

**Ex-Post Project Evaluation 2010:
Package I-4
(Indonesia, Malaysia)**

September 2011

JAPAN INTERNATIONAL COOPERATION AGENCY

VALUE FRONTIER CO., LTD

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Preface

Ex-post evaluation of ODA projects has been in place since 1975 and since then the coverage of evaluation has expanded. Japan's ODA charter revised in 2003 shows Japan's commitment to ODA evaluation, clearly stating under the section "Enhancement of Evaluation" that in order to measure, analyze and objectively evaluate the outcome of ODA, third-party evaluations conducted by experts will be enhanced.

This volume shows the results of the ex-post evaluation of ODA Loan projects that were mainly completed in fiscal year 2008, and Technical Cooperation projects and Grant Aid projects, most of which project cost exceeds 1 billion JPY, that were mainly completed in fiscal year 2007. The ex-post evaluation was entrusted to external evaluators to ensure objective analysis of the projects' effects and to draw lessons and recommendations to be utilized in similar projects.

The lessons and recommendations drawn from these evaluations will be shared with JICA's stakeholders in order to improve the quality of ODA projects.

Lastly, deep appreciation is given to those who have cooperated and supported the creation of this volume of evaluations.

September 2011

Masato WATANABE

Vice President

Japan International Cooperation Agency (JICA)

Disclaimer

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Republic of Indonesia

Ex-Post Evaluation of the Japanese Grant Aid Project

“Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization”

Mr. Koichiro Ishimori, Value Frontier Co., Ltd

0. Summary

The implementation of the project has been highly relevant to the development policies and needs of Indonesia, as well as to the development policies of Japan, and thus the relevance is high. However, the efficiency of project inputs is fair since the project period was slightly longer than planned, while the project cost was lower than planned. Through the project, the procurement of equipment for research, collection, and educational purposes at the botanical and microbial divisions of the Research Center for Biology (RCB) has brought about research effects (e.g., the volume of research and collections increased/maintained) and educational effects (e.g., the number of visitors increased). These are either the same as or higher than planned. The impact is also high, since research and development of new drugs and biofuels that utilize plants and microbes are conducted in the project. No major problems have been observed in the structural, technical, and financial aspects of the operation and maintenance of the equipment and facilities at RCB. Thus, the sustainability of the project effects is high.

In light of the above, the Project is evaluated to be highly satisfactory.

1. Project Description



Project Location



Building of Research Center for Biology

1.1 Background

The landmass of Indonesia is approximately 1.3% of the world's landmass, and it was home to approximately 20% of the earth's organism species. The number of mammals and reptiles found in Indonesia was the highest and the third highest in the world, respectively. However, economic development, triggered by population growth in Indonesia, has worsened their living environment and caused the speed of species extinction to become unprecedentedly fast. Thus, it was necessary to

conserve the biodiversity¹.

In 1990, the Government of Indonesia designated RCB, under the Indonesian Institute of Science, as a research institute for the conservation of biodiversity. Since RCB did not have adequate research facilities and capabilities, the Government of Japan has implemented the following cooperation projects at the Indonesian government's request.

【Grant Aid Projects:】

1995: Biodiversity Conservation Project (for constructing facilities at the zoological division)

1996: Biodiversity Conservation Project (for procuring equipment at the zoological division)

【Technical Cooperation Projects:】

1995-1998: Biodiversity Conservation Project I (for strengthening research capabilities)

1998-2003: Biodiversity Conservation Project II (for establishing management systems)

As the facilities and equipment at the botanical and microbial divisions were decrepit, the Project for Improvement of Research Facilities for Biodiversity Conservation and Utilization has been implemented as part of a series of projects on the conservation of biodiversity in Indonesia.

1.2 Project Outline

The objective of the project is to promote research in and education on the conservation of plants and microbes by constructing a building for the botanical and microbial divisions of RCB at Cibinong in the suburbs of Bogor. The project also aims to procure equipment for research, collection, and educational purposes at the facility.

Grant Limit/ Actual Grant Amount		2,172 million yen / 2,151 million yen
Exchange of Notes Date		July, 2004
Implementing Agency		Research Center for Biology, Indonesian Institute of Science
Project Completion Date		September, 2006
Parties Involved	Main Contractors	Construction: Taisei Corporation (Japan) Procurement: (1) Itochu Corporation (Japan), (2) Lot-1 Itochu Corporation (Japan), Lot-2 Itochu Corporation (Japan), Lot-3 Ogawa Seiki Corporation (Japan)
	Main Consultant	Kume Sekkei Corporation (Japan) • Intem Consulting (Japan) (JV)
Basic Design		April, 2003 – December, 2003
Related Projects		• Grant Aid Project Biodiversity Conservation Project (1995 & 1996) • Technical Cooperation Project Biodiversity Conservation Project (I: 1995-1998, II: 1998- 2003)

¹ For us, the conservation of biodiversity in Indonesia is not someone else's problem. Most of the fibers for our clothes, our food, and building materials for our houses are imported. Our lives depend on ecosystem services (supporting services, provisioning services, regulating services, and cultural services) abroad. Since the foundation of ecosystem services is biodiversity (lives on earth), the loss of our biodiversity leads to poorer ecosystem services and thus, a lower standard of living.

	<p>The Project on Improvement of Collection Management and Biodiversity Research Capacity of the Research Center for Biology (2007-2009)</p> <ul style="list-style-type: none"> • (Science & Technology) Project for Development of Internationally Standardized Microbial Resources Center to Promote Life Science Research and Biotechnology (2011-2016)
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As mentioned above, the project is part of a series of cooperation projects spread over 10 years, in which the Government of Japan contributes toward improving the research facilities and capabilities of RCB. These series of projects have fortified the position of RCB as a center of excellence in the conservation of biodiversity in the Government of Indonesia.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mr. Koichiro Ishimori, Value Frontier Co., Ltd

2.2 Duration of the Evaluation Study

The ex-post evaluation study was implemented according to the following schedule:

Duration of the Study: October 2010– October 2011

Durations of the Field Studies: November 27th–December 11th, 2010 and April 2nd–April 9th, 2011

2.3 Constraints during the Evaluation Study

Due to limitations on the budget and time available for the ex-post evaluation study, it was not possible to observe the operation and maintenance situations of all 420 items procured by the project for research, collection, and educational purposes. However, this information has been verified through the RCB database.

Moreover, the external evaluator was unable to disclose certain research results in this report due to issues of intellectual property rights.

3. Results of the Evaluation (Overall Rating: A)

3.1 Relevance (Rating: ③)

3.1.1 Relevance to the Development Policies/Plans of Indonesia

Program Pembangunan Nasional (PROPENAS) (2000–2004) at the time of the basic design aimed at “strengthening the sustainable and fair development foundations based on the promotions of economic reconstruction and national economic system” as one of its 5 priorities, and tried to seek “the development of natural resources and the environment” to realize the aim.

The Indonesia Biodiversity Strategy and Action Plan (2003–2020) aimed at “enhancing the Indonesian community through the conservation and utilization of its biodiversity” as its vision, and sought “the utilization of scientific and technological knowledge on biodiversity” to realize this. One of the priorities of the plan was the promotion of basic and applied scientific research in biodiversity

issues and provision of support to the existing financial and human resources in order to disseminate related information.

Rancangan Pembangunan Jangka Menengah Nasional (RPJMN) (2010-2014), at the time of the ex-post evaluation, aims at “enhancing economic development and national welfare” as one of its 5 priorities. It seeks “the improvement of science and technology necessary for achieving sustainable natural resources development” as a step towards realizing the aim.

The Indonesia Biodiversity Strategy and Action Plan (2003–2020) still remains the same.

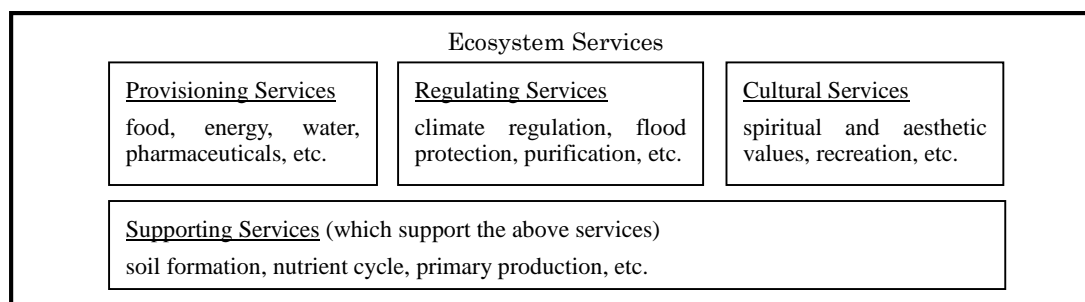
In sum, the national development plans and the Indonesia Biodiversity Strategy and Action Plan, both at the time of the basic design and the ex-post evaluation, acknowledge the importance of “the development of natural resources and the environment” and “biodiversity”. In light of the above, the project is judged to be relevant with the national development plans and the Indonesia Biodiversity Strategy and Action Plan.

3.1.2 Relevance to the Development Needs of Indonesia

At the time of the basic design, approximately 40 million people in Indonesia worked in the agricultural and fishery industries and lived a life that was directly dependent on the ecosystem. By using foods, drugs, and construction materials originating from wild animals and plants, the remainder of the Indonesian population was also indirectly dependent on ecosystem services (see figure 1). Meanwhile, the habitat areas of wild animals and plants were decreasing year by year due to human economic activities and forest fires. According to the International Union for Conservation of Nature (IUCN) (2002), the number of endangered species in Indonesia was 1,393, which was approximately 12.5% of all the 11,167 species found in the world. Therefore, the project that was going to be implemented to promote research in and education on the conservation of wild plants and microbes met the development needs at that time. In light of the above, the needs of the project were judged to be high.

At the time of the ex-post evaluation, approximately 40 million people in Indonesia still work in the agricultural and fishery industries and live a life that is directly dependent on the ecosystem. The remainder of the Indonesian population is also still indirectly dependent on ecosystem services. At the same time, according to IUCN (2009), the number of endangered species in Indonesia is 1,126, which is approximately 3.4% of the world's 33,039 species. The project that constructed a building for the botanical and microbial divisions of RCB and procured equipment for research, collection, and educational purposes promotes not only the discovery and utilization of previously unknown biological resources, but the sustainable management and use of known biological resources. It also helps the people to understand the meaning of conservation of biodiversity and biological resources. This is expected to contribute to maintaining and expanding both ecosystem services and the conservation of biodiversity that forms the foundation of the services. Therefore, the project still meets the development needs of today, and in light of the above, the needs of the project are judged

to be high.



Source: Millennium Ecosystem Assessment

3.1.3 Relevance to Japan's ODA Policies

The Charter on Official Development Assistance (ODA) (2003) highlighted the importance of “contributing to resolving global issues” including environmental issues as one of its 4 priorities. Among the 7 priorities stated in the mid-term policy on ODA (1999), “conservation of the environment” was included under the priority of global issues.

From this perspective, the Government of Japan has implemented a wide range of biodiversity conservation projects in Indonesia. The grant aid projects have constructed facilities and procured equipment for promoting scientific research, while the technical cooperation projects have strengthened research capabilities. The project discussed in this ex-post evaluation is also relevant in that it is a grant aid project, since it aimed at reconstructing decrepit facilities and procuring equipment for the purpose of conserving and researching biodiversity, which are common assets for mankind. In light of the above, the project is judged to be relevant with Japan's ODA policies.

In sum, the project has been highly relevant with Indonesian development policies/plans and development needs, as well as Japan's ODA policies. Therefore, its relevance is high.

3.2 Efficiency (Rating: ②)

3.2.1 Project Outputs

Table 1 describes the planned and actual outputs of the project, including notes and reasons for difference between the two.

Table 1: Details of Project Outputs

Plan (Basic Design)	Actual (Ex-post Evaluation)	Notes
(1) Construction of a building for botanical and microbial divisions of RCB: 1	(1) Construction of a building for botanical and microbial divisions of RCB: As planned.	Both (1) and (2) were appropriate outputs that enhanced the effectiveness and sustainability of the project. A liquid nitrogen maker is currently not in use due to lack of engineers who have
(2) Procurement of equipment for research, collection, and educational purposes:	(2) Procurement of equipment for research, collection, and educational purposes: As planned	

<p>【 Measurement/Analytical Equipment at Botany】</p> <ul style="list-style-type: none"> • Plant chemistry: 30 items • Plant physiology: 51 items • Morphologic genetics/anatomy: 44 items • Taxonomy: 37 items • Ecology: 22 items • Ethnobotany: 5 items • Collection: 19 items • Others: 43 items <p>【 Measurement/Analytical Equipment at Botany】</p> <ul style="list-style-type: none"> • Biology/physiology: 45 items • Microbial development: 21 items • Phylogenetics/genetics: 27 items • Biochemistry: 32 items • Others: 17 items <p>【 Equipment for Environmental Education】</p> <ul style="list-style-type: none"> • Audio-visual room: 18 items • Library: 5 items • Information center: 4 items 		<p>mastered in its operation. The OECD guideline² demands that biological research centers should preserve collections using liquid nitrogen and RCB attempts to ensure the same. Therefore, the liquid nitrogen maker was an appropriate output in the medium and long terms.</p>
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Source: RCB



UV-VIS Spectrometer



Spray Drier

² “OECD Best Practice Guidelines for Biological Resource Centres” (2007)



Gas Chromatograph Tandem Mass Spectrometer



Projector and Screen

3.2.2 Project Inputs

3.2.2.1 Project Cost

While the project cost planned for the basic design was 2,172 million yen, the actual cost for realizing the planned outputs was 2,151 million yen (99% of the planned cost). Thus, it was lower than planned.

3.2.2.2 Project Period

While the project period planned for the basic design was 23 months, from July 2004 (Date of Exchange of Notes) to May 2006, the actual project period was 27 months (117% of the planned period). This meant a 4-month delay, from October 2004 (Date of Exchange of Notes) to September 2006. The reason behind this was the additional time required for the procedures for the second tender, which was necessitated due to the failure of the first bid that was higher than the budget. Thus, this had nothing to do with the increases/decreases in outputs.

In sum, while the project cost was lower than planned, the project period was longer than planned, and therefore, the efficiency of the project is fair.

3.3 Effectiveness (Rating: ③)

3.3.1 Quantitative Effects

【Promotion of Research】

1. Effects of Procuring Equipment for Research

Table 2: Effects of Procuring Equipment for Research

Indicators	Base (2002)	2006	2007	2008	2009	2010
Total number of joint research projects on botany	15	18	19	30	16	14
Joint research projects on botany with Japanese	2	5	2	4	3	3

Total number of visiting researchers	281	9	104	250	286	289
Visiting researchers from Japan	4	1	3	3	3	6

Source: RCB

While the project planned to achieve 20 joint research projects on botany in 2010, it actually achieved 14, which was 70% of the planned target. However, the average from 2006 to 2010 was 19, which was 95% of the planned target.

There was no planned target with regard to visiting researchers, thereby making it impossible to compare the planned number with the actual figure. However, the number of visiting researchers remained more or less consistent before and after the project was implemented. The only exceptions were in 2006, when the RCB building was under construction and in 2007, immediately after its completion.

In addition, Biodiversity Conservation Project I (1995–1998) and II (1998–2003) of the Technical Cooperation Project that were implemented before this project, has provided researchers and support staff at the botanical and microbial divisions of RCB with training in operations, such as in conducting measurements and using analytical equipment like electron microscopes and DNA analyzers. This is believed to have improved their analytical and research capabilities. Thus, these projects are believed to have effects of promotion of research. Such observations recognize the synergy between the technical cooperation projects and the grant aid projects.

2. Effects of the Procurement of Equipment for Collection

Table 3: Effects of the Procurement of Equipment for Collection

Indicators	Base (2003)	2006	2007	2008	2009	2010
Dried specimens	20,000	716,146	720,544	729,554	732,626	737,550
Spirit specimens	8,194	49,614	49,614	49,772	49,825	49,846
Microbes	864	37,259	62,102	93,641	134,002	183,645

Source: RCB

While the project planned to achieve 707,000 collections of dried specimens in 2007, it actually achieved 716,146, which was 102% of the planned target. In the same year, it had planned to achieve 50,000 collections of spirit specimens and actually achieved 49,614, which was 99% of the planned target. Similarly, while the project planned to achieve 37,800 collections of microbes, it actually achieved 62,102, which was 164% of the planned target. However, 300 out of 37,800 collections that the project had planned to preserve using liquid nitrogen have not been preserved. This was due to lack of engineers qualified in the operation of the liquid nitrogen maker and collection techniques using the chemical.

In addition, the Project on the Improvement of Collection Management and Biodiversity

Research Capacity of the Research Center for Biology (2007–2009), of the Technical Cooperation Project implemented earlier, had trained botanical and microbial researchers belonging to the RCB and their support staff in the collection techniques of plants and microbes. Such an improvement of the collection capabilities and promotion of efficient research further demonstrates the synergy between the technical cooperation projects and the grant aid projects.

【Promotion of Education】

3. Effects of the Procurement of Equipment for Educational Purposes

Table 4: Effects of the Procurement of Equipment for Educational Purposes

Indicator	Base (2002)	2006	2007	2008	2009	2010
Visitors to botanical and microbial division	1,054	311	1,115	1,247	1,054	1,399

Source: RCB

While the project planned to attract 1,300 visitors to the botanical and microbial division in 2010, it actually witnessed 1,399 visitors, which was 108% of the planned target. Every Thursday, the RCB hosts groups of students from all over the country and educates them on different aspects of the environment. The photographs provided below were taken at such sessions.

In addition, the Project on the Improvement of Collection Management and Biodiversity Research Capacity of the Research Center for Biology (2007–2009), as part of the Technical Cooperation Project, has made posters showing their research results. These, along with the RCB website (<http://www.biologi.lipi.go.id/>), are believed to have strengthened the dissemination of information on the environment. Thus, this technical cooperation project has visibly succeeded in promoting education. Therefore, the synergy between the technical cooperation projects and the grant aid projects is evident.



Lecture on RCB and biodiversity



Demonstration of collection of dried specimens

3.3.2 Qualitative Effects

According to 20 researchers at RCB with whom the external evaluator had an interview, all of

them expressed their satisfaction with the project as being higher than before. They also attributed improvements in their research quality to the enhanced research environment in terms of facilities and equipment.

In sum, the project has largely achieved its objectives, and therefore its effectiveness is high.

3.4 Impact

3.4.1 Intended Impacts

Table 5: Effects of Promotion of Research

Indicators	Base (2003)	2006	2007	2008	2009	2010
Publications	119	186	170	227	173	178
External research funds (Rp 1 million)	NA	3,354	1,829	1,411	14,816	13,628

Source: RCB

While the project planned to have 160 publications in 2010, it actually managed 178, which was 111% of the planned target.

There was no planned target with regard to external research funds and thus, it is not possible to compare the planned funds with the actual ones. In 2010, the actual funds³ were approximately 4 times higher than in 2006. However, it must be noted that the dramatic increases after 2009 can be explained by the fact that, in addition to the continual efforts of RCB, the Government of Indonesia increased its research budget in each sector.

Table 6: Effects of Promotion of Education

Indicator	Base (2002)	2006	2007	2008	2009	2010
Seminars and workshops	14	104	175	133	82	39

Source: RCB

There was no target with regard to the number of seminars and workshops⁴ planned by the project. Thus, it is not possible to compare the planned number with the actual one. However, the number of seminars and workshops after the project was implemented increased in comparison to the period before its initiation. Such events are believed to have contributed to the promotion of education. The period after 2007 witnessed a decreasing trend due to the fact that researchers at RCB wanted to focus on their own research activities rather than on educational ones. This resulted in the number dropping to 39 in 2010 (an average of 3.25 times per month), the lowest in recent years.

³ The funds were provided by the Research Incentive for Researchers and Inventors as the national research grant agency, United Nations Educational, Scientific and Cultural Organization (UNESCO) as the international organization, and National Institute of Health (NIH) as the foreign research institute.

⁴ Contents of seminars and workshops ranged from “an introduction to biodiversity” and “biology of the Pandanus” to “the antibacterial effect of aromatic materials” and “the surveillance of avian influenza viruses.”

Further, 100 undergraduate and graduate students who have used RCB facilities were interviewed; they provided a number of reasons for visiting RCB. From among the 100, 50 students provided study tours organized by their universities or graduate schools as the reason for visiting. 32 students mentioned that it was because they required particular information from researchers at RCB, 30 stated that they wanted to use the RCB experiment facilities, and 18 mentioned that they wanted to use the RCB library. Overall, 99 out of the 100 students said that their visit to RCB was very useful to their studies and research. Therefore, the project is also believed to have successfully contributed to the promotion of education at the center.

【Others (Various research examples)】

1. A major Japanese pharmaceutical company has been conducting research, in collaboration with RCB, on the development of anti-aging products using the center's collections of plants. The development and utilization of anti-aging products can contribute to expanding ecosystem services, particularly provisioning services.
2. ICGB⁵ has been conducting research, in collaboration with RCB, on the development of anticancer drugs and biofuels using the center's collections of microbes. As in the case above, the development and utilization of anticancer drugs and biofuels can also contribute to expanding ecosystem services, particularly provisioning services.
3. In combating soil degradation, the Government of Indonesia has been using microbes that RCB found to improve the soil quality of forest areas degraded by the eruption of Mt. Merapi in central Java. Improvements in the soil quality can contribute toward maintaining and expanding ecosystems, particularly as a supporting service.
4. Poultry farmers in Indonesia have been using high carotene microbes that RCB found to behave as prevention of disease. The development of such foods can contribute to expanding the ecosystems, particularly by providing provisioning services.

3.4.2 Other Impacts

1. Impact on the Natural Environment

While conducting various chemical experiments, RCB generates toxic wastes and effluents that must be dealt with appropriately. In order to respond to such needs, the Technical Cooperation Project on Improvement of Collection Management and Biodiversity Research Capacity of the Research Center for Biology (2007–2009) has trained staff at the administrative division in the

⁵ The official name is International Cooperative Biodiversity Groups. They include University of California at Davis in the United States of America, Bandung Institute of Technology, Ministry of Forestry, and RCB in Indonesia, and are financed by the Government of the United States of America.

management of toxic wastes and effluents. A waste management plan has also been created. This, once again, demonstrates the synergy between the technical cooperation projects and the grant aid projects. Currently, local professionals handle toxic wastes, while effluents are treated using water purification equipment installed at RCB. Therefore, there seems to be no negative impact on the natural environment.

2. Resettlement and land acquisition

Four farmers had been using a part of the land allocated for the construction of the building for the botanical and microbial divisions of RCB. The Government of Indonesia solved the land acquisition problem by purchasing their agricultural products and allocating alternative lands for them. Currently, there seems to be no problem with resettlement and land acquisition.

3. Other Unintended Impacts

Since 1995, the series of projects with Japan, spanning over 10 years, have fortified RCBs position as a center of excellence on the conservation of biodiversity in Indonesia. RCB had also sent its members, as representatives of the Government of Indonesia, to the 10th Conference of the Parties to the Convention on Biological Diversity held at Nagoya in 2010. Thus, RCB plays an important role in the Government of Indonesia.

In sum, the project has had impacts on promoting research and education and other things, and therefore, many positive impacts are acknowledged.

3.5 Sustainability (Rating: ③)

3.5.1 Structural Aspects of Operation and Maintenance

At the time of the basic design, the operation and maintenance of the constructed facilities was to be done by 5 administrative officers and 4 technical officers (1 engineer and 3 others) from the general affairs section of the administrative division. In reality, this is actually done by 14 administrative officers and 7 technical officers (5 engineers and 2 others). The procured equipment was to be operated by a team comprising of 74 researchers (21 PhDs, 7 MS and 46 BS holders) and 29 technical officers from the botanical division, and 40 researchers (8 PhDs, 5 MS and 27 BS holders) and 8 technical officers from the microbial division. The team now comprises of 102 researchers (30 PhDs, 30 MS and 42 BS holders) and 49 technical officers from the botanical division, and 47 researchers (8 PhDs, 13 MS and 26 BS holders) and 12 technical officers from the microbial division.

Similarly, the maintenance of the procured equipment was planned to be done by 8 administrative officers and 5 technical officers (1 engineer, 3 librarians and 1 information system officer) from the botanical section of the collection management division alongside 8 administrative officers and 5

technical officers (3 librarians, and 2 information system staff) from the microbial section of the collection management division. Currently, maintenance of the procured equipment is actually done by 4 administrative and 12 technical officers (1 engineer, 9 librarians, and 2 information system officers) from the botanical section of the collection management division and 1 administrative and 4 technical officers (3 engineer and 1 information system officer) from the microbial section of the collection management division. In the botanical division of the collection management division, librarians undertake the same role at the microbial section of the collection management division as well.

The Government of Indonesia considers the importance of conserving biodiversity from the combined viewpoints of “utilizing biological resources” as well as “maintaining the balance of biodiversity”. Accordingly, it expects RCB to play the role of the center of excellence in the conservation of biodiversity. In order to help it to do this, the Government of Indonesia enhances the functions of the operations and maintenance of the facilities at RCB. Therefore, there seems to be no structural problem with its operation and maintenance.

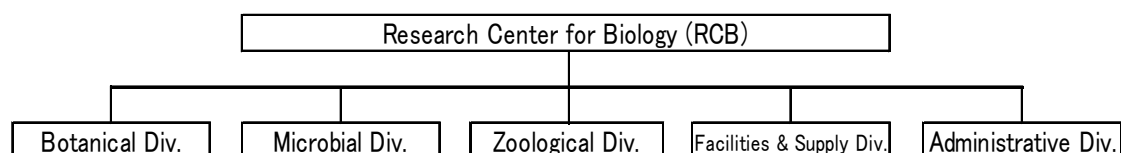


Figure 2: Organizational Diagram of RCB

3.5.2 Technical Aspects of the Operation and Maintenance

Officers at the facilities and collection management division conduct daily operations and maintenance of the constructed facilities. External contractors conduct regular maintenance and ensure no technical problems arise with the operation and maintenance of the facilities.

The researchers and technical officers are well qualified to handle the procured equipment (except a liquid nitrogen maker), while local agents provide the replacements and spare parts. In addition, the Technical Cooperation Project on Improvement of Collection Management and Biodiversity Research Capacity of the Research Center for Biology (2007–2009) has created maintenance manuals for the equipment. Therefore, there seems to be no major technical problem with their operation and maintenance.

3.5.3 Financial Aspects of the Operation and Maintenance

The project assumed that it would cost Rp. 1.6 billion for the operation and maintenance of the constructed facilities and procured equipment. From 2008 to 2010, the cost of this was actually Rp. 1.9 billion on average. However, the overall budget of RCB in this period was 1.3 times higher than the budget in 2003. This implied that, while the overall budget in 2003 was Rp. 27.6 billion, in the

period from 2008 to 2010, it was Rp. 35.7 billion on average. Thus, RCB has maintained a positive balance every year. Profit carried forward at the end of every financial year can be used for operations and maintenance whenever necessary. With this in mind, it would be safe to say that the financial situation with regard to the operation and maintenance of facilities and equipment at RCB seems to be sound.

Table 7: Profit and Loss Sheet

(Unit: Rp 1,000)

	2008	2009	2010
(1) Routine budget	27,021,832	24,725,326	26,889,579
(2) Supplementary budget, etc	13,139,224	6,969,955	8,363,946
(3) Total budge ((1) + (2))	40,161,056	31,695,281	35,253,525
(4) Personnel expenses	18,897,496	17,438,457	18,182,473
(5) Operational expenses	12,275,862	10,089,178	9,575,501
(6) Maintenance expenses	2,090,611	2,002,908	1,785,824
(7) Travel expenses	2,448,843	1,048,200	1,983,632
(8) Total expenses ((4) + (5) + (6) + (7))	35,712,812	30,578,743	31,527,430
(9) Net ((3) - (8))	4,448,244	1,116,538	3,726,095

Source: RCB

3.5.4 Current Status of the Operation and Maintenance

No problem has been observed in the operation and maintenance of the constructed facilities.

Similarly, there have been no problems observed in the operation and maintenance of the procured equipment, over 420 items, except in the case of a liquid nitrogen maker. The liquid nitrogen maker is not currently in use due to lack of engineers who are qualified to operate it and perform the collection techniques that utilize liquid nitrogen. However, researchers have been attempting to learn the necessary techniques with help from other institutes.

In sum, no major problem has been observed in the structural, technical, and financial aspects of the operation and maintenance of RCB, and therefore, the sustainability of the project effects is high.

4. Conclusions, Recommendations, and Lessons Learned

4.1 Conclusions

The implementation of the project has been highly relevant to the development policies and needs of Indonesia, as well as to the development policies of Japan, and thus the relevance is high. However, the efficiency of project inputs is fair since the project period was slightly longer than planned, while the project cost was lower than planned. Through the project, the procurement of

equipment for research, collection, and educational purposes at the botanical and microbial divisions of the RCB has brought about research effects (e.g., the volume of research and collections increased/maintained) and educational effects (e.g., the number of visitors increased). These are either the same as or higher than planned. The impact is also high, since research and development of new drugs and biofuels that utilize plants and microbes are conducted in the project. No major problems have been observed in the structural, technical, and financial aspects of the operation and maintenance of the equipment and facilities at RCB. Thus, the sustainability of the project effects is high.

In light of the above, the Project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 The Research Center for Biology (RCB)

Since the OECD Best Practice Guidelines for Biological Resource Centers (2007) demands that centers should preserve their collections using liquid nitrogen, RCB should make efforts to master operating the liquid nitrogen maker and the collection techniques that use liquid nitrogen. This would enable the center to preserve the collections using liquid nitrogen as mandated.

4.2.2 The Japan International Cooperation Agency (JICA)

The Japan Science and Technology Agency and JICA plan to implement a science and technology project at RCB, called the Development of Internationally Standardized Microbial Resources Centers as the core of the Biological Resources Center. This will be done with the aim of promoting life science research and biotechnology for 5 years, beginning from 2011. The National Institute of Science and Evaluation plans to improve the collection techniques at RCB within the project. Therefore, it is recommended that JICA transfer the operation techniques of the liquid nitrogen maker and collection techniques for using liquid nitrogen to RCB within the project.

4.3 Lessons Learned

The sustainability of the project is high (③). This can be attributed to the fact that, over the past 10 years, the Government of Japan has provided the implementing agency with comprehensive cooperation, consisting of the grant aid projects and the technical cooperation projects. This has resulted in the improvement of infrastructure and techniques at the implementing agency, and that the Government of Indonesia has created a policy that ascribes importance to the conservation of biodiversity including utilizing genetic resources, and then strengthened the structures and finances of the implementing agency.

Indonesia

Ex-Post Evaluation of Japanese Technical Cooperation Project
“Freshwater Aquaculture Development Project”

Mr. Koichiro Ishimori, Value Frontier Co., Ltd

0. Summary

Implementation of the Freshwater Aquaculture Development Project has been highly relevant to the development policies and needs of Indonesia and the development policies of Japan, and thus, the relevance of the project is high. However, the efficiency of the project inputs is low because the project period had to be extended by two years on account of a delay in the construction of broodstock ponds. This situation was a result of the late acquisition of land and the late disbursement of the government budget from the Government of Indonesia. It is also low because the project cost was believed to be higher than planned. The project has either achieved or mostly achieved all of the five outcomes and has generally attained the planned effects. Therefore, the effectiveness of the project is high. The Strategic Plan (2010–2014) of the Ministry of Marine Affairs and Fisheries aims to “increase the productivity of aquacultures and develop human resources as a means of improving the productivity and competitiveness of the knowledge-intensive marine products industry,” and thus, the sustainability of the policy as regard to the project is high. In addition, no major problems have been observed in the institutional, technical, and financial aspects of the Freshwater Aquaculture Development Center at Jambi (BBAT Jambi); and thus, the sustainability of project effects/impacts is also high.

In light of the above, the project is evaluated to be satisfactory.

1. Project Description



Project Location



Patins in a fish farm aquaculture pond

1.1 Background

After being hit by the Asian financial crisis in 1997, Indonesia was having serious social problems, such as a shortage of food supply and loss of employment opportunities, and accordingly, the aquaculture, forest, and fisheries sectors required an urgent policy to respond. The then Directorate

General of Fisheries at the Ministry of Agriculture¹ was planning to invest in infrastructure development for BBAT Jambi in order to maintain and increase the food supply and employment opportunities by using the counter fund of the sector program loan that the Japan International Cooperation Agency (JICA) had lent as an urgent economic countermeasure. Meanwhile, the Government of Indonesia believed that a technical cooperation was inevitable for the purpose of developing simple aquaculture technology that small-scale farmers could use with minimum capital and promoting dissemination activities based on the aquaculture technology of existing and new fish culture species; and thus, requested one with the Government of Japan.

1.2 Project Outline

Overall Goal		Sustainability of freshwater aquaculture of small-scale fish farmers is improved.
Project Objective		Dissemination activities for appropriate applied freshwater aquaculture technologies available to small-scale fish farmers are developed and strengthened.
Outputs	Output 1	High quality broodstock of existing freshwater fish culture species is supplied to seed production units.
	Output 2	Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species is improved.
	Output 3	Fish breeding technologies for new fish culture species are developed.
	Output 4	Effective extension models adjusted to the local conditions are established.
	Output 5	The Stakeholders in the project area are more interested in freshwater aquaculture.
Input		<p>【Japanese side】</p> <ol style="list-style-type: none"> Experts: 31 experts (Long-term: 8 experts, Short-term: 23 experts) Trainees received: 27 trainees Third country training program: N/A Equipment: 195 million yen Local cost: 98 million yen Others: Study teams of the mid-term review, the terminal evaluation, and the terminal evaluation for the extended period <p>【Indonesian side】</p> <ol style="list-style-type: none"> Counterparts: 30 counterparts Land and facilities Local cost: 325 million yen
Project Cost		1,002.53 million yen
Project Period		August 2000 to August 2005 & August 2005 to August 2007 (extension)

¹ The Directorate General of Fisheries at the Ministry of Agriculture became the Ministry of Marine Affairs and Fisheries in 2000 owing to a reorganization of government ministries.

Executing Agency	Freshwater Aquaculture Development Center at Jambi (BBAT Jambi) under Ministry of Marine Affairs and Fisheries (Former Directorate General of Fisheries at the Ministry of Agriculture)
Cooperation Agency in Japan	Ministry of Agriculture, Forestry, and Fisheries (Fisheries Agency), Tokyo University of Marine Science and Technology, and Prefectural Fisheries Experimental Stations
Related Projects	Construction of hatcheries for shrimps and fish eggs with the use of the counter fund of the sector program loan by JICA.

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

According to the terminal evaluation of the project in 2005, it was too early to judge whether the overall goal had been achieved even though the volume of freshwater aquaculture production in the six provinces of the southern part of Sumatra was increasing each year. However, according to the terminal evaluation of the project for the extended period in 2007, the achievement of the overall goal was judged to be high since the volume was expected to increase in the future.

1.3.2 Achievement of Project Objective

According to the terminal evaluation in 2005, it was judged that the achievement of the project objective was not low, since as a result of the project's development and dissemination of many aquaculture technologies, the number of fish farms was increasing, and subsequently, fish farms that increased the volume of freshwater aquaculture production and amount of income appeared. The terminal evaluation for the extended period in 2007 also judged that the project objective was achieved owing to the result of strengthened dissemination activities.

1.3.3 Recommendations

The terminal evaluation in 2005 made the following recommendations. The recommendations and the situation for responding to them at the time of the terminal evaluation were as follows:

1. To achieve the project objective, it is important that the project continues six of the nine activities that were not completed by the terminal evaluation in 2005 and is extended for another two years. Through their own efforts, the counterparts should continue the remaining three activities.
→ During the two years of the extended period, all the nine activities were completed.
2. Javanese technology as well as the Japanese-Indonesian hybrid technology that the project developed should be fully utilized, and dissemination activities should be carried out jointly with other organizations including the local government.
→ BBAT Jambi developed new fish culture species, especially sand goby, by using all available technologies and worked with the local government in the extension areas.

3. BBAT Jambi should take measures against fish diseases, such as Koi Herpesvirus (KHV), encourage fish farms to understand the importance of preventing these diseases, and promote management of water quality and growth of healthy seeds.
→ BBAT Jambi took measures against fish diseases and encouraged fish farms to understand the importance of preventing these diseases. It also promoted management of water quality and growth of healthy seeds.

The terminal evaluation for the extended period in 2007 made the following recommendations. The recommendations and the situation for responding to them at the time of the ex-post evaluation were as follows:

1. BBAT Jambi and the provincial and district fisheries services should play a major role in financial and technical support for district government hatcheries.
→ BBAT Jambi now provides technical support, and provincial and district fisheries services provide financial support for district government hatcheries.
2. The Directorate General of Aquaculture at the Ministry of Marine Affairs and Fisheries (formerly the Directorate General of Fisheries at the Ministry of Agriculture) should maintain at least the present level of budgetary allocation for BBAT Jambi's monitoring and technical guidance since identification of the needs of fish farms through monitoring is a solid foundation for BBAT Jambi's activities.
→ The annual budget of BBAT Jambi, supported by the Strategic Plan of the Ministry of Marine Affairs and Fisheries, has been increasing each year and is sufficient to cover annual operation and maintenance costs.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mr. Koichiro Ishimori, Value Frontier Co., Ltd

2.2 Duration of the Evaluation Study

The ex-post evaluation study was implemented according to the following:

Duration of the study: October 2010–October 2011

Duration of the field study: December 12–December 25, 2010 and April 10–April 16, 2011

2.3 Constraints during the Evaluation Study

Some data in the model areas for the project (Bungo Tebo and Batanghari in Jambi Province, Bengkulu Utara in Bengkulu Province, Kuantan Singingi in Riau Province, and Sijunjung in West Sumatra Province) were incomplete, and thus, there was a partial constraint on the analyses of the effectiveness of the project.

3. Results of the Evaluation (Overall Rating: B)

3.1 Relevance (Rating: ③)

3.1.1 Relevance with the Development Policies/Plans of Indonesia

Program Pembangunan Nasional (ROPENAS) (2000–2004) aimed to “strengthen sustainable and fair development foundations based on the promotion of economic reconstruction and the national economic system” as one of its five priorities, and attempted to seek the “development of agribusiness” to realize this aim.

Program Peningkatan Ekspor hasil Perikanan (PROTEKAN) (1998–2003) aimed to “contribute to the Indonesian economy and stable food supply” as its vision, and attempted to seek “greater production of aquaculture” to realize this aim. One of the priorities was to develop the human resources engaging in aquaculture.

Rancangan Pembangunan Jangka Menengah Nasional (RPJMN) (2005–2009), which covered the original and extended period, aimed to “realize an economy that builds a solid foundation for sustainable development” as one of its three priorities, and attempted to seek “revitalization of agriculture, forestry, and fisheries” to realize its aim.

Furthermore, the Strategic Plan (2005–2009) of the Ministry of Marine Affairs and Fisheries aimed to “achieve the welfare of the people through sustainable management of marine resources” and attempted to seek “an increase in fishermen’s income” to realize this aim. One of the priorities was promoting freshwater aquaculture and capacity development in fishermen.

Aquaculture was prioritized in the national development plans and the sector plan both at the time of planning and at the completion of the project. In light of the above, the project is judged to be relevant with the national development plans and sector plan.

3.1.2 Relevance with the Development Needs of Indonesia

Before the project, freshwater aquaculture production in Indonesia accounted for roughly 25% of the total production, and fishes from freshwater aquaculture were an important source of protein for the people. However, the production was approximately 70% of the target owing to the traditional production system of the fisheries and the limited fish culture species. In addition, the industry provided 1.83 million fish farmers with employment opportunities in 2000 when Indonesia was still suffering from the Asian financial crisis. Therefore, the project, which intended to promote freshwater aquaculture with a view of stabilizing and increasing food supply and employment opportunities, met the development needs at that time. In light of the above, the need for the project was judged to be high.

At the time of the terminal evaluation for the extended period, freshwater aquaculture fish in Indonesia were still an important source of protein for the people² and the industry provided 1.64

² According to the “Annual statistics (2008)” of the Statistical Bureau of Indonesia, the three biggest sources of protein are cereals (61%), nuts (25%), and fish (10%), with fish being bigger than meat and dairy products. Moreover,

million fish farmers with employment opportunities in 2007. The western part of Indonesia was experiencing an epidemic of KHV; thus, the project took measures against it and established a new system based on changes in the dissemination system of freshwater aquaculture resulting from decentralization. Therefore, the project, which intended to promote freshwater aquaculture with the aim of stabilizing and increasing the food supply and employment opportunities while responding to the changing environment, still met the development needs at the time of the terminal evaluation for the extended period. In light of the above, the need for the project was judged to be high.

3.1.3 Relevance with Japan's ODA Policies

The Charter on Official Development Assistance (ODA) (1992) before the project highlighted the importance of “cooperation for improving technologies, such as research cooperation that would improve the capability of research and development and adaptability by developing countries.” The current Charter on ODA (2003) highlights the importance of “cooperation for agriculture,” including fisheries, the “creation of employment” with the goal of poverty alleviation, and “research cooperation” with the goal of sustainable growth.

The Mid-term Policy on ODA (1999) prioritized “cooperation for improvement and effective dissemination of fisheries technologies, such as development of new varieties” in order to secure a stable food supply. The current Mid-term Policy on ODA (2005) prioritizes “securing the food supply” in order to contribute to the security and prosperity of the international society.

In light of the above, the project that contributes to stable food supply through aquaculture is judged to be relevant with Japan's ODA policies.

In sum, the project has been highly relevant with Indonesian development policies/plans and development needs, as well as Japan's ODA policies. Therefore, its relevance is high.

3.2 Effectiveness, Impact (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Outputs

Output 1: High quality broodstock of existing freshwater fish culture species (i.e., carps, tilapias, patins, and freshwater prawns) is supplied to seed production units.

According to the terminal evaluation of the project, 2,217 specimens of carps, 2,400 kg of tilapias, and 200 kg of patins were supplied, and there was no mention of freshwater prawns. The ex-post evaluation confirmed that it had become possible by the end of the extended period to secure and supply high quality broodstock of all of the existing freshwater fish culture species

since freshwater aquaculture production accounts for approximately 20% of the total production and is second to marine production, that is, 57%, the importance of freshwater aquaculture as a food supply (a source of proteins) is recognized.

except for freshwater prawns, as indicator 1 below explains.

Indicator 1: The good quality broodstock which satisfies the needs of seed production unit are secured in the extension area.

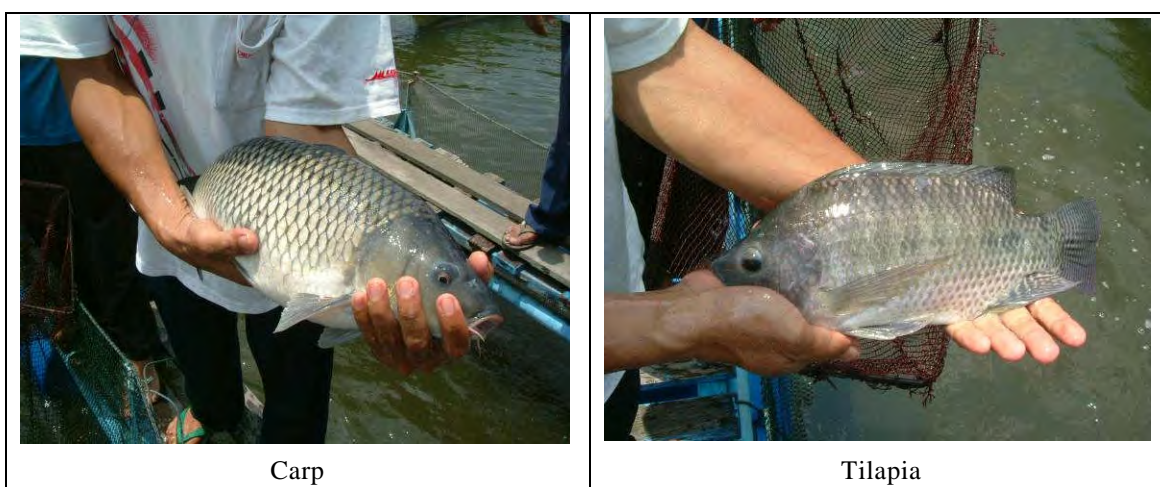
Carp : 600 kg of broodstock with a high tolerance against disease was available at the time of the terminal evaluation in 2005; whereas, 2,346 kg was available at the time of the terminal evaluation for the extended period in 2007.

Tilapias : 3,000 kg of fast growing broodstock was available at the time of the terminal evaluation in 2005; whereas, 5,748 kg was available at the time of the terminal evaluation for the extended period in 2007.

Patins : Only 50 kg of fast growing broodstock was available at the time of the terminal evaluation in 2005; whereas, 4,376 kg was available at the time of the terminal evaluation for the extended period in 2007.

Freshwater Prawns³ : Fast growing broodstock was available and supplied to several seed production units at the time of the terminal evaluation in 2005; whereas, they have not become common owing to low profitability⁴.

In sum, it can be stated that output 1 has mostly been achieved.



³ The demand for freshwater prawns since the project formulation has been low among small-scale fish farmers in the project areas. However, they were included in the project since the Ministry of Marine Affairs and Fisheries was interested in developing its aquaculture and growing technologies.

⁴ The wholesale price of freshwater prawns in 2010 in the capital city of Jambi province where the project was implemented was Rp. 40,000/kg. Since the average pond could cultivate approximately 75 kg, the total wholesale price per pond was approximately Rp. 3 million. Meanwhile, the wholesale price of patins was Rp. 10,000/kg. Since this average pond could cultivate approximately 3,000 kg, the total wholesale price per pond was approximately Rp. 30 million, which was ten times higher than that of freshwater prawns.



Patin

Freshwater prawn

Output 2: Quality of aquaculture products (seed and grow-out fish) of existing freshwater fish culture species (i.e. carps, tilapias, patins, and freshwater prawns) is improved.

According to the terminal evaluation in 2005, it was judged that the quality of aquaculture products had improved owing to the constant production of high quality seeds and grow-out fish. The ex-post evaluation confirmed that by the end of the extended period, it had become possible to develop aquaculture and growing technologies for all the existing freshwater fish culture species and to produce them with the exception of freshwater prawns, as explained by indicator 2 below.

Indicator 2-1: The technology for the selection of fish, feed, health control, water quality control, etc. are standardized and possible to disseminate.

- Carps : It has become possible to disseminate the technology, since the manual was completed in June 2007 and distributed to approximately 130 organizations in the country.
- Tilapias : It has become possible to disseminate the technology, since the manual was completed in July 2007 and distributed to approximately 130 organizations in the country.
- Patins : It has become possible to disseminate the technology, since the manual was completed in May 2007 and distributed to approximately 130 organizations in the country.
- Freshwater Prawns : It has not become possible to disseminate the technology, since though the manual itself was completed in August 2005, it has not been distributed owing to low demand as explained in footnote 3.

Indicator 2-2: The seed and grow-out fish are produced (based on the standardized technology) steadily in the extension model areas.

Carps : 10-30 small-scale fish farms on average in each province have been able to produce seed and grow-out fish.

Tilapias : 10–30 small-scale fish farms on average in each province have been able to produce seed and grow-out fish.

Patins : 10–30 small-scale fish farms on average in each province (110–120 small-scale fish farms in Jambi) have been able to produce seed and grow-out fish.

Freshwater Prawns : It has not become possible to produce seed and grow-out fish in the areas owing to the reason explained in footnote 3.

In sum, it can be stated that output 2 has mostly been achieved.

Output 3: Fish breeding technologies for new fish culture species (sand goby) are developed.

According to the terminal evaluation in 2005, it was judged that fish breeding technologies for the new fish culture species had been developed since the survival rate for fingerlings that grow to the size of seed was over 50% and more than 1,000 specimens were expected to be raised by the end of the project. The ex-post evaluation also confirmed that the survival rate was over 50% and more than 1,000 species had been raised, as indicator 3 below explains⁵.

Indicator 3-1: The necessary number of new specimens broodstock which are for seed production experiment are raised (1,000 by the completion of the project).

Sand goby: More than 1,000 specimens were raised by the end of the project.

Indicator 3-2 : The survival rate of fingerlings until they grow up to the size of seed becomes over 30%.

Sand goby: The survival rate was over 50% by the end of the project in 2005.

Indicator 3-3: Technical papers on fish culture of new species are prepared.

Sand goby: Technical papers were completed in June 2005.

In sum, it is can be stated that output 3 has been achieved.

⁵ Sand goby has low profitability because it takes approximately 2 years to grow to the size of seed and has a low wholesale price. Consequently, fish farms have little interest in it, and it has not become common.



Sand goby

Output 4: Effective extension models adjusted to the local conditions are established.

According to the terminal evaluation in 2005, it was judged that effective extension models had been established, though it would take a few years for fish farms to master and practice all the standardized technologies. The ex-post evaluation also confirmed that the models had been established by the end of the terminal evaluations in 2005 and 2007, as indicator 4 explains, and that fish farms understood the standardized technologies and made partial use of them.

Indicator 4-1: Level of improvement of training program

99 training programs (on average 14 programs per year) were implemented by the end of the project in 2005; this resulted in 1,343 participants.

Indicator 4-2: Level of improvement of training textbooks

Training textbooks covering feed, production, and diagnosis were improved by the end of the project in 2005.

Indicator 4-3: The monitoring is held regularly in the model area by counterpart personnel

The monitoring was implemented at the fish farms 38 times (on average 8 times per year) during the original project period and 61 times (on average 30 times per year) during the extended project period. The training contents of the monitoring vary from production and feed to diagnosis.

Indicator 4-4: Level of technology improvement

Fish farms in Bungo Tebo and Batanghari in Jambi Province and Bengkulu Utara in Bengkulu Province were able to understand the standardized technologies and partially use them by the end of the project in 2005, whereas fish farms in Kuantan Singingi in Riau Province and Sijunjung in West Sumatra Province were able to understand them and partially use them by

the end of the extended project period in 2007.

Indicator 4-5: 50% of small-scale fish farms record aquaculture in model areas

According to the counterpart's monitoring results, over 50% of small-scale fish farms took records of aquaculture. The beneficiary survey implemented in Bungo Tebo and Batanghari in Jambi Province during the ex-post evaluation revealed that 95% of 100 small-scale fish farms took records.

Indicator 4-6: The extension manuals are prepared

The extension manuals were prepared by the end of the project in 2005 and completed by the end of the extended period of the Project in 2007

In sum, it can be stated that output 3 has been achieved.

Output 5: The stakeholders in the project areas are more interested in freshwater aquaculture.

According to the terminal evaluation in 2005, it was judged that the implementation of various seminars and the distribution of newsletters had contributed to developing the stakeholders' interest in freshwater aquaculture. The ex-post evaluation also confirmed that they had made the contributions by the end of the terminal evaluation in 2005 as indicator 5 explains.

Indicator 5-1: Exchange of information between the project and local government officials took place twice a year.

Exchange of information between BBAT Jambi and district fisheries services took place roughly every other month (i.e., 6 times per year) during the project. Study tours for district fisheries services that took place in addition to the above also contributed to developing an interest in freshwater aquaculture.

Indicator 5-2: Informative materials for aquaculture extension are published twice a year and distributed.

Informative materials were published and distributed three times a year during the project. The publication and distribution of informative materials was more frequent than planned and this also contributed to developing the stakeholders' interest in freshwater aquaculture.

Indicator 5-3: Fish farmers and district fisheries services have common information on freshwater aquaculture.

Although by the end of the project in 2005, some degree of information was shared among fish farmers and district fisheries services, it was not sufficient for district fisheries services because of

the lack of extension workers. Accordingly, the project has attempted to increase opportunities to share information by conducting monitoring activities for fish farms together with the extension workers of the district fisheries services in the areas that they supervise.

In sum, it can be stated that output 3 has been achieved.

3.2.1.2 Achievement of Project Objective

Indicator 1: Activity level of extension work in the project extension areas

The district fisheries services conducted 27 times of monitoring and extension activities on average per year for small-scale fish farms in the project extension areas during the original project period (in total 136 times); however, this number increased to 48 times on average per year during the two-year of extended project period of the project (in total 96 times).

Indicator 2: The number of small-scale fish farms in the extension model areas are increased

The number of small-scale fish farms increased in all the extension model areas as compared to the number in 2,000 before the project (Table 1). Although the overall number of fish farms in Indonesia decreased by approximately 190,000 during the implementation of the project, the number of small-scale fish farms increased in the extension model areas. This can be attributed to contributions made by the project to effective extension models for small-scale fish farms that were established under output 4 and activities to raise interest among stakeholders that were conducted under output 5.

Table 1: The number of small-scale fish farms

(Unit: household)

Region	2000 (Base)	2007	2008	2009	2010
Bungo Tebo, Jambi	606	1,182	1,449	NA	1,585
Batanghari, Jambi	4,850	6,954	7,116	7,116	7,397
Bengkulu Utara, Bengkulu	978	1,215	1,250	1,325	1,350
Kuantan Singingi, Riau	1,100	1,114	1,279	1,466	1,764
Sijunjung, West Sumatra	5,616	6,258	7,742	8,129	8,540

Source: BBAT Jambi

Indicator 3: The production of freshwater aquaculture in the extension model areas are increased

There was an increase in the production of freshwater aquaculture in all the extension model areas as compared to the production in 2000 before the project (Table 2). The project is believed to have contributed not only to the increase in the number of small-scale fish farms in the extension model areas but also to the increase in the production of freshwater aquaculture because it has supplied high quality broodstock to seed production units under output 1 and has

brought higher productivity to small-scale fish farms by enabling them to conduct high quality aquaculture production under outputs 2 and 3.

Table 2 : The volume of freshwater aquaculture production

(Unit: ton)

Region	2000 (Base)	2007	2008	2009	2010
Bungo Tebo, Jambi Province	89	535	469	1,342	1,721
Batanghari, Jambi Province	372	12,806	15,124	16,317	18,102
Bengkulu Utara, Bengkulu Province	1,512	2,789	3,193	4,031	4,591
Kuantan Singingi, Riau Province	182	1,749	NA	NA	1,860
Sijunjung, West Sumatra Province	2,775	2,865	3,214	4,332	5,733

Source: BBAT Jambi

Indicator 4: The income by freshwater aquaculture of small-scale fish farms in the extension model areas is stabilized.

The beneficiary survey that was implemented for 100 small-scale fish farms in Bungo Tebo and Batanghari in Jambi Province during the ex-post evaluation revealed that the annual gross operating profit from freshwater aquaculture after the project became 3.7 times higher than before, from Rp. 992,040 to Rp. 3,640,243 (inflation-adjusted price) on average, resulting in more than a stabilization of income⁶.

In sum, the project has achieved its objective, and thus, the effectiveness of the project is high.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

Indicator 1: The production of freshwater aquaculture is increased or stabilized in the high level in the project areas.

The production of freshwater aquaculture in the six provinces of the southern part of Sumatra increased as compared to the production in 2000 before the project (Table 3). The project has carried out activities, such as study tours on freshwater aquaculture, for district fisheries services in the extension model areas to raise their interest under output 5. District fisheries services have also strengthened the seed production system by constructing district government hatcheries. Since BBAT Jambi is the only freshwater aquaculture development center in the six provinces of the southern part of Sumatra, the increases in the production of freshwater aquaculture can be attributed to the project.

⁶ The main business of most small-scale fish farms is either agriculture or service businesses, which means that the fish farm is their secondary business. The annual gross operating profit from freshwater aquaculture after the project became approximately 3.5 times higher than before, which was equivalent to only one month of the monthly minimum wage by-law in Jambi Province (Rp. 1,050,000).

Table 3: The volume of freshwater aquaculture production

(Unit: ton)

Region	2000	2009*
Jambi Province	2,812	23,559
Bengkulu Province	5,004	13,160
Riau Province	6,435	37,932
West Sumatra Province	20,476	84,190
South Sumatra Province	15,795	110,391
Lampung Province	4,694	24,758
Total	55,216	293,991

Source: Ministry of Marine Affairs and Fisheries

* Figures from 2009 were used owing to the lack of data since 2010

3.3.2.2 Other Impacts

1) Impacts on the Natural Environment

BBAT Jambi regularly checks the quality of water drained from all extension model areas as well as BBAT Jambi, and has not observed a problem.

2) Relocation and Acquisition of Land

Approximately 20 farms were cultivating lands that were part of the areas where BBAT Jambi was planning to construct its facilities. However, the provincial government resolved the problem by compensating the farmers and offering them an alternative land or job at BBAT Jambi.

3) Other Indirect Impacts

In 2010, BBAT Jambi received the “Citra Pelayanan Prima Award (the best public service award),” for which the President of Indonesia selects one entity from one sector every year, based on the fact that it provides innovative services for small-scale fish farms in the region.

In sum, it can be stated that the implementation of the project generated many positive impacts.

3.3 Efficiency (Rating: ①)

3.3.1 Inputs

Table 4: Comparison of Inputs before and after the Project

Elements of Inputs	Plan	Actual Result (at Terminal Evaluation)
<Japanese Side>		
(1) Experts	Long-term: 5 fields Short-term: 2-3 experts/year if necessary	Long-term: 8 experts in 6 fields Short-term: 21 experts in 8 fields
(2) Trainees Received	2-3 trainees/year	27 trainees in total
(3) The Third Country Training	-	-
(4) Equipment	NA	195 million yen
(5) Operational Cost	NA	98 million yen

Total Cost	NA	1,002.53 million yen
< Indonesian Side >		
(1) Counterpart	NA	30 counterparts
(2) Land and Facility	Provision of lands and facilities	Late provision of lands and facilities
(3) Local Cost	NA	580.42 million yen ⁷

Source: BBAT Jambi and JICA

3.3.1.1 Elements of Inputs

< Japanese Side >

The actual number of experts who were dispatched is regarded to be almost as planned. Meanwhile, the actual number of trainees received is regarded to be larger than planned, since the plan was to have 10–15 trainees for the five years of the original project period (and 14–21 trainees for the seven years of the total project period, including the extension period). The other elements could not be compared to the plan owing to a lack of data at the time of the plan.

< Indonesian Side >

There was a delay of approximately 14 months in the provisions of land and facilities, which was attributable to a delay in the construction of broodstock ponds resulting from the late acquisition of land and late disbursement of the government budget (the counter fund of the sector program loan). The other elements could not be compared with the plan owing to a lack of data at the time of the plan.

3.3.1.2 Project Cost

The actual project cost could not be compared with the plan owing to a lack of data at the time of the plan. However, it is regarded to be higher than planned, since such inputs as experts dispatched, trainees received, equipment, and local costs increased owing to the two-year of extension of the project.

3.3.1.3 Project Period

The project experienced a two-year extension, since out of the project's 21 activities, 9 were delayed due to a delay in the construction of broodstock ponds resulting from the late acquisition of land and disbursement of the government budget (the counter fund of the sector program loan). Therefore, it can be stated that the extension of the project period had nothing to do with changes in the outputs.

In sum, the actual project cost and the actual project period are regarded to be higher than planned owing to the delay in the construction of broodstock ponds; therefore, the efficiency of the project is low.

⁷ The figure has been taken from the terminal evaluation for the original period and the extended period.

3.4 Sustainability (Rating: ③)

3.4.1 Policy Related to the Project

The Strategic Plan (2010–2014) of the Ministry of Marine Affairs and Fisheries aims to “be the world’s largest producer of marine and fishery products” and attempts to seek “the further improvement of the welfare of the marine and fishery society” to realize this aim. One of the priorities is to “increase productivity of aquacultures and develop human resources as a means of improving the productivity and competitiveness of the knowledge-intensive marine products industry,” and thus, the sustainability of the policy related to the Project is judged to be high.

3.4.2 Institutional Aspects of the Executing Agency

The number of BBAT Jambi staff before the project was 35 (11 administrators and 24 technicians), of which, 15 had graduated from university, 17 from high school, 1 from junior high school and 2 from elementary school. The present number of staff is 98 (36 administrators and 62 technicians), of which 5 had graduated from graduate school, 53 from university, 33 from high school, 4 from junior high school and 7 from elementary school. Now that the quality and quantity of the staff has significantly improved, BBAT Jambi is one of the best freshwater aquaculture development centers in Indonesia. Many technicians have received training through the project on aquaculture production, measures against fish diseases, feed, and extensions, and now carry out each of the responsible tasks related to the training they received without problems; thus, it can be stated that there seems to be no problem with the institutional aspects of BBAT Jambi.

3.4.3 Technical Aspects of the Executing Agency

Since all the aquaculture technologies transferred by the project have been put into manuals, district fisheries services as well as counterparts utilize them on a daily basis. In addition, BBAT Jambi has maintained and even improved its technical capability since the end of the project. For example, it has been encouraging the staff that has received training to teach other staff, planning to design and construct a facility to sterilize fish diseases as well as a laboratory to analyze fish diseases in order to strengthen measures against these diseases, and receiving trainees from Cambodia for freshwater aquaculture development. Thus, it can be stated that there seems to be no problem with the technical aspects of BBAT Jambi.

3.4.4 Financial Aspects of the Executing Agency

The annual government budget of BBAT Jambi, supported by the Strategic Plan of the Ministry of Marine Affairs and Fisheries, increased from Rp. 8.7 billion 2006 to Rp. 9.9 billion in 2010, and covered the annual costs necessary for operation and maintenance. The budget in 2011 has been authorized as Rp. 11 billion and there seems to be no financial problems with operation and maintenance in the future. Furthermore, the sales profit for broodstock and others also increased,

albeit to a small degree, from Rp. 120 million in 2006 to Rp. 760 million in 2010. Since the number of private seed production units and district fisheries services that purchase broodstock and others has recently been increasing and the sales income is expected to increase, there seems to be no problem with the financial aspects of BBAT Jambi.

3.4.5 Continuity of Effects/Impacts

The demand for the aquaculture of carps, tilapias, and patins is still high. In addition, BBAT Jambi has been attempting to develop the environment for sustaining the effects/impacts of the project. The district fisheries services have been making efforts to promote aquaculture by constructing government hatcheries. Therefore, it can be stated that the continuity of the project effects/impacts is high.

In sum, there seems to be no problem with the policy related to the project or with the institutional, technical, and financial aspects of BBAT Jambi; thus, the sustainability of the project effects/impacts is high.

4. Conclusions, Recommendations, and Lessons Learned

4.1 Conclusions

Implementation of the Freshwater Aquaculture Development Project has been highly relevant to the development policies and needs of Indonesia and the development policies of Japan, and thus, the relevance of the project is high. However, the efficiency of the project inputs is low because the project period had to be extended by two years on account of a delay in the construction of broodstock ponds. This situation was a result of the late acquisition of land and the late disbursement of the government budget from the Government of Indonesia. It is also low because the project cost was believed to be higher than planned. The project has either achieved or mostly achieved all of the five outcomes and has generally attained the planned effects. Therefore, the effectiveness of the project is high. The Strategic Plan (2010–2014) of the Ministry of Marine Affairs and Fisheries aims to “increase the productivity of aquacultures and develop human resources as a means of improving the productivity and competitiveness of the knowledge-intensive marine products industry,” and thus, the sustainability of the policy as related to the project is high. In addition, no major problems have been observed in the institutional, technical, and financial aspects of the Freshwater Aquaculture Development Center at Jambi (BBAT Jambi); and thus, the sustainability of project effects/impacts is also high.

In light of the above, the project is evaluated to be satisfactory.

4.2 Recommendations

4.2.1 To BBAT Jambi

Sand goby are not yet common since the project was intended to develop seed production technologies only. It is expected, however, that BBAT Jambi should promote them in the areas where the demands for aquaculture of sand goby is high (e.g., Java) by developing new technologies that make it possible to increase the growing speed, which usually takes two years. It should also promote contributions to freshwater aquaculture in Indonesia by transferring technologies for freshwater prawns to government freshwater aquaculture development centers whose technologies are relatively lagging behind (e.g., BBAT Mandiingin in South Kalimantan and BBAT Tatelu in North Sulawesi).

4.2.2 To JICA

JICA should make use of BBAT Jambi as an entity that can receive third country training programs on freshwater aquaculture since it already has experience in receiving trainees from Cambodia.

4.3 Lessons Learned

The former Directorate General of Aquaculture of the Ministry of Agriculture (the present Ministry of Marine Affairs and Fisheries) had initially planned to finish the construction of the government hatcheries during the five years from 1995 to 2000. However, it was concerned about staying on schedule since the budget was reduced owing to the Asian financial crisis. Accordingly, the former Directorate General of Aquaculture of the Ministry of Agriculture attempted to continue its construction by using the counter fund of the sector program loan that JICA had lent as an urgent economic countermeasure. Nevertheless, it turned out that the project was extended by two years partially because of the delay in the construction resulting from the late disbursement of the government budget by the Government of Indonesia. The government of the recipient country and JICA need to ensure well before the implementation of a project that they enter into an official agreement stating that the government of the recipient country will smoothly allocate the budget necessary for the project.

Malaysia

Ex-Post Evaluation of the Japanese Technical Cooperation Project
“Bornean Biodiversity and Ecosystems Cooperation Program (I)”

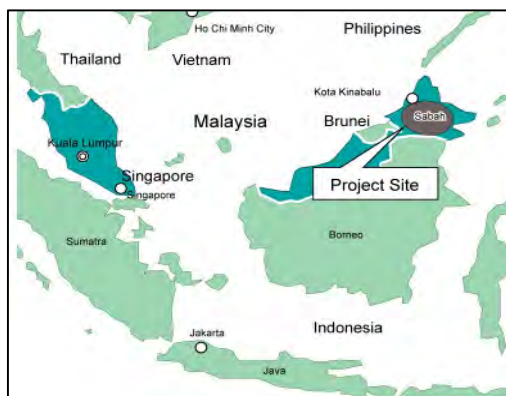
Mr. Koichiro Ishimori, Value Frontier Co., Ltd

0. Summary

The implementation of the program project, which is a program consisting of 7 outputs, has been highly relevant to the development policies and needs of Malaysia, as well as to the development policies of Japan, and thus the relevance is high. The efficiency of the project inputs is also high since the project period and cost were almost as planned. Although one of the seven outputs, that is, the park management component, has not been achieved, the remaining six outputs have been achieved or mostly achieved. The program objective under the premise of the seven outputs has been attained in terms of all three indicators, and thus, the effectiveness of the program is high. Moreover, positive impacts such as increase in the number of entities and individuals cooperating to conserve biodiversity and the ecosystem in Sabah and the number of protected areas, have been realized. The 10th Malaysia Plan (2011–2015) aims at the “conservation of biological resources” and “sustainable use of resources,” and the National Policy on Biological Diversity (1998) remains unchanged; thus, the sustainability of the policy related to the program is high. However, there are minor problems with the institutional, technical, and financial aspects of the operation and maintenance of the program with regard to environmental education, and thus the sustainability of program effects and impacts is fair.

In light of the above, the program project is evaluated to be highly satisfactory.

1. Project Description



Program Location



Images of the ecosystems in Borneo

1.1 Background

Malaysia was home to approximately 60% to 70% of the earth's species. It had over 15,000 types of phanerogam, including the world's largest flower, *Rafflesiales*, over 15,000,000 types of terrestrial vertebrate, including orangutans and proboscis monkeys, and over 150,000 types

of invertebrate, including the world's largest butterfly, *Troides brookiana*. In particular, Sabah (a state on Borneo island), where the program project was implemented, had one of the richest biodiversities in the world.

However, in Sabah, rampant commercial logging and oil palm plantation have rapidly taken place and resulted in the loss of forests, causing the destruction of its biodiversity. Accordingly, measures to conserve the biodiversity have started to become necessary¹.

Under such circumstances, the Government of Malaysia requested the Government of Japan to implement a technical cooperation project based at the Institute for Tropical Biology and Conservation (ITBC). However, the problem analyses during the subsequent program formulation indicated that it would be also necessary to manage the parks and protected areas, improve environmental education, and take comprehensive measures in their collaboration, in addition to the original request to conduct research into the biodiversity. Consequently, this program project that has seven outputs has been formulated and implemented.

1.2 Project Outline

Overall Goal		Conservation of the biodiversity and ecosystems in Sabah is enhanced.
Program Objective		Comprehensive and sustainable approach for conservation is established.
Output	Output 1	A monitoring system and integration among components for comprehensive conservation is enhanced.
	Output 2	An appropriate research and education model for conservation is established (Research and Education Component: REC).
	Output 3	Effective management options for protected areas are developed (Park Management Component: PMC).
	Output 4	An integrated approach to habitat management for important species is established (Habitat Management Component: HMC).
	Output 5	Models to change behaviors of the target groups towards biodiversity conservation are established (Public Awareness Component: PAC).
	Output 6	A more permanent framework as a basis for comprehensive conservation which is modeled from the program is developed.
	Output 7	The plan, progress, and results of the program are made known to the public.
Input		【Japanese side】 1. Experts: 52 experts (Long-tem: 19 experts, Short-tem: 33 experts) 2. Trainees received: 62 trainees

¹ For us, the conservation of biodiversity in Malaysia is not someone else's problem. Most of the fibers for our clothes, our food, and building materials for our houses are imported. Our lives depend on ecosystem services (supporting services, provisioning services, regulating services and cultural services) abroad. Since the foundation of ecosystem services is biodiversity (lives on earth), the loss of our biodiversity leads to poorer ecosystem services and thus, a lower standard of living.

	3. Japan Overseas Cooperation Volunteers (JOCV): 17 people (of which 2 are Senior Volunteers) 4. Third country training program: NA 5. Equipment: 290 million yen 6. Local cost: 102 million yen 7. Others: Study teams of the appraisal, the mid-term review, and the terminal evaluation, etc. 【Malaysia side】 1. Counterparts: 117 counterparts 2. Land, facilities, and operation and maintenance cost of facilities - Research and Education Component (REC) : 16 million yen - Park Management Component (PMC) : 32 million yen - Habitat Management Component (HMC) : 5 million yen - Public Awareness Component (PAC) : 13 million yen
Project Cost	Approximately 1,383 million yen
Project Period	February, 2002 to January, 2007
Executing Agency	Institute for Tropical Biology and Conservation (ITBC), Sabah Parks (SPs), Sabah Wildlife Department (SWD), Unit of Science and Technology (UST), and others ²
Cooperation Agency in Japan	Ministry of the Environment, Ministry of Agriculture, Forestry, and Fisheries.
Related Projects	JOCV and “Bornean Biodiversity and Ecosystem Cooperation Program (II)” of the Technical Cooperation Project

1.3 Outline of the Terminal Evaluation

1.3.1 Achievement of Overall Goal

According to the terminal evaluation in 2006, it was expected that the overall goal would be achieved to some degree within five years. It was also expected that it would be difficult to continue comprehensive conservation activities after the completion of the program project without a comprehensive framework integrating the four outputs corresponding to REC, PMC, HMC, and PAC components.

1.3.2 Achievement of Project Objective

According to the terminal evaluation in 2006, the program objective has been mostly achieved, with the exception of introducing a permanent framework at the program level.

1.3.3 Recommendations and the Situation of Responding to Them

The terminal evaluation in 2006 made the following recommendations. The

² Economic Planning Unit of the Federal Government, Ministry of Tourism, Culture and Environment, Natural Resources Office, Economic Planning Unit, Lands and Surveys Department, Forestry Department, Environment Protection Department, and district government of Sabah.

recommendations and the situation of responding to them are as follows:

1. An organizational framework that integrates the four outputs corresponding to REC, PMC, HMC, and PAC needs to be made after the completion of the program project.
--> Sabah Biodiversity Centre (SaBC), which integrates the four outputs, was established under the “Sabah Biodiversity Enactment 2000” in May 2008 after the completion of the program project.
2. Regarding REC, it is necessary to deploy technicians for maintaining the biodiversity database, MUSEBASE, by the completion of the program project and to incorporate research and education into actual management after the completion of the program project.
--> Technicians for maintaining MUSEBASE were deployed before the completion of the program project. MUSEBASE functions as the biodiversity database, but it is impossible to use it for incorporating research and education into actual management, since the data in the database cannot be shared on the internet because of its system errors.
3. Regarding PMC and PAC, it is necessary that the state government of Sabah authorizes the Crocker Range Park Management Plan and the Sabah Environmental Education Policy (SEEP) by the completion of the program project and that the Plan and the Policy are steadily implemented and monitored after the completion of the program project.
--> The state government of Sabah authorized the Crocker Range Park Management Plan after the completion of the program project, and SPs now implements and monitors the Plan. The state government of Sabah also authorized SEEP in April 2009, after the completion of the program project, and SaBC that took over the responsibility of environmental education from UST now implements and monitors it with assistance from the Bornean Biodiversity and Ecosystem Cooperation Program (II).
4. Regarding HMC, it is necessary to strengthen the technical aspects and staffing of counterparts (SWD).
--> SWD has been trying to strengthen its technical aspects by conducting research into habitat in collaboration with international NGOs. Although significant staffing of SWD has not been observed, it has been attempting to strengthen its staffing by utilizing a participatory system of honorary wildlife wardens.

1.4. Project Description of the Bornean Biodiversity and Ecosystem Cooperation Program (II)

Overall Goal	Biodiversity and ecosystems conservation in Sabah is strengthened and internationally recognized as a conservation model.
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Program Objective		A system for biodiversity and ecosystems conservation in Sabah is strengthened and Sabah state becomes a center for extension of knowledge and information to other areas of Malaysia and foreign countries.
Output	Output1	Functions and implementation capacity of Sabah Biodiversity Council/Centre are enhanced.
	Output2	Biodiversity and ecosystems conservation activities are implemented.
	Output3	Extension services and training capability related to the biodiversity and ecosystems conservation are enhanced.

The Bornean Biodiversity and Ecosystem Cooperation Program (II) by Japan International Cooperation Agency (JICA), operating from October 2007 to September 2012, provides policy-oriented assistance focusing on the public administration system in the state of Sabah in order to establish and strengthen the system for conservation of biodiversity and the ecosystem. For example, it facilitates the institutional setup, capacity-building activities, and creation of the strategic action plan of SaBC under the activities of output 1.

2. Outline of the Evaluation Study

2.1 External Evaluator

Mr. Koichiro Ishimori, Value Frontier Co., Ltd

2.2 Duration of the Evaluation Study

The ex-post evaluation study was implemented according to the followings:

Duration of the Study: October 2010 – October 2011

Duration of the Field Study: January 9–29, 2011, & April 24–May 7, 2011

2.3 Constraints during the Evaluation Study

The program project targeted vast areas of the state of Sabah³. However, owing to limitations on the budget and time available for the ex-post evaluation study, it was not possible to visit and observe all the program-related areas. There were also slight problems with indicators (i.e., indicators 4-1 and 6-1) in measuring the outputs that had been set at the time of planning the program project, and thus, it was difficult to evaluate the extent to which the concerned outputs were achieved. In addition, the external evaluator has been unable to disclose detailed financial information in this evaluation report because the counterparts have requested that these details should be withheld from the public, though they have agreed to present the external evaluator the financial situations unofficially.

³ The total area of the state of Sabah is 73,631km², which is equivalent to approximately 90% of the total area of Hokkaido, Japan (83,456km²).

3. Results of the Evaluation (Overall Rating: A)

3.1 Relevance (Rating: ③)

3.1.1 Relevance with the Development Policies/Plans of Malaysia

The 8th Malaysia Plan (2001–2005), in operation at the time of planning the program project, aimed at “pursuing environmentally sustainable development to reinforce long-term growth” as one of its seven priorities, and it attempted to “conserve the biodiversity” in accordance with the National Policy on Biological Diversity (1998) and “empower local authorities and engaging communities” to realize this aim.

The National Policy on Biological Diversity (1998) aimed at “transforming Malaysia into a world center of excellence in conservation, research and utilization of tropical biological diversity” as its vision, attempted to promote “conservation and sustainable use of the biodiversity” to realize this aim. One of the priorities was to “enhance scientific and technological knowledge, and educational, social, cultural values of biological diversity.”

The 9th Malaysia Plan (2006–2010), in operation at the time of the terminal evaluation, aimed at “improving the standard and sustainability of quality of life” as one of its five priorities, and it attempted to promote “environmental protection and sustainable resource management” to realize this aim. The National Policy on Biological Diversity (1998) also remained valid at this time.

In light of the above, the program project is judged to be relevant with the national development plans and sector plan.

3.1.2 Relevance with the Development Needs of Malaysia

The biodiversity in the state of Sabah at the time of planning the program project was already deemed important for containing valuable assets common to humankind. However, owing to the lack of an integrated system to manage its conservation as well as the lack of understanding of the importance of the biodiversity, the biodiversity was worsening year by year. Therefore, the program project, which intended to establish such an integrated system, promote environmental education, and so forth with a view of conserving the biodiversity, met the development needs at the time of planning the program project. In light of the above, the needs of the program project were judged to be high.

The biodiversity in the state of Sabah at the time of the terminal evaluation remained important because of its value across the world, and its conservation remained essential. However, rampant commercial logging and oil palm plantation have persisted, and the loss of forests⁴ followed by the loss of biodiversity still occurred. Accordingly, the program

⁴ The total forest area in the state of Sabah in 2002 when the program project got started were approximately 4.42 million ha, but dropped to approximately 4.30 million ha in 2010 when the ex-post evaluation was conducted; hence, the net loss of approximately 0.12 million ha, which is almost twice as large as the size of the 23 wards comprising the Tokyo metropolitan area (Source: calculation by the external

project, which intended to establish an integrated system and promote environmental education with a view of conserving the biodiversity, met the development needs at the time of the terminal evaluation. In light of the above, the needs of the program project were judged to be high.

3.1.3 Relevance with Japan's ODA Policies

The previous Charter on Official Development Assistance (ODA) (1992) highlighted the importance of “helping efforts made by developing countries, given that global issues like environmental issues must be resolved together through cooperation between developed and developing countries.” The current Charter on ODA (2003) highlights the importance of “making positive contributions to global issues through ODA, given that global issues like environmental issues are issues for which the international communities must take prompt and coordinated actions.”

The previous Mid-term Policy on ODA (1999) prioritized “positive cooperation for nature conservation from the viewpoint that environmental issues would threaten the lives of human beings.” The current Mid-term Policy on ODA (2005) prioritizes the “capacity building of human resources in order to strengthen organizational capability of handling environmental issues for relevant entities in developing countries, and cooperation for environmental monitoring, policy making, system development, and procurement of equipment from the viewpoint that environmental issues would threaten the lives of human beings.”

In addition, the previous Country Assistance Policy for Malaysia (2002) viewed East Malaysia (the northern part of Borneo island) as the richest area in the world in terms of biodiversity and prioritized the importance of providing comprehensive cross-sectoral support for nature conservation, from training for researchers and practitioners to environmental education.

In sum, the program project has been highly relevant with Malaysian development policies/plans and development needs, as well as Japan's ODA policies. Therefore, its relevance is high

3.2 Effectiveness, Impact (Rating: ③)

3.2.1 Effectiveness

3.2.1.1 Outputs

evaluator based on data from Forestry Department, Forest Research Institute of Malaysia, Malaysia Timber Council, and World Wildlife Fund). In order to conserve forests all over the state of Sabah, a policy-oriented assistance across related ministries and departments is necessary. However, since the program project was just a project-oriented assistance in research and education, park management, habitat management, and public awareness, it is unreasonable to expect the program project to prevent forest loss.

Output 1: A monitoring system and integration among components for comprehensive conservation is enhanced (for efficient and effective collaboration among concerned parties in implementing the program project).

Indicator 1-1: A mechanism to coordinate and monitor the activities of 4 components is established.

Four levels of committee/meetings have been established (Program Steering Committee⁵, Component Managers Meeting⁶, Working Group Meeting⁷, and Program Secretariat Meeting⁸). As a result, a mechanism to coordinate the planning, implementation, and monitoring of each component has been established.



Indicator 1-2: Activities and results of 4 components are coordinated and integrated for comprehensive conservation.

The four levels of committee/meetings have been held on a regular and as-required basis. They have become a forum where the planning, implementation, and monitoring of each component were coordinated and thus comprehensive conservation was integrated.

⁵ The Program Steering Committee consisted of the state secretary of Sabah as the chairperson, chancellor of the University of Malaysia at Sabah and JICA's chief advisor as the vice chairpersons, component managers, and other members, and it was held three times a year. The main role of the Committee was overall management and coordination of the program project and authorization of plans submitted by each project.

⁶ The Component Manager Meeting consisted of, among others, the representatives from ITBC, in its position as the lead organization for REC; SPs, the lead organization for PMC, SWD, the lead organization for HMC; and UST, the lead organization for PAC. It was held about 10 times a year. The major role of the Meeting was sharing information on the planning, implementation and monitoring of each component for the purpose of coordination among all components.

⁷ The Working Group Meeting of each component consisted of the concerned lead organization and other related organizations, and it was held about four times a year. The major role of the Meeting was the planning and monitoring of activities by the concerned component.

⁸ The Program Secretariat Meeting was attended by staff from ITBC, UST, and JICA and was held about four times a year. ITBC was in charge of running the Program Steering Committee and Component Manager Meeting, and UST was in charge of publicity and communication among the concerned parties.

In sum, the above two indicators have been achieved, and efficient and effective collaboration among concerned parties has been recognized. It is therefore judged that output 1 has been achieved.

Output 2: An appropriate research and education model for conservation is established (for enhancing the research and education capabilities of the concerned parties, including ITBC).

Indicator2-1: Usefulness of model to solve conservation problems brought in.

ITBC has conducted a wide variety of biological research, including research into the ecology of important species, such as orangutans and proboscis monkeys, and into the conservation of tropical forests. It presented the results of this research as part of an educational outreach effort to 7 international conferences, 94 seminars, 14 workshops, 22 training programs, and other such events. Moreover, based on these research results, ITBC has introduced a park management approach at Crocker Range Park in collaboration with SPs as well as a habitat management approach at Lower Segama Wildlife Reserves in collaboration with SWD.

In sum, the above indicator has been achieved, and it is acknowledged that the research and education capabilities of the concerned parties, including ITBC, have been enhanced. Therefore, it is judged that output 2 has been achieved.



Output 3: Effective management options for protected areas are developed (for enhancing the park management capabilities of concerned parties, including SPs).

Indicator 3-1: The majority of protected areas in Sabah and all states in Malaysia have and refer to the hand book of lessons-learned by the end of January 2007.

A handbook of lessons learned from the program project was compiled in September

2006 and has been in use at the concerned organizations of the state of Sabah. This book includes the concept of the Community Use Zone (CUZ), which allows indigenous people in protected areas to use and manage land within those areas, and the concept of the Honorary Park Manager, for local people to patrol protected areas. However, the book has not been distributed to all states in Malaysia, owing to budget limitations at SPs, and thus, at the end of January 2007, has not become in use in all the states.

In sum, it is acknowledged that the park management capabilities of the concerned parties, including SPs, have been enhanced, but that the handbook has not become in use in all states. Therefore, it is judged that part of output 3 has not been achieved.



Land Survey at Crocker Range Park

Discussion with indigenous people on CUZ

Output 4: An integrated approach to habitat management for important species is established (for enhancing the habitat management capabilities of concerned organizations, including SWD).

Indicator 4-1: The number of stakeholders in Lower Segama participating in the approach that is sustainable and supported by local people by the end of January, 2007.

The government (i.e., the state government of Sabah and the district government of Kota Kinabatangan), 14 companies, 2 NGOs, and 14 local communities have participated in the Integrated Management Plan for Lower Segama. SWD has promoted habitat revegetation in collaboration with NGOs and implemented training programs for local people appointed as honorary wildlife wardens. In this manner, the habitat management capabilities of the concerned organizations, including SWD, have been improved.

It is judged that this indicator, which was set at the time of planning the program project, is not appropriate, since it is difficult to evaluate its achievement based on only the number of stakeholders, which does not indicate any quantitative baseline or plan. (A

preferable indicator would have been, for example, “the number of stakeholders will increase from X to Y by the completion of the project,” based on the actual count or a rough estimation of the number of stakeholders before the program project was implemented.) Accordingly, the external evaluator made the assumption that the program project would allow a “large” number of stakeholders to participate in the Plan and estimated that over 30 stakeholders was a sufficiently large number.

In sum, this indicator has been achieved, and it is acknowledged that the habitat management capabilities of the concerned parties, including SWD, have been enhanced. It is therefore judged that output 4 has been achieved.

Output 5: Models to change behaviors of the target groups towards biodiversity conservation are established (for enhancing the public awareness capabilities of the concerned parties, including UST).

Indicator 5-1: Models including guideline and delivering mechanism for public awareness of the target groups (i.e., teachers, journalists, developers, policy makers, and non-environmental NGOs) are produced with evidence of successful application by the end of January, 2007

The guideline (i.e., SEEP) was not completed by the end of January 2007, owing to limitations on the time required for consulting over 30 parties. It was eventually completed in April 2009. The delivery mechanism (i.e., Sabah Environmental Education Network: SEEN⁹) was completed in March 2005 and was applied to the target groups in an effective manner.

In sum, while SEEP was completed only after the program project, SEEN was completed as planned with evidence of successful application, and it is acknowledged that the public awareness capabilities of the concerned parties, including UST, have been enhanced. Therefore, it is judged that output 5 has been achieved.

Output 6: A more permanent framework as a basis for comprehensive conservation which is modeled from the program project is developed (for efficient and effective collaboration among concerned parties in implementing the program project).

⁹ The role of SEEN is to promote environmental education, communication, and awareness in Sabah through networking, cooperation, and collaboration among the member organizations/individuals, and its themes vary from conservation of the biodiversity and ecosystems to global warming and the 3 Rs (i.e., Reduce, Reuse, and Recycle).

Indicator 6-1: The number of joint activities.

The number of joint activities, including research, exhibitions, conferences, and workshops, among the concerned parties directly related to the program project (i.e., ITBC, SPs, SWD, and UST) during the implementation of the program project was 28, which translated to 6 activities per year on average.

It is judged that this indicator, which was set at the time of planning the program project, is not appropriate, since it is difficult to evaluate its achievement based on only the number of joint activities, which does not indicate any quantitative baseline or plan. (A preferable indicator has been, for example, “the number of joint activities will increase from X to Y by completion of the project,” based on the actual count or a rough estimation of the number of joint activities before the program project was implemented.) Accordingly, the external evaluator assumed that the program project intended to carry out a “large” number of joint activities and estimated that 28 joint activities was a sufficiently large number. This means that indicator 6-1 has been achieved.

Indicator 6-2: The document containing the framework is produced.

- REC: Biodiversity and Conservation research for Science and the People was made in March 2006.
- PMC and HMC: Master List of Sabah Protected Areas was jointly made in December 2006.
- PAC: SEEP was made in April 2009.

In sum, SEEP was established after the program project was implemented. However, the above two indicators have been achieved, and efficient and effective collaboration among the concerned parties is recognized. It is therefore judged that output 6 has been mostly achieved.

Output 7: The plan, progress, and results of the program project are made known to the public (for disseminating information).

Indicator 7-1: Media coverage on the program project is increased and maintained.

The program project has been covered by media such as newspapers, radio, and television over 700 times during its implementation (see Chart 1). Although this coverage began to decrease after 2005, it can be considered that the overall coverage has increased and has maintained some degree of exposure according to the progress made

by the program project. In fact, the beneficiary survey discussed later in this ex-post evaluation report indicates that 30% of the people have been made aware of the program project by such media.

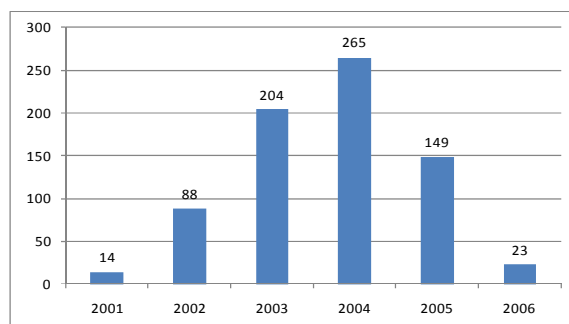


Chart 1: Number of times the program project was covered by newspapers, radio, TV, and other media
Source: JICA

In addition, the annual average number of times the homepage of the program project was accessed during the implementation of the program project was over 32,000 (see Chart 2).

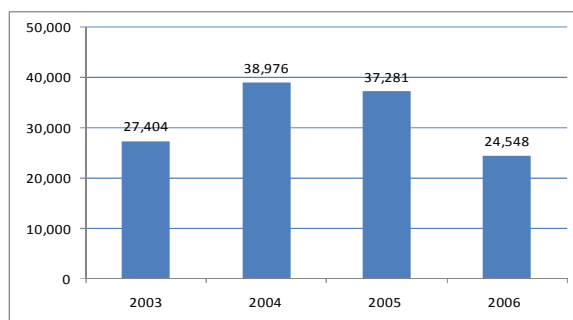


Chart 2: Number of times the homepage of the program project was accessed
Source: JICA

In sum, indicator 7-1 has been mostly achieved, and it is acknowledged that the dissemination of information has been improved. It is therefore judged that output 7 has been mostly achieved.

3.2.1.2 Achievement of Program Objective

Program Objective: Comprehensive and sustainable approach for conservation is established.

Indicator 1: The concerned parties are networked to share information, human resources and facilities, and joint conservation activities are increases.

The joint conservation activities¹⁰ among concerned parties directly related, and

¹⁰ Study tours, ecotourism, workshops, and forestations, etc.

between concerned parties directly and indirectly related, to the program project, numbered 18 at the time of the start of the program project, but increased to over 50 by its completion.

Table 1: Numbers of joint conservation activities

	2002	2007
Number of joint conservation activities	18	50

Source: JICA

Indicator 2: Organizations, local communities, NGOs, and private companies that are directly not related to the program project are involved in planning, implementation and monitoring of conservation activities with the state government and University of Malaysia at Sabah.

Since the monitoring mentioned in this indicator has not been undertaken, no data is available. Consequently, the ex-post evaluation study made the evaluation based on hearings of actual cases revealed by counterparts.

SOS Rhino Borneo (now Borneo Rhino Alliance), a local NGO established in 2003, has been carrying out, together with SWD and the University of Malaysia at Sabah, activities to protect Borneo rhinos, which are an endangered species. The Borneo Conservation Trust established in 2006 has been implementing together with SWD the Green Corridor Project, which connects fragmented forests and wildlife reserves by purchasing and foresting the lands between them, resulting in the expansion of wildlife habitats. These cases are evidence that entities that are not directly related to the program project are involved in conservation activities with the state government and University of Malaysia at Sabah. It is therefore judged that indicator 2 has been achieved.

Indicator 3: A more permanent framework as a basis for comprehensive conservation.

The program project proposed that the state government of Sabah should establish Sabah Biodiversity Council under which biodiversity-related entities can work jointly and SaBC as the secretariat of the Council.

In sum, the above three indicators have been achieved, and thus, the program objective has also been achieved.

3.2.2 Impact

3.2.2.1 Achievement of Overall Goal

Overall Goal: Conservation of biodiversity and ecosystems in Sabah is enhanced.

Indicator 1: Public awareness of biodiversity is raised among people in Sabah (This indicator has not been set in Program Design Matrix)

According to the beneficiary survey, which targeted 100 people in Sabah¹¹, the number of people aware of the importance of biodiversity has increased from 74 in 2002 to 97 in 2010. Reflecting the increase, in addition, the number of people participating in conservation activities related to biodiversity, such as forestation, has also increased from 41 in 2002 to 45 in 2010.

Indicator 2: The number of institutions and individuals in Sabah cooperated for biodiversity conservation through the formalized framework (i.e., SEEN created under output 5) is increased.

Since SEEN did not exist prior to the program project, it is not possible to make a direct comparison of the numbers of institutions and individuals cooperating on biodiversity conservation through SEEN before and after the program project. However, these numbers increased after 2005 when SEEN was established, to 34 institutions and 80 individuals by the time of the ex-post evaluation in 2010.

Table 2: Numbers of institutions and individuals in Sabah cooperating on biodiversity conservation through the formalized framework (i.e., SEEN)

(Unit: institutions/individuals)

	2002	2005	2006	2007	2008	2009	2010
Institutions cooperating through SEEN	—	22	26	26	29	33	34
Individuals cooperating through SEEN	—	52	63	63	66	72	80

Source: SEEN

Indicator 3: The number of protected areas is increased.

Whereas the number of protected areas was 135 before the program project, by the time of the ex-post evaluation in 2010, this number had increased to 138. One place was added to the total number in each of the years 2003, 2006, and 2008¹².

Table 3: Protected areas in Sabah

(Unit: places)

	2002	2010
Protected areas in Sabah	135	138

Source: World Database on Protected Areas (2010)

3.3.2.2 Other Impacts

1) Impacts on the Natural Environment

The positive impact of the program project on the natural environment, such as raised

¹¹ Fifty people from the city of Kota Kinabalu and fifty people from the rural area of Tambunan were randomly chosen and interviewed one-to-one.

¹² Nurod Urod Virgin Jungle Reserve (1,705 ha) in 2003, Kebun Cina Amentiy FR (149 ha) in 2006, and Lower Kinabatangan Segama Wetlands (78,803 ha) in 2008.

public awareness and increased number of institutions/individuals and protected areas, is well acknowledged and no negative impact is acknowledged.

2) Relocation and Acquisition of Land

There is nothing in particular to be noted.

3) Other Indirect Impacts

Activities for conserving biodiversity underpin tourism in Sabah, where ecotourism is emphasized on. The numbers of travel agencies and hotels registered in Sabah and revenue from tourism in Sabah have therefore been examined, and it has been found that these have all increased, though they are not indicators that were set at the time of planning the program project. However, it is reasonable to expect that other factors have also had a role to play in these increases. Thus, it would be inaccurate to assert that these increases have been brought about solely by the program project. Nevertheless, it is believed that the program project has had a role to play in the increases to some degree.

Table 4: Numbers of travel agencies and hotels registered and revenue from tourism in Sabah
(Unit: Number/RM 1 billion)

	2002	2009*
Travel agencies registered in Sabah	167	515
Hotels registered in Sabah	279	443
Revenue from tourism in Sabah	2,287	3,266

Source: Sabah Tourism Board

* Data for 2009 was used because of a lack of data for 2010 when the ex-post evaluation study was conducted

In sum, the above three indicators have been achieved, and other impacts have also been acknowledged. Thus, it is judged that the overall goal has been achieved and that the program project, consisting of multiple components, has had synergies.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Table 5: Comparison of inputs before and after the project

Elements of Inputs	Plan	Actual Result (at Terminal Evaluation)
< Japanese Side >		
(1) Experts	Long-term: 9 fields Short-term: 40 experts	Long-term: 19 experts in 10 fields Short-term: 33 experts in 29 fields
(2) Trainees received	45 trainees	63 trainees
(3) Japan Overseas Cooperation Volunteers (JOCV)	9 volunteers	17 volunteers in 9 fields (2 of them were senior volunteers in 2 fields)
(4) Third country training	NA	NA
(5) Equipment	Approximately 2.5 million yen	Approximately 2.9 million yen

(6) Local cost	Approximately 1.5 million yen	Approximately 1.2 million yen
Total cost	Approximately 1,585 million yen including JOCV	Approximately 1,383 million yen in which cost of JOCV was calculated based on average cost per person information on actual costs was not available.
< Malaysian Side >		
(1) Counterpart	NA	117 counterparts
(2) Land and facilities, maintenance cost of facilities.	NA	– REC: 16.92 million yen – PMC: 32.00 million yen – HMC: 5.66 million yen – PAC: 13.09 million yen

Source: JICA

3.3.1.1 Elements of Inputs

< Japanese Side >

The number of long-term experts is believed to have been almost same as planned, though it is not possible to make a comparison between planned and actual figures, because of the unavailability of a planned figure, whereas the actual number of short-term experts was fewer than planned. The number of JOCVs was greater than planned, and the number of trainees was also greater than planned. Equipment and local costs have been mostly the same as planned. It is considered that the inputs from the Japanese side have been mostly as planned, and counterparts have also considered that the inputs were appropriate.

< Malaysian Side >

The counterparts consider the inputs from the Malaysian side to be suitable, though it is not possible to make a comparison between the planned and actual figures, because of the unavailability of a planned figure.

3.3.1.2 Program Cost

The planned total cost of the program project was 1,585 million yen, while the actual cost was lower than planned, at 1,383 million yen.

3.3.1.3 Program Period

The planned period of the program project was five years from February 2002 to January 2007, as was the actual period. Therefore, the program period was as planned.

In sum, it can be considered that the elements of the program inputs have been appropriate in relation to the realized outputs. The cost of the program project was lower than planned, and the period of the program project was the same as planned. The program project necessitated significant inputs because it consisted of multiple components.

However, all the inputs have been efficiently managed, and thus, the efficiency of the program project is high.

3.4 Sustainability (Rating: ②)

3.4.1 Policy Related to the Project

The 10th Malaysia Plan (2011–2015) aims at “building an environment that enhances quality of life” as one of its five priorities, and attempts to promote the “conservation of biological resources” and “sustainable use of resources” to realize this aim.

The National Policy on Biological Diversity (1998) remains valid.

Thus, the sustainability of the policy related to the program project is judged to be high.

3.4.2 Institutional Aspects of the Executing Agency

3.4.2.1 ITBC (REC)

Staff at ITBC prior to implementation of the program project numbered 29 (2 professors, 2 associate professors, 13 lecturers, and 12 supporting staff), while this figure is currently 67 (6 associate professors, 20 lecturers, and 41 supporting staff).

Two professors left ITBC, but the number of associate professors and lecturers increased significantly. Many of the associate professors and lecturers have experience within and outside Malaysia, and ITBC has been able to continue research and education with no particular problems. Thus, it is judged that there are no problems with the institutional aspects of ITBC.

3.4.2.2 SPs (PMC)

Staff at SPs before the program project was implemented numbered 321 (17 administrative staff at the headquarters and regional offices and 304 park management staff), while this figure is currently 658 (164 administrative staff at headquarters and regional offices and 494 park management staff). SPs has significantly improved the quantity and quality of administrative staff at its headquarters and regional offices and has been able to continue park management activities with no particular problems. Thus, it is judged that there are no problems with the institutional aspects of SPs.

3.4.2.3 SWD (HMC)

Staff numbers at SWD before the program project was implemented totaled 195 (18 administrative staff at its headquarters and regional offices and 177 rangers), while this number is now 225 (20 administrative staff at its headquarters and regional offices and 205 rangers). Although SWD has not significantly improved the quantity and quality of its staff, it has been trying to strengthen its staffing by utilizing honorary wildlife wardens and has

been able to continue habitat management activities with no particular problems. Thus, it is judged that there are no problems with the institutional aspects of SWD.

3.4.2.4 UST (PAC)

Staff at UST before the program project numbered 6 (3 administrative staff and 3 technical staff), while this figure is now 16 (13 administrative staff and 3 technical staff). However, because the major responsibility for public awareness of biodiversity conservation shifted from UST to SaBC in December 2009¹³, it has become important to ascertain the institutional role of SaBC¹⁴. Staff at SaBC currently numbers only 8 (6 administrative staff and 2 technical staff), and the person responsible for raising public awareness has not received any technical assistance from the program project; thus, it is difficult to affirm that SaBC has sufficient staffing.

3.4.3 Technical Aspects of the Executing Agency

3.4.3.1 ITBC (REC)

ITBC has been using in its activities research and education techniques in such fields as taxonomy and conservation biology transferred from the program project, and it is judged that they are well embedded in ITBC¹⁵. Moreover, ITBC staff have improved in terms of quantity and quality, and no problems have been found with the technical aspects of ITBC, with the exception of MUSEBASE. As mentioned above, MUSEBASE functions as the biodiversity database, but it is unable to be employed as a tool to disseminate ITBC information on important species, since the data in the database cannot be shared on the internet owing to its system errors.

3.4.3.2 SPs (PMC)

SPs has been using in its activities park management techniques, such as social survey methods and land use planning within parks, transferred from the program project, and it is judged that they are well embedded in SPs¹⁶. Moreover, SPs staff have improved in terms of quantity and quality, and no problems have been encountered with the technical aspects

¹³ UST still conducts public awareness activities spontaneously even after this shift.

¹⁴ SaBC received technical assistance under the Bornean Biodiversity and Ecosystem Cooperation Program (II) from 2007 to 2012 and was successfully established in May 2008. The missions of SaBC are to 1) promote environmental education with regard to biodiversity in Sabah, 2) coordinate and manage activities for conserving biodiversity, 3) regulate access to biological resources, 4) manage information on biodiversity, and 5) promote utilization of biotechnologies.

¹⁵ According to the terminal evaluation, ITBC has been lack of techniques in animal physiology, DNA analyses, or environmental ecology. However, it now has these capabilities because it has acquired either associate professors or lecturers who have them.

¹⁶ According to the terminal evaluation, there should be no problems with establishing the CUZ plan, but there may be a problem with implementing and disseminating it. It is still impossible to judge whether SPs has difficulties in doing so, because the plan has not been implemented and disseminated until the ex-post evaluation study.

of SPs, with the exceptions of weather monitoring stations and touch-screen monitors. After the completion of the program project, four sets of weather monitoring stations malfunctioned and have been out of use to researchers of plant and animal biology. Recently, however, the Bornean Biodiversity and Ecosystem Cooperation Program (II) introduced three sets of new weather monitoring stations in the same locations as the inactive stations, and it is now possible to conduct this research again. Meanwhile, four sets of touch-screen monitors that have been installed in places such as the visitor center of Croker Range Park, which had over 20,000 visitors in 2010,¹⁷ are still out of order. Consequently, public visibility of the program project through Japanese assistance and opportunities for effective dissemination of information on animals and plants have been lost.

3.4.3.3 SWD (HMC)

SWD has been using in its activities habitat management techniques such as selection methods for key species and planning participatory habitat management transferred from the program project, and it is judged that they are well embedded in SWD¹⁸. Moreover, SWD staff have made attempts to improve their techniques by conducting joint studies in habitat management with international NGOs, and no problems have been found with the technical aspects of SWD. Although two GPS transmitters out of the four introduced by the program project in order to conduct research in the habitat of elephants are currently unusable, SWD has been able to continue its research by undertaking it jointly with international NGOs that have working GPS transmitters.

3.4.3.4 UST (PAC)

UST has been using in its activities public awareness techniques, such as training in environmental education on biodiversity conservation and creating and implementing public awareness plans, transferred from the program project, and it is judged that they are well embedded in UST¹⁹. As mentioned above, however, the major responsibility for

¹⁷ This is fewer than the 34,824 visitors (in 2009) to the Rausu Visitor Center of Shiretoko National Park in Japan, which is a world heritage site, but is larger than the 7,515 visitors (in 2009) to the Yakushima World Heritage Conservation Center in Japan, which is another world heritage site (Source: Ministry of the Environment).

¹⁸ According to the terminal evaluation, SWD has been lack of techniques in 1) monitoring various key species, 2) assistance in strengthening organizational and financial capabilities of villages implementing eco-tours led by villagers, and 3) registration procedures for Ramsar Conservation. At the time of the ex-post evaluation, however, there are no problems with points 1) and 3), because SWD has gained experience in these. However, it is difficult to judge whether it has sufficient techniques in point 2), since it has no experience in this yet.

¹⁹ According to the terminal evaluation, UST has been lack of techniques in 1) planning environmental education policy and 2) monitoring environmental education activities. At the time of the ex-post evaluation, however, there are no problems with point 1), since UST has gained experience in this, and regarding point

public awareness has shifted to SaBC, which has been planning, implementing, and monitoring public awareness activities with the help of the Bornean Biodiversity and Ecosystem Cooperation Program (II). However, it remains a concern whether the public awareness techniques will be utilized at and embedded in SaBC, since it has no staff who have received training in these through the program project.

3.4.4 Financial Aspects of the Executing Agency

3.4.4.1 ITBC (REC)

There has been an increasing trend in the annual budget for the operation and maintenance of ITBC from 2006 to 2010, and the annual budget in 2010 was approximately 250% of that in 2006. The annual budget in 2011 also increased compared to that in 2010 and covers the expenditure necessary for the operation and maintenance of ITBC. Therefore, there are no problems with the financial aspects of ITBC.

3.4.4.2 SPs (PMC)

There has been an increasing trend from 2006 to 2010 in the annual budget for the operation and maintenance of SPs; the annual budget in 2010 was approximately 170% of that in 2006. The annual budget in 2011 is almost the same as that in 2010, but covers the costs necessary for the operation and maintenance of SPs. Therefore, there are no problems with the financial aspects of SPs.

3.4.4.3 SWD (HMC)

The annual budget for the operation and maintenance of SWD over 2006–2010 has increased overall, and the annual budget in 2010 was approximately 176% of that in 2006. The annual budget in 2011 also increased compared to that in 2010 and covers the costs required for the operation and maintenance of SWD. Therefore, no problems can be found with the financial aspects of SWD.

3.4.4.4 UST (PAC)

The annual budget for the operation and maintenance of UST has increased overall from 2006 to 2010; the annual budget in 2010 was approximately 107% of that in 2006. As mentioned above, however, the budget of SaBC should be confirmed since the major responsibility for public awareness of biodiversity has shifted from UST to SaBC. The annual budget for the operation and maintenance of SaBC has increased overall since 2008, when it was established, and the annual budget in 2010 was approximately 240% of that in 2009. The annual budget in 2011 also increased from that in 2010, since SaBC has

2) SaBC will carry this out on behalf of UST.

acquired a special budget for managing information on biodiversity, as one of its missions, in addition to the ordinary budget. The ordinary budget in 2011 is almost the same as that in 2010 and remains small. Therefore, it is difficult to state confidently that SaBC has a sufficient budget for fulfilling its missions, including public awareness.

3.4.5 Continuity of Effects/Impacts

No problems have been found with the institutional, technical, and financial aspects of ITBC, SPs, SWD, and UST. However, SaBC, which was newly established as a comprehensive framework on biodiversity and is responsible on behalf of UST for public awareness of biodiversity, has slight problems with its institutional, technical, and financial aspects. Therefore, there are concerns about the continuity of effects and impacts, particularly on public awareness.

In sum, the program project has slight problems with the institutional, technical, and financial aspects of SaBC, and thus the sustainability of program effects and impacts is fair.

4. Conclusions, Recommendations, and Lessons Learned

4.1 Conclusions

The implementation of the program project, which is a program consisting of 7 outputs, has been highly relevant to the development policies and needs of Malaysia, as well as to the development policies of Japan, and thus the relevance is high. The efficiency of the project inputs is also high since the project period and cost were almost as planned. Although one of the seven outputs, that is, the park management component, has not been achieved, the remaining six outputs have been achieved or mostly achieved. The program objective under the premise of the seven outputs has been attained in terms of all three indicators, and thus, the effectiveness of the program is high. Moreover, positive impacts such as increase in the number of entities and individuals cooperating to conserve biodiversity and the ecosystem in Sabah and the number of protected areas, have been realized. The 10th Malaysia Plan (2011–2015) aims at the “conservation of biological resources” and “sustainable use of resources,” and the National Policy on Biological Diversity (1998) remains unchanged; thus, the sustainability of the policy related to the program is high. However, there are minor problems with the institutional, technical, and financial aspects of the operation and maintenance of the program with regard to environmental education, and thus the sustainability of program effects and impacts is fair.

In light of the above, the program project is evaluated to be highly satisfactory.

4.2 Recommendations

4.2.1 To Counterparts

4.2.1.1 ITBC (REC)

MUSEBASE functions as the biodiversity database, but it cannot be used to share this data on the internet, owing to its system errors. Therefore, it is expected that any missing effects and impacts of the program project may be recovered by fixing the system errors. Meanwhile, parties in the Convention of Biological Diversity have begun to promote heavily the Clearing House Mechanism (CHM)²⁰, which is an advanced information management tool on biodiversity. It is assumed that ITBC must respond to this call in due course. Accordingly, it is expected that ITBC will reconsider the roles of MUSEBASE based on the necessity to take action regarding CHM and decide whether to continue MUSEBASE by fixing the system errors or to start to use CHM as a new alternative.

4.2.1.2 SPs (PMC)

Since the handbook containing information on the concepts of CUZ and the Honorary Park Manager has been distributed in Sabah, the concepts have become pervasive in the state. However, they have not yet been formally introduced. The Bornean Biodiversity and Ecosystem Cooperation Program (II) has been supporting SPs work on CUZ and expects it to be introduced during the implementation period of the program. Honorary park managers should be deployed in June 2011 as scheduled.

Meanwhile, lessons including the concepts from the program project are currently not well shared with other states, since the handbook has not been distributed widely. Where SPs does not have a sufficient budget for printing and distributing the handbook, it is expected that it will attempt to share copies with other states by taking measures such as uploading data on the lessons to the SPs homepage.

4.2.1.3 SWD (HMC)

The habitat management techniques developed at Lower Segama through the program project have been used in wildlife reserves in the state of Kelantan on the peninsula of Malaysia, and thus its versatility has been acknowledged. It is expected that SWD will apply the techniques to wildlife reserves in as many other states as is feasible.

²⁰ CHM contains information on biological specimens, similar to MUSEBASE (e.g., information on their scientific names, place and time that specimens were collected, name of the person who collected specimens and identified them, and present location where specimens are stored). CHM covers a wider range of information than MUSEBASE on the ecosystem (e.g., geographical distributions and changing conditions of vegetation and terrestrial and marine animals, terrain, rivers, lakes, swamps, coasts, mudflats, seaweed beds, and coral reefs), information on species (e.g., scientific names of species, physiological and genetic characteristics, geographical distributions), and information on regulations with regard to the natural environment (e.g., regulated areas of national parks and protected game reserves). The user is able to search this information and share it on the internet.

4.2.1.4 UST (PAC)

UST ensures that techniques transferred from the program project with regard to public awareness will be transferred to SaBC, and it is expected that this will happen soon. Meanwhile, among its many missions, SaBC must prioritize and focus on a few missions, owing to limitations on its budget and staff, at least for the time being. In addition to fulfilling the responsibility for public awareness, which SaBC has taken over from UST, it must work on projects that promise high impacts over a relatively short period, such as managing information on biodiversity, for which SaBC has already acquired a budget and which will also be of great use to other parties. By doing so, it is expected that SaBC will raise its profile among concerned parties and expand its organization.

4.2.2 To JICA

It is expected that JICA will either repair the four sets of touch-screen monitors that have been procured for SPs or procure new ones under its follow-up scheme. The proper functioning of these will contribute to effective dissemination of information on biodiversity to the 20,000 visitors to the Center at Crocker Range Park and to visibility of the program project through Japanese assistance.

Despite the acknowledged importance of the SaBC missions (see footnote 14), SaBC is not well prepared for them in its institutional terms. Therefore, it is expected that JICA will seek better understandings on and further cooperation for SaBC towards the state government of Sabah for strengthening the institutional aspects of SaBC.

The speed of rampant commercial logging and oil palm plantations has been slowing, but the loss of forests followed by the loss of biodiversity still occur. Therefore, it is expected that JICA will continue its work on biodiversity and the ecosystem in Sabah through the Bornean Biodiversity and Ecosystem Cooperation Program (II). It is also expected that JICA will help the state government of Sabah to regulate new commercial logging and oil palm plantations in a sustainable manner by assisting it in creating a Sabah Biodiversity Conservation Strategy through the Bornean Biodiversity and Ecosystem Cooperation Program (II).

4.3 Lessons Learned

Biodiversity and ecosystems involve a variety of areas, and thus conservation of biodiversity and ecosystems requires the establishment of a scheme that involves various areas. In this regard, it was appropriate that JICA took the approach of a program project bundling multiple components in various fields under one objective when planning and implementing the technical cooperation project, which was not the conventional approach of a project in these fields. This program project-based approach is considered to have been

crucial in successfully achieving the program objectives and overall goal.

The program project has established the permanent framework of SaBC as the foundation for comprehensive environmental conservation. However, since its establishment in May 2008, SaBC has not been without problems in terms of its institutional, technical, and financial aspects. When proposing a new organization through a project, it is therefore important to coordinate and consult with leading organizations on the institutional, technical, and financial capabilities necessary to fulfill its missions well before it is established.