

FINAL TECHNICAL REPORT



**ITTO Project PD 777/15 Rev. 3 (F)
Accelerating the Restoration of Cibodas
Biosphere Reserve (CBR) Functions through
Proper Management of Landscapes Involving Local Stakeholders**

Cibodas, West Java - Indonesia, February 2022

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Accelerating the Restoration of Cibodas
Biosphere Reserve (CBR) Functions through
Proper Management of Landscapes Involving Local Stakeholders

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Directorate General of Conservation of Natural Resources and Ecosystems
Ministry of Environment and Forestry of
The Republic of Indonesia

With the assistance of:

The International Tropical Timber Organization (ITTO)

Cibodas – Cianjur, 28 February 2022

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Directorate General of Conservation of Natural Resources and Ecosystems
Ministry of Environment and Forestry of The Republic of Indonesia

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		Total	USD 643,616	USD 555,374

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FOREWORD

ITTO Project PD 777/15 Rev. 3 (F) entitled "Accelerating the restoration of Cibodas Biosphere Reserve (CBR) functions through proper management of landscapes involving local stakeholders" was deliberately developed and designed by Gunung Gede Pangrango National Park (GGPNP) Authority to help restore the basic functions of CBR. Its specific objective was to improve conservation and sustainable management of biodiversity and ecosystems in CBR which was planned to be achieved through delivery of three outputs and implementation of twelve core activities in total.

The project had been implemented by GGPNP authority since September 2018 in a collaborative manner and completed by end of February 2022. Its specific objective has been fully achieved at project completion and contributed significantly to restoring the basic functions of CBR, improving local livelihood and enhancing the overall management of CBR.

I would like to express sincere thanks to the Government of Japan for its financial support that made implementation of the project possible, to the International Tropical Timber Organization for its continued advising to project management, to the Project Management Unit led by Mr. Ade Bagja Hidayat for its hard work and to all parties or individuals that had contributed to implementation of the project in one way or another.

I surely believe that this report would be beneficial to proponents of forest resource conservation and managers of biosphere reserves in Indonesia and other ITTO member countries.

With best regards,



Mr. Wasja
Acting Director,
Gunung Gede Pangrango National Park



LIST OF ABBREVIATIONS AND ACRONYMS

ADP	: Arca Domas Pangrango
AF3	: Alastair Fraser Forestry Foundation
APFW	: Asia-Pacific Forestry Week
BPS	: Badan Pusat Statistik
BPTN	: Bidang Pengelolaan Taman Nasional
BR	: Biosphere Reserve
CBR	: Cibodas Biosphere Reserve
CC Forum	: Coordination and Communication Forum
CSP	: Creative Students Program
CSR	: Corporate Social Responsibility
EA	: Executing Agency
EO	: Event Organizer
FB	: Facebook
FFG (KTH)	: Forest Farmers Group (Kelompok Tani Hutan)
FGD	: Focus Group Discussion
FPIC	: Free Prior Informed Consent
GCP	: Ground Control Point
GGPNP	: Gunung Gede Pangrango National Park
GIS	: Geographical Information System
GPS	: Global Positioning System
HSPK	: Harga Satuan Pokok Kegiatan
IG	: Instagram
ISMP	: Integrated Strategic Management Plan
ITTO	: International Tropical Timber Organization
KLIF	: Koorders Lestari Indonesia Foundation
KTH (FFG)	: Kelompok Tani Hutan (Forest Farmers Group)
LAS	: Lestari Alam Sejahtera
LBC Lestari	: Lebak Bukit Ciherang Lestari
LFG	: Local Farmers Group
MAB	: Man and Biosphere
MD	: Man/Day (Orang/Hari)
MDI	: Minimum Domination Index
MMDC	: Mina Mukti Dahlia Cooperative
MMP	: Masyarakat Mitra Polhut
MoEF	: Ministry of Environment and Forestry
Mol	: Ministry of Interior
NGO	: Non-Governmental Organization
NTFP	: Non-Timber Forest Product

OH	: Orang/Hari (Man/Day)
PMU	: Project Management Unit
PHBM	: Pengelolaan Hutan Bersama Masyarakat
RBM	: Resort Based Management
RMS	: Root Mean Square
RPJMD	: Rencana Pembangunan Jangka Menengah Daerah
RTRW	: Rencana Tata Ruang Wilayah (Regional Spatial Plan)
SBM	: Standar Biaya Manajemen
SFM	: Sustainable Forest Management
SMART	: Spatial Monitoring and Reporting Tools
SOP	: Standard Operating Procedures
SPOT	: Satellite Pour l'Observation de la Terre
SPTN	: Seksi Pengelolaan Taman Nasional
UNESCO	: United Nations Educational, Scientific and Cultural Organization
WFC	: World Forestry Congress
WCS	: Wildlife Conservation Society

EXECUTIVE SUMMARY

Introduction

01. CBR is one of the nineteen biosphere reserves in Indonesia as of 2021 with mountain rain forest as the dominant ecosystem and most advancedly managed compared to other reserves; it is not valued only as a direct life supporting system but also home to hundred endemic species of flora and fauna.
02. GGPNP was designated as the core area of CBR with an extent of around 24,500 hectares; the buffer and transition zones that cover an area of around 142,500 hectares in extent, are the place where sustainable development activities have been carried out by local beneficiaries.
03. ITTO Project PD 777/15 Rev. 3 (F) was designed to help restore the functions of CBR and had been implemented by GGPNP Authority since September 2018 and completed by February 2022.
04. The specific objective of the project was “to improve conservation and sustainable biodiversity and ecosystems in CBR” which was planned to be achieved through delivery of three project outputs, namely: i) threat to biodiversity in the core area significantly reduced, ii) land use best practices in the buffer and transition zones promoted, and iii) enhanced institutional arrangements for CBR management.

Reducing threat on biodiversity

05. Main results of the activities under Output 1 were enrichment planting of multi tree species on lands poorly occupied tree species with a total area of seven hectares, reduced land conflicts in the core area, enhanced capacity of local stakeholders in the protection of the core area and sound SOPs for monitoring of flagship fauna species developed.
06. The matching of indicators of Output 1 defined in the logical framework with the results of the activities led to a conclusion that the output had been fully achieved and delivered.

Promoting land use best practices

07. Main results of the activities under Output 2 were: information on existing land use practices, deviation to originally defined practices and proposed action plan for fixing up the deviation, nine local livelihood projects collaboratively identified, constructed, operated and maintained by FFGs, increased awareness of local stakeholders on conservation and sustainable development, and the FFGs trained on the skills needed to manage the livelihood projects.
08. The matching of indicators of Output 2 defined in the logical framework with main results of the activities implemented indicated that the output had been fully achieved and delivered.

Enhancing institutional arrangements

09. Main results of the activities implemented under Output 3 were: revised decree of West Java Governor on CC Forum for CBR management and Working Groups of the CC Forum established at district level; workshops and discussions on conservation and sustainable development organized; website, FG and IG of GGPNP efficiently functioned, and; experience of other biosphere reserves shared and learned.

10. The matching of indicators of Output 3 defined in the logical framework with main results of the activities implemented proved that the output had been fully achieved and delivered.

General discussion

11. On the bases of full achievement and delivery of three planned outputs and results of the matching of indicators of the specific objective defined in the logical framework with results of the activities under the outputs, it was reasonable to conclude that the specific objective has been fully achieved at the project completion.
12. ITTO Project PD 777/15 Rev. 3 (F) has contributed significantly to restoring the basic functions of CBR through the interventions designed to reduce threat on biodiversity, promote land use best practices and enhance institutional arrangements for CBR management.
13. Adequate implementation of the livelihood initiatives can significantly improve local livelihood which in turn, will serve as a strong incentive for local stakeholders to support SFM in general, conservation of biodiversity and ecosystems in particular.
14. To be sustainable, the local livelihood projects should produce goods and services that are marketable at profit; to be marketable, the products to sell must have competitive advantage; and to be competitive, a good or service must be produced in an efficient and quality manner, and supplied in a continuous fashion.

Lessons learned

15. The lessons learned as outlined in Section 5.5 encompass a wide spectrum of CBR management: from the need to redefine unclear indicator of achievement to strategies for development of local livelihood projects, and from use of social media for sharing information to key success of the project implementation.

Conclusions

16. The conclusions drawn from the implementation of ITTO Project PD 777/15 Rev. 3 (F) are:
 - i. The project was collaboratively implemented by GGNP Management with the local stakeholders, notably local communities, and competent parties;
 - ii. The smooth implementation of planned project activities and successful completion of the project was attributable to the adoption of a collaborative management strategy, continued supervision by the executing agency, the solid and creative PMU and the effective communication with the ITTO Secretariat;
 - iii. Threat on biodiversity in the core area of CBR had been significantly reduced through enrichment planting on the lands occupied by a single tree species, abatement of land conflicts causing forest and land degradation, enhanced protection of core area and application of sound monitoring system for flagship fauna species;
 - iv. Land use practices in the buffer and transition zones of CBR had been promoted by revisiting the original land use plan, collaboratively establishing local livelihood projects, increasing awareness of local stakeholders on biodiversity conservation and sustainable development and training of local farmers groups on the skills needed for development of livelihood projects;

- v. Institutional arrangements for CBR management had been enhanced by revising the original CC Forum on CBR management and forming Working Group of CC Forum at district level, organizing workshop and dialogue sessions on conservation awareness raising, making use of website, FB and IG for sharing information and experience and participating in different events on biosphere reserves as well as organizing the Asia-Pacific regional workshop on biosphere reserve management in the City of Bogor on 20 January 2022.
- vi. Contribution of ITTO Project PD 777/15 Rev. 3 (F) to restoring the functions of CBR was significant and real through better conservation of the core area, more effective use of the buffer and transition zones for local livelihood development and biodiversity conservation and enhanced arrangement for logistical needs of CBR management operations.
- vii. Defined specific objective of the project has been fully achieved at completion of the project through full delivery of three planned outputs of the projects.

Recommendations

- 17. The recommendations made consistent with the lessons learned are:
 - i. Land conflicts in the core area of CBR had been reduced under the recently completed ITTO Project but not eliminated; remaining conflicts need to be resolved using a win-win solution collaboratively developed by land occupying farmers and GGNP management in order to fully clean and clear the core area of inappropriate land use practices;
 - ii. Enrichment planting with diverse tree species on the lands in the core area that are poorly occupied by plant and tree species is advisable for the GGNP management to continue;
 - iii. Development of new livelihood projects and training on the skills needed to construct, operate and maintain the projects should be continued in view of providing incentive for local communities to support conservation of biodiversity and ecosystems in CBR;
 - iv. Dialogue with local communities is an effective means for raising awareness on conservation and sustainable development thus deserves steady implementation;
 - v. To ensure an effective functioning of the newly established Working Groups on District CC Forum for CBR management, their operational costs should be jointly shouldered by GGNP and local governments;
 - vi. Operation of the publicly accessible website, FB and IG proved effective for sharing and disseminating information on CBR hence should be continued;
 - vii. Participating in biosphere reserves is the effective strategy for sharing information and learning experience of other reserves.

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Photo: GGPNP

1. INTRODUCTION

1.1. Cibodas Biosphere Reserve (CBR) at a Glance

A biosphere reserve is an area designated by a government through the UNESCO-Man and Biosphere (MAB) cooperation program for conservation of biodiversity and sustainable development based on a strong community efforts and sound sciences. A biosphere reserve is an ideal area to test and demonstrate approaches towards sustainable development at the regional level. Therefore, a biosphere reserve is a conservation area whose existence is recognized internationally as a landscape for promotion of healthy relation between human and nature.

CBR is one of the nineteen biosphere reserves in Indonesia as of 2021 with mountain rainforest as the dominant ecosystem. CBR is viewed, not only as a direct life supporting system such as source of water and habitat of wildlife but also with ecological function for controlling flood, erosion and global warming. A degraded landscape is very difficult and expensive to restore that its management must be performed with extreme care, taking into account ecological function and interest of the present and future generations.

Administratively, CBR landscape is situated in three district of West Java province, namely: Bogor, Cianjur, and Sukabumi with the Ciawi-Puncak-Cianjur-Sukabumi road as its outer boundary. The CBR consists of core area, buffer zone and transition area totaling 167,000 hectares in extent as highlighted below:

The core area:

- In 1982, Gunung Gede Pangrango National Park (GGPNP) was designated as one of the core areas of CBR at 15,196 hectares in extent; in 2003 the area of the national park had been extended to become 21,975 ha. Upon a thorough assessment in 2009 extent of the

area was actually 22,861 hectares as the size of area of Perum Perhutani embedded was found 7,665 hectares.

- ✓ In general, forests of GGPNP are still well intact and are viewed as among the best forest ecosystems in Java Island;
- ✓ The main forest ecosystems based on elevation consist of lower mountain forest, upper mountain forest and alpine mountain forest.
- ✓ In addition, independent of elevation, swamp, crater, lake and plantation forest ecosystems are also found inside the park.
- ✓ Scientists have found no less than 1,500 floras and 800 faunas in GGPNP; among the peculiar ones are shown in Figure 1 and 2.



Figure 1. Floras in GGPNP, from left to right: Edelweiss (*Anaphalis javanica*) and Rafflesia (*Rafflesia rochussenii*) (Photo: GGPNP)



Figure 2. Faunas in GGPNP, from left to right: Javan hawk-eagle (*Nisaetus bartelsi*), Javan leopard (*Panthera pardus melas*), and Javan gibbon (*Hylobates moloch*) (Photo: GGPNP)

- Telagawarna is also one of the core areas of CBR; this area has been designated as conservation area for nature reserve and nature tourism park. The size of the area is around 368,25 hectares and it is adored by tourists for its beautiful nature view, cute mountain lake, cool weather and proximity to main highway.
- Jember Tourism Park is yet another core area of CBR located at the peak of Gede mountain at the border of Bogor and Cianjur districts with an area of around 50 hectares only. This area is a beautiful landscape, home for a number of endangered, beautiful wildlife species.

The buffer zone:

- Is the area directly bordering the core area that can be used for protective activities that support conservation of the core area. Among the suitable activities are environmental education and recreation, ecotourism and basic research program.
- There are a total of 119 villages occupying the buffer zone while the extent of the zone was estimated at around 54,800 hectares.

The transition area:

- Is part of the biosphere reserve area to be used with local communities and is situated directly neighboring the buffer zone.
- Transition area belongs to individuals, institutions, organizations or other legal entities; it is the site for implementing different models on sustainable development and biodiversity conservation by stakeholders in a collaborative manner.
- The extent of transition area was estimated at 87,700 hectares with 78 villages in total.

Biosphere reserve is a concept for landscape management to harmonize nature conservation with sustainable development on the basis of scientific knowledge. The concept was introduced by the MAB Programme of UNESCO back in 1974. Superiority of the biosphere reserve concept lays on its three blended functions, namely:

- i. Conservation function of biodiversity and ecosystems as well as culture. This function contributes to conservation of landscape, ecosystem, species, plasma nuftah and culture diversity;
- ii. Development function that promotes and enriches sustainable economic development that is economically and culturally feasible;
- iii. Logistical supporting function including research, education, training and monitoring works relating to conservation and sustainable development issues at the local, regional, national and international levels.

The CBR with a total area of around 167,000 hectares, is managed consistent with above management concept by GGPNP authority in cooperation with the district governments of Bogor, Cianjur, and Sukabumi.

1.2. Origin of the Project

ITTO Project PD 777/15 Rev. 3 (F) entitled “Accelerating the restoration of Cibodas Biosphere Reserve (CBR) functions through proper management of landscape involving local stakeholders” was a follow-up to the previously completed ITTO Project TFL-PD 019/10 Rev. 2 (F) titled “Developing collaborative management of Cibodas Biosphere Reserve in West Java, Indonesia” which had been completed by March 2014. The key problem addressed by that previous project was “poor implementation of good governance practices and in-effective law enforcement in the conservation and sustainable use of biodiversity and environmental services” caused mainly by: i). lack of stakeholders’ commitment to an effective CBR management and law enforcement, ii). absence of an integrated strategic management plan, and iii). limited community awareness on sustainable use of biodiversity and environmental services.

Consistent with the key problem addressed, the specific objective of Project TFL-PD 019/10 Rev. 2 (F) was “to strengthen forest law enforcement and governance on the conservation and sustainable use of biodiversity and environmental services of CBR” which, had to some extent, been achieved through delivery of three outputs, fully or partially, namely:

- Commitment of stakeholders to an effective CBR management increased
- An integrated strategic management plan for CBR developed
- Community awareness on the conservation and sustainable use of biodiversity and environmental services as well as forest law enforcement and governance enhanced.

Indeed, the previous project had not resolved all the problems facing CBR management. While commitment of stakeholders to CBR management and awareness of communities on conservation and sustainable use of forest resources had been increased, several problems remained unresolved which were well documented in the Integrated Strategic Management Plan (ISMP) developed under that project. It should be noted however, that the enhanced commitment and increased awareness of stakeholders are an invaluable asset for achieving the CBR management, i.e. to restore and conserve the intended functions of CBR, that they had been properly utilized in the implementation of the just completed project which is currently under final reporting.

ITTO Project PD 777/15 Rev. 3 (F) was the initiative of the GGNP authority as a follow up to the findings of Project TFL-PD 019 Rev. 2 (F). The main purposes of the project currently under final reporting were:

- To preserve and make use of the achievements and findings of the previously completed project;
- To partially implement the ISMP developed under Project TFL PD 019 without delay in order not to lose the momentum that might aggravate existing problems; and
- To put in place adequate strategies for conservation and sustainable management of the CBR in view of restoring the conservation and development functions of the reserve.



**Figure 3. Curug Ciwalen, Cibodas (left) and Suspension Bridge at Situgunung (right)
(Photo: GGNP)**

1.3. Project Design

The key problem addressed by Project PD 777/15 Rev. 3 (F) was “inadequate conservation and sustainable management of biodiversity and ecosystems in CBR”. The Executing Agency argued that if this problem remained unresolved, the conservation and development functions of CBR core area would be deteriorating over time, which is inconsistent with the intended objectives of biosphere reserve development as defined in the Seville Strategy and Madrid Action Plan for biosphere reserve conservation and development.

The key problem to address had been thoroughly analyzed involving the relevant stakeholders in order to comprehend cause-effect relationship of the problem. Using a problem tree analytical technique, the consequences as well as direct and indirect causes of the key problem were adequately identified hence the cause-effect relationship of the key problem was well understood and clearly pictured in a problem tree diagram. The problem tree was used as the basis for construction of a solution tree that pictured an effective and relevant project design as outlined below. The project proponent argued that the project design arrived at must be the relevant and effective one to resolve the problems addressed as it was derived from the relevant problem and solution tree diagrams.

Design of ITTO Project PD 777/15 Rev. 3 (F) as it was originally derived is presented below:

- **Development objective**

To contribute to restoring the conservation and development functions of CBR.

- **Specific objective**

To improve conservation and sustainable management of biodiversity and ecosystems in CBR through implementation of the Integrated Strategic Management Plan (ISMP).

- **Outputs**

Three outputs defined correspond to the main or direct causes of the key problem addressed were:

Output 1: Threat on biodiversity in the core area significantly reduced

Output 2: Land use best practices in CBR buffer and transition zones demonstrated and promoted

Output 3: Institutional arrangements for CBR management enhanced

- **Activities**

In total, 12 activities had been defined correspond to the indirect causes of the key problem as listed below:

Output 1

Activity 1.1: To enrich biodiversity on lands managed under monoculture silviculture system through planting of suitable diverse plant and tree species

Activity 1.2: To resolve land conflicts with farmers by employing a win-win solution and replant the lands with diverse species of plants and trees

Activity 1.3: To enhance capacity in core area protection by involving local communities in forest patrol operations and providing essential facilities

Activity 1.4: To put in place a sound monitoring system of biodiversity and ecosystems

Output 2

Activity 2.1: To review implementation of existing land use plan and provide recommendations for repairing follow up actions

Activity 2.2: To establish sustainable livelihood models for demonstration and training in collaboration with local communities and private firms

Activity 2.3: To increase awareness on conservation and sustainable development through intensive dialogues with local stakeholders and dissemination of attractive, easy to read printed materials

Activity 2.4: To train local people and stakeholders on skills needed to develop sustainable livelihood projects

Output 3

Activity 3.1: To establish and operate CC Forum at district level

Activity 3.2: To organize three district workshops on management/development planning

Activity 3.3: To install and operate a publicly accessible CBR information system

Activity 3.4: To learn lessons and experience from other biosphere reserves

Consistent with the project design, a logical framework establishing intervention strategy, measurable indicators, means of verification and key assumptions had been defined as shown in Table 1.

Table 1. Logical framework of the project

Strategy Intervention	Measurable indicators	Means of verification	Key assumptions
Development objective: To contribute to restoring the conservation and development functions of CBR	4 years after project completion <ul style="list-style-type: none"> • 50% of poorly managed core area biologically enriched • Illegal forest activities in CBR core area abolished • 50% of lands occupied by farmers rehabilitated • Sustainable livelihood models replicated at least 15 sites in 3 districts 	GGPNP report GGPNP report GGPNP report Field check/GGPNP report	<ul style="list-style-type: none"> • GGPNP Authority and district governments remain committed to CBR conservation and development • Good coordination between MoEF and regional/district governments • Cooperative farmers • Cooperative local communities and firms
Specific objective: To improve conservation and sustainable management of biodiversity and ecosystem in CBR through implementation of the Integrated Strategic Management Plan	At project completion/end of year 3 <ul style="list-style-type: none"> • 2 biodiversity enrichment models established • 1 land conflict resolution model agreed to by farmers and GGPNP Authority • A sound monitoring system for biodiversity and ecosystems operational • 200 reps of beneficiaries trained on skills for 6 types of sustainable livelihood projects • 3 CC Forum operational in 3 districts 	Consultant's report Consultant's report Consultant's report Training report Consultant's report	<ul style="list-style-type: none"> Good coordination between MoEF and regional/district governments Cooperative farmers - - Supportive district governments

Strategy Intervention	Measurable indicators	Means of verification	Key assumptions
Output 1 Threat on biodiversity in the core area significantly reduced	<ul style="list-style-type: none"> • 2 biodiversity enrichment models on 4 ha of land designed in Year 1 and established since Year 2 • A win-win land conflict resolution model identified in Year 1 and applied since Year 2 • 60 community members trained on skills for monitoring of forest patrol operations 	Consultant's report Consultant's report Training report	- Cooperative farmers Cooperative farmers
	<ul style="list-style-type: none"> • A sound monitoring system for biodiversity and ecosystem developed in Year 1 and applied since Year 2 	Consultant's report	-
Output 2 Land use best practices in CBR buffer and transition zones demonstrated and promoted	<ul style="list-style-type: none"> • Actual land use practices in buffer and transition zones documented and evaluated in Year 1 • 6 sustainable livelihood models identified in Year 1 and established in Year 2-3 in 3 districts • 12 dialogues organized at sub-district level in Years 2-3 each involving 3-4 villages • 200 reps of beneficiaries trained on sustainable livelihood skills in Year 2-3 	Consultant's report Field check; Consultant's report Dialogue reports Training reports	Good coordination between MoEF and regional/district governments Cooperative local communities and firms Cooperative local communities Cooperative local communities and firms
Output 3 Institutional arrangements for CBR management enhanced	<ul style="list-style-type: none"> • CC Forum at 3 districts established in Year 1 and operational since Year 2 	Minutes of CC Forum meetings	Supportive province and district governments
	<ul style="list-style-type: none"> • 3 district workshops on management planning organized in Years 1-3 	Workshop reports	-
	<ul style="list-style-type: none"> • CBR information system installed in Year 1 and operational since Year 2 	Consultant's report	-
	<ul style="list-style-type: none"> • Learning of lessons and experience from other reserves conducted in Years 1-3 	Report on workshop and participation in biosphere reserve events	-

1.4. Project Implementing Strategy

The project proponent hypothesized that the specific objective will be achieved if all three outputs defined delivered; while prerequisite to delivering each output is to fully implement its pertinent activities. Therefore, it is critical to fully implement all defined activities in order to deliver planned outputs.

Planned project activities had been implemented using participatory, collaborative approach, i.e. in close consultation and cooperation with the competent stakeholders, as appropriate. Experience showed that any unilaterally executed project proved fail to achieve planned objectives in an efficient manner.

The basic strategy pursued for implementing the project is outlined below:

Delivery of Output 1

This output was delivered through execution of four pertinent activities:

- Activity 1.1 concerned with enrichment planting on poorly managed park lands in terms of biodiversity. The project had initiated the restoring process by planting different tree species in collaboration with competent professionals and local farmers;
- Activity 1.2 dealt with land use conflicts between the park authority and forest farmers. To identify a win-win solution, intensive dialogue had been conducted at different stages with the assistance of an experienced, professional NGO, the Koorders Lestari Indonesia Foundation (KLIF);
- Activity 1.3 concerned with forest protection; under the project, a training program on forest patrolling had been completed. Some sixty people had obtained skills on forest patrolling and conversant in using SMART application;
- Activity 1.4 dealt with monitoring of flora and fauna focusing on flagship fauna species. The project was able to develop and test SOP for monitoring Javan hawk-eagle, Javan leopard, and Javan gibbon with the assistance of competent in-house and external experts.

Delivery of Output 2

To realize this output, four relevant activities had been fully implemented:

- Activity 2.1 on reviewing existing land use practices, had been accomplished with the support of competent professionals. Result of the review would be used by concerned authorities for repairing irregularities of land use practices;
- Under Activity 2.2, most promising local livelihood projects had been collaboratively identified and showcased by farmers groups, park management and competent professionals. The seed funds for six livelihood projects were made available by the project;
- Activity 2.3 on awareness raising was initiated in the previous project and is now extended to all three districts involving large number of villagers with the help of competent local NGO, as well as local governments;
- Activity 2.4 dealt with training on skills needed to operate the livelihood projects identified under Activity 2.2. The training was successfully implemented with the assistance of a team of professionals with forest farmers and villagers as the primary participants.

Delivery of Output 3

To deliver this particular activity, four planned activities had been fully executed:

- Activity 3.1 was an attempt to make existing CBR CC Forum functioning as the CC Forum was too difficult and costly to operate due to its unusually big organization and large membership. The activity was successful in forming and piloting the CC Forum at the district level;
- Activity 3.2 dealt with enhancement of management planning on regional planning. District governments and Park management had undertaken several training workshops on regional planning and real time information sharing;
- Activity 3.3 concerned with development of database system and provision of real time information on CBR, accessible by both park management and local governments to aid decision making; this activity was executed collaboratively by in-house and external experts;
- Under Activity 3.4 an Asia-Pacific regional workshop on biosphere reserves was organized by GGNP management with the assistance of a competent Event Organizer called Alastair Fraser Forestry Foundation (AF3) with the primary objective to share lessons learned and experience among 168 biosphere managers in 40 countries situated in the Asia-Pacific region.

1.5. Organization of the Report

The entire processes on the implementation of ITTO Project PD 777/15 Rev. 3 (F) “Accelerating the restoration of Cibodas Biosphere Reserve (CBR) functions through proper management of landscapes involving local stakeholders” are organized in the following fashion:

- Chapter 1 briefly presents the background information covering general picture of CBR, origin of the project and its design as well as the strategy pursued in implementing the project;
- Chapter 2 deals with the interventions implemented to reduce the observed threat on biodiversity of GGNP and results of these interventions were followed by an assessment on the achievement in light of the indicators defined in the logical framework;
- Chapter 3 concerns with the interventions implemented to promote landuse best practices in the CBR, results of these interventions and their analysis were used to assess achievement of the interventions in light of the logical framework defined in the project document;
- Chapter 4 confers results of the interventions implemented to enhance institutional arrangements for CBR management and discuss on these results to find out to what extent the enhancement had been realized as measured with the relevant indicators;
- Chapter 5 presents a general discussion on achievement of planned specific objective, contribution of the project to achieving the intended functions of the CBR, sustainability of the project, local livelihood vs CBR conservation and the main lessons learned from the project; and
- Chapter 6 presents the conclusions drawn and recommendations made in relation to sustainable management of CBR.



2. REDUCING THREAT ON BIODIVERSITY OF GGPNP

2.1. Introduction

This chapter concerns with the efforts devoted to reducing threat on biodiversity of GGPNP, which was one of the major problems facing the operational strategy of the Park in recent years. The project proponent argued that observed threat to biodiversity was attributable to at least four main causes, namely:

- Significant portion of the national park area was not appropriately allocated for biodiversity conservation. Indeed, significant portion of the park, i.e. around 4,367 hectares or 19 percent of the total park area was managed under a monoculture silviculture system planted either with agathis, eucalypt, pine or coffee only;
- Continued land use conflicts.
Some 1,222 hectares of park area or around 5.31 percent was occupied by local people and used for planting of such cash crops as vegetables, carrot, tomato, etc. These occupied lands were part of the area previously administered by Perhutani Forestry State Firm as the production forest under the so called “community participatory forest management (PHBM)” which had been formally categorized as part of the national park since 2003 thus losing its production function.
- Prevalent illegal forest activities.
Some illegal activities by local people like harvesting of NTFPs, e.g. orchids, ornamental plants, resin as well as hunting of endangered fauna, e.g. wild bears and porcupines, had been taking place even as to date which obviously could jeopardize conservation of biodiversity due mainly to weak forest patrolling. In fact, the national park was an attractive

source of income for many people living around the national park, i.e. in the buffer and transition zones.

- Weak monitoring system of biodiversity and ecosystems of GGNP; currently, monitoring of biodiversity and ecosystem status was weak due mainly to lack of operational resources and the absence of a sound monitoring system.

2.2. The Project Interventions

Realizing the threat on biodiversity and ecosystems of GGNP, the management authority of the Park had introduced a number of relevant interventions under the ITTO-assisted project PD 777/15 Rev. 3 (F) as highlighted in the following section.

2.2.1. The activities implemented and employed methodologies

Four relevant activities or interventions had been identified and implemented in order to remove each of the threats on biodiversity and ecosystems as previously identified; they were:

- Activity 1.1: To enrich biodiversity on lands managed under monoculture silviculture system through planting of suitable diverse plant and tree species**

The methodologies employed:

- The primary objective of this intervention was to enrich biodiversity as around 4,367 hectares of the park land was planted using a single species which is clearly not in the interest of biodiversity conservation.
- The first step taken was to perform a quick study on the site for purpose of species identification. The simple procedures followed in the study were as exposed in Figure 4.

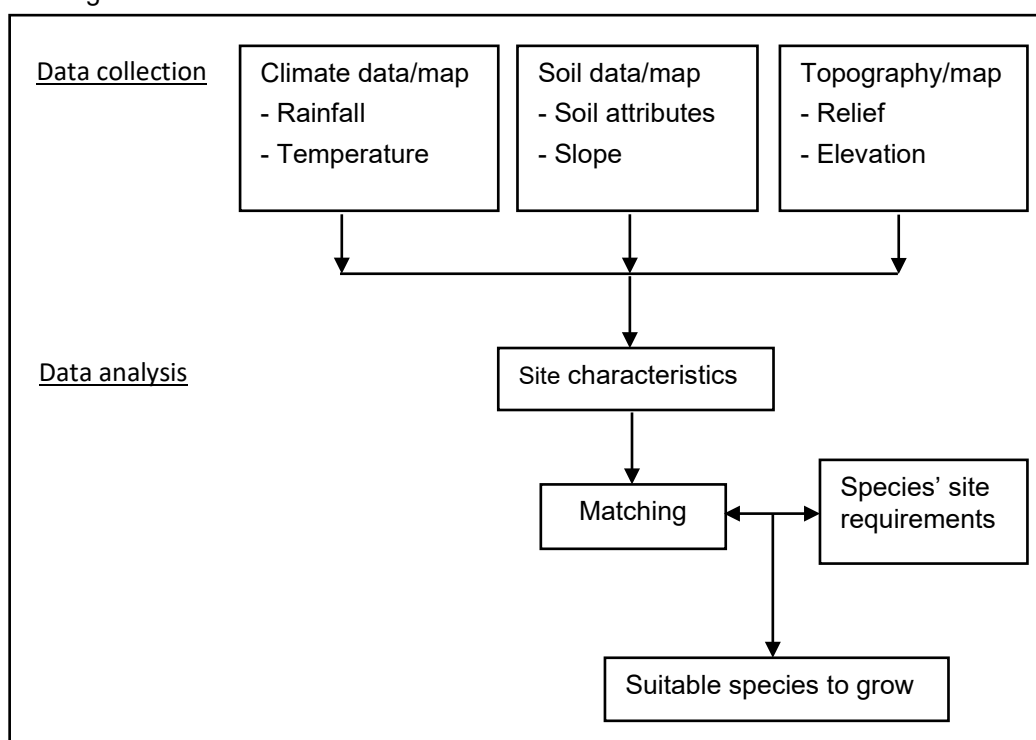


Figure 4. Employed procedures for site-species matching

- The enrichment planting program was implemented at Ciukir Forest Complex in Pasir Hantap Forest Resort of Sukabumi district on 4.0 ha of park land area. The species planted were rasamala, puspa, kihujan and manglid.
- The planting operation was performed in a collaborative manner wherein “Harapan Maju Forest Farmers Group” and the Pasir Hantap Park Resort were actively involved.
- The planting operation was accomplished during the rainy season during the second year plan of operation following the established standard operating procedures for tree planting.

ii. Activity 1.2: To resolve land conflicts with farmers by employing a win-win solution and replant the lands with diverse species of plants and trees.

The methodologies employed in implementing the activity are highlighted below:

- The primary objective of this activity was to resolve existing land conflicts between GGPNP and local farmers due to changed function of the forest land from previously production forest to currently conservation forest. The activity was meant to identify a win-win solution for supporting both local livelihood and biodiversity conservation.
- The first step taken was to solicit a competent professional consultant to assist in field operations. The Keorders Lestari Indonesia Foundation (KLIF) was finally appointed as the consultant after completing some due processes.
- With KLIF, the activity was divided into five sub-activities to ease comprehension of the issue, namely:
 - ✓ To conduct intensive dialogue with the right local farmers;
 - ✓ To propose a draft win-win conflict resolution model and hold a FGD on the proposal;
 - ✓ To finalize the model using inputs from the FGD;
 - ✓ To apply the model and report on progress in implementation of Activity 1.1.
- Farmers also received technical training on agro-forestry to facilitate their involvement in planting of tree species suitable for the site and in planting crops to support their livelihood for skills for development of business plan are needed.
- In the entire process on searching for a win-win solution for land conflicts, two local community groups that fully involved in were: Gerbi Lestari and Remaja Tani Community Groups that comprised 52 households in total; the former group was interested in developing lime cultivation business while the latter opted for cow fattening undertaking.
- The whole dialogue process comprised four local gatherings, namely:
 - FPIC (Free Prior Informed Consent) to provide information on the objectives of Activity 1.2; direct dialogues on identifying a win-win solution to use of lands inside the national park; FGD on identifying local livelihood projects to develop that are suitable for the lands and for the farmers; and FGD on developing workplan for the restoration of degraded park lands.

iii. Activity 1.3: To enhance capacity in core area protection by involving local communities in forest patrol operations and providing essential facilities.

- The objectives of this activity were:
 - ✓ To provide knowledge and skills on the collection and recording as well as analysis and presentation of forest operations data using SMART application, and
 - ✓ To conduct field practical training on the use of SMART application for GGPNP staff.
- The expected outcomes of the activity were:
 - ✓ Conversant in the use of SMART to aid decision making process
 - ✓ Enhanced team work and increased productivity
 - ✓ Increased accuracy and minimized mistakes
- The elements of the training strategy employed include:
 - ✓ Classroom lecturing to comprehend the work principles and operational framework of SMART and close learning on the device.
 - ✓ Fields practical use of SMART device to appreciate available features of the application.
- The training was conducted at the GGPNP headquarters in Cibodas, lasted for three days with sixty participants in total.
- The trainers and resource persons originated from the Ministry of Environment and Forestry, Wildlife Conservation Society (WCS) and University of Pakuan in Bogor.

iv. Activity 1.4: To put in place a sound monitoring system of biodiversity and ecosystems.

- The main objectives of the activity were to develop Standard Operating Procedures (SOP) for monitoring of flagship species: Javan hawk-eagle (*Nisaetus bartelsi*), Javan leopard (*Panthera pardus melas*) and Javan gibbon (*Hylobates moloch*) showing detailed materials as well as human resource inputs needed to perform a proper monitoring of the target species.
- Applied methodologies
 - ✓ Desk study
To collect and analyze the primary and secondary data on the flagship species that had ever been collected by GGPNP.
 - ✓ Brain storming
To gather as much information as possible from the monitoring operators.
 - ✓ Field visit
To ground check on the implementation of the monitoring operations with the monitoring operators.

- Inputs and procedures

For monitoring of Javan hawk-eagle

- ✓ Need 5 professionals for 5 days.
- ✓ Needed materials and tools: notes book, tally sheet, timer, pencil, field guide for identifying the bird, binocular/ monocular, camera, GPS and working map.
- ✓ Monitoring of the bird was performed using point count method, i.e. direct observation method. Any move and activity of the bird by point and time was recorded by time scan method. Number of individuals in a group and structure of the group members (adult, sub-adult, juvenile) were all recorded.
- ✓ Data were collected twice a day between 6 to 12 am, and 15 to 17 pm for 40 hours, i.e. 8 hours per day.
- ✓ Bird population was calculated using descriptive extrapolation analysis which is head of habitat approach based on home range, making use of distribution, abundance and density as the parameters of extrapolation.

For monitoring of Javan leopard

- ✓ Need at least 5 professionals for 5 days to accomplish one batch of monitoring work.
- ✓ Needed materials and tools include: working map of GGNP, 2 units of camera trap, GPS, digital camera, timer, sword, measuring tape, tally sheet, fasteners, stationery, personal computer and fauna species identification manual.
- ✓ Monitoring methods may be directly on ground by searching for signs of presence of Javan leopard, e.g. foot print, dung and scratch, or secondary data such as information on encounter with preys, literature, etc.
- ✓ In analyzing photos, some important terminologies to remember are: trap night (actual operation time of camera), trap night effective, detection (presence of a species on photo at one time and location), occasion, sampling period, capture history and independent photo.

For monitoring of Javan gibbon

- ✓ Need at least 5 professionals for 5 days to complete a batch of monitoring work.
- ✓ Needed materials and tools include: timer, tally sheet, stationery, field guide for primate species, binocular/monocular, camera, GPS and working map.
- ✓ Data might be collected through direct field observation or literature search. Primary data were collected through observation along the planned line, i.e. line transect sampling normally at least one kilometer of length. The right time to observe was at 07-09 am and 15-17 pm.
- ✓ Data on habitat and threat on Javan gibbon were obtained through primary and secondary sources.
- ✓ The data obtained were processed and analyzed quantitatively and qualitatively and presented in a descriptive manner. To make estimate of population from line transect, Poole method was a useful procedure.

2.2.2. Results of the interventions

This section briefly presents the results generated by individual interventions as outlined in the previous section.

Activity 1.1: To enrich biodiversity on lands managed under monoculture silviculture system through planting of suitable diverse plant and tree species

- Prior to planting selected tree species, a study on species-site matching had been undertaken to ensure that the site at Ciukir, Pasir Hantap forest complex is suitable for growing rasamala, puspa, kihujan and manglid;
- Four hectares of park land had experienced land/ soil preparation, erection of planting sticks, planting holes construction, supply of seedlings and planting of the seedlings;



Figure 5. Demoplot on enrichment planting

- Four hectares of park land had been planted with four aforementioned tree species at the spacing of 4 by 4 meters in collaboration with Harapan Maju Forest Farmers Group under the supervision of Pasir Hantap Park Resort. In other words, 2,500 tree seedlings had been successfully planted;
- Another 3 Ha of land at Selabintana forest complex was planted with different local species in collaboration with Maju Jaya FFG. Hence, the enrichment planting model established was 7 Ha in total: 4 Ha at Pasir Hantap and 3 Ha at Selabintana forest complex, respectively.
- Monitoring of the young plantations by end of second year of operation indicated that the seedlings grew well as expected;
- In addition to the physical results of the activity as outlined above, the activity had also enhanced personal relationship between local farmers and local park authority which is an invaluable social asset for future management of the park.



Figure 6. Dialogue between GGPNP and KTH Harapan Maju, Sukabumi



Figure 7. Planting of 2,500 seedlings by KTH Harapan Maju



Figure 8. Gathering of members of KTH Harapan Maju, Sukabumi

Activity 1.2: To resolve land conflicts with farmers by employing a win-win solution and replant the lands with diverse species of plants and trees.

- Two community groups, Gerbi Lestari and Remaja Tani, with a total member of 52 households had been identified by KLIF as the partners for resolving land conflicts between farmers and the park;
- A dialogue workplan comprising four gatherings between the community groups and the park had been developed collaboratively and endorsed for implementation.
 - ✓ The first gathering was for the KLIF to communicate the objectives of the activity with the community groups;

- ✓ The second gathering was to discuss on use of park land without compromising park conservation;
- ✓ The third gathering was in the form of FGD to discuss on alternative land use suitable for supporting local livelihood and conservation;
- ✓ The fourth gathering was in the form of FGD to discuss on collaborative development of a park restoration plan to be collaboratively implemented.
- Above gathering events had successfully generated the following outcomes and results:
 - ✓ A win-win solution to persisting land conflicts due to the change in the forest land function had been identified by the conflicting parties;
 - ✓ The local community groups had fully understood the objectives of the activity which was to clear the land conflicts between the Park and the local farmers;
 - ✓ The local farmers were willing to release the lands they had occupied for years and to support restoration of degraded park lands in accordance with the management prescriptions specified by park authority
 - ✓ In return, the Park would provide support to the local farmer groups, to develop local livelihood projects in the forms of material, skill and financial inputs. The agreed upon livelihood projects were to provide 200 stems of citrus limo for lime business by the Gerbi Lestari Group and 3 cattles for fattening business by Remaja Tani Group.
 - ✓ In addition, the Park would provide needed inputs for restoration of degraded park lands previously occupied by the farmers while the farmers would contribute their laborer.



Figure 9. Handing over and trial planting of seedlings by KTH Remaja Tani and KTH Gerbi Lestari

Activity 1.3: To enhance capacity in core area protection by involving local communities in forest patrol operations and providing essential facilities.

- In total, 60 participants had been trained on skills needed to operate SMART application which comprised: 30 Park Resort staff, 15 MMPs (voluntary community groups for forest patrol), 6 Reprs of SPTN, 3 Reprs of BPTN and 6 Reprs of GGNP branches.

- The materials taught by the trainers were: SMART system overview, configuration/ structure of SMART application, use of cybertracker and smart mobile on android mobile phone, use of datasheet and GPS, inputting of data to SMART system, data analysis and tabulation and reporting of monitoring results through SMART.



Figure 10. Training on SMART forest patrol

- .SMART forest patrol was not limited to forest patrolling but also could record and manage data on other such activities as survey or monitoring of wildlife, extension operations and handling of wildlife-human conflicts.
- Evaluation of the training results at the end of the program indicated that:
 - ✓ in terms of capacity and comprehension in data collection and inputting to SMART, the average improvement increased by 71.80%.
 - ✓ in terms of skills on data analysis had improved by around 78%.



Figure 11. Field practice training on SMART forest patrol

Activity 1.4: To put in place a sound monitoring system of biodiversity and ecosystems.

- The SOP produced for monitoring of Javan hawk-eagle

Duration	: 5 days
Professionals	: 3 persons
Wagers	: 2 persons
Method	: concentration count
Target	: 5 observation points

Table 2. Direct costing to implementing the SOP for monitoring of Javan hawk-eagle

No.	Process & costing	Inputs				Remarks
		Qty	Unit	Cost IDR	Total Cost IDR	
1.	Preparation <ul style="list-style-type: none"> • Materials & reporting • Foods for wagers • Field facilities • Personal use • Health care 	1 10 1 3 1	Packages MD Set Men Team	750,000 60,000 1,000,000 150,000 250,000	750,000 600,000 1,000,000 450,000 250,000	Minimum requirements
2.	Operation <ul style="list-style-type: none"> • Wages • Honoraria field staff • Local transport 	10 15 1	MD MD/OH Team	100,000 230,000 1,000,000	1,000,000 3,450,000 1,000,000	In accordance with applicable province standard and HSPK
3.	Ex-post operation <ul style="list-style-type: none"> • Meeting on findings 	50	MD	60,000	3,000,000	In accordance with SBM/HSPK
Total Cost					11,500,000	

- The SOP produced for monitoring of Javan leopard
 - ✓ Duration : 5 days
 - ✓ Professionals : 3 persons
 - ✓ Wagers : 5 persons
 - ✓ Methods : camera/video, 10 video traps per team
1 video trap set on a 2 by 2 km grid
 - ✓ Target : 4,000 hectares
 - ✓ Total cost : IDR 16,525,000 per monitoring operation

Table 3. Direct costing to implement the SOP for monitoring of Javan leopard

No.	Process & costing	Inputs				Remarks
		Qty	Unit	Cost IDR	Total Cost IDR	
1.	Preparation <ul style="list-style-type: none"> • Materials & reporting • Foods for wagers • Batteries for video trap and GPS • Memory card 4 GB • Operational facilities • Personal use • Health care 	1 25 130 20 1 3 1	Packages MD Bat Card Set Men Team	750,000 60,000 7,500 85,000 1,000,000 150,000 250,000	750,000 1,500,000 975,000 1,700,000 1,000,000 450,000 250,000	Minimum requirements. Based on provincial rates of SBM/HSPK.

No.	Process & costing	Inputs				Remarks
		Qty	Unit	Cost IDR	Total Cost IDR	
2.	Operation					Use Papua province as the sample, others to adjust. Transport at cost.
	• Wages	25	MD	100,000	2,500,000	
	• Honoraria field staff	15	MD/OH	230,000	3,450,000	
	• Local transport	1	Team	1,000,000	1,000,000	
3.	Ex-post operation					In accordance with SBM/HSPK
• Meetings on findings	50	MD	59,000	2,950,000		
Total Cost					16,525,000	

- The SOP produced to aid monitoring of Javan gibbon
 - ✓ Duration : 5 days
 - ✓ Professionals : 3 persons
 - ✓ Wagers : 2 persons
 - ✓ Methods : concentration count on one observation point with 5 replications
 - ✓ Total cost : IDR 11,500,000

Table 4. Direct costing to implement the SOP for monitoring of Javan gibbon

No.	Process & costing	Inputs				Remarks
		Qty	Unit	Cost IDR	Total Cost IDR	
1.	Preparation					Minimum requirements. Foods adapted to local conditions
	• Materials & reporting	1	Team	750,000	750,000	
	• Foods for wagers	10	MD	60,000	600,000	
	• Field facilities	1	Set	1,000,000	1,000,000	
	• Personal use	3	Persons	150,000	450,000	
	• Health care	1	Team	250,000	250,000	
2.	Operation					Based on HSPK. Paid at cost.
	• Daily wages	10	MD	100,000	1,000,000	
	• Honoraria field staff	15	MD/OH	230,000	3,450,000	
	• Local transport	1	Team	1,000,000	1,000,000	
3.	Ex-post operation					Based on SBM/HSPK
• Meetings on findings	50	MD/OH	60,000	3,000,000		
Total Cost					11,500,000	

2.3. Discussion on the Results

2.3.1. Biodiversity of GGPNP enriched

- 2,500 seedlings of rasamala, puspa, kihujan and manglid tree species had been planted on seven hectares of land on the core area of CBR. The seedlings were growing well till end of the planting year. These four species were expected to survive for years as planting of the species was preceded by a thorough study on species-site matching. In no doubt, planting of the four species have now enriched biodiversity of GGPNP to five species from initially only a single species, pine.
- A by product of the enrichment planting activity was the improved relation between local farmers with park officers which surely will contribute to reducing threat to the biodiversity occupying the core area; while this improved relation does not directly enrich biodiversity, it will surely contribute to securing current richness of the biodiversity.
- In conclusion, the planned enrichment planting has enriched not only biodiversity of the core area of CBR but also social asset of GGPNP that materialized as an improved relation between local communities and park management which, sooner or later, would contribute to sustainable management of GGPNP.



Figure 12. Training on honey bee production skills with KTH Cikereteg Maju

2.3.2. Land conflicts inside GGPNP resolved

- The KLIF had successfully organized several gatherings between two local community groups involved in the land occupation of the CBR core area with the park management to discuss on causes and consequences of the land conflicts problem that persisted and identify on a win-win solution to both parties;
- The agreed upon solution by both the local farmers were:

- i. The local farmers would release the lands they had occupied for years and support restoration of degraded park lands, formerly occupied by farmers, using the prescriptions specified by park management;



Figure 13. Initiating businesses on citrus by KTH Gerbi Lestari (left) and cow fattening by KTH Remaja Tani (right)

- In no question, a win-win solution to persisted land conflicts between local farmers and park management had been collaboratively identified and planned for execution. The livelihood projects introduced were community-based initiatives whose feasibility was assessed with the assistance of KLIF and park management experts that their likelihood of success was high. The win-win solution could be used as a land conflict resolution model for replication to other localities.
- The dialogues that took place during the gathering events between the local farmers and park management officers had inevitably also changed the color of their relationship from formerly an acid and sour one to a warm and mutually caring one. This kind of new relation could be expected to contribute to developing a healthy environment for building up a capacity to sustainably manage CBR.
- In conclusion, the project had successfully identified and implemented a win-win solution to persisted land conflicts between local farmers and park management through intensive and healthy dialogues facilitated by KLIF, a model solution that could be adapted to similar conflicts in other localities of GGNP.

2.3.3. Capacity in protection of the national park enhanced

- In total, 60 participants had been trained on skills needed to undertake forest patrolling operation in a proper manner using Park Resort as the basis of management (RBM). To properly undertake forest patrolling, the personnel involved should be equipped with knowledge on existing rules and procedures for biodiversity protection to ensure that forest patrolling is performed consistent with forest protection laws. In addition, personnel of forest patrol must be conversant with techniques for field data gathering, data analysis and presentation as well as reporting under the SMART application.

- All of above knowledge and skills had been transferred to 60 trainees in the classroom, directly practiced in the field and experienced by simulation. The learning hour used in classroom and in the field was 24 hours in total which was quite sufficient to comprehend the knowledge and skills delivered.



Figure 14. Classroom training on SMART forest patrol

- The primary objective of the training was to enhance capacity to perform forest patrolling efficiently which was planned to achieve through class lecturing, field practice and simulation. The objective of the training had been achieved by 60 trainees.
- Among the trainees, 15 participants were members of local communities of different park resorts willing to become the partners of park rangers in carrying out forest patrol operations. Involving community members in forest patrolling is an effective strategy for building up collaboration between park management and local communities in forest protection.
- In conclusion, the project had successfully equipped 60 trainees with needed knowledge and skills to carry out forest patrolling in an effective manner consistent with existing rules and procedures for forest protection.

2.3.4. Monitoring system for biodiversity of the national park improved

- Under Activity 1.4, three SOP for monitoring of 3 flagship fauna species had been produced, namely: SOPs for monitoring of Javan hawk-eagle, Javan leopard, and Javan gibbon. Each SOP specified needed inputs to conduct monitoring of each species making monitoring operations can be performed in an efficient way. If such a SOP does not exist, inputs to monitoring operations should be specified every now and then which may take time to complete.
- As SOPs for carrying out monitoring of the target species are now available, all the Park management needs to do is to procure the specified inputs including professionals, wagers, method to employ, materials, time and financial inputs. With the SOP developed, it is now handy to conduct monitoring of the target species.

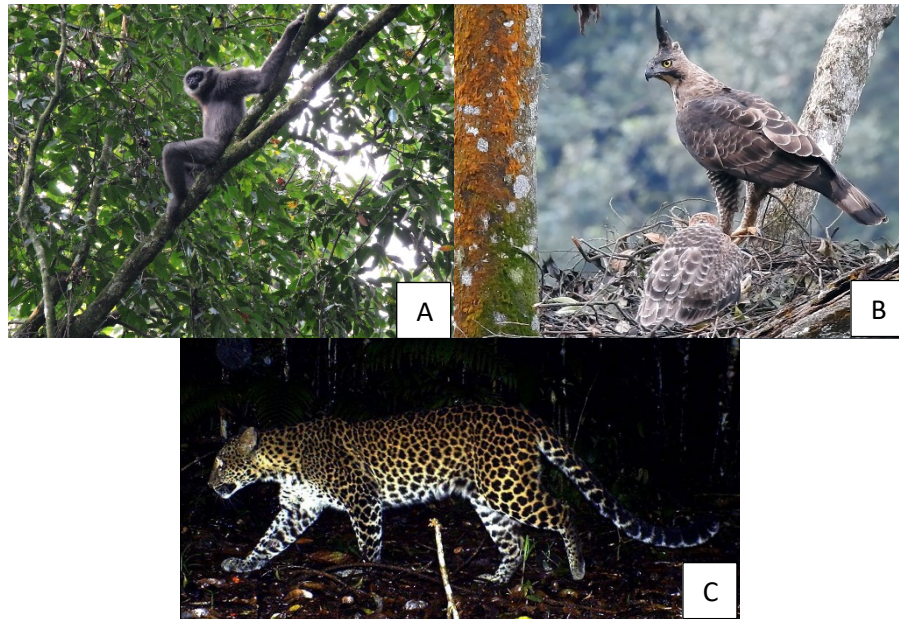


Figure 15. Javan gibbon (A), Javan hawk-eagle (B), and Javan leopard (C) in nature (Photo: GGNP)

- In conclusion, monitoring of biodiversity in general, flagship fauna species in particular, can now be accomplished efficiently by using developed SOPs to guide inputs procurement and monitoring operations.

2.4. Achievement of the Interventions Assessed

Four project interventions had been fully implemented under the project, namely:

- Activity 1.1: To enrich biodiversity on lands managed under monoculture silviculture system through planting of suitable diverse plant and tree species;
- Activity 1.2: To resolve land conflicts with farmers by employing a win-win solution and replant the lands with diverse species of plants and trees;
- Activity 1.3: To enhance capacity in core area protection by involving local communities in forest patrol operations and providing essential facilities; and
- Activity 1.4: To put in place a sound monitoring system of biodiversity and ecosystems.

The objective of implementing the activities was to reduce threat on biodiversity of the core area of CBR, i.e. Gunung Gede Pangrango National Park (GGNP) and deliver the first output of the project, i.e. threat on biodiversity in the core area of CBR significantly reduced. The question is, “has the first output been delivered through the full implementation of the four project activities or interventions?”. To properly answer this question there is a need to match the indicators defined in the logical framework with the major outcomes of individual activities. This matching is shown in Table 5.

Table 5. Indicators of achievement vs major outcomes of the activities

No.	Indicators of achievement	Major outcomes of activities
1.	2 biodiversity enrichment models on 4 ha of land established since year 2	7 ha of park land planted with 4 suitable tree species under two different planting techniques
2.	A win-win conflict resolution model identified and applied	A win-win conflict resolution model collaboratively identified and applied
3.	60 community members trained on skills for forest patrol operations	45 GGNP personnel and 15 community members trained on skills for forest patrol operations
4.	A sound monitoring system for biodiversity developed and applied	3 SOPs developed and used for monitoring of 3 flagship fauna species

Close examination of the information in Table 5 indicated that major outcomes of the activities have essentially matched defined indicators of achievement suggesting the fact that the first output of the project had actually been delivered with the following remarks:

- The number of trainees specified by both the indicators and the training report are the same in total but different in composition. The indicator indicated 60 community members as the trainees while in practice the trainees comprised 45 park personnel and only 15 community members. The park management had deliberately increased number of park personnel in the training as the personnel are also in need of skills upgrading to keep up with technological advancement and to enhance their capacity to lead community members in forest patrolling operations;
- The fourth indicator did not provide any specifics about monitoring system while the activity was very specific about it, i.e. developed 3 SOPs for monitoring of 3 target species noting that SOP is a major component of a monitoring system.

Having matched the defined indicators with major outcomes of the project activities and understood the differences between them as outlined above, it should be reasonable to conclude that defined first output of the project had been fully delivered.

2.5. Lessons Learned

- Revising defined indicator of a deliverable might be needed or even necessary in order to conform implementation of the project to the actual need of the executing agency and to avoid a rigid tying of operation to the value obtained during the planning stage. As the park was in need of enhancing capacity of its personnel, the number of community members was reduced while number of park personnel increased in the training on forest patrolling.
- Unclearly defined indicator needs to be clearly redefined to make it useful as a measure of achievement so long as the original and revised versions are still strongly connected with each other. Such was the case with the fourth indicator in Table 5 which was thoughtfully converted from “a sound monitoring system for biodiversity “ to become “3 SOPs developed and used for monitoring of 3 target species”.



3. PROMOTING LAND USE BEST PRACTICES IN CBR

3.1. Introduction

This chapter deals with the interventions on the promotion of land use best practices in CBR. The project proponent argued that improper adoption of land use best practices on the buffer and transition zones of CBR was one of the major problems facing conservation and sustainable management of biodiversity and ecosystem of the biosphere reserve. The improper land use practices were diagnosed by the meetings of stakeholders as caused by four problems, namely:

- i. Loose implementation of existing land use plan
 - It was not uncommon to see agriculture practices on sloping lands without land terracing and establishment of settlements on disaster prone areas.
 - The buffer and transition zones should have been utilized to provide livelihood incentives for local people from entering the core area of CBR but proper and productive land use practices were lacking.
- ii. Lack of sustainable livelihood models
 - Livelihood models that suited the ecological and social conditions of the buffer and transition zones were insufficiently developed to demonstrate the strong link between sustainable development and biodiversity conservation.
- iii. Lack of awareness on conservation and sustainable development
 - Extension program on conservation and sustainable development was generally weak.
 - Communication and coordination between GGPNP management, district governments and local stakeholders seemed to be lacking due mainly to the weak functioning of CC Forum and the absence of a stakeholders' forum.

- iv. Local people and local firms were not trained on sustainable livelihood skills
 - The scarce sustainable livelihood models and weak extension program did not facilitate conduct of training on needed skills for sustainable livelihood development.

3.2. The Project Interventions

Realizing the improper adoption of land use best practices on the buffer and transition zones, the park management had implemented a number of relevant interventions under the ITTO Project PD 777/15 Rev. 3 (F) as highlighted in the next section.

3.2.1. The activities implemented and methodologies employed

Four relevant activities had been identified and implemented as the interventions to properly adopt land use best practices on the buffer and transition zones of CBR; those interventions were:

i. Activity 2.1: To review implementation of existing land use plan and provide recommendations for repairing follow-up actions.

The methodologies employed

- a. The approaches used to implementing the activity were:
 - Land use analysis
 - ✓ To interpret land cover of SPOT satellite images using GIS procedures and techniques;
 - ✓ To conduct ground check or ground truthing by direct field observation and drone aerial photos on purposively drawn samples of land use irregularities.
 - Policy analysis on land use planning
 - ✓ Conduct of a regional spatial policy analysis through a regulatory analysis particularly the Regional Spatial Plan (RTRW) of concerned district governments.
 - Policy analysis on regional development
 - ✓ The analysis focused on the long-term and mid-term Regional Development Plans of the district governments involved.
 - Survey on villages
 - ✓ The survey was accomplished by field checking approach and tracing of the rationale for land use in order to understand the typology bases of community livelihoods and to identify potential of the areas for CBR management.
 - Dissemination of findings
 - ✓ To disseminate findings through district level and central level FGDs involving the relevant stakeholders.
- b. The data analysis procedures and techniques applied were:
 - Land cover analysis

The objective was to obtain updated land cover information on CBR area as land use and land cover information was required to describe the physical condition and potential of an area. For this reason, 2019 SPOT satellite imagery

was needed with GIS as the tool of analysis. The stages of land cover classification process consisted of:

✓ Image rectification

The SPOT imagery was geometrically converted that its position matched position of the object on earth surface. The geometric correction process was done using a mathematical relationship between pixel coordinates in satellite imagery and actual pixel conditions in the field by taking several points as the ground control points (GCP). Accuracy of the geometric correction was indicated by the value of root mean square (RMS) error: the lower RMS value, the higher level of GCP accuracy. Accuracy test results of geometric correction was done by overlaying the corrected map with a reference map and detecting on the deviation.

✓ Cutting boundaries of the study area

SPOT image cutting was needed to arrive at the area to analyze. i.e. CBR area.

✓ Classification of land cover

Analysis of actual land cover was carried out by interpreting SPOT imagery data 2019 path 122 row 65. The data extracting process with visual methods by digitizing on screen while google satellite map imagery was used in identifying the type of land used/land cover.

✓ Testing of interpretation results

The testing was carried out by ground truthing, to check accuracy in field. Verification carried out at several locations by examining land use in the sample areas.

• Minimum Domination Index (MDI) analysis

✓ MDI was used to review the physical potential of landscape on each CBR management area;

✓ MDI was divided into 3 index groups: $MDI=0$; $0 < MDI \leq 1$; $MDI > 1$;

✓ Review of the physical potential of landscape was done using spatial data on RTRW;

✓ The data used were in spatial format (SHP) obtained in the form of data files and document data that had been reformatted into spatial format (SHP).

• Regional policy analysis

✓ The analysis was carried out in a descriptive manner based on existing typologies, existing policies, regional policy documents (RTRW, RPJMD)

c. Data collection techniques

The techniques applied in data collection are presented in Table 6.

Table 6. Data collection techniques

No.	Theme	Data type	Data source	Collection technique
1.	Land use analysis	Primary/Secondary	SPOT imagery, ground check	Survey, map
2.	Regional spatial policy analysis	Secondary	Province and district RTRWs	Document collection
3.	Regional development policy analysis	Secondary	RTRW, RPJMD	Document collection
4.	Villages survey	Primary/Secondary	Sub-district & village authorities Communities	Survey with in-depth interview
5.	Promotion of CBR management renewal	Primary	Regional Planning office, GGNP	FGD

ii. Activity 2.2: To establish sustainable livelihood models for demonstration and training in collaboration with local communities and private firms.

The methodologies employed

- Organization of FGDs aimed to explore potential attributes of local communities and the landscape and verify legalities and competence of existing KTHs. In effect, this was a pre-appraisal process designed to explore community potential for business development. The FGDs were attended by the communities, GGNP and PMU representatives, and the Project's expert team. The best KTHs in terms of legality organization and experience in working with CBR were identified.
- Facilitating process was conducted from April to December 2020 using dialogues or communication device to help the KTHs identified potential of livelihood projects, identified by looking onto owned resources as well as needed vs wanted projects; the main purpose was to help each KTH to decide what livelihood project to pursue.
- Writing project proposal was done by each KTH on development of selected livelihood project, with the assistance of experienced GGNP staff, taking technical, non-technical as well as financial factors into account.
- Training on the skills needed by KTHs to manage the livelihood project was accomplished by a Team of Expert comprising experienced and knowledgeable professionals on the skills they assigned to teach, advise or discuss. The training was conducted under Activity 2.4.
- After the training on skills, the next step was to initiate construction of a project by proposing KTH; for this purpose, each KTH was granted an amount of funds from the ITTO project as the stimulant to start the project.

- After initiating the projects, the KTHs were provided with technical assistance for sometime. During this period, ITTO experts evaluated the works of KTHs in running the projects and advised on steps to overcome any weaknesses in operational management of the projects.

iii. Activity 2.3: To increase awareness on conservation and sustainable development through intensive dialogues with local stakeholders and dissemination of attractive, easy to read printed materials.

The methodologies employed:

Intensive dialogues and dissemination of extension materials were implemented in three districts (Bogor, Cianjur and Sukabumi) through different planned events as summarized below.

- a. Sarongge Festival, 29-30 September 2018 in Cianjur district
 - The festival took place at Sarongge Hamlet of Ciputri village;
 - The project supported implementation of the festival as an effective dialogue tool with local stakeholders and visitors as well;
 - The organizer informed local stakeholders of the presence of ITTO Project PD 777/15 Rev. 3 (F) in CBR and its main objectives as well as activities requiring participation of local communities in their execution;
 - The mission of ITTO Project to conserve biodiversity and support local sustainable development was clarified as consistent with values of local culture and wisdom that are preserved through the Sarongge Festival whose implementation has been expected and supported by local communities.
- b. Collaborative Dialogue with Creative Students Program (CSP) of University of Pakuan, Bogor, 30 November – 01 December 2021 at Sarongge Girang Hamlet of Ciputri village in Cianjur district.
 - In collaboration with the students of University of Pakuan Bogor, the Project organized a number of dialogues with Sarongge community;
 - The students informed local people of the need to always keep the environment healthy to preserve productivity;
 - Local people were also provided with practical knowledge on social, economic and ecological aspect of the CBR;
 - Finally, the students also demonstrated on how to keep healthy water, soil fertility and air using simplest technique.
- c. Dialogue with forest farmers group “Lestari Alam Sejahtera” (LAS), 30 January 2020 at Pasir Hantap village of Sukabumi district.
 - LAS had been educated by GGNP for sometime now and was expected to become a good model of forest farmers group in the near future in terms of organization and performance;
 - LAS had been equipped with some knowledge on the management of organization, land resource and business and the knowledge has been practiced to result in some improvements of performance.

- d. Dialogue with forest farmers group “Cikereteg Maju”, 22 December 2020 at Ciawi village of Bogor district.
 - The dialogue concerned mainly with conservation task of GGPNP in CBR landscape for which continued support of local farmers is required;
 - The dialogue was combined with training on bee raising skills to produce honey for sale as a source of additional income for the farmers;
 - Through the dialogue and training it was expected that the farmers group would be more loyal to environmental conservation.
- e. Dialogue with Mina Mukti Dahlia Cooperative (MMDC), 26 March 2021 at Situ Gunung village of Sukabumi.
 - The cooperative dealt with producing herbal drinking products having strong market during the covid-19 pandemic;
 - The dialogue focused on packaging and branding of the products using CBR logo and growing herbal plants in a sustainable manner outside the national park area.
- f. Dialogue with forest farmers group “Arca Domas Pangrango” (ADP), 05 April 2021, at a village in Bogor district.
 - The dialogue focused on development of sustainable livelihood project as a source of income for local farmers and as a tool to conserve biodiversity and ecosystems of GGPNP;
 - The livelihood project discussed was bee raising for honey production that has a strong local market.
- g. Dialogue with Situ Gunung communities in Sukabumi district, 20 September 2021.
 - The dialogue focused on promotion of eco-tourism as a source of local income and a tool of conservation by reducing entry of local people to GGPNP;
 - Beside eco-tourism, efficient use of buffer zone was also discussed by growing marketable edible plants beneath the trees as another source of local income.
- h. Dialogue with GGPNP volunteers, 27 October 2021 at GGPNP headquarters in Cibodas, Cianjur district.

The dialogue covered different aspects of conservation management that would strengthen awareness of the volunteers on biodiversity conservation; among the points discussed were:

 - Biodiversity as an essential part of life supporting system of mankind and collaborative management is the right strategy to pursue for biodiversity conservation to be successful;
 - Local community groups, including GGPNP volunteers must be involved in CBR operational management based on competence;
 - Branding of livelihood products with CBR logo would indicate their green production process and differentiate the products in the eye of consumers thus is worth pursuing.

iv. Activity 2.4: To train local people and stakeholders on skills needed to develop sustainable livelihood projects.

The methodologies employed are highlighted below:

- The major activities of the training program include: identification of project sites, selection of forest farmers groups to participate in, selection of competent professional trainers, development of training schedule for six farmers groups at six villages, development of training materials and their presentation, initiation of project construction, conduct of monitoring of project construction and operation.
- Inputs applied to the training program were:
 - ✓ Forest farmers groups, selected based on: existing resources of the villages where they reside, the project proposal submitted by eligible individual groups to the project, organization of FGD for selection of the best proposals involving district governments. At the end, six best proposals were selected.
 - ✓ Other stakeholders including: district government, NGOs and private firms.
 - ✓ Six livelihood projects proposed by five forest farmers groups and one village cooperative comprising four sheep raising/fattening projects, one bee raising/honey production project and one homestay project located at six different villages in three districts.
 - ✓ A team of professional trainers led by Dr. Hiras Sidabutar with members comprising Mr. Yusuf Munandar, sheep raising expert, Mr. Eureka Zatnika as the bee raising/honey expert, Mr. Rubino S. as the ecotourism/homestay expert and Mr. Agus Sudrajat as the business management expert.
- Site and date of the training
 - ✓ Classroom lecturing and discussion on training materials
 - ✓ Field practice on application of the knowledge and skills received in the classroom including on the spot discussions.
 - ✓ The training was implemented at six different villages located in three different districts.

3.2.2. Results of the interventions

This section briefly presents results of the interventions in the forms of findings and recommendations. Detailed results are presented in the technical reports of individual activities which are available with GGPNP secretariat.

Activity 2.1: To review implementation of existing land use plan and provide recommendations for repairing follow up actions

- Review on CBR administrative boundary found the extent of CBR and number of villages as follow:

<u>CBR zone</u>	<u>Area size (Ha)</u>	<u>Number of village</u>
Core area	24,834	-
Buffer zone	30,220	58
<u>Transition zone</u>	<u>32,548</u>	<u>87</u>
Total CBR	87,602	145

The area and villages are distributed in Bogor, Cianjur and Sukabumi districts.

- Irregularities in land use found as shown in Table 7 were based on the field checking of actual land use practices on CBR landscape management introduced in 2012 by the GGNP management authority.

Table 7. Deviation in landuse practices from the originally planned land use types

Zone	Planned land use type	Deviation in practice
Core area	Biodiversity and ecosystems conservation	Agricultural activities existed, spread over in 3 districts
Buffer zone	Sustainable agriculture and animal husbandry	Improper agricultural practices were not uncommon, e.g. use of chemical fertilizers and pesticides, in some areas in Cianjur, Sukabumi and Bogor districts
	Eco-friendly settlements	Environmentally unfriendly settlements were common as evident by the absence of waste handling program
	Eco-friendly plantations	Use of chemical fertilizers and pesticides were not uncommon
Transition zone	Sustainable agriculture and animal husbandry	Inappropriate agricultural practices, e.g. use of chemicals fertilizers and pesticides, absence of waste treatment at stalls, are common in some areas of the districts
	Sustainable economy	Small firms have not yet practiced eco-friendly technologies
	Eco-friendly settlements	Many settlements/housings were not equipped with waste treatment system
	Eco-friendly plantations	Use of chemical fertilizers and pesticides were common
	Eco-friendly industry	Some industries did not have integrated waste management especially those in certain areas of Cianjur and Sukabumi districts

- Review on physical potential of the originally planned use of CBR lands using MDI approach indicated that: i) physical potential observed in several sites did not match with the originally planned use of those sites in terms of spatial pattern and existing conditions, and; ii) direction of regional development in Mid-term Regional Development Plan (RPJMD) in several locations was inconsistent with the originally planned use of the locations as defined by GGNP management in 2012.
- The originally planned use of CBR lands as defined in 2012 need to be revised based on the actual status of suitability of the lands with the spatial pattern policy, condition of the existing land cover and suitability of the regional development policy.
- In revising the originally planned land use pattern, twenty one (21) villages had been proposed as the demonstration sites in order to minimize cost of repairing the entire land use pattern, to be duplicated later on in other villages.
- Current CBR management has not been operating in accordance with the originally planned land use pattern in 2012 especially in the buffer zone and transition area.
- The function of the core zone as a national park conservation area has driven ecotourism and environmental education activities despite the fact that some agricultural activities are still going on sporadically.
- The CC Forum is currently not functioning optimally as a coordinating body that the CBR's vision and mission has not yet entered into governance structure through development and implementation of an integrated management plan.
- In the context of institutional revitalizing of CBR, it is also important to build an organizational unit at the district level that can carry out monitoring, evaluation and reporting functions of CBR management.
- In revitalizing CBR management, an integrated action plan should be developed based on revised CBR administrative boundaries, the renewal of village administrative boundaries and adjusted CBR management direction of landscape.

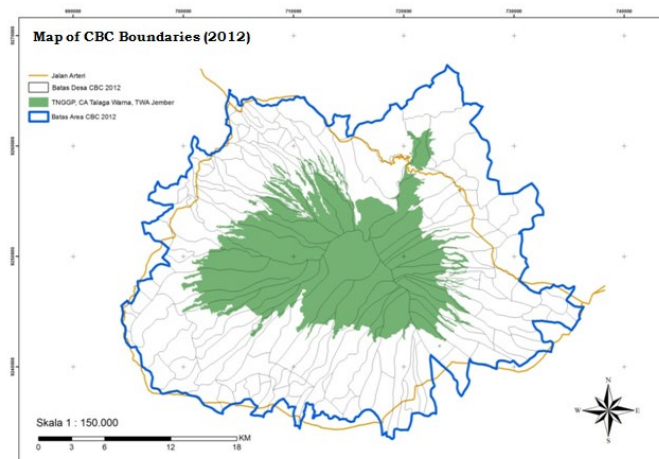


Figure 16. Map of CBR Boundaries 2012

Activity 2.2: To establish sustainable livelihood models for demonstration and training in collaboration with local communities and private firms

Below are main results of the activity; interested parties and individuals in detailed results may consult with the technical report on the activity which is available with the GGNP.

- Selected livelihood projects to implement, qualified forest farmers groups (KTH) to execute and locus of each project are summarized in Table 8.

Table 8. Selected livelihood projects, responsible KTHs and loci of the projects

No.	Livelihood project	Responsible KTH	Locus
1.	Honey bee farming	KTH LBC Lestari	Cileungsi village Bogor district
2.	Sheep fattening and breeding	KTH Wangun Jaya	Pasir Buncir village Bogor district
3.	Sheep fattening and breeding	Cooperative Sugih Makmur	Sarongge Girang village Cianjur district
4.	Homestay business	KTH Hejo Cipruk	Gekbrong village Cianjur district
5.	Sheep fattening and breeding	KTH Tunas Bangsa	Cihanjavar village Sukabumi district
6.	Sheep fattening and breeding	KTH Lestari Alam Sejahtera	Ambar Jaya village Sukabumi district



Figure 17. Training of FFGs on skills needed for development of livelihood projects

- The progress made by KTHs in operating the livelihood projects is summarized in Table 9.

Table 9. Current status of livelihood projects by KTH^{*)}

No.	Project/KTH/Location	Current status of project	Weakness observed
1.	KTH LBC Lestari Bee honey endeavor Cileungsi village Bogor district	<ul style="list-style-type: none"> • Productive using <i>Trigona sp</i> bee • Total revenue USD 203 • KTH getting skillful 	<ul style="list-style-type: none"> • No serious operational obstacles • <i>Apis mellifera</i> bee proved unmanageable
2.	KTH Wangun Jaya Sheep farming Pasir Buncir village Bogor district	<ul style="list-style-type: none"> • Productive, profitable • KTH got more talent in fattening than breeding • Total revenue USD 458 	<ul style="list-style-type: none"> • Poor breeding facilities • Weak dietary handling • Operating on land owned by other's with no security of use right
3.	Sugih Makmur Cooperative Sheep farming Ciputri village Cianjur district	<ul style="list-style-type: none"> • Productive • Gross profit at USD 235 • Sheep number increased 	<ul style="list-style-type: none"> • Incident of stolen sheep
4.	KTH Hejo Cipruk Homestay industry Gekbrong village Cianjur district	<ul style="list-style-type: none"> • Under construction • To start operation by end of 2020 • KTH shared construction cost 	<ul style="list-style-type: none"> • Only one unit homestay available for the growing local market
5.	KTH Tunas Bangsa Sheep farming Cihanjawa village Sukabumi district	<ul style="list-style-type: none"> • Productive • Gross profit USD 176 • KTH was learning hard 	<ul style="list-style-type: none"> • 8 sheep died of pesticide poisoning • Weak sanitation and dietary handling
6.	KTH Lestari Alam Sejahtera Sheep farming Ambar Jaya village Sukabumi district	<ul style="list-style-type: none"> • Productive • Gross profit USD 200 • KTH was striving to learn 	<ul style="list-style-type: none"> • 2 sheep died of sickness • Weak dietary handling

^{*)} After 5 months of operation



Figure 18. Samples of the progress made by KTHs in operating sheep fattening projects

Activity 2.3: To increase awareness on conservation and sustainable development through intensive dialogues with local stakeholders and dissemination of attractive, easy to read printed materials

Results of the activity are summarized below; interested parties and individuals in detailed results may consult with the technical report of the activity which is available with GGPNP. The dialogues with nine stakeholder groups were realized fifteen times meaning particular groups were involved in more than one dialogue sessions.

- Dialogue with Sarongge Festival organizer and participants
 - ✓ Growing public support on making Sarongge Festival as a yearly calendar event for nature conservation
 - ✓ Growing synergism among stakeholders in environmental conservation
 - ✓ Communication between CBR with a wide spectrum of stakeholders promoted through the Sarongge Festival
- Dialogue with Creative Students of University of Pakuan
 - ✓ Guide book on identification of wild fauna discussed
 - ✓ Technical manual on tour guiding and interpretation talked about
 - ✓ Brochures on promotion and marketing of local products drafted

- Dialogue with KTH Lestari Alam Sejahtera
 - ✓ Capacity of KTH in managing the organization, in efficient use of landscape and in development of eco-friendly local products in general, eco-tourism in particular, enhanced.
- Dialogue with KTH Cikereteg Maju
 - ✓ Better knowledge and skills of KTH on bee raising for production of quality honey product and obtaining its legal status from local government
 - ✓ Improved communication between GGPNP with the local government involved
- Dialogue with Mina Mukti Dahlia Cooperative
 - ✓ Enhanced skills of the cooperative on packaging and branding of herbal products
 - ✓ Communication between GGPNP and local stakeholders promoted
- Dialogue with KTH Area Domas Pangrango
 - ✓ Better understanding of the KTH and local stakeholders on the link between conservation with sustainable development
 - ✓ Improved communication between GGPNP, local community and local firm
 - ✓ Enhanced skills of KTH on bee raising, especially on moving and handling of bee colonies and harvesting of honey and pollen
- Dialogue with some KTHs combined
 - ✓ Improved communication between GGPNP and the KTHs operating in CBR and among the KTHs themselves
 - ✓ Better understanding of the KTHs on the social, economic and ecological functions of CBR
 - ✓ The KTHs were better motivated to be creative in site identification, product development and marketing with respect to livelihood development
- Dialogue with GGPNP volunteers
 - ✓ Volunteers were better motivated to secure legality of their move, objective and activities
 - ✓ Strengthened communication between GGPNP and the volunteers
 - ✓ The volunteers were encouraged to establish tour guiding service as source of lawful income

Note that 3 additional dialogues were accomplished during the project extension period, namely:

- Dialogue with several KTHs at Situ Gunung on basic function of CBR and legal requisites for collaborating
- Dialogue with volunteers at CBR Headquarters on hiking activity and guiding service
- Dialogue with KTH Jagaraksa on procedures and skills for forming a new village cooperative



Figure 19. Dialogue with KTH Cikereteg Maju on bee honey production



Figure 20. Dialogue with KTH Jagaraksa on forming of a new village cooperative

Activity 2.4: To train local people and stakeholders on skills needed to develop sustainable livelihood projects

Results of the activity are summarized below; detailed results are presented in the technical report which is available with GGNP.

- Training participants
Planned for 200-210 people, realized only 148 people or 70% of the target due to the strict enforcement of health protocols on pandemic covid-19, time conflict of invited persons and the voluntary nature of the training.

- Level of comprehension of lectured materials is shown in Table 10.

Table 10. Order of comprehension level on lectured materials in classroom

KTH	Questions addressed	Rating	Project	Village
LBC Lestari	13	1	Honey bee raising	Cileungsi
Tunas Bangsa	12	2	Sheep farming	Cihanjawa
Wangun Jaya	10	3	As above	Pasir Buncir
Sugih Makmur Cooperative	9	4	As above	Ciputri
Lestari Alam Sejahtera	8	5	As above	Ambar Jaya
Hejo Cipruk	6	6	Homestay	Gekbrong

- Competence of the KTHs in practicing the skills taught in the classroom is summarized in Table 11.

Table 11. Level of competence in practicing classroom knowledge

KTH	Total score	Rating	Project	Village
Wangun Jaya	20	6	Sheep farming	Pasir Buncir
LBC Lestari	45	1	Honey bee raising	Cileungsi
Sugih Makmur Co.	24	3	Sheep farming	Ciputri
Hejo Cipruk	23	4	Homestay	Gekbrong
Tunas Bangsa	25	2	Sheep farming	Cihanjawa
Lestari Alam Sejahtera	21	5	Sheep farming	Ambas Jaya

Note that 3 KTHs had been trained during the project extension period, namely:

- Indung Group at Nyalindung Village on skills for development of vegetable-based products with 20 participants
- KTH Tapak Jagat at Bidang PTN Wilayah III Bogor Office on skill for bee honey production with 7 participants
- KTH Jagaraksa G. P. at Bidang PTN Wilayah III Bogor Office on skills for bee honey production with 7 participants

In total, number of participants have become 182 people or 91% of the target; while number of livelihood projects increased from 6 to 9 projects, consisting of 4 business lines: 4 on sheep raising, 3 on bee honey production, 1 on homestay service, and 1 on vegetable products.



Figure 21. Participants from KTHs attend lectures and practicing skills session in the classroom



Figure 22. Entrepreneurship training of women Indung Group



Figure 23. Training of KTH Jagaraksa and KTH Tapak Jagat on skills for production of bee honey

3.3. Discussion on the results of the interventions

3.3.1 Implementation of existing land use plan reviewed

- Based on the review in 2012 on administrative boundaries of CBR (Activity 2.2 ITTO Project TFL-PD 019/10 Rev. 2 (M)), the total area of CBR was 167,000 hectares comprising 24,500 hectares of core area; 54,800 hectares of buffer zone and 87,700 hectares of transition area with 119 villages in the buffer zone and 78 villages in the transition area or a total of 197 villages.
- Spatial analysis on CBR administrative boundary in 2019 found a significant change to the 2012 conditions as shown in Table 12.

Table 12. Conditions of CBR in 2012 and 2019

Zone	2019 condition ^{*)}		2012 condition	
	Area (Ha)	Number of village	Area (Ha)	Number of village
Core area	24,834.19	-	24,500	-
Buffer zone	30,220.38	58	54,800	119
Transition area	32,547.78	87	87,700	78
Total	87,602.35	145	167,000	197

*) After a spatial correction

- The review on CBR area in 2019 argued that the figures resulting from the 2012 CBR review are not relevant anymore for at least three reasons. Firstly, the Bureau for Central Statistic (BPS) in 2016 had released new data on number and administrative boundaries of villages in the three districts of Bogor, Cianjur, and Sukabumi. Secondly, there might be double countings of village in the 2012 review, and thirdly, the outer boundaries used in 2012 review were the highway road connecting the three districts while the 2019 review was based on the outer boundaries as defined by the

BPS. The 2019 figures shown in Table 12 are those after spatial correction made to administrative boundaries of the villages identified by the BPS.

- Data in Table 12 clearly indicate that there was a drastical change in both size of CBR area at the number of village inside CBR. In terms of area size, the CBR area was reduced from 167,000 hectares in 2012 to 87,602 hectares in 2019 or 79,398 hectares in magnitude. The area change was due to increase size of the core area (334 hectares), reduction in area of buffer zone (24,580 hectares) and in transition area (55,152 hectares). In terms of village, the number was reduced from 197 in 2012 to 145 in 2019 or a total reduction by 52 villages.
- These findings of the project regarding size of CBR area and number of village are critical for GGPNP to review involving responsible authorities, mainly the local governments as regards size of the CBR buffer zone and transition areas, with the MoEF as regards size of the core area. Those reviews are best accomplished prior to periodical review on CBR management status by MAB-UNESCO scheduled for 2022.
- Irregularities in land use practices are shown in Table 7. The core area of CBR was, in 2012, designated for conservation of biodiversity and ecosystems, but some agricultural activities were still taking place at different localities in three districts. This could have happened for the lack of monitoring and low enforcement or it could be the activities of the farmers that once took part in the social forestry program by the state-owned company Perhutani, whose area was partly redefined as conservation area under GGPNP. If so, the activities could have occurred on the lands that were under occupation by the former farmers of Perhutani.
- Irregularities in the buffer zone occurred in different land use types defined in 2012 by GGPNP, namely: sustainable agriculture and animal husbandry, eco-friendly settlements and eco-friendly plantations. Closer examination of the irregularities revealed that the irregularities did not change the planned allocation of lands but rather were inappropriate land use practices due to lack of competence and skills coupled with weak monitoring and control by managers in charge of the operations.
- The irregularities in the transition area took place on five different types of land use. Close examination of the irregularities again revealed that planned types of land use were not changed but they rather were results of weak supervision and quality control, absence of SOP, weak technical competent and skills. For examples inappropriate agricultural practices were indicator of weak SOP and control; absence of waste treatment at the settlements was picture on weak SOP and quality control and; use of chemical fertilizer was reflection of weak control and law enforcement and lack of health awareness.
- Deviations in land use practices were rooted in two sources. The 2012 direction on land use types were not implemented because they were inconsistent with existing spatial plan, potential resource of the landscapes, and regional development plan. In addition, the 2012 direction on land use types is not relevant anymore due to changes in village administration made by BPS and local governments. In essence, there is a

need to revise the 2012 direction on land use types based on updated, accurate existing conditions of landscape and its environment.

3.3.2. Sustainable livelihood models established

The main results of Activity 2.2: To establish sustainable livelihood models for demonstration and training in collaboration with local communities were presented in Tables 8 and 9 and are discussed below:

- Six KTHs were selected to become the partner of GGNP in the implementation of conservation programs in CBR and development of sustainable local livelihood projects. The KTHs had been selected based on domicile, i.e. a KTH must reside adjacent to the park; poverty status, i.e. members of KTH lived in subsistence level and; history of involvement in forest management, i.e. members of KTH were former farmers of Perhutani. The KTHs selected were also tasked to identify livelihood projects to be further assessed in collaboration with GGNP as regards their potential for development.
- Six livelihood projects had been identified by the KTHs, based on their preference and proposed to GGNP for development. The project proposals developed by the KTHs were collaboratively reviewed and assessed one by one to confirm feasibility for development for which some amount of seed funds was provided by GGNP. It happened that two proposed projects originally proposed by KTHs had to be replaced as they were not quick yielding in nature; note that a quick yielding project was most preferable during the covid pandemic time in order to help members of KTHs surviving the difficult time.
- Selected KTHs were trained on needed skill for constructing and properly running the projects; this training was conducted under Activity 2.4 of the project. The skills learned during the training had enabled the KTHs to properly construct and operate the respective projects identified for development.
- Monitoring of the projects operations till five months after construction indicated that all the projects were in operation, productive and profitable meaning that all KTHs had been able to practice the knowledge and skills learned from the training under Activity 2.4 despite some weaknesses that needed overcoming.



Figure 24. Monitoring of the project operations until five months after construction

3.3.3. Awareness on conservation and sustainable development increased

- The project had conducted fifteen dialogues with nine groups of stakeholders whose results were presented in the previous section. The dialogues had surely promoted healthy communication between GGPNP and the respective stakeholders and better understanding on the task of GGPNP on environmental conservation in general, biodiversity conservation in particular.
- The dialogues also had initiated development of different documents on promotion of ecotourism, e.g. guide book, manuals and brochures, improved awareness of the participants on the critical role of conservation as the life supporting system and enhanced capacity of the participants in particular aspects of livelihood projects such as in packaging and branding of livelihood products.
- The dialogues had surely facilitated better communication between GGPNP and the stakeholders that should lead to better understanding on the tasks and responsibilities of the parties as well as transparency which were all essential for development a collaborative conservation strategy involving GGPNP and multi-stakeholders; and pursuing a collaborative management is a must due to limited capacity and resources of GGPNP.



Figure 25. Dialogues between GGPNP and different stakeholders groups

3.3.4. Training on skills needed for attending the livelihood projects conducted

- Prior to constructing the livelihood projects selected under Activity 2.2, training on needed skills for the construction, operation and maintenance of each project by individual KTHs was conducted under Activity 2.4 which indicated that implementation of the two activities were inseparable.
- The training process revealed two interesting results, i.e. capacity to comprehend training materials delivered in the classroom were different among the KTHs, capacity in practicing the knowledge and skill received in the classroom was also varied between the KTHs, and capacity to comprehend training materials did not correspond to capacity in practicing except for KTH LBC Lestari and KTH Tunas Bangsa. This finding is not surprising though; it is a common phenomenon that some students are good in classroom but weak in practical application.
- The training also evaluated operation of individual projects. For instance, the training evaluated how sanitation inside a sheep cage was handled, how dietary of animals was managed by the KTHs. Any deficiency found was discussed with the KTH involved and repairing action demonstrated by the trainers. In this was any weakness could be fixed up in the earliest time possible that it would not compromise productivity and quality of project operations.



Figure 26. Samples of weaknesses of the KTHs in project management

- Conducting the training prior to physically constructing the projects was indeed a logical sequence of actions to pursue.
 - ✓ A KTH did not master needed skills

When KTH LBC Lestari selected honey bee farming for its business, some members had some experience in the business but the skills acquired might not be the right ones or they might cover only part of the skills actually needed. The training taught proven technologies and covered the complete skills needed for honey bee farming.
 - ✓ The same was true with the case of KTH Hejo Cipruk that chose homestay business for development.
 - ✓ Four KTHs, namely Wangun Jaya, Sugih Makmur, Tunas Bangsa and Lestari Alam Sejahtera had chosen sheep fattening and breeding business to develop. The final discussions between the project expert with the KTHs indicated that some members of the KTHs had already had some experience with the business; but also confessed that the skills they acquired were more traditional in nature and covered only small part of the skills actually needed to properly run the business. In fact, the KTHs had no idea on what skills should be first acquired before getting involved in the business thus they were practically dependent on the training accorded by the ITTO project. Indeed, it was a must to conduct the training for the KTHs on needed skills prior to commencing any business operation.

3.4. Achievement of the Interventions Assessed

Four project interventions pertaining to Output 2 of the project had fully implemented, namely:

- i. Activity 2.1: To review implementation of existing land use plan and provide recommendations for repairing follow-up actions.
- ii. Activity 2.2: To establish sustainable livelihood models for demonstration and training in collaboration with local communities and private firms.
- iii. Activity 2.3: To increase awareness on conservation and sustainable development through intensive dialogues with local stakeholders and dissemination of attractive, easy to read printed materials.
- iv. Activity 2.4: To train local people and stakeholders on skills needed to develop sustainable livelihood projects.

The objective of implementing the activities was to demonstrate and promote land use best practices. The project proponent hypothesized that the full implementation of above mentioned activities should deliver the second output of the project, i.e. land use best practices in CBR buffer and transition zones demonstrated and promoted. The question was, “had the four activities implemented delivered the second output?”. To properly answer this question, it was necessary to examine realized outcomes of individual and match these outcomes with the indicators of achievement defined in the logical framework of the project. This matching process is shown in Table 13.

Table 13. Defined indicators of achievement vs major outcomes of the activities

No.	Defined indicators	Major outcomes
1.	Actual land use practices in buffer and transition zones documented and evaluated	Actual land use practices reviewed and deviation to intended practices identified
2.	6 sustainable livelihood models identified and established	9 sustainable livelihood projects identified and established, 3 under extension period
3.	12 dialogues organized at sub-district level involving 3-4 villages	15 dialogues organized in 3 districts involving multi-stakeholders
4.	200 reps of beneficiaries trained on sustainable livelihood skills	182 reps of local beneficiaries trained on sustainable livelihood skills

Close examination of the information in Table 13 indicated that:

- The first indicator was fully satisfied
- The second indicator was exceeded by 3 projects
- The third indicator was exceeded by 3 dialogues in terms of number of dialogue; planned participants were 3-4 villages per dialogue but replaced with multi-stakeholders in 3 districts.
- The fourth indicator only realized 91% due mainly to the strict enforcement of the protocols on pandemic Covid-19.

Overall, above examination indicated that indicator of Output 2 had been mostly satisfied noting that one indicator was not fully met while two indicators exceeded the targets.

3.5. Lessons Learned

- Revising particular defined indicators during the project development stage is advisable to ensure validity of the indicator as a measure of achievement taking progress of project operations into account. Such is the case with the third and fourth indicators as implementation of Activities 2.3 and 2.4 was strongly affected by pandemic covid-19.
- When reviewing size of a biosphere area there is a need to clearly define the original and new outer boundaries used in order to avoid confusing interpretation of the review's results.



4. ENHANCING INSTITUTIONAL ARRANGEMENTS FOR CBR MANAGEMENT

4.1. Introduction

This chapter concerns with the interventions on enhancing institutional arrangements for CBR management. The project proponent argued that weak institutional arrangement was one of the major problems facing the management of CBR which was thoroughly analyzed involving the major stakeholders; the problem was found as caused by three sub-problems as highlighted below:

- Existing CC Forum on CBR did not function effectively
 - ✓ The Forum was too costly to operate as it involved too many authorities and staff of different levels of government
 - ✓ Decision making process was sluggish to cope with the dynamics of stakeholders
- Weak coordination among authorities in CBR management planning
 - ✓ Current CBR management plan was insufficiently accommodated in district government development planning
 - ✓ Management planning of CBR followed the policy of MoEF while district development planning followed the policy of MoI
- Lack of updated information to support proper decision-making
 - ✓ Authorities were not well informed of actual issues and progress in management operations
 - ✓ Absence of updated information did not facilitate an objective and effective decision making process.

4.2. The Project Interventions

The GGPNP management had decided to implement the relevant and effective interventions under ITTO Project PD 777/15 Rev. 3 (F) based on above problem diagnose. The interventions and methods of their implementation as well as results of the interventions are highlighted in the following two sections.

4.2.1. The activities implemented and methodologies employed

- i. To establish and operate CC Forum at district government level

The methodologies employed

- Restructuring: the original structure of the CC Forum was just too fat and costly to operate; Forum members required re-screening and reduction based on needed roles, competence and new nomenclatures of different institutions
- Identifying potential sources of funds to operate the Forum: central or regional governments or other non-tying external sources such as grant and CSR
- Establishing Forum-Working Group at district level by the respective heads of district government

- ii. To organize three district workshops on management/development planning

The methodologies employed

- To organize one workshop by combining three district workshops
- The combined workshop was implemented in Cianjur town involving participants from three districts
- Savings from combining three workshops to one workshop only was used to support financing 15 dialogue events with multi-stakeholders in three districts on conservation and sustainable livelihood development in CBR under Activity 2.3.

- iii. To install and operate a publicly accessible CBR information system

The methodologies employed

- Development of CBR information system was focused on installing website, Facebook (FB) and Instagram (IG) involving experienced professionals
- Operation of the system involved trial and validation processes

- iv. To learn lessons and experience from other biosphere reserves

The methodologies employed

- To search information on other biosphere reserves through internet
- To participate in events on biosphere reserves in Indonesia only as travelling to other countries was problematic due to pandemic covid-19
- To organize an international workshop entitled “Empowering forestry communities in sustainable management of biosphere reserves in the Asia-Pacific region”; the workshop was implemented on 20 January 2022 in the City of Bogor.

4.2.2. Results of the interventions

- i Activity 3.1: To establish and operate CC Forum at district level

Main results of this activity were:

- Coordination meeting in December 2019 for revising the 2018 West Java Governor's decree on FCC for CBR management
- Revised West Java Governor's decree on CC Forum for CBR management produced and announced
- Cianjur district government issued a decree on formation of a CC Forum Working Group as the field executor of the CC Forum for CBR management



Figure 27. Coordination meeting in December 2019 on CBR management at Cianjur

- ii. Activity 3.2: To organize three district workshops on management development planning

Main results of this activity were:

- A combined workshop involving three district governments organized
- Socialization of ITTO Projects PD 777's programs and activities and the 2018 West Java Governor's degree regarding CC Forum on CBR management

Note that the original activity had been modified to become the above activities for reason of cost efficiency.



Figure 28. Socialization of ITTO Projects PD 777's programs and activities to Regent of Cianjur

iii. Activity 3.3: To install and operate a publicly accessible CBR information system

Main results of this activity were:

- The website www.itto-cbr.id launched and operational
- Documenter movies on the management of CBR
- Operational social media (FB and IG): <https://www.facebook.com/itto.c.reserve> and <https://instagram.com/cibodasbiosphere.reserve>



Figure 29. Website www.itto-cbr.id

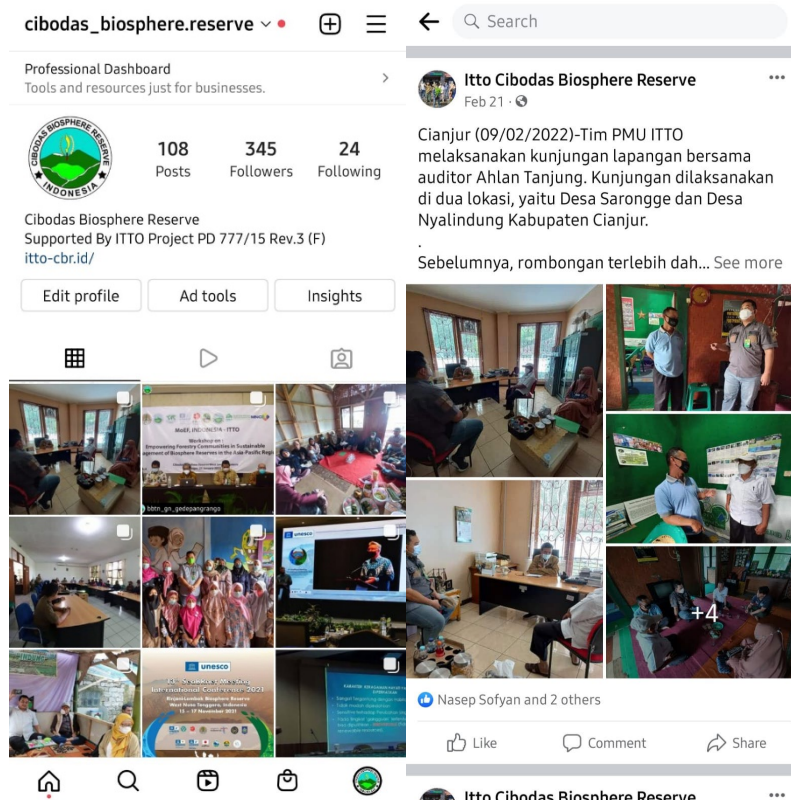


Figure 30. CBR Instagram (left) and Facebook (right)

iv. Activity 3.4: To learn lessons from other biosphere reserves

Main results of this activity were:

- Participated in the International event of Asia-Pacific Forestry Week (APFW) 2019 in Incheon, Korea, on 17-21 June 2019
- Took part in some webinar International meetings such as the 13th Southeast Asian Biosphere Reserves Network/SeaBRnet meeting in June 2020, BR Innovation for a New Sustainability SeaBRnet Responses to the Covid-19 Pandemic in July 2020 and the 2nd UNESCO webinar meeting “The UNESCO Water Family in Asia and the Pacific Responds to the Covid-19 pandemic: the answers are in the Water” in 2020
- Shared and learned experience in BR management with the Gunung Merapi Merbabu Manoreh BR in Yogyakarta (August 20), Wakatobi BR in Baubau, Sulawesi (October 2020), Saleh Moyo Tambora BR in Sumba Island (October 2020) and Bunaken Tangkok Minahasa BR in North Sulawesi (November 2020).
- The PMU was already registered with the XV World Forestry Congress (WFC) in South Korea
- Participated in the SeaBRnet meeting in Lombok as a speaker in November 2021



Figure 31. Mr. Ade Bagja Hidayat as a speaker in the SeaBRnet meeting in Lombok, November 2021

4.3. Discussion on the Results

4.3.1. District CC Forum established and operational

- Upon intensive discussion between the EA and PMU, it was decided to first review and revise the original decree of West Java Governor on CC Forum as the Forum did not function for years due mainly to the too fat organizational structure and unbearable cost of its operation.
- The revised structure of CC Forum is now much slimmer in structure and its cost of operation is affordable even without external financial assistance.
- Revising the original CC Forum was costly as the meeting involved large number of representatives of institutions and authorities that allocated funds for Activity 3.1 was nearing exhausted. As a result, the project could only assist the Cianjur district

government in forming Working Group on CC Forum. As for the other two district governments of Bogor and Sukabumi, the project provided technical assistance in establishing their Working Groups on CC Forum.

4.3.2. District workshop on management/development planning organized

- A combined workshop on development planning was organized involving three district governments as a combined workshop was more cost efficient without compromising the planned objective of Activity 3.2.
- The saving made from combining the workshops was used to socialize the objectives, outputs and activities of ITTO Project PD 777/15 Rev. 3 (F) as this had never been done before and to help financing 15 dialogue sessions with multi-stakeholders in three districts.

4.3.3. Publicly accessible CBR information system operational

- Activity 3.3 focused on installing and operating website, FB and IG; to ensure an efficient operation, the system experienced trial run and validation process.
- Indeed, the system employed was publicly accessible as entry to website required no password and the website stored only information related to on-going ITTO projects.

4.3.4. Experience from other biosphere reserves learned

- The EA and PMU of on-going ITTO project had learned substantial experience from other biosphere reserves through their participation in different events as described in the previous section.
- Actually, on-going ITTO project had also shared its experience to at least four biosphere reserves in Indonesia at the request of the respective reserves; this sharing of experience was requested considering the fact that CBR was known as the most advancedly managed biosphere reserve in Indonesia and this activity was jointly financed by the reserves involved in the activity.

4.4. Achievement of the Interventions Assessed

- Matching indicators of Output 3 with major outcomes of the activities. The matching process is shown in Table 14 by comparing output indicators defined in the logical framework with main outcomes of the activities implemented.

Table 14. Matching of defined indicators with outcomes of the activities on Output 3

No.	Defined indicators of Output 3	Outcomes of the activities under Output 3
1.	CC Forum at 3 districts established	CC Forum re-visited and re-structure One Working Group on CC Forum established
2.	3 district workshops on management planning organized	One district workshop organized involving three district governments
3.	CBR information system installed and operational since Year 2	The information system already installed and the system is operational

No.	Defined indicators of Output 3	Outcomes of the activities under Output 3
4.	Learning of lessons and experience from other reserves conducted	<ul style="list-style-type: none"> • The EA learned experience from other reserves and shared its experience with other Indonesia BRs • The EA organized an Asia-Pacific workshop on biosphere reserves for sharing information and experience

The information presented in Table 14 indicated that all four indicators of Output 3 had been met noting that the first indicator was only partly satisfied due to the urgent need to revisit and restructure the original CC Forum that nearly exhausted the originally allocated budget of Activity 3.1. Accepting this rationale would justify the full fulfillment of the first indicator.

- Full implementation of pertinent activities would deliver Output 3.
As indicated in the previous section, four activities under Output 3 had been fully implemented and generated the expected outcomes. The project proponent argued, on the basis of cause-effect relationship of the major problems, that the full implementation of pertinent activities would deliver the output. If so, it must be reasonable to conclude that Output 3 had been fully delivered. This conclusion confirmed the result of matching defined indicators of Output 3 with major outcomes of the activities under the output shown in Table 14; that Output 3 “Institutional arrangements for CBR management enhanced” had been realized. The extent to which the institutional arrangements had been enhanced was not measurable thus is opened for further discussion by interested parties or individuals.

4.5. Lesson Learned

- On special cases, the PMU and EA may take decision to somehow deviate from the original project activity by reducing expanding scope of the activity depending on the case characteristics. Such is the case with Activity 3.1 where the PMU and EA had expanded scope of the activity by reviewing and revising the decree on CC Forum, as a well functioning Forum was urgently needed, in expense of reduced CC Forum Working Group number that could be established.
- The PMU and EA are encouraged to make necessary adjustment to definition of a particular activity for efficiency reason without compromising the original objective of the activity. Such was the case with Activity 3.2 when the PMU conducted only one combined workshop involving 3 districts in place of 2 individual district workshops.



5. GENERAL DISCUSSION

5.1. Achievement of the Project's Specific Objective

The extent to which defined project outputs had been achieved varied from one output to another as summarized below:

- Assessment of delivery of Output 1 made by matching defined indicators of Output 1 with major outcomes of the activities under the output (see Section 2.4) had been fully delivered.
- Matching defined indicators of Output 2 with major outcomes of the activities under the output (see Section 3.4) indicated that Output 2 had been fully delivered noting that one indicator was only 91% met but of two indicator were exceed.
- Matching defined indicators of Output 3 with major outcomes of the activities under the output (see Section 4.4) indicates that Output 3 had been fully delivered.

As highlighted in the first part of this report, three outputs had been defined as the means for achieving the specific objective, i.e. conservation and sustainable management of biodiversity and ecosystems in CBR improved through implementation of the Integrated Strategic Management Plan. Above assessment indicated that all three outputs have been fully delivered. It is therefore, reasonable to conclude that the specific objective was fully achieved at completion of the project, based on degree of delivery of the outputs. To confirm this conclusion or otherwise, can be done by matching defined indicators of achievement (see the logical framework) with particular outcomes of the project activities as shown in Table 15.

Table 15. Matching defined indicators with outcomes of particular project activities

No.	Defined indicators of achievement	Outcomes of particular activities
1.	2 biodiversity enrichment models established	2 enrichment models established under Activity 1.1
2.	1 land conflict resolution model agreed to by farmers and GGNP	1 land conflict resolution model adopted under Activity 1.2
3.	A sound monitoring system for biodiversity and ecosystems operational	Monitoring system for 3 fauna species developed and operational under Activity 1.4
4.	200 reps of beneficiaries trained on skills for six sustainable livelihood projects	A total of 182 reps of beneficiaries trained on skills for 9 livelihood projects
5.	CC Forum operational in 3 districts	<ul style="list-style-type: none"> • The original CC Forum revisited to accommodate formation of CC Forum Working Group • One District form a Working Group

The information in Table 15 revealed the following facts:

- Two indicators were fully met by Activities 3.1 and 3.2.
- On monitoring system, 3 SOPs for monitoring of 3 fauna species developed and operational under Activity 1.4. The indicator was not defined specifically that a sound monitoring system was difficult to measure. In this case, the indicator was assumed as fully met by the outcome of Activity 1.4
- The actual number of training participants on needed skills for livelihood projects was 182 or 91% of the target due mainly to pandemic covid-19 problem while realized projects increased from six to nine projects. In this case, the fourth indicator was viewed as satisfied by Activities 2.2 and 2.4.
- Cc Forum has been operational in one district, initiated under Activity 3.1, while the other two Working Groups are in the process of establishing with the assistance of the EA.

Above matching of defined indicators with outcomes of particular activities indicated that all five indicators of the specific objective defined were fully met. In other words, the specific objective had been fully achieved at completion of the project. This conclusion confirmed the full achievement of the specific objective based on delivery of defined outputs.

5.2. Contribution of the Project to Restoring the CBR Functions

There are three basic functions of a biosphere reserve, including CBR defined by UNESCO; in a simplified form, they are:

- i. Conservation of biodiversity and cultural diversity
- ii. Economic development that is socio-culturally and environmentally sustainable
- iii. Logistic support, underpinning development through research, monitoring, education and training

See page 2 of Chapter 1 for the full text of above three functions. These three functions are pursued through the three main zones of a biosphere reserve.

ITTO Project PD 777/15 Rev. 3 (F) was designed to accelerate the restoration of CBR functions. Note that the first output of the project was devoted to reducing threat on biodiversity in the core area of CBR; the second output was intended to cope with conservation and sustainable development of the buffer and transition zones, while the third output dealt with institutional arrangements for CBR management.

Under Output 1, biodiversity of the core area was enriched through planting of new tree species, conservation of the core area was promoted involving local farmers, protection of the core area was elevated through enhanced forest patrolling involving forest rangers and local communities and conservation of the core area was promoted by putting in place appropriate, sound monitoring system of wild animal species. Clearly, the project has significantly contributed to conservation of biodiversity in the core area of CBR, compatible with the first function of CBR.

Under Output 2, implemented activities have identified irregular land use practices and proposed developing an action plan for repairing the irregular practices, established local livelihood projects, raised awareness on conservation and sustainable development and trained local communities on skills needed to operate and maintain the livelihood projects. No doubt that the project has significantly contributed to conservation and sustainable development in the buffer and transition zones of CBR, consistent with the second function of CBR.

Under Output 3, project activities dealt with CC Forum for CBR management, socialization of ITTO project and CC Forum, CBR information system and learning as well as sharing of information and experience. Obviously, the ITTO project has enhanced logistical function of CBR.

Above review on contribution of project outputs and activities clearly indicated that, overall, ITTO project PD 777/15 Rev. 3 (F) has significantly contributed to restoring the intended functions of CBR.

5.3. Local Livelihood vs CBR Conservation

Policy makers and forest managers in the tropics in general, in Indonesia in particular have learned, admitted and concluded through experience, observation and research, that efforts on conservation of forest resource will be successful only with the support of local stakeholders, notably local communities. This strong proposition is attributable to several reasons as described below:

- For generations, local communities have lived around and inside forest land areas that they, frequently and persistently, claim themselves as owner of the forest resource; ousting the communities from the forest land is against the principles of fairness and humanity.
- For centuries, most local communities have relied heavily on forest resources as the sustainable source of their livelihood; halting the communities to depend their lives on forest resources is against the law of human rights.

- For the sake of Sustainable Forest Management (SFM), several laws on conservation have been enacted and enforced by many governments including Indonesia which limit access of local communities to using forest resources as their source of income; the conservation laws have, in fact, sacrificed local livelihood.

Above reasons clearly do not justify the proposition made by policy makers and forest managers, i.e. conservation of forest resources can only be successful if supported by local communities. Above arguments clearly indicated that conservation of forest resources is basically not in the interest of local communities as conservation laws and efforts have limited their old privileges and access to using the resource. In short, conservation of forest resources is making local communities worse-off thus it is against their traditional way of living. If so, how then policy makers and managers could gain support of local communities on conservation? The logical option is to ensure that conservation policies and programs do not deprive local people; that conservation initiatives do not make local people worse-off by taking care of their livelihood while, at the same time, implementing conservation initiatives. That is to say that conservation shall make livelihood as an incentive for local communities to support conservation policy; that conservation can provide them with needed sources of income to secure their lives. This is the point where development enters conservation regime.

To ensure that local livelihood is not compromised by conservation initiatives, livelihood development initiatives should be placed as an essential element of any conservation program and collaboratively designed in order to build up strong local ownership and ease its effective implementation. Effectively implemented livelihood initiatives can significantly improve local livelihood which in turn will serve as a strong incentive for local stakeholders to support SFM in general, conservation of biodiversity and ecosystem in particular. This proposition is consistent with adoption of a new paradigm promoted by Director General of Conservation of Biodiversity and Ecosystem that local communities must be made as the subject and main actor of any conservation programs in Indonesia.

5.4. Sustainable Livelihood vs Project Sustainability

- Poor local people normally enter nearby forests for making living by collecting forest products that can be consumed or sold. It is argued here that, based on the chats with local peoples at some localities and by common sense, poor local people will not enter the forests if they can make living outside the forests for it is indeed more comfortable for them to do. And by reducing forest entry, probability of doing illegal harvests or forest clearing by local people is minimized thus supporting forest conservation. Developing source of income outside the forest is the major task for proponents of forest conservation to accomplish and to preserve appreciation on forest resource and such sources of income must be sustainable.
- The project, in collaboration with forest farmer groups (FFG) and competent experts have established nine livelihood projects in total outside the forests in the buffer and transition zones of CBR. Those projects had been identified and their feasibility and sustainability assessed by competent professional experts. To construct, operate and maintain the

project, the FFG involved had been equipped with the necessary skills by experienced practitioners. Monitoring of six projects within five months since construction, the projects were running well and productive except the homestay project that took longer time for construction.

- To be sustainable, those projects have to produce goods and services that are marketable at profit. To be marketable at profit, the products sold must have competitive advantage as similar products or substitutes are usually already sold in the same market. To be competitive, a good or service must be produced in a cost efficient and quality manner and supplied in a continuous fashion. Efficiency, quality and continuity of supply are therefore the heart of market competitiveness that must be understood and practiced by any FFG in order a project is sustainable. To sustain a project, re-investment is required overtime for payment of necessary inputs and for project expansion; and source of this re-investment is the product sold, i.e. proceeds of product selling. It must be clear at this junction that any livelihood project is sustainable only if the products made are marketable at profit.
- Assuming that the livelihood projects established are sustainable by building up market competitiveness, it is amounting to say that the just completed ITTO project is also sustainable, as the livelihood projects were initiated under the ITTO project with the requisites for sustainability implanted since the construction of those projects.

5.5. The Lessons Learned

Among the important lessons learned from the implementation of ITTO Project PD 777/15 Rev. 3 (F) are outlined below:

- i. The PMU of any ITTO project should attempt to clearly defined any unclearly defined indicator(s) presented in the logical framework of a project. This attempt is necessary to ensure that an indicator appropriately serves its function as a measure of project achievement.
- ii. Any land conflict inside designated conservation area should be resolved under a win-win solution, collaboratively by conservation authority and local community groups through a series of intensive but friendly dialogues between the parties.
- iii. Social media like website, FB and IG are an effective means for exchanging and disseminating information that any ITTO project should be familiar with operation of the media.
- iv. Sustainable livelihood projects were collaboratively developed by the park authority and local farmer groups to ensure that any project is suitable for local conditions and for meeting the needs of involved farmers groups, has the potential as a sustainable source of income and contributes to conservation of the biosphere reserve.
- v. Training of the local farmer groups (LFGs) involved in developing livelihood projects on needed skills for the construction, management and maintenance of the projects is indispensable for building up competence of the LFGs to properly manage the projects.
- vi. Assistance to LFG, technically or financially, could be terminated only after the LFG is able to market its products at profit.

- vii. Conducting frequent dialogues with local stakeholders proved able to effectively raise awareness on biodiversity conservation and elevate understanding on sustainable development.
- viii. Visit to a project site by park authority and on-site discussions proved able to enrich practical knowledge of the persons involved in the project in an efficient manner.
- ix. A too fat organizational structure involving large number membership relating to coordination and communication of stakeholders on biosphere reserve should be avoided as it would be too costly to function as intended to.
- x. A publicly accessible website, FB and IG proved effective for sharing information and experience between the biosphere reserves.
- xi. A transparent and healthy relation between the PMU with the Executing Agency and ITTO Secretariat is a key success to implementation of ITTO Project PD 777/15 Rev. 3 (F).



Photo: GGPNP

6. CONCLUSIONS AND RECOMMENDATIONS

6.1. Conclusions

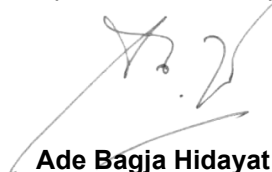
- i. The project was collaboratively implemented by GGPNP Management with the local stakeholders, notably local communities, and competent parties;
- ii. The smooth implementation of planned project activities and successful completion of the project was attributable to the adoption of a collaborative management strategy, continued supervision by the executing agency, the solid and creative PMU and the effective communication with the ITTO Secretariat;
- iii. Threat on biodiversity in the core area of CBR had been significantly reduced through enrichment planting on the lands occupied by a single tree species, abatement of land conflicts causing forest and land degradation, enhanced protection of core area and application of sound monitoring system for flagship fauna species;
- iv. Land use practices in the buffer and transition zones of CBR had been promoted by revisiting the original land use plan, collaboratively establishing local livelihood projects, increasing awareness of local stakeholders on biodiversity conservation and sustainable development and training of local farmers groups on the skills needed for development of livelihood projects;
- v. Institutional arrangements for CBR management had been enhanced by revising the original CC Forum on CBR management and forming Working Group on CC Forum at district level, organizing workshop and dialogue sessions on conservation awareness raising, making use of website, FB and IG for sharing information and experience and participating in different

- events on biosphere reserves as well as organizing the Asia-Pacific regional workshop on biosphere reserve management in the City of Bogor on 20 January 2022.
- vi. Contribution of ITTO Project PD 777/15 Rev. 3 (F) to restoring the functions of CBR was significant and real through better conservation of the core area, more effective use of the buffer and transition zones for local livelihood development and biodiversity conservation and enhanced arrangement for logistical needs of CBR management operations.
 - vii. Defined specific objective of the project has been fully achieved at completion of the project through full delivery of three planned outputs of the projects.

6.2. Recommendations

- i. Land conflicts in the core area of CBR had been reduced under the recently completed ITTO Project but not eliminated; remaining conflicts need to be resolved using a win-win solution collaboratively developed by land occupying farmers and GGPNP management in order to fully clean and clear the core area of inappropriate land use practices;
- ii. Enrichment planting with diverse tree species on poorly occupied plant and tree species lands in the core area is advisable for the GGPNP management to continue;
- iii. Development of new livelihood projects and training on the skills needed to construct, operate and maintain the projects should be continued in view of providing incentive for local communities to support conservation of biodiversity and ecosystems in CBR;
- iv. Dialogue with local communities is an effective means for raising awareness on conservation and sustainable development thus deserves steady implementation;
- v. To ensure an effective functioning of the newly established Working Groups on District CC Forum for CBR management, their operational costs should be jointly shouldered by GGPNP and local governments;
- vi. Operation of the publicly accessible website, FB and IG proved effective for sharing and disseminating information CBR hence should be continued;
- vii. Participating in events on biosphere reserves is the effective strategy for sharing information and learning experience of other reserves.
- viii. The Executing Agency is strongly recommended to follow-up the findings of Activity 2.1, especially on size of the buffer zone and transition area of CBR, involving the relevant authorities, prior to periodical review on CBR management status which is scheduled for 2022.

Responsible for the report



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FINAL TECHNICAL REPORT

ITTO Project PD 777/15 Rev. 3 (F)
Accelerating the Restoration of Cibodas
Biosphere Reserve (CBR) Functions through
Proper Management of Landscapes Involving Local Stakeholders



Cibodas, West Java - Indonesia, February 2022