



Asia-Pacific Network for Sustainable Forest Management and Rehabilitation

**Integrated Forest Ecosystem Management
Planning and Demonstration Project in
Greater Mekong Sub-region
(Tram Chim Project Site, Vietnam)**

PROJECT PROPOSAL


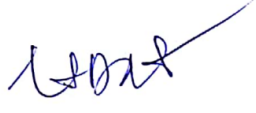
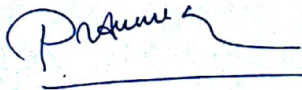
Tram Chim National Park, Dong Thap Province, Vietnam

Oct. 2018



Project title	Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Tram Chim Project Site, Vietnam)	
Supervision department	Viet Nam Administration of Forestry (VNFOREST)	
Executive agency	Department of Science, Technology and International Cooperation, VNFOREST	
Project period	Jan. 2019 - Dec. 2022. 48 months	
Project location: Dong Thap Province, Vietnam		
Total budget(US\$) 625,330.53	APFNet(US\$) 449,567.88	Counterpart Contribution (US\$) 175,762.65
Outline of the Project: <p>The project site of Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (Tram Chim Project Site, Vietnam) is located at Dong Thap Province. The implementation area is 1,899.14 ha. The total budget is US\$625,330.53, among which APFNet's grant is US\$449,567.88 and counterpart contribution from Vietnam is US\$175,762.65.</p> Project Goal: <p>Through designing and implementing the project of Integrated Forest Ecosystem Management Planning and Demonstration Project in GMS (Tram Chim Site, Vietnam), optimal integrated sustainable wetland and forest management models will be set up in the upper reach region of GMS, so as to improve quality of the wetland ecosystem and optimize its integrated ecological, economic and social functions.</p> Project Objectives: <ol style="list-style-type: none">1 to strengthen conservation and development of wetland ecosystem in Tram Chim National Park through monitoring wetland and developing a Ten-year Management Plan of Tram Chim National Park;2 to mitigate stress from local communities on the national park by providing alternative income opportunities;3 to enhance the capacity, knowledge and awareness of local community, local government and staff through capacity building. Project Outputs: <ol style="list-style-type: none">1 A wetland area monitoring report formulated;2 Water quality monitoring and development strategy plan formulated;3 A wetland soil monitoring report formulated;4 A rare and endangered flora and fauna monitoring report formulated;5 National Park boundary patrolled;6 A bird survey tower (50m high) constructed;7 A Ten-year Management Plan of Tram Chim National Park formulated;8 50ha lotus and 10ha water lily plantation established;		

<p>9 300 boxes of beekeeping established by local households;</p> <p>10 Development of weaving products by local community;</p> <p>11 Public environmental awareness building conducted in the national park and adjacent area;</p> <p>12 Technology trainings organized;</p> <p>13 International exchanges on wetland conservation and management conducted.</p>		
<p>Project Proponent: Vu Tien Dien</p> <p>Contact organization/entity: Forest Resources and Environment Center</p> <p>Authority agency: Department of Science, Technology and International Cooperation - Vietnam Administration of Forestry</p> <p>Project contact person : Luu Tien Dat</p> <p>Tel: +84. Email: Fax:</p>		
<p>Prepared and Submitted by:</p> <p><u>Vu Tien Dien (Director of FREC)</u></p> <p>Project Proponent Signature on behalf of EA Date</p>		<p>Reviewed and Nominated by:</p> <p><u>Luu Tien Dat (Chief of DSTIIC))</u></p> <p>Council Representative Signature</p> <p>Date</p>
<p>Supervision Department</p> <p>Department of Science, Technology and International Cooperation</p> <p>Signature</p> <p>Nguyen Phu Hung</p> <p>Date</p>		

3 A wetland soil monitoring report formulated; 4 A rare and endangered flora and fauna monitoring report formulated; 5 National Park boundary patrolled; 6 A bird survey tower (50m high) constructed; 7 50ha lotus and 10ha water lily plantation established; 8 300 boxes of beekeeping established by local households; 9 Development of weaving products by local community; 10 Public environmental awareness building conducted in the national park and adjacent area; 11 Four trainings for project staff on integrated wetland management technology; 12 International exchange on wetland conservation and management conducted.	
Project Proponent: Vu Tien Dien Contact organization/entity: Forest Resources and Environment Center Authority agency: Department of Science, Technology and International Cooperation – Viet Nam Administration of Forestry Project contact person : Luu Tien Dat Tel: +84 243 8438814 Email: tdatluu@gmail.com Fax: +84 243 8438793	
Prepared and Submitted by:  <u>Vu Tien Dien (Director of FRECC)</u> Project Proponent Signature on behalf of EA Date	Reviewed and Nominated by:  <u>Luu Tien Dat</u> APFNet Focal Point of Viet Nam Date
Supervision Department Department of Science, Technology and International Cooperation Signature  <u>Nguyen Phu Hung</u> Date	

Abbreviations and acronym

APFNet	Asia-Pacific Network for Sustainable Forest Management and Rehabilitation
GMS	Greater Mekong Sub-region
PMA	Project Monitoring Agency
VNFOREST	Viet Nam Administration of Forestry
FREC	Forest Resources and Environment Center
NP	National Park
PSC	Project Steering Committee
PMB	Project Management Board
MARD	Ministry of Agriculture and Rural Development
PC	People Committee
Pre-PP	Pre-project Proposal

Table of Contents

1 Background	1
1.1 Background.....	1
1.2 Problem to be solved	1
1.3 Project site selection	2
2 Significance and Necessity	5
2.1 Significance of project implementation.....	5
2.2 Necessity.....	5
3 Project Goal and Objectives	7
3.1 Goal	7
3.2 Specific objectives	7
4 Expected Output and Major Activities	7
5 Budget and Financial Management	11
5.1 Budget and source	11
5.2 Assets management.....	11
6 Project Monitoring and Evaluation	11
7 Dissemination and Sustainability	12
7.1 Project dissemination.....	12
7.2 Project sustainability.....	13
8 Guarantee System.....	14
8.1 Human resource	14
8.2 Material resource	15
8.3 Strategies and regulations.....	15
8.4 Organization ability	16
9 Risk Assessment	16
Annex	17
Annex A Table	17
Annex B Project Area Map.....	17
Annex C Proof documents of forest/land Ownership.....	17
Annex D Protected Rare and Endangered Species	17
Annex E Project Implementation Plan	17

1 Background

1.1 Background

The preparation of integrated forest ecosystem management planning and demonstration project in GMS started from 2015. The scope of the project covers six economies including China, Myanmar, Vietnam, Thailand, Cambodia and Laos. Tram Chim National Park (NP) is selected as the pilot site of Vietnam to carry out planning and demonstration project in 2017.

The Tram Chim NP consists of 5 communes and 1 town, which are under Tam Nong district, Dong Thap province with 15 villages, 6126 households and 22517 inhabitants. People of working age accounts for 60.7%. The illiteracy rate is high (14%). Poverty rate is 31%. (The total income per capital is about US\$200/year). The livelihood mainly relies on (i) Land (cultivation – growing rice); (ii) Natural resources (fishing, hunting wild animals, exploiting and processing timber, collecting non-timber forest products); (iii) Simple labour (employed, small business, service, etc.).

National Park and buffer zone are ideal places for scientists to conduct research, and national & international student to study the issues of biodiversity, conservation, ecosystems, ecological, for them to learn the dynamics and population structure of the species, as well as plant and animal communities in the region, cultural characteristics of the people, etc.

The Tram Chim NP is a scenic spot for tourists. The tourism activities are organized for the purpose of expanding the types of services and diversified tourism products, building towards tourism model of community participation in a sustainable way. The program will facilitate to the construction of infrastructure in the NP, such a building a bird survey tower, setting up billboards to improve public awareness of environment protection. The program also will help the locals to plant lotus and lily and conduct beekeeping, to improve the tourism and livelihood of the locals.

1.2 Problem to be solved

In many years, Tram Chim NP has made lots of efforts on sustainable management on the ecosystems of *Melaleuca* forests and wetlands. However, the effects are not significant as expected due to lack of effective long-term development strategies for integrated wetland ecosystem management, appropriate sustainable wetland management models as well as high quality forest management. Tram Chim National Park has not yet approved a medium-term

development strategy for integrated wetland ecosystem management as well as conservation action plans. Meanwhile, the reduction in the distribution of Crane in the NP and the lack of water bird species are also alarming. Wetland trees and cultivation objectives have not been considered in the technical guidelines, often with some technical standards of management that are very old and ineffective.

1.3 Project site selection

(1) Project site selection

The project will be implemented at Tram Chim NP, Tam Nong District, Dong Thap province, south part of Vietnam.

Vietnam is the last economy before the Mekong river reach the ocean, and southern Vietnam is just the mouth of the river where is a conjunction area of water, wetland and forested wetland. The project site Tram Chim NP is mainly composed of forested wetlands which generally refer to woody colonies that are submerged for a long time or periodically by flood, including woody marsh, flood-land hardwood forest, riverside forest buffer zone, etc. It has an important role in maintaining local ecological balance.

● Introduction of Tram Chim National Park

Tram Chim National Park is a non-productive unit under the Provincial People's Committee. It is subject to the state management of specialized branch of the Agriculture and Rural Development Service; it is also subject to professional management by provincial specialized agencies and competent agencies according to the provisions of law. Tram Chim National Park is a revenue-generating unit with legal status, seal and separate accounts. The headquarter is located in Group 4, Tram Chim Town, Tam Nong District, Dong Thap Province.

● Function

Tram Chim NP has the function of advising the People's Committee of Dong Thap Province on the management and conservation of typical wetland ecosystem of the Mekong River Delta into a national standard sample of wetland ecosystem in flooded area of Dong Thap Muoi. To conserve organism gene sources, especially rare bird species (ancient Crane, for example); to preserve unique cultural and historical values; to research and exploit the ecosystem of the region for the national interest and contributing to the protection of the general ecological environment of Southeast Asia; to promote the values of wetland ecosystem for further protection of the environment, to protect the natural landscape in service of scientific research, ecological tourism and environmental education; to call for

investment in ecotourism development.

- **Organizational structure:**

Professional sections:

- Organization and Administration;
- Financial Planning Division;
- Department of Science and International Cooperation.

Dependent units:

- The Forest Protection Unit is a state administrative agency of Tram Chim NP that is under the direct and comprehensive management of the NP Director and is subject to professional guidance by the Provincial Forest Protection Department;
- Center for Conservation and Development of Creatures is a non-productive unit, directly under Tram Chim NP. It has the legal person status, seal and separate account.

- **The functional zones of Tram Chim NP**

Tram Chim NP has three subdivisions: strict protection zone, ecological restoration zone and administrative service area. The area of the subdivision is as follows:

Total area of Tram Chim NP:	7,313.0 ha
a) Strictly protected subdivision: Zone A1:	4,942.8 ha
b) Ecological restoration sub-zone:	2,339.6 ha
zone A2:	1,122.7 ha
zone A3:	44.5 ha
zone A4:	731.9 ha
zone A5:	440.5 ha
c) Administrative-service area (Zone C):	30.6 ha

- **Tram Chim NP functional zones**

Due to the historical and ecological integrity of the ecosystem, Zone A1 is planned as a strictly protected area. Under the Vietnamese Law of nature conservation, this area prohibits activities that affect the primary ecological system of the site, including the implementation of conservation projects related to modeling or basic construction. That is also the reason, when developing the project proposal, the People's Committee of Dong Thap province only allowed the project in A2. Zone A2 is planned as an ecological rehabilitation zone. According to the provisions of Paragraph 27 Article 2 of Forest Law 2017 (effective from

01/01/2019), this content is regulated as follows: The ecological restoration zone of the special-use forest is a well-managed and protected area for the restoration of natural ecosystems of national parks, nature reserves and species-habitat conservation zones.

- **Buffer zone of Tram Chim NP**

Tram Chim NP is bordered by five communes (Phu Tho, Phu Duc, Phu Hiep, Tan Cong Sinh, and Phu Thanh B) and one town Tram Chim.

The natural area of 5 communes and 1 town adjacent to Tram Chim NP is 30,730 ha, accounting for 64.8% of the total area. The number of households in these 6 administrative units is 45.9% and the number of people accounts for 45.4% of the total population in the district.

From 2005 to 2011, the number of households in this area adjacent to Tram Chim NP increased by 2,371 households, equivalent to a population of 5,273 (up 12.4%), an average increase of 878 people per year. Average population density increased by 17 persons / km². The fastest increase in Tram Chim town and Phu Duc commune is 34 people / km².

By 2016, specifically for Tram Chim Town, the population is 10,349 people (in 2011 it is 10,267); The population density is 839 people / km² (in 2011 it is 835 people / km²).

This shows that the pressure is always on the protection and conservation of *Melaleuca* forests, wetland ecosystem and biodiversity of Tram Chim NP.

(2) Reasons of Tram Chim NP of be selected

- Tram Chim NP is bounded by Campuchia, which is conducive to demonstrate and disseminate the project results to the Greater Mekong Subregion.

- The proposed project site Tram Chim NP is located at the Dong Thap Muoi area of the south part wetland delta of Vietnam. Tram Chim NP is flooded forest ecosystem (the components are *Malaleuca* trees and with habitat dominated by Cane *Phragmites vallatoria*) and marsh ecosystem (with typical plants such as reed, lotus, water lily, etc.).

- Tram Chim NP is influenced by the hydrology of Mekong Delta, it receives water directly from the Mekong River through the irrigation canal systems, which floods the fields from August to December every year. The environment and nature condition are unique and suitable for wetland development.

- Plant species and habitats in wetland are under threat, wetland forest in the

park is affected by water level, reducing the growth rate and limiting the regeneration. It is considered to be the main reason for the decline of Sarus Cranes in the NP. The Forest Resources and Environment Center (FREC) is a leading unit on wetland researching in Vietnam, with abundant resources and capabilities to implement the project.

2 Significance and Necessity

2.1 Significance of project implementation

Wetlands play fundamental ecological functions as regulators of water regimes and as habitats supporting a characteristic flora and fauna, especially waterfowl, which in their seasonal migrations may transcend frontiers and so should be regarded as an international resource. Therefore, wetlands constitute a resource of great economic, cultural, scientific and recreational value, the loss of which would be irreparable. To stem the progressive encroachment on and loss of wetlands now and in the future, the conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with coordinated international action.

The Lancang - Mekong River is one of the world's largest rivers, the river with vast watershed area flows through China, Myanmar, Thailand, Cambodia, Laos and Vietnam.

The forest and forested wetland ecosystem in watershed is critical for ecological security, and economic and social development of GMS, and plays a very important role in promoting social development, biodiversity conservation, mitigation of climate change, water conservation, and insurance of agricultural production.

To carry out the Integrated Forest Ecosystem Management Planning and Demonstration Project in GMS, the demonstration site in Vietnam will be established to accumulate experience and provide reference models to regional integrated management of wetland ecosystem and sustainable wetland management, to promote the integrated management of wetland ecosystem so as to improve economic, social and ecological functions of wetland ecosystem, and facilitate the construction of ecological civilization in GMS in a better way.

2.2 Necessity

(1) It is the need for safeguarding ecological security of the downstream regions of the Mekong River.

Tram Chim NP is defined as the wetland conservation of Delta of the Lancang-Mekong River, which is of great importance to wetland conservation, erosion and landslides control and so on. The implementation of the project is crucial in ecological security of downstream economies of the Mekong River.

(2) It is the need for establishing a good image and building south ecological security barrier.

Through the implementation of the project, the integrated management of wetland ecosystem will be strengthened; best practices on wetland management of Dong Thap Muoi will be disseminated more widely. It is also conducive to promote a better international image of Vietnam government responsibility in international community.

(3) It is the need for building a Beautiful Dong Thap Muoi.

The project will facilitate management of Dong Thap Muoi by promoting sustainable wetland management on pilot site based on integrated planning. The activities structure of demonstration plots will be optimized, and quality and efficiency of wetland will be improved, so as the conservation functions in ecological, economic, social and cultural perspectives will be enhanced through the project demonstration and dissemination in Dong Thap NP, to build a Beautiful Dong Thap Muoi.

(4) It is the need for enhancing the integrated function of wetland ecosystem in the project area.

Through the implementation of the project, a series of advanced techniques will be developed and disseminated, such as lotus tending techniques aiming to lotus sustainable exploitation in local area, control of water quality and number of individuals of wild fauna and flora species. These techniques can be popularized to local and areas with similar conditions, to promote the reservation, restoration and improvement of wetland ecosystem, and strengthen the integrated function of wetland ecosystem in project area.

(5) It is the need for promoting the communication and cooperation among the GMS economies.

The results of this project will be disseminated among economies and organizations in Asia Pacific region through communications and technical cooperation in the field of integrated management of forested wetland ecosystem and sustainable wetland management.

3 Project Goal and Objectives

3.1 Goal

The goal of the project is to establish a demonstration model of integrated wetland ecosystem management and forest sustainable management for the lower regions of the Mekong River, thereby to improve the quality of ecosystem and improve the integrated ecological, economic and social functions in GMS.

3.2 Specific objectives

- (1) to strengthen conservation and development of wetland ecosystems in Tham Chim Natinal Park through monitoring wetland and developing a Ten-year Management Plan of Tram Chim National Park;
- (2) to mitigate stress from local communities on the national park by providing alternative income opportunities;
- (3) to enhance the capacity, knowledge and awareness of local community, local government and staff through capacity building.

4 Expected Output and Major Activities

Specific objective 1: to strengthen conservation and development of wetland ecosystems in Tham Chim Natinal Park through monitoring wetland and developing a Ten-year Development Plan of Tram Chim National Park

Output 1: A wetland area monitoring report formulated

Activity 1.1 Conducting survey on current conditions of wetland covered by the project. (See Annex E Project Implementation Plan 1.1)

Activity 1.2 Designing of wetland area monitoring. (See Annex E Project Implementation Plan 1.2)

Activity 1.3 Monitoring wetland area 2 times a year in dry and rainy season respectively (in total 6 times). (See Annex E Project Implementation Plan 1.3)

Activity 1.4 Data analysis and formulating “wetland area monitoring report” (at the end year of the project). (See Annex E Project Implementation Plan 1.4)

Output 2: Water quality monitoring and development strategy plan formulated

Activity 2.1 Designing of water quality monitoring. (See Annex E Project Implementation Plan 2.1)

Activity 2.2 Monitoring water quality in dry (Jul.) and rainy season (Dec.) respectively per year (8 times) by collecting samples and sending for test in laboratory. (See Annex E Project Implementation Plan 2.2)

Activity 2.3 Data analysis and formulating “ Water quality monitoring and development strategy plan” . (See Annex E Project Implementation Plan 2.3)

Output 3. A wetland soil monitoring report formulated

Activity 3.1 Designing of wetland soil monitoring. (See Annex E Project Implementation Plan 3.1)

Activity 3.2 Monitoring wetland soil per year (8 times)by collecting samples and sending for test in laboratory. (See Annex E Project Implementation Plan 3.2)

Activity 3.3 Data analysis and formulating “ wetland soil monitoring report”. (See Annex E Project Implementation Plan 3.3)

Output 4. A rare and endangered flora and fauna monitoring report formulated

Activity 4.1 Supplementary inventory on flora and fauna in the National Park. (See Annex E Project Implementation Plan 4.1)

Activity 4.2 Designing of rare and endangered flora and fauna monitoring. (See Annex E Project Implementation Plan 4.2)

Activity 4.3 Monitoring amount of rare and endangered flora in dry (Jul.) and rainy season (Dec.) respectively per year (6 times) and fauna per year (3 times). (See Annex E Project Implementation Plan 4.3)

Activity 4.4 Data analysis and formulating “rare and endangered flora and fauna monitoring report and conservation plan”. (See Annex E Project Implementation Plan 4.4)

Output 5. National Park boundary patrolled

Activity 5.1 Formulating a management regulation for National Park patrolling. (See Annex E Project Implementation Plan 5.1)

Activity 5.2 National park is equipped with one patrolling boat and two commuting boats. (See Annex E Project Implementation Plan 5.2)

Activity 5.3 Patrolling the National Park areas regularly from illegal activities (fishing, plants collecting) and fire. (See Annex E Project Implementation Plan 5.3)

Output 6. A bird survey tower (50m high) constructed

Activity 6.1 Designing bird survey tower. (See Annex E Project Implementation Plan 6.1)

Activity 6.2 Constructing the bird survey tower and equipped with cameras and binoculars. (See Annex E Project Implementation Plan 6.2)

Output7. A Ten-year Management Plan of Tram Chim National Park formulated

Activity 7.1 Formulating a Development Plan of Tram Chim National Park (10 years) (See Annex E Project Implementation Plan 7.1)

Specific objective 2: to mitigate stress from local communities on the national park by providing alternative income opportunities

Output 8. 50ha lotus and 10ha water lily plantation established

Activity 8.1 Selecting farmer households from local community for lotus and water lily planting. (See Annex E Project Implementation Plan 8.1)

Activity 8.2 Lotus varieties collection and seedling preparing. (See Annex E Project Implementation Plan 8.2)

Activity 8.3 Lotus and water lily seedling planting and maintaining. (See Annex E Project Implementation Plan 8.3)

Output9. 300 boxes of beekeeping established by local households

Activity 9.1 Selecting farmer households from local community for beekeeping. (See Annex E Project Implementation Plan 9.1)

Activity 9.2 Conducting beekeeping activity. (See Annex E Project Implementation Plan 9.2)

Output10. Development of weaving products by local community

Activity 10.1. Selecting farmer households from local community for handicraft making. (See Annex E Project Implementation Plan 10.1)

Activity 10.2 Weaving products designing and raw material preparation. (See Annex E Project Implementation Plan 10.2)

Activity 10.3 Producing of weaving handicrafts by local people. (See Annex E Project Implementation Plan 10.3)

Specific Objective 3: to enhance the capacity, knowledge and awareness of local community, local government and staff through capacity building programs, which will make sure to sustain the management activities after the project is accomplished

Output 11. Public environmental awareness building conducted in the national park and adjacent area

Activity 11.1 Designing billboards with contents of wetland conservation. (See Annex E Project Implementation Plan 11.1)

Activity 11.2 Setting up billboards at vital sites (10). (See Annex E Project Implementation Plan 11.2)

Activity 11.3 Designing, producing and lay out information (picture and specimen and brief introduction) about endangered and economic important flora and fauna in the National Park. (See Annex E Project Implementation Plan 11.3)

Output 12. Technology trainings organized

Activity 12.1 Four trainings for project staff on integrated wetland management technology (25persons/training). (See Annex E Project Implementation Plan 12.1)

Activity 12.2 Two trainings for local officials and local leaders on integrated wetland management (20 persons/training). (See Annex E Project Implementation Plan 12.2)

Activity 12.3 Two trainings for techniques on forest, wetland and biodiversity monitoring and survey (20 persons/training). (See Annex E Project Implementation Plan 12.3)

Activity 12.4 Four trainings for local farmers on lotus plantation, beekeeping, weaving, vegetable planting, and marketing. (50 persons/training). (See Annex E Project Implementation Plan 12.4)

Output 13. International exchange on wetland conservation and management conducted

Activity 13.1 Exchange study visit to other GMS project site to share and learn project experiences (6 persons, 8 days). (See Annex E Project Implementation Plan 13.1)

5 Budget and Financial Management

5.1 Budget and source

The total budget is US\$625,330.53, APFNet's grant is US\$449,567.88 and counterpart contribution from Vietnam is US\$175,762.65.

5.2 Assets management

5.2.1 Fixed assets management

To simplify the process and improve the efficiency, the purchase of fixed assets will use inquiry purchase approach and are determined by office meeting of Department of Science, Technology and International Cooperation. The files of fixed asset will be established and managed by staff pointed with clear responsibility. The department in charge of the project should carry out an inventory of fixed assets at least once a year.

5.2.2 Current assets management

Current assets include cash, bank deposits and low value consumables. The Department of Science, Technology and International Cooperation should set up a special account for this project, the fund only can be used by this project and the special account will be accounted separately. After each activity finished, the handling personnel should fill in the account application form, after audited by the finance department and signed by project director, the fund could be paid.

5.2.3 Audit

The administrative department will inspect the project financial situation. Executive agency should submit financial report annually to APFNet. An independent project audit will be carried out each year by qualified audit organizations.

6 Project Monitoring and Evaluation

The Project Steering Committee (PSC) and external evaluation experts are responsible for external inspection of the project. PSC will carry out an inspection every year after the start of the project. External evaluation experts will carry out project evaluation in the middle of the project and after the completion of the project according to the requirements of APFNet.

PSC and project administrative department are responsible for the supervision and guidance on the project implementation. The project office shall submit annual

progress report, annual work plan and budget to PSC. In addition, the project office will carry out continuous project monitoring, regularly submit the internal assessment report to APFNet, this report explains the achievements of the project, implementation status, budget management, potential risks on management. If the project activities cannot be carried out in accordance with the project plan and implementation plan, or the existence of major issues affecting the progress of the project, the project director shall put forward the inspection application for APFNet in order to find out the causes of the problem and the solution.

Project executive agency and technical support agency will jointly carry out an internal evaluation at 3 months before the end of the project, mainly to evaluate the effectiveness and efficiency of project implementation, the participation of stakeholders, project impact, project risk and how to ease the risk, experience and lessons, evaluation methods, relevant data, material and information will be obtained through on-the-spot investigation, interview and questionnaire. The evaluation report will be submitted too as the attachment of the completion report.

7 Dissemination and Sustainability

7.1 Project dissemination

The outputs and results in the process of project implementation will be publicized by many forms of newspaper, TV, internet, media, CD-ROM and publications.

(1) Media: through Dong Thap Daily, Dong Thap television, the Journal of Agriculture and Rural Development and other domestic newspapers and magazines. The objectives, content, funding agencies of the project, achievements, experiences and practices of the project will be publicized.

(2) Project publicity sign: The publicity sign of demonstration project will be set up at significant positions of the project activity demonstration area, the promotional contents include the construction units, the basic situation of project, measures, implementation time, specific practices and funding agencies.

(3) Internet: The implementation progress and progressive achievement will be shown at the websites of VNFOREST, Department of Agriculture and Rural Development of Dong Thap province, Tram Chim NP, FIPI, FREC and APFNet.

(4) Publication: Staged results will be released through the publication of paper and other materials. The main object includes forestry technicians, local forestry authorities, and international organizations and so on.

The details will be found in Annex A-6.

7.2 Project sustainability

(1) Social and economic sustainability

In addition to the revenue from bee, lotus and other plant collection, the planting occurring in the project period, the project implementation will also hire local labors, increasing employment and income. All the activities of the demonstration project are carried out on the forestland of Tram Chim NP, where all the benefit goes to. Once the farmers can benefit from the integrated management model of wetland ecosystem developed by the project, more farmers will be willing to accept the technology demonstrated and promoted by the project so as to promote the economic development of Dong Thap province and Dong Thap Muoi area.

(2) Environmental resource sustainability

The project is committed to promoting the wetland ecosystem management, so will not have negative impact on the environment; in theory, the project will weakly impact on undergrowth vegetation, when there are less water and soil erosion at the time of site preparation. The project sites of demonstration originally are the extensive management wetland, with the implementation of the project activities, the wetland structure and quality of degraded wetland forest will be greatly improved and the forested wetland will play a greater role in long-term soil conservation.

(3) Administration system and strategy sustainability

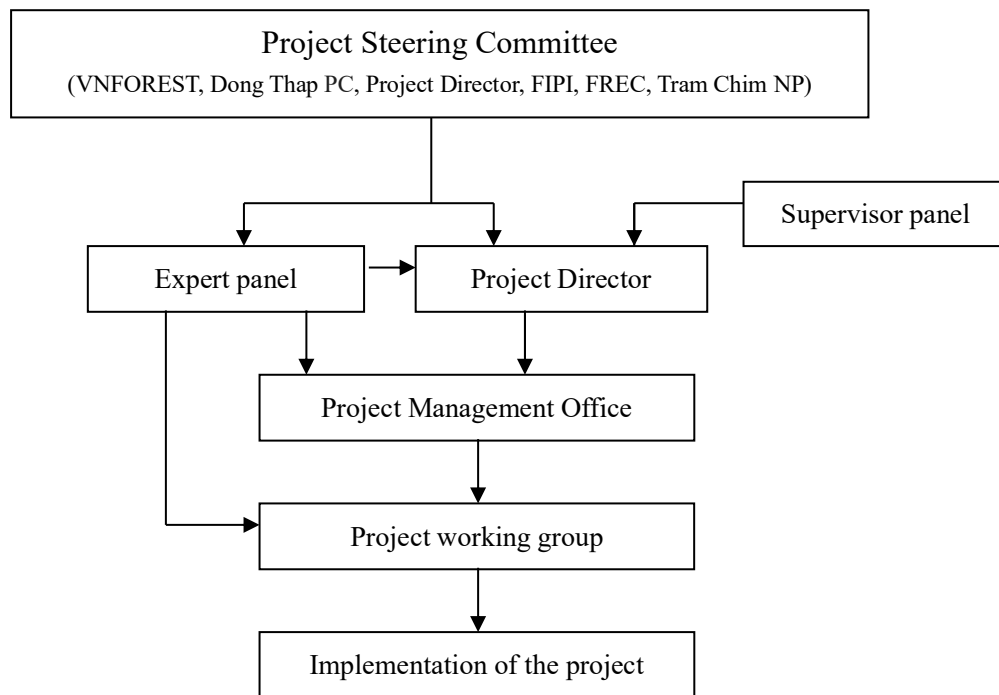
The project administrative and management system consists of APFNet, local government of Dong Thap and Tam Nong District, project executive agency and project technical support team. The project conforms to policies and regulations, guidance and development planning on forest and wetland ecosystem protection of central and Dong Thap provincial governments; at the same time, the project land belongs to the state with clear ownership. Tram Chim NP commitments for project cooperation are unlikely reversal or have major changes during the implementation of the project.

The project is relatively harmonious, compatible in the economy and environment, economy and society, society and environment, institutions and policies, with low risk in conflicts and contradictions, so the overall sustainability of the project is good.

8 Guarantee System

8.1 Human resource

To guarantee the successful project implementation, a project management system will be established consisting of a project steering committee, a project monitoring agency, a project technical support team and a project management office. The Project organizational chart is illustrated as follows:



The Project organizational chart

8.1.1 Project Steering Committee

A Project Steering Committee (PSC) is composed of forestry administrative departments at VNFOREST. The leader of the VNFOREST is the head; other members include: Leader of Department of Science, Technology and International Cooperation (Project Director), leaders of Dong Thap Province, FIPI, FREC and Tram Chim NP. The PSC will inspect annual work plan and activity report, carry out necessary inspection and assessment of project process, research and guide the important issues during the project implementation. APFNet is member of PSC as observer.

8.1.2 Project Supervisor Panel

A Project supervisor panel is composed of the leaders of VNFOREST, Department of Agriculture and Rural Development of Dong Thap province and different functional departments, to carry out necessary inspection of the project.

8.1.3 Project technical support team

A project technical support team is composed of the experts from VNFOREST, FIPI, and Yunnan Academy of Forestry of China, who are specialized in forest and wetland management, forest cultivation, forest ecology, forest protection, etc., to prepare annual project plans and progress reports. The project chief expert is responsible for developing the project proposal, providing technical consultancy and guidance on key technical problems and internal evaluation, etc..

8.1.4 Project implementation office

A project management office will be set up in the Department of Science, Technology and International Cooperation of Tram Chim NP and is mainly responsible for the project organization, coordination and implementation work. The main work contents include: assisting the project technical supporting team to prepare and submit annual project plans and progress reports, interim assessment and project acceptance; organizing project implementation; financial accounting; communication and coordination.

Accountant: 3 suitable staff will be nominated after recruitment and selection and approved by the project management board.

8.2 Material resource

8.2.1 Clear ownership of forested wetland and trees in project area

The project sites belong to independent management of Tram Chim NP. The ownership of forested wetland and trees is clear and with no controversy.

8.2.2 Tram Chim NP and FREC with a certain infrastructures and equipment

Tram Chim NP is located in central of Tam Nong District and has well-grounded infrastructure, convenient access to transportation and communications. The FREC is equipped with well-grounded survey equipment and able to independently carry out project activities.

8.3 Strategies and regulations

This project emphasizes on the integrated planning and demonstration of the forest and wetland ecosystems which will enormously promote wetland structure and sustainable forest management, improve the quality and efficiency of forest and wetland land and optimize forestry ecological, economic and social function. The project completely conforms to the relevant laws, regulations, rules and management planning of central and Dong Thap provincial governments.

8.4 Organization ability

Project executive agency, the Department of Science, Technology and International Cooperation, is a state administrative agency of VNFOREST under the MARD (Ministry of Agriculture and Rural Development). VNFOREST has many offices responsible for daily management, production, operation, administration, finance, planning and design. The VNFOREST is managing the system of special-use forests in Vietnam with nearly 200 areas including Tram Chim NP. FREC, the main implementing unit of the project has over 50 employees, over 40 of whom are professionals. FREC has completed many projects on ecological restoration, afforestation, planning and design and so on.

9 Risk Assessment

Risks and corresponding mitigating measures are as follows.

Risk	Measure
1 Coordination problems between participant agencies which influence the implementation of project activity	1.1 Clarify the responsibility, right, interest of each agency; 1.2 Strengthen the communication between project agencies; 1.3 Coordinate through project leading team.
2 Integrated management measures of forest and wetland ecological system may not coincide with the existing forest and wetland management practices, so that the project activities may be limited	2.1 Coordinate to get approval through PSC and local forestry administrative departments; 2.2 Separately implement activities which greatly impact forest and wetland, to reduce its impact area and intensity.
3 During the 4 years of the project implementation, the factors of rising price may result in the budget shortfall	3.1 Save costs as far as possible in the process of project implementation process, do not waste; 3.2 In the initial stage of the project, each outsourcing task will be fixed in the way of the contract to reduce the effect of the price rise; 3.3 Implement the project and purchase the equipment as early as possible.

4 Poor forest and wetland management affects the effectiveness of demonstration sites	5.1 Organize a patrol to improve management; 5.2 Enhance education and publicity on forest and wetland protection awareness; 5.3 Build fire isolation belt and livestock fence at key sites.
---	--

After a comprehensive assessment, the overall risk of project can be controlled, and project implementation is necessary and feasible.

Annex

Annex A Table

TableA-1 Basic Information of project sites

TableA-2 Specific information of project sites

TableA-3 Location of the Project Activity

TableA-4 Project Logical Framework

TableA-5 Project Work Plan and Budget

TableA-5-1 Detailed Budget by Activity

TableA-6-1 Project Publicity

TableA-6-2 Publicity Plan and Budget

TableA-6-3 Publicity Monitoring and Evaluation

Annex B Project Area Map

Figure B-1-1 Location Map of Dong Thap Province in GMS

Figure B-1-2 Location Map of Dong Thap Province in Vietnam

Figure B-1-3 Location Map of Tram Chim NP in Dong Thap Province

Figure B-2 Functional Area of Tram Chim National Park

Figure B-3-1 Distribution Map of Forest Resources in Project Area in Tram Chim NP

Figure B-3-2 Distribution Map of Forest Resources in Project Area

Figure B-4 Distribution Map of Water System in Project Area

Annex C Proof documents of forest/land Ownership

Annex D Protected Rare and Endangered Species

Annex E Project Implementation Plan



*Asia-Pacific Network for Sustainable Forest
Management and Rehabilitation*

Annex E

**Integrated Forest Ecosystem Management Planning and
Demonstration Project in Greater Mekong Sub-region
(Tram Chim Project Site, Vietnam)**

Project Implementation Plan

**Tram Chim National Park, Tam Nong District
Dong Thap Province, Vietnam**

Otc. 2018

Table of Contents

Specific Objective 1: to strengthen conservation and development of wetland ecosystems in Tram Chim National Park through monitoring wetland and developing a Ten-year Development Plan of Tram Chim National Park.	2
Output 1: A wetland area monitoring report formulated	2
1.1 Conducting survey on current conditions of wetland covered by the project	2
1.2 Designing of wetland area monitoring	3
1.3 Monitoring wetland area 2 times a year in dry and rainy season respectively (in total 6 times)	3
1.4 Data analysis and formulating wetland area monitoring report	4
Output 2: Water quality monitoring and development strategy plan formulated	4
2.1 Designing of water quality monitoring	4
2.2 Monitoring water quality in dry (Jul.) and rainy season (Dec.) respectively per year (8 times) by collecting samples and sending for test in laboratory	5
2.3 Data analysis and formulating water quality monitoring and development strategy plan ..	6
Output 3. A wetland soil monitoring report formulated	6
3.1 Designing of wetland soil monitoring	6
3.2 Monitoring wetland soil per year (8 times) by collecting samples and sending for test in laboratory	7
3.3 Data analysis and formulating “wetland soil monitoring report”	7
Output 4. A rare and endangered flora and fauna monitoring report formulated	8
4.1 Supplementary inventory on flora and fauna in the National Park	8
4.2 Designing of rare and endangered flora and fauna monitoring	9
4.3 Monitoring amount of rare and endangered flora in dry (Jul.) and rainy season (Dec.) respectively per year (6 times) and fauna per year (3 times)	10
4.4 Data analysis and formulating “rare and endangered flora and fauna monitoring report and conservation plan”	11
Output 5. National Park boundary patrolled	11
5.1 Formulating a management regulation for National Park patrolling	11
5.2 National park is equipped with one patrolling boat and two commuting boats	12
5.3 Patrolling the National Park areas regularly from illegal activities (fishing, plants collecting) and fire	13
Output 6. A bird survey tower (50m high) constructed	13
6.1 Designing bird survey tower	14
6.2 Constructing the bird survey tower and equipped with cameras and binoculars	15
Output 7. A Ten-year Development Plan of Tram Chim National Park formulated	15
7.1 Formulating a Development Plan of Tram Chim National Park (10 years)	15
Specific objective 2: to mitigate stress from local communities on the national park by providing alternative income opportunities	16
Output 8. 50ha lotus and 10ha water lily plantation established	17
8.1 Selecting farmer households from local community for lotus and water lily planting ..	17
8.2 Lotus varieties collection and seedling preparing	18

8.3 Lotus and water lily seedling planting and maintaining.....	19
Output 9. 300 boxes of beekeeping established by local households	20
9.1 Selecting farmer households from local community for beekeeping	20
9.2 Conducting beekeeping activity	21
Output 10. Development of weaving products by local community.....	22
10.1 Selecting farmer households from local community for handicraft making	22
10.2 Weaving products designing and raw material preparation.....	23
10.3 Producing of weaving handicrafts by local people.....	24
Specific Objective 3: to enhance the capacity, knowledge and awareness of local community, local government and staff through capacity building programs, which will make sure to sustain the management activities after the project is accomplished	24
Output 11. Public environmental awareness building conducted in the national park and adjacent area.....	24
11.1 Designing billboards with contents of wetland conservation.....	24
11.2 Setting up billboards at vital sites (10)	25
11.3 Designing, producing and lay out information (picture and specimen and brief introduction) about endangered and economic important flora and fauna in the National Park.	26
Output 12. Technology trainings organized	26
12.1 Four trainings for project staff on integrated wetland management technology (25persons/training).....	26
12.2 Two trainings for local officials and local leaders on integrated wetland management (20 persons/training).....	27
12.3 Two trainings for techniques on forest, wetland and biodiversity monitoring and survey. (20 persons/training)	28
12.4 Four trainings for local farmers on lotus plantation, beekeeping, weaving, vegetable planting, and marketing. (50 persons/training).....	29
Output 13. International exchange on wetland conservation and management conducted	30
13.1 Exchange study visit to other GMS project site to share and learn project experiences (6 persons, 8 days)	30

Tram Chim project site of Integrated Forest Ecosystem Management Planning and Demonstration Project in Greater Mekong Sub-region (GMS) is located in Tram Chim National Park (Tram Chim NP), Tam Nong District, Dong Thap Province, Vietnam. The project implementation area is 1,899.14 ha.

The goal of the project is, through designing and implementing the project of Integrated Forest Ecosystem Management Planning and Demonstration Project in GMS (Tram Chim Site, Vietnam), optimal integrated sustainable forest and wetland management models will be set up in the lower reach region of GMS, so as to improve quality of the forest and wetland ecosystems and optimize their integrated ecological, economic and social functions. The project objectives include: 1. to strengthen conservation and development of wetland ecosystems in Tram Chim National Park through monitoring wetland and developing a Ten-year Development Plan of Tram Chim National Park; 2. to mitigate stress from local communities on the national park by providing alternative income opportunities; 3. to enhance the capacity, knowledge and awareness of local community, local government and staff through capacity building.

To realize objectives above, in addition to the outputs such as project management and publicity, a series of project activities will be carried out to obtain the following thirteen project outputs: 1. A wetland area monitoring report formulated; 2. Water quality monitoring and development strategy plan formulated; 3. A wetland soil monitoring report formulated; 4. A rare and endangered flora and fauna monitoring report formulated; 5. National Park boundary patrolled; 6. A bird survey tower (50m high) constructed; 7. A Ten-year Development Plan of Tram Chim National Park formulated; 8. 50ha lotus and 10ha water lily plantation established; 9. 300 boxes of beekeeping established by local households; 10. Development of weaving products by local community; 11. Public environmental awareness building conducted in the national park and adjacent area; 12. Technology trainings organized; 13. International exchange on wetland conservation and management conducted.

The project plan is drafted to realize the above 13 project outputs to carry out a series of activities.

Specific Objective 1: to strengthen conservation and development of wetland ecosystems in Tram Chim National Park through monitoring wetland and developing a Ten-year Development Plan of Tram Chim National Park.

Output 1: A wetland area monitoring report formulated

Significance

Survey on existing forest and wetland management status of Tram Chim NP, clarify a reform direction of Tram Chim NP and develop a detailed and targeted monitoring report aiming to increase forest and wetland resources, improve the stand quality, improve personnel capacity, so as to improve the quality of management level. A demonstration model of forest and wetland ecosystem monitoring and management system will be established for GMS.

1.1 Conducting survey on current conditions of wetland covered by the project

- (1) Basic information: the management scope of Tram Chim NP covers forest and wetland management, afforestation, garden flower, seedling cultivation, forestry technical services and community forestry development. Tram Chim has never carried out the planning of wetland monitoring.
- (2) Measures: on the basis of latest data of Tram Chim NP and investigation on forest and wetland resources, an overall monitoring will be conducted at different stages, covering wetland ecological system and vegetation system.
- (3) Investigation precision: based on the latest data of second class investigation.
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha.
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jun. and Dec. 2019
- (7) Budget: Investment budget US\$10,600, of which, US\$8,200 is from APFNet, US\$2,400 from counterpart.
 - a. Counterpart: US\$2400
 - 1) Data collection on vegetation status and maps, related documents:
4 persons * 20 days * US\$20 /person· day = US\$1,600;
1 person * 20 days * US\$40 /person· day = US\$800

b. APFNet:US\$8,200

1) Food and accommodation = 100days * US\$70 /person· day=US\$7,000

2) Domestic travel(5 persons* 2times*US\$120/person·time)= US\$1,200

1.2 Designing of wetland area monitoring

(1) Basic information: Tram Chim has a large area of wetland, but so far Tram Chim NP has never carried out the planning of wetland monitoring.

(2) Measures: Based on the technical outlines of the projects that FREC has done on forest and wetland forest inventory and management, a comprehensive monitoring will be conducted at different stages which covers wetland ecological system and vegetation system

(3) Investigation precision: on the basis of latest data of Tram Chim NP

(4) Survey area: Monitoring 3 zones (A2, A3, A4) with 1,899.14 ha

(5) Planning compilation unit: FREC.

(6) Schedule: Jun. - Dec. 2019

(7) Budget: Investment budget US\$900, all by APFNet.

Design a wetland land monitoring plan: 1 person * 6days * US\$150/ person· day = US\$900

1.3 Monitoring wetland area 2 times a year in dry and rainy season respectively (in total 6 times)

(1) Basic information: Tram Chim National Park in Dong Thap Muoi area is the place of two distinct seasons, dry and rainy. Therefore, effective wetland monitoring of high accuracy should be carried out in two seasons.

(2) Measures: Using the topographic map of 1 / 25,000 coordinates VN 2000, the source of the Ministry of Natural Resources and Environment, 2002. In addition, Landsat satellite images of nearby times and GPS field images will be combined with databases collected during the field surveys in Tram Chim National Park to assist in monitoring.

(3) Investigation precision: basis on latest data of Tram Chim National Park conservation management plan.

(4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha

(5) Planning compilation unit: FREC.

(6) Schedule: Jun and Dec. 2020/2021/2022

(7) Budget: Investment budget US\$11,460, of which, US\$9,300 is from APFNet, US\$2,160 from counterpart.

a. Counterpart:US\$720/year*3 years=US\$2,160

- 1) Supervision Routes and Points by Design: $2\text{persons} * 16\text{days} * \text{US\$}20 / \text{person} \cdot \text{day} = \text{US\$}640$
 $1 \text{ person} * 2\text{days} * \text{US\$}40 / \text{person} \cdot \text{day} = \text{US\$}80$
- b. APFNet: $\text{US\$}3,100/\text{year} * 3 \text{ years} = \text{US\$}9,300$
 - 1) Food and accommodation = $34\text{days} * \text{US\$}70 / \text{person} \cdot \text{day} = \text{US\$}2,380$
 - 2) Transportation (3 persons * 2 times * $\text{US\$}120 / \text{person} \cdot \text{time}$) = $\text{US\$}720$

1.4 Data analysis and formulating wetland area monitoring report

- (1) Basic information: Since there is no wetland monitoring program, this will be the first time Tram Chim National Park has reported wetland monitoring.
- (2) Measures: Based on the results of the “Monitoring wetland area 2 times a year in dry and rain season respectively (in total 8 times), data will be collected and analyzed to formulate a wetlands monitoring report for Tram Chim NP
- (3) Investigation precision: second class investigation
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jun. - Dec. 2022
- (7) Budget: Investment budget $\text{US\$}2,250$, all invested by APFNet
 $1\text{person} * 15\text{days} * \text{US\$}150 / \text{person} \cdot \text{day} = \text{US\$}2,250$

Output 2: Water quality monitoring and development strategy plan formulated

2.1 Designing of water quality monitoring.

- (1) Basic information: Located in the lower Mekong, Tram Chim is a large wetland, surrounded by many canals. These canals are filled with wastewater due to the activities of local people such as domestic waste water and agricultural waste water. However, up to now, there has not been any water quality monitoring plan in this area.
- (3) Measures: Based on the technical outlines of the projects that FREC has done on wetland inventory and management, a comprehensive monitoring program will be developed at different stages on water quality monitoring plan.
- (3) Investigation precision: on the basis of latest data of Tram Chim NP
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.

(6) Schedule: Jan. - Dec. 2019

(7) Budget: Investment budget US\$3,700, of which, US\$3,100 is from APFNet, US\$600 from counterpart.

a. Counterpart: US\$600

1) Data collection on vegetation status and maps, related documents:

4 persons * 5 days * US\$20 / person·day = US\$400;

1 person * 5 days * US\$40 / person·day = US\$200

b. APFNet: US\$3,100

1) Food and accommodation = 25 days * US\$70 / person·days = US\$1,750

2) Domestic travel (5 persons * US\$120 / person·time) = US\$600

3) 1 person (making report) * US\$150 / person·day * 5 days = US\$750

2.2 Monitoring water quality in dry (Jul.) and rainy season (Dec.) respectively per year (8 times) by collecting samples and sending for test in laboratory.

(1) Basic information: Tram Chim National Park in Dong Thap Muoi area is the place of two distinct seasons, dry and rainy. Therefore, effective water quality monitoring of high accuracy should be carried out in two seasons.

(2) Measures: 2 staff from Tram Chim National Park will collect water samples, the water samples will be collected from 10 places, and samples will be sent for laboratory analysis. Each sample will require 10 indexes.

(3) Investigation precision: based on the latest data of second class investigation.

(4) Survey area: There are 10 different locations on the rivers, canals, and special sites inside the national park and in the border areas of the national park, which are related to the distribution of rare fauna and flora species.

(5) Planning compilation unit: FREC.

(6) Schedule: dry (Jul.) and rainy season (Dec.) from 2019 to 2022.

(7) Budget: Investment budget US\$12,480, of which, US\$11,520 is from APFNet, US\$960 from counterpart.

a. Counterpart: US\$120/time * 2 times = US\$240/year, 4 years in total: US\$960

1) 6 persons field sampling of 10 samples /time = 6 persons * US\$20 / person·day = US\$120

b. APFNet: US\$1,440/time * 2 times = US\$2,880/year, 4 years in total: US\$11,520

- 1) Food and accommodation= 6 days * US\$70/person· day=US\$420;
- 2) Transportation (6 persons *US\$120/person· time) = US\$720;
- 3) Sample analysis in room=10samples*10indexes/smample*US\$3/index= US\$300

2.3 Data analysis and formulating water quality monitoring and development strategy plan

- (1) Basic information: Since there is no water quality monitoring program, this will be the first time Tram Chim National Park reports water quality monitoring.
- (2) Measures: Based on the results of the “Monitoring water quality in dry (Jul.) and rainy season (Dec.) respectively per year (8 times) by collecting samples and sending for test in laboratory”, data will be collected and analyzed to formulate a water quality monitoring report for Tram Chim NP.
- (3) Investigation precision: based on the latest data of second class investigation.
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jul and Dec in 2019 to 2022
- (7) Budget: Investment budget US\$3,000, all invested by APFNet.
1 person *20days* US\$150 /day=US\$ 3,000

Output 3. A wetland soil monitoring report formulated

3.1 Designing of wetland soil monitoring

- (1) Basic information: Land and water are the two most important components that make up wetlands. Located in the lower Mekong, Tram Chim is a large wetland. However, up to now, it has no water quality monitoring plan in this area.
- (2) Measures: Based on the technical outlines of the projects that FREC has done on soil inventory, a comprehensive monitoring program will be developed at different stages on soil monitoring plan.
- (3) Investigation precision: on the basis of latest data of Tram Chim NP
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jul. and Dec. in 2019
- (7) Budget: Investment budget US\$900 , all invested by APFNet.

1person * 6 days * US\$ 150 / day =US\$ 900

3.2 Monitoring wetland soil per year (8 times) by collecting samples and sending for test in laboratory

- (1) Basic information: Tram Chim National Park in Dong Thap Muoi area is the place of two distinct seasons, dry and rainy. Therefore, effective water quality monitoring of high accuracy should be carried out in two seasons
- (2) Measures: 2 staff from Tram Chim National Park will collect wetland soil samples, 10 wetland soil samples will be collected, and sent for laboratory analysis. Each sample will require 10 indexes.
- (3) Investigation precision: based on the latest data of second class investigation.
- (4) Survey area: There are 10 different locations inside 3 zones (A2, A3, A4)
- (5) Planning compilation unit: FREC.
- (6) Schedule: dry (Jul.) and rainy season (Dec.) from 2019 to 2022.
- (7) Budget: Investment budget US\$12,480, of which, US\$11,520 is from APFNet, US\$960 from counterpart.
 - a. Counterpart: $\text{US\$120/time} \times 2 \text{ times} = \text{US\$240/ year}$, 4 years in total: US\$960
 - 1) 6 persons for field sampling of 10 samples /time = 6 persons * US\$ 20/ day = US\$120
 - b. APFNet: $\text{US\$1,440/time} \times 2 \text{ times} = \text{US\$2,880/year}$, 4 years in total: US\$11,520
 - 1) Food and accommodation = 6 days * US\$70/day = US\$420;
 - 2) Transportation (6 persons * US\$120 / time) = US\$720;
 - 3) Sample analysis in room = $10 \text{ samples} \times 10 \text{ indexes/sample} \times \text{US\$3/index} = \text{US\$300}$

3.3 Data analysis and formulating “wetland soil monitoring report”

- (1) Basic information: Since there is no wetland soil monitoring program, this will be the first time Tram Chim National Park reports on wetland soil monitoring
- (2) Measures: Based on the results of the “Monitoring wetland soil per year (8 times) by collecting samples and sending for test in laboratory”, data will be collected and analyzed to formulate a wetland soil monitoring report for Tram Chim NP.
- (3) Investigation precision: based on the latest data of second class investigation.

- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jul. to Dec. in 2022
- (7) Budget: Investment budget US\$2,250, all invested by APFNet.
1 person *15days* US\$150/day= US\$2,250

Output 4. A rare and endangered flora and fauna monitoring report formulated

Objectives

- Review on rare and precious species listed in the Red Book of Vietnam and the IUCN Red Book, and indication of their distribution on the map as the basis for the management and development of protection and research programs of Tram Chim National Park.
- Additional assessment of the biodiversity of flora and fauna, distribution patterns, values of wildlife resources, endangered species and their distribution to propose the monitoring and management plan for Tram Chim National Park.

4.1 Supplementary inventory on flora and fauna in the National Park

- (1) Basic information: According to the latest data on the status of rare wildlife of Tram Chim National Park, there are 7 species of animals and 3 species of plants. (see Annex D).
- (2) Measures: Gather documents and conduct supplementary surveys, develop a list of the flora and fauna species composition, and rare and precious species in the Red Book. Investigate and assess the characteristics of the flora and fauna, especially some rare and endemic species listed in the Red Book on population fluctuations, to develop the conservation planning. Investigate and map the distribution of precious and rare species. Four experts from two sub-FIPs and two from FREC together with a staff from Tram Chim National Park will conduct the survey in 20 days.
- (3) Investigation precision: based on Red Data Book of Vietnam and IUCN.
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jan. - Dec. 2019
- (7) Budget: Investment budget US\$14,160, of which, US\$10,960 is from APFNet, US\$3,200 from counterpart.

a. Counterpart:US\$3,200

- 1)Supplementary inventory on flora in the National Park (divided into 2 rounds of survey, rainy season and dry season) = 2persons * 20 days*US\$20 /person·day*2 times =US\$1,600;
- 2) Supplementary inventory on fauna in the National Park (divided into 2 rounds of survey, rainy season and dry season) = 2persons * 20 days*US\$20/person·day*2 times= US\$1,600;

b. APFNet: US\$10,960

- 1)Food and accommodation = 80days * US\$70 /person·day= US\$5,600;
- 2)Domestic travel(4 persons*2 times *US\$120 /person·time)= US\$960;
- 3) Mapping: 1person* 10days*US\$ 110/person.day= US\$1,100;
- 4) Formulating report: 1person* 30days*US\$ 110/day= US\$3,300

4.2 Designing of rare and endangered flora and fauna monitoring

- (1) Basic information: Maintaining the existence of important species populations is one of the most important objectives of a protected area. However, this work is difficult because we know very little about these species. The monitoring program will show where the specific distribution of each species is, how large and whether the distribution varies seasonally or yearly. The monitoring program also provides information on reproductive status, population health status, relative abundance of species in the protected area, and population trends over time. If a program for monitoring rare and precious animal and plant species is established, this will be the first time Tram Chim National Park has this program.
- (2) Measures: Based on the technical outlines of the projects that FREC has done on rare and endangered flora and fauna inventory. Identification of monitoring objectives, selection of monitoring indicators, identification of monitoring indicators, selection of methods for data collection and analysis, identification of monitoring intervals, time of program implementation monitoring, human resources, funds and other necessary requirements (if any) for monitoring activities.
- (3) Investigation precision: on the basis of latest data of Tram Chim NP
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jan. - Dec. 2019
- (7) Budget: Investment budget US\$ 2,250, all invested by APFNet

1person * 15days *US\$ 150 / day =US\$ 2,250

4.3 Monitoring amount of rare and endangered flora in dry (Jul.) and rainy season (Dec.) respectively per year (6 times) and fauna per year (3 times)

- (1) Basic information: Tram Chim National Park has two seasons, dry and rainy. The variability of plant species in wetlands may vary from season to season, so monitoring of them in both dry and wet seasons is necessary. With the animals on the wetlands, their seasonal fluctuations are less volatile. The fluctuation of animals, if any, occurs only in coastal wetlands due to migratory birds. Tram Chim is a wetland area in the territory, and migratory animals are just Crane, a very rare species that migrates from the upper Mekong. Therefore, with the rare fauna species in Tram Chim only need to monitor the season of migratory Cranes is enough.
- (2) Measures: Bird monitoring can use linear monitoring. Currently, collection of specimens of reptiles and amphibians for surveillance is not allowed in Vietnam. Thus, the presence of these species only through direct observation in nature. In each monitoring area, based on topographic maps, hydrological systems and information from “Supplementary inventory on flora and fauna in the National Park” conducted to identify a number of monitoring routes (3-4 routes for a survey site). Routes need to go through the habitat / habitat type where the surveillance species usually live. Surveillance lines are described, coordinated and displayed on topographic maps. At the scene, surveillance lines must be marked with colored paint for easy access to the surveys next survey.
- (3) Investigation precision: basis on Red Data Book of Vietnam and IUCN.
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jul. and Dec. in 2020 to 2022
- (7) Budget: Investment budget US\$13,920, of which, US\$8,520 is from APFNet, US\$5,400 from counterpart.
 - a. Counterpart:US\$5,400
 - 1)Monitoring amount of rare and endangered flora in dry (Jul.) and rainy season (Dec.) respectively per year (6 times) = 6 persons*5days *US\$20/person·day*6 times=US\$3,600
 - 2) Monitoring amount of rare and endangered fauna per year (3 times):

$$6\text{persons} \times 5\text{days} \times \text{US\$}20/\text{person} \cdot \text{day} \times 3\text{times} = \text{US\$}1,800$$

b. APFNet: US\$8,520

1) Food and accommodation = 60 days * US\$ 70 /days = US\$4,200;

2) Domestic travel (6 persons* 6times *US\$120/person·time) = US\$ 4,320

4.4 Data analysis and formulating “rare and endangered flora and fauna monitoring report and conservation plan”

(1) Basic information: Since there is no “rare and endangered flora and fauna monitoring program, this will be the first time Tram Chim National Park has reported on rare and endangered flora and fauna monitoring.

(2) Measures: Based on the results of the monitoring amount of rare and endangered flora in dry (Jul.) and rain season (Dec.) respectively per year (6 times) and fauna per year (3 times), data will be collected and analyzed to formulate a rare and endangered flora and fauna monitoring report for Tram Chim NP.

(3) Investigation precision: based on the latest data of second class investigation

(4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha

(5) Planning compilation unit: FREC.

(6) Schedule: Jan. - Dec. 2022

(7) Budget: Investment budget US\$ 6,600, all invested by APFNet.

1) Data analysis: 1 person*15days*US\$110/person·day=US\$1,650

2) Formulating report: 1 person*30days*US\$110/person·day=US\$3,300

3) Mapping: 1 person*15days*US\$110/person·day=US\$1,650

Output 5. National Park boundary patrolled

5.1 Formulating a management regulation for National Park patrolling

(1) Basic information: Tram Chim National Park is located 25 km west of the Mekong (Tien River) and 40 km north of the Cambodian border. Hydrological regime or flooded status is an important factor for the conservation of the wetland ecosystem in general and in Tram Chim National Park in particular. The hydrographic regime in Tram Chim National Park is dependent on the following factors: the Mekong's flow regime; Tidal regime of the East Sea; Rainy regime on the Plain of Reeds; natural terrain conditions; and socio-economic development activities.

These factors have been changing a lot since before, which has impact on Tram Chim National Park. Previously, the hydrographic regime in Tram Chim National Park was managed in two modes: open mode, ie natural hydrological regime; and management method according to water drainage system. The project area is divided into three management zones (A2, A3, A4), each covered by a canal and canal system with a total length of about 60 km. In each region there are channels of different depths and widths. Therefore, it is necessary to develop a patrol regulation to suit the hydrological conditions, natural characteristics and socio-economic development of the locality.

- (2) Measures: Based on the collection of data on hydrology, terrain, socio-economic characteristics of local people.
- (3) Investigation precision: based on the latest data of Tram Chim NP.
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: FREC.
- (6) Schedule: Jan. - Dec. 2019
- (7) Budget: Investment budget US\$550 , all invested by APFNet.
Formulating a management regulation for National Park patrolling:
 $1 \text{ person} * 5 \text{ days} * \text{US\$}110/\text{day} = \text{US\$}550$

5.2 National park is equipped with one patrolling boat and two commuting boats

- (1) Basic information: There are very few patrol boats in Tram Chim National Park that do not meet the protection patrol, so it is necessary to equipped with one patrolling boat and two commuting boats.
- (2) Measures: Get quotes from companies providing boat services, after selecting the reasonable price will enter into the purchase contract.
- (3) Investigation precision: According to Vietnamese law
- (4) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (5) Planning compilation unit: Tram Chim NP.
- (6) Schedule: Jan. - Dec. 2019
- (7) Budget: Investment budget US\$4,000, all invested by APFNet.
1 patrolling boat= US\$1,500
2 commuting boats * US\$1,000/boat=US\$ 2,000
Sampling facility=US\$500

5.3 Patrolling the National Park areas regularly from illegal activities (fishing, plants collecting) and fire

- (1) Basic information: There are about 41,000 people living around the national park, they are very poor. Every day, in addition to boat trips on rivers, canals and canals around the national park, people are still active in the NP, which requires patrolling from illegal activities (fishing, plants collecting) and fire.
- (2) Measures: Follow the instructions given in a management regulation for National Park patrolling.
- (3) Survey area: 3 zones (A2, A3, A4) with 1,899.14 ha
- (4) Planning compilation unit: Tram Chim NP.
- (5) Schedule: Jan. - Dec. of 2019-2022
- (6) Budget: Total cost: US\$43,200 . All invested by Tram Chim Nation Park.
 - 1 person/patrol/month=US\$150
 - 2 person/patrol/month=US\$300
 - Total= US\$300*48months*3patrols/month=US\$43,200

Output 6. A bird survey tower (50m high) constructed

Objectives

An important issue in Tram Chim National Park management is the issue of fire. The impact of intense fire has created an urgent need in state and social management agencies. Fire damages the wetland ecosystem such as destroying vegetation and peat layer, reducing organic layer on the surface, increasing ground erosion, decreasing animal numbers, etc. But fire at appropriate frequencies and intensities will play an active role in maintaining and enhancing the biodiversity of wetland ecosystems, especially for herbaceous vegetation. For some tree species (eg. cajuput, eucalyptus, etc.) forest fire with appropriate frequency and intensity will become favorable conditions for seed and bud regeneration. Fire also plays an important role as a source of nutrition for aquatic species through the effect of mineral organic chemicals. Without burning, organic matter will accumulate at a rapid rate, and the ground will be elevated to the level that ecosystems differ from those that need to be preserved. Thus, to a certain extent, fire is a natural ecological element necessary for the conservation of the biodiversity of the herbaceous vegetation communities in particular and the wetland ecosystem generally. For wetland ecosystems in

Tram Chim National Park, fire is a factor that has two sides: harm and good. The harm is clear. The ecological significance of fire to ecosystems in Tram Chim has a dry phase and a humid phase, a flood season and a dry season, with *Melaleuca* forests and flammable grasslands, so far not paid attention. Studying the ecological significance of fire is a complex issue not only for Tram Chim but also for Vietnam and the world. While it is not possible to control the positive side and benefit from fire, it is important to prevent the harmful effects of fire. But the prevention and treatment of wild *Melaleuca* forests and grasslands in the dry season is still a problem. Due to the characteristics of terrain, canals are divided into 6 subdivisions (A 1, A 2, A 3, A 4, A 5 and C), with consideration of management, patrol and control of the NP. The difficulty is NP security forces have no means of transportation to patrol inside the wetland. In the dry season, villagers violate the park regularly, most of which use fire so easily burns at any time. Local people have no place to grazing livestock, so the households have taken advantage of the natural grass of the park to release cattle into the park. In terms of infrastructure, there are now three new observatories for bird watching, combined with scientific research and forest fire warnings. Poor infrastructure has not met the requirements of protection, fire prevention and tourism development. Forest fire observation station: There are 6 permanent stations (2 iron stations and 4 concrete stations) with a height of 14-16m and 3 temporary stands (eucalyptus trees) of 8m. And there is no water bird watching tower in NP, especially the observation of the Sarus Crane.

6.1 Designing bird survey tower

- (1) Basic information: The poor infrastructure of Tram Chim NP has not met the requirements of protection, fire prevention and tourism development. Forest fire observation station: There are 6 permanent stations (2 iron stations and 4 concrete stations) with a height of 14-16m and 3 temporary stands (eucalyptus trees) of 8m. There is no water bird watching tower in NP, especially the observation of the Sarus Crane.
- (2) Measures: to contact a consulting unit for designing bird survey tower.
- (3) Investigation precision: According to Vietnamese law
- (4) Survey area: A3
- (5) Planning compilation unit: Tram Chim NP.
- (6) Schedule: Jan. - Dec. 2019

(7) Budget: Investment budget US\$550 , all invested by APFNet.

Designing bird survey tower: 1 person*5days*US\$110/person·day=US\$550

6.2 Constructing the bird survey tower and equipped with cameras and binoculars

(1) Basic information: At present there are only 3 observation towers in the national park. They are low and simple in terms of structure, form and equipment. It is necessary to build a high tower, solid and equipped with modern observation equipment as cameras and binoculars.

(2) Measures: to contract with a construction company to build a tower according to design which was designed by consulting company.

(3) Investigation precision: According to Vietnamese law

(4) Building area: A3

(5) Planning compilation unit: Tram Chim NP.

(6) Schedule: Jan. - Dec. 2020

(7) Budget: Investment budget US\$43,860, all invested by APFNet.

Constructing the bird survey tower: US\$43,860

(Please read the attached picture of the quotation on the last page.)

Output7. A Ten-year Development Plan of Tram Chim National Park formulated

7.1 Formulating a Development Plan of Tram Chim National Park (10 years)

(1) Basic information: The Tram Chim National Park was recognized by the Ramsar International Secretariat as the 2000 Ramsar site in the world. The Tram Chim National Park is recognized by the Ramsar Convention Secretariat as an internationally important wetland site (Ramsar site) is very significant for Vietnam's nature preservation. Tram Chim National Park is a Protected Area with a wetland area, located in the freshwater wetland in the Mekong Delta. The recognition of the Ramsar site confirms that ecosystems and wetland resources are of international importance.

As a Protected Area, Tram Chim National Park is essentially a wetland reserve. The wise use of wetland resources is one of the important approaches of a Ramsar site. This is also in line with the Vietnamese Government policies on payment for forest environmental services, including for Protected Areas. The Ramsar approach will support and

provide the basis for Tram Chim National Park to develop proposals for the conservation and sustainable use of wetland resources to develop ecotourism and benefit sharing with the community.

For good management of Tram Chim NP and Ramsar site is required to develop a 10-year management plan for the management of *Melaleuca* forests and wetland ecosystems, with a focus on wetland management and prevention. In the dry season, implement the plan of rational use of natural resources and benefit sharing with communities in the buffer zone, implementing biodiversity monitoring, establishing and managing biodiversity database to provide the basis for appropriate management measures, and ultimately to improve the management capacity of National Park staff.

- (2) Measures: The consultants for nature conservation and wetlands of FREC from FIPI will formulate a Development Plan for the Tram Chim National Park for Ten Years.
- (3) Area: A2, A3, A4(1,899.14 ha)
- (4) Unit: FREC - FIPI
- (5) Schedule: Jan. - Dec. 2021
- (6) Budget: Investment budget:US\$10,445.27, all invested by APFNet.
1,899.14 ha *US\$5.5/ha=US\$10,445.27

Specific objective 2: to mitigate stress from local communities on the national park by providing alternative income opportunities

Objectives

Agricultural activities are indispensable for the existence of local communities around Tram Chim National Park, but they are responsible for the impacts on the preservation of the natural ecosystems. Particularly wetland major risks include (in descending order of importance):

- At present, Tram Chim's biggest obstacle is the increase in population and poverty resulting in the illegal and over exploitation of the park's natural resources such as fish, snake, turtle, bird, firewood, and more dangerously, they use poison to catch birds, electricity to catch fish, and the like. It has a negative impact on the conservation of Tram Chim NP.
- Grazing livestock into the forest will negatively affect the natural ecosystem, changing the habitat of rare and precious plants and animals

existing in the park.

- Exploitation of honey.
- Under severe weather, with low water level, the risk of *Melaleuca* forest fire in the National Park is extremely dangerous.
- Ecotourism activities.

Under the risk of affecting the biodiversity of Tram Chim National Park, to overcome the above and achieve the dual objective of conserving the park's natural resources and developing communities in the vicinity, the project will specifically provide alternative income opportunities, focusing on activities stated below.

Output 8. 50ha lotus and 10ha water lily plantation established

Target:

- To transfer advanced techniques of planting, tending lotus trees and shoots to diversify crops and improve livelihoods by helping people in the buffer zone gradually, and contribute to poverty reduction.
- To help farmers to create more sources of products for daily life and increase income from the sale of flowers, seeds, leaves and tubers, to solve the employment problem and limit the exploitation of products from natural forests.
- Through model dissemination, step by step to help people approach production and consumption of lotus trees and improve tourism in Tram Chim National Park.

8.1 Selecting farmer households from local community for lotus and water lily planting

- (1) Basic information: The lotus we often see outside the lagoon for harvesting seeds, leaves, flowers, etc., is a Vietnamese lotus. In order to contribute to the landscape and tourism environment for Tram Chim National Park, and poverty alleviation by creating jobs for farmers in buffer zone communes, a lotus planting model is proposed in the project. Although the model is not new, but it helps farmers quickly and easily apply the planting and access scientific and technical achievements in production. Water lily will be planted in wetlands.
- (2) Measures: The Tram Chim National Park Management Board works with the communes in the buffer zone to hold village meetings to select the

households to participate in the model building, based on the public selection and consideration. Capacity of households will be selected based on the list proposed by communes and evaluation from the NP management board. The Tram Chim NP management board will cooperate with the Dong Thap Agriculture and Forestry Seed Center, Agriculture Department of Tam Nong District to evaluate the implementation of the model.

(3) Area of demonstration plot and location: Scale of implementation: 60 ha for 50 households, 1.2 ha each.

(4) Planning area: 3 zones (A2, A3, A4) with 1,899.14 ha

(5) Schedule: Jan. - Dec. 2019

(6) Budget: Investment budget US\$636 , all invested by APFNet.

(7) Selecting farmer households from local community for lotus and water lily planting: Total =US\$219+US\$417=US\$636

1) Village meeting allowance for selected households participating in model development (water, fruits, stationery of all kinds):

10 villages*500,000VND=5,000.000 VND = US\$219

2) Support 1 project officer to go to village meeting:

1 person *10 villages*950,000VND=9,500.000 VND = US\$417

8.2 Lotus varieties collection and seedling preparing

(1) Measures: The activities are implemented on the basis of the project to support the cost of the seed, fertilizer for the first planting and the first two years of maintenance; Funds for technical guidance on planting, tending, gathering and preserving products; people grow and care.

(2) Preparation of soil: Soil must be muddy, flat and with appropriate depth, and weeds must clean out. Before plowing, after the first rain (May and June) brings water into the field, spread lime 300-500 kg / ha, and roll a layer of thick mud to the land 20 -25cm. Keep the water level of 20-25 cm and after 7-10 days conduct planting.

(3) Seed supply and fertilizer supply: After the completion of technical training, the Tram Chim National Park Management Board will coordinate with the Dong Thap Agriculture and Forestry Seed Center, the seedling and fertilizer supplier. For households involved in model building:

- Lotus seedlings must meet the standard below: Each seedling has two leaves, the large leave diameter of seedlings is more than 30cm. The seedling is healthy and has no broken stem. These indicators are closely

related to the survival rate.

- The specific fertilizer is as follows: Firstly: 10 days after planting, grass is sprayed with 25 kg of DAP and 25 kg of urea throughout the field. Secondly: 30 days after transplanting, it is sprayed with 50 kg of urea, 50 kg of DAP and 50 kg of NPK. Thirdly: 50 days after transplanting, with 50 kg of urea, 50 kg of DAP and 50 kg of NPK. Fourthly: when the plants start to flower, spread the fertilizer with 25kg of urea, 25kg of DAP and 100kg of potassium.

(4) Preparing area: A2, A3, A4

(5) Planning compilation unit: Tram Chim NP.

(6) Schedule: Jan. - Dec. 2019

(7) Budget: Investment budget US\$14,814, of which, US\$ 11,654 is invested by APFNet and US\$3,160 invested by counterparts.

a. Counterpart: US\$3,160

1) Prepare 60 ha of soil (plowing, spreading, ...) (6 workers/ ha):

$$60\text{ha} \times 6\text{workers} \times 200,000\text{VND/worker/day} = 72,000,000\text{VND} = \text{US\$3,160};$$

b. APFNet: US\$ 11,654

1) Seedlings collected in localities in the country (density of 1,500 trees /ha + 10% of planted trees):

$$9,900 \text{ tree} \times 5,000 \text{ VND} = 49,500,000 \text{ VND} = \text{US\$2,173};$$

2) Fertilizers of all kinds (NPK, LAP, DAP) (450kg /ha):

$$60\text{ha} \times 450 \times 8,000 \text{ VND/kg} = 216,000,000 \text{ VND} = \text{US\$ 9,481}$$

8.3 Lotus and water lily seedling planting and maintaining.

(1) Measures: Tram Chim National Park Management Board together with the Agriculture Extension Department of Tam Nong district monitor and direct the implementation of the model.

(2) Planting methods: Seedlings before planting should be kept cool, avoid sunlight radiation to make the plants wilting, transplant into the field plowed gently to avoid fracture. Do not plant too deeply. It is necessary to control the water level in the field with 20-25 cm in the early planting, help the tree quickly root. Approximately 10 days after planting the water level increases as the tree grows.

(3) Pest and disease prevention: Regular monitoring should be conducted to detect pests and diseases such as: creepers, aphids; diseases.

- (4) Planting and maintaining area: A2, A3, A4
- (5) Planning compilation unit: Tram Chim NP.
- (6) Schedule: Jan. - Dec. of 2019-2022
- (7) Budget: Investment budget US\$7,767, of which, US\$2,500 is invested by APFNet and US\$5,267 by counterparts.
 - a. Counterpart: US\$5,267
 - Supporting local people to plant and care (10 persons/ ha)
 - $60\text{ha} \times 10 \times 200,000 \text{ VND/person} = 120,000,000 \text{ VND} = \text{US\$5,267}$
 - b. APFNet: US\$2,500
 - Supporting the project staff to monitor:
 - $60\text{ha} \times 950,000 \text{ VND/ha} = 57,000,000 \text{ VND} = \text{US\$2,500}$

Output 9. 300 boxes of beekeeping established by local households

Target:

- Transfer technology of honey bee breeding, conduct replication to improve productivity, increase income, and create jobs for people.
- Apply participatory extension methods in training and provide technical guidance to farmers.
- Through the application of new training methods in the model implementation, the replication and dissemination of models to other farmers is more effective.

9.1 Selecting farmer households from local community for beekeeping

- (1) Measures: Communes hold village meetings to select households to participate in the honeybee bee breeding model, based on the list of selected households in the proposed communes by public vote, and consideration of the implementation capacity of the households. The Tram Chim National Park Management Board works with the Provincial Extension Center and the Tam Nong District Agricultural Extension Office, and selects the pilot site. On the basis of the actual inspection of the location and conditions of the facilities of the proposed households, the appraisal members shall consider, comment and give suggestions on the selection of households. 30 households will be selected.
- (2) Survey area: Five communes in Tram Chim National Park buffer zone (including Tan Cong Sinh, Phu Duc, Phu Tho, Phu Thanh A and Phu Thanh

B communes). In total 30 households will be selected.

(3) Planning compilation unit: Tram Chim NP.

(4) Schedule: Jan. - Dec. 2019

(5) Budget: Investment budget US\$636 , all invested by APFNet.

Selecting farmer households from local community for beekeeping:

Total =US\$219+US\$417=US\$636;

1)Village meeting allowance for selected households participating in model development (water, fruits, stationery of all kinds):

10 villages*500,000VND=5,000.000 VND = US\$219;

2) Support 1 project officer to go to village meeting:

1 person *10 villages*950,000VND/day=9,500.000 VND = US\$417

9.2 Conducting beekeeping activity

(1) Basic information: Tram Chim National Park, with diverse ecosystems of flora and fauna, in which there are many natural *Melaleuca*. Every year, *Melaleuca* forests produce two fragrant flowers, which are suitable for bee keeping. In addition, the initial costs for building honey bee model is not much, beekeepers are less risky, because bees are less likely to be attacked, the rate of loss is low. Normally each box produces 25kg honey in value of 200 each year, brings the income of 2000 per year for each household if it keeps 10 boxes. The development of the beekeeping model is a very important part of sustainable development, because it reduces the pressure on exploitation of the NP, which harmoniously meets the objective of conserving natural resources. It provides opportunities for people to benefit from the rich resources of mangroves. The honey bee model proposed in the project was evaluated by the farmers and departments for the suitability and practicality of the model although the model was not yet replicated in the buffer zone of the Tram national park.

(2) Supply 300 honey bee breed boxes: The timber which is not cracked, can drain moisture and bear rain and sun; Light wood for easy movement. It is best to use pine, mulberry or jackfruit; Thickness of 1.5-2cm to ensure stable moisture inside the tank; Boxes should be painted green, white, yellow, green for bees to recognize and resist moisture; The size of the box must be exactly as prescribed to facilitate the movement of the bees and the exchange of bees.

(3) Management: The Tram Chim NP Management Board together with the

Agriculture Extension Department of Tam Nong District and the local authorities of the communes will monitor and direct the implementation of the model by checking outside of the herd and inside of the bee container. During the examination, if any honey bees need to be treated, do so immediately.

(4) Conducting beekeeping area: A2, A3, A4

(5) Planning compilation unit: Tram Chim NP

(6) Schedule: Jan. - Dec. of 2019-2022

(7) Budget: Investment budget US\$22,121 invested by APFNet.

1) Boxes bought in local areas:

$300\text{boxes} \times 1,200,000 \text{ VND} = 360,000,000 \text{ VND} = \text{US\$ } 15,800;$

2) Materials for boxes construction:

$300\text{boxes} \times 100,000 \text{ VND} = 30,000,000 \text{ VND} = \text{US\$ } 1,317;$

3) Supporting the project staff to monitor:

$120 \text{ persons} \cdot \text{day} \times 950,000 \text{ VND/person} \cdot \text{day} = 114,000,000 \text{ VND}$
 $= \text{US\$ } 5,004$

Output 10. Development of weaving products by local community

Target:

Transferring techniques of weed-weaving, conducting replication of models in order to raise productivity and provide products for the society, increase incomes and create jobs for people, especially households in poverty.

10.1 Selecting farmer households from local community for handicraft making

(1) Measures: The Tram Chim NP coordinates with the communes to hold village meetings to select poor households to build the handicrafts making model, based on the list of selected households in the proposed communes by public vote and considerations on capacity of households. . The Tram Chim NP Management Board coordinates with Dong Thap Women's Union, Village Women's Union to appraise the households to implement the model. On the basis of the actual inspection of the location and conditions of the proposed household facilities, the appraisal members shall consider, comment and make suggestions and select 30 households to participate in the activity.

(2) Survey area: The model will be implemented in 10 villages / 5 communes in Tram Chim National Park buffer zone (including Tan Cong Sinh, Phu Duc, Phu Tho, Phu Thanh A and Phu Thanh B communes). On average there are 3 households per village, in total of 30 households.

(8) Schedule: Jan. - Dec. 2019

(9) Budget: Investment budget US\$636 invested by APFNet.

Selecting farmer households from local community for handicrafts making:

Total = US\$219 + US\$417 = US\$636

1) Village meeting allowance for selected households participating in model development (water, fruits, stationery of all kinds):

10 villages * 500,000 VND = 5,000,000 VND = US\$219;

2) Support 1 project officer to go to village meeting:

1 person * 10 villages * 950,000 VND/day = 9,500,000 VND = US\$417

10.2 Weaving products designing and raw material preparation

(1) Basic information: *Eichhornia crassipes* has developed in the area of the Dong Thap Muoi, mostly on intra-field canals that affect agricultural production, navigation and drainage. In the rainy season, the *Eichhornia crassipes* grows swiftly in the rainy season and is home to mosquitoes and insect pests causing concern for the environment as well as for human health. It seems to be useless, but it is considered a precious and valuable material for handicraft production. At present, the model of Dong Thap Women's Union is highly appreciated and it is necessary to study and replicate the model so that women can get income during leisure time, especially in floating season. The water *Eichhornia crassipes* model was proposed by the farmers and related departments who assessed the suitability and practicality of the model, although the model is not new in the area, it has not been replicated in the buffer zone communes. Tram Chim National Park, especially for poor families.

(2) Measures: supply of dried *Eichhornia crassipes* material, and template design for 30 water hyacinth models.

(3) Survey area: The model will be implemented in 10 villages / 5 communes in Tram Chim National Park buffer zone (including Tan Cong Sinh, Phu Duc, Phu Tho, Phu Thanh A and Phu Thanh B communes).

(4) Planning compilation unit: Tram Chim NP.

(5) Schedule: Jan. - Dec. 2019

(6) Budget: US\$7,2420, invested by APFNet.

1)Supply of raw material:

$500\text{kg} * 300,000 \text{ VND/ kg} = 150,000,000\text{VND} = \text{US\$6,584};$

2)Materials (Models):

$30\text{models} * 500,000\text{VND/ model} = 15,000,000\text{VND} = \text{US\$658}$

10.3 Producing of weaving handicrafts by local people

(1) Measures: Tram Chim NP Management Board together with Dong Thap Provincial Women's Union and commune authorities monitor and direct the implementation of the model. To build an assembly house is about 100m^2 ($10\text{m} \times 10\text{m}$) installed in the tourist area, the women can have a place to make handicraft products, combined with tourism, and can sell products for guests here. At the same time, teach visitors how to make handicrafts (especially for foreign visitors).

(2) Producing area: The model will be implemented in 10 villages / 5 communes in Tram Chim National Park buffer zone (including Tan Cong Sinh, Phu Duc, Phu Tho, Phu Thanh A and Phu Thanh B communes)

(3) Planning compilation unit: Tram Chim NP.

(4) Schedule: Jan. - Dec. of 2019-2022

(5) Budget: US\$6,891, invested by APFNet.

1) Supporting the project staff to monitor:

$60 \text{ person}\cdot\text{day} * 950,000 \text{ VND/ person}\cdot\text{day} = 57,000,000 \text{ VND} = \text{US\$2,502}$

2)Building a assembly house 100m^2 ($10\text{m} * 10\text{m}$) = $100,000,000 \text{ VND} = \text{US\$4,389}$

Specific Objective 3: to enhance the capacity, knowledge and awareness of local community, local government and staff through capacity building programs, which will make sure to sustain the management activities after the project is accomplished

Output 11. Public environmental awareness building conducted in the national park and adjacent area

11.1 Designing billboards with contents of wetland conservation

(1) Basic information: Every year, Tram Chim National Park Management Board coordinates with Forest Protection Department, Fire Prevention and

Fighting Police Department and local authorities to conduct fire prevention in communes and towns surrounding the park. Repair education posters and panels in residential clusters, important places to raise awareness of people about wetlands and management and protection of Tram Chim NP in general and forest fire prevention in particular.

- (2) Measures: Tram Chim NP Management Board coordinates with Forest Protection Department, Fire Prevention and Combat Police to work together to make the billboards with contents of wetland conservation and management and protection of Tram Chim NP in general and forest fire prevention in particular.
- (3) Investigation precision: According to the laws of Vietnam on wetland conservation, environment and fire prevention.
- (4) Survey area: A2, A3, A4
- (5) Planning compilation unit: Tram Chim NP.
- (6) Schedule: Jan. - Dec. 2019
- (6) Budget: Investment budget US\$1,350, invested by APFNet.
Designer: 1 person*3 days *US\$ 150 /day: US\$450
Billboards production: US\$600
Translated into English (billboards should be in Vietnamese and English):US\$ 300

11.2 Setting up billboards at vital sites (10)

- (1) Basic information: According to the latest survey, the project area has hardly any billboards with contents of wetland conservation. Therefore, it is necessary to setup a system of billboards at vital sites.
- (2) Measures: Hire a construction company, install and setup the 10 billboards with the design with contents of wetland conservation
- (3) Investigation precision: According to the law of Vietnam
- (4) Setting up area: A2, A3, A4
- (5) Planning compilation unit: Tram Chim NP.
- (6) Schedule: Jan. - Dec. 2019
- (7) Budget: Investment budget US\$8,830, invested by APFNet.
Set up: US\$883 (including 1 table (billboard) including iron, brick, sand, cement, construction worker) * 10 tables (billboards) = US\$8,883

11.3 Designing, producing and lay out information (picture and specimen and brief introduction) about endangered and economic important flora and fauna in the National Park.

- (1) Basic information: Tram Chim National Park has a tourist center, although it exhibits a number of specimens but does not have enough photos, specimens as well as basic information about the economic important flora and fauna in the National Park. Therefore, it is necessary to design and present more pictures, specimen and brief introduction.
- (2) Measures: Tram Chim National Park will hire a local company to design the pictures, photographs, make samples as well as briefly describe the specimens of the economic important flora and fauna in the National Park.
- (3) Investigation precision: According to the law of Vietnam
- (4) Planning compilation unit: Tram Chim NP.
- (5) Schedule: Jan. - Dec. of 2020
- (6) Budget: US\$3,000, invested by APFNet.
 - 1) Designer: 1 person * 3 days * US\$150 /day=US\$ 450
 - 2) Lay out information: 1 person* 5 days *US\$ 110 /day=US\$550
 - 3) Producing specimen: 20 specimens * US\$100/ specimen= US\$2,000

Output 12. Technology trainings organized

12.1 Four trainings for project staff on integrated wetland management technology (25persons/training)

- (1) Target: project staff training on integrated wetland management technology
- (2) Time: trainings will be carried out during Mar. 2019, Mar. 2020, Nov. 2021, and Mar. 2022, respectively.
- (3) Training site: Tram Chim NP
- (4) Contents: forest resources inventory and monitoring, basics for classification of tree, wetland conservation, forest management, forest farm management, environmental protection and resource use planning, fire prevention, project management and publicity etc.
- (5) Scale: 4 trainings, and 25persons for each.
- (6) Budget: Investment budget US\$13,040 invested by APFNet.
 - 1) Lecturer: 1 person*2 days *US\$110/person·day*4 times= US\$880;
 - 2)Participant: Package cost for students (US\$22/person·day - Costnorms2015):25 persons *US\$22/person·day*4 times=US\$ 2,200;

- 3) Document preparation: $2\text{days} * \text{US\$}110/\text{person} \cdot \text{day} * 4 \text{ times} = \text{US\$}880$
- 4) Allowance and accommodation for lecturer ($\text{US\$}10 + \text{US\$}15 = \text{US\$}25$ / day· night): $2\text{days} * \text{US\$}25 / \text{day} \cdot \text{night} * 4 \text{ time} = \text{US\$}200$
- 5) Domestic travel (HN-Tram Chim - HN: 4 rounds (Taxi round trip Hanoi - Noi Bai, Tan Son Nhat - Tram Chim: $\text{US\$}100 / \text{person}$; $\text{US\$}250 / \text{person/training}$): $1\text{person} * \text{US\$}350/\text{person} * 4 \text{ times} = \text{US\$}1,400$
- 6) Conference hall, equipment teaching assistant ...:
 $2 \text{ days} * \text{US\$}60/\text{day} * 4 \text{ times} = \text{US\$}480$
- 7) Student materials: $25 \text{ persons} * \text{US\$}10/\text{person} * 4 \text{ times} = \text{US\$}1,000$
- 8) Meal: $25 \text{ persons} * 2 \text{ days} * \text{US\$}10/\text{day} * 4 \text{ times} = \text{US\$}2,000$
- 9) Visiting / practicing after training: $\text{US\$}1,000/\text{time} * 4 \text{ times} = \text{US\$}4,000$

12.2 Two trainings for local officials and local leaders on integrated wetland management (20 persons/training)

- (1) Target: local officials and local leaders
- (2) Time: trainings will be carried out during Mar. 2019, and Nov. 2021, respectively.
- (3) Training site: Tram Chim NP
- (4) Contents: integrated wetland management (including wetland conservation, environmental protection and resource use planning, fire prevention, project management etc.).
- (5) Scale: 2 trainings, and 20persons for each.
- (6) Budget: Investment budget $\text{US\$}5,780$ invested by APFNet.
 - 1) Lecturer: $1 \text{ person} * 1 \text{ days} * \text{US\$}110 * 2 \text{ times} = \text{US\$}220$;
 - 2) Participant: Package cost for students ($\text{US\$}22 / \text{person} \cdot \text{day}$ - Costnorms2015): $20 \text{ persons} * \text{US\$}22/\text{day} * 2 \text{ times} = \text{US\$}880$;
 - 3) Document preparation: $2\text{days} * \text{US\$}110/\text{day} * 2 \text{ times} = \text{US\$}440$
 - 4) Allowance and accommodation for lecturer ($\text{US\$}10 + \text{US\$}15 = \text{US\$}25$ / day night): $2\text{days} * \text{US\$}25 / \text{day night} * 2 \text{ time} = \text{US\$}100$
 - 5) Domestic travel (HN-Tram Chim - HN: 4 rounds (Taxi round trip Hanoi - Noi Bai, Tan Son Nhat - Tram Chim: $\text{US\$}100 / \text{person}$; $\text{US\$}250/\text{person} / \text{training}$): $1\text{person} * \text{US\$}350/\text{person} * 2 \text{ times} = \text{US\$}700$
 - 6) Conference hall, equipment teaching assistant: $2 \text{ days} * \text{US\$}60/\text{day} * 2 \text{ times} = \text{US\$}240$
 - 7) Participant materials: $20 \text{ persons} * \text{US\$}10/\text{person} * 2 \text{ times} = \text{US\$}400$
 - 8) Meal: $20 \text{ persons} * 2 \text{ day} * \text{US\$}10/\text{day} * 2 \text{ times} = \text{US\$}800$

9) Visiting / practicing after training: US\$1,000 per time * 2 times = US\$2,000

12.3 Two trainings for techniques on forest, wetland and biodiversity monitoring and survey. (20 persons/training)

- (1) Target: Assisting local officials (including Tram Chim province, district and Tram Chim NP) to acquire knowledge and techniques on forest monitoring, wetland and biodiversity monitoring and survey.
- (2) Time: trainings will be carried out during Oct. 2020 and Mar 2021.
- (3) Training site: Cao Lanh (Dong Thap province) and Tram Chim NP.
- (4) Lecturer and participants: The lecturer is a specialist in using satellite images and statistical analysis; specialist in inventory, analysis and assessment of wetland, biodiversity and forest; the lecturers also have practical experience in training, guidance and participation. Training participants are the selected from provincial and district departments have activities related to forests, biodiversity and wetlands, the total number of participants are 20 persons.
- (5) Contents: Preparing training material. Training for technical staff of local professional organization on forest status mapping by using satellite images and statistical analysis of area data by administrative and management unit. Training for practical in the field including interviews local people and professional agencies to gather analyze and evaluate the status and capacity of the wetland, biodiversity and forest resources inventory and assessment. Training on analysis and assessment of shortcomings in current wetland, biodiversity and forest resource inventory and assessment at the national and local level. Training on identify the capacity building needs in forest resources inventory and assessment for local officials. Training on remote sensing principle – SPOT6 image. Training on the application of GIS for wetland, biodiversity and forest resources assessment. Training on the GPS using for wetland, biodiversity and forest resources inventory and assessment.
- (6) Scale: 2 trainings. For one training, 20 persons, 6 days (4 days in Cao Lanh, 2 days in the Tram Chim for practical in the field).
- (7) Budget: Investment budget US\$ 21,440 , all invested by APFNet.
Two trainings =US\$ 10,720/training *2 trainings= US\$21,440
One training =US\$ 10,720:

- 1) Lecturer: 2 persons*6 days *US\$110*1 time=US\$ 1,320;
- 2) Participant: Package cost for students (US\$22/person·day-Costnorms2015):
20 persons *US\$22/day*6days * 1 time= US\$2,640;
- 3) Document preparation: 12days *US\$110/day*1 time=US\$1,320
- 4) Allowance and accommodation for lecturer (US\$10 + US\$25 = US\$35 / day· night):2 persons * 6days * US\$35/ day·night * 1 time= US\$420
- 5) Domestic travel for lecturer (HN-Cao Lanh - HN: 4 rounds (Taxi round trip Hanoi - Noi Bai, Tan Son Nhat – Cao Lanh: US\$100/person; US\$ 250/person/ training): 2persons *US\$350/person * 1 time= US\$700
- 6) Travel and accommodation cost for trainee (20 trainees):
20persons * 6 days * US\$35/person · time= US\$420
- 7) Conference hall, equipment teaching assistant as PC, projector renting: 4 days *US\$300/day*1 time=US\$1,200
- 8) Participant materials: 20 persons *US\$25/person*1 time= US\$500
- 9) Meal: 20 persons *6 days*US\$10/day*1 time=US\$1,200
- 10) Practical in the field: US\$500/day * 2days =US\$ 1,000

12.4 Four trainings for local farmers on lotus plantation, beekeeping, weaving, vegetable planting, and marketing. (50 persons/training)

- (1) Target: local farmers
- (2) Time: trainings will be carried out during Mar. and Nov. 2019, Mar. and Nov. 2020, respectively.
- (3) Training site: Tram Chim NP.
- (4) Lecturer: The lecturer is a specialist in cultivation, livestock and handicrafts working in Dong Thap with practical experience in training, guidance and participation, visiting models in and out of the province. Training participants are the selected households to carry out the model building. The total number of households expected to participate in the training is 50 households.
- (5) Contents: To compile documents for teaching; Guidance on preparation for land selection; Techniques for planting, nursing and pest control, harvesting and preservation of harvested products; Introduction of the origin and morphological characteristics of the honey bee varieties; Techniques and standards of bee keeping box; Breeding techniques; Nursing care; Prevention and treatment of some common diseases; Introduction of

specimen; Production of handicrafts in the province.

- (6) Scale: 4 trainings, and 50 persons for each.
- (7) Budget: Investment budget US\$11,840 invested by APFNet.
 - 1) Lecturer: 1 person*2 days * US\$110*4 times= US\$880;
 - 2) Document preparation: 2days * US\$110/day*4 times= US\$880
 - 3) Allowance and accommodation for lecturer (US\$10 + US\$ 15 = US\$ 25 / day· night):2days * US\$ 25 / day * 4 time=US\$ 200
 - 4) Domestic travel (HN-Tram Chim - HN: 4 rounds (Taxi round trip Hanoi - Noi Bai, Tan Son Nhat - Tram Chim: US\$100/person; US\$250 /person/training):1person *US\$350/person * 4 times= US\$1,400
 - 5) Conference hall, equipment teaching assistant: 2 days * US\$60/day*4 times= US\$480
 - 6) Participant materials: 50 persons * US\$10/person*4 times= US\$2,000
 - 7) Meal:50 persons *2 days* US\$10/day*4 times= US\$4,000
 - 8) Visiting / practicing after training: US\$500 /time * 4 times = US\$2,000

Output 13. International exchange on wetland conservation and management conducted

13.1 Exchange study visit to other GMS project site to share and learn project experiences (6 persons, 8 days)

- (1) Visit time: Dec. 2019
- (2) Economies to be visited: Thailand
- (3) Visitors: main technical staff and managers (6 persons for 8 days).
- (4) Content for exchange visit: carry out exchange visit in GMS countries with focus on forest ecosystem management and information exchange.
- (5) Budget: Investment budget US\$8,130 , all invested by APFNet.
 - 1) Noi Bai Airport - Bangkok - Udon Thani Airport (Thai Airways):
4persons * US\$450/ ticket/person =US\$ 1,800
 - 2) Tan Son Nhat Airport - Bangkok - Udon Thani Airport (Thai Airways)
2persons*US\$ 450/ ticket/person = US\$900
 - 3) Private airport transportation upon entry / exit:
6persons * US\$75/person =US\$ 450
 - 4) Rental (Hanoi - Noi Bai - Hanoi, HCM - Tan Son Nhat - HCM):
6persons * US\$30/person = US\$180
 - 5) Room for rent at Asean Resort (99, Moo 13, Tumbon Viset, Amphoe

Mueang, Bung Kan) - Buengkan - Thailand (6 rooms*8 days):

6persons * US\$50/person*8days =US\$ 2,400

6) Meals and allowances (6 persons * 8 days *US\$ 40 / person / day):

6persons * US\$40/person*8days = US\$1,920

7) Rent of transport means during the working time (US\$ 80 /person/time):

6persons * US\$80/person =US\$ 480