The Socialist Republic of Vietnam
Biodiversity Conservation Agency (BCA)
Vietnam Environment Administration (VEA)
Ministry of Natural Resources and Environment (MONRE)

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

PROJECT COMPLETION REPORT

JUNE 2015

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

JAPAN DEVELOPMENT SERVICE CO., LTD. (JDS)

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ABBREVIATIONS

Abbreviation	English
ADB	Asian Development Bank
ASEAN	Association of South‐East Asian Nations
BCA	Biodiversity Conservation Agency
BD	Biodiversity
BDMI	Biodiversity Monitoring Indicators
BIP	Biodiversity Indicators Partnership
C/P	Counterpart Personnel
CG	Core Group
CBD	Convention on Biological Diversity
CCA	Canonical Correspondence Analysis
CEID	Centre for Environmental Information and Documentation, VEA, MONRE
CEM	Centre for Environmental Monitoring, VEA, MONRE
CETAF	Consortium of European Taxonomic Facilities
CEPF	Critical Ecosystem Partnership Fund
CI	Cooperazione Italiana
CITES	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMS	Convention on the Conservation of Migratory Species of Wild Animals /Bonn Convention
COP	Conference of the Parties
CRES	Center for Natural Resources and Environmental Studies – Hanoi National University
DARD	Department of Agriculture and Rural Development
DINTE	Department of Information Technology, MONRE
DoF	Department of Forestry
DONRE	Department of Natural Resources and Environment
DOST	Department of Science and Technology
EIA	Environmental Impact Assessment
EPA	Environment Protection Agency
FAO	Food and Agriculture Organization
FIPI	Forest Inventory Planning Institute
FOB	Free on Board
FORMIS	Development of Management Information Systems for Forestry Sector Project
FSSP	Forest Sector Support Partnership
GBIF	Global Biodiversity Information Facility
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographic Information System
GIZ	Deutsche Gesellschaft fur Internationale Zusammenarbeit
GPS	Global Positioning System
HNUE	Hanoi National University of Education
HNU-CRES	Hanoi National University Center for Natural Resources Management and Environmental Studies
HUS	Hanoi University of Science
ICBN	International Code of Botanical Nomenclature
ICT	Information and Communication Technology
IC/R	Inception Report

Abbreviation	English
IEBR	Institute of Ecology and Biological Resources
IET	Institute of Environmental Technology
IT	Information Technology
ITC	Information Technology Center, Administration Office, VEA, MONRE
IT IS	Interagency Taxonomic Information System
IUCN	International Union for Conservation of Nature and Natural Resources
ICZN	International Code of Zoological Nomenclature
JCC	Joint Coordinating Committee
MARD	Ministry of Agriculture and Rural Development
MONRE	Ministry of Natural Resources and Environment
MOST	Ministry of Science and Technology
MPI	Ministry of Planning and Investment
NBSAP	National Biodiversity Strategies and Action Plans
NGO	Non-Governmental Organizations
OJT	On the Job Training
PDM	Project Design Matrix
PO	Plan of Operation
R/D	Record of Discussions
RIA	Research Institute for Aquaculture
RSC	Vietnam National Remote Sensing Center
TDWG	Taxonomic Database Working Group
TWG	Technical Working Groups
UNEP-WCMC	United Nations Environment Programme – World Conservation Monitoring Centre
VACNE	Vietnam Association for Conservation of Nature and Environment
VAST	Vietnam Academy of Science and Technology
VEA	Vietnam Environment Administration
VNU	Vietnam National University
VNUH	Vietnam National University, Hanoi
WCS	Wildlife Conservation Society
WRI	World Resources Institute
WTO	World Trade Organization
WWF	World Wildlife Fund for Nature
XTNP	Xuan Thuy National Park

1. Outline of the Project

(1) Basic information of the Project

[Project Title]

Project for Development of the National Biodiversity Database System

[Project period]

From November 2011 to March 2015 (3 years and 5 months)
From November 2011 to March 2013 (The first stage)
From April 2013 to March 2015 (The second stage)

[Executing agency]

Biodiversity Conservation Agency (BCA), Vietnam Environment Administration (VEA), Ministry of Natural Resources and Environment (MONRE)

[Related organizations in the cooperation]

MARD, MOST, VAST, Nam Dinh province, etc.

[Target area for pilot survey]

Xuan Thuy National Park (Nam Dinh province)

(2) Background of the Project

Although Vietnam possesses roughly 10 percent of the biological species in the world and has an extremely rich biodiversity, its covering of forest, which is important as habitat for inland ecosystems, declined from roughly 43 percent in 1943 to 27.7 percent in 1990 as a result of conversion to farmland and illegal logging, etc. brought about by population increase and poverty.

Due to subsequent efforts to restore forests, the forest cover had recovered to approximately 39.1 percent by the end of 2009; however, half of the recovered forest area consists of reforested plantations which have low biodiversity, and primeval forest is minimal and said to be continuing to deteriorate. In addition, against the backdrop of dramatic economic growth in recent years, rapidly increasing population and consumption have brought about the over-utilization of natural resources, while rapid development and infrastructure construction have altered the national landscape, diminished natural landscape and brought about ecological isolation and disappearance of habitats for wild flora and fauna. Moreover, huge impacts as a result of climate change are forecast and there is concern that this will bring about massive loss of biodiversity.

Under these circumstances, in response to the 2010 Goals[1] adopted at the 6th Conference of the Parties of the Convention on Biological Diversity (CBD / COP6, 2002), the Government of

[1] The signatory states aim to significantly reduce the speed of biodiversity loss by 2010.

Vietnam formulated the Direction of the National Biodiversity Action Plan 2010, 2020 (Decision No. 79/2007/QD-TTg) in 2007, and in 2008 it enacted the Biodiversity Law aimed at preserving and developing biodiversity in continental areas, marine areas, wetland and farmland, realizing the sustainable use of biological resources and bolstering biosafety controls. Furthermore, it has subscribed to international biodiversity conventions and is committed to preservation of biodiversity.

The said Act stipulates that VEA, which is the implementing agency for the Project, should take uniform control of biodiversity (Article 6). In addition to compiling national plans on conservation of biodiversity (Article 10), this ministry is charged with taking a leading role in implementing basic surveys for the monitoring of biodiversity, constructing biodiversity databases, promoting their utilization and reporting on conditions of biodiversity and so on.

However, in reality, biodiversity information is scattered among related government offices, research institutes and universities, etc. Moreover, no systematic surveys are conducted in order to monitor and evaluate biodiversity, making it difficult to assess biodiversity at the national level.

Accordingly, the Government of Vietnam issued a request to the Government of Japan for technical cooperation comprising development of a database system, etc. geared to consolidating and disclosing data based on systematic monitoring. Now that the conditions for implementing cooperation have been established, the Project can commence with the MONRE Vietnam Environment Administration Biodiversity Conservation Agency (VEA BCA) acting as the Project counterpart (C/P) agency.

(3) Project Objectives and Objectively Verifiable Indicators

The Project has the following objectives: (1) to construct a first generation National Biodiversity Database System (NBDS) through consolidating and disclosing disparate biodiversity information by cooperating with the various agencies in Vietnam that possess such information, (2) to conduct technology transfer on the systematic survey methods necessary for monitoring the said information and construct a provincial level database for storing the data acquired through such surveys, and (3) to transform existing databases on bio-safety. In conducting the work, care will be taken to ensure that the NBDS in future becomes a system that can contribute to the conservation and sustainable utilization of biodiversity on the national level, to Environmental Impact Assessment (EIA) and deployment of other global scale frameworks. Moreover, concerning the sharing, management and utilization of information in the NBDS, another objective of the Project will be to propose a cooperation mechanism with operating agencies of existing databases, to introduce the NBDS to agencies and central and regional agency employees engaged in the preservation of biodiversity, and propose a roadmap geared to the second generation NBDS. The Project purpose and overall objective of the Project are as follows.

[Super Goal] (2025)

The 2nd generation of national biodiversity database system is developed.

[Objectively verifiable indicators]

- The 2nd generation of NBDS with data of provinces and related organizations is used for monitoring national biodiversity.
- Utilization method of NBDS for specific application is developed (in EIA etc.), with Nam Dinh Province in mind.

[Overall Goal] (2020)

The second generation of national biodiversity database system is developed and piloted in selected protected areas and provinces.

[Objectively verifiable indicators]

- Utilization method of NBDS for management purpose is developed in Nam Dinh Province.
- The GIS-liked NBDS is used for a selected protected areas and province in a province other than Nam Dinh.
- NBDS is used for the preparation of biodiversity-related national reports.

[Project Purpose**]**

The first generation of National Biodiversity Database System is developed.

[Objectively verifiable indicators]

- NBDS Architecture is approved by VEA/ MONRE.
- Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS.
- 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.

2. Overview of the Achievement Status of Outputs and Activities

This section describes the achievement status of outputs and activities during the project period.

(1) Major achievements

Major achievements during the project period are listed in Appendix 9.

(2) Achievement status of project activities

Activities of the project are listed in the table below, and the overall work flow of the project is indicated as Appendix 2. These activities reflect the newly added and modified activities based on the revised PDM from Version 1 to 4

Table-1 Project Activities

Activity	Contents
P-1	Preparatory work (in Japan)
P-2	Preparation, discussion and presentation of the Inception Report (IC/R)
P-3	Prepare Work Plan (in Japan)
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 (TWG) for NBDS development with participation from MONRE, MARD, MOST, VAST, Nam Dinh Province and other related government offices and agencies
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
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.
1-5-1	Prepare proposal (Master scheme) of NBDS
1-5-2	Prepare a draft Architecture for NBDS
1-5-3	Prepare 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 into NBDS
1-8	Modify NBDS architecture based on experiences from the pilot project.
1-9	Submit the final draft Architecture of NBDS to MONRE.
2-1	Identify key database holders (including international organizations)
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.
5-1	Prepare and implement equipment procurement
5-2	Prepare and implement training in Japan and the third country
5-3	Perform capacity assessment of biodiversity sector in Vietnam
R-1	Create progress reports and report to JICA
R-2	Create the First Stage Work Completion Report and report to JICA and related parties
R-3	Preparation of the Project Completion Report (Final Report)
R-4	Create Self-Evaluation Report

The following section gives the detailed descriptions on the project activities during the project period.

(3) Completion status of project activities

P-1: Preparatory work (in Japan)

Before the beginning of the project implementation period, The expert team and supporting team in Japan started preparation for project activities including human resource allocation plan and communication infrastructure among the team.

P-2: Preparation, discussion and presentation of the Inception Report (IC/R) (in Japan)

Before the beginning of the project implementation period, the expert team and supporting team in Japan created the draft of Inception Report, and have explained the content to JICA with strategy for activity implementation.

- 26 Dec. 2011: After several discussions with BCA at the beginning of the project implementation period, the final versions of IC/R (English / Japanese) have been completed.
- 16 Jan. 2012: The Vietnamese version of IC/R has been completed.
- 14 Mar. 2012: The final version of IC/R has been approved in the 1st JCC meeting.

P-3: Prepare Work Plan (in Japan)

The expert team and supporting team in Japan has created the Work Plan (for the 1st stage) and submitted it to JICA prior to the beginning of project activity in Vietnam.

Upon the beginning of the 2nd stage of the project, the Work Plan for the 2nd stage has also been created. The content of the Work Plan for the 2nd stage has been then modified based on the result of Mid-term review.

0-1: Review both PDM and PO, and revise them, as needed, upon the approval from JCC.

Based on the technical discussion in the Project team and Core Group meetings, the PDM has been updated 3 times (from version 1 to 4). Versions of PDMs are listed in Appendix 1. Changes in these versions of PDMs are as follows.

- Version 2 (30 May 2013): Based on the discussion in the mid-term review, the content of PDM was largely revised in order to add newly introduced core-group activities and their outputs such as master scheme and draft legal document for collaboration mechanism. Objectively Verifiable Indicators and Means of Verification are also largely revised and newly added.

- Version 3 (1 Aug. 2014): Based on the discussion in the final evaluation, “Super Goal” was introduced by dividing the content of original “Overall Goal” into 2 distinct goals with approximate target years. The new Overall Goal was designated as the goal that can be

accomplished by the year 2020, while the new Super Goal would be achieved by the year 2025. The description for awareness raising material was also generalized.

- Version 4 (27 Jan 2015): The titles of 2 guidelines (Core Group outputs) mentioned in the PDM were changed to reflect the real titles of completed publication as follows.
  - ➢ (Old) Guideline for developing National indicators for biodiversity monitoring
    (New) Guideline for biodiversity indicator development and utilization
  - ➢ (Old) Technical guideline of basic survey and monitoring on wetland ecosystem
    (New) Technical guideline for basic survey and monitoring of coastal wetlands

0-2: Monitor and evaluate progress of the project activities

The progress of project activities are monitored and evaluated based on the PDM. The progress was monitored by means of the progress of TWG meetings (in the first stage of the project period) and by means of Core Group activities (in the second stage of the project period). The project team (JICA experts and BCA counterparts) and Technical Coordinator (Prof. Cu) have cooperatively monitored the progress of the project activities.

The mid-term review was conducted from May 15th to 30th 2013. Through intensive discussions and interviews with C/Ps and relevant organizations, the review team has made recommendations to revise the outputs of the project to include several new documents which are important for Vietnamese government to set national level biodiversity policy targets as well as to endorse the overall NBDS architecture and its data collaboration mechanisms. There are 5 newly added or modified outputs in total that are in the form of documents as shown below.

- Draft Master Scheme (Proposal) of NBDS
- System Architecture of NBDS
- Guideline for Biodiversity Indicator Development and Utilization
- Technical Guideline for Coastal Wetland Survey
- Draft legal document for collaboration mechanism

The project team implemented activities based on the result of mid-term review during the second stage of the project.

At the end of December 2013, the project had a meeting for evaluating the progress, and the project acknowledged the delay of progress of the project. Based on the discussion in the meeting, the project decided to introduce Technical Coordinator for monitoring and coordinating the progress of Core Group activities.

The terminal evaluation of the project was conducted from July 13th to August 2nd, 2014. The evaluation team has concluded that the project purpose would be achieved within the project

period, and had some recommendations for sustainability and for development of future generations of NBDS.

1-1: Identify and analyze existing databases

The project team has implemented several different kinds of surveys on existing databases in Vietnam and in the world related to biodiversity in order for the reference to be used in the development of NBDS architecture. The survey was conducted by analyzing existing information in Vietnam, and by visiting related organizations in Vietnam that hold information related to biodiversity in Vietnam. The list of visited organizations is indicated in Appendix 10. The project team has also included questions related to the existing databases into capacity assessment survey (See 5-3).

According to the result of these surveys and assessment, the project team has identified some possibilities regarding the architecture of NBDS that consists of three kinds of databases, 1) taxonomic database, 2) metadata database, 3) site specific database (for Xuan Thuy National Park as a pilot database).

1-2: Establish a Technical Working Group (TWG) for NBDS development with participation from MONRE, MARD, MOST, VAST, Nam Dinh Province and other related government offices and agencies

During the first stage of project implementation, two groups of TWG were established based on the conclusion in pre-TWG meeting. One is in charge of Biodiversity survey and monitoring (Group A). Another is for Database development and management (Group B).

1-3: Organize meetings of Technical Working Group (TWG)

The project has implemented 14 TWG meetings in the 1st stage as shown in the table below.

Table-2 TWG meetings

No.	Group*	Date	No. of Participants (Organizations)
Pre-TWG	-	14 Mar. 2012	27 (BCA, MONRE, DONRE, IEBR, etc.)
TWG1	Group A	14 Jun. 2012	37 (BCA, CEID, ITC, CEM, IEBR, DONRE, XTNP, MARD, CRES, etc.)
	Group B	14 Jun. 2012	
TWG2	Group A	14 Jul. 2012	17 (BCA, IEBR, DONRE, XTNP, etc.)
	Group B	25 Jul. 2012	13 (BCA, ITC, CEID, CEM, DONRE, XTNP, MOST, etc.)
TWG3	Group A	15 Sep. 2012	13 (BCA, HNUE, XTNP, HUS, etc.)
	Group B	17 Aug. 2012	12 (BCA, ITC, CEID, CEM, DONRE, XTNP)
TWG4	Group A	10 Oct. 2012	29 (BCA, MARD, IEBR, HNUE, DONRE, XTNP, etc.)
	Group B	10 Oct. 2012	19 (BCA, ITC, CEID, CEM, DONRE, XTNP)
TWG5	Group A	2 Nov. 2012	34 (BCA, VEA, DONRE, XTNP, FIPI, RSC, RIA, IEBR, HUS, CRES, etc.)
	Group B	20 Nov. 2012	19 (BCA, ITC, CEID, CEM, FORMIS, etc.)
TWG6	Group A	17 Jan. 2013	29 (BCA, DONRE, XTNP, RSC, IEBR, ITC, CEID, CEM, etc.)
	Group B	17 Jan. 2013	
TWG6.1.B	Group B	25 Jan. 2013	17 (BCA, ITC, CEID, CEM, HUS, etc.)

* Group A: Biodiversity survey and monitoring
Group B: Database development and management

Main points of the discussion in these TWG meetings are described below.

1. Pre-TWG

   - ➢ Introduction of the project and discussion on how to proceed with the TWG meetings.
   - ➢ Agreed to divide TWG meetings into 2 groups (Group A for biodiversity survey and monitoring, and Group B for Database development and management).

2. TWG1 (Group A)

   - ➢ Report on the preliminary survey at XTNP.
   - ➢ Scope and plan of activities for biodiversity monitoring / surveys / indicators.
   - ➢ Agreed to hold a technical seminar on how to rate and choose appropriate indicators from large number of candidates.

3. TWG1 (Group B)

   - ➢ Policy, plan, and schedule of NBDS development.
   - ➢ Which programming language and environment to use for the development.
   - ➢ Agreed to hold a technical seminar on Web database development technology.

4. TWG2 (Group A)

   - ➢ Presentation on the candidate biodiversity indicators for Vietnam.
   - ➢ Should follow standard procedures for selecting indicators, starting from the determination of the issues and target of biodiversity in Vietnam.
   - ➢ Brainstorming for determining the issues and target of biodiversity in XTNP.
   - ➢ Agreed to implement similar process for selecting national-level biodiversity indicators.

5. TWG2 (Group B)

   - ➢ Technology transfer on database normalization basics and ER diagram.
   - ➢ Suggested data structure of NBDS and its prototype.
   - ➢ Agreed to implement flexible data format for NBDS that is based on GBIF standard internally but can adapt to various kinds of existing data formats in Vietnam.

6. TWG3 (Group A)

   - ➢ Discussion on the selection of biodiversity indicators by using indicator matrix.
   - ➢ Agreed to implement intensive discussion on the candidate indicators at XTNP.
   - ➢ Agreed to implement capacity assessment survey including biodiversity resources and database formats to all DONREs in Vietnam and other organizations.

7. TWG3 (Group B)

   - ➢ Presentation on the suggested user interface of NBDS and its prototype.

- ➢ Technology transfer on the introduction to PostgreSQL and its administration basics.
- ➢ Agreed on the user interface of NBDS as suggested with minor revisions.

8. TWG4 (Group A)

- ➢ Presentation and discussion on the status of development of biodiversity indicators for XTNP.
- ➢ Presentation and discussion on the procedures to determine core biodiversity monitoring indicators for Vietnam
- ➢ Presentation on the result of capacity assessment questionnaire.
- ➢ Questions and answers on the detail of biodiversity indicators

9. TWG4 (Group B)

- ➢ Technology transfer on the introduction to MVC (Model–View–Controller) architecture and PHP MVC framework (CodeIgniter).
- ➢ Presentation and discussion on MVC module design of NBDS.
- ➢ Presentation on the introduction to group-based development by SCM tools.
- ➢ JICA expert team encouraged C/Ps to join programming of NBDS.

10. TWG5 (Group A)

- ➢ Presentation and discussion on the preparation of the biodiversity monitoring guideline for wetlands.
- ➢ Presentation on the preparations for the 1st survey in XTNP.
- ➢ Agreed with the survey plan, and proceed to prepare its implementation.

11. TWG5 (Group B)

- ➢ Presentation, demonstration, and discussion on the current status and progress of NBDS development.
- ➢ Presentation and discussion on the plan for NBDS setup, configuration, and system testing.
- ➢ Discussion on the scheme of administration, operation and maintenance.
- ➢ Presentation and discussion on the plan for data entry to NBDS (including primary/secondary data).
- ➢ Agreed on the above contents.

12. TWG6 (Group A/B)

- ➢ Presentation on the result of field survey at XTNP and overall analysis of current ecological conditions.

- ➢ Presentation and discussion on NBDS data structure and the input of XTNP field survey data into NBDS.
- ➢ Presentation on the considerations for biodiversity indicator development with link to current CBD orientation.
- ➢ Presentation on preliminary analysis of capacity assessment questionnaire survey results.

13. TWG6.1B (Group B)

- ➢ Detailed discussion on the data structure coverage of NBDS (1st generation).
- ➢ Agreed to develop structure for ecosystems diversity and genetic diversity into the 1st generation of NBDS but with no actual data.
- ➢ Agreed on the data structure for species diversity.

1-3-1. Establish 5 core groups of Master Scheme, National indicator guideline, System Architecture, Wetland Monitoring Guideline and Legal Document.

Based on the discussion in mid-term review, 5 core groups were established since June 2013. Technical review procedure implemented by the core group is indicated in the figure below.

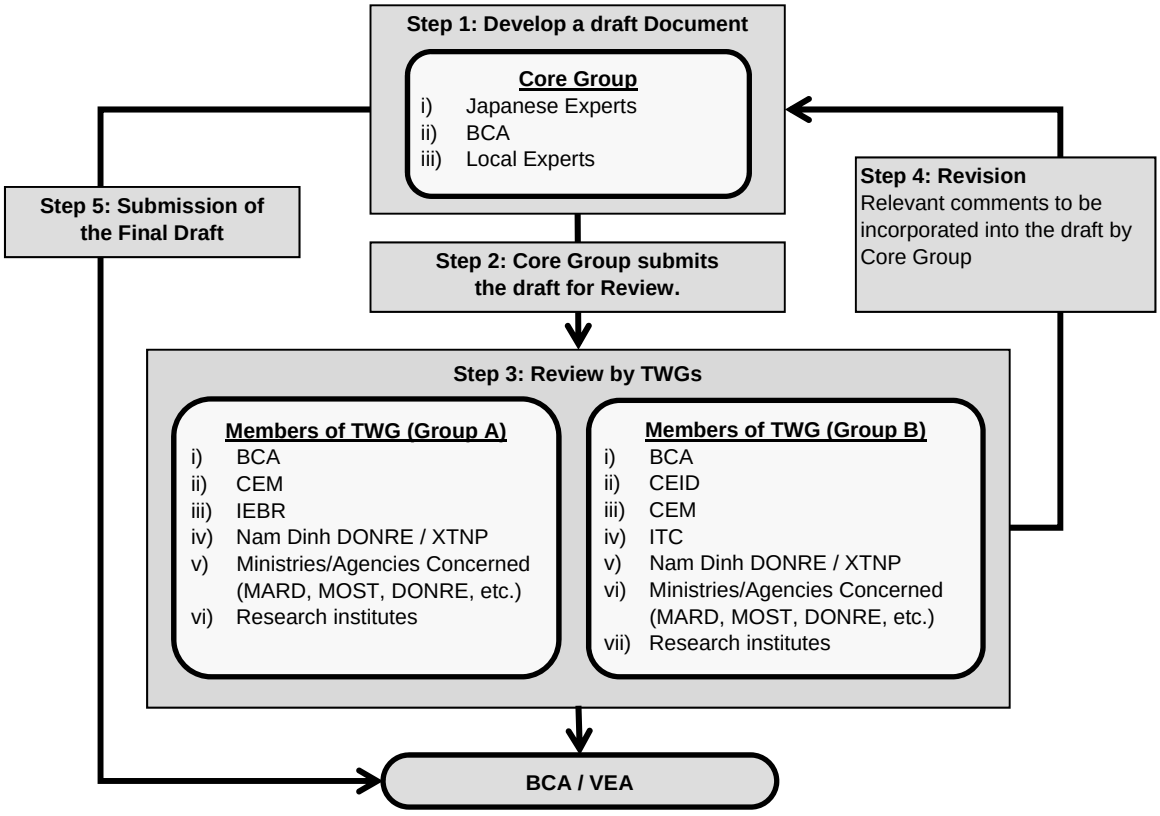


Figure-1 Technical review procedure implemented by the core group

The member of each core group is shown in the table below.

Table-3 Members of core groups

Core Group	Member
Master scheme of NBDS	• **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
System architecture of NBDS	• **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
Biodiversity monitoring indicator guideline	• **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
Technical guideline for coastal wetland survey	• **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
Draft legal document for collaboration mechanism	• **LE9:** Mr. Le Hung Anh* (Head of Department of Aquatic Ecology and Environment, IEBR) • **LE10:** Mr. Tran Thanh Than (Researcher, IET) • BCA C/Ps

* … Leader of the core group
LE: Local Expert, JE: JICA expert, LC: Local Consultant

Aside from these core group members, the project has also assigned a Technical Coordinator (TC), Prof. Pham Van Cu, in order to coordinate the progress and information sharing among all CGs.

1-3-2. Organize meetings and workshop for core groups.

The activity of 5 Core Groups has been very active during the second stage of the project in order to complete their respective outputs within the project period. Since the assignment of Japanese experts in Vietnam were limited in the second stage, many Core Group meetings have been done by local experts and BCA counterparts. This indicates that the ownership of Vietnamese side has been greatly improved through core group activities. Below is the list of each core group meetings and main points of discussion with participation of JICA expert team. Most of participants are indicated by abbreviations defined in 1-3-1. Note that there were many more meetings held (especially by Legal Document core group) during the absence of JICA experts.

1) Draft Master Scheme (Proposal) of NBDS

Table-4 List of recorded meetings of Master Scheme Core Group

No.	Date (Y/M/D)	Time	Participants
1	2013/9/23	08:00 - 10:20	LE1, LE2, JE2, JE4
	• Important Assumptions for Master Scheme of NBDS. • Presentation and discussion on the current progress • Confirmed the issues to be solved (Data structure, Data management method, Implementation technology)		
2	2013/10/11	14:00 - 17:00	LE1, LE2, JE3, JE4, BCA, CEID
	• Current status of authoring Master Scheme – Chapter 1~7 • Thematic report and discussion on database management system selection for NBDS • Comments and suggestions from BCA, JICA experts, and CEID		
3	2014/2/17	16:00 - 17:30	LE3, TC
	• Assessment of the current progress of Master Scheme • Confirmation of the needs to share information with other CGs. • Action plan to rapidly provide work plan to all stakeholders and to have a meeting with Biodiversity Indicator CG		
4	2014/2/18	13:30 - 16:30	LE1, LE2, LE3, TC, BCA
	• Sharing result of meetings with other CGs. • Confirmation of current issues and status of Master Scheme. • How to harmonize opinions from different LEs. • Agreed to promote more inter-CG meetings especially with BI CG.		
5	2014/3/14	11:40 - 12:15	LE1, LE2, LE3, Mr. Miyata, JE7, BCA, etc.
	• How to synthesize contents of other CG outputs into Master Scheme. • Discussion on the current issues and status of Master Scheme.		
6	2014/4/18	14:00 - 17:00	LE1, LE3, JE1, JE3, BCA
	• Presentation on the first draft of Master Scheme to be presented to VEA next week. • Discussion on the content and issues of the current version of draft.		
7	2014/4/25	14:00 - 17:00	LE1, LE3, JE1, JE3, JE6, JE7, BCA, CEID, IEBR, HNUE, HUS, etc.
	• Presentation on the updated first draft of Master Scheme to be presented to VEA next week. • Technical discussion on detailed topics of Master Scheme.		
8	2014/4/28	08:30 - 11:45	LE1, LE3, JE1, JE3, BCA, VEA IT Committee, etc.
	• Presentation on the completed first draft of Master Scheme to VEA IT Committee for review and discussion. • Discussion on the comments and suggestions of the content of Master Scheme.		
9	2014/6/4	09:00 - 11:00	LE3, TC
	• Discussion on the improvement of Master Scheme contents. • Discussion on the integration of NBDS into current governmental systems		
10	2014/8/15	13:00 - 14:00	LE3, TC, BCA
	• Discussion on the necessary modification for final version of Master Scheme. • Issues of inconsistency of contents among core group outputs. • How to proceed with the finalizing of Master Scheme.		

Note: After the 10th meeting, CG members have worked on e-mail basis and had many more meetings without Japanese experts' participation before finally completing the final draft of Master Scheme on 27 Dec. 2014.

2) System Architecture of NBDS

Table-5 List of recorded meetings of System Architecture Core Group

No.	Date (Y/M/D)	Time	Participants
1	2014/4/29	16:00 - 17:30	LE4, LE5, JE1, JE6, LE1-LE3, BCA, etc.
	• Review of NBDS development flow and plan. • Discussion on the additional data structure such as genetic diversity and ecosystem diversity. • Discussion on the selection of database technology for NBDS. • Agreed on the schedule of System Architecture document development.		
2	2014/5/15	14:00 - 16:00	LE4, LE5, JE1, BCA, ITC, CEID, CEM, etc.
	• Brainstorming on biodiversity data management needs in BCA. • Discussion on the requirements for NBDS functionalities.		
3	2014/7/22	15:00 - 16:00	LE4, LE5, JE1, JE3, BCA, ITC, CEID, etc.
	• Presentation and discussion on the 2nd draft of System Architecture document.		
4	2014/9/10	09:00 - 12:00	LE4, LE5,BCA, ITC, CEID, DINTE, IET, VNU, HNUE, etc.
	• Hearing and discussion on the latest version of SA document from various biodiversity and IT experts. • Discussion on the database infrastructure for NBDS at MONRE		
5	2014/10/2	09:00 - 12:00	BCA, CEID, VAST, DINTE, CRES, VNU, etc.
	• Detailed evaluation and discussion on the latest version of SA document. • Compiled comments and suggestions to SA document.		

3) Guideline for Biodiversity Indicator Development and Utilization

Table-6 List of recorded meetings of Biodiversity Indicator Guideline Core Group

No.	Date (Y/M/D)	Time	Participants
1	2013/7/6	14:00 - 18:00	LE6, LE7, LE8, JE4, JE7, BCA
	• Confirmation of current status of proposed biodiversity indicators. • Discussion on further revisions of the proposed core biodiversity indicators for XTNP • Discussions on approaches to the Natural Capital Index (NCI).		
2	2013/8/30	14:00 - 17:00	LE6, LE7, LE8, BCA
	• Presentation and discussion on the draft list of national-level BDMI. • Discussion on the fundamental approach for developing BDMI guideline		
3	2013/9/21	14:00 - 16:30	LE6, LE7, JE4, BCA, Local experts from research institutes.
	• Presentation and discussion on the current status of BDMI guideline. • Comments and suggestions from research institutes		
4	2013/10/14	09:00 - 11:30	LE6, LE7, LE8, JE4, JE5, BCA, LC
	• Discussions on the needs for quantitative and qualitative assessment of ecosystems by BDMI • Ideas for BD indexes for the assessment.		
5	2013/10/21	14:00 - 17:00	LE6, LE7, LE8, JE4, JE5, JE7, BCA, IEBR
	• Discussion on the 2nd TOR of BDMI local experts. • Review and discussion on composite indicators / indexes.		
6	2014/1/10	08:30 - 16:00	LE6, LE7, LE8, TC, Mr. Sakaguchi, JE1, JE2, JE6, BCA
	• Presentation and discussion on the current set of BDMI for XTNP. • Presentation and discussion on the list of indicators for the strategic plan for biodiversity 2011-2020 vs. BDMI for XTNP/Vietnam. • Presentation and discussions on the current BDMI guideline. • Presentation and discussions on “Strategic Plan for Biodiversity 2011-2020 with Aichi Biodiversity Targets and National Biodiversity Targets in Japan” and “Biodiversity indicators and monitoring system in Japan” by Mr. Sakaguchi		

No.	Date (Y/M/D)	Time	Participants
7	2014/2/14	13:30 - 17:30	LE6, LE7, LE8, JE5, TC, BCA
	• Presentation and discussions on the current BDMI guideline. • Presentation and discussions on the analysis of monitoring biodiversity indicators for XTNP • Presentation and discussions on the proposed national-level BDMI		
8	2014/3/12	13:30 - 17:00	LE6, LE7, LE8, Mr. Miyata, JE5, JE7, BCA, LC, NBSAP project in VEA
	• Presentation and discussions on the proposed national-level BDMI and its guideline		
9	2014/4/08	13:30 - 17:30	LE6, LE7, LE8, LE3, HNUE, VNU, HUS, LE4, JE5, JE7, JE3, TC, BCA
	• Review and discussion for finalizing BDMI guideline. • Comments and suggestions from invited local experts.		
10	2014/4/24	08:30 - 12:00	LE6, LE7, LE8, LE1, LE3, JE1, JE3, JE5, JE6, JE7, VNU, FIPI, BCA
	• Presentation on the final draft of BDMI for XTNP and for Vietnam • Discussion on the final draft of BDMI		

4) Technical Guideline for Coastal Wetland Survey

The development of Technical Guideline for Coastal Wetland Survey was carried out by local consultant team for XTNP survey as one of their TORs. This means LC team has developed the survey guideline by applying their experiences of 4 times of basic survey and monitoring survey at XTNP. There were many meetings and technology transfers with LC team and JICA team / BCA since before the first survey in terms of survey methodology. Other than these meetings, there were following meetings specifically for development of survey guideline.

Table-7 List of recorded meetings of Survey Guideline Core Group

No.	Date (Y/M/D)	Time	Participants
1	2014/3/13	14:00 - 15:30	LC, Mr. Miyata, JE5, JE7, BCA
	• Presentation and discussion on the current status of survey guideline. • Comments and suggestions on the content of the guideline.		

5) Draft legal document for collaboration mechanism

Based on the agreement made in the mid-term review, there was no member from JICA expert team to join the core group of legal document since no member in JICA expert team could contribute to the Vietnamese legal system. As a consequence, BCA took the initiative in this CG and implemented many internal meetings for the development of legal document. Below is only the list of "recorded" meetings, and there were actually much more meetings implemented by BCA including the meeting with representative staff from MARD.

Table-8 List of recorded meetings of Legal Document Core Group

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.
	• Presentation and discussion on the current content of legal document. • Detailed discussions on the articles to be included in the document.		
2	2014/6/17	08:30 - 12:00	LE9, LE10, LE4, TC, LC, JE6, JE7, BCA, etc.
	• Presentation and discussion on the 2nd draft of legal document • Detailed discussions on the content and articles in the document.		

6) Inter-Core-Group meetings

Other than meetings for each core group, the project also held several inter-core-group meetings in order to share information on the content and progress of each core group output and also to synthesize contents of their outputs. These meetings were extremely important since the contents of each core group outputs are closely related with each other.

Table-9 List of recorded inter-core-group meeting

No.	Date (Y/M/D)	Time	Participants
1	2014/1/7	08:30 - 16:30	TC, Mr. Egashira, JE1, JE2, BCA
	• Discussion on how to solve technical coordination problem in CGs. • Agreed to assign technical coordinator for CG coordination.		
2	2014/2/28	08:45 - 10:45	LE1, LE3, LE6, LE8, JE5, TC, BCA
	• Presentation and discussion on current progress of each CG • Agreed to adopt PSBR approach rather than DPSIR for BDMI category		
3	2014/4/16	10:30 - 12:30	TC, JE1, JE3, JE6, JE7, BCA, etc.
	• Presentation on current progress of each CG by TC • Discussion on the current issues in CG activities especially for Master Scheme.		

1-4. Organize technical workshops with the participation of relevant experts for establishing specification of NBDS.

The project implemented 11 technical workshops as listed in Table-10.

Table-10 List of technical workshops implemented in the project and their objectives

No.	Date (Y/M/D)	Title	No. of participants (Organizations)
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.		
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		

No.	Date (Y/M/D)	Title	No. of participants (Organizations)
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		

In these workshops, the content of core group outputs has been introduced to the participants from major related organizations for their comments and suggestions. Core group outputs have been finalized based on the result of these workshops.

At the end of project period, the project has implemented 2 final workshops in Ho Chi Minh City and Hanoi in order to disseminate the achievement and conclusion of the project as well as to officially announce the availability of NBDS Web site for public use. The completed core group outputs have been distributed to the participants as final printed documents, and the achievements of the project have been presented and discussed. The workshop also has officially launched the first generation of NBDS as Web site including the demonstration of key features. There are many comments and suggestions from the participants, but the most frequently asked question was how to guarantee the quality of uploaded biodiversity data (See 5 (2) for the recommendation on this issue).

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.

The project has completed these output documents through TWG meetings and Core Group discussions as described below in detail.

1-5-1. Prepare proposal (Master scheme) of NBDS for Vietnamese government

The Master Scheme is a proposal document for Vietnamese government in order to explain and propose the NBDS as an official national-level database for biodiversity information in Vietnam including the roadmap and development plan for NBDS future generations with prioritized actions and estimated cost. The Master Scheme is a very important document for the C/P in order to request official approval and necessary budget allocation for the development and maintenance of NBDS. It has been added as one of the project outputs based on the result of mid-term review.

- 27 Jul. 2013: The Core Group for the Master Scheme was formulated.
- End of Oct. 2013: The CG submitted the Table of Contents for the Master Scheme. Based on the Table of Contents, it has been planned to start the development of the content of Master Scheme soon after that. However, due to the change of IT local expert for the CG and negotiation on the TOR of CG, the schedule was delayed.
- Jan. 2014: The authoring of content of Master Scheme began.
- 28 Apr. 2014: The first draft of the Master Scheme has been completed and presented to VEA IT committee.
- 23 Jul. 2014: The 2nd draft of Master Scheme has been completed.
- 25 Aug. 2014: The workshop on Master Scheme was implemented.
- 27 Dec. 2014: The final draft of the Master Scheme has been completed and submitted to MONRE
- Jan. 2015: The final draft has been translated into English and was distributed in the final workshop and the 4th JCC meeting. It has then been circulated to all stakeholders including Ministries and provinces.
- Mar. 2015: Several comments and suggestions have been received from stakeholders. BCA amended the final draft based on these comments with the help from local experts.
- Apr. 2015: The completed version of Master Scheme has been submitted to VEA and is in the appraisal process of VEA.

1-5-2. Prepare a draft Architecture for NBDS

The System Architecture of NBDS is a document that described technical detail of the NBDS architecture including biodiversity data structure and format.

- Early 2012: The JICA expert team has started the creation of conceptual design and user interface design of NBDS.

- 17 Aug. 2012: “External Specification of NBDS” was completed as a document in TWG3 meeting through the review by participants.
- Sep. 2012: The expert team has completed the detailed design of NBDS including data structure through discussions in TWG meetings, and started implementation (programming) of the working NBDS as a Web site.
- 20 Nov. 2012: In TWG5 meeting , the project team has introduced and demonstrated the preview version of working NBDS in order to review the functionality of NBDS by target users and local experts in order to fine tune the functionality of NBDS. The project team also presented the plan for setup, configuration, testing of NBDS and the data entry plan to NBDS. During the review and discussion, the project team got plentiful suggestions and comments including the needs for in-depth discussion on data format among both Group A and Group B of TWG.
- Jan. 2013: Through the discussion in TWG6 and TWG6B, the project team tried to finalize the data structure of NBDS by clearly separating the future generations of NBDS. The project team and local experts have concluded that data structure for “Ecosystem diversity” and “Genetic diversity” should be added to NBDS despite that the project will not cover input of real data or reporting functionality of those data in the first generation of NBDS. Detailed data structure for “Species diversity” and other related data have also been finalized in these discussions.
- May 2014: Based on the discussion in the Mid-term Review, it was agreed to develop a System Architecture document as one of the project output that contains compiled technical information of NBDS development including the future generations of NBDS.
- 29 Jun. 2014: The 1st draft of System Architecture document was completed.
- 22 Jul. 2014: The 2nd draft of System Architecture document was completed through several CG meetings with local experts from other CGs,
- 9 Oct. 2014: Implemented a workshop on System Architecture of NBDS for discussing its content.
- 9 Dec. 2014: The system architecture of NBDS has been completed and was submitted to BCA/VEA.
- Jan. 2015: The document has been translated into Vietnamese and was distributed in the 4th JCC meeting. Since the document contains detailed architecture and security information on NBDS, it was not distributed in the final workshops.
- 26 Jan. 2015: The development of the first generation of NBDS (as real Web site) was completed and was ready to accept public access since then.
- Mar. 2015: The system was further enhanced and improved before closing the project.

1-5-3. Prepare national core set of indicators for biodiversity monitoring with the agreement among TWG members

Based on the initial project schedule, the project team has surveyed examples of biodiversity indicators in the world and their selection methods. Based on the survey and series of discussions in TWG meetings, the team has created the list of candidates for the indicators by using PSBR (Pressure - State - Response) model as well as the sustainable use (Benefit) of biodiversity.

Based on the candidate list of biodiversity monitoring indicators, the project team and core group have had extensive discussions through TWG meetings, Core Group meeting, and workshops. The national-level biodiversity monitoring indicators have been finalized in April 2014, and were submitted to BCA on July 9th, 2014 for the approval by BCA.

1-6: Develop a Guideline for developing National indicators for biodiversity monitoring

Based on the discussion of mid-term review, a guideline document for elaborating and selecting appropriate biodiversity monitoring indicators was newly planned as one of project outputs. Since the project has already been developing the indicator set, it was a supplemental effort to compile all related procedures of indicator development as a publishing-ready document.

- Jun. 2013: The core group for the guideline has started the development of guideline.
- 27 Apr. 2014: The final draft of the guideline was completed.
- 13 Jun. 2014: The content of the guideline has been officially presented in the workshop for BDMI.
- 9 Jul. 2014: Based on the comments and suggestions received through the workshop, it was finalized and submitted to BCA.
- Dec. 2014: The content of the guideline went through many processes of checking, proofreading, and approval before finally published as a book.
- Jan. 2015: The guideline (both Vietnamese and English version) was distributed to the participants in the final workshop.

1-7: Gather and input data in NBDS

The following data related to biodiversity in Vietnam were gathered and were input into NBDS during the project period.

1) Vietnam Red list 2007 (IEBR)
2) Vietnam Red data book 2007 (IEBR)
3) Flora of Vietnam, Fauna of Vietnam (IEBR)
4) Vietnam Red data book 2003 (CEM)
5) Data from 2 baseline surveys and 2 monitoring surveys in XTNP

The list of all data input into NBDS is shown in Appendix 8. The JICA expert team has employed a data entry supporting staff in order to input secondary data (almanac of flora and fauna in Vietnam) for the NBDS.

1-8: Modify NBDS architecture based on experiences from the pilot survey.

After the preview version of NBDS has been developed in November 2012, the project team had close discussions with local consultant team who has implemented the pilot survey at XTNP. Based on the discussions, the project team has continuously updated the data format for the survey in order to better represent the most comprehensive and versatile data format for the wetland survey in Vietnam. Through 4 times of pilot surveys, NBDS has modified and improved its data format (in Microsoft Excel format for easier data entry) and its importing functionality into NBDS. The system architecture of NBDS has also been updated and optimized in order to accommodate those changes in data format. In November 2014, the final version of data format was completed, and NBDS architecture has been finalized in the form of System Architecture document.

1-9: Submit the final draft Architecture of NBDS to MONRE.

The draft System Architecture of NBDS was printed and submitted to MONRE in January 2015.

2-1: Identify key database holders (including international organizations)

The project team has compiled the list of relevant organizations in Vietnam which hold existing data related to biodiversity. The project team has also included questions related to the existing databases into capacity assessment survey (See 5-3) in order to identify as many database holders as possible. The project team also utilized the previous effort of elaborating biodiversity-related databases such as the report from CRES[2].

2-2: Assess the data availability, formats and capacity for data sharing and database management

Based on the elaborated list of database holders, the expert team and BCA have selected the important organizations in order to visit and hold discussions. The list of organizations visited in the project period is shown in Appendix 10. The summary of the result of the visit and discussion with the following organization is also shown in Appendix. 10.

1) IEBR (Institute of Ecology and Biological Resources), VAST
2) MOST (Ministry of Science and Technology)
3) MARD (Ministry of Agriculture and Rural Development)
4) CRES (Centre for Natural Resources and Environmental Studies) , VNU

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

5) The World Bank
6) Institute of Oceanography (VNIO - Nha Trang)
7) Center for Biodiversity and Development (CBD), Institute of Tropical Biology (ITB – Ho Chi Minh City)
8) Can Tho University (CTU – Can Tho)
9) Nong Lam University (NLU – Ho Chi Minh City)
10) Forest Inventory and Planning Institute (FIPI)
11) General Statistical Office (GSO)
12) International conference at VNIO
13) GIZ (FORMIS project)
14) UNESCO MAB program office (Hanoi National University of Education)
15) FORMIS project
16) FSIV (Vietnam Academy of Forest Science)
17) National University of Hanoi – Herbarium (HNUH)

2-3: Draft documents of the mechanism for collaboration with existing database holders in sharing, managing, exploiting and utilizing data and information of NBDS.

Based on the result of mid-term review, a draft legal document for collaboration mechanism in the form of MONRE circular has been added as one of the project outputs. This document should clarify the mechanism, responsibility, required budget and human resource for the data sharing among key data holders.

- Jul. 2012: The core group in charge of this legal document was established with no Japanese expert member since there is no relevant expert in JICA expert team though the experts have been providing technical advices for the mechanism and data format of data sharing.
- During 2012~2013: The development of draft legal document has been very active with participation from stakeholders such as MARD.
- 13 Nov. 2014: Implemented workshop in Quang Binh province for presenting and getting comments from central region provinces.
- 10 Dec. 2014: Implemented workshop in Hanoi for presenting and getting comments from northern region provinces.
- 27 Dec. 2014: The final draft was completed and was submitted to MONRE. The circular was then been circulated to all stakeholders for final comments and shown on the MONRE Web site for public comments.
- End of Mar. 2015: More than 100 comments were received, and BCA was synthesizing all these comments for possible amendments of the circular.
- Apr. 2015: The completed circular was submitted to VEA through Legal Department. It is already on the official list of planned circular of MONRE in 2015.

3-1: Identify biodiversity indicators of Xuan Thuy National Park, Nam Dinh Province

At the same time as national-level biodiversity monitoring indicators, the project team also developed the indicators for XTNP.

- 15 Sep. 2012: In TWG3 meeting, the project team continued the active discussion from TWG2 where participants agreed to follow the CBD guideline for determining BD indicators by clarifying management objectives of biodiversity and their corresponding indicators. At the end of the meeting, the project has created the draft indicator matrix for XTNP. In order to make the matrix reflecting the realistic needs in XTNP, the team has visited XTNP on September 24-25th, 2012 for detailed discussion with local experts who have experiences in doing research or survey there.
- 10 Oct. 2012: In TWG4 meeting, all participants basically agreed on the content of proposed biodiversity indicators for XTNP. Though there were some opinions that further discussion is needed to hear from broader opinions from all over the country, the project team has decided to utilize the final version agreed in TWG4 for the first pilot survey at XTNP.
- 9 Jul. 2014: Following the criteria of the Guideline for Biodiversity Indicator Development and Utilization and taking into account the testing activities of indicators during the field monitoring activities, the final set of indicators for the ecosystems in XTNP was submitted to BCA for the approval from the Vietnamese side.

3-2: Develop data format of the pilot database for Nam Dinh Province

Based on the discussion in TWG meetings, the expert team has decided to develop data format of pilot database for Nam Dinh province by using GBIF international standard together with possible user-defined data for Nam Dinh. The data format has been approved in the TWG2 meeting.

Based on the result of 4 pilot surveys at XTNP, NBDS has modified and improved the data format (both in Microsoft Excel format for data entry, and in the core NBDS) for better coverage of biodiversity indicators.

3-3: Identify data of the pilot database for Nam Dinh Province.

The project team has elaborated the list of data that should be stored in the database and the data format in several TWG meetings and the meeting at XTNP. We have concluded the list of data during the preparation of field survey with local consultant.

Prior to the 2nd and later pilot surveys in XTNP, the project team and the local consultant team has always discussed and elaborated the expanded and updated data format to be used in the pilot survey. Therefore, newer data format was always used in each survey.

3-4: Develop procedure for data collection, compilation, and monitoring for the pilot survey in Xuan Thuy National Park.

After the contract was signed with the local consultant, the preparation for field survey in XTNP has started. In this survey, the target survey area is located at the mouth of the Red River which changes its shape annually by sediment. So the project team concluded that the latest satellite image and detailed map of XTNP are required for the survey. The project team has visited NARENCA[3] and NRSC[4] to discuss the availability of those images and maps. As a result, it was possible to order the latest satellite image and 1:5000 map of XTNP based on 2010 information. These have not been included in the initial list of equipment, but we acknowledged their importance and requested JICA for additional procurement. The project and the local consultant have prepared all necessary equipment and procedures for the survey, including the procedure for data collection and entry to NBDS prior to each pilot survey as follows.

1) Interview and discussion with research institutes for the survey procedure

The expert team did through research on the past survey done at XTNP, and made visits to relevant institutions / researchers in order to obtain further information as follows.

Table-11 List of interviews and discussions for survey procedure

Institution	Met with	Discussion Content
IET (Institute of Environmental Technology), VAST	Assoc.Prof.Dr. Nguyen Thi Phuong Thao (Head of Department of Environment Toxicity)	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.
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.

[3] Viet Nam Publishing House of Natural Resources, Environment and Cartography
[4] National Remote Sensing Center

2) Preliminary survey at XTNP

The project team has initially planned to implement the first pilot survey in May 2012, but there was no time to prepare for the survey including the selection and bidding procedure of local consultant. The project team thus rescheduled the first pilot survey in December 2012. However, the project team considered that it is better to implement preliminary survey by JICA expert team before implementing the real survey in order to collect information for preparing the real survey in December 2012. The table below shows the list of preliminary surveys implemented in the project.

Table-12 List of preliminary surveys

Date	Expert	Survey Content
May 21 to June 8, 2012	Haneji	• 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
June 11 to 18, 2012	Kogure Haneji	• Survey of outer area of XTNP which is near to the ocean • Capacity assessment and discussions with local organizations in Nam Dinh province
July 11 to 13, 2012	Kogure Ono Otsuka	• 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

3) Creating a field survey plan in Xuan Thuy National Park

After the contract with local consultant team was signed, the team has created detailed plan for the pilot survey that describes procedures for data collection, compilation and monitoring based on the result of interviews, preliminary surveys, and discussions in TWG meetings.

3-5: Carry out basic survey and biodiversity monitoring at Xuan Thuy National Park in Nam Dinh Province.

The project has implemented 4 times of field surveys at XTNP. According to the initial plan, only 2 times of surveys were planned. But based on the discussion in mid-term review, the project team has acknowledged the importance of regular monitoring survey by means of selected species and indicators. As a consequence, the project team has changed the plan to implement 2 baseline surveys and 2 monitoring surveys in the summer and winter.

A baseline survey is a large scale biodiversity survey to elaborate all major species and possible indicators in the survey area. On the other hand, a monitoring survey should choose few target species (keystone species) and important indicators from result of baseline survey, and implement the survey on these selected items. The monitoring survey is intended to monitor and track the change and trend in biodiversity on regular basis.

The pilot surveys have been implemented according to following steps.

1) Selection of local consultant for pilot survey

The project has done bidding for the local consultant who implements the pilot survey in XTNP. Since there are so many technical requirements for the survey content, among 6 local consultants we invited for the bidding, only 1 consultant submitted the proposal, and after a few days of delay, additional 2 more consultants have submitted their proposals. The project team has investigated and evaluated the proposals from these 3 consultants, but none of them met criteria based on our TOR. The project discussed the possibility to implement another bidding by eased TOR, but finally decided to give some more time for consultants to improve their proposal. After the additional improvement, only 1 consultant could pass our criteria so we decided to choose the consultant. After we made the contract, the project has started preparation for the survey at XTNP.

2) Implementation of the baseline survey at XTNP

The surveys were carried out by specific groups according to the expertise of each researcher such as the followings.

- Aquatic macro invertebrates (Including benthic aquatic insects), Shellfish
- Fish
- Water and soil quality
- Mangroves and other vegetation
- Birds
- Reptiles, Amphibians, Terrestrial mammals
- Terrestrial insects
- Ecosystem in general (including GIS)
- Socioeconomics

As a result of the first baseline survey in December 2012, the project has obtained a large number of survey data including 73 species of plants, 80 species of invertebrates, 70 species of birds, and 80 species of fishes.

The 2nd baseline survey was conducted in July 2013 mainly for two purposes. (1) To conduct a representative survey for summer season in order to complement the field survey conducted in winter season in mid of December 2012. (2) Provision of relevant data and information required for the selection and monitoring activities inherent to biodiversity indicators for the monitoring of ecosystems of XTNP. The result of the survey includes 118 species of plants, 358 species of macro invertebrates, 29 species of fishes, 28 species of reptiles-amphibians, 47 species of birds.

The detail of these survey results are described in the final reports of the survey.

3) Training for the procedures of monitoring survey

In order for the sustainability of the monitoring survey which should be implemented on regular basis, the project has implemented a training on how to perform the monitoring activities on December 3rd, 2013 to the staffs of XTNP who would be the persons in charge of the regular monitoring after the termination of the project.

4) Implementation of the monitoring survey at XTNP

The 1st monitoring survey was conducted in XTNP in December 2013. This survey was based on the result of previous 2 surveys, and was conducted mainly for monitoring the pre-defined target species and measurements based on the draft biodiversity monitoring indicators for XTNP, which has been elaborated by biodiversity monitoring indicator Core Group. The final report of the 1st monitoring survey has been submitted in February 2014, and the acquired data of the survey has been input into NBDS.

The 2nd monitoring survey was conducted in XTNP in June 2014. The final report of the 2nd monitoring survey has been completed in September 2014, and the acquired data of the survey has been input into NBDS.

3-6: Compile data collected from basic survey.

In all 4 pilot surveys in XTNP, the raw data was input into pre-formatted Excel sheet by the local consultant. The data was then compiled and checked by JICA experts for quality assurance and screening.

3-7: Input gathered data to the pilot database.

The compiled and checked data was then imported into NBDS manually by JICA experts. These procedures and techniques were transferred to local consultants and C/Ps especially the data importing procedures into NBDS (See 4-1).

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.

This guideline has been under development by the local consultant based on the experiences in pilot survey at Xuan Thuy national park. The first draft of the document was presented in the workshop held in June 13th 2014, and was used as training material in the workshops of June 18-25, 2014. The document was revised reflecting the learnt lessons in its application for the monitoring activities conducted in Xuan Thuy National Park in June 2014 and with the comments received in each event.

The guideline was completed in December 2014, and then was translated into English. Both Vietnamese and English version of the guideline were published as books and were distributed to the participants of final workshop.

4-1: Provide trainings on database management and utilization, and basic survey to staff of related ministries and agencies

The project team has implemented trainings on several different topics including biodiversity indicators, system architecture of NBDS, data import and management, etc. The list of all technology transfers implemented in the project is shown in Appendix 14 (1).

4-2: Prepare Administrator's manual and User's manual on 1st generation of NBDS.

The final draft of manuals for administrators and users of the first generation of NBDS have been completed and were translated into Vietnamese in October 2014 before the project implemented trainings on the usage of NBDS both for administrators and users.

These manuals were then updated according to the additional development of NBDS Web site and were finalized before the closing of the project.

4-3: Develop sample materials for reporting and publication based on the data collected in Xuan Thuy National Park.

Based on the recommendation of mid-term review, the project started to develop a material for the promotion and utilization of NBDS called "Awareness Raising Material" (ARM) targeted to the potential users of NBDS. After several discussions in the project team as well as in the technical seminar for this purpose on October 22nd 2014, the project team has completed the development of Awareness Raising Materials including the leaflet for target users and more detailed booklet for technical applications of data stored in NBDS.

4-4: Conduct workshop / seminar to introduce NBDS to policy makers, and central / provincial officers concerned.

The project has implemented the final workshops on January 20th 2015 at Ho Chi Minh City and on January 27th 2015 at Hanoi in order to introduce the official launch of the first generation of NBDS.

5-1: Prepare and implement equipment procurement

Based on the project plan and the result of discussions with C/Ps, the project has procured necessary equipment for the project implementation. The list of procured equipment is shown in the Appendix 6.

Based on the discussion with C/P, the project has decided to setup NBDS servers at ITC data center in VEA (MONRE) building. Based on the discussion with ITC, the project needed to modify the equipment specification according to the MONRE's regulation. Though it did not affect much on the equipment budget, the procurement had delayed for several months due to delay in delivery by suppliers. Most of the equipment for field survey at XTNP has been delivered relatively smoothly before the beginning of the first survey.

Equipment to be installed at ITC data center has been first installed at project office for development, testing and setting up of NBDS. After that, the servers have been successfully setup in ITC data center in February 2013. All other computer equipment has also been installed at C/Ps offices (both in BCA and DONRE Nam Dinh) and handed over to them in February 2013.

At the end of the project, all equipment were successfully handed over to the C/P.

5-2: Prepare and implement training in Japan and the third country

The project has implemented 3 trainings in Japan and in Malaysia during the project period as shown in the table below.

Table-13 List of trainings in Japan and the third country

No.	Date	Target personnel	Objectives of the training
1	May 27 to June 2, 2012	Managers from JCC member ministries and organizations	• Introduce biodiversity-related organizations and facilities in Japan • Promote and encourage collaboration on the biodiversity data sharing among related organizations
2	August 19 to September 1, 2012	Researchers and officials in charge of biodiversity conservation	• Acquire know-hows of biodiversity conservation activities in Japan to be applied in Vietnam • Acquire working examples of biodiversity-related policies and activities in Japan
		IT engineers in charge of NBDS administration	• Acquire technical knowledge and skill in administrating Web-based database systems • Acquire working examples of biodiversity-related policies and activities in Japan
3	October 27 to November 9, 2013	Researchers and officials in charge of biodiversity survey and monitoring	• Acquire know-hows of biodiversity monitoring and related database administration from the experiences in Japan and Malaysia • Acquire knowledge and skill for planning biodiversity monitoring survey on regular basis

The schedule of each training is shown in Appendix 5. Below are the summary of result of these trainings.

1) Training in Japan for managers of the project in May 2012

This training has been implemented in order to promote collaboration mechanism among related ministries and organizations related to biodiversity information in Vietnam by learning the examples and experiences in Japan. The time for discussion among participants were also

allocated for discussing collaboration mechanism and action plan for the project implementation. The main points of the discussion during the training were as follows.

- For the collaboration mechanism among related ministries and organizations, BCA pointed out that there must be some form of legal framework such as decree or circular in order to authorize the collaboration mechanism. BCA will create the draft of such legal framework with cooperation from JICA experts. JICA might also consider dispatching individual expert in the field of legal framework. It was expected that such legal framework would be proposed to the Vietnam government during the 2nd stage of this project (2013-2015).
- As for the biodiversity data sharing among related organizations, it is also necessary to have the same legal framework to guarantee regular data sharing for long term. For the time being, the project needs the data sharing for NBDS during the 1st stage of project, and the BCA will have to individually request related organizations for sharing necessary data. Mr. Tran The Lien (MARD) suggested that we should first finalize data structure of NBDS so that we will know what kind of data should be stored in NBDS from which organization. All participants agreed with his suggestion. Mr. Nguyen The Dong (BCA) suggested that JICA experts should take initiative for such design for data structure, and then propose it in TWG Meeting for comments and suggestions.
- The data structure of NBDS should be compatible with international standards such as GBIF, and should also be compatible with existing data in Vietnam.
- In order to clarify which organization has what kind of data, the project should accelerate the visits to all important related organizations that have biodiversity-related data in order to obtain information on their data structure. The project has already made a list of such organizations, and BCA will support JICA team in sending official letter to those organizations for the visit. BCA staff should also accompany JICA experts as much as possible.
- As for the participatory survey and monitoring which have been quite successful in Japan (such as "Ikimono Mikke[5]" project, "Inochi no Nigiwai Chosadan[6]", and "Fish image database[7]"), many participants said that it is too early to do similar projects in Vietnam. It might be possible to promote such voluntary activities in schools just like in Japan.

2) Training in Japan for C/P of the Project in August 2013

The project implemented the C/P training in Japan from August 19th to September 1st, 2012. In this training, we have divided the training into 2 groups according to the technical fields of

5 http://www.mikke.go.jp/
6 http://www.bdcchiba.jp/monitor/
7 http://fishpix.kahaku.go.jp/fishimage/index.html

target C/P based on the same grouping in TWG. The training has been implemented as 2 different courses as “Biodiversity Conservation” and “Biodiversity database maintenance and administration”. Both courses had different content in the 1st week but had the same content in the 2nd week.

The biodiversity conservation course has schedule to go to Iriomote Island for the practical training of biodiversity conservation. But due to the approaching typhoon, we had to shorten the training and went back to Tokyo. Participants however could gain knowledge on the biodiversity conservation in Japan from the alternative content (Ibaraki Nature Museum, etc.).

The biodiversity database maintenance and administration course did training on PostgreSQL in both Kyoto Computer Gakuin and Orkney, Inc. Thanks to the preliminary technology transfer done before going to Japan, all participants could gain technical skill well on the software.

At the end of training, all participants of 2 courses joined together to discuss the action plan. The training courses have been successfully completed with satisfactory result.

3) Training in Malaysia and Japan for C/P of the Project in October 2014

Based on the result of mid-term review, additional training for counterpart staffs was implemented in late October 2013 that includes not only the training in Japan but also in Malaysia where another JICA project (BBEC/SDBEC) was conducting cooperation in biodiversity field including biodiversity database.

In Malaysia, participants learned successful example of biodiversity conservation activities such as the high level of awareness and active involvement of local community and well-maintained research facilities and databases. In Japan, participants also learned continuous and regular biodiversity monitoring activities which is a key issue in Vietnam after the project implementation.

5-3: Perform capacity assessment of biodiversity sector in Vietnam

During the preliminary survey at XTNP, the JICA expert team visited and discussed with the following related departments in Nam Dinh province as well as in XTNP for capacity assessment and for determining existing information regarding biodiversity monitoring.

- Department of Agriculture and Rural Development (DARD)
- Department of Science and Technology (DOST)
- Department of Industry and Trade (DIT)
- Xuan Thuy national park office

In TWG3 meeting, the project have decided to implement a questionnaire survey on the current situation (human resource, surveys, and existing data) of biodiversity monitoring in other related

organizations. The project has sent more than 300 questionnaires in the end of October 2012, and have received about 140 answers as of December 31. Answers of the questionnaire (mostly in papers) have then been input into PC, translated into English, and then were analyzed by the project team. The result of analysis was presented at TWG6 meeting and the 1st Technical Workshop. Most of the answers were from DONRE, DARD, DOST, and Protected Areas. Major findings from the assessment are as follows.

- In rural areas, institution which is responsible for biodiversity has not been clearly defined.
- They mainly have data for terrestrial plants (probably forest) only.
- Mainly DONRE or PA is doing the biodiversity monitoring
- Majority of monitoring is done for natural forest ecosystem, followed by freshwater ecosystem and agro-ecosystem.
- Major taxa / objects that are being monitored includes terrestrial plants, mammals, birds, reptiles, and amphibians.
- Major source of budget for the monitoring is local governments
- 65% of organizations answered that all data can be shared, and more than half of them replied that it could be free of charge.
- As for the format of data sharing, 45% answered as hard copy (printed materials). For digital data, Microsoft Word / Excel were the most common formats.

R-1: Create progress reports and report to JICA

The project team and the supporting team in Japan have reported on the current progress and issues of the project to JICA through 6 progress reports (PRGR1 to PRGR6) during the project implementation period. The report on the progress of activities after the PRGR6 (September 2014 to March 2015) was incorporated into this final report.

R-2: Create the First Stage Work Completion Report and report to JICA and related parties

The first stage work completion report was created in the form of Progress Report No. 3 at the end of the first stage of the project (Mar. 2013).

R-3: Preparation of the Project Completion Report (Final Report)

The report (this document) was created in May 2015 after the termination of project activities in Vietnam.

R-4: Create Self-Evaluation Report

The project team and the supporting team in Japan have created self-evaluation report for Mid-term review (May 2013) and for Terminal evaluation (July 2014).

3. Achievement Status of Project Purpose

(1) Achievement Status of Project Output

Output 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.

The specification of data format, software, and hardware of NBDS has been fully identified and concluded through series of technical discussions in TWG meetings. As a result, the required hardware and software have been procured and installed within the project period. List of procured equipment is shown in Appendix 6. The type of software is described in administrator's manual in Appendix 14 (13).

1.2 The proposed architecture for NBDS based on the available information/ condition is submitted to MONRE.

The proposed architecture for NBDS based on the available information and conditions including the required data structure of NBDS have also been fully identified through the TWG meetings, Core Group meetings, and Technical workshops. The full architecture for NBDS have then been compiled as the form of 3 output documents as shown below. All these documents have been completed within the project period.

- Final draft of Research Proposal for Establishing and Developing the NBDS (Master Scheme) – Appendix 14 (8)
- System Architecture for the NBDS – Appendix 14 (9)
- Guideline for Biodiversity Indicator Development and Utilization – Appendix 14 (10)

Therefore, Output 1 of the project has been fully achieved.

Output 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.

The project has conducted capacity assessment survey as well as visiting interviews with many related agencies and organizations in order to assess the existing data and formats related to biodiversity information in Vietnam. The assessment report on related organizations are shown in Appendix 10 and 11. The collaboration mechanism in order to share those existing data and formats has also been discussed among all related agencies including MONRE, MARD, MOST, VAST and Nam Dinh province through TWG meetings, Core Group meetings, and Workshops.

2.2 Recommendations as a draft legal document are prepared.

Based on the result of these surveys, interviews, and discussions, the project has formed a Core Group for drafting a legal document for collaboration mechanism among the related agencies and organizations in order to officially share biodiversity information in Vietnam on regular basis. The Core Group has completed the final draft of MONRE circular for this purpose and has submitted to MONRE within the project period. The completed draft legal document is shown in Appendix 14 (12).

Therefore, Output 2 is achieved and expected to be fully achieved once the circular is officially promulgated and is taken into effect.

Output 3. A database for Nam Dinh Province is developed as a part of NBDS.

Based on TWG meetings and workshops, the project has developed the biodiversity database for Nam Dinh province as a part of NBDS.

3.1 The entry of data of pilot survey in Xuan Thuy National Park into NBDS is completed.

The project has conducted 4 biodiversity surveys in total in Xuan Thuy national park in Nam Dinh province. All data acquired in these surveys has been input into NBDS.

3.2 The pilot database for Nam Dinh Province is ready to be regularly updated.

The project has created Administrator's manual and User's manual of NBDS as shown in Appendix 14 (13) and (14).

3.3 Technical Guideline for basic survey and monitoring of coastal wetlands is completed.

The survey methodology and experience in pilot surveys have been compiled as the "Technical Guideline for Basic Survey and Monitoring of Coastal Wetlands" shown in Appendix 14 (11).

3.4 The staff of DONRE is trained to use and maintain the database for Nam Dinh Province.

The staff of DONRE / DARD Nam Dinh province and Xuan Thuy National Park has been trained to use and maintain the database for Nam Dinh province. The record of training is shown in Appendix 14 (1).

Therefore, Output 3 of the project has been fully achieved.

Output 4. Capacity on management and awareness of utilization of NBDS are strengthened.

4.1 BCA/ VEA/ DONRE staff gained skills to manage NBDS.

The project has conducted series of technology transfer trainings and seminars for development, management, and usage of NBDS to BCA/VEA/DONRE staffs. The record and result of these trainings are shown in Appendix 14 (1).

4.2 Manual for management and utilization of 1st generation NBDS is developed.

The project has developed the operation manuals for both NBDS users and administrators and these manuals were used in the above trainings. As a result, these staffs have acquired enough technical knowledge and skill in order to administer and maintain NBDS. These manuals are shown in Appendix 14 (13) and (14).

4.3 Awareness raising workshops are conducted.

The project has developed a material for awareness raising on the utilization of NBDS in order to promote the awareness and utilization of NBDS for all potential users of NBDS. The developed awareness raising material is shown in Appendix 14 (6). The project has also conducted a technical seminar for the awareness raising on 22 Oct. 2014. The completed awareness raising materials are distributed to all participants of final workshops both in Ho Chi Minh City and Hanoi. Number of participants in these workshops are shown in Table 10. Number of awareness raising materials distributed in total is more than 165 (No. of participants + invited media reporters, etc.).

Therefore, Output 4 of the project has been fully achieved.

(2) Achievement Status of Project Purpose

1. NBDS Architecture is approved by VEA/ MONRE.

The project has developed full architecture of NBDS including the future generations and improvements in the form of Master Scheme and System Architecture documents.

2. Basic data on fauna and flora, at least all species on Vietnam red list are input into NBDS.

The project has input all data of biodiversity surveys at Xuan Thuy National Park as well as basic data on fauna and flora including Vietnam Red List into the first generation of NBDS (See Appendix 8). These data is ready to be searched and accessed from the NBDS Web site.

3. 1st Generation of NBDS architecture is developed, operated and maintained in VEA/ MONRE.

Based on the above Master Scheme and System Architecture documents, the project has developed working Web system of the first generation of NBDS (http://nbds.vea.gov.vn/)

and has officially launched the Web site for public access. The staffs of BCA/VEA have trained to operate and maintain the system, and have started its operation and maintenance as of the end of March.

Therefore, the project purpose has been fully achieved.

4. Issues and Lessons Learned from the Project Implementation

There have been following issues identified during the implementation of the project.

(1) Insufficient involvement from other key organizations such as MARD

Though the project was continuously inviting representatives from related organizations to TWG meetings, most of the invited participants were just giving comments and suggestions but were not active in actual implementation of project activities. Most of organizations showed the interest and willingness to cooperate with the project, but it has been difficult to officially implement the data sharing and collaboration with them in the project.

In order to overcome this situation, Core Groups were formulated to perform real implementation activities for the project output. The project also developed draft legal document (MONRE circular) by means of CG in order to realize effective collaboration mechanism in official manner.

(2) Heavy delay in Core Group activities and its rescheduling

In order to develop newly added / extended project outputs according to the result of mid-term review, the schedule of Core Group activities has been originally scheduled as shown in Figure-2. This figure indicates that there are complex dependencies between deliverables, and development of some deliverables must wait for other deliverables. So if there is a delay in an activity, all dependent activities must delay accordingly. In fact, the overall schedule of CG activities has been heavily delayed (~ 5 months) as of January 2014. The insufficient technical coordination has been also recognized as the major cause of the delay.

In order to overcome this situation, the project decided to start development of dependent deliverables before the completion of depending deliverables as shown in Figure-3. In order to fill the gap of insufficient technical coordination among CGs, the project has appointed an independent local expert (Prof. Cu, Director of ICARGC[8]) as a technical coordinator to coordinate and facilitate discussions in and among Core Groups. The project has also assigned 2 new Japanese experts on Biodiversity and Policy Advice at the end of December 2013, and dispatched a short-term expert for Biodiversity Monitoring Indicators in order to promote the progress of CG output development.

[8] International Centre for Advanced Research on Global Change (http://www.icargc.edu.vn/)

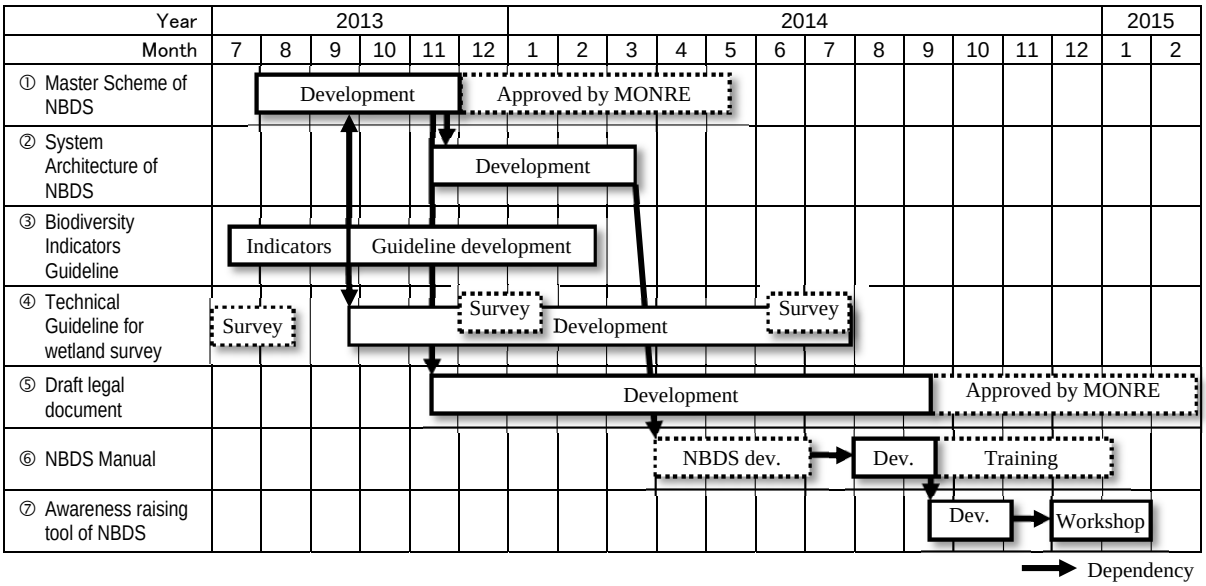


Figure-2 Schedule and dependencies of project outputs (as of September 2013)

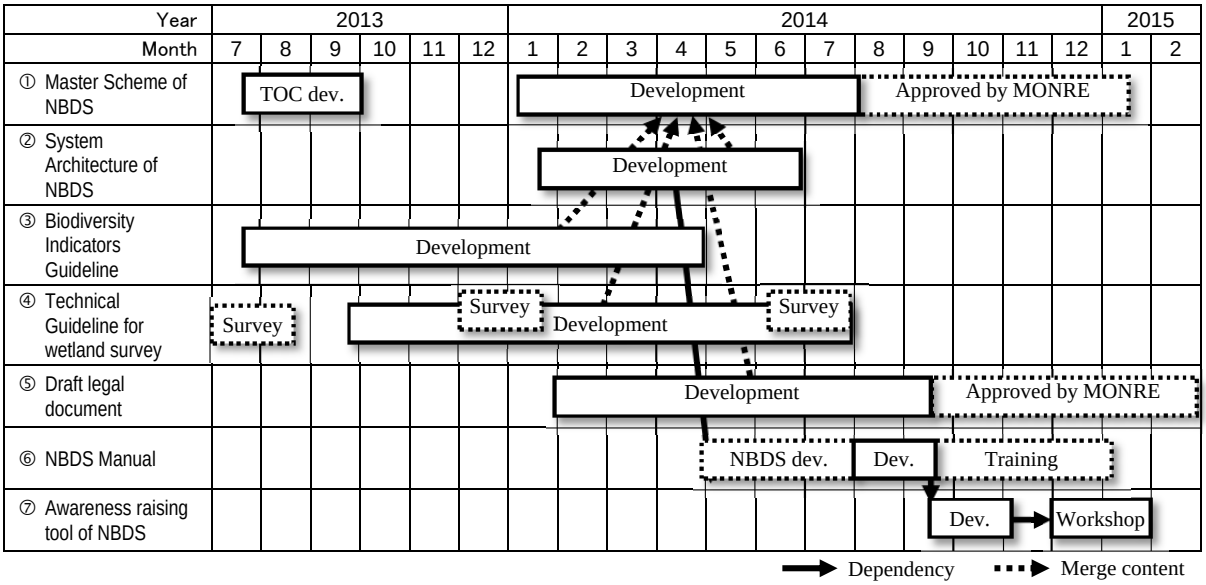


Figure-3 Schedule and dependencies of project outputs (as of January 2014)

Based on the experiences of above issues and countermeasures, there are following lessons learned during the implementation of the project.

(1) Assignment of local experts for authoring the output as official documentation

In order to develop project output to be used for the official documentation in Vietnamese government, it is indispensable to assign Vietnamese local experts not only for the technical advice and consultancy but also for the (more time-consuming) authoring task of the output. Japanese experts can take part in the authoring, but special considerations in Vietnamese context are required in the authoring and only the Vietnamese experts can handle these details in the authoring of the documentation.

(2) Need of technical coordinator for the work of local experts

In order to facilitate the progress of work performed by local experts, it is also needed to assign dedicated technical coordinator because each local expert is essentially involved only in their respective technical fields, and technical coordination and schedule management cannot be performed well by local experts. The technical coordinator can either be Vietnamese or Japanese, but the importance should be given on the enough allocation of such technical coordinator in order to regularly monitor and track the progress of teach local expert's task.

5. Recommendations for achieving overall goal

In order to achieve overall goal of the project, there are following recommendations.

(1) Regular input and update of data in NBDS

It is indispensable for any database system to regularly add and update data. The first generation of NBDS contains only the biodiversity data in Xuan Thuy national park and basic species data, thus new data from other national parks, provinces, and related organizations should be added and regularly updated through collaboration mechanism of data sharing. In this sense, the promulgation of MONRE circular for collaboration mechanism and its application to related organizations are essential for the regular input and update of data stored in NBDS.

(2) Quality assurance of the data in NBDS

One of the most frequently asked questions from the participants during the final workshop as well as from the local experts was how to ensure the quality of data stored in NBDS. Since any qualified NBDS account holders (Managers and Standard users) can upload biodiversity data into NBDS, it is necessary to have mechanism like GBIF data cleaning[9] to ensure that the uploaded data is scientifically correct and has enough quality. Ideally, the administrating agency (BCA/VEA/MONRE) should allocate a dedicated staff to do the quality assurance of uploaded data in NBDS. However, the staff must have expert knowledge and experience of biological taxonomy and other scientific area. It is also still unclear how much and how often the data will be uploaded into NBDS at this time. Therefore, it would be difficult to secure and allocate such expert person on regular basis.

The possible and more realistic recommendation is to delegate the responsibility of quality assurance to the organization / person who upload the data into NBDS. In case any problem on data quality will be found, the organization / person who submitted data should be responsible for amending and correcting data. The administrating agency of NBDS (BCA/VEA/MONRE) should develop a guideline for uploading data onto NBDS including the data quality assurance and should distribute to all potential users and organizations.

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

(3) Utilization of data stored in NBDS

The data stored in NBDS should not only be added and updated regularly, but should also be utilized for the Vietnamese government. The first generation of NBDS supports flexible search function and basic data export function for this purpose. BCA/VEA/MONRE should utilize the data stored in NBDS for their administrative tasks and reports. The future generations of NBDS should also support more reporting and analysis functions for better utilization of data store in NBDS (which is already indicated in the System Architecture document of NBDS).

(4) Allocation of regular budget for the maintenance and administration of NBDS

The working Web system of NBDS required regular maintenance and administration even if no user activities were made because the open Web system is subject to potential attack from hackers from all over the world. In this sense, regular data backup and system maintenance is indispensable for NBDS operation. It is recommended for BCA/VEA/MONRE to allocate regular budget for this purpose. JICA should also consider further technical support for better NBDS utilization.

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	

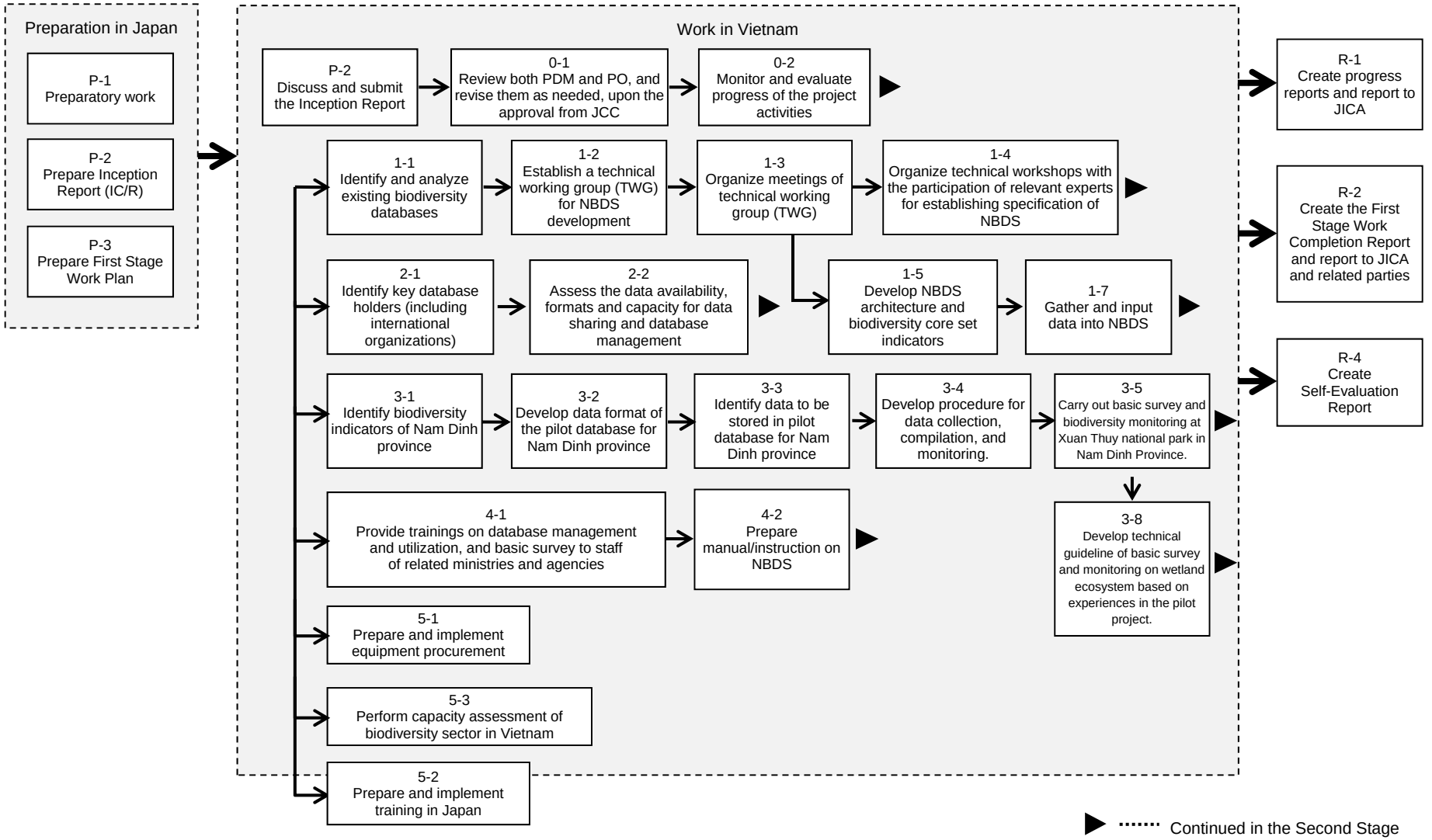
Activities	Inputs		
	Japanese side	**Vietnamese side**	
0-1. Review both PDM and PO, and revise them, as needed, upon the approval from JCC. 0-2. Monitor and evaluate progress of the project activities. 1-1. Identify and analyze existing databases. 1-2. Establish a technical working group for NBDS development 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.			

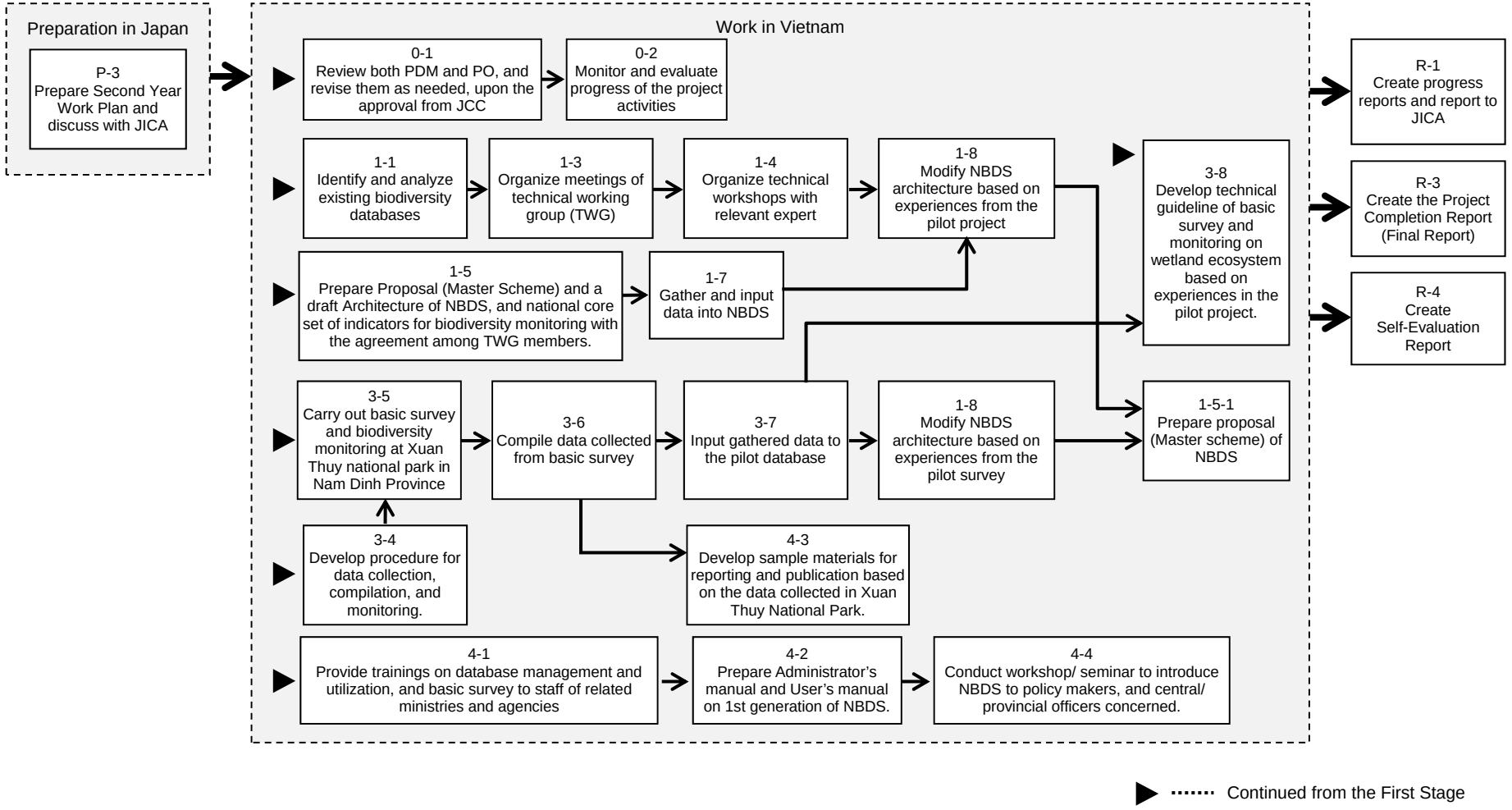
Note 1: Entity Relationship Diagram gives an overview of the structure of NBDS. The print out can be obtained from the project for verification.
Note 2: The acceptance test is to be done jointly done by Japanese Expert Team and BCA with the users.
Note 3: The type of software used can be verified in 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)

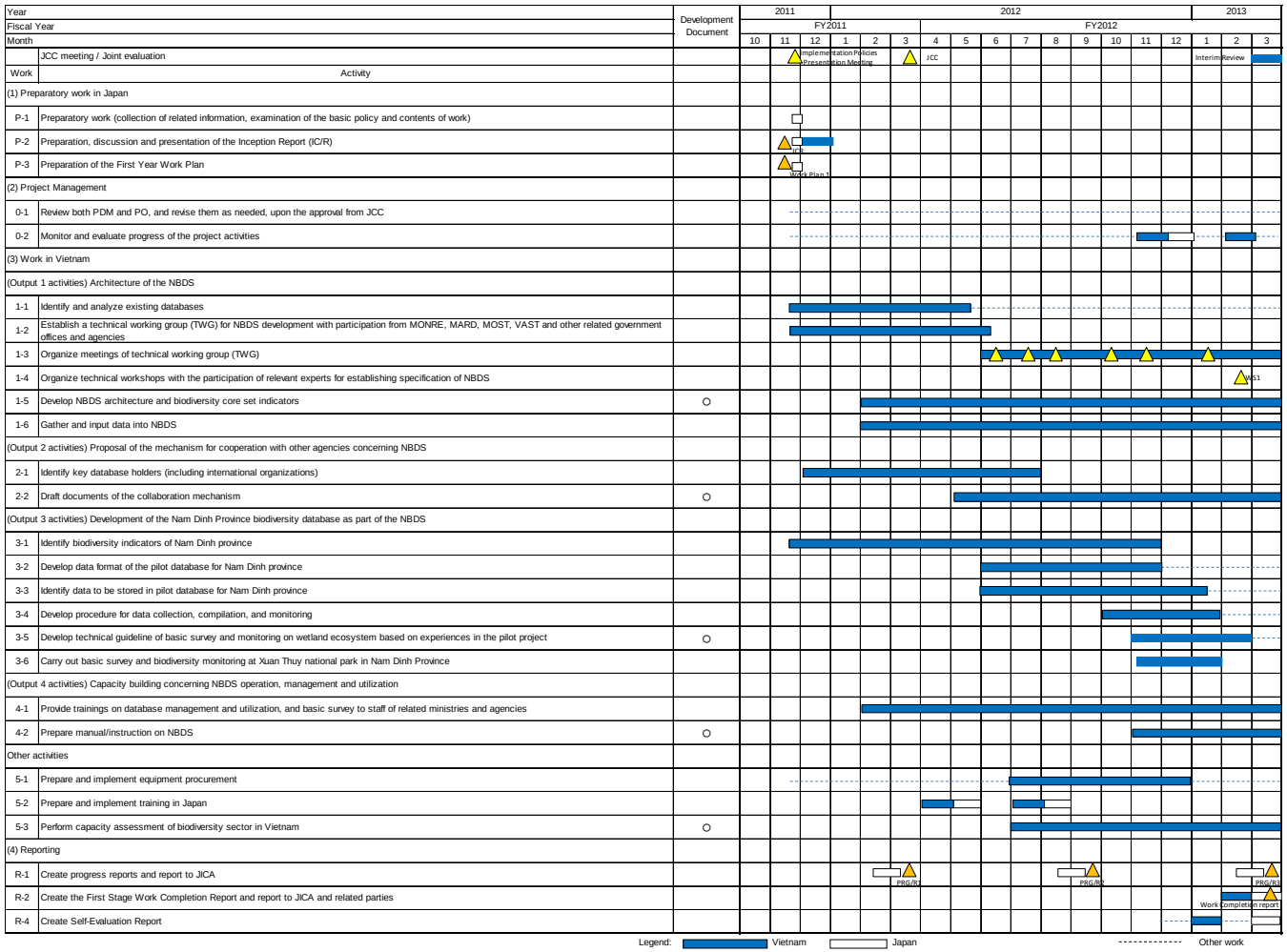


(2) 2nd Stage (April 2013~March 2015)



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:

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

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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: 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. 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	HP QV994AV Compaq Elite 8300 MT	21,640,586	1	21,640,586.0	27 Dec 2012	DONRE, NamDinh/ Đang hoạt động	DONRE, NamDinh
	- 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							

	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:

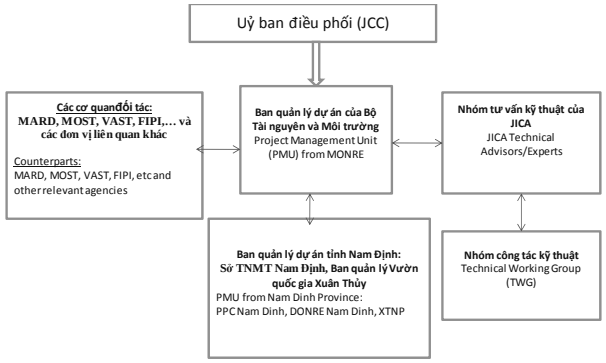
- Funds provided by JICA : 301,320,685 JPY (approximately VND 79,599 million)
- Reciprocal capital of Vietnam (Counterpart funds): VND 10,304 million (converted at the exchange rate inter-bank average: $1 = VND 20,608) in cash and in kind.

- 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)

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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.

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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

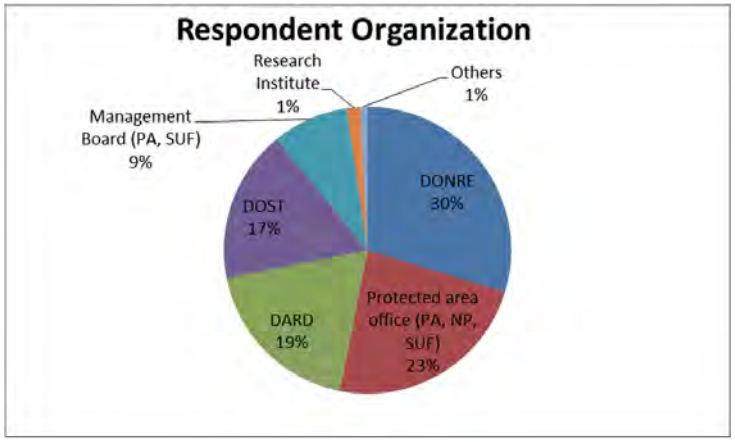


Figure 1 Composition of respondent organizations

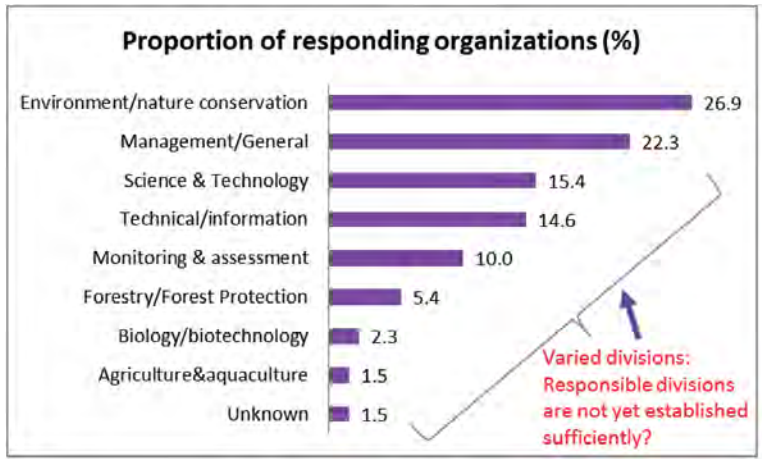


Figure 2 Responsible divisions for biodiversity conservation in the respondent organizations

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.

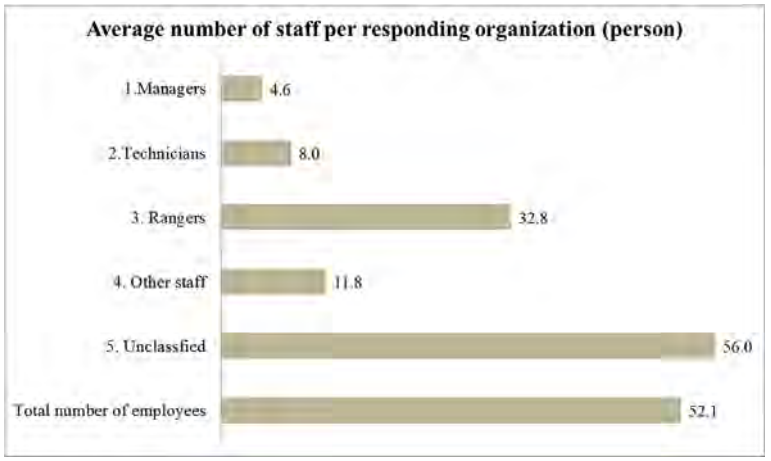


Figure 3 Composition of staff in the respondent organizations

(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.

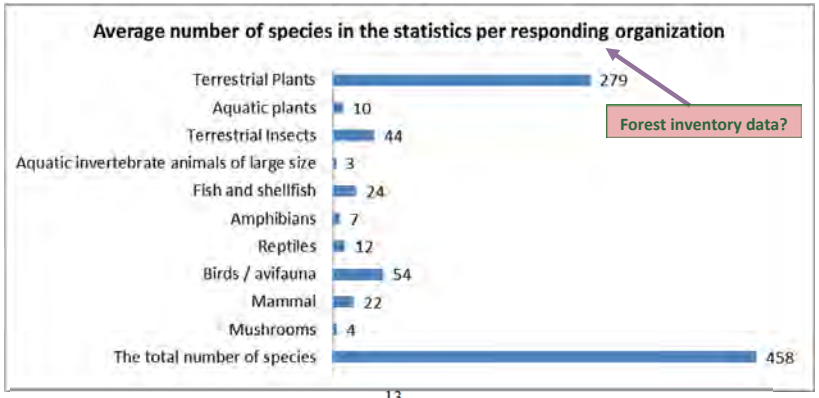


Figure 5 Average number of species in the statistics

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.

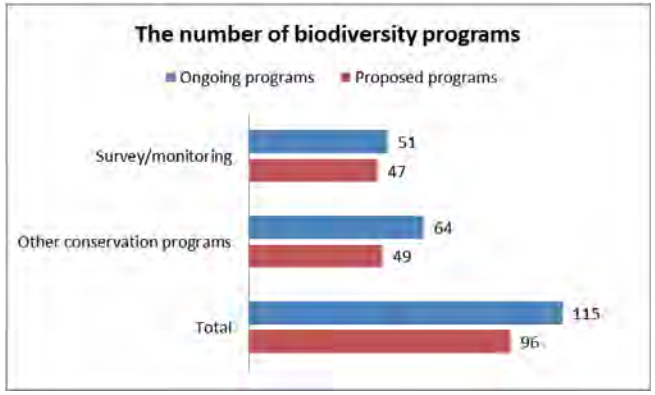


Figure 7 Number of biodiversity-related programs implemented or proposed by respondent organizations

(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.

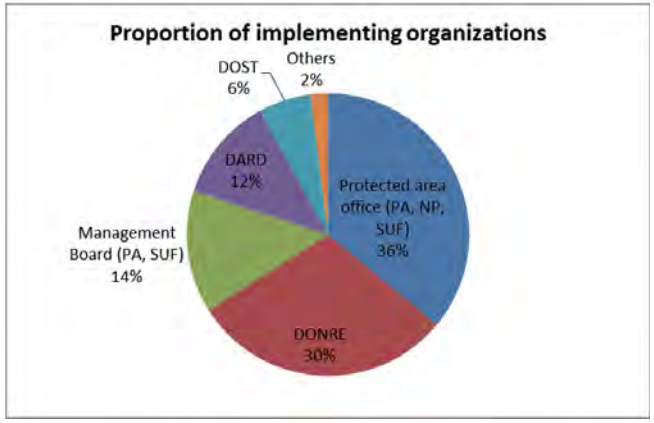


Figure 8 Proportion of respondent organizations that conducted biodiversity monitoring/surveys

(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

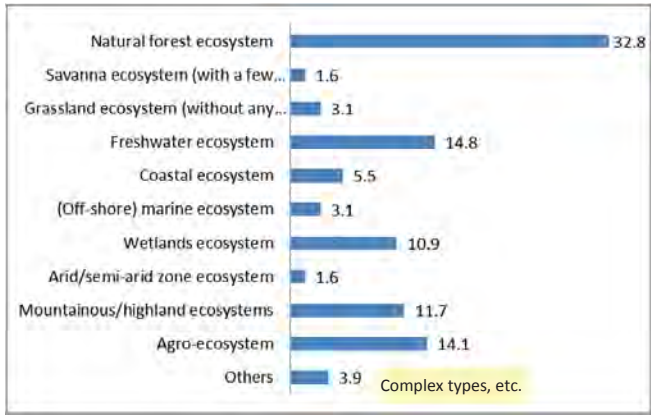


Figure 9 Proportion of respondent organizations that monitored each type of ecosystems (%)

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.

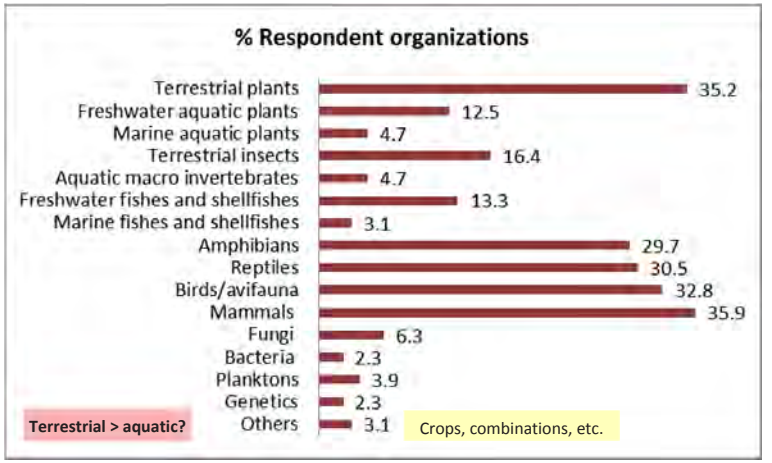


Figure 10 Proportion of respondent organizations that collected other types of data

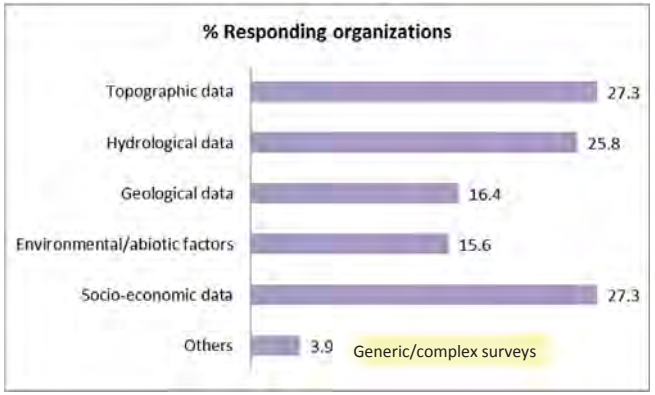


Figure 11 Proportion of respondent organizations that collected other types of data

(5) Target monitoring areas

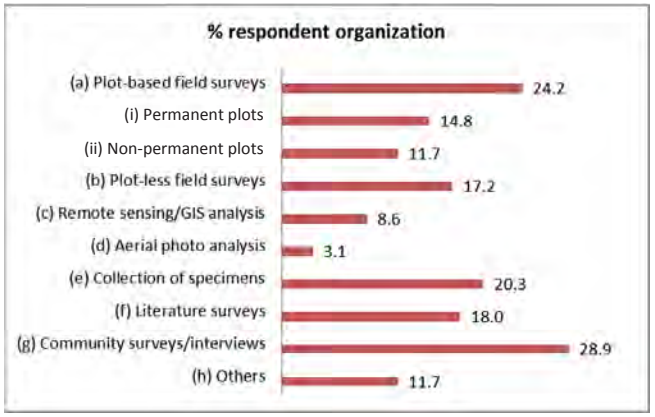
Figure 12 clarifies the breakdown of target areas of monitoring conducted by the respondent organizations that ever implemented biodiversity monitoring. 22 % of the implementing organizations conducted biodiversity monitoring in national park areas, whereas half of the organizations initiated the monitoring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

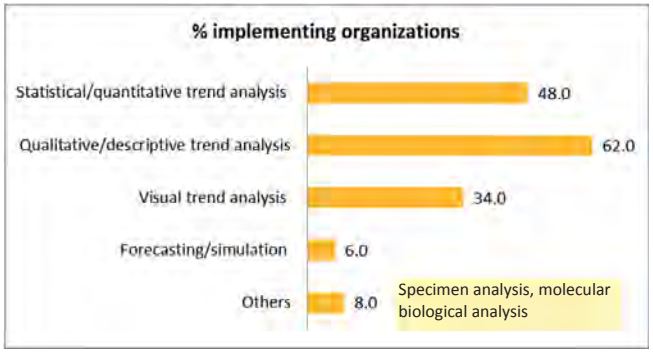


Figure 14 Proportion of implementing organizations that adopted each type of analytical methods

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

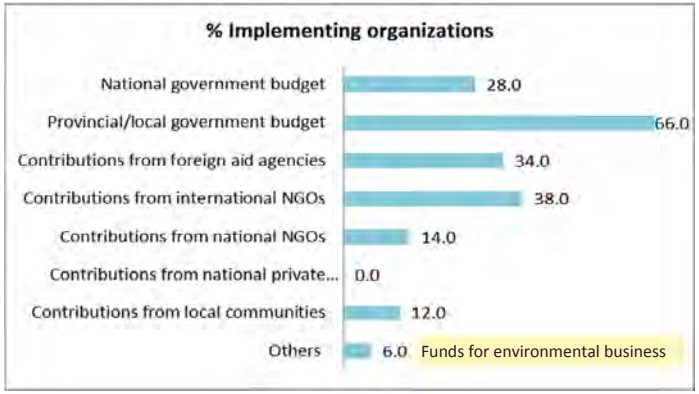
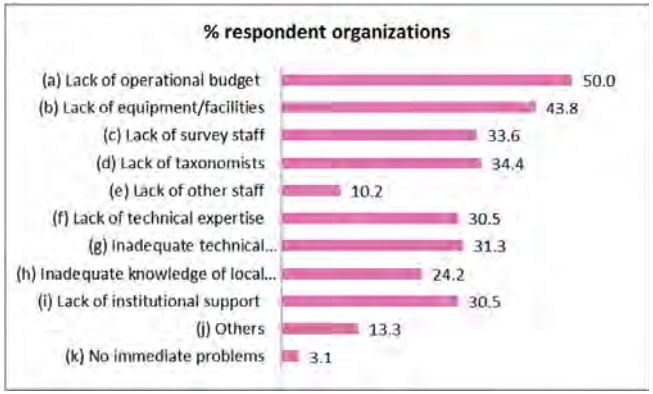


Figure 15 Budgetary sources of biodiversity monitoring

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

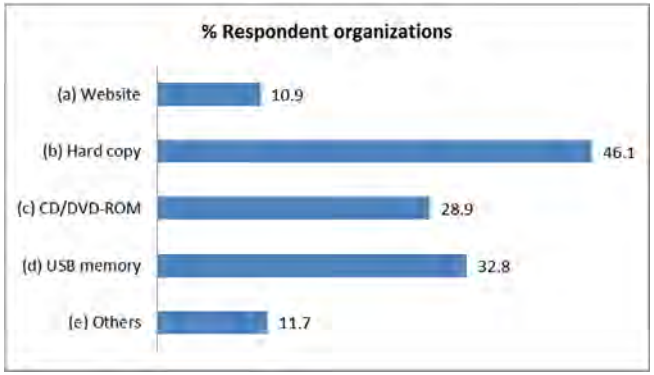


Figure 18 Available data media on biodiversity

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

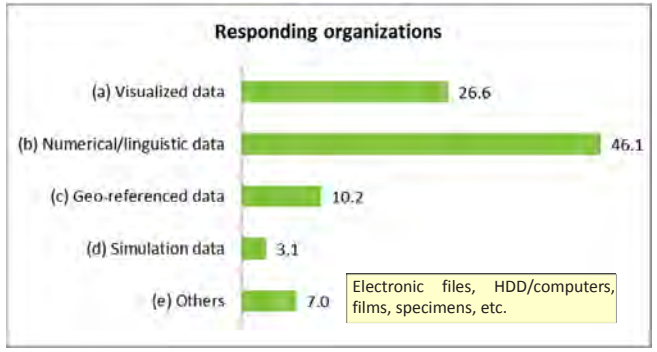


Figure 19 Types of biodiversity data

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.

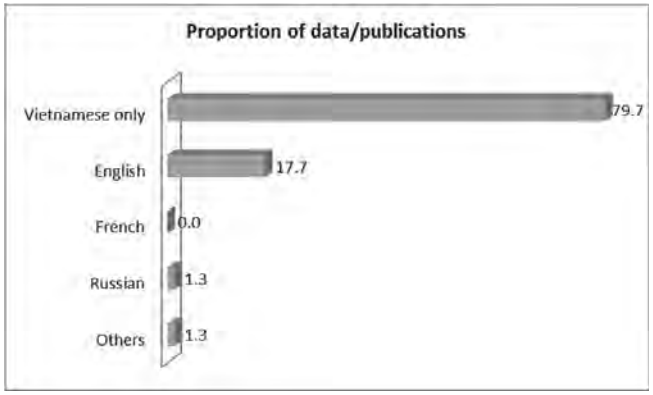


Figure 20 Available languages of data/publications prepared by the respondent organizations

(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

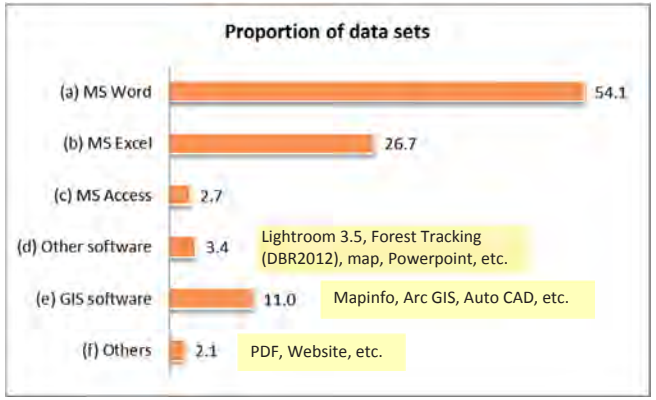


Figure 21 Formats of data sets (used software)

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.

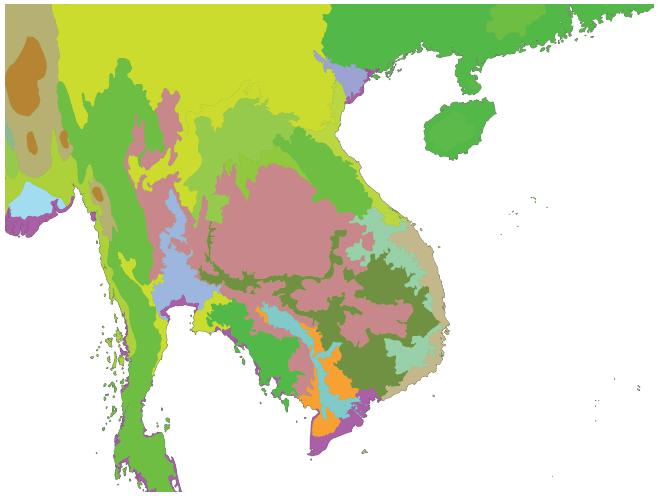


Figure 22 Distribution of eco-regions encompassing Vietnam

(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.

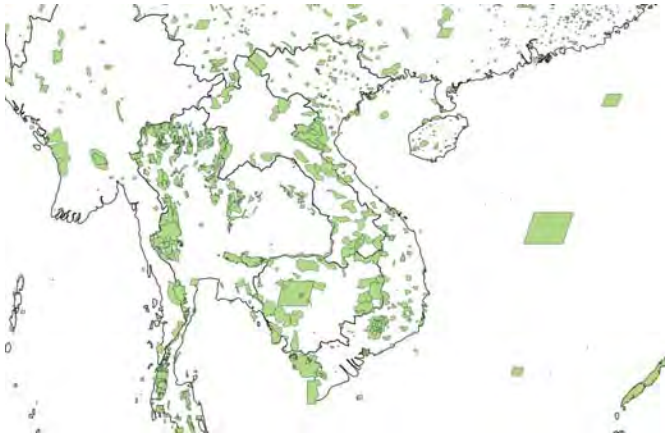


Figure 23 Distribution of conservation areas surrounding Vietnam

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