions on biodiversity database management/data sharing.

Thank you very much for your collaboration.

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Appendix 2 List of respondent organizations for the questionnaire survey

1. Management Board of Takou Natural Protected Area
2. Center for Computing & Technological Scientific Information - DOST of Bac Giang Province
3. Department of Science & Technology of Binh Duong Province
4. Department of Science & Technology of Soc Trang Province
5. Department of Science & Technology of Thừa Thiên-Huế Province
6. Department of Science & Technology of Bình Phước Province
7. Nam Hải Vân Special-Use Forest (currently the Forestry sector of Liên Chiểu District)
8. Department of Agriculture and Rural Development of Đà Nẵng City
9. Division of Environmental Protection of Quảng Trị Province
10. Center for Scientific & Technological Advance Application, Test and Analysis - Department of Science & Technology of Hà Nam Province
11. Department of Agriculture & Rural Development of Bắc Ninh Province
12. Department of Science & Technology of Điện Biên Province
13. Department of Science & Technology of Quảng Bình Province
14. Department of Agriculture & Rural Development of Bình Phước Province
15. Department of Science & Technology of Lạng Sơn Province
16. Department of Natural Resources & Environment of Hòa Bình Province
17. Department of Natural Resources & Environment of Lâm Đồng Province
18. Department of Science & Technology of Đồng Tháp Province
19. Department of Natural Resources & Environment of Tiền Giang Province
20. Department of Science & Technology of Bình Thuận Province
21. Tà Đùng Natural Protected Area
22. Natural Resources & Environment Department of Quảng Nam Province
23. Division of Environmental Protection - DONDRE Phú Yên
24. Department of Agriculture and Rural Development of Phú Thọ Province
25. Department of Natural Resource and Environment of Thái Nguyên Province
26. Department of Science and Technology of Phú Thọ Province
27. Department of Aquaculture of Khánh Hòa
28. Department of Natural Resource and Environment of Đắk Lắk Province
29. Division of Forest Ranger of Kon Tum
30. Department of Natural Resource and Environment of Kon Tum Province
31. Management board of Căng Bắc Mê Special Use forest
32. Division of environment protection of Thừa Thiên Huế
33. Department of Science and Technology of Ninh Thuận Province
34. Department of Natural Resource and Environment of Vĩnh Long Province
35. Department of Natural Resource and Environment of Bạc Liêu Province
36. Division of forest ranger of Đắk Lắk
37. Department of Agriculture and Rural Development of Lạng Sơn Province
38. Xuân Nha Natural Protected Area Management Board
39. Mường Nhé Natural Protected Area Management Board - Điện Biên Province
40. Đakrông Natural Protected Area Management Board - Quảng Trị Province
41. Nature and Culture Protected Area in Đồng Nai
42. Department of Natural Resources and Environment of Trà Vinh
43. Department of Natural Resources and Environment of Hậu Giang

44. Division of Forestry of Hồ Chí Minh city
45. Department of Natural Resources and Environment of Thanh Hóa
46. Department of Science and Technology of Đồng Nai
47. Cát Tiên National Park
48. Management Board of An Toàn Special Use forest
49. Lung Ngọc Hoàng Nature Protected Area
50. Na Hang Nature Protected Area
51. Center of Environmental Monitoring and Analysis - Department of Natural Resources and Environment of Quảng Ninh
52. Center of Environmental Monitoring and Analysis - Department of Natural Resources and Environment of Quảng Ninh
53. Division of Environmental Protection of Lào Cai
54. Ninh Bình Forestry Office
55. Nature Protected Area of Ngọc Linh - Kon Tum
56. Department of Natural Resources and Environment of Khánh Hòa
57. Department of Agriculture and Rural Development of Lai Châu
58. Division of Forest Ranger of Bình Định
59. Department of Natural Resources and Environment of Quảng Ngãi
60. Nature Protected Area of Tây Yên Tử
61. Hòn Bà Nature Protected Area Management Board
62. Department of Science and Technology of Hải Phòng
63. Department of Agriculture and Rural development of Cần Thơ city
64. Department of Agriculture and Rural development of Hà Nam Province
65. Division of Environment Protection - Department of Natural Resource and Environment of Đăk Nông
66. Vũ Quang National Park
67. Department of Natural Resources and Environment of Đồng Tháp
68. Nature Protected Area of Đồng Sơn - Kỳ Thượng
69. Division of Aquaculture of Bình Định
70. Sông Thanh Nature Protected Area Management Board
71. Department of Natural Resources and Environment of Ninh Bình
72. Division of Environmental Protection - Department of Natural Resource and Environment of Cao Bằng
73. Division of Environmental Protection of Bình Định
74. Division of Environmental Protection of Hà Nam
75. Ranger Unit Assigned to Sơn Trà and Ngũ Hành Sơn (Sơn Trà Nature Protected Area)
76. Núi Ông Nature Protected Area Management Board
77. Department of Science and Technology of Thanh Hóa
78. Department of Natural Resources and Environment of Lạng Sơn
79. Department of Science and Technology of Bến Tre
80. Department of Natural Resources and Environment of Bắc Giang
81. Tam Đảo National Park
82. Soils and Fertilizers Research Institute
83. Division of Forest Ranger of TT. Huế
84. Department of Agriculture and Rural Development of Quảng Ninh Province
85. Department of Natural Resources and Environment of Lai Châu
86. Department of Science and Technology of Bắc Ninh
87. Department of Natural Resources and Environment of Nam Định

88. Division of Forest Ranger of Đăk Nông
89. Department of Science and Technology of Kiên Giang
90. Department of Science and Technology of Quảng Nam
91. Division of Forest Ranger of Vĩnh Long
92. Department of Natural Resources and Environment of Hà Tĩnh
93. Division of Environment Protection of Bà Rịa, Vũng Tàu - DONRE
94. Department of Natural Resources and Environment of Sơn La
95. Division of Environment Protection of Kiên Giang
96. Department of Agriculture and Rural development of Cao Bằng Province
97. Thượng Tiến Nature Protected Area Management Board
98. Department of Agriculture and Rural Development of Đồng Nai Province
99. Department of Natural Resources and Environment of Bình Dương
100. Kon Chư Răng Nature Protected Area Management Board
101. Gene Research Institute - Institute of Science and Technology of Vietnam
102. Management Board of Côpia Special Use forest
103. Division of Environment Protection of Sóc Trăng
104. Division of Forest Ranger of An Giang
105. Division of Forest Ranger - DARD Thái Nguyên
106. Department of Agriculture and Rural development of Bến Tre
107. Management Board of Ecology Conservation Area in Đồng Tháp Mười
108. Division of Environment Protection of Đà Nẵng City
109. Department of Natural Resources and Environment of Điện Biên
110. Department of Science and Technology of Lào Cai
111. Department of Science and Technology of Nam Định
112. Kim Hỷ Nature Protected Area
113. Species and Habitat Conservation Zone of Nam Xuân Lạc
114. Management Board of Phong Điền Nature Protected Area
115. Management Board of Tây Côn Lĩnh Nature Protected Area
116. Xuân Liên Nature Protected Area
117. Management Board of Pù Hu Nature Protected Area
118. Management Board of Phong Quang Nature Protected Area
119. Management Board of Pù Luông Nature Protected Area
120. Cát Bà National Park
121. Chư Mom Ray National Park
122. Chư Yang Sin National Park
123. Phú Quốc National Park
124. Pù Mát National Park
125. Xuân Sơn National Park
126. Hanoi Zoo Co., Ltd
127. Management Board of Bình Châu - Phước Bửu Nature Protected Area
128. Xuan Thuy National Park

Appendix 12: Inception report

It is submitted by data only.

Appendix 13: Progress report

Progress reports 1 to 6 are submitted by data only.

Appendix 14: Other activities

The following documents are submitted by data only.

(1) Training list
(2) Collected data of capacity / needs assessment report
(3) Species data entered into NBDS by the project
(4) Result of Acceptance Test
(5) Maintenance Record
(6) Result of promotion of NBDS (Awareness raising material etc.)
(7) Top page of NBDS
(8) Draft of Research Proposal (Master Scheme)
(9) System Architecture
(10) Guideline for biodiversity indicator development and utilization
(11) Technical Guideline for basic survey and monitoring of coastal wetlands
(12) Circular (Legal Document)
(13) Administrator’s Manual of NBDS
(14) User’s Manual of NBDS
(15) Pictures