



**Japan International Cooperation Agency (JICA)
Sustainable Natural Resources Management Project (SNRM)**

LOCAL CONSULTANT FOR EVALUATION ON PROJECT ACTIVITIES

EVALUATION FINAL REPORT

**By Pro. Dr. Vo Dai Hai
Vietnamese Academy of Forest Sciences**

Hanoi - April 2020

TABLE OF CONTENTS

	<u>Page</u>
1. Background and rationale.....	2
2. Objective of consultancy service.....	3
3. Task of consultancy service.....	3
4. Implementation methods.....	4
5. Achievement of Component 3.....	4
5.1. Output 1: An institutional framework necessary for management.....	4
and operations (integrated and collaborative ecosystem management framework) of LB-BR is established.	
5.2. Output 2: The collaborative management agreement (CMA) with the.....	7
benefit sharing mechanisms (BSMs) is upgraded as a tool for conservation of forest ecosystems in the core and buffer zones of LB-BR	
5.3. Output 3: The results of forest and biodiversity monitoring are used for.....	12
the management of the core and buffer zones of LB-BR	
6. Assessment of Component 3 according to 5 perspectives.....	14
6.1. Evaluation on Relevance of component 3 toward project goals, priorities.....	14
and policies of Vietnam and of Lam Dong province.	
6.2. Evaluation on effectiveness of the project.....	15
6.3. Evaluation on impact of the project.....	16
6.4. Evaluation on efficiency of the project.....	19
6.5. Evaluation on sustainability of the project.....	21
7. Conclusion and recommendation.....	23
7.1. Conclusion.....	23
7.2. Recommendation.....	24
References.....	25
Work plan for consultancy service implementation.....	27

1. Background and rationale

JICA and MARD have launched a joint project named the “Sustainable Natural Resource Management Project (SNRMP)” to enhance the capacity of the forestry sector in Vietnam for sustainable natural resource management. SNRMP is composed of 4 components to address critical issues of sustainable natural resource management in Vietnam simultaneously, namely: i) sustainable forest management through promotion of REDD+ and ii) biodiversity conservation through development of collaborative ecosystem management in the field as well as in the policy discussions.

Component 1: Policy support.

Component 2: Sustainable Forest Management and REDD+.

Component 3: Biodiversity Conservation.

Component 4: Knowledge sharing.

Biodiversity Conservation Component (hereinafter referred to as the Component 3), is to be implemented in the newly-established biosphere reserve named Lang Biang World Biosphere Reserve (LB-BR) in Lam Dong Province. This is 9th biosphere reserve of Vietnam and the first one in the Central Highlands, belonging to Lam Dong province and was recognized by UNESCO in 2015. Total area of LB-BR is 275,429 ha, comprising 34,943 ha of core zone, 72,232 ha of buffer zone and 168,264 ha of transitional zone. LB-BR is located in 5 districts: Lac Duong, Lam Ha, Don Duong, Duc Trong, Dam Rong and Da Lat city. The core zone of LB-BR is located in BNNP, buffer zone is surrounded by natural and plantation forests areas and next to core zone. Transitional zone consists of Da Lat city and nearby districts to buffer zone.

The main objective of the Project is to establish an integrated and collaborative ecosystem management system for sustainable conservation and management of the LB-BR. Specifically the Project aims to: i) develop and implement a Management Plan (MP) for management and operations of the LB-BR; ii) upgrade/improve the collaborative management (CM) model with the benefit sharing mechanisms (BSM) as a tool for conservation of forest ecosystems in the core and buffer zones of the LB-BR; and iii) develop and implement forest and biodiversity monitoring system for the management of the core and buffer zones of the LB-BR.

By the end of December 2019 the Component 3 successfully conducted and almost completed the sub-Component activities well. The systems/tools developed by the Component 3 are supposed to be widely used in LB-BR and Biosphere Reserves in Vietnam for better management of their ecosystems after the project termination. Therefore, it is absolutely necessary to make an evaluation on the systems/tools developed by the Component 3 in order to convince relevant organizations concerned to use them.

This report is formulated under the consultant contract signed with JICA - SNRMP project (Component 3) to evaluate project activities by five criteria: Relevance,

Effectiveness, Impacts, Efficiency and Sustainability. The evaluation also includes policy implication of the systems/tools developed through analysis of available information/data as well as field survey and interview with stakeholders concerned.

2. Objective of consultancy service

The overall objective of the assignment of the local consultant is to make the report on the project activities of the sub-Component 1, 2 and 3.

3. Task of consultancy service

i) Conduct a desk review on 1) PDM of the Component 3, 2) monitoring/ evaluation reports on activities of the sub-Components which are prepared by the Component 3, 3) information/data relevant to the evaluation which was collected by the component 3 and 4) relevant policies to activities of the Component 3 in the national/ provincial level.

ii) Based on the result of the above i), inform the component 3 of insufficient information/data necessary for the development of the Report.

iii) Make a summary of less than 5 pages in English/Vietnamese on the evaluation of 5 points (Relevance, Effectiveness, Impacts, Efficiency and Sustainability including policy implication of the systems/tools developed) through analysis into the information/ data available and submit it to the Component 3/ PPMU for explanation/ consultation.

5 evaluation perspectives

Perspective	Description
Relevance	Examines the extent to which the activity is suited to the priorities and policies of Lam Dong province/ Vietnam: Are the activities and outputs of the program and project consistent with the overall goal and the attainment of its objectives?
Effectiveness	Mainly measures the extent to which a program or a project attains its objectives.
Impact	Examines positive and negative changes as a result of the project. This includes direct and indirect effects and expected and unexpected effects.
Efficiency	Measures the outputs in relation to the inputs to determine whether the project uses resources effectively to achieve the desired results.
Sustainability	Measures whether the benefits of the project are likely to continue after the closure of the project.

iv) Draft the Report with focus on the above 5 points based on the result of the above consultation and submit it to the Component 3/ PPMU for comments.

v) Finalize the draft report including the executive summary of less than 5 pages based on the comments from the Component 3/PPMU and submit it to the Component 3/PPMU for approval.

4. Implementation methods

i) Collecting available materials and documents:

- PDM of component 3.
- Annual and 6 month reports of Component 3.
- Annual assessment and monitoring reports of Component 3.
- Materials about activities of sub-components prepared by Component 3.
- Legal policies related to objectives, activities and outputs of Component 3 at state and provincial level.

ii) Review collected documents and materials.

iii) Working with PPMU and project staffs to collect additional information about implementation process and results obtained so far by Component 3;

iv) Conduct EFLO field survey on mushroom cultivation, cowshed improvement, compost making by using coffee pulps.

v) Interview PPMU, project staffs, households involved in EFLO about 5 evaluation perspectives.

5. Achievements of Component 3

A lot of specific activities have been implemented and a number of main important results have been achieved so far. It can be summarized in accordance with project's outputs as follows.

5.1. Output 1: An institutional framework necessary for management and operations (integrated and collaborative ecosystem management framework) of LB-BR is established

- Management board of LB-BR has been established with the support of the project (Decision No 1164/QĐ-UBND dated 03/June/2016 of chairman of Lam Dong PPC), of which organizational structure, functions and task as well as implementation budget for LB-BR were clearly defined.

- 5-year Management Plan (2018 - 2022) has been established for LB-BR (under Decision No. 786/QĐ-UBND dated 27/April/2018 of chairman of Lam Dong PPC), in which specific objectives were identified for achieving its objectives set; 9 action programs were set up in the Management Plan (1. Conservation of natural resources; 2. Conservation of cultural values; 3. EFLO; 4. Tourism development; 5. Minimization of environmental pollution; 6. Communication and environmental education; 7. Science research; 8. Assessment and monitoring; 9. International cooperation) with 35 sub-programs, of which 24 sub-programs are priority ones implemented in the period 2018 -

2022. Budget for implementation of Management Plan is 48.9 billion VND that was clearly pointed in the Decision. Institutional framework for the implementation of the Management Plan was formulated including responsibility of relevant parties/authorities in implementing their mission.

- Two series of consultation meetings with core stakeholders of LB-BR were conducted to promote and deepen understanding on MAB program and Management Plan of the LB-BR for active participation of the stakeholders in the LB-BR related activities.

- Annual Action Plan (AAP) for year 2018 and 2019 was successfully formulated. The project supported LB-BRMB to monitor implementation of AAP of LB-BR operated by related parties. The objective of monitoring program is to evaluate how AAP was implemented? Does it fit MP approved by PPC? This is very important because action programs approved in MP aimed to match sustainable development objectives of LB-BR at present and in the future. Monitoring report on MP implementation in 2018 and 2019 showed that preliminary results have been obtained so far: in 2018 8/9 programs with 20/35 sub-programs were implemented. In 2019, 9/9 programs including 24/35 sub-programs with 93 sub-activities were implemented by 12 relevant local authorities/ units. Total social investment for related action programs of LB-BR in 2018 and 2019 was about 527,240 million VND, of which budget for natural resource management program of LB-BR was up to 337,534 million VND, occupied about 64%. This was obviously showed that there was priority of Lam Dong Government in implementation of MP established by SNMR for sustainable development of LB-BR.

Table 1: Budget and action programs implemented in 2018-2019 in LB-BR

TT	Action program	Budget (million VND)	
		Year 2018	Year 2019
1	Conservation of natural resources	155,383.5	182,150.6
2	Conservation of cultural values	400.0	5,950.0
3	EFLO	34,110.1	12,081.5
4	Tourism development	2,042.0	4,486.8
5	Minimization of environmental pollution	56,832.0	55,557.0
6	Communication and environmental education	3,770.5	1,270.0
7	Science research	4,881.6	6,372.9
8	Assessment and monitoring	539.0	412.0
9	International cooperation	0	1,000.0
	Total	257,959.2	269,280.8

(Source: Monitoring report in 2019 - SNRM project)

Implementation budget in 2019 consists of 4 following sources:

- (i). Local government budget: 233,061.8 million VND, occupied 86.5%
- (ii). ODA budget: 22,968.0 million VND, occupied 8.5%.
- (iii). Central government budget: 11,300.0 million VND, occupied 4.2%
- (iv). Socialization budget: 1,951.0 million VND, occupied 0.7%.

- Establishment and operation of CMP was initiated by SNMR - component 3. The project supported LB-BRMB to issue the Decision of CMP establishment (Decision No 198/QD-BQL dated 30/Jan/2018). CMP was chaired by secretariat of LB-BRMB and was organized periodically or in case of need based on proposal of related parties. CMP is a venue where relevant parties: local government (District, commune), provincial authorities (Departments, branches), forest owners, enterprises and communities can raise issues, discuss, share and recommend suitable solutions related to sustainable natural resource management. Through CMP, an agreement was reached out by stakeholders about specific issues related to right and duty of relevant stakeholders for solving the issues impacted natural resource management in LB-BR. If any issue still has different ideas, the secretariat of LB-BR will submit to LB-BRMB (at common meetings) to be solved by higher level of management. It can be said that CMP is an opportunity for wider participation of relevant stakeholders in management activities of LB-BR, especially CMP is a place where weaker sides (farmer, small and medium enterprise,...) can express their expectations to sustainable development process of BR.

- 4 CMPs were successfully organized in the LB-BR with participation of all parties concerned:

i) The first CMP: *“The pollution of a reservoir providing domestic water to people in Da Nhim commune and the need of collaborative management from relevant stakeholders for pollution control”* was organized on November 24, 2017 proposed by Community of Da Raha village, Da Nhim commune. Based on the result of the above CMP, Division of Resource and Environment of Lac Duong district already took responsibility to mitigate the pollution and propose DPC to launch a domestic water supply project for local people living in Da Nhim commune. Recently, the project is in approval and completion stage.

ii) The second CMP: *“Establishment of a model of improved cowshed with biological bed”* was organized on March 9, 2018 at Meeting room of Da Nhim CPC, Lac Duong district, Lam Dong province. Based on the result of the above CMP, collaborative actions among stakeholders (SNMR – component 3, DoNRE, Agriculture Division of PDC and local villagers) were taken for the establishment of the cowshed improvement model, resulting in the livelihood improvement of the related villagers and reduced pollution.

iii) The third CMP: *“Strengthening the cooperation for law enforcement among relevant stakeholders on forestry land encroachment - Da Nhim Watershed Protection*

Forest Management Board” was organized on September 25, 2018 at Meeting room of Da Nhim CPC, Lac Duong district, Lam Dong province. Based on the result of the above CMP collaborative actions among stakeholders were taken for the reduced encroachment.

iv) The fourth CMP: “*Mushroom development as an environmentally friendly crop solution of Langbiang Biosphere Reserve*” was organized on May 17, 2019 at Meeting room of Bidoup - Nui Ba National Park, Lac Duong district, Lam Dong province. Based on the result of the above CMP collaborative actions among stakeholders were taken for expansion of the shiitake mushroom model, resulting in livelihood improvement for increased number of villagers.

- Information sharing workshops and technical training courses were organized in LB-BR to share information relating to MAB (Man and Biosphere program) and project outputs with bordering provinces (Dak Lak, Ninh Thuan and Khanh Hoa provinces) toward possible enlargement of the LB-BR to cover protected areas in the provinces in the future.



Picture 1: Information sharing and technical training workshop

5.2. Output 2: The collaborative management agreement (CMA) with the benefit sharing mechanisms (BSMs) is upgraded as a tool for conservation of forest ecosystems in the core and buffer zones of LB-BR

Inheritance of CM model and CMA established by the former project: “*strengthening community-based management capacities for BNNP*”, sponsored by JICA and ended in January 2014. In order to continuously develop CM model in natural resource management, the major activities and results 3.2 were designed in PDM of SNMR – Component 3: Upgrading CMA with BSM as tool for eo-system conservation in core and buffer zones of LB-BR.

CM of natural resources has many different concepts, however in this project it was understood as management of natural resource by relevant parties/stakeholders through a negotiation process, in which relevant parties/stakeholders share their right of decision making, rights, duties, role and responsibility in sustainably natural resource management. Therefore, comprehension of CM should be considered to the following aspects:

(i) Natural resources or important eco-systems are defined as forest and forest land in BR.

(ii) Relevant stakeholders in important eco-system management are: local authorities (commune, village), forest management boards (forest owners) and local community.

(iii) In order to promote cooperation of relevant parties/stakeholders in forest and forest land management in biosphere reserve there should be a CMA with BSM signed by all parties/stakeholders.

In reality, role, responsibility, right and obligation of local authorities and state's forest owners in natural resources management are defined in the legal documents/policies, however it is not clear for local communities, especially their right.

Role and right of local villagers are very important in forest resource protection recognized by the project and relevant parties/stakeholders, therefore: (1) They were introduced and supported to be involved in EFLO; (2) They can participate in CBET activities to improve their income; (3) They were supported to market access for local products produced themselves to improve their livelihood; (4) They can get 90% PFES funding from state's forest owners for their participation in forest protection;

In order to achieve output 3.2, following activities were implemented by SNMR - Component 3:

(1) Assessment on BSM and CMA developed in the previous project "*strengthening community-based management capacities for BNNBP*", sponsored by JICA and ended in January 2014 was done for the development of upgraded CMA concept.

(2) Survey was conducted by the project to identify a number of planting species/different scenario options that can generate supplemental income from EFLO activities such as: selection of trees planted as landmark between agricultural and forestry land, intercropping model between fruited persimmon trees and coffee, coffee cultivation and processing models, Shiitake mushroom cultivation, cowshed improvement and organic compost making,...

(3) Improvement and upgrade of CBET to attract tourists: Homestay models in local communities, long house and environmental education activities were surveyed by the project; a series of marketing activities for CBET products was also conducted.

(4) Establishment of marketing strategy for local products: Marketing strategy for local products is done by organizing competition festivals for local farmers about coffee quality, supporting them in contract formulation directly with coffee processing and consuming companies, selling persimmon fruits and mushroom to companies in Ho Chi

Minh City. Local products were selected for sticking eco-label of MAB licensed by the Intellectual Property Department. .

(5) Upgraded and established CMA with BSM, in which local villagers participated in CMA of target villages in LB-BR will benefit from EFLO, CBET, PFES activities and have opportunity to access local market for their products.

(6) Socio-economic survey of the target villages was conducted for preparation and implementation of the upgraded CMA related activities.

(7) Trial CMA with BSM was approved by LB-BRMB for operation.

(8) Trial CMA with BSM was operated at target villages, of which following EFLO models were selected and implemented: mushroom cultivation, organic compost making and cowshed improvement. Forest patrol regrouping was also done for villagers participated in PFES to increase efficiency of forest protection at target villages.

(9) Guideline document on upgraded CMA with BSM in core and buffer zones of LB-BR (BNBNP and Da Nhim watershed protection forest) was formulated based upon CMA trial activities including BSM in order to continuously replicate in LB-BR after project termination.

(10) Theoretical and practical training courses on CMA, BSM, CBET and EFLO for staff members of provincial organizations concerned and villagers related to CMA.

Below are some pictures about project activities.



Picture 2: Improved cowshed



Picture 3: Compost making from coffee pulps

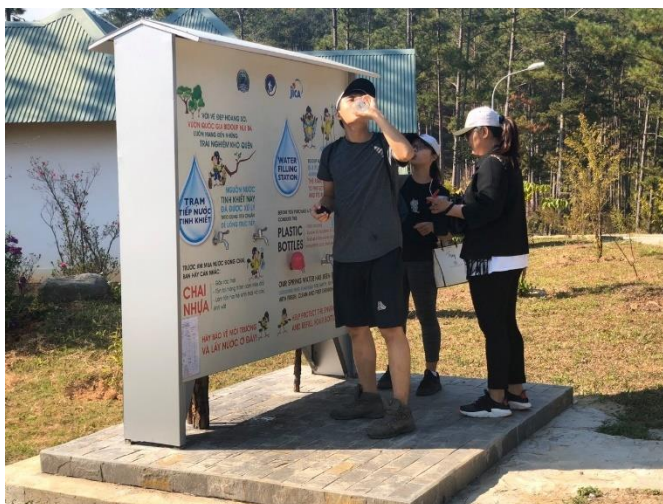
- The Environment Education (EE) program was designed with the concept of “art-nature-fun” and developed EE materials targeting to secondary school students in Vietnam as well as international students and series of facilitation trainings and trial tours were organized.



Picture 4: Environmental Education program

- A water purification system with a capacity of 1,500 liters/hour applying Japanese high - quality technology was installed in BNNBP and enhanced the capacities of the staff on its operation and maintenance. Through the system, visitors, including participants on EE program, can directly drink purified water comes from the forest and learn the vital role of the forested area for watershed conservation. The results of water quality test showed high standard for drinking purpose. The system is also expected to

mitigate the current waste disposal problems caused by plastic bottles brought from visitors.



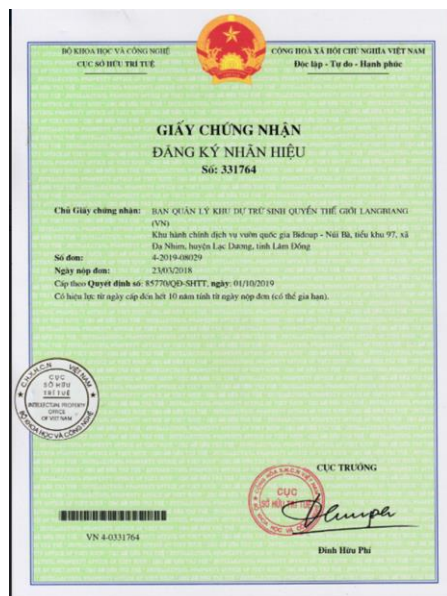
Picture 5: Water purification system in BNNP

- A guest house which is used for further development of the environment education in LB-BR (EE) was renovated which reflects the unique natural environment and ethnic minority culture in and around the national park. Also, a glamping facility is under set up as a model for cheaply providing comfortable staying space for EE.



Picture 6: Guest house renovation (left (in progress)) and glamping design (right)

- Trial operation of the mushroom supply chain in particular and marketing strategy in general (including MAB label stick) for local products in LB-BR: Logo and eco-label for LB-BR has been licensed by the Intellectual Property Department of Ministry of Science & Technology (certificate No. 331764 in accordance with Decision No. 85770/QĐ-SHTT dated 01/Oct/2019). Protected products are: Coffee (group 30), tea (group 31, 39), eco-tourism (group 39), mushroom (group 29, 31).



Picture 7: Certificate of logo and label registration for LB-BR

5.3. Output 3: The results of forest and biodiversity monitoring are used for the management of the core and buffer zones of LB-BR

For output 3.3, activities implemented and achievement of the project are as follows.

- A vegetation map of LB-BR was established, of which forest change for period of 1990 - 2017 was assessed.

- Biodiversity basic survey was conducted in 2017, through which a new spp. of snake (*Oligodon rostralis*) was found out as a new species and many endangered spp. of IUCN red list including critically endangers spp. were confirmed through the monitoring and the survey.



Picture 8: A new spp. of snake (*Oligodon rostralis*) was found out

- The Biodiversity Monitoring System (BMS) and its implementation plan were developed based on the results of the above biodiversity basic survey conducted in 2016-2017 and a manual for managers and a handbook for rangers on monitoring activities were also developed.

- Following the design of the BMS, a permanent plot (1ha) and 6 transects were set up at different forest ecosystems with their baseline surveys. And biodiversity monitoring was conducted with installed camera traps in the above locations, resulting in confirmation of precious species including large-antlered muntjac (*Muntiacus vuquangensis*) categorized as a critically endangered species in IUCN Red List.

- Training courses on BMS implementation as well as database management on collected data were continuously conducted for staffs, rangers and DoNRE related organization staff.

- Data of plant, animal, bird, reptile, amphibian and insect collected through biodiversity basic survey and BMS implementation was continuously input into BRAHAMS and supplied to MARD and MoNRE (NBDS) through the long-term experts.

- Tool and software were equipped to monitor forest by drone (flycam) for improvement in effectiveness/ efficiency of the forest monitoring including PFES patrol improvement.

- Training courses on Drone / data logger operation and its database management were conducted for rangers and technical staffs of the forest owners.

- Trained staffs/rangers of BNNBP conducted forest monitoring with drone for early detection on forest land use changes and for checking effectiveness of PFES contract.

6. Assessment of Component 3 according to 5 perspectives

6.1. Evaluation on Relevance of component 3 toward project goals, priorities and policies of Vietnam and of Lam Dong province

Activities of Component 3 focus on: i) establish an institutional framework necessary for management and operations of the LB-BR; ii) upgrade/improve the collaborative management agreement (CMA) with the benefit sharing mechanisms (BSMs) as a tool for conservation of forest ecosystems in the core and buffer zones of the LB-BR; and iii) use the results of forest and biodiversity monitoring for the management of the core and buffer zones of the LB-BR. It is visible that the Component 3 and its activities mainly address issues of sustainable management of forest resources, biodiversity conservation and livelihood improvement for local communities in the core and buffer zones of the conserved area. It totally matches with the ultimate goals of the project, which is to *promote sustainable natural resource management to generate benefits to people*. The Component 3 has implemented many activities to enhance management capacity for forest owners, managers, scientists, local authority (at commune and village levels) on different themes. Particularly, Component 3 has established the operational framework for LB-BR with the core to be the 5-year management plan for LB-BR which was approved by relevant authority (Lam Dong PPC). The Collaborative Management Agreements (CMA) by forest owners, local authority and community in the core and buffer zones of Bidoup - Nui Ba National Park have been upgraded and implemented on trial scale. A forest change and biodiversity monitoring system has been developed and operated with the utilization of hi-tech (flycam and integrated software). Such outputs are relevant to the specific goal that *An integrated and collaborative ecosystem management system is established for sustainable conservation and management of the Lang Biang Biosphere Reserve*.

Activities, contents and outputs of the Component 3 are relevant to current priorities and policies of Vietnam, including the Forestry Law (2017), the Biodiversity Law (2008), Directive No. 13-CT/TW dated 12/Jan/2017 of the Secretariat on strengthening the Party's leadership in forest management, protection and development; the organization and management of special-use forest system (Decree No. 117/2010/ND-CP dated 24/Dec/2010 by the Central Government); the project on sustainable forest management and forest certification (Decision No. 1288/QĐ-TTg dated 01/Oct/2018 by the Prime Minister); the target program for sustainable forestry development 2016-2020

(Decision No. 886/QD-TTg dated 16/June/2017 by the Prime Minister); Management strategy of special-use forest, nature reserve, in-land water area system of Vietnam up to year 2020, vision to year 2030 (Decision 218/QD-TTg dated 7/Feb/2014 by the Prime Minister); approval for master plan of nation-wide biodiversity conservation planning by 2020, with a vision to 2030 (Decision No. 45/QD-TTg dated 08/Jan/2014 by the Prime Minister); the project for protection, restoration and sustainable development of forests in Central Highland for 2016-2030 (Decision No. 297/QD-TTg by the Prime Minister); Policies to Enhance Forest Protection (Decision No. 07/2012/QD-TTg dated 8/Feb/2012 by the Prime Minister); Policies for investment and development of special-use forests in the period of 2011-2020 (Decision No. 24/2012/QD-TTg dated 01/June/2012 by the Prime Minister); the Scheme of Restructuring the Forestry Sector (Decision No.1565/QD-BNN-TCLN dated 8/July/2013 by the minister of MARD); Forest Protection and Development Plan for 2011-2020 (Decision No. 57/QD-TTg dated 9/Jan/2012 by the Prime Minister).

Contents and outputs of the Component 3 are also matching with current priorities and provincial policies of Lam Dong province, including: Master plan of socio-economic development of Lam Dong province up to 2020 (under Decision No. 1462/QD-TTg dated 23/Aug/2011 by the Prime Minister); Master planning of biodiversity conservation of Lam Dong province up to 2020, vision to 2030 (under Decision No. 169/QD-UBND dated 23/Jan/2017 by the Chairman of Lam Dong PPC); the Action Plan to implement the sustainable development strategy of Vietnam in the period of 2011-2020 in Lam Dong province (under Decision No. 1119/QD-UBND dated 10/June/2013 by Lam Dong PPC).

6.2. Evaluation on effectiveness of the project:

The project has formulated a necessary framework to manage and operate LB-BR, including the formation of LB-BR MB (under Decision No. 1164/QD-UBND dated 03/June/2016 by the Chairman of Lam Dong PPC), the formulation of logo and eco-label for LB-BR which is licensed by the Intellectual Property Department of Ministry of Science & Technology. Particularly, the project supported to formulate and implement the 5-year Management Plan of LB-BR (2018-2022) which was approved by Lam Dong PPC (under Decision No. 786/QD-UBND dated 27/April/2018 signed by the Lam Dong PPC chairman). The project achieved this very critical output to put the management and operation of LB-BR into practice. The Management Plan has developed functions, responsibilities, institutional structure, operational cost of LB-BR as well as goals, targets, 5-year plans (operation plan), source of fund (central, provincial funds, ODA and other sources). Besides, it also defined responsibilities of stakeholders concerned. The project supported activities of the Secretariat and organized collaborative management platforms (CMP). CMP makes possible to develop and implement appropriate collaborative solutions, which is much more effective compared to other conventional method. The effective operation of LB-BR MB is attributed to achievements and support of the project and that made LB-BR to be a good model for other biosphere reserves in Vietnam.

The project has upgraded the CMA formulated in previous project “*strengthening community-based management capacities of BBNBP*”, sponsored by JICA and ended in January 2014. Basic upgraded points of CMA compared to the previous are as follows. i) Cost effectiveness; ii) Strengthenment of forest conservation; iii) wider target area and increased members participated stakeholders. The Memorandum of Understanding (MOU) among DPC, BBNPMB and LB-BR MB is designed to receive commitment from DPC on smooth implementation of CMA and endorsement of LB-BR MB, which enhance the effectiveness of the CMAs in natural resource management in LB-BR. The implementation of CMAs assists forest owners in better performing their forestry management responsibilities (article 102, the Forestry Law of 2017) and generates better benefits to villagers who joined the CMAs.

Effectiveness of PFES patrol has been increased with the applied new approach such as early detection of land use change by drone monitoring and enhancement of PFES team members’ and rangers’ responsibility and capacity.

The CMAs enable participating households to be supported by the project with livelihood improvement activities, including mushroom cultivation, compost making, cowshed improvement, coffee cultivation and processing techniques, approaching markets of produces, etc. Besides, the project also integrated other programs to improve local lives mainly through CMPs, namely the program 135, the program of pollution reduction of DoNRE....

Hi-tech forest and biodiversity monitoring system was developed by the Component 3 for the management of the core and buffer zones of the LB-BR. This BMS supported biodiversity and forest monitoring effectively in LB-BR.

6.3. Evaluation on impacts of the project

The project has made significant achievements in many activities that greatly influence many aspects. They are:

- *In terms of raising awareness, capacities and information sharing:* The project organized study tours to Japan for provincial officers to learn about forest resource management and biosphere management which provided chances for responsible officers to gain good experiences to implement the 5-year management plan of LB-BR. The project also supported the organization of eight LB-BR MB meetings with participation from central and local officials, international organizations, scientists, local people, forest owners, to share and exchange information about management experience in LB-BR, to present project achievements as well as to look for cooperation opportunities to conserve the biodiversity values and forest resources in LB-BR. At the same time, the project organized many training courses for various stakeholders concerned on different themes, which enhanced the awareness and capacities of both local authority and community people. Environmental education activities also help community, tourists and students better learn and understand about values of the LB-BR and environment protection.

- The establishment of database of forest resources and biodiversity shall support the practical implementation of forest and biodiversity monitoring. Results from baseline survey and the establishment of monitoring routes/ a permanent plot as well as the documentation of biodiversity monitoring system have set a sound foundation for BNBNP MB to develop a sustainable forest management plan, which is in accordance with the Forestry Law of 2017 and the Master plan of Ecotourism. From the achievements of biodiversity monitoring activities of the project, BNBNP has signed MOUs with German Leibniz-IZW, US Global Wildlife Conservation to further develop the collaboration and seek for resources to serve conservation activities.

- The improvement of patrolling procedure, regrouping of PFES team and drone forest monitoring result in more convenient and effective forest protection.

- *The spread of EFLO activities:* The support for mushroom cultivation is confirmed as an appropriate crop for LB-BR in terms of environmentally friendly and profitable nature. In addition to initial support of 2 HHs (households) for trial and 18 HHs in the second stage of support, the 4th CMP was conducted to expand shiitake mushroom production model among the stakeholders, based on the above result, the stakeholders collaboratively worked on the mushroom production expansion. One of the stakeholder, namely, Lac Duong DPC developed a program to formulate a collaborative chain of mushroom cultivation and consumption with a budget of 2020 to be VND 200 millions. The district also spared 6,000 m² for Nguyen Long company to expand the production of mushroom media. Currently, this facility is under construction and almost completed. Therefore, a trial activity of cultivating mushroom by the project has grown into a district and commune program with bigger scale of participation.



Picture 9: Expansion area for production of mushroom media of Nguyen Long company in Lac Duong District

- *Regarding economic development at household level, job opportunities and poverty alleviation:* The project provided job/ livelihood improvement opportunities to local people through the supports of mushroom cultivation, compost making and cowshed improvement. Cultivating mushroom generate significant and sustainable economic benefits for local households. On average, a shed of mushroom generates from VND 10 to 12 million of income per month. Cowshed improvement and compost making also help local people to gain extra income through selling manure. On average, one cow produces manure for selling of VND 600,000 per month. Furthermore, application of the compost to coffee farm instead of chemical fertilizers purchased makes the coffee farming profitable, considering the fertilizer accounts for around 40% of the coffee production cost. Therefore, application of organic compost is high cost efficiency for coffee farming.

- *Regarding pollution reduction:* Currently, in Lam Dong in particular and in Central Highland areas in general, the volume of coffee pulps produced through coffee processing is big, causing negative environmental impacts. The project provided the technique of making compost by using coffee pulps for PFES contractors of BNBPN and DNWSPFMB in Da Chais and Da Nhim communes. In total, 171 HHs participated in the series of trainings. The activity created organic fertilizer for coffee and reduced environment pollution. With the realization of the organic compost, the Division of Environment Protection of DoNRE has integrated this activity into their training program for coffee producing businesses. Besides, cowshed improvement also mitigates pollution issues.

- *Contribution to address hot topics in the locality*: The project organized Collaboration Management Platform (CMP) four times to discuss the “hot” issues of encroachment, livelihood improvement, pollution associated with free grazing and management of domestic water with participation of stakeholders concerned in order to understand status, causes and solutions. The platform contributes partly to solving pressing issues of the localities. Through cattle shed improvement and compost making among stakeholders in LB-BR, economic effectiveness was improved and environment pollution was mitigated.

6.4. Evaluation on Efficiency of the project

5-year Management Plan of LB-BR was implemented effectively in 2018 (8/9 programs with 20/35 priority sub-programs were implemented with total budget is 257,959.2 million VND) and in 2019 (9/9 programs with 24/35 priority sub-programs were implemented in 2019 with 269,280.8 million VND). The advantage of the Management Plan implementation is a coordination and integration mechanism of budgets and activities among the provincial departments/agencies concerned for formulation and implementation of Annual Action Plan, that have missions appropriate to the Management Plan of LB-BR. Although the project is constrained with its resources, the scales, targets and activities are wide and diversified. Therefore, in order to enhance the efficiency of the work, component 3 opted a suitable approach, especially by taking over achievements of project phase 1, including maintaining, enhancing and upgrading CMA, EFLO, CBET activities. Such improvement secures the continuation, inheritance and efficiency of invested resources. Besides, the project applies participatory approach (by both local people and local authority) to both mobilize various resources into project activities and quickly put project achievements into daily practice. Local people directly joint the production and become absolute beneficiaries, which also proves the practical application of the project.

CMP helps develop/implement solutions comprised of collaborative actions among the relevant stakeholders including community members concerned, which bring win-win situations to stakeholders. As a result, livelihoods of the community members are improved with small inputs based on agreements of CMP especially as in cases of the shiitake mushroom production and cowshed improvement.

The project did not invest the whole budget on implementation but by collaboration with stakeholders concerned, especially for mushroom cultivation, cowshed improvement and compost making under EFLO sub-component. For those activities, the project supported initial investment costs. For mushroom, the project provided study tours, media, equipment, training and supported procedure for VietGAP certificate in addition to the overall management of the collaborative activities while local people worked on building sheds and shelves and other stakeholders provided materials, medias, equipment and necessary techniques through trainings with use of their own budgets. For the cowshed, the project supported study tours, construction materials for bio-beds, technical training in addition to overall management of the collaborative activities for the cowshed

improvement while other stakeholders provided building materials for bio-beds and cowsheds, training. The farmers were required to have their own cow and to construct the improved sheds by themselves. Such approaches are effective to connect economic benefits and responsibilities of local people with project activities. It also uses project resources in an effective manner and mobilizes any available resources on the site. With the cowshed improvement, the cattle grow faster and become more resistant to disease as it is easy for vaccination and disease control in captivity.

The project activities have been implemented on step-by-step basis and expanded gradually. Typically, for EFLO activities, the first phase of the project set up trial models with small scale for two HHs. After the efficiency was confirmed, the activities were expanded with various scales for mushroom cultivation, cowshed improvement and coffee compost. The trial stage started with small number of HHs and later it was developed and expanded to 18 HHs. Such practice is well-planned, prudent and reliable to ensure high efficiency.

Implementation of BMS in LB-BR through 35 trap - camera, large - antlered muntjac (*Muntiacus vuquangensis*) - a very precious species in Red List of IUCN (critically endangered species) and Red Book of Vietnam, has been identified. Besides, a new species of snake (*Oligodon rostralis*) has been found during baseline biodiversity survey in 2017. Besides, many endangered spp. of IUCN Red List including critically endangers spp. were confirmed through the monitoring and the survey. Hopefully, something news will be discovered in the near future.



Picture 10: Large-antlered muntjac was confirmed by the installed camera traps

6.5. Evaluation on sustainability of the project

The project is well sustainable with proven factors below:

- Management Plan of LB-BR (2018-2022) shall be continuously implemented after the project termination following the way the project implemented in 2018 and 2019, especially 9 programs with 35 priority sub-programs established in the Management Plan. Coordination and integration mechanism of budgets/ activities from different sources (local government budget, central budget, ODA and socialization budget) among departments/ agencies concerned will create opportunities for successful implementation of the Management Plan of the LB-BR.

- Forest monitoring and biodiversity monitoring shall be continuously maintained / implemented under the responsibilities of LB-BR MB and forest owners, which are part of administrative requirements by the Vietnamese government. Particularly, the project has established one of the most advanced biodiversity monitoring systems in Vietnam with six monitoring transects and a permanent plot with installation of 35 trap cameras in a strategic way following the developed Biodiversity Monitoring System (BMS). In order to ensure its sustainability, a manual on BMS for the manager level and a handbook on BMS for field level were developed and several series of OJT and Off-JT were provided for different level of staffs of BNBPNMB with use of the manual and the handbook. For forest monitoring, new technologies such as drones, a software for processing the photos

by drones, data logger were applied for improving existing forest patrolling activities which are jointly conducted by forest owners and PFES contracted members. Same as biodiversity monitoring, development of a handbook on drone monitoring was completed and the provision of continuous training was made to staff of forest owners with focusing on OJT. And decisions on the regulation of drone and data logger operation were issued by BNBPNMB and DNWPFMB respectively with support of the project, which clearly stipulate the roles and responsibilities within the organizations. It is likely possible to consider the application of the biodiversity and forest monitoring systems in part or in whole for other national parks/ conserved areas depending on their conditions.

- EFLO and CBET activities shall be continuously implemented after the project terminates. Currently, mushroom cultivation, cowshed improvement and coffee compost have been continuously implemented and expanded among local HHs within and even to outside of target communes. AAP monitoring result of SNRM project in 2019 on Shiitake mushroom cultivation shows that relevant parties including: DARD, MONRE, CPC/DPC, local people, private company and SNRM project successfully collaborated to expand mushroom cultivation model by budget agreement of the 4th CMP. Shiitake mushroom with high quality produced by this model is currently supplied for consumers in Ho Chi Minh city, including Japanese company named AEON and a pizza restaurant through collaborative chain supply between people, company and consumer. Some of the activities have been integrated into commune, district and provincial activities which ensure the continuation of those after the project terminates. CBET including EE is well sustainable. Considering the policies to develop ecotourism of Vietnam in general and in Lam Dong province in particular for LB-BR and BNBPN, CBET including EE is expected to grow strongly.

- The project does not only create a new product like mushroom but also pay attention to building a collaborative supply chain to secure the sustainability of the production.



Picture 11: Shiitake mushroom production in Da Nhim commune

- CMA shall be continuously implemented with participation of all responsible related parties based on available budget sources like PFES and programmes/policies according to Decision 24/2012/QD-TTg by the Prime Minister; Decree 75/2015/ND-CP by Central government; Decision 1600/2016/QD-TTg by the Prime Minister; Buffer project according to Decree 156/2018/ND-CP by Central government; Decision 297/2019/QD-TTg by the Prime Minister, including investment and development projects for buffer zone managed by BNNBP (Article 16, Decree 156/2018/ND-CP by Central government).

7. Conclusion and recommendation

7.1. Conclusion

- All activities of the project have been fully implemented in accordance with the PDM with relevant approach and participation of all parties concerned.

- Almost all results/ outputs of the project have already been accomplished with high quality by this moment, of which three following achievements are the most important: i) An institutional framework necessary for management and operations (integrated and collaborative ecosystem management framework) of LB-BR is established,

especially the development of CMP is a very important and appropriate tool to LB-BR for solving local issues through the horizontal cooperation among the stakeholders under vertical administration, considering that biosphere reserve is a coordination body; ii) The collaborative management agreement (CMA) with the benefit sharing mechanisms (BSMs) is upgraded as a tool for conservation of forest ecosystems in the core and buffer zones of LB-BR; iii) The results of forest and biodiversity monitoring are used for the management of the core and buffer zones of LB-BR.

- The Component 3 is relevant toward project goals, priorities and policies of Vietnam and of Lam Dong province in terms of sustainable management of forest resources and biodiversity conservation, livelihood improvement for local community of the core and buffer zones of the conserved area.

- The project is evaluated as high in terms of effectiveness, impact, efficiency and sustainability.

7.2. Recommendation

(1) Although a lot of achievements have been obtained so far in term of supporting LB-BR operation, there should be a general management frame of the government for multi-sectorial and multi-area coordination mechanism as well as human/ financial/ technical resources integration of organizations and relevant local stakeholders to be successful in the future;

(2) CMA with BSM in core and buffer zones of LB-BR is a new and effective model. However, BSM - the crucial issue of CMA based on integrated ecosystem service, is a new and difficult issue, therefore additional research/trial should be conducted and general policy of Central Government should be formulated in order to scale up this model in the future.

(3) Biodiversity management and monitoring is very important in sustainable natural resources management strategy. As a result of the project, a new and effective biodiversity monitoring model has been established for BNNP, core zone of LB-BR. However, in order to maintain and develop this system it requires financial and human resources, of which international cooperation is important solution to seek funding for biodiversity conservation and monitoring. This should be prioritized in the Management Plan of LB-BR.

REFERENCES

1. Directive No.13-CT/TW dated 12/01/2017 of the Secretariat on strengthening the Party's leadership in forest management, protection and development.
2. Central Government, 2010: Decree No 117/2010/ND-CP dated 24th December 2010 about organization and management of special-use forest system.
3. National Assembly, 2017: Forest Law, Law No 16/2017/QH14 dated 15/Nov/2017.
4. National Assembly, 2008: Biodiversity Law, Law No 20/2008/QH12, dated 13/Nov/2008.
5. Prime Minister, 2018: Decision 1288/QD-TTg dated 01/Oct/2018 approval of the Scheme on sustainable forest management and forest certification.
6. Prime Minister, 2017: Decision 886/QD-TTg dated 16/June/2017 approval of the target program for sustainable forestry development 2016-2020.
7. Prime Minister, 2014: Decision No 218/QD-TTg dated 7/Feb/2014 approval of management strategy of special-use forest, nature reserve, in-land water area system of Vietnam up to year 2020, vision to year 2030.
8. Prime Minister, 2014: Decision No 45/QD-TTg dated 08 Jan 2014 approval for master plan of nation-wide biodiversity conservation by 2020, with a vision to 2030.
9. Prime Minister, 2019: Decision No 297/QD-TTg dated 18/March/2019 approval of the scheme for protection, restoration and sustainable development of forests in Central Highland for 2016-2030.
10. Prime Minister, 2012: Decision No 07/2012/QD-TTg dated 8/Feb/2012 promulgation of a number of policies to enhance forest protection.
11. Prime Minister, 2012: Decision No 24/2012/QD-TTg dated 01/June/2012 about policies for investment and development of special-use forests in the period of 2011-2020
12. Prime Minister, 2012: Decision No 57/QD-TTg dated 9/Jan/2012 approval of forest protection and development plan for 2011-2020.
13. Prime Minister, 2011: Decision No 1462/QD-TTg dated 23 Aug 2011 approval for master plan of socio-economic development of Lam Dong province up to 2020.
14. Minister of Agriculture and Rural development, 2013: Decision No 1565/QD-BNN-TCLN dated 8/July/2013 approval of restructuring scheme for forestry sector.
15. Lam Dong PPC, 2017: Decision No 169/QD-UBND dated 23/Jan/2017 approval for master planning of biodiversity conservation of Lam Dong province up to 2020, vision to 2030.

16. Lam Dong PPC, 2016: Decision No 1164/QD-UBND dated 03/June/2016 about establishment of management board of LB-BR, Lam Dong province.
17. Lam Dong PPC, 2018: Decision No 786/QD-UBND dated 27/April/2018 approval of 5 year management plan (2018-2022) of LB-BR.
18. Lam Dong PPC, 2013: Decision No. 1119/QD-UBND dated 10/June/2013 approval of action Plan to implement the sustainable development strategy of Vietnam in the period of 2011-2020 in Lam Dong province.
19. Sustainable Natural Resource Management Project (SNRM), 2017: Baseline survey on biodiversity for Sustainable Natural Resource Management Project (component 3). Final report, Southern Ecological Institute.
20. Sustainable Natural Resource Management Project (SNRM), 2018: Assessment of activities implemented in 2018 of LB-BR.
21. Sustainable Natural Resource Management Project (SNRM), 2018: Guidelines and monitoring system for annual action plan of LB-BR.
22. Sustainable Natural Resource Management Project (SNRM), 2019: Assessment and monitoring report on action plan in 2019 of LB-BR.
23. Sustainable Natural Resource Management Project (SNRM), 2019: Evaluation on implementation of collaborative management platform in Langbiang World Biosphere Reserve.
24. Sustainable Natural Resource Management Project (SNRM), 2018: Training in biodiversity monitoring in Bidoup – Nui Ba National Park.
25. Sustainable Natural Resource Management Project (SNRM), 2019: Achievements and Remaining Issues of Forest and Biodiversity Monitoring in LB-BR.
26. Sustainable Natural Resource Management Project (SNRM), 2019: Major achievements of SNRM Component 3.

WORKPLAN FOR CONSULTANCY SERVICE IMPLEMENTATION

TT	Activity	Number of working days	Time
1	Hanoi – Da Lat: Setting up workplan for consultancy service implementation and collecting related reports, materials/documents and data.	3	23-25/Feb/2020
2	Study and analysis of documents, materials on PDM of component 3.	5	26-29/Feb/2020
3	Study of assessment and monitoring reports on activities of sub-component prepared by component 3.	6	01-05/March/2020
4	Analysis of policies related to objectives, activity and outputs of component 3 at state and provincial level.	6	06-10/March/2020
5	Writing executive summary of evaluation report focusing on 5 perspectives	4	11-14/March/2020
6	Component 3 and PPMU give comments on executive summary of evaluation report.	-	15-17/March/2020
7	Drafting evaluation report	10	18-27/March/2020
8	Component 3 and PPMU give comments of evaluation report.	-	28-30/March/2020
9	Finalization of executive summary and evaluation report based upon comments made by component 3/ PPMU	4	31/March-03/April/2020
10	Hanoi - Da Lat: Presentation of final report to SNRM.	3	04-6/April/2020
11	Submit final report to PPMU for approval	-	07/April/2020
	Total	41	