

## 2.2 Basic Concept of the Project

### 2.2.1 Review of Demands

This project involves the following activities with the purpose of enhancing and establishing a system for conservation of the biodiversity in cooperation with LIPI and PHPA.

- To properly collect, set in order, treat, process, and preserve specimens at LIPI and RDCB zoological division facility; to manage and apply the biodiversity information in zoological/biological fields at the BIC (biodiversity information center) of the RDCB zoological division facility; and utilize the information for various purposes.
- To improve the scientific ability of the researchers at LIPI/RDCB zoological division facility in terms of systematics and other specific research fields.
- To use the GHNP (Gunung Halimun National Park) as a model place for wide-ranging research regarding ecosystem conservation and biodiversity to conduct research study of natural environments and practice appropriate park conservation and management.
- Between LIPI and PHPA, to exchange and utilize effective information regarding biodiversity.
- To establish a nature conservation information center (NCIC) to spread the use of computers for park management and research and to compile, manage and operate the database concerning the natural/social conditions of national parks beginning with GHNP as well as the database concerning the zoological and biological species that are targeted for conservation.

In carrying out the activities above, the Indonesian Government has made the following requests for the grant.

#### Facility

- Construction of the zoological specimens storage facility, including the space for the Biodiversity Information Center (BIC)
- Construction of the Gunung Halimun National Park Headquarters (GHNP HQ)

- Construction of the Gunung Halimun National Park Research Station (GHNP RS)
- Construction of the Nature Conservation Information Center (NCIC)

#### Equipment

- Research equipments for zoological and microbiological fields
- Information processing equipment for BIC
- Management equipment, on-site survey equipment, and visitor equipment for GHNP
- Information processing equipment for NCIC

The requested equipment for LIPI was confirmed in the Basic Design (B/D) to be a computer system consisting of two types of micro-organic research equipment, 140 types of zoological research equipment, a database system, a geographical information system, and an image processing system. LIPI includes the laboratory tables and reagent racks to be installed in various research rooms as well as outdoor incinerators. The requests from the PHPA were confirmed to be 27 types of fundamental research equipment, 21 types of audio-visual equipment, 12 types of drawing and car-repair tools, 6 wheels, 12 motorbikes, and a computer system at the point of Basic Design (B/D).

The review of requests are as follows.

#### (1) RDCB zoological division facility

The specimens stored in the LIPI · RDCB zoological division facility, including those collected from the Dutch colonial period amount to 300,000 items. However, the database on these biological specimens is insufficient thus causing inconveniences to data search and comparative research, etc. This problem is further combined with such problems as damage to specimens, storage space shortage, and insufficient air conditioning, etc. thus placing the precious specimens in an extremely serious conservation condition.

To improve the situation, the project by the IBRD's GEF(Global Environmental Facility) is planning on readjustment of specimens and provision of specimen racks, in view of the urgent need for the facility to be fully equipped for production and storage of specimens as well as research. The old facility currently located in Bogor has exceeded its limit as a

specimen storehouse in terms of both functions and ability. The transfer to the Life Science Center, planned since 1987, is necessary for improved functions and ability in this capacity and thus is considered appropriate.

In terms of specimen management, the RDCB's zoological division currently uses three GEF-aided personal computers and dBASE-III software to proceed with database compilation; however, the main objective being the specimen management, this division has not reached the stage of creating a biological inventory based on detailed classifications in accordance the established research and collection method and procedure.

The zoological division currently has only a small number of pieces of equipment required for activities and, on top of that, most of them are obsolete. Because the quantity of the requested equipment is large, it is necessary to adjust the number and size of the research rooms affiliated to the specimen storehouses which will be newly built. Decisions on the equipment to be provided were made after examining the situation based on the priority order of A to C. The requested database is for more general purposes - to include not only the information on species but also the information on changes in land utilization as a type of related map and environmental information. Therefore, the system considered for introduction into the newly-built facility is the database system with the geographical information processing function, and the image analysis function in one. However, the immediate target with the highest priority was compilation of a database on the GHNP (Gunung Halimun National Park), aimed at using it as a model to be spread to other national parks or areas.

The requested system can be realized in 1997; therefore, assuming that engineers are trained in Japan, at least 3 persons can be requested to take charge of the system facility until completion. It is estimated that 25,000 items are being held by the RDCB as species related to the GHNP (Gunung Halimun National Park) and that another 10,000 items will be added in the coming two years. Furthermore, if the readjustment of the currently held specimens continues to be carried out smoothly, 500,000 items of the specimens are expected to have been put in database during the coming 10 years. For compilation of a fine unity of database, a database commission being led by the IBRD's GEF as a pivotal organization is conducting

research on its formatting, etc. In May, 1995, GEF's computer specialists are planned to enter Indonesia, aimed at a remarkable progress in database.

Regarding the information processing equipment, both LIPI and PHPA are requesting a computer system which contains the database system, the geographical information system and the image processing system all in one. However, they differ from each other in their main purpose of desiring a computer system except that PHPA wants to use LIPI's biological database, the LIPI desires a computer system to understand the biota in Indonesia from various angles, whereas the PHPA desires one for management of the national park.

By implementing the plan for LIPI, it is expected that the biodiversity information on zoological/botanical fields can be utilized and is appropriately maintained/managed/updated at the BIC (Biodiversity Information Center). Also, researchers scientific search abilities in the taxonomy related to biodiversity as well as in other specific fields have improved at the LIPI and RDCB zoological research institutes. Accordingly, it is considered proper that the plan for LIPI be implemented.

## (2) GHNP HQ

Currently in Indonesia, there are 31 national parks, of which 12 have headquarters. Designated as a national park in February, 1992, the Gunung Halimun National Park (GHNP) is a comparatively new one in Indonesia. However, the GHNP covers a vast zone of major tropical rain forests still remaining in the Java island. Also, the island is still blessed with some species that are near the brink of extinction as well as some zoological and botanical groups unique to itself.

However, the parks are encountering problems such as illegal occupation, poaching, and illegal gold-mining, etc. These are derived from deficiency in park management and lack of understanding by the public of the importance of conservation areas. Therefore, it is necessary to strengthen the park management, to train park managers, and to spread the understanding of and programs on conservation. Places for conservation of the species related to the biodiversity in the GHNP (Gunung Halimun National Park) as well as research activities for creating catalogs are also necessary.

Therefore, through providing facilities and equipment for research and training, the above objectives are strengthened to form a model of national park management in accordance with the conservation program of biodiverse in-situs.

The types of equipment requested by the PHPA were completely new for both the HQ and the RS as far as the requests from the PHPA were concerned - they were basically for national park management and for specimen collection and processing. And, as with RDCB, they had to be adjusted with the accommodation capacity of the HQ and the RS, which are to be newly built; therefore, as with RDCB, the situation was examined in accordance with the priority order of A to C.

By implementing the plan for PHPA, it is expected that the appropriate park conservation and management have been carried out in the GHNP (Gunung Halimun National Park), as a model place for in-situ conservation of biodiversity and comprehensive research. Also, by providing education and training for the people concerned with biodiversity conservation and neighboring residents, it promote enabling a more perfect from of conservation to be carried out. Accordingly, it is considered proper that the plan for PHPA be implemented.

(3) GHNP research station (RS)

The research center is considered to be necessary as a base for collecting specimens of and data/information on the high biodiversity in the GHNP (Gunung Halimun National Park). It is also a base for rangers.

The facility is considered for researchers from outside can be stay for about four months and it is also necessary to plan functions of laboratory and management, the appropriate scale and equipment are reviewed and considered to meet this necessity.

(4) NCIC (Nature Conservation Information Center)

Initially, the Indonesian side were seeking accumulation of biota and environmental data and networking of the national parks throughout Indonesia, specifically based on the GHNP (Gunung Halimun National Park).

However, since the background, the organization, and the positioning, etc. were unclear, these were checked in the Basic Design (B/D). Currently, not much progress was made through the LIPI and the PHPA in organizing the information on national parks as well as on various forms of life in the national parks. Therefore, the information networking of the national parks in the whole country is still in its infancy; and it was agreed that so only the center be started with only the information on the GHNP as a facility with expandability for future purposes.

It is prior subject to plan for the input of drawings accumulated by the present and those effective use, therefore the geographical information system of EWS control is planned to be introduced into the NCIC, and as one of the user of database of RDCB's biodiversity information network which will be planned to be constructed, it will be planned to play a function of information exchange not merely play a function of a geographical information processing system of the PHPA.

Although its facility was initially desired at the HQ, it was decided that this system be installed at the NCIC due to positional and functional problems of the HQ.

By implementing the plan, it is expected that the exchange and utilization of biodiversity information can be attempted between the LIPI (BIC and zoological/botanical research institute) and the PHPA (GHNP). Accordingly, it is considered proper that the plan be implemented.

In view of the fact that the above points were examined to confirm its effect, actuality, as well as Indonesia's ability for implementation of the project and that the effect of this project agrees with the system of the grant assistance, it is considered proper that the project be implemented with the Japanese grant assistance. Accordingly, the outline of the project shall be reviewed and the basic design shall be implemented as follows. However, with regard to the contents of the project, it is proper to modify some of the requests as described when reviewing the components of the project and the details of the requested equipment.

### 2.2.2 Basic Concept

The basic conception planned for the facilities for the RDCB zoological division shall include the following:

- The specimen strages are divided into those for "mammals," "birds," "insects and invertebrate animals," "wet specimens," and "Mollusca" respectively. And the specimen processing facility (space) and the specimen research facility (space) shall be installed for each of these strages.
- The specimen processing room shall be placed near the specimen strages in accordance with the classification of the specimen strages.
- The research rooms shall consist of three fields of "Zoological Systematics," "Zoological Ecology," and "Zoological Physiology," based on LIPI's future plan.
- Staff rooms shall be located on the path of flow that enables effective research activities by various research fields, specimen strages, and sampling rooms, etc. Research rooms for external or visiting researchers shall also be put into consideration on the same line as the staff rooms.
- The function of the information processing room as an activity base of future professional engineers shall also be considered by providing it as an annex to the research division. While putting into consideration the future development toward NBIN, the immediate target activities shall include the database construction limited to RDCB and trial data exchange with PHPA-NCIC.

The basic conception planned for the facilities for the PHPA shall include the following:

- The GHNP control office is positioned as the nucleus point of guard posts scattered in the park. Facilities which will enable various types of training centering on field practices shall be provided.
- Simplified accommodation facilities for researchers, trainees, and administrators. Although it cannot be avoided that the scope of the accommodation is to cope with a small number of people for the time being, the plan should make sure of future expandability.
- The research station shall have residential facilities for researchers whose are closely attached to field work and managing facilities for park managers.
- The NCIC, for the time being, shall be planned as an information center for park management mainly consisting of geographical information on the GHNP (Gunung Halimun National Park).

The project-type technical cooperation is planned in terms of five fields, i.e., the information processing network, the Systematics, the natural/social environment research study, the conservation and management of national parks, and the environmental education. The information processing network field and the systematics field does not specify target areas; however, the natural/social environment research study and the national-park conservation and management field specify the entire area of the GHNP (Gunung Halimun National Park) and its environs as the target areas. As the base of project-type technical cooperation activities, part of the RDCB zoological division facilities and the GHNP (Gunung Halimun National Park) headquarters will be considered.

Details of the basic conception for basic design of facilities are as follows:

(1) RDCB zoological division facility

1) Setting the size of specimen storages

We have received a request from the RDCB zoological division, expressing their desire that the scale of specimen storehouses be large enough to accommodate the storage quantity to be required 25 years after its opening. After discussions, which included the scale and activity ability of the RDCB zoological division, it was decided to settle on the storage capacity of about 10 years later. This size will be adjusted in line with the scale of the storage racks, the facility planned to be requested to the GEF. Furthermore, the specimen storages will be arranged within the building site in such a manner that will ensure sufficient space for additional construction in the future.

2) Setting the number of persons to be employed

The staff plan from 6th year since the opening of the facility is not clear. Therefore, the plan after 5 years shall be tackled to make sure to set a scale that is neither too large nor small.

3) Air-conditioning range

The range of the required air conditioning facilities in the plan, the order of priority was discussed and studied. The results are outlined below.



- Rank 1 (approximately 1,710 square meters)  
Includes part of the specimen storages (mammals, insect species, bird species), the computer room, the training aids room, part of laboratories, the seminar room, and the director room, etc.
- Rank 2 (approximately 2,040 square meters)  
Includes the laboratories and the ID room into Rank 1.
- Rank 3 (approximately 2,770 square meters)  
Includes staff rooms into Rank 2.

When the facilities in its environs are compared and the running costs are looked at, there is no substantial difference from the previously-described Rank 1 to Rank 3. However, in view of maintenance the Rank-1 which was described in the previous section is adopted to avoid using the mechanical system. Furthermore, heat insulating methods are going to be applied to roofs and walls, etc. to reduce the air-conditioning load; dehumidification measures are going to be taken especially for the specimen storages.

#### 4) Facility plan

After discussing with the Indonesian side, it was decided to take the following measures

- For moisture countermeasure, to configure the specimen storages in such a manner that immersed specimens are placed on the first floor while dry specimens on the second floor.
- To build a room for fumigation of specimens.
- To install an elevator for carrying in/out specimen loads.
- Plan the specimen storage to manage the compactus system cabinet which is planned to grant by GEF.
- The zone which will devote to systematic activities for the classification of specimens and the zone which devote to the study and the rest are separated.

5) Equipment and materials

In selecting equipment and materials, emphasis is placed on the following points;

- Shall be conformable with the contents of research, with wide applicability and a high operating rate.
- Shall avoid overlapping of those which can be shared in common use.
- Easy maintenance
- Sufficient consideration shall be given to equipment and materials as well as loads that are required incidentally.

(2) GHNP HQ

- 1) Setting the number of persons to be employed  
The staff plan from 5th year since the opening of the HQ is not clear. Therefore, the plan should be of such a scope that makes further allowance for the situation after 4 years.
- 2) Based on the discussions with the Indonesian side, the HQ shall be placed on the most easy-to-use and even part of the rugged building site. The buildings shall consist of small blocks, in light of the ups and downs of the site.
- 3) As the higher point at site is included in the Indonesian plan to construct buildings for staff accommodation, their access routes should be considered.

(3) GHNP RS

- 1) Consists of wooden flat-roofed buildings. As the construction site is located in the middle of mountains, the method of constructing buildings in a short period of time simply by assembling parts shall be adopted as a means of minimizing the field work, aimed at cost saving.
- 2) For environmental protection, the building arrangement will be in such a manner that as many existing trees are allowed to stay as possible and efforts shall be made to minimize landscaping work.

- 3) Besides its four permanently resident staff members, the RS is planned to accommodate ten research workers from other research stations in accordance with their past achievement records.
- (4) NCIC (Nature Conservation Information Center)
- 1) The interior alteration work to the Bogor PHPA headquarters is expected to be extremely difficult considering its ever-increasing costs and influences on other divisions during its reconstruction work, a new building shall be built on a new lot in the Bogor city.
  - 2) Based on the plan by PHPA, the size of staff is planned to be 10 persons.
  - 3) Based on the extension plan by the Indonesian side in the future, thoughtful considerations shall be made to ensure that the space to be required is secured. Also, the fact that, after the roads are widened, the constructible area is restricted accordingly by law, shall be noted when reviewing the arrangement of buildings.
  - 4) The immediate purpose of the NCIC is the management of the GHNP (Gunung Halimun National Park). PHPA's data is mainly on the geographical information and there is the intention to turn the specimens in the park into a form of database. However, compared with the LIPI, the quantity of specimens possessed by the PHPA is limited; and it assumed that, in the future, the PHPA will be a user of the LIPI's database. Therefore, as an NCIC system, the geographical information system is given the function of communicating with external systems to make it the software loaded with a database system common with the LIPI.