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Report No: 22053

IMPLEMENTATION COMPLETION REPORT  
(TF-28657)  
ON A  
GRANT  
IN THE AMOUNT OF US\$7.2 MILLION  
TO THE  
REPUBLIC OF INDONESIA  
FOR  
BIODIVERSITY COLLECTIONS PROJECT

09/17/2001

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## CURRENCY EQUIVALENTS

(Exchange Rate Effective )

Currency Unit = Rupiah (Rp)

Rp. 1,000,000 = US\$ 103.82

US\$ 1.00 = Rp.9,632

## FISCAL YEAR

January 1 to December 31

## ABBREVIATIONS AND ACRONYMS

ARCBC	ASEAN Regional Centre for Biological Conservation
BAPPENAS	<i>Badan Perencanaan Pembangunan Nasional</i> (Agency for National Development Planning)
BCP	Biodiversity Collections Project
CGI	Consultative Group for Indonesia
GEF	Global Environmental Facility
GOI	Government of Indonesia
HB	Herbarium Bogoriense
IBIS	Indonesian Biodiversity Information System
ICR	Implementation Completion Report
IT	Information Technology
IMF	International Monetary Fund
IPM	Integrated Pest Management
IST	Information System Team
JICA	Japan International Cooperation Agency
LIPI	<i>Lembaga Ilmu Pengetahuan Indonesia</i> (Indonesian Institute of Sciences)
MS	Management System
MZB	Museum Zoologicum Bogoriense
NBIN	National Biodiversity Information Network
PIU	Project Implementation Unit
PMC	Project Management Committee
PPPB-LIPI	<i>Pusat Penelitian dan Pengembangan Biologi</i> (Research and Development Centre for Biology)-LIPI
PPPO-LIPI	<i>Pusat Penelitian dan Pengembangan Oseanologi</i> (Research and Development Centre for Oceanology)LIPI
TAG	Technical Advisory Group
UAG	User Advisory Group
WB	World Bank

Vice President:	Jemal-ud-din Kassum
Country Manager/Director:	Mark Baird
Sector Manager/Director:	Mark D. Wilson
Task Team Leader/Task Manager:	Dely P. Gapasin

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### INDONESIA BIODIVERSITY COLLECT

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<i>Project ID:</i> P034080	<i>Project Name:</i> BIODIVERSITY COLLECTIONS PROJECT
<i>Team Leader:</i> Dely P. Gapasin	<i>TL Unit:</i> EASRD
<i>ICR Type:</i> Core ICR	<i>Report Date:</i> September 17, 2001

## 1. Project Data

*Name:* BIODIVERSITY COLLECTIONS PROJECT      *L/C/TF Number:* TF-28657  
*Country/Department:* INDONESIA      *Region:* East Asia and Pacific Region  
*Sector/subsector:* VI - Environmental Institutions

### KEY DATES

	<i>Original</i>	<i>Revised/Actual</i>
<i>PCD:</i> 07/01/1992	<i>Effective:</i> 07/25/1994	
<i>Appraisal:</i> 12/01/1993	<i>MTR:</i> 06/09/1997	
<i>Approval:</i> 06/29/1994	<i>Closing:</i> 10/31/2000	03/31/2001

*Borrower/Implementing Agency:* GOI/LIPI  
*Other Partners:* NGOs

STAFF	Current	At Appraisal
<i>Vice President:</i>	Jemal-ud-din Kassum	
<i>Country Manager:</i>	Mark Baird	Marianne Haug
<i>Sector Manager:</i>	Mark D. Wilson	Antony Cole
<i>Team Leader at ICR:</i>	Dely P. Gapasin	Ms. Jessica Mott
<i>ICR Primary Author:</i>	Henrik Balslev & Maurice Kottelat	

## 2. Principal Performance Ratings

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HL=Highly Likely, L=Likely, UN=Unlikely, HUN=Highly Unlikely, HU=Highly Unsatisfactory, H=High, SU=Substantial, M=Modest, N=Negligible)

*Outcome:* S

*Sustainability:* L

*Institutional Development Impact:* SU

*Bank Performance:* S

*Borrower Performance:* S

	QAG (if available)	ICR
<i>Quality at Entry:</i>	S	S
<i>Project at Risk at Any Time:</i>	No	

### 3. Assessment of Development Objective and Design, and of Quality at Entry

#### 3.1 *Original Objective:*

The objective of the GEF-supported Biodiversity Collections Project (GEF-BCP) was to strengthen the institutional capacity of the Research and Development Centre for Biology (PPPB) of the Indonesian Institute of Sciences (LIPI) to support systematic biological collections, a basic reference tool for biodiversity inventory and monitoring. The Project would also make the information from the collections available to external clients. The Project would establish the foundation required for PPPB to meet the expanding needs for biodiversity information over the long-term, and provide high priority information during the Project period.

The Project objective was clearly stated and was consistent with the country's priorities and the Bank's Country Assistance Strategy (CAS) at the time of Project preparation, appraisal, and grant approval (1993-1994). It was also consistent with the Government's strategy to implement the country's Biodiversity Action Plan. The GEF-BCP was designed as an innovative pilot project to demonstrate the feasibility of investing on biological collections in developing countries. The Project's design was directly consistent with achieving this objective.

#### 3.2 *Revised Objective:*

The original objective remained unchanged throughout the Project life.

#### 3.3 *Original Components:*

**(a) Project Management and Coordination (Component 1).** In this component, the following units were established to facilitate Project implementation: a Steering Committee (SC), a Project Management Committee (PMC), a Project Implementation Unit (PIU) including locally contracted specialists in project and financial management, a Technical Advisory Group (TAG) consisting of international advisors with institutional and technical expertise, and a Users' Advisory Group (UAG) with representatives of external clients. The Project contracted short-term advisors and trainers (in environmental health and safety, document restoration, data field design, and specialized systematic biology) and mentors who were specialists in their fields. It also implemented a grant program for systematic research and carried out a special sustainability study including financial and institutional sustainability.

**(b) Systematic Collections and Research in Botany and Zoology (Component 2).** This component supported the restoration and management of systematic biological collections and associated research in the Botany and Zoology Divisions of PPPB through:

*(i) Human Resource Development:* Provision of 18 graduate-level scholarships in systematic biology and 11 recruits who had newly graduated from university, plus advice and extensive on-the-job training for PPPB managers, scientists, interns, and technicians in curation, taxa identification, field collecting, and user product development;

*(ii) Collections Restoration and Development:* Provision of building renovations, furniture, archival supplies, 40 temporary employees, and redeployment of 20 permanent staff to work as curatorial assistants to improve and expand specimen storage, improve the scientific organization of the collections, restore deteriorating specimens, and stabilize the specimens, as necessary, before moving them to new cabinets, and/or buildings. These activities included the integration of the marine reference collections belonging to LIPI's Research and Development Centre for Oceanology with PPPB's terrestrial and freshwater-based reference collections;

**(iii) Research Facilities:** Building renovations and provision of essential scientific literature and equipment to improve systematic biology research facilities; and

**(iv) Publications and Products:** Development of an illustrated technical glossary, a computerized bibliography of published reference materials, a computerized gazetteer, a database and handbooks covering specific taxa, field guides, and a specimen identification service.

**(c) Information Systems Management (Component 3).** In this component, the Project set up a computer database and a local area network capable of basic specimen data entry, automated label production, collection management functions, and information dissemination. This system complemented and comprised a node of a wider network, which the Government planned to develop. This component provided inputs of technical assistance, software development and support, and the establishment of a new sub-division with re-deployed and newly recruited staff.

**(d) Scientific Collaborations and Services (Component 4).** This component provided technical assistance and office equipment to strengthen PPPB's capacity to carry out collaborative research, provide client services, including a publication program, and manage the degree and non-degree training program.

#### *3.4 Revised Components:*

The four components remained essentially unchanged throughout the life of the Project.

#### *3.5 Quality at Entry:*

The quality at entry was judged to have been "*Satisfactory*". Project preparation was thorough and comprehensive. The design of the Project considered the conditions and basic requirements of PPPB in terms of strengthening the capacity of staff in taxonomy research, facilities improvements, collections management, and the development of information technology innovations. However, some aspects were planned in such detail that it appeared to have intimidated execution (especially after the departure of the Technical Advisory Group), although attempts were made during the supervisions to overcome this.

The Project started by rehabilitating only the specimens at highest risk, based on the original design, but it became apparent quickly that when the hazardous preservatives were removed from the collections, there was risk of further deterioration of the rest of the specimens. All specimens would then have to be processed and stored in large numbers of cabinets. It was not anticipated that the large volume of specimen restoration and reorganization would require many of the taxonomists to stay in Bogor longer before starting their degree programs, and this caused delays. The target to restore less than 10 percent of about two million Herbarium specimens was not significant for the collection overall and it is felt that it could have been more ambitious, although it was recognized that a much larger goal would have been unrealistic in terms of the implementation capacity of PPPB.

## **4. Achievement of Objective and Outputs**

#### *4.1 Outcome/achievement of objective:*

The Project has substantially achieved its original objective and expected outputs and was rated as "*Satisfactory*". It has restored and developed the collections in the Herbarium and Museum to world-class standards. It has designed functional software and established core databases in Botany and Zoology comprising information from the existing collections. PPPB has strengthened the capacity of staff to coordinate and foster collaborative biological research. The Project was managed with flexibility to handle the differences between the conditions and human resources in the Herbarium and Museum. A change in work culture was obvious and, especially in the Museum, there was great satisfaction among staff and

managers with the team work achieved.

The Project has made a major contribution to global biodiversity because well-managed collections, and the taxonomy based on them, are at the core of good conservation and resource management. They provide the physical means by which organisms can be identified, and the human resources to undertake the work. Like libraries, the values of biological collections accrue over the long-term. The Project has helped to make the Bogor collections the finest in Asia and among the best in the developing world. But more important than this is the pride and enthusiasm it has produced among its staff.

The newly-secured and organized Bogor biological collections benefit not only Indonesia's biodiversity but also now support and encourage regional and other specialists to compare their specimens from outside Indonesia with those collected within Indonesia to ascertain whether the species are the same. The immediate utility of the collections is demonstrated by the growing number (in thousands) of specimens sent out on loan to other institutions each year and on the growing number of specialists coming to work in the Museum and Herbarium. It takes forward thinking to commit long-term support for taxonomic institutions; the GEF has provided that and as a result, the biological collections in Bogor are now reinvigorated for long-term benefit.

The human resources of PPPB have been significantly improved through degree and non-degree training such that the important collections are now in the hands of competent, well-networked staff whose horizons have been expanded and whose services for training, advice, and collaborative research are now sought. The targets in human resources development were exceeded with 20 scholars (11 recruits) sent for graduate studies (19 completed their degrees, 6 with Ph.D. and 13 with M.Sc.), 27 completed overseas work studies for coordinators and collection managers, 28 interns from universities, 17 specialists mentors, and 63 trained technicians.

The botanical and zoological collections are now organized, catalogued and thus useable, and the working environments have improved so that research is encouraged. The targets in restoration have been reached in the Herbarium and largely exceeded in the Museum where the target quickly shifted from partial to total restoration (creating needs for additional equipment beyond the original projections).

The Project facilitated the development of a solid, tailor-made software for managing the collections and for generating products. The targets in databasing specimen-based information were not reached in the Herbarium but were largely exceeded in the Museum. Through the publication program, not only were many Indonesian-language books produced, but the staff and management learned a great deal about publishing and distribution, and about peer review and quality control. The commitment of the Government for the Project and for future funding, the establishment of a foundation for distribution and funding of publications, and the quality of the scientific staff provide certainty that these achievements are sustainable, given continued intellectual stimuli and incentives.

#### *4.2 Outputs by components:*

##### **(a) Project Management and Coordination (Component 1)**

Overall, the performance on project management and coordination has been rated as “**Marginally Satisfactory**”. These activities were guided by an inter-agency Steering Committee, chaired by the Vice Chairman of LIPI, a Project Management Committee consisting mainly of the PPPB management team and chaired by the PPPB Director, a User Advisory Group that linked the Project to users, a Technical Advisory Group that provided consultants' services, and a Project Implementation Unit headed by a Project Manager. PPPB management has, at times, shown great support for the Project, but at others it has not been sufficiently engaged to assist the PIU in solving some critical problems. The combined support

provided by these groups had been mixed resulting in inconsistencies and sometimes strained relationships among implementers and managers. Some groups that were hoped to facilitate smooth implementation of Project activities did not consistently deliver.

The Steering Committee, comprising individuals sympathetic to the Project, provided sustained and critical support. Through the committee's facilitation, the Government was able to maintain its counterpart funding level even during the economic crises. LIPI and PPPB were able to obtain new positions for the new recruits who have returned with advanced degrees despite the Government's "zero growth" policy (no recruitments). The SC periodically discussed Project progress and provided guidance to the PMU on key issues. The PMC, the Project's management team, was not consistent in fulfilling its executive responsibility, but has improved through the Project life. The UAG was expected to facilitate a two-way communication between the Project and end-users. The initial consultations with representatives of actual and potential users gave directions and priorities and established a diverse 'core group'. However, beyond discussion of issues and planning, there were no substantive results. There were few incentives for the UAG to function well and this was felt to be indicative of user participation generally.

Initially, the PIU comprised 115 staff from various PPPB units, a Project Manager, and two long-term consultants (financial specialist and management specialist). When the technical staff were integrated back in their regular units, the PIU was reduced to a core management team, and two additional short-term, consultants (editor and training specialist) were added at mid-term. The PIU was responsible for the coordination of Project activities, procurement of goods, preparing work plans and progress reports, and financial management. The PIU established a poor record in adhering to Bank procurement procedures resulting in delays in obtaining scientific and curatorial equipment, materials, taxonomic references, and book printing. Despite concerns expressed over procurement, the public audit office (BPKP), expressed "unqualified opinion" on the annual financial reports. The short-term consultants who facilitated the training program and the publication of books, manuals and brochure were efficient and provided a major support to the Project's success.

Overall, the provision of technical services was "**Satisfactory**". The TAG provided periodic technical advice and guidance on training, curation, health and safety, equipment specifications, database development, and information systems, and Project management. The TAG comprised three core advisors and short-term consultants under a contract between PPPB and Harvard University. At mid-term (in July 1998), the Harvard University contract was terminated due to the consultants claiming *force majeure* during Indonesia's political and social upheavals. The TAG's technical advice was much valued and had major impacts on the Project. The TAG established the critical scientific basis for most of the Project activities.

The TAG organized important inputs from many short-term consultants including those who carried out the health and safety study, archival and restoration study, collections database study, and support for development of an information system. They managed the degree training and overseas work studies of staff. The financial and institutional sustainability study was very much delayed and was managed by the PIU later. The style of work delivery by some TAG members caused strained relationships. The TAG was replaced by experienced scientific advisors, contracted as individual consultants, who visited Indonesia twice a year but were available to give advice between visits through electronic links.

#### **(b1) Systematic Botany Collections and Research (Component 2)**

The outputs of this component have been rated as "**Satisfactory**" overall. The original targets in human resource development were reached and, with 16 interns, has exceeded the target of eight. Ten degree

trainees were selected for graduate studies after a competitive selection process involving new university graduates. The trainees included nine recruits who all studied overseas and one staff who studied at a local university. Ten scholars, including one in Microbiology, completed their degrees (4 Ph.D. and 6 M.Sc.); nine were recruits. These newly trained taxonomists make up an impressive 43 percent of the 23 plant taxonomists currently employed by PPPB.

The short-term overseas training of the Botany Coordinator and Collection Managers in many foreign herbaria, and on-the-job training of staff and technicians improved the capacity and quality of staff and increased work morale. Seven overseas mentors provided technical and scientific advice and training of staff focusing on the priority taxa. The mentors contributed to global exposure of staff and provided expert knowledge which improved the curation of most priority taxa. Sixteen interns from 15 universities were trained by Herbarium staff for up to six months on collection management and other topics. Some interns have started their own biological collections. Together, the staff, interns, and overseas mentors now form a network that enhances scientific collaboration and extends PPPB's biodiversity services, not only abroad but most importantly, to Indonesia's regions.

The restoration of botanical collections was successful in spite of initial problems. A total of 255,000 dried specimens were remounted on acid free paper and stabilized, which is far beyond the revised target at mid-term of 150,000 specimens and the original target of 200,000. New specimen covers, alphabetic arrangement, and rebottling of 8,000 collections in alcohol ("wet collections") enormously improved the quality of specimen storage. Particularly important are the 25,000 type-specimens that were remounted and stored separately in an air conditioned type room. Although the restoration target was exceeded, this number still represents only about 12 percent of the estimated two million specimens in the Herbarium, leaving 88 percent still to be restored. There is a large backlog of possibly 200,000 unmounted specimens that are kept under unsatisfactory conditions in the fourth floor and drying room. Other herbaria, even in developed countries, also have large backlogs of unmounted specimens. Nevertheless, the situation at PPPB calls for serious consideration of the rates of specimen restoration and mounting after the completion of the Project.

The use of toxic chemicals for preserving specimens has been replaced by an Integrated Pest Management (IPM) Program to reduce health hazards to staff and visitors handling the collections. The original plan of keeping only specimens of highest risk in new air-tight cabinets was changed to putting all the collections in cabinets to reduce the risk of further deterioration due to the removal of chemical preservatives. About 1,033 new air-tight steel cabinets (target was 785) were procured. Windows and doors in the Herbarium were screened and regular monitoring of insect infestations in the storage rooms was carried out using sticky traps. Freezing of specimens and putting them in zipped plastic bags before placing them in the cabinets became a standard practice in the Herbarium. IPM implementation also encouraged staff, technicians, and users to keep their work areas clean and ensured that the cabinets were locked after use and checked at the end of each work day.

Research facilities in the Herbarium were improved. Three research laboratories and a type room were upgraded and air-conditioned. Rearrangement of the processing and pressing area, renovation of a supply storage, mounting, and database rooms, installation of an electric plant specimen drier, and a walk-in freezer, including improved electric installations, were completed. There were problems with operating the freezer, mainly due to fluctuations in electrical voltage, but this was solved by rewiring the entire building. Five long-armed and three dissecting microscopes were procured, but more microscopes are needed.

The provision of essential scientific literature reached only 50 percent of the potential acquisitions

identified. Additional specialized literature was provided by mentors. Production targets for publications were nearly met. Preparation of a technical bilingual glossary and a computerized bibliography of key systematic references was completed. Four original field guides, authored by staff, were produced on rare plants, wild bananas, and bamboos (two). Staff also produced a curatorial manual, a management policy of the Herbarium, and five international publications by the graduates.

## **(b2) Systematic Zoology Collections and Research (Component 2)**

Overall, the outputs of this component have been rated as "**Highly Satisfactory**" and often exceeded the targets. Seven staff and three recruits were selected to receive degree training, seven M.Sc. and three Ph.D. (including one in Oceanology); one M.Sc. graduate (recruit) continued for a Ph.D., and one M.Sc. candidate (recruit) failed. These nine graduates represent 39 percent of the 23 animal taxonomists currently employed by PPPB and will enhance its scientific capacity significantly. Ten staff went on overseas work-study and ten overseas mentors visited the Museum. Linked with the new facilities, this resulted in a radical upgrading of curatorial practices which are now in line with international standards.

Staff, technicians, university interns, and high school students received on-the-job training (about 100 persons). Twelve university staff received internships in the Museum. There are numerous requests for more training and some interns are now funding their own programs. The status of one recruit will be formalized as a civil servant on his return. The graduate students authored 10 international-standard publications. The Museum benefited from efficient and dynamic leadership; this, combined with the new facilities, the training program, and new responsibilities, has had a profound impact on the work culture and team building in the Museum.

The Museum successfully moved its collections in 1998 to the new JICA-funded building equipped with modern facilities with health and security conditions meeting international standards. The entire collection (more than two million specimens) have been stabilized and moved, and new materials has been integrated. The original target was a partial restoration, but because of the move it became apparent that a full restoration was necessary, thus creating the need for equipment in addition to the original projections. The Project procured 1,135 air-tight steel cabinets of various types (original target was 310 cabinets) and three sets of compactus (sliding shelf units). The JICA-funded Biodiversity Conservation Project (JICA-BCP) procured 100 additional insect cabinets in FY2001. The collection is now almost completely reorganized (except for some insect taxa). An IPM Program was established with freezing of specimens in lieu of using toxic chemical preservatives that was withdrawn early in the Project.

The collections are now accessible and useable, although there remain unidentified collections which have not yet been stabilized or attended to (a common problem in museums around the world). There is still a shortage of some supplies and shelving. It is noteworthy that all these achievements and the databasing (mentioned under Component 3) has been achieved in a short period as a result of the staff first having to handle the move of the Museum; it also partly explains the low publication output and some delays in the degree training. The integration of the marine reference collection of the Research and Development Centre for Oceanology has not been completed as planned although part of the collection has been transferred to the Museum. Oceanology research and technical staff have been trained and curatorial supplies provided. Loans of specimens to requesting foreign museums have increased over the last few years after a hiatus.

Equipment (11 microscopes, 2 computers, 1 server) were procured and were complemented well by the JICA-BCP. Only 83 reference book titles and no journals were bought, although ample funding was available. Additional references were provided by mentors. This delay seriously compromised the efficiency and quality of future curation and research. Production targets for publications were reached in partnership

with four NGOs working on biodiversity. A management and curation handbook and a Museum brochure were published. Two volumes of the small field guide series were written by staff. A technical glossary was not completed.

### **(c) Information Systems Management (Component 3)**

The outputs of this component have been rated as “**Satisfactory**”. The Project has developed a fully functional software for collection management called the Indonesian Biodiversity Information System (IBIS). The revised target at mid-term was for an IBIS pilot for Botany. A similar Zoology version was also developed by the Information Technology (IT) Team and is also now fully functional. The development of databases is a significant achievement, especially given past delays caused by contractor and technical assistance differences. The IT Team has developed the databases on their own and showcased it in an international meeting in Germany in 2000. Short-term training and study visits abroad provided to the IT Team facilitated software development. They were supported periodically by short-term IT consultants. Early problems arising from differences between the IT team and some consultants were resolved when the team took responsibility for the product. The Team has also established a website - <http://bio.lipi.go.id> - for PPPB within which information related to the Project and its products can be accessed.

The Herbarium staff has databased 240,000 specimen records with about 1,000 validated records and 3,000 awaiting data entry. The Museum staff has databased 144,000 specimen records with 27,300 validated records. The mentors’ reports noted problems with erroneous validations in the priority taxa which are being corrected. The entries for type specimens demonstrate a lack of basic knowledge of nomenclature rules among the IT staff. These problems appear to result from insufficient coordination and collaboration among the IT Team and taxonomic staff. Several taxonomists demonstrated limited understanding of the IBIS and its potential use. The Project has worked through issues relating to the utilization of the Herbarium and Museum databases, and although there are no products for public distribution at the close of the Project, some are imminent. The bamboo databases were used in the preparation of the two bamboo field guides authored by a member of the Herbarium staff.

Computers and accessories have been procured by the Project for the Herbarium and Museum. Some problems arose because of timely upgrades and maintenance contracts. However, in the Museum, the JICA-BCP provided additional computers, Oracle platform and software, and other accessories. In the Herbarium, upgrades were provided by the Project but a similar support from JICA-BCP has allowed the migration of the databases into Oracle platform. The recent migration was necessary because the large sizes of the databases were causing slow systems response and crashes in the Herbarium databases. The expectation was to have all staff online, with internal and external e-mail available. In the Herbarium, seven computers utilized for entering specimen data are linked by a LAN. In the Museum, LAN infrastructure is in place but there is no software. Thus, there is no intranet or internet access in either institution.

### **(d) Scientific Collaboration and Services (Component 4)**

The outputs of this component has been rated as “**Marginally Satisfactory**”. Seventeen field guides were published by the Project, four in Botany (all original titles and by staff), and 11 in Zoology (three original titles and by staff, one original title by a partner). In addition, two collection manuals and a Museum brochure were printed. The field guides are in three distinct series based on users’ needs. At mid-term, there was a minimal pipeline of manuscripts so part of the budget for publications was reallocated to partially cover the cabinet shortfall. An editor was then contracted and her input was critical in working with staff, printers, partners, and ensuring high quality in the publications.

PPPB staff and local conservation NGOs were encouraged to prepare manuscripts for consideration. Four field guides were published in collaboration with partners (BirdLife International, Wetlands International, Darwin Initiative, and Wallacea Foundation). Writing disciplines, such as adherence to deadlines, originality, appropriate style, and acceptance of peer review, developed staff expertise in widely-accepted standards. A new initiative introduced by the Project was the establishment of a foundation (*Yayasan Hayati*) tasked with distributing PPPB publications and of using income for the production of additional biodiversity books. The foundation contracted a commercial book distributor for wider distribution of the products within the country but other mechanisms are needed to ensure the widest possible readership.

Before the Project, PPPB researchers were engaged in collaborative taxonomic research with some Indonesian and foreign universities. To enhance this, competitive research grants were made available under the Project. Twenty two research Projects were completed. However, at mid-term, it was found that the quality of the proposals and utility and quality of the reports did not justify further use of GEF funds, although the Government continued to support research. The funds allocated for these grants were reallocated at mid-term to partially cover the cabinet shortfalls.

As part of the effort to expose the Indonesian public to the work and benefits of the Herbarium and Museum, staff have held 'open house' events and training. In the Museum, these recent events have been attended by over 6,000 school children and teachers. These events contributed significantly to team building among the staff. Prior to the Project, both the Herbarium and Museum staff helped to identify specimens collected by others and this service continued during implementation, as did responding to queries from the general public and other government agencies.

#### *4.3 Net Present Value/Economic rate of return:*

Not applicable

#### *4.4 Financial rate of return:*

Not applicable

#### *4.5 Institutional development impact:*

Considering its final rating as "**Substantial**", the Project has significantly improved PPPB's capacity to manage its biological collections following international standards and increased the staff's capacity to carry out taxonomic research and build databases in both the Herbarium and Museum using tailored-made software developed within the institution. Beginning FY2001, a new PPPB structure will be implemented but it will not reflect the needs, demonstrated by the Project, requiring integration and coordination of core activities. To counter any negative effect, PPPB management has prepared detailed job descriptions for staff positions to ensure that the right individuals are matched with key jobs to be carried out.

The work culture in the Herbarium and Museum has improved, such as teamwork, partnering, and networking within and outside Indonesia. The staff has improved its understanding of the need to improve further to ensure quality work and products. PPPB management has, at times, shown great support for the Project, but at others it has not been sufficiently engaged to assist the PIU in solving critical problems. The broad exposure of the Herbarium and Museum has created awareness among senior officials in government agencies of the significance and use of biodiversity collections and they are now willing to provide resources for the maintenance of the collections from government routine budget.

## **5. Major Factors Affecting Implementation and Outcome**

### *5.1 Factors outside the control of government or implementing agency:*

The economic crisis of mid-1997 that affected Indonesia and other Asian countries had both negative and positive impacts on the Project. The decrease in the value of the Rupiah meant that the dollar grant could buy more in the country. The negotiated Government contribution in dollar terms was, by the end of the Project, USD 2.77 million compared to the original estimated amount of USD 4.2 million. Nevertheless, the Government committed the necessary counterpart funds and additional budget to cover the shortfall of cabinets.

The Technical Advisory Group that provided consultants for the Project broke their contract citing *force majeure* following the violence of the civil unrest in 1998. This necessitated PIU taking more responsibility for Project implementation. Although there was a delay in some activities, it resulted in a stronger ownership of the Project by the staff and the clearing of tensions between the TAG and the implementing agency.

#### *5.2 Factors generally subject to government control:*

Initially, the Project design required that the Herbarium and Museum staff involved in the Project form a new working arrangement intended to facilitate implementation. Early in implementation, however, it was evident that sustainability would be better served by integrating the Project and regular staff into the Botany and Zoology Divisions of PPPB. This resulted in a better working arrangement. However, the new PPPB structure that is scheduled to be implemented in FY2001 is expected to have some negative impacts on this working arrangement.

The recruitment of ten new staff who have completed their advanced degrees as part of the Project has been achieved despite the “zero growth” policy of the government. One recruit did not complete his degree and cannot be hired as a regular staff. The first seven new recruits who have returned from their studies abroad in 1999 and 2000 have been provided with structural positions. The three remaining recruits are expected to get their regular positions in FY2002.

The transfer of the oceanology reference collections from PPPO, another LIPI research center, to the Museum has been started. About 300 specimens have been moved - the Museum has sent 3,000 bottles to the PPPO, and more collections are ready for transfer. One staff has completed an M.Sc. degree and other staff have undergone non-degree training with support from the Project. However, the total transfer, as originally envisaged, will not be achieved because of a change in PPPO policy.

#### *5.3 Factors generally subject to implementing agency control:*

The process of selecting staff and new university graduates for degree training was competitive and transparent. Achievement was very successful with 95 percent of the students completing their advanced degrees.

There have been inconsistencies in Project management that affected the implementation and coordination of activities. Staff changes to improve Project management have been dealt with sporadically and with difficulty resulting in long delays. The knowledge and proactivity of staff to seek assistance to deal with financial and procurement matters remained low.

Although the Project sought to strengthen the routine activities in the Herbarium and Museum, some staff who were not directly involved thought that the Project was a distinct activity. They did not accept that it was a capacity development process that should have positively influenced the institution as a whole. This has affected the work culture in the Herbarium more than in the Museum. The situation was much improved at the end of the Project.

The development of an information system has been worst affected by a tendency to isolate the IT Team from the researchers, which in turn had negative effects on the Herbarium and Museum activities. The opportunity to develop an institution-wide system of information sharing has been missed. The utilization of the databases remained the generally isolated effort of individuals and no products have resulted. There is limited data sharing internally because particular groups tried to control the databases rather than ensuring their validity. Many researchers do not have access to data outside their research area yet the data are public goods having been generated using public funds, including the GEF grant funds. With a change in policy, the Herbarium and Museum could have a good information system shared by its staff and their partners.

#### *5.4 Costs and financing:*

##### **(a) Project disbursements:**

Based on Bank disbursement figures as of June 30, 2001, USD 6.89 million had been disbursed from the GEF grant and is likely to reach USD 7.11 million by July 31, 2001, or 99 percent of the appraisal estimate of USD 7.20 million (equivalent to SDR 5.1 million). The total Project expenditure was USD 9.88 million, including the Government's counterpart of USD 2.77 million. The Government's counterpart funding was 66 percent of the appraisal estimate of USD 4.20 million. Although the Government's total contribution was reduced in dollar terms because of the exchange rate fluctuations, it has provided sufficient counterpart funds as scheduled, and in addition procured more cabinets to meet the shortfall of curatorial equipment.

The actual Project costs of various components (**Annex 2a**) were different from those estimated at appraisal. In the Project Management and Coordination component, the appraisal estimate of USD 1.64 million was lower by 58 percent compared to the actual costs of USD 2.59 million. In Systematic Botany Collections and Research sub-component, the appraisal estimate of USD 2.86 million was lower compared to the actual costs of USD 3.60 million, with significant increase of 26 percent, indicating an emphasis on the development of the Herbarium. In Systematic Zoology Collections and Research sub-component, the appraisal estimate of USD 2.59 million was higher by 43 percent compared to the actual costs of USD 1.47 million.

In Information Systems Management component, the appraisal estimate of USD 0.76 million was higher compared to the actual costs of USD 0.16 million, or a decrease of 79 percent, due to the downgrading of IBIS into a pilot effort at mid-term. In the Scientific Collaboration and Services component, the appraisal estimate of USD 1.77 million was lower compared to actual costs of USD 2.06 million, or an increase of 16 percent. Part of the funds from the third and fourth components were reallocated at mid-term to cover part of the cost of the shortfall in curatorial equipment (mainly cabinets). The increased costs in some components were due to a combined effect of the increase in unit costs of cabinets caused by different specifications and special designs (**Annex 2e** compares the cost of cabinets for Botany and Zoology), an increase in the number of cabinets needed, and an increased number of staff who went for overseas degree programs and work study.

##### **(b) Financial audit and follow-up actions on audit findings:**

In FY1998/99 and FY1999/00, the public audit office (BPKP) expressed "unqualified opinion" on the Project's annual financial reports. In the FY1998/99 PA audit report, the auditor noted that there was a contract awarded to an unqualified contractor but this was followed up accordingly by the PIU. The audit report of the SA/SOEs for FY2000 was submitted to the Bank by BPKP on July 11, 2001.

## 6. Sustainability

### *6.1 Rationale for sustainability rating:*

Overall, the rating for sustainability is “Likely”. About 37 percent of the Project's investment has been for curatorial equipment and materials needed for the efficient long-term management and curation of the collections. These are expected to have long lasting impacts. Maintenance and continuation of the reached level of restoration of the collections is partly attained by the establishment of a new budget line for curatorial supplies in the government's routine budget, but this funding is likely to remain insufficient to meet all the aspirations of the staff. However, there are enough basic curatorial supplies procured by the Project to last for 3-4 years. Maintenance and upgrading of research and IT equipment remain highly dependent on international collaboration.

IBIS is now functional and its sustainability depends of its coverage and scientific credibility. The validation process, as defined by the workflow, needs rethinking. Issues on intellectual property rights have not been addressed and this threatens the availability of the data to the public (contradicting the Project objectives). PPPB has to review the legal issues and compatibility with using public funds (GEF grant). If the databases are not made available to the scientific community and the public, and PPPB does not receive outside feed-back, it will have missed the opportunity and the intention to become a useful, dynamic research and management tool. Without policy changes, the utilization within PPPB would be limited. There are, of course, valid arguments for withholding certain data (such as the precise locations of collections of rare and sought-after orchids), as mentioned in the Project Document, but these are relevant for only a small number of specimens.<sup>1</sup>

About 25 percent of the investment was for training of staff who are expected to contribute to the long-term human resource needs of supporting biodiversity effort in Indonesia. Only one staff was recruited in the Museum, while nine staff were recruited in the Herbarium. This is noteworthy considering the “zero growth” environment of the Indonesian civil service. The technicians in the Herbarium are insufficient to maintain the yearly increase of the collections, thus they will have limited effect on the remaining unrestored collections or the large backlog of unsorted material. The same applies to the insect collections in the Museum. The collection management scientific staff in both institutions is sufficient. About one-third of the highly skilled and well-trained technicians and data entry operators will be employed through other projects and the government's routine budget.

The scientific staff in both institutions is sufficient to provide identification services and to conduct valuable taxonomic research for which Indonesian biodiversity provides ample topics. The 19 staff who have completed their degrees have strongly enhanced the human resource capacity of both institutions. However, taxonomy is a field in which long experience is a key factor. Therefore, opportunities of continued exposure to the global scientific community is vital to strengthen the researchers' productivity. Continued efforts in training, education, mentoring could be achieved by international collaboration at both institutional and individual levels. The global biodiversity community has demonstrated a basic goodwill which could be increased if the present policy environment was relaxed, and institution and management effectiveness was increased to meet the staff's expectations. The remaining gaps in scientific references would make it difficult to conduct competitive research at international standards.

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<sup>1</sup>There are of course, valid arguments for withholding certain data (such as the precise locations of collections of rare and sought-after orchids), as mentioned in the Project Document, but these are relevant for only a very small number of specimens.

As has already been noted, the vastly improved state of the collections and facilities has increased the number of specimens being returned to the Herbarium and Museum by outside scientists and institutions abroad.

The continued operation of the Yayasan Hayati foundation would allow the Herbarium and Museum to publish books in the Indonesian language at affordable prices at zero cost for these institutions. If managed properly and with a minimum of outside input (co-publication, cost-sharing, etc.), this should be self-sustainable in the future.

A financial and institutional sustainability study was carried out after long delays due to problems in procurement and selection of a consulting firm. The recommendations to PPPB management have not been adopted and the structural changes to commercialize products and services of researchers have not been considered in the recent PPPB reorganization. The Yayasan Hayati foundation established to publish and distribute PPPB's publications is the main mechanism for managing funds outside the government.

#### *6.2 Transition arrangement to regular operations:*

##### **(a) Actions to be taken by the Government:**

A draft "Transition Arrangement Plan" was prepared by PPPB, including both short-term and long-term actions, to ensure smooth interfacing of the Project initiatives into PPPB's regular operations. The plan includes critical follow-up activities to be funded by PPPB up to December 31, 2001. The PPPB management is in the process of preparing detailed descriptions of the functions of the new units and clear job description of the positions within them. Structural positions for the remaining three recruits who will be returning from their studies abroad in FY2001 will be requested by LIPI in FY2002.

To keep restoration of specimens at an acceptable level, especially in the Herbarium, the contracts of 10-20 project-trained technicians and data operators will be continued using government budgets, funds from other projects. Further development of the information system is needed especially testing of the software by collaborating individuals who will provide feedback. Additional basic curatorial materials will be procured, like alcohol and bottles, through government routine budget.

The long-term plan addresses critical organizational and staffing issues. PPPB will have to monitor emerging problems arising from the misfit of the new structure to the work flow and procedures in collection management and staffing arrangements introduced by the Project. Management of the collections will be the responsibility of the Research Facilities and Collections Management Division of PPPB but there are no direct linkages to the research units where the taxonomists and technicians in the Herbarium and Museum are located. The recruitment of young staff, especially in the Museum, will be continued because of the serious aging profile of the scientific staff.

##### **(b) Follow-up by the Bank**

The Bank will follow-up on the long-term actions taken by the Government to ensure the sustainability of the innovations introduced by the Project in the Herbarium and Museum.

## **7. Bank and Borrower Performance**

### **Bank**

#### *7.1 Lending:*

The Bank lending has been rated as "Satisfactory". The Bank provided comprehensive support to the Government and LIPI in identifying key Project activities. The objective of the Project was fully in agreement with the Government's strategy for biodiversity conservation and information as expressed in the

1993 Biodiversity Action Plan for Indonesia. The Project was consistent with the Bank's Country Assistance Strategy and it was a logical continuation of a number of initiatives on biodiversity promotion and awareness building. The Project was well structured and the Bank's assistance to the Borrower for Project preparation was "**Satisfactory**". The appraisal of the Project was also "**Satisfactory**" and had secured the full commitment of the Government to the implementation. The capacity of the implementing agency had been sufficiently evaluated and the financial package was appropriate and adequate in its amounts.

#### *7.2 Supervision:*

A Quality of Supervision Assessment rated the Bank's supervision of the Project as "**Highly Satisfactory**" in FY2000. The authors of this report agree with this rating. The Project implementation was adequately and timely reviewed and reported. There was a very detailed mid-term review in 1998. In addition to the ICR mission in February 2001, there have been 11 supervision missions during which the Project's progress was evaluated. Following an "Unsatisfactory" rating for implementation progress just before mid-term, the Bank's task team monitored the Project progress with monthly reporting for six months until appropriate corrections were made.

Throughout implementation, project-related problems were identified and acted on in a timely manner. The skills and quality of the Bank staff and consultants who periodically reviewed the progress of Project implementation reflected well the complexity of the project design and its contents. The missions' time in the field, the timing of supervision, and the support of the Bank and GEF managements to staff at critical points were adequate. The Bank's mid-term review and subsequent supervision reports maintained "Satisfactory" and "Highly Satisfactory" ratings of the Project's achievement of global objective.

#### *7.3 Overall Bank performance:*

The Bank's overall performance in this Project has been rated as "**Satisfactory**". The Bank has provided significant support to the Government and the implementing agency and its responses to implementation problems were timely and efficient. The Bank staff complied with the Bank's policies and procedures including its fiduciary responsibilities.

#### **Borrower**

#### *7.4 Preparation:*

The Government's performance during the preparation of the Project has been rated as "**Satisfactory**". Most needs were met in preparing the Project and inputs were sought from outside stakeholders. The Project documents clearly described the activities that were carried out, sometimes in great detail. The design considered the strategies to ensure successful achievement of the Project objective. However, planning for the information technology component underestimated the needs of the final system considering that PPPB started from a very low IT base. The design did not anticipate the major advances in technology throughout the Project life.

The Project was designed to achieve coverage of only limited taxa in the electronic database while establishing the foundation to enable full and functional entry, maintenance (including quality control), and use of specimen data in a computerized system "within the next twenty-five years". The Project Managers, Coordinators and Collection Managers were research staff of PPPB. These staff were Ph.D. level scientists, but not trained managers. At the beginning, some designated staff-cum-managers found a mismatch between their skills and desires and what their new tasks demanded. Among the original Project staff and their replacements, there has been a learning curve in management and leadership that, in some cases, is still limited.

#### *7.5 Government implementation performance:*

The Government's implementation performance has been rated as **"Satisfactory"**. Despite the economic crisis that occurred during the Project implementation period, the Government had given priority to providing sufficient counterpart funds and sometimes it exceeded expectations. The Government provided budget to cover most of the shortfall of curatorial equipment (cabinets). BAPPENAS and LIPI management have consistently supported the Project.

#### *7.6 Implementing Agency:*

The overall performance of the implementing agency has been rated as **"Satisfactory"**. The collections are stable or are being stabilized, the IBIS software and databases are in place and functional, and staff, including new recruits, have been trained both in degree and non-degree programs. What is required for the future is for the institutions to recognize how far they have come and develop a management vision and maintain a strong capacity to ensure long-term sustainability of the new initiatives.

#### *7.7 Overall Borrower performance:*

The overall Borrower's performance has been rated as **"Satisfactory"**.

### **8. Lessons Learned**

The key lessons that can be drawn from this Project are grouped as follows based on its application.

#### ***(a) General:***

- Even if the GEF had not previously invested in this type of project, which was seen as innovative and risky when it was approved by the GEF Council, this Project has clearly demonstrated that it is feasible and worthwhile to invest in similar projects in developing countries. Biological collections have an important role in management and monitoring of the countries' diverse plant and animal resources.
- Both individuals and institutions in the global biodiversity community are prepared to support the intellectual and financial development of biodiversity collections in developing countries. International exposure may be obtained through mentorship programs that would link researchers and administrators to the global research community in open networks that can be extended to regional centers.
- It was confirmed that within the life of a project it was possible to establish adequate storage facilities, of world-class standard, for a major biodiversity collection of high international importance.

#### ***(b) Country:***

- The Project has shown that despite going through economic and political crises, the Government of Indonesia has fulfilled its commitment to co-finance and implement the development of modern biodiversity collections as part of its response to the implementation of the country's Biodiversity Action Plan and concern for biodiversity in general.
- Extension of the benefits of a similar biodiversity collections project to regional locations can be obtained through internship programs that connect smaller centers to a national biodiversity node through individual and institutional contacts.

#### ***(c) Institutional:***

- A prerequisite for success of such undertaking is that staff is prepared to change established traditions that may hamper implementation. The management needs to support the staff in changing the work culture. Both groups should stay focused on the Project's objective. Individuals and the institution must have a common desire to develop a status as independent and equal partners in the international research community.

- Many of the adjustments needed during implementation were related to underestimation of the time needed to carry out a particular element, or to underestimation of the number of specimens present in the collections.
- For a Project such as the GEF-BCP that was implemented by a single agency, the provision of technical assistance by scientific advisors who would regularly interact with Project implementers for short periods based on need, was sufficient. It was more flexible, and cost effective compared to contracting full-time consultants who would be on-post for long periods. In the interim, open communication to the PIU by email and phone was maintained.
- Development of database facilities to handle biodiversity collections require an open and flexible project design with room for development. The institution has to accept IT as the backbone of collections management and information dissemination. The success of the undertaking would require effective teamwork between technical and IT staff.
- A project must work within and fully respect the implementing institution's organizational structure.

## 9. Partner Comments

*(a) Borrower/implementing agency:*

Refer to the GOI implementation completion report in **Annex 8**.

*(b) Cofinanciers:*

There was no co-financier for this Project.

*(c) Other partners (NGOs/private sector):*

Although NGOs participated in various stakeholders consultations and workshops, there has been limited input in the implementation of specific activities. The NGO community was previously identified as an important stakeholder group. The Project gave opportunity for international conservation NGOs, and an internationally known Indonesian biodiversity specialist outside LIPI to publish four field guides under the LIPI publication program imprint. They have been grateful for the opportunity, but have shared enormous frustrations with PPPB's apparent disinterest in encouraging the distribution of these books. Two international publishers, Oxford University Press and Princeton University Press, have been satisfied with the quality of the work in translating and publishing four of their English-language field guides.

The Internship and Mentorship Programs have provided the basis for partnerships with Indonesian and foreign institutions and individuals. The impact of both activities has been regarded, from all sides, as satisfactory. In addition, major partnerships are in the offing through the regional technical cooperation network for capacity-building a taxonomy known as ASEANET, a major meeting of which has been hosted by the Museum recently.

## 10. Additional Information

Amendment to Grant Agreement in April 1998

## Annex 1. Key Performance Indicators/Log Frame Matrix

Objective	Key Performance Indicators	Project Outputs		
		Appraisal Estimate	Mid-Term	End-of Project
			Actual	Actual
<p>The Project will strengthen the institutional capacity of PPPB of LIPI to support systematic biological collections, a basic reference tool for biodiversity inventory and monitoring.</p> <p>* Overall achievement of global objective has been rated as "Satisfactory"</p>	*Capacity of PPPB to manage biological collections strengthened.	<p>*18 staff (incl. 11 recruits) will undergo graduate studies;</p> <p>*2 Coordinators and 9 Collection Managers undergo work study abroad; *16 interns from universities;</p> <p>*16 specialist mentors.</p>	<p>*15 staff (incl. 11 recruits) started graduate degree programs;</p> <p>*15 staff completed work-study abroad</p> <p>*10 interns completed 6-months study.</p>	<p>* 19 staff completed degrees; 11 recruits, 7 with positions/others in process;</p> <p>*27 staff completed work-study abroad;</p> <p>*28 interns completed program;</p> <p>*17 mentors visited Herbarium and Museum.</p>
	*Herbarium and Museum collections brought up to world class standards.	<p>* Facilities developed to world class standards;</p> <p>* 200,000 Herbarium specimens remounted (target was 150,000 at mid-term); all specimens at risk placed in new cabinets;</p> <p>* Museum specimens at risk restored before transfer to new Museum; placed in new cabinets and reorganized by taxa in new location.</p>	* Part of Herbarium and Museum collections restored, stabilized, and placed in new cabinets; rehabilitation of specimens continuing.	<p>*New Museum facilities provided by JICA and Herbarium facilities and collections management of world-class standards.</p> <p>*Procured 2,168 new cabinets, microscopes, other equipment and supplies.</p> <p>* 255,000 specimens, or 12% of Botany collections remounted, most specimens stabilized and stored in new cabinets.</p> <p>*All Museum specimens restored, stabilized, moved to new Museum, reorganized and placed in new rooms.</p>
	*Specimen-based information databases developed.	*Information system software developed; down graded to pilot for Botany at mid-term; specimens in priority taxa databased, partially validated.	* Botany IBIS partly developed, downgraded to pilot scale for Botany; data entries not yet validated.	* IBIS software functional for both Botany and Zoology; 384,300 specimen records for priority taxa databased, 28,300 records validated.
	*Project management committees established.	*Steering Committee, Project Management Committee and Users Advisory Group established.	* Project committees and technical support groups, including technical advisors under a Harvard University contract, established and functional.	*Project Steering and Project Management Committees and Users Advisory Group functional early in project implementation.
<p><b>Component 1:</b></p> <p><b>Project management and coordination</b></p> <p>*Project management and coordination has been rated as "Marginally Satisfactory".</p>	*Project Implementation Unit (PIU) established.	*PIU established with Project Manager and staff designated by PPPB Director.	*PIU is functional with Project Manager and full staff complement in place.	*PIU managed and coordinated project activities effectively. Project Manager, Coordinators and staff supported by 2 long-term and 2 short-term consultants.
	*Technical Advisory Group (TAG) established.	*TAG organized through a consultancy contract.	*TAG organized through Harvard University contract; advisors and short-term consultants provided periodic support to project implementers.	*Harvard University TA contract terminated in 1998; two technical advisors contracted as individual consultants; short-term consultants managed by PIU.

Project Outputs	Output Indicators	Appraisal Estimate	Mid-Term Actual	End-of Project Actual
<b>Component 2a:</b>  <b>Systematic Botany collections and research</b>  *Outputs for Component 2a (Botany) has been rated as "Satisfactory".	*Botany staff and partners capacity increased.	*9 Botany staff undergo degree training;  *1 coordinator and 2 collection managers go for work-study abroad;  *8 university interns;  *6 mentors visit Herbarium.	*10 Botany staff (incl. 9 recruits) started their degree programs abroad.  *Botany Coordinator and 3 Collection Managers completed work-study abroad.  * 6 interns have completed internships;  *3 mentors visited the Herbarium.	*10 Botany staff (9 recruits) completed degrees (4 Ph.D., 6 M.Sc.).  *Additional 2 Collection Managers completed work-study abroad.  * 16 interns from universities; *7 mentors visited the Herbarium.
	*Herbarium collections better managed; Herbarium conditions less risky to staff and specimens.	* 200,000 specimens remounted (reduced at mid-term to 150,000).	* Part of Herbarium collections stabilized, placed in new cabinets.  *100,000 specimens remounted and stored.  *All type specimens stored in separate Type room.  *Toxic preservatives withdrawn early in project.	*12% of Herbarium collections stabilized, placed in new cabinets.  *255,000 specimens remounted (target was 150,000);  *Priority taxa partly curated;  *Toxic preservatives replaced by IPM and freezing regime.
	*Cabinets, equipment and curatorial supplies provided.	*785 cabinets, microscopes, computers and accessories and curatorial supplies procured.	*Procurement of new cabinets, curatorial supplies, microscopes, computers and accessories started.	*1,033 new cabinets (785 target), microscopes, computers and accessories, curatorial supplies, and books procured; some supplies are sufficient for next 3-4 years.
	*Facilities in Herbarium renovated.	*Some rooms renovated for specialized laboratory.	*Some rooms renovated for specimen preparation and databasing.	*3 research laboratories, preparation, database, and type rooms rehabilitated and air conditioned.
<b>Component 2b: Systematic Zoology collections and research</b>  *Outputs for Component 2b (Zoology) has been rated as "Highly Satisfactory".	*Zoology staff and partners' capacity in taxonomic fields increased.	*10 Zoology staff and recruits undergo degree training.  *1 coordinator and 7 collection managers go for work-study abroad.  * 12 university interns trained.  * 9 mentors visit Museum.	*10 Zoology staff (incl. 3 recruits) started their degree programs abroad.  *Zoology Coordinator and 7 Collection Managers completed work-study abroad.  * Internship program not started.  *none (0) mentors visited the Museum.	*9 Zoology staff (2 recruits) completed degrees (3 Ph.D., 6 M.Sc.); 1 recruit failed.  *2 Additional Collection Managers completed work-study abroad.  *12 interns from universities completed study.  *10 mentors visited the Museum.
	*Museum collections better managed; Museum conditions less risky to staff and specimens.	*Most Zoology specimens rehabilitated, cleaned of toxic preservations, bagged or boxed before transferring to new Museum. Wet collections transferred to new bottles.	*All Zoology collections stabilized, placed in new cabinets and move to new Museum.  *All type specimens stored in separate Type room.  *Toxic preservatives withdrawn early in project.	*Most Zoology collections stabilized, and placed in new cabinets.  *Priority taxa partly curated;  *Toxic preservatives replaced by IPM and freezing regime.
	*Cabinets, equipment and curatorial supplies provided.	310 cabinets, microscopes and accessories and supplies procured.		*1,135 new cabinets (310 target), microscopes, computers and accessories, curatorial supplies and books procured; some supplies are sufficient for next 3-4 years.
	*Collection transferred to new Museum facilities.	*New Museum facilities of world-class standard built with JICA support.	*Collections moved in 1998 to new world-class Museum facilities with collection rooms, preparation rooms and storage facilities.	*Museum facilities are excellent; collections occupy 7 new collection rooms; with sufficient room for specimen preparation and storage. *Facilities meet global health and security standards.

Project Outputs	Output Indicators	Appraisal Estimate	Mid-Term Actual	End-of Project Actual
<b>Component 3:</b> <b>Information systems management</b>  *Outputs for Component 3 has been rated as "Satisfactory".	* Specimen-based information system (IBIS) developed and operational; data in databases validated	* Databases and LAN to support Herbarium and Museum; down graded at mid-term to Botany only.  * Enter specimen records and data validated by taxonomists.	* IBIS partially developed.  * Botany databases still being developed; data entry of records on priority taxa was continuing.	* IBIS software fully functional.  * Botany and Zoology IBIS databases developed;  *240,000 plant records entered, 1,000 validated; *144,000 animal records entered, 27,300 validated.
	*Equipment and accessories procured.	* Procure computers, servers, and accessories.	* Computers, servers and accessories produced for Herbarium and Museum.	*Computers, servers and accessories procured; LAN in Herbarium but none in Museum.
	Information technology (IT) staff trained; IT Team organized.	* Train staff on IT management, computer skills and maintenance of databases; data entry operators trained.	* IT team trained locally and abroad on computer skills and IT management.	*IT Coordinator and team members trained locally and abroad; 10 skilled data operators trained.
<b>Component 4:</b> <b>Scientific collaboration and services</b>  *Outputs for Component 4 has been rated as "Marginally Satisfactory".	*Taxonomic research completed.	*15 collaborative research grants awarded.	*13 collaborative research grants awarded, 4 completed.	*22 collaborative research grants completed.
	*Relevant products published and distributed.	*Publish checklists, field guides and other products.	*4 field guides manuscripts prepared.	*17 field guides published (7 original work by staff), also curatorial manuals, brochure.  *Published 4 field guides with biodiversity NGOs partners.  *Yayasan Hayati Foundation establish to distribute books.
	*Better aware clients.	*Carry out periodic consultations with users and stakeholders.	*2 stakeholders' consultation workshops carried out.	*Conducted "open house" events for public especially school children.  *Conducted periodic stakeholders' consultations and workshops.

## Annex 2. Project Costs and Financing

### Annex 2a. Project Cost by Component (US\$ million equivalent)

	<b>Appraisal Estimate</b>	<b>Actual/Latest Estimate</b>	<b>Percentage of Appraisal</b>
<b>Project Cost By Component</b>	US\$ million	US\$ million	%
1. General Project Management and Coordination	1.64	2.59	157.92
2a. Systematic Botany Collections and Research	2.86	3.60	125.87
2b. Systematic Zoology Collections and Research	2.59	1.47	56.75
3. Information Systems Management	0.76	0.16	21.05
4. Scientific Collaboration and Services	1.77	2.06	116.38
<b>Total Baseline Cost</b>	<b>9.62</b>		
<b>Total Project Costs</b>	<b>11.39</b>	<b>9.88</b>	<b>86.74</b>
<b>Total Financing Required</b>	<b>11.39</b>	<b>9.88</b>	<b>86.74</b>

**Annex 2b. Project Costs by Procurement Arrangements (Appraisal Estimate)**  
**(US\$ million equivalent)**

<b>Expenditure Category</b>	<b>ICB</b>	<b>Procurement NCB</b>	<b>Method1 Other2</b>	<b>N.B.F.</b>	<b>Total Cost</b>
<b>1. Civil works</b>	0.00	0.09	0.00	0.00	0.09
	(0.00)	(0.08)	(0.00)	(0.00)	(0.08)
<b>2. Equipment furniture and materials</b>	0.00	1.21	0.81	0.00	2.02
	(0.00)	(1.03)	(0.69)	(0.00)	(1.72)
<b>3. Research grants</b>	0.00	0.00	0.08	0.41	0.49
	(0.00)	(0.00)	(0.08)	(0.00)	(0.08)
<b>4. Technical assistance and training</b>	0.00	0.00	4.06	0.44	4.50
	(0.00)	(0.00)	(3.82)	(0.00)	(3.82)
<b>5. Allowances, honoraria and wages of contracted employees</b>	0.00	0.00	0.94	2.54	3.48
	(0.00)	(0.00)	(0.80)	(0.00)	(0.80)
<b>6. Consultants' services and publications</b>	0.00	0.00	0.81	0.00	0.81
	(0.00)	(0.00)	(0.70)	(0.00)	(0.70)
<b>Total</b>	<b>0.00</b>	<b>1.30</b>	<b>6.70</b>	<b>3.39</b>	<b>11.39</b>
	<b>(0.00)</b>	<b>(1.11)</b>	<b>(6.09)</b>	<b>(0.00)</b>	<b>(7.20)</b>

**Annex 2c. Project Costs by Procurement Arrangements (Actual/Latest Estimate)**  
(US\$ million equivalent)

<b>Expenditure Category</b>	<b>ICB</b>	<b>Procurement NCB</b>	<b>Method1 Other2</b>	<b>N.B.F.</b>	<b>Total Cost</b>
<b>1. Civil works</b>	0.00	0.08	0.00	0.19	0.27
	(0.00)	(0.08)	(0.00)	(0.00)	(0.08)
<b>2. Equipment, furniture and materials</b>	0.26	1.60	1.10	1.86	4.82
	(0.26)	(1.60)	(0.84)	(0.00)	(2.70)
<b>3. Research grants</b>	0.00	0.00	0.07	0.07	0.14
	(0.00)	(0.00)	(0.07)	(0.00)	(0.07)
<b>4. Technical assistance and training</b>	0.00	0.00	3.31	0.39	3.70
	(0.00)	(0.00)	(3.31)	(0.00)	(3.31)
<b>5. Allowances, honoraria and wages of contracted employees Miscellaneous</b>	0.00	0.00	0.37	0.00	0.37
	(0.00)	(0.00)	(0.37)	(0.00)	(0.37)
<b>6. Consultants' services and publications</b>	0.00	0.00	0.58	0.00	0.58
	(0.00)	(0.00)	(0.58)	(0.00)	(0.58)
<b>Total</b>	<b>0.26</b>	<b>1.68</b>	<b>5.43</b>	<b>2.51</b>	<b>9.88</b>
	<b>(0.26)</b>	<b>(1.68)</b>	<b>(5.17)</b>	<b>(0.00)</b>	<b>(7.11)</b>

1/ Figures in parenthesis were the amounts financed by GEF Grant funds. All costs include contingencies.

2/ Includes civil works and goods procured through national shopping, consulting services, services of contracted staff of the project management office, training, technical assistance services, and incremental operating costs related to (i) managing the project.

**Annex2d. Project Financing by Component**  
(in US\$ million equivalent)

Component	Appraisal Estimate			Actual/Latest Estimate			Percentage of Appraisal		
	Bank	Govt.	CoF	Bank	Govt.	CoF	Bank	Govt.	CoF
I	1.04	0.60	0	2.41	0.18	0	231.73	30.00	0
IIa	1.81	1.05	0	2.15	1.45	0	118.78	138.09	0
IIb	1.64	0.95	0	0.82	0.65	0	50.00	68.42	0
III	0.48	0.28	0	0.08	0.08	0	16.66	28.57	0
IV	1.12	0.65	0	1.65	0.41	0	147.32	63.07	0
Total base cost	6.09	3.53	0			0			0
Physical contingencies	0.40	0.24	0	0	0	0	0	0	0
Price contingencies	0.71	0.42	0	0	0	0	0	0	0
Total Project Costs	7.20	4.19	0	7.11	2.77	0	98.75	66.10	0
<b>Grant Total</b>	<b>11.39</b>			<b>9.88</b>			<b>86.74</b>		

**Annex 2e: Unit Costs of Cabinets**

Item	Target at Appraisal No.	Revised Target No.	Unit Cost at Appraisal		Actual Unit Cost	
			USD	IDR	USD	IDR
Botany Cabinets Type I	750	998	425.06	894,745	1,077	8,526,700
Botany Cabinets Type II	35	35	503.36	1,059,566	1,077	8,526,700
Entomology Cabinets	170	570	570.47	1,200,841	454.43	1,037,000
Other Cabinets	140	565	548.10	1,153,750	507.01	1,157,000

### **Annex 3. Economic Costs and Benefits**

Not applicable

## Annex 4. Bank Inputs

### (a) Missions:

Stage of Project Cycle	No. of Persons and Specialty (e.g. 2 Economists, 1 FMS, etc.)		Performance Rating	
	Count	Specialty	Implementation Progress	Development Objective
<b>Identification/Preparation</b> Preparation (05/05-05/21/93)	4	1 TTL (see footnote 2)		
<b>Appraisal/Negotiation</b> Pre-Appraisal/ Appraisal (11/09-12/01/93)	3	1 TTL, 1 Proc., 1 Bot.		
Negotiation (04/04-04/08/94)	4	1 TTL, 1 Law., 1 Biodiv., 1 Proc.		
<b>Supervision</b> 03/13-03/17/95	4	1 TTL, 1 Oper., 1 Bot., 1 FMS	S	S
10/16-10/20/95	3	1 TTL, 1 Bot., 1 FMS	HS	S
04/01-04/04/96	3	1 TTL, 1 Oper., 1 Proc.	S	S
11/18-11/22/96	2	1 TTL, 1 Proc.	U	S
06/09-06/17/97 (MTR)	5	1 TTL, 1 Biodiv., 1 Zool., 1 Oper., 1 FMS	S	S
12/03-12/11/97	5	1 TTL, 1 Biodiv., 1 Bot., 1 Oper., 1 FMS	S	S
08/02-08/09/98	2	1 TTL, 1 proc.	S	S
11/30-12/09/98	5	1 TTL, 1 Biodiv., 1 Bot., 1 Oper., 1 Proc.	S	HS
08/12-08/19/99	4	1 TTL, 1 Biodiv., 1 Oper., 1 Proc.	S	HS
12/01-12/13/99	3	1 Biodiv., 1 Oper., 1 Proc.	S	HS
08/17-08/22/00	5	1 TTL, 1 Biodiv., 1 Oper., 1 Zool., 1 Proc.	S	HS
<b>ICR</b> 02/5-02/15/01	8	1 TTL, 1 Bot., 1 Zool., 1 IT, 1 FMS, 1 Proc., 1 Oper.	S	S

Note: Biodiv-Biodiversity Specialist, Bot.-Botany/Herbarium Specialist, Disb.-Disbursement Analyst, Env.-Environmental Specialist, IT-Information Technology Specialist, FMS-Financial Management Systems Specialist, Law.-Lawyer, Oper.-Operations Officer, Proc.-Procurement Specialist, Soc.- Social Development Specialist, TTL-Task Team Leader, Zool.-Zoology/Museum Specialist

<sup>2</sup> Bank records indicate four mission members but three others (2 Environmentalists, 1 Sociologist) were actually working on the associated Kerinci-Seblat project.

(b) Staff:

Stage of Project Cycle	Actual/Latest Estimate	
	No. Staff weeks	US\$ ('000)
Identification/Preparation	17.10	\$57.10
Appraisal/Negotiation	20.20	78.10
Supervision	88.41	331.62
ICR	3.39	44.43
Total	129.10	\$511.75

*Note: ICR staff weeks and the corresponding USD amount are included in the quoted estimates under Supervision.*

## Annex 5. Ratings for Achievement of Objectives/Outputs of Components

(H=High, SU=Substantial, M=Modest, N=Negligible, NA=Not Applicable)

	Rating				
<input checked="" type="checkbox"/> <i>Macro policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Sector Policies</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Physical</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Financial</i>	<input type="radio"/> H	<input type="radio"/> SU	<input checked="" type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Institutional Development</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input checked="" type="checkbox"/> <i>Environmental</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
 <i>Social</i>					
<input checked="" type="checkbox"/> <i>Poverty Reduction</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Gender</i>	<input type="radio"/> H	<input checked="" type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Private sector development</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input checked="" type="checkbox"/> <i>Public sector management</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA
<input type="checkbox"/> <i>Other (Please specify)</i>	<input type="radio"/> H	<input type="radio"/> SU	<input type="radio"/> M	<input type="radio"/> N	<input checked="" type="radio"/> NA

## Annex 6. Ratings of Bank and Borrower Performance

(HS=Highly Satisfactory, S=Satisfactory, U=Unsatisfactory, HU=Highly Unsatisfactory)

### 6.1 Bank performance

Rating

☒ Lending

☐ HS ☒ S ☐ U ☐ HU

☒ Supervision

☒ HS ☐ S ☐ U ☐ HU

☒ Overall

☐ HS ☒ S ☐ U ☐ HU

### 6.2 Borrower performance

Rating

☒ Preparation

☐ HS ☒ S ☐ U ☐ HU

☒ Government implementation performance

☐ HS ☒ S ☐ U ☐ HU

☒ Implementation agency performance

☐ HS ☒ S ☐ U ☐ HU

☒ Overall

☐ HS ☒ S ☐ U ☐ HU

## **Annex 7. List of Supporting Documents**

### **A. Bank and Project Documents:**

Indonesia Biodiversity Collections: Project, Memorandum and Recommendation of the Director,  
June 22, 1994  
Global Environment Trust Fund Grant Agreement (Biodiversity Collections Project) between  
Republic  
Indonesia and IBRD, July 25, 1994  
Amendments to Grant Agreement  
World Bank Guidelines for Preparing Implementation Completion Reports, June 1999  
Operational Policies (OP 13.55) for Implementation Completion Reporting  
Operational Directive (OD 13.05) for Project Supervision

### **B. Bank Supervision Mission Reports:**

First Supervision Mission Report, May 11, 1995  
Second Supervision Mission Report, November 29, 1995  
Third Supervision Mission Report, May 1, 1996  
Fourth Supervision Mission Report, January 27, 1997  
Fifth Supervision Mission Report, July 11, 1997  
Sixth Supervision Mission Report, December 30, 1997  
Seventh Supervision Mission Report, August 5, 1998  
Eight Supervision Mission Report, December 17, 1998  
Ninth Supervision Mission Report, September 9, 1999  
Tenth Supervision Mission Report, February 1, 2000  
Eleventh Supervision Mission Report, August 1, 2000  
Final Supervision Mission Report, February 15, 2001

### **C. Project Reports:**

First Annual Progress Report, September 1995  
Second Annual Progress Report, September 1996  
Third Annual Progress Report, September 1997  
Fourth Annual Progress Report, September 1998  
Fifth Annual Progress Report, September 1999  
Sixth Annual Progress Report, September 2000  
Draft Project Final Report, February 2001  
Financial and Institutional Sustainability Study, November 2000  
Project Impact Study of IT Component, Biodiversity Collections Project, February 2001  
Project Impact Study of Botany and Zoology Components, Biodiversity Collections Project,  
December 2000  
Various Mentors' Reports  
Various Technical Advisors' and Consultants' Reports  
Government's Draft Implementation Completion Report, January 2001  
Draft Transition Arrangement Plan, January 2001

## **Additional Annex 8.GOI Implementation Completion Report**

**Research and Development Center for Biology Indonesian Institute of Science  
Republic of Indonesia**

### **PREFACE**

Based on the request of the Director of *Pusat Penelitian dan Pengembangan Biologi* (PPPB) of the Indonesian Institute of Sciences (LIPI), an Indonesian Team of Experts has made an evaluation on the completion of the implementation of the GEF-BCP (Global Environment Facility Grant No. TF 028657). The GOI-ICR Team consisted of Prof. Dr. Aprilani Soegiarto, Senior Researcher of LIPI, Dr. Kuswata Kartawinata, Forest Ecologist of CIFOR (Center for International Forest Research), and Dr. Sri Suharni Siwi, Senior Researcher of the Central Research Institute for Food Crops (CRIFC) of the Ministry of Agriculture, Republic of Indonesia.

This is the Final Report of the ICR - Team.

The ICR Team expressed its appreciation to the Director of PPPB, Project Management Committee, and the Project Implementation Unit for their support and assistance, without which the Team could not complete its tasks. The assistance and critical comments of the World Bank Task Team Leader is also greatly acknowledged.

Bogor, June 30, 2001

The GOI- ICR Team

### 3. Assessment of Development Objective and Design, and of Quality at Entry

#### 3.1 Original Objective:

The Project would have strengthened the institutional capacity of the Research and Development Center for Biology (PPPB) to support systematic biological collections, a basic reference tool for biodiversity inventory and monitoring. The project would also have made the information from the collections available to external clients. The project would have established the foundation required for PPPB to meet the expanding needs for biodiversity information over the long term, and would provide high priority information during the project period.

The project objectives were consistent with Indonesia's priorities and the World Bank's Country Assistance Strategy (CAS) at the time of project preparation, appraisal and grant approval (1993-1994).

#### 3.2 Revised Objective:

The original objective remained unchanged throughout the project life.

#### 3.3 Original Components:

**(a) Project Management and Coordination (Component 1).** The component would (1) establish the following committees and working units: a steering committee (SC); a project management committee (PMC); a project implementation unit (PIU); a technical advisory group (TAG), and a user advisory group (UAG), (2) appoint short-term advisors and trainers on environmental health and safety, document restoration, data field design, and specialized systematic biologist; and (3) provide a grant program for systematic research and genetic resource conservation, and a financing strategy study.

**(b) Systematic Collections and Research in Botany and Zoology (Component 2).** This component have developed systematic collections and related research activities in botany and zoology through:

**(i) Human Resource Development:** 18 graduate-level scholarships in systematic biology and 11 recruits from Universities; extensive on-the-job training for managers, scientists, interns, and technicians in curation, taxa identification, field collecting, and user product development;

**Collection Restoration and Development:** Provision of building renovations, furniture, archival supplies, 40 temporary employees and redeployment of 20 permanent staff to work as curatorial assistants in order to improve and expand specimen storage, to improve the scientific organization of the collections, to restore deteriorating specimens, and to stabilize the specimens as necessary before moving to the new cabinets or buildings (these activities included the integration of the marine reference collections belonging to the Research and Development Centre for Oceanology ("*Pusat Penelitian dan Pengembangan Oseanologi*"-PPPO) with PPPB's terrestrial reference collections;

**(ii) Research facilities:** Renovation of buildings, provision of scientific literature and equipment for improving research facilities on systematic biology.

**(iii) Publications and Products:** Preparation and publication of an illustrated technical glossary, a computerized bibliography of written reference materials, a computerized gazetteer, a database and handbooks covering specific taxa, field guides and a specimen identification service.

**(c) Information System Management (Component 3).** This component has set up a computer database and a local area network capable of basic specimen data entry, automated label production, collections management function, and information dissemination. This system will complement and comprise a node of wider network, which GOI is planning to develop. This component has comprised inputs of technical assistance, software development and support, and establishment of a new sub-division with re-deployed and newly recruited staff.

**(d) Scientific Collaboration and Services (Component 4).** This component provided a small amount of technical assistance and office equipment to strengthen PPPB's capacity to manage collaborative research, client services, training program, mentors and internship programs.

### **3.4 Revised Components:**

Essentially there was no change during the project's life span.

### **3.5 Quality at Entry:**

Quality at entry was judged to have been "*satisfactory*". The project was design to strengthen the capacity of staff in research on systematics, improvement of facilities, collections management, and the development of information technology at PPPB. It was excellently designed, and some parts were little too detailed. Despite a thorough and comprehensive and comprehensive preparation. The staff had to work very hard and encountered some problems at the beginning that needed some adjustment on the detail requirement set forth in the project document particularly those regarding with the discontinuation of the use of hazardous preservatives. It necessitated that the herbarium specimen (targeted at 200,000 specimens), had to be reprocessed and stored in insect proof metal cabinets.

## **4. Achievement of Objective and Outputs**

### **4.1 Outcome/achievement of objective:**

Overall, the Project produced "*satisfactory*" results, despite a tremendous political upheaval and economic downturn that Indonesia underwent during the course of the project implementation. Despite these pressing problems GOI was still able to provide adequate counterpart budget throughout the duration of the Project. After experiencing some problems, such as conflicts in staff assignment, inappropriate project structure, procurement of curatorial equipment, etc., with the assistance and guidance of the WB Team and consultants, most activities were carried out in accordance with the principles outlined in the Project Document. The Project's closing date was extended for five months up to March 31, 2001 from the original closing date of October 31, 2000.

### **4.2 Outputs by components:**

#### **(a) Project Management and Coordination (Component 1)**

The Project Management and Coordination (PMC) can be rated as "*satisfactory*" due in most part to the better guidance and support from the PPPB management. The PMC, PIU (Project Implementation Unit) and Collection Coordinators have run the Project "*satisfactorily*", despite a number of changes in their staffing. It is expected that there would be no change in the remaining period of the Project. It is understood that the PIU staff will return to their original work unit at the completion of the Project. The ICR Team is of the opinion that the unit should still be maintained for a period of time to foresee and supervise a smooth transition process according to the agreed plan. All the degree and non-degree training programs as well as the mentors and in-house training schemes have been completed "*satisfactorily*". As required the Project has also established Project Steering Committee (PSC), Technical Advisory Group (TAG), and User's Advisory Group (UAG). The guidance of PSC was "*highly satisfactory*", and that of the TAG was "*satisfactory*" whereas that UAG was "*unsatisfactory*". Part of the problems with UAG seemed to be the lack of communication with PIU and PMC as well as budgetary constraints. Although concrete plans of action have been submitted, no implementation had been carried out. Most members of the UAG were from outside of PPPB and LIPI. Constraints in procurement procedure were encountered by the management as there some conflicting requirement by the Bank's procedure versus that of the government. The management managed to take the necessary steps so that it satisfied the Bank and always obtained "unqualified opinion" from the official Indonesian public audit (BPKP) in its annual audit reports. Despite the project involved many scientists from different backgrounds the management has successfully motivated the team to produce their best that many targets were exceeded.

#### **(b1) Systematic Botany Collection and Research (Component 2)**

The achievement of the HB Collection has been “*satisfactory*”. Through the degree and non-degree programs of the project, the number of qualified staff have increased and it is the largest number of taxonomist attached to one institution in South East Asia. The Herbarium has regained its status as the global significant center for research in taxonomic botany. The research staff, technicians, and other supporting staff members are highly dedicated personnel. The rehabilitation of the systematic collections, the digitization of specimen information, training program, and improvement of facilities and working atmosphere, have strongly enhanced their motivation and commitments. Improvement in the HB has been widely acknowledged by visiting taxonomists, graduate students, government officials, and private company staff. Foreign taxonomists recognized that the systematic collection is the most important reference collection of South East Asian plants.

Few problems remain, such as the installation of an air-conditioning system in the specimens collection floors to make them closed at all time, thus preventing or at least minimizing the opportunities for insect entry, and providing comfortable and conducive working space for researchers and technicians to work more effectively. It should be done now and not to wait until a new herbarium building is constructed otherwise a large number of specimens may be destroyed by then. Restoration, remounting and registration of the remaining 88% of the collection should continue beyond the completion of the GEF project and be given high priority and receive special attention. The management should make serious and special efforts in any way possible to seek funds from GOI, private sectors and various donors in order to be able to continue the above undertaking. PPPB should explore the possibilities of securing a financial support to enable it to hire professional fundraiser.

#### **(b2) Systematic Zoology Collection and Research (Component 2)**

The progress of work in the MZB collection can be rated as “*highly satisfactory*”. The MZB has now qualified staff members and can be recognized as a globally important center for taxonomic zoological research. The research staff and technicians are highly dedicated. The construction of the new building, improved facilities, better working atmosphere, rehabilitation of the systematic collections, the digitization of specimen information, and training program have strongly enhanced their motivation and commitments. Through concerted efforts the MZB is now able to attract public attention, in particular school children, students, hobbyists, and have been recognized nationally (universities, consultative Group on Indonesian Museums), regionally (through ASEANET-CABI) and internationally with other musea in the world through the mentors. The newly designed and locally produced insect collection cabinets were praised and received attention by participants of ASEANET Meeting. They were interested to purchase the cabinets for their musea. The new designed is now being patented. The training and mentorship programs have successfully enhanced work culture at the MZB.

The transfer of the marine collection from PPPO to the MZB and HB was initiated and provision of the transfer was prepared by the project. Unfortunately, the policy was under review as some members of PPPO showed some reluctance and planned to develop its own museum.

#### **(c) Information system management (Component 3)**

During the earlier stage of the project implementation, delays occurred in the development of Information Technology (IT). However, at the later stages of the project, IT team has developed the database on their own and the output of this component has been rated as “*satisfactory*”. The project has developed fully functional software for collection management called the Indonesian Biodiversity Information System (IBIS), version 2.02 in MZB and 2.0 in HB, respectively. Both versions, together with the gazetteer, can be opened in MZB, Cibinong. Labels can be produced for all zoological and botanical taxa. Several constrained of IBIS have been encountered due to limited capacity of software access, resulted in frequent computer system crashes. Additional support to improve the program has been

provided by the JICA, that allowed the migration of IBIS data from MS Access format into ORACLE platform and provided to MZB more computers. In the HB computer upgrades were provided by GEF, and LAN links seven computers utilized for entering data. In the MZB, LAN infrastructure is in place, unfortunately there was no software. Optical disk is used to back-up data from HB to be copied at UNIX in MZB, because both versions have not been linked due to the high cost. Short-term training and study visits abroad that provided to IT Team facilitated software development. IT team has been regrouped, and it now consists of a Coordinator of Information, Botany and Zoology Network Managers, Botany and Zoology Database Managers and Computer Technicians. They were also supported by short-term IT consultants. Local training courses for DEO's improved their ability in entering data.

In HB, the total number of specimen data entry stands at 240,000 records (about 10%). As a whole the percentage of progress in data validation is very low. The botanical validation should make use the available 120 taxonomists collaborating in the Flora Malesiana program to provide assistance. In MZB, the entry of zoological data accounts for about 142,000 records (6%) with only a small fraction (27, 300) of the data has been validated. Serious steps should be made to improve the speed of data entry while increasing the basic knowledge of nomenclature to decrease fault validation efforts.

PPPB Web site is <http://biolipi.bogor.net> or <http://bio.lipi.go.id>, represents the joint efforts of the JICA Biodiversity Project, the GEF project and resources of PPPB itself. It is available for searching information of validated types with many species records are complemented with photographs. However, information dissemination should be stepped up in the utilization of IBIS databases and some shortcomings need to be verified to make IBIS more accessible to a wider network.

#### **(d). Scientific Collaboration and Services**

This component was rated "*marginally satisfactory*" by the last World Bank Supervision Mission. This rating was questionable in view of GOI-ICR as almost all of the tasks of this component such as small research grants, scholarship, non-degree training, internship, mentorship and publication of fields guides were integrated with the other components. This component facilitated these programs which in each component were rated satisfactory. Without the excellent performance of this component in organizing these activities the high degree of success would not be achieved. This component also succeeded in fostering collaboration with partners such as Birdlife International, Wetland International, and Wallacea Foundation publishing the field guides. Collaboration was also fostered with international institution and individuals as reflected by the availability of mentors, both individually or provided by herbaria and musea around the world. This has enhanced the recognition of PPPB's biological collections world wide.

#### **4.3 Net Present Value/Economic rate of return: Not Applicable**

#### **4.4 Financial rate of return: Not Applicable**

#### **4.5 Institutional development impact:**

The biological collections of PPPB area very valuable national and international asset. They are the largest taxonomic reference collections in the whole Southeast Asian region. The GOI, LIPI and PPPB commitments and concerted efforts on the upgrading of physical facilities, the collections and the training of staff as well as the recruitment of new staff and technicians, have developed the MZB and HB with their qualified staff into globally significant centers of taxonomic and biodiversity research. GEF-Biodiversity Collection Project has played a paramount role in the overall success of upgrading the collections and human resources development. It should also be noted the important role of JICA in the reorganization of the zoological collection, the construction of the new "*Widyaloka*" building with its excellent working facilities and in the development of a well arranged accessible collection of world class at MZB. The PPPB could capitalize this excellent progress and capacity for enhancing its role in the further development of the

collections and in supporting the biodiversity conservation efforts nationally, regionally and internationally. The reorganization of LIPI should provide an excellent opportunity for this purpose. The institutional development impact can be rated as substantial.

## **5. Major Factors Affecting Implementation and Outcome**

### ***5.1 Factors outside the control of government or implementing agency:***

In 1997, Indonesia experienced a multi-dimensional crises. At the same time the rupiah value spiraled down from Rp.2.400,- to as low as Rp. 17.000,- to a US dollar. Although eventually the exchange rate stabilized to about Rp.7.000/dollar. Economic and monetary crises hit the Southeast Asian 'tigers', such as South Korea, Thailand, Malaysia and even Singapore and Taiwan. But Indonesia suffered the most and even until now the economy has not yet recovered. At this writing the exchange rate is down again to Rp. 10. 400/US dollar. These multi-dimensional crisis gave no effect to the implementation of the project. The government stuck to the policy that this project was a priority, and accordingly kept up the level of counterpart budget at respectable level. In terms of the foreign budget, the project had profited from the high USD exchange rate thereby enabled to pay out more in rupiah terms. This resulted in more cabinets could be purchased hence reducing the short-fall, more technicians to be hired adding to the achievement of specimen restoration, and more field guides were published.

### ***5.2 Factors generally subject to government control:***

Despite severe economic and monetary crises, GOI was still able to maintain the necessary counterpart budget allocation. The change of dollar exchange rate was positively utilized to purchase materials and equipment at better price domestically. Although GOI has implemented the "zero-growth" policy on public servant, the Project has successfully recruited all returning degree program trainees as well as hiring a number of new technicians. However, the "zero-growth" policy will affect the overall sustainability of the PPPB programs, in particular those at the MZB and HB.

### ***5.3 Factors generally subject to implementing agency control:***

These include staff assignment for the Project, Project structure that links with PPPB organization, staff training schedules, procurements of curatorial equipment and materials, schedule of restoration and curation of the collection, etc. Despite slow learning process, eventually the staff assignment to the Project was improved by integrating them with the Botany and Zoology divisions. Selection of staff to be trained was carried out in good order and transparent. Therefore, almost 95% of the advanced degree training were able to complete their degree programs. The management of PPPB has guided the project to satisfactory completion. The work culture has slowly improved with the guidance of mentors and partners. The information system was at first not quiet yet developed, but at the later stages it has been improving steadily.

### ***5.4 Costs and financing:***

Based on Bank disbursement figures as of June 30, 2001, USD 6.89 million has been disbursed from the GEF grant and is likely to reach USD 7.11 million by July 31, 2001, or 99% of the appraisal estimate of USD 7.20 million (equivalent to SDR 5.1 million). The total project expenditures of USD 9.88 million, including the Government's counterpart of USD 2.77 million. The Government's counterpart was 66% of the appraisal estimate of USD 4.20. Although the Government's total contribution was reduced in dollar terms because of exchange rate fluctuations, it has provided sufficient counterpart funds as scheduled, procured additional cabinets to meet the shortfall of the curatorial equipment, and continued the research grants. The actual total GOI fund for this project was IDR 13,653 million or 154% of the appraisal estimate of IDR 8,841 million. Despite the economic crisis and in US dollar term contribution of GOI was short of the expectation, the government has done very well during the crisis.

### **Financial audit and follow-up actions on audit findings:**

In the last two fiscal years (FY 1998/99 and FY 1999/00), the public audit office (BPKP) expressed "unqualified opinion" on the project's annual financial reports. In the FY 1998/99 PA audit report, the auditor noted that there was a contract awarded to an unqualified contractor but this was followed up accordingly by the PIU. The audit reports for FY 2000 (the last PA and SA/SOE reports) are due for submission to the Bank by BPKP on June 30, 2001.

## **6. Sustainability**

### **6.1 Rationale for sustainability rating:**

The real measure of the sustainability of the Project is whether the momentum of activities carried out by the Project can be sustained or even expanded many years after the completion of the Project. The sustainability of the project to be considered as "*likely*". The Project has been successfully implemented. The institutional capacity building program resulted in that PPPB, in particular through the improved botanical and zoological collections and qualified staff, has been recognized as globally significant center for taxonomy and biodiversity research. Most of the targeted efforts in the framework of the BCP have been achieved. LIPI and PPPB management has assured the sustainability of the project once it was completed, including provision of the operational budget and recruitment of badly needed trained and skilled human resources. It is, however, not so sure that the new organization structure of LIPI, inaugurated on March 22, 2001, will reinforce this commitment.

The progress in Zoological and Botanical Collection Management was rated as highly satisfactory and satisfactory, respectively. Validation efforts need to be increased and can be done routinely by taxonomists or visited experts. Botanical validation should make use the availability of 120 taxonomists collaborating in the Flora Malesiana program to provide assistance. HB has developed linkages over a century with large herbaria interested in the Flora of Malesia and Indonesia in particular, such as Kew, Leiden, and Arnold Arboretum and should make use such close networking in solving validation problem.

In cooperation with JICA the IBIS is currently migrated data from MS ACCESS format to ORACLE to improve data entry interface. As it was suggested by the impact study team, the functioning IBIS should meet the requirements of taxonomic community, become more visible and user friendly providing services for inventory and biodiversity assessments, and should support publications in different format. In this regard, publication of field manuals, revision of taxa, and monographs, should be strengthened. Although dissemination can be in the form of printed material, electronic publication can be made available through PPPB web site at Cibinong. *Web site:* [http:// biolipi.bogor.net](http://biolipi.bogor.net) or [http:// bio.lipi.go.id](http://bio.lipi.go.id).

Significant progress has been made in human resources capacity building both through degree as well as non-degree training programs. In addition, internship programs in botany and zoology have been completed to strengthen the capacity of taxonomists in a number of universities in Indonesia. It is a potential asset for developing a national networking in the field of taxonomy in Indonesia.

The Mentors program is a very successful project initiative. Besides producing helpful a brief report, each mentor collaborated with the collection staff and in many cases also continued to assist them. In addition, they are a potential resource that could be utilized, for developing partnership. The new zoology building, laboratories and other facilities constructed by JICA have created a better working atmosphere. Existing cooperation and excellent interaction with JICA, in particular for the zoological collection, support the sustainability of the project.

Although LIPI and PPPB management have assured the sustainability of the project once it was completed, it is uncertain and questionable, however, whether a new reorganized structure of LIPI, which was inaugurated on March 22, 2001, will be strongly supportive of BCP. One of the changes is that the Deputy for Natural Sciences will be split into two Deputies: Biological Sciences and Earth Sciences. There is a possibility that PPPB will be the core institution under the Deputy for Biological Sciences. Thus, it is expected that stronger support will be given to the biological collection organization, i.e., MZB and HB.

But it still remains to be seen how the new organization structure plans to support the maintenance and expansion of the biological collection.

It is essential that in the framework of the new organization, a number of weaknesses and unresolved problems should be given serious consideration. Long term planning for recruitment of trained and skilled of research staff / technicians and strategy for increased funding, from government budget, research grants and other potential funding sources should be given consideration. PPPB should strengthen the potential of non-budgetary funding sources, such as marketing books and other products, consultancy, laboratories fees, specimen photographing fees, etc. Botanical field guides, manuals and monographs have not been produced, hence should be given serious attention. IBIS could further be developed to include mapping of the biodiversity as well as coverage on ecological, phyto-chemical, ethno-botanical information. Communication between research staff and ISM staff should be improved, especially solid linked between IST and database managers to ensure the highest quality information entered into database.

#### **6.2 Transition arrangement to regular operations:**

During the life span of the GEF-BCP, the project has improved and set up international standard of work practices on collection, such as on improving collection management, health and safety requirement, development of IBIS, etc. Since the project will be closed by March 31, 2001, the responsibility of managing the project has been in coordination with PPPB leadership for ensuring a smooth transition. It would be desirable that the PIU could oversee the smooth transition so that the function and responsibility of managing the biodiversity collection are completely merged with the new organizational structure of PPPB.

In order to ensure that specimen restoration will continue in botany, the head of botany division together with botany coordinator has assigned two permanent technicians fully in charge of the specimen restoration assisted by other technicians whenever other duties allow. In zoology, most of the technicians are attached to collection maintenance and all of the specimens have been restored by the project. The ongoing BCP sponsored by JICA will support zoology division in hiring two technicians. Short-term technicians may also be hired through collaborative projects such as the upcoming project financed by ASEAN Regional Committee for Biodiversity Conservation (ARCBC). There is a possibility that National Biodiversity Information Network (NBIN) will hire some DEO to continue entering data. In the year of 2000, five new recruits were induced as permanent staff, four after completing the master degrees and one of Ph.D. program. One M.Sc and one Ph.D. new recruits were provided with positions in January 2001. PPPB management has agreed to continue recruiting the rest once they have finished their studies. Therefore, the safety of the collections will be in good hands.

"*Yayasan Hayati*" will continue to contribute field -guide books published by the project and will also finance publication of more field -guides with the fund generated from the book sale. Efforts to generate money through business development as recommended in the financial sustainability report will be followed up by Scientific Collaboration and Service Section. JICA-BCP and the upcoming NBIN will continue the IBIS development under supervision of this section.

### **7. Banks and Borrower Performance**

#### **Bank**

**Lending:** The Bank lending has been rated as "*satisfactory*". The Bank provided comprehensive support to the Government and LIPI in identifying key project activities. The objective of the project was fully in agreement with the government's strategy for biodiversity conservation and information as expressed in the 1993 Biodiversity Action Plan for Indonesia. The project was consistent with the Bank's Country Assistance Strategy and it was a logical continuation of a number of initiatives of biodiversity. The project was well structured and the Bank's assistance to the Borrower with project preparation was satisfactory. The appraisal of the project was also satisfactory and had secured the full commitment of the Government to the implementation. The capacity of the implementing agency had been sufficiently evaluated and the

financial package was appropriate and adequate in its amounts.

#### **7.1 Supervision:**

The Bank's supervision was considered "*highly satisfactory*". During the life span of the Project, the Bank staff and consultants who provided the most and urgently needed assistance intensively supervised it. Communication between the Bank and Recipient was very intensive. After each supervision mission there was a long list of items, both technical and operational, that have to be carried out and completed by the Recipient by certain dates. It was noted also that on occasion delay was observed in response to the Bank, in particular when decision or approval was required. The Bank also provided the urgently needed training in financial, disbursement and accounting. Although there were changes in the responsibility of the Project management as well as the Collection coordinators, however the Bank's core team remained essentially the same.

#### **7.3 Overall Bank performance:**

The Bank's performance was rated as "*satisfactory*" throughout the preparation and implementation. In the course of the implementation, in particular in the early part, the Bank has provided the urgently needed assistance and guidance with procurement contract preparation and several other technical issues. The Recipient highly appreciated this assistance's.

#### **Borrower**

#### **7.4 Preparation:**

The Government's performance during the preparation of the project has been rated as "*satisfactory*". For number of years relevant of the GOI, in particular LIPI and PPPB, have expressed a growing concern on the urgent need to renovate and safeguard the scientifically invaluable collections of MZB and HB. The national and international importance of these collections as the principal reference source of information on the fauna and flora of Indonesia, was clearly recognized in the "Biodiversity Plan for Indonesia" (BAPPENAS, 1991), Which called to further investment in biodiversity collection restoration, maintenance and development. Through a number of intensive consultations, workshops and interactions, finally in 1994, GOI and WB approved the project for the implementation of GEF-BCP. LIPI and PPPB have been assigned to manage the GEF-BCP with a total financing plan of US\$ 7.2 million (GET Grant No. TF 028657). Subsequently they established the PMC and PIU from the existing staff of PPPB, in particular from MZB and HB.

#### **7.5 Government implementation performance:**

Despite facing multi-dimensional crisis since 1997 on economy, monetary, social and political as well as environment, the GOI performance was rated as "*satisfactory*". It was fully realized that the ability of GOI to provide financial contribution was hindered by the economy and monetary crisis. However, with a concerted efforts and excellent coordination by PPPB, LIPI and BAPPENAS, the GOI always gave high priority to the project. Therefore, sufficient counterpart fund can always be made available in some case event beyond expectations. Despite the economic crisis the government had been able to cover all the short-fall in the cabinet procurements totaling to 495 units or equivalent to USD 506,328.

#### **7.6 Implementing Agency:**

PPPB of LIPI has been designated as the implementing agency of the project. With the strong support of LIPI and GOI and the assistance of WB staff, consultants and mentors, PPPB could implement the project in a satisfactory manner. The PMC and PIU have successfully implemented the overall project components and the biological collection have been stabilized, databases is in function, almost all trainees have returned, recruited and contributed to the work.

### **7.7 Overall Borrower performance:**

Although at early stage of the implementation there was problems associated with much needed learning curve on the part of PPPB and the severe multi-dimensional crisis, faced by Indonesia, in general the Borrower's performance has been rated as "*satisfactory*".

## **8. Lessons Learned**

Indonesia is recognized as the center of mega-biodiversity, both in the terrestrial as well as marine environment. Unfortunately, however, the rate of losses and ecosystem degradation has increased substantially in the last decades. Therefore, the "Biodiversity Action Plan" for Indonesia has clearly recognized the problems and called for further investment in biodiversity collection relocation, maintenance and development. The GEF-BCP was desired to strengthen institution and develop capacity in the country to alleviate those pressing problems. The lessons learned from the GEF-BCP can be grouped as follows:

### **For Indonesia**

1. It takes strong commitments, concerted efforts and time to manage biological resources for national development. Institutional strengthening and developing a network of partnership, both nationally and internationally, is a major step toward achieving the goal of developing and conserving the biological resources.
2. The GOI strong commitment throughout the life span of the project was reflected by the strong support to the GEF-BCP, despite political, economic, social and even environmental crisis faced by the country since 1997. The GOI has provided adequate counter fund budget. Despite the "zero-growth" policy, GOI concerted to recruited the returning research staff from their Ph.D. and M. Sc. training abroad. These supports in part will ensure the sustainability of the project.
3. Despite various problems encountered and rather slow learning curve in the early stage, Indonesia with the strong support and commitment by the Bank, was able to implement the project satisfactorily, a load achievement for a developing country in strengthening institution with the purpose of managing biodiversity collections. The success could be used as an example by Indonesia especially the Bank to develop similar program activities in the region or in other developing countries worldwide.

### **For LIPI and PPPB and Institutions**

1. From the onset LIPI has provided strong support, guidance and advice to PPPB to implement the project. The strong coordination and understanding with BAPPENAS made it possible that LIPI and PPPB secured counter budget fund for the project and even putting budget for purchasing alcohol, collection materials and increased electricity bills to the routine budget. Almost all the returning Ph.D. and M. Sc. degree program trainees have been successfully recruited and become civil servants. This by itself was a major achievement due to the "zero-growth" policy implemented by the government.
  2. It took a concerted efforts and coordination in order to implement GEF-BCP. It was clearly indicated by the slow learning curve at the beginning of the project implementation. Only with the assistance and continued guidance from the Bank and mentors, the PMC and PIU could implement the project satisfactorily.
  3. The slow and tedious learning was experienced by PIU and PMC in the preparation and implementation of almost all components of the project, in particular on the Project Management Coordination (Component 1) and Human Resources Development of the component 2. Slowly with change of work culture, guidance from steering committee, mentors and partners, PIU and PMC acquired the experience and the needed expertise in managing the project.
- The HB and MZB, along with their valuable botanical and zoological collections, trained qualified staff and technicians, have become globally significant research centers for taxonomy and biodiversity. PPPB in co-operation with its national and international partners should capitalize this achievement to sustain or if

possible to expand further. It should be promoted in particular within the conceptual framework of the newly established Deputy for Life Sciences in the new organizational structure of LIPI, inaugurated officially March 22, 2001.

## **9. Partner Comments**

**(a) Borrower/implementing agency:**

**(b) Cofinanciers: No co-financier**

**(c) Other partners (NGOs/private sector):**

In the course of project implementation, there were some partners contributed to the success of the project. JICA has constructed a new building with modern facilities and excellent working atmosphere for MZB. It also provided ORACLE software in order to improve the capacity of the IBIS, and funds for publications, organizing workshops, and purchase of badly needed cabinets.

Some NGO's and organizations should be acknowledges for their assistance and contributions, such as the Birdlife International, Wallacea Foundation, Harvard, Ryksherbarium Leiden, Kew Herbarium, Bishop Museum, CSIRO and BAPPENAS. PPPB has established "*Yayasan Hayati*" which will strengthen the efforts of publishing and marketing books and manuals. Potential partners can be further developed through interactions with the former mentors and in association with the ASEANNET, whose a major meeting was hosted by MZB in 2000.

**10. Additional Information: None**