KINGDOM OF CAMBODIA
NATION RELIGION KING

INUNDATED FOREST FIRE PREVENTION AND MANAGEMENT PLAN
BATTAMBANG PROVINCE
2021-2025

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FISHERIES ADMINISTATION AND BATTAMBANG ADMINISTRATION

PREFACE

The Kingdom of Cambodia is rich in natural resources, especially the Tonle Sap Lake that consists of many freshwater lives such as fishes, turtles, reptiles, water birds, aquatic plants and inundated forest, which are the matters of utmost importance to humanity and to maintain the natural balance. These resources not only play a vital role in supplying fish daily to Cambodians but also to protect and conserve the Tonle Sap basin and grant tourism services.

The Royal Government of Cambodia has taken significant policy measures addressing the sustainable protection, conservation and management of fisheries resources and the aquatic ecosystems on which many Cambodian households, most importantly for those living in rural areas around the Lake, depend for livelihoods, employment, income, food security and nutrition (Nutrient Sources to Tonle Sap Lake, Cambodia, APN Science BulletinIssue 3, March 2013).

The 10-year Strategic Plan for Fisheries Conservation and Management under the pillar 1 of Capture Fisheries and Management of the Strategic Planning Framework for Fisheries covering the years 2015-2024, continues its efforts to pursue a vision of "Cambodia's fisheries resources and ecosystems are restored where depleted, conserved and protected for livelihoods, food security and nutrition for present and future generations". Its overall objective entails that "all stakeholders collaborate to ensure the Cambodia's fisheries are utilized sustainably, conserved and managed in an environmentally non-degrading, ecologically appropriate, economically viable, and socially acceptable manner".

Battambang province consists of a part of the floodplain of the Tonle Sap Lake that has high potential for promoting economic development through fishing, agricultural production and ecotourism development. Due to the geographical situation of Battambang province, uniqueness of biodiversity and situation of degradation of flooded forest by fire occurred every year that negatively affect to fisheries habitat and fisheries stock, Fisheries Administration in close collaboration with CAPFISH's FAO Complementary Support project, Battambang Administration and local authorities develops the 5-Year Inundated Forest Fire Prevention and Management Plan for Battambang province for implementing from 2021-2025.

To meet the above vision, on behalf of the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries, I fully support the implementation of this an important management plan to ensure sustainable management of inundated forest fire and restoration for the sake of fisheries conservation, fisheries biodiversity and the contribution to local poverty reduction to meet the standard of living for our people.

And on behalf of the Battambang Administration, I sincerely support and officially declare to launch the 5-Year Inundated Forest Fire Prevention and Management Plan for Battambang province from this day forwards. The provincial authorities will fully support the implementation of this management plan to make sure our fisheries resources can support our next generations in years to come.

Phnom Penh, date 14-12-2021

H.E. Poum Sotha
Delegate of the Royal Government
Director General of Fisheries Administration

Battambang, date 22-12-2021

H.E. Sok Lou
Governor
Battambang province

ACKNOWLEDGE

I would like to thank **H.E. Veng Sakhon**, Minister of The Ministry of Agriculture Forestry and Fisheries (MAFF) for his support in the development of the CAPFISH-Capture for fisheries resources management in Cambodia. Special thanks are due to HE has assigned the Programme Steering Committee for ensuring that arrangements for working among FiA with the relevant Ministries were in place and for his efforts to ensure its good coordination.

I am grateful to **H.E. Has Sareth**, Secretary of State of the Ministry of Agriculture, Forestry and Fisheries and Chairman of the CAPFISH-Capture Program Steering Committee for his direct support and efforts to orient the program implementation in line with the Agricultural Strategic Development plan of the Ministry of Agriculture, Forestry and Fisheries.

Special thanks are also to **H.E Sok Lou**, Governors of Battambang province and his technical officers for all support FiA team mission on data/information gathering for flooded forest fire management plans and insight in identifying the core problems, caused, and effected and focusing on the prevention, intervention respond, and restoration mechanism for their technical inputs to the plan.

H.E. Poum Sotha Delegate of the Royal Government and Director General of FiA, and official of Fisheries Administration and Programme Officer of the CAPFISH-Capture Project, as well to the team leaders and technical official from Fisheries Administration Cantonment of Battambang, for leading to develop inundated forest fire prevention and management plan for Battambang province with fully supported by PDAFF director.

The special thanks also referred to the FAO Country Representative, **Mr. Alexandre HUYNH**, the CTA, **Mr. David Brown** and his colleagues in the CAPFISH-Capture project for complementary supporting to develop this plan.

This inundated forest fire prevention and management plan for Siem Reap province has benefited from inputs of those involve in working in the Tonle Sap region such as UNESCO, WCS, AFD and TCO shared details of their work in Tonle Sap.

Finally, I would also like to thank the EU Delegation to Cambodia for their interest and support, most notably that **H.E. Carmen Moreno**, Ambassador of the European Union, **Mr.** □□□□□ □□□□□□□ , Head of Cooperation of the EU Delegation, **Mr. Aymeric Roussel**, Former Attaché of EU Delegation and Mr. □□□□□□□□□ □□□□□, Attaché of EU Delegation, CAPFISH-Capture and Co-Chair of the TWGF for their thoughtful review of the draft plan. Funding support for this work was provided by the European Union's Delegation to the Kingdom of Cambodia through the MAFF to FiA for the CAPFISH-Capture Project.

Contents

Acronyms and abbreviations

BAT : Battambang province
CAPFISH : Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector
CBFiM : Community Based Fisheries Management
CFFPT : Community Forest Fire Patrol Team
CFi : Community Fisheries
CFiMC : Community Fisheries Management Committee
CFR : Community Fish Refuge
DFA : Department of Fisheries Affairs
DFC : Department of Fisheries Conservation
FAO : Food and Agriculture Organization of the United Nations
FiA : Fisheries Administration
FiAC : Fisheries Administration Cantonment
MAFF : Ministry of Agriculture, Forestry and Fisheries.
MET : Monitoring and Evaluation Team
MoE : Ministry of Environment
PDAFF : Provincial Department of Agriculture, Forestry and Fisheries.
PDE : Provincial Department of Environment
PDoRAM : Provincial Department of Water Resources and Meteorology
SMS : Short Messaging Service
TSA : Tonle Sap Authority
UNESCO : United Nations Educational, Scientific and Cultural Organization
WGFFFM : Working Group for Flooded Forest Fire Management
WGFFM : Working Group for Forest Fire Management

1. Introduction

The Tonle Sap Great Lake is described by Cambodians as the heart of their culture and national economy. Globally, it is known as the heart of Cambodia's freshwater fisheries, the largest freshwater lake in Southeast Asia and one of the most productive wetland areas in the world. The flooded forests and floodplains surrounding the lake provide shelters for fish and some of the world's most threatened water birds and access to spawning, breeding as well as feeding areas. According to the Fisheries Administration (FiA), fish, the vast majority of which comes from the Tonle Sap Lake, provide over 60% of protein intake in the Cambodian diet *(Nutrient Sources to Tonle Sap Lake, Cambodia, APN Science BulletinIssue 3, March 2013)*.

As Cambodia's population and economy gradually grow, the Tonle Sap Lake is now under threat from man-made factors, competition over the lake's natural resources has intensified and clearing of flooded forest for cultivating rice and cash crops has negative impact directly on fish and other wildlife.

In the last few years, water levels in the Tonle Sap Lake reached record low levels due to climate change, especially extreme heat and drought. These conditions exacerbated forest fires, which have affected fish conservation areas, fish habitats for breeding, spawning and feeding and Ramsar sites of Steung Sen, Boeung Tonle Chmar and Prek Toal bird sanctuary which are home for Southeast Asia's largest water bird colony.

Two key factors are considered to trigger flooded forest fires around the Tonle Sap Lake; the accidental and the intentional cases. The accidental case includes using smoke to harvest bee honey, discarding lit cigarette butts, leaving cooking fires without putting them out, burning forest for hunting wildlife and recovering domestic cows and buffalos that are freely released for grazing. The second case includes burning flooded forests for converting into rice fields, hunting animals and setting a long path to lay long fishing nets so-called Sach Daiy across streams.

The forest fire is the most serious threat to flooded forest. Since the inundated forest is the key breeding and feeding grounds for fish and water birds, the loss of flooded forest will lead to decreases in both fish and water bird species and population. Repeated flooded forest burnings will result in transforming flooded forest to grass species and flooded grasslands.

The consequences of flooded forest fires in the floodplain in of the Tonle Sap Lake in Battambang province contribute to gradual decline of fisheries resources, including fish population and species, aquatic plants, reptiles, mammals and wild birds. The FAO's complementary component of the CPAFISH project identifies and works with key stakeholders that are involved in flooded forest fire management at provincial, district, commune and community levels in the province to develop and implement Flooded Forest Fire Management in a manner to deal with and reduce the forest fires. That is why this IFFPMP is developed in a participatory approach with proper, applicable and flexible responses or interventions.

The technical team, consisting of 12 officers from Department of Fisheries Conservation (DFC), FiA and Fisheries Administration Cantonment (FiAC) in Battambang province (annex 1: List of the working group responsible for supporting flooded forest fire management in BAT province) gathered primary and secondary information in the fields for developing IFFPMP at province and district levels. The first field mission was conducted on 12-23 May 2020 to meet local commune and stakeholders in the target districts and communes to collect information on causes of forest fires, responsive actions applied against forest fires, stakeholders involved in forest prevention and intervention, the existing forest fire management mechanism and its effectiveness, restoration approaches for the burnt forest areas and required equipment and infrastructure to support forest fire prevention and intervention. Collecting waypoints and mapping the burnt forest areas were carried out in this field mission.

2. Biodiversity of the inundated forest in Battambang province

The western part of Battambang province next to national road N° 6 covers about three-fourths of the total area of the province consisting of forests and plateau, rich in natural resources that are very good for biodiversity and water conservation, forest-based income generation, agricultural production and animal husbandry. The eastern part of the province below national road 6 covers about none-fourths the total area is a floodplain, extending from west to east to Tonle Sap Lake with a gentle slope. This area is good for cultivating rainy and dry season rice, floating rice and receding rice based on deferent elevations and fishing to support the needs for food of communities living in the province and others as well.

Tonle Sap lowland in the province comprises of many fishery resources such as flooded forests, aquatic plants, fishes, water birds, mammals and reptiles. On the other hand, the soil of Tonle Sap's floodplain is Lacustrine Alluvia Soil as a whole is very fertile. Based on their age, these soil have been classified into two types of old and new alluvium soils. These soils contain adequate proportion of Potash, Lime, and Phosphoric acid. Silk, clay, gravel and sand are the main constituents of the soil. It is ideal for growing rice, corn, beans, chili paper and sugarcane that are the high protein food for Cambodians and the income of farmers and fishermen living around Tonle Sap Lake.

Tonle Sap Lake with the rivers of Mekong, Tonle Sap and Bassac form a unique eco-system, home to a great variety of species: over 200 fish species live in the lake, 70 of them are of commercial relevance. 23 snake species, among them the endemic *Longhead Water Snake (Enhydris longicauda)* as well as 13 turtle species live in and around Tonle Sap Lake *(www.globalnature.org/en/living-lakes/asia/tonle-sap#)*. Please see list of biodiversity species in floodplain areas of BAT province in annex 2)

The forests and shrub lands in the Tonle Sap floodplain of this province contain a number of endemic plant species, e.g. *Samandura harmandii, Terminalia cambodiana, Coccoceras anisopodum, Diospyros bejaudii, Diospyros cambodiana, Garcinia loureiri, Acacia thailandica,* and *Hydnocarpus saigonensis*. Major communities include *Barringtonia acutangula, Elaeocarpus madopetalus* and *Diospyros cambodiana*; floating and emergent herbs including *Brachiaria mutica, Eichornia crassipes, Polygonium barbatum, P. tomentosum* and *Sesbania javanica* (Annex 3: List of flooded forest species in floodplain areas of BAT province). Noteworthy, there are also a number of grass and sedge species i.e. Wild Rice *Oryza rufigpogon* which is very important in terms of the gene pool and genetic biodiversity conservation and the Globally Vulnerable *Cynometra inaequifolia*, which is a species of legumes in the Fabaceae family.

Over 200 species of fish use this habitat as a feeding, breeding, and nursery ground. The woody species of this forest is often laden with fruits and seeds at the time of inundation, providing food for the 34 species of fruit-eating fish of the Lower Mekong Basin *(Impacts on the Tonle Sap Ecosystem, June 2010, MRC)*.

There are 7 fisheries conservation areas covering 53.750 ha are under direct control of the FiAC as well as 47 community fisheries (CFi) with a total area of 181,311 hectares (Annex 4: List of CFi in the province) and 28 community fish refuges (Annex 5: List of community fish refuges in the province) under direct management of the concerned communities in the floodplain and the Lake within the province.

3. Overview of Geography and Demography of the floodplain

Battambang province is one of the 25 municipalities and provinces of the Royal Government of Cambodia which borders Pursat (PS) and Tonle Sap Lake in the east, Thai border in the west, Banteay Meanchey (BTM) province in the north, and Pursat province in the south. It is located about 291 km from Phnom Penh Capital in the northwest extending in a total area of 11,748 km2 and consists of one municipality and 13 districts occupied by a total number of 263,435 families equal to 1,205,050 people (602,994 women) in which 72.20% are farmers dependent on agricultural production, the

major occupation *(General population Census of the Kingdom of Cambodia 2019, Ministry of Planning)*.

Regarding the flooded forest management, only four among the 13 districts – namely Aek Phnum, Sangkae, Moung Ruessei and Thma Koul - are identified as the target districts for flooded forest fire management by the CAPFISH Project which consist of flooded forests and a number of community fisheries under the jurisdiction of Fisheries Administration, as well as Prek Toal Ramsar Site in Kaoh Chiveang commune, Aek Phnum district under the jurisdiction of Ministry of Environment. Prek Toal is one of three biospheres on the Tonle Sap Lake, and this stunning bird sanctuary makes it the most worthwhile and straightforward to visit. It's an ornithologist's fantasy, with a significant number of rare breeds gathered in one small area, including the huge lesser and greater adjutant storks, the milky stork and the spot-billed pelican. Even the uninitiated will be impressed, as these birds have a huge wingspan and build enormous nests.

Within the four target districts, there are only 19 out of 35 communes involved in flooded forest management. Regarding the sizes of the flooded forest, Aek Phnom district is ranked first, Sangkae is ranked second, Moung Ruessei is ranked third while Thma Koul district is ranked last.

The total area of flooded forests in the four target districts is 224,210 hectares equal to 34.63% of the total area of 647,406ha of the flooded forest in the Tonle Sap's floodplain defined by sub-decree No. 197 of which 122,289ha are Prek Toal Ramsar site under the jurisdiction of the Ministry of Environment.

3.1 *Overview of Geography and Demography of floodplain in Aek Phnum district*

Aek Phnum district is one of the four target districts in the province which consists of five out of seven communes - namely Preaek Norint, Preaek Luong, Peam Aek, Prey Chas and Kaoh Chiveang - that involve in flooded forest fires management. Only two of them - Prey Chas and Kaoh Chiveang communes - that are the most relevant communes to engage the direct practice of forest fire management as they are settled in the inundated zone while the other neighboring three are indirect.

Aek Phnum district extending in a total area of 635 km2 borders Mongkul Borei and Prea Netr Preah districts of BTM province and Puok district of Sem Reap (SR) province in the north; Sangkae district and BTB municipality of BTB province in the south, Puok district of SR province and Tonle Sap Lake in the east; and Thma Koul district and BTB municipality in the west.

The total population of Aek Phnum district is 82,602 people (41,826 women) equal to 18,205 families in which 73.02% of the total population engaged in the agricultural production sector, the primary occupation, including rainy and dry season rice, cashew, mango, rubber, cassava, black pepper, corn, mung bean, longan, sesame and animal husbandry (Aek Phnum district profile for 2019, PDP Feb 2020).

In the agricultural sector, around 31.62% of its total population involve in rice production being cultivated in a total area of 10,876ha of which 896ha is dry season rice fields mostly situated in Zone 2 while some are in Zone 3 *(Aek Phnum district profile for 2019, PDP Feb 2020)*.

3.2 *Overview of Geography and Demography of the floodplain in Moung Ruessei district*

Moung Ruessei district is located in the southeast of the province about 52 km from the provincial town via national road N^0 5. Moung Ruessei district is one of the four target districts in the province which consists of 5 out of 9 communes – namely Chrey, Ka Koah, Reissei Krang, Prey Touch and Ta Loas - that are involved in flooded forest fires management.

The district borders Bakan and Veal Veaeng districts of Pursat province in the south; Sangkae district of Battambong province and Tonlea Sap Lake in the north, Koas Krala district of Battambang province

in the west, and Bakan district of Pursat province and Tonle Sap Lake in the east. Nearly all the communities living in the target communes depend on agricultural production.

The total population of the district is 135,132 people (68,247 women) equal to 28,516 families. About 77.30% of the total population engage in the agricultural production sector, the primary occupation, including rainy and dry season rice, animal husbandry, cassava, mango, sugar cane, sesame, sweet potato, soybean, mung bean, peanut, fishing and non-wood forest product. Around 0.90% of the total population is found involved in fishing for earning a living (Moung Ruessei district profile for 2018, PDP March 2019).

In the agricultural sector, around 69,70% of the total farmers is involved in rice production being cultivated in a total area of 36,537 ha of which 6,147 ha is dry season rice fields mostly situated in Zone 1 and Zone 2 while some are in Zone 3. The dry season rice area is increased from 5,751 ha to 6,147 ha in the years between 2016 and 2018 (Moung Ruessei district profile for 2018, PDP March 2019).

3.3 *Overview of Geography and Demography of the floodplain in Sangkae district*

Sangkae district is one of the four target districts in the province which consists of 4 out of 7 communes - namely Anlong Vil, Kampong Preah. Kampong Preang and Ta Pon - that are involved in flooded forest fires

management.

Sangkae district extending in a total area of 71,020 hectares borders Aek Phnum district of Battambang province in the north; Moung Ruessei and Koas Krala province of BTB province in the south, Moung Ruessei district of BTB province and Tonle Sap Lake in the east, Banan and Aek Phnum districts and BTB municipality of BTB province in the west.

The total population of Sangkae district is 129,870 people (66,101 women) equal to 27,072 families in which 81.47 % of the total population engage in the agricultural production sector, the primary occupation, including rainy and dry season rice, cassava, corn, mung bean, soybean, peanut, sesame, sweat potato, sugar cane, pitaya, mango, orange, fish and crocodile culture and animal husbandry (goat, pig, cow, buffalo, duck and chicken).

In the agricultural sector, around 79.40% of the total population is involved in rice production that is being cultivated in 37,257 ha of which 1,723 ha is dry season rice fields where are mostly positioned in Zone 2 while some in Zone 3 *(Sankae district profile for 2019, PDP Feb 2020)*.

3.4 *Overview of Geography and Demography of floodplain in Thma Koul district*

Thma Koul district is one of the four target districts in the province which consists of 4 out of 10 communes - namely Boeng Pring, Chrouy Sdau, Ta Pung and Ta Meun - that involve in flooded forest fire management. Thma Koul district extending in a total area of 647,29.69 hectares borders Mongkol Borei district of Banteay Meanchey province in the north; Banan district and BTB municipality of BTB province in the south, Aek Phnum district and BTB municipality in the east, Bavel district of BTB province in the west.

The total population of Thma Koul district is 133,859 people (68,012 women) equal to 28,690 families of which 76% of the total population engaged in agricultural production sector, the primary occupation, including rainy and dry season rice, cassava, corn, sugar cane, mango, orange, pitaya/dragon fruit, fish culture, crocodile culture and animal husbandry (Thma Koul district profile for 2019, PDP Feb 2020).

In the agricultural sector, around 21% of the total population involve in rice production being cultivated in a total area of 76,221ha of which 16,067 ha is dry season rice fields mostly situated in Zone 2 while some are in Zone 3. (Thma Koul district profile for 2019, PDP Feb 2020).

4. Flooded Forest Fire Issues

Flooded Forest Fire Issues in Battambang's floodplain landscape, inundated forest fires are common and there is clear evidence that forest fires have been used for decades as a way to clear areas for rice farming and other cash crops. FiAC's officers in the province reported in 2016, a total area of 10,992 ha of inundated forest area was completely cleared for and converted into agricultural lands. Based on the data collected on 12-13 May 2020 by the FiA and FiAC working team, an additional area of 14,562 ha of 15 locations were burnt in the period between 2016 and 2020 within the 4 target districts.

The forest fires that have been happened over decades impact heavily on fisheries resources, including forests and grasses that are the favorite and safe habitats of fish, wildlife and water bird communities for seasonal feeding, spawning and breeding. The most negative impact is the decline of fish species and population that are the main source of local income generation of fishing communities, forcing them to clear flooded forest for agricultural products instead.

4.1 Causes of fires

Based on the report developed by the working group composed of the officers from Department of Fisheries Conservation (DFC) and Department of Fisheries Affair (DFA), Fisheries Administration (FiA), responsible for Battambang province led by Mr. Bun Racy, deputy director of Department of Fisheries Conservation (DFC), mentioned that the key causes of flooded forest fires in dry season in the province are mainly from:

- Negligent human activities of slashing and burning vegetation in existing plots of agricultural

  lands located next to grasslands and flooded forests. It is ranked as a highest potential risk of causing flooded forest fires.

- Burning dry grasses and hangover of flooded forest and shrubs that have been cut intentionally for an attempt to expand the existing rice fields and newly claim inundated forest land. This activity is also one of the highest risks as it has commonly occurred across the Tonle Sap Lake region.

- Burning rice straw in rice fields to gain fertilizer (ashes) before plowing, spreading fires across grasslands and flooded forests nearby that were unable to be controlled.

- Discarding lit cigarette butts in dry grass and bushes, and in a pile of dry organic matter. This careless activity triggering flooded forest fires has quite often been seen along the roads.

- Careless cooking without putting out the fire before leaving by fishers, hunters and people who take care of domestic animals is also one of the major reasons of flooded forest fires.

- Using fire to ignite dry grasses and dead branches of trees by hunters to chase and catch wildlife (reptiles and mammals) and collect bee honey. Actually, hunters set fire to hunt wildlife at a meso-scale but later the fire extended at a larger scale to destroy flooded forests and grass lands where are the breeding and feeding refuges of some wildlife and wild birds, especially *Bengal Florican* or *Bengal bustard* (Ksep) that is a bustard species native to the Indian subcontinent, Cambodia, and Vietnam. It is listed as Critically Endangered on the IUCN Red List because fewer than 1,000 individuals were estimated to be alive as of 2017 (BirdLife International 2017).

- There is no information on natural phenomena such as dry thunderstorms and lightning set

  flooded forest fires in Battambang province reported.

Therefore, all the reasons causing the flooded forest fires are triggered from carelessness or negligence of human actions. The information on the roots of every cause were explored deeper to

use as the foundation for analyzing and interpreting the proper actions to deal with these problems that have been happened in specific locations within the target communes as mentioned in table 1. And all the identified causes of the flooded forest fires raised by the concerned stakeholders are included into the IFFPMP for Battambang province to ensure they will be addressed in the 5-year life period of the plan.

4.2 Locations of burnt forest sites in Battambang province

Based on the data collected by the FIA/FIAC team from 13-20 May 2020, in the period between 2016

and 2020, there were 46 fire-damaged forest locations documented, damaging a total of 7,755 ha of flooded forest area in 19 communes of 4 districts. The team collected the waypoints and mapped the burned forest sites as shown in the annex 2.

Aek Phnum district has the highest number of the forest fires and then Sangkae district recorded in terms of time and area. The table 1 below indicates the fire cases and areas of fire-damaged forests by communes

Table 1: List of flooded forest areas burnt in the target districts and communes of Battambang province.

District	Commune	Number of forest fires recorded	Estimated Area burned (Ha)	Time of forest fires commonly happened	Response to extinguish forest fires
Aek Phnum	1. Preaek Norint 2. Preaek Luong 3. Peam Aek 4. Prey Chas 5. Kaoh Chiveang	11	5,214	Mar-May (2016-2020)	Self-Extinguished as limited access to the burned areas
Sangkae	6. Kampong Preah 7. Kampong Preang 8. Ta Pon 9. Roka 10. Anlong Vil	21	1,274	Mar-May (2016-2020)	Self-Extinguished as limited access to the burned areas
Moung Ruessei	11. Chrey 12. Ka Koah 13. Reissei Krang 14. Prey Touch 15. Ta Loas	9	977	Mar-May (2016-2020)	Self-Extinguished as limited access to the burned areas
Thma Koul	16. Boeng Pring 17. Chrouy Sdau 18. Ta Pung 19. Ta Meun	5	290	Apr-May (2016-2020)	Self-Extinguished as limited access to the burned areas
4	19	46	7,755		

4.3 *Stakeholders Involved in Flooded Forest Fire Management*

Flooded forest, floodplains, natural ponds and the Lake themselves are important for aquatic life and biodiversity as well as human beings for economics (fish, rice and cash crops) and source of protein (fish). Due to these multiple benefits, there are many stakeholders identified and involved in the uses and management of fisheries resources and flooded lands as well as setting and control flooded forest fires in the Great Lake territory as following:

Table 2: Involvement of key involved stakeholders in flooded forest fire management

Stakeholder	Review	Risk Reduction	Readiness	Response	Recovery
Local communities	Extend periods of dry season and late start to raining season.	Reduce access to inundated forest areas.	Disseminate information on the importance of	Join interventions during	Join cooperation to re-plant inundated forest trees in

			inundated forests and the impacts of fires	inundated forest fire fighting. Support means for carrying/ pumping water for fire-fighting.	damaged areas Protection & maintenance of seedlings Maintain signboards in re-planted areas.
Village Security Guards	Study and observe the movement of people into inundated forest areas.	Participate in the dissemination of information on an importance of inundated forests and impacts of inundated fire. Strengthen law enforcement	Prepare fire-fighting equipment Joint patrolling/ monitoring of inundated forest areas.	Join fire-fighting teams in attacking fires Provide support for carrying water and other materials to fire-fighting teams	Participate in re-planting of inundated forests Protection of seedlings Maintain signboards and demarcation poles in recovering areas
Community Fisheries	Record names of people accessing inundated forest areas and their purpose, during the dry season.	Participate in the dissemination of information on an importance of inundated forests and impacts of inundated fire	Participate in digging and restoring ponds or canals for retaining water during dry season that can be used to support fire-fighting.	Join fire-fighting teams in attacking fires Provide support for carrying water and other materials to fire-fighting teams.	Participate in re-planting of inundated forests and protection of seedlings Maintain signboards and demarcation poles in recovering areas
Commune councils	Study the movement of people and their access into inundated forest areas.	Join patrolling for monitoring inundated forest areas Strengthen law enforcement including prohibiting people from access to zone 3 areas, and punishing offenders Disseminate education materials related to fire management Reserve equipment for fire-fighting.	Reserve equipment for intervention for fire extinguish. Organization of local teams for digging or restoring ponds and canals	Mobilize local people to join intervention for fire-fighting. Join fire-fighting teams in attacking fires Mobilization of support for water and equipment distribution.	Join cooperation to re-plant inundated forest tree in the burnt areas. Design and build signboards for the protection of inundated forest areas.
Civil Society Organizations /NGOs (VSG and FACT)	Studies on inundated forest situation and peoples actions in inundated forest fire issues.	Raise awareness of the importance of inundated forest and impacts of inundated fire.	Training of local fire-fighting teams	Logistical support	Join local community and local authorities in re-planting inundated forest areas. Support the protection and maintenance of re-planted areas.
District and commune Police	Conduct census of cattle owners and families who are farming in inundated forest areas	Strictly prohibit people 's access to zone 3 Join patrolling of inundated forest areas	.	Join fire-fighting teams in attacking fires	Join local community and local authorities in re-planting inundated forest areas.
District Authorities	Collect & maintain data on inundated forests in the Districts. Issues directives related to inundated	Disseminate educational materials on the importance of inundated forest and impacts of fires Strengthening law	Cooperate with fishery authorities and others to conduct training and dissemination on forest fire	Mobilize forces to participate in inundated forest fire fighting Provide equipment and	Record information on replanted areas and their recovery.

	forest management.	enforcement.	management	materials support for fire-fighting teams	
Provincial Department of Agriculture, Forestry and Fisheries (PDAFF)	Review report on forest fires submitted by the FiAC.	Support FiAC to promote local awareness on forest fire prevention and strengthen law enforcement.	Further report the forest fire issues to the provincial governor for preparedness and intervention.	Join fire-fighting teams in attacking forest fires.	Support FiAC, CFi and local communities to restore the fire-damaged forests.
Provincial departments	Development of local policies related to fire management	Dissemination of information on forest fire management to involved stakeholders	Provide high risk level warnings when necessary	Designate staff to participate in inundated forest fire fighting Provide material and manpower support for fire fighting	Designate staff to participate in re-planting of inundated areas. Mobilize funds for the restoration of inundated forest areas.
Tonle Sap Authority	Study inundated forest situation and people actions in inundated forest fire issues. Monitor boundaries of inundated forest between zone 2 and 3 and re-erect poles if the demarcation is unclear.	Educate and disseminate information on the importance of inundated forests and impacts of fires on local people and the ecology	Provide fire-fighting equipment to communities.	Designate staff to participate in fire fighting	Designate staff to participate in re-planting of inundated areas.
Fisheries Administration & Fisheries Administration Cantonments	Maintain CFi records of community engagement in fire-fighting Regularly monitor inundated forest situation. Conduct ecological and livelihood surveys of inundated forest areas Collect data on causes of fires, size of damaged areas etc.	Produce and disseminate educational materials on the importance of inundated forest and impacts of fires Strengthening law enforcement.	Maintain and provide equipment for fire fighting	Designate staff to participate in inundated fire fighting Report to line Departments leaders	Join in the organization of re-planting operations in the burnt areas Assist in the coordination of patrolling for monitoring re-planted areas.
Ministry of Environment	Conduct ecological and livelihood surveys in inundated forest areas	Produce and disseminate educational materials on the importance of inundated forest and impacts of fires	Maintain and provide equipment for fire-fighting.	Designate staff to participate in inundated fire fighting Report to line Departments leaders	Participate in the organization of re-planting operations in the damaged areas Assist in the coordination of patrolling for monitoring re-planted areas.

The identification of the stakeholders is indispensable for the planners to think of the target groups and their engagements in the different activities for flooded forest fire management to be mentioned in the 5-year IFFPMP, ranging from for the target groups who assumedly set forest fires to be educated and the groups who are responsible for patrolling and controlling flooded forest fires.

4.4 Challenges for taking measure to respond the forest fires

The historical background of the flooded forest fire control in Battambang province shows that neither action taken on the ground to distinguish flooded forest fires nor any institution responsible for managing the forest fire suppression is sufficiently clear. The challenges are driven from various factors and reasons as shown below:

- **No IFFPMP mechanism in place**: Flooded forest fires have been a common occurrence for a long time with many verbal complaints and reports by members of community fisheries to the concerned agencies -including local authorities (village, commune and district) and Fisheries Administration Cantonment's triage - to seek the intervention for putting out the forest fires but there was no intervention. That is probably caused by not yet having the right forest fire management mechanism at commune or district levels discussed and developed to manage firefighting group, budget and fire extinguishing tools for precaution, prevention and immediate intervention responding in the forests that are being fired.

- **No IFFPMP plan in place**: Resulted from absence of the IFFPMP mechanism or a coalition team consisting of the key stakeholders set up for putting out flooded forest fires, the applicable and agreeable IFFPMP plan could not be developed and so the forest fires continued freely. This is despite some efforts made by community fisheries to suppress the wildfires that were not fully successful due to having no well-prepared people and appropriate extinguishing tools.

- **Limited knowledge of local communities on Fisheries Law's forest fire management-related articles and effects of flooded forest fires**: Most of local people are mainly aware of illegal fishing control-related articles of the Fisheries Law as there were many extension meetings conducted and educational tools produced and erected for the target fishing communities. They, however, understand less about the inundated forest fire management, which is caused by the lack of extension awareness campaigns on flooded forest fire management and of extension materials distributed and displayed in relevant villages.

  On the other hand, local people who encountered the forest fires that were happening and wished to extinguish the fires have neither phone number to contact for requesting intervention and help nor skill and tools to put out the fires.

- **Hard to access the burning areas by geographical situation**: Since the flooded forest floors are always submerged under water during rainy season, no paths or trails comfortable for traveling by motorcycles or cars are built with only a few naturally small, rough trails for walking, ox-carts and powered tillers. So few trails in poor condition are also one of the major obstacles to hamper or elongate the effort to deliver water and extinguishing tools in the early stages of fires to eliminate flooded forest fires happening far away from the water sources and villages. The delay provides opportunity for the forest fires to expand and develop in intensity becoming harder to control.

- **No available water**: Water sources are numerous and vary by agro-ecological zones and communities in Battambang's floodplain. Availability of water from these sources is not perennial, and the quality, particularly for domestic uses, has changed during the years. The natural waterbodies (ponds and streams) are gradually becoming shallower by long-term sediment increment mainly resulting from deforestation and unsustainable land preparation for agricultural purposes in areas around them and in upstream areas.

  In the past ten years, fishermen realized that nearly all the ponds in the floodplain of the Tonle Sap Lake Region in the province dried out completely by a number of reasons, including shallowness by sediment deposit, using brush park for collecting fish and pumping water out of the ponds to catch fish.

Since water is a critical resource for flooded forest firefighting, lack of water resources nearby the sensitive forest sites is the major concern restricting immediate action against flooded forest fires.

- **Lack of budget and extinguishing tools**: Putting out flooded forest fires is a serious task which needs a joint effort of all relevant stakeholders to implement in a participatory manner under an effective management mechanism consisting of competent institutions, including communities, CFi, FiAC and local authorities at village, commune and district level with the sustainable budget source. However, the major stakeholders, namely FiAC, commune councils and community fisheries have no or less budget earmarked for flooded forest fire management as costs for forest fire extinguishing tools and services are expensive.

Due to the above impediments, the stakeholders have just some ideas on how to try to prevent and eliminate flooded forest fires but no choices for actions and improving practice.

4.5 Offenders and Prosecutions

Many cases of inundated forest fires happening in Battambang province appear to be caused by the local people rather than outsiders. However, fishers and farmers often move from upland areas to zone 3 next to the Tonle Sap Lake during the dry season to fish, clear small patches of the forested land for dry season rice and vegetable cultivation and fuel wood collection. Sometimes, fires spreading across the inundated forest were caused by careless extinguishing of camping fires when they left the fishing grounds, farms and fuel wood collection sites.

The FiAC conducted investigations into fire cases and documented information on the causes and effects of the fires, chronological histories of offenders who are suspected of setting the fires, and names of people involved in flooded forest land encroachment. It is noted that not all the cases have been fully investigated as some conflicting areas are located far away and there is a lack of resources to reach a conclusion. After investigations and documentation, the FiAC prepared and sent complaint letters to arrest the suspects to the provincial court. However, the process of court intervention remains uncertain and many of the suspects have been released with unclear reasons without punishment under the Fisheries Law.

5. The IFFPMP Process for Battambong province

To ensure the implementation of participatory flooded forest fire management is carried out effectively and timely following the 5 R's principle and 3 stages of Prevention (review, risk reduction & readiness),

Intervention (response) and Restoration (recovery) should be by the following process.

5.1 Prevention Steps (review, risk reduction & readiness)

5.1.1 Review

Review the latest experiences/information/understanding of fire behavior probabilities and fire effects in different areas of the province over the past several years. Fire behavior probabilities include meteorological conditions, fuel loads and moisture status and ignition sources (human and natural). Fire effects are the potential damage to socio-economic values (properties, resources, recreational importance, carbon stocks, etc.), environmental condition (soil and vegetation) and landscape value (distinctiveness, conservation status, etc.). The review was made following the actions below:

a) Consultation meetings

A series of consultation meetings with key stakeholders (FiAC, local authorities, NGOs, CFi and local

communities) were conducted to discuss and gather information/data related to forest fire behavior (weather condition, fuel load, moisture status); causes of forest fires and suspected people igniting the fires; effects of forest fires to local properties, health and life of human and animals, environment and landscape management; the prevention and responses to forest fires and the forest-fire restoration approaches have been applied; and stakeholders involved in the process of forest fire management. The information collected and findings found in this stage will be used to determine the effective methodologies for the inundated forest fire management.

b) Field observation

Field observation of the burn forest areas was made after the consultation meetings to collect more information on the ground on physical condition, land use pattern, land cover, vegetative species susceptible to fire, causes of forest fires, temporary camping locations, scope of forest fire damages. Coordinates of the fire-damaged forest areas is to be collected in this field observation for producing map of the fire-affected forests.

c) Risk reduction

Risk reduction activities aim to reduce the number of unwanted, uncontrolled or escaped fires from starting in the first place. Risk reduction is one of the most important parts of fire management; and they are the most economical way of reducing fire damage and loss. Focusing on the potential causes of fires can help reduce the risks of them occurring.

d) Produce extension materials and assemble signboards

To get meaningful, simple extension materials for promoting local awareness produced, erected and distributed, a series of the below activities should be completed:

- Design draft pictures and messages for producing extension materials.
- Review and finalize pictures and messages for producing extension materials.
- Publish extension materials.
- Conduct meeting with district governor and technical team, commune chiefs, CFi and CFFPTs to identify locations for erecting signboards and target people for distribution of the extension materials, and how to read and use them for promoting local awareness. Some posters and leaflets are dropped at the district and commune offices for helping distribution and dissemination.
- Erect signboards at the identified locations.

e) Promote local awareness and participation in flooded forest fire management

- Identify villages, locations and groups of equal representation of female and male farmers, fisherfolk, bee honey collectors, hunters and domestic cattlemen/boys, which are the target audiences of the extension campaign on participatory forest fire management.
- Collect existing document related to the target groups such as lists of farmers who possess farmlands in Zone 3, tractor owners, fishers, hunters by locations.
- Conduct extension meetings to raise awareness of the target groups by locations on participatory flooded forest fire management and law enforcement against the offenders who are suspected to set forest fires.
- Distribute the leaflets and posters to local people who are living in the target villages.

f) Conduct flooded forest fire patrols

The CFFPTs should be established and do patrol based on the agreed weekly forest fire patrol plan. Members of the patrol team must take along the portable forest fire tools to be ready for fighting forest fires they face during the patrol. In addition to that, the team members must record the harmful activities and events they spot in the given form for reporting. Pictures of those activities are

also taken for evidence. The incumbent patrol team leaders have to keep the concerned commune chief informed regularly about status in the field and to get their requests for the support readily prepared.

Chiefs of the concerned commune and FiAC's triage have to stand by, follow up and keep connection with members of the CFFPTs who are on patrol regularly by phone and/or by walky-talky so that they can manage to take action respond to the emergency requests for intervention from the patrol teams. They further ask for immediate intervention from the WGFFM at district level if their effort to put out forest fires is ineffective.

5.1.2 Readiness

Readiness activities aim to prepare structures, equipment and personnel for possible fire events and activities that aim to quantify and evaluate what is necessary and what will optimize firefighting actions

a) Formation of working groups for IFFPMP at provincial, district and commune levels

- Draft roles and responsibilities of the working groups at different levels.
- Meeting with provincial, district and commune administrations to develop required papers for the legal formation of working groups.
- Meeting with commune council to establish WGFFM at provincial and district levels and community forest fire patrol teams at commune level.

b) Conduct quarterly WGFFM meeting at provincial level

Based on the ToR of the working group at provincial level stated in the Decision Letter issued by the provincial governor, The FiAC should organize quarterly WGFFM meeting at provincial level chaired by the provincial governor regularly. The target participants of the meeting include all members of the WGFFM at district and provincial levels and commune chiefs.

The objectives of the meeting are to report the progress made in the quarterly period; raise challenges related to communication, working cooperation, forest fire-fighting equipment, logistics, law enforcement and so on; and get effective recommendations from the provincial governor to deal with those concerns.

Before the meeting, FiAC's focal officers, appointed by the Director of PDAFF, should develop an official request for organizing the quarterly meeting attached with the meeting agenda and quarterly report on progress of IFFPMP's implementation to be submitted to the provincial governor, and current flooded forest fire maps and other related documents to be distributed to all the participants in the meeting.

After the meeting, the FiAC should develop the report of the quarterly meeting and submit the report to the PDAFF for review and approval, then to the provincial governor for his review and signature. The report will be then sent to all the relevant institutions at provincial, district and commune levels for taking action.

c) Conduct monthly WGFFM meetings at district level

The FiAC should organized WGFFM meeting at district level to provide opportunity to representatives of

the CFFPTs, WGFFM at district level and FiA (for some case) to report the result of the IFFPMP has been achieved in the month and place on the table the problems that have not yet been resolved for the recommendations from the members of the WGFFM and district governor. The provincial governor requires to be invited to participate in the meeting,

After the meeting, the FiAC should develop the report of the quarterly meeting and submit this report to the district governor for his review and signature. The report will be then sent to all the relevant institutions at provincial, district and commune levels for information and taking action.

d) Conduct commune meeting to review monthly and weekly forest fire patrol work plan

Monthly or Weekly CFFPT meeting chaired by the commune chief should be organized regularly to share lessons learnt among the team members and discuss challenges faced during the patrol and proper solution to deal with. In the previous training on Participatory Flooded Forest Fire Management, the CFFPTs already discussed the weekly and monthly patrol plans, so this meeting is aimed to refresh their knowledge on the roles and responsibilities of the CFFPTs and the monthly and weekly work plans, remind of the conduct of regular weekly CFFPT meeting, arrange rotational patrol teams, and check the form for recording unusual events discovered while patrolling and forest fire-fighting tools to be taken along to get them ready to go the fields for forest fire patrol the days after this meeting. Promote active and meaningful participation of women.

The minutes of the monthly or weekly meeting must be developed at the end of the meeting for

reporting to the WGFFM at district level and FiAC's chief for information and take action to help address the challenges.

e) Build physical structures for flooded forest fire prevention

As mentioned above, the necessary physical structures to be built for preventing forest fires include installation of triangle poles along the border of the Zone 3, construction of guard towers, rehabilitation of natural ponds to retain water for putting out forest fires during dry season and marking fire-damaged forest sites with concrete poles. Due to limited budget, not all the structures will be established at the same year. They will be developed year by year following the priorities set in the previous consultation meetings with the involved stakeholders at district and commune levels. Below is the process of the physical structure development:

- Conduct a first consultation meeting with commune and village heads, CFis and CFFPTs identify sites for building guard towers, natural ponds to be rehabilitated, and fire-damaged forest sites to be marked with poles and/or small signboards.
- Conduct field engineering assessment for pond rehabilitation and estimate costs. The triangle poles and guard tower are not included in the engineering assessment as their designs and costs are already developed.
- Conduct process of procurement (documentation, announcement and selection of engineering firm) for pond rehabilitation and guard tower construction.

f) Improve knowledge and skill of the community forest fire patrol teams

- **Develop training manual on Participatory Flooded Forest Fire Management**: The training is centered on the subjects of role and responsibility of the patrol team, importance of flooded forest and impact of fire on ecology and human beings, effective patrol strategy, recording of events encountered during patrol, use and maintenance of community patrol equipment, use of social medias with smart phone, fisheries law and forest fire-related rules, the way of communication for intervention when encountering forest fires, activity planning and report writing.
- **Conduct training on Participatory Flooded Forest Fire Management** for community forest fire patrol teams. The training should be organized at commune level to provide opportunity for every member of the patrol team to learn forest fire management technique, share their lessons learnt and experiences.
- **Develop monthly and weekly forest fire patrol plan**: allow the local participants to consult on the applicable monthly and weekly patrol work plans to develop ownership as they will

apply it in the field after the training. The monthly and quarterly work plans are to be signed by the concerned commune chief.

- **Follow up** and improve the application of the knowledge gained from the training in the fields to ensure satisfactory training quality.

g) Equip the community forest patrol teams with forest fire-fighting tools

The community forest patrol equipment for common use and personal safety - including power tillers with water pumps and firefighting hose, drone, first aid, 20-liter portable water pump sprayer, smart phone Black View, fire-fighter boots, hammock, brim hard hat made from high-density polyethylene, leather groves, goggles, long handle shovel, torches, backpack, walkie talkie and face mask - have to be purchased and distributed to the patrol teams.

Regulation for using the equipment for community forest fire patrol team must be developed and disseminated to all members of the team through a meeting at commune level to ensure proper use, maintenance and durability of the equipment.

Additional training at commune level on proper uses of the forest fire-fighting tools would be delivered to members of the patrol teams as required to ensure the forest fire-fighting equipment are used

effectively and safely.

5.2 Intervention Step (Response)

This intervention step is much focused on forest fire fighting and enforcement of the Law on Fisheries with regular flooded forest patrol led by the CFFPTs under direct support and management of the chiefs of the concerned commune council and FiAC's triage. To capacitate and empower the CFFPTs to undertake the forest fire patrol effectively the FiAC's focal officers should direct them to concentrate on the following points.

In cases the CFFPTs encounter forest fires happening while patrolling, the team members must act promptly against the forest fire with the following instruction:

a) Small forest fire cases

- For the small cases of forest fires that can be manageable the CFFPTs spot while on patrol, the team members can use the available fire extinguishing materials to put out the fires immediately on their own with the following actions:
- Covers the mouth and nose with a mask, scarf or sweatshirt to reduce smoke and dust inhalation.
- Use tree branches to beat the fire.
- Use shovel or hoes to dig soil for covering/burying the fires or to make cleared lines
- Use the portable water pumps container to throw water into the fires. Make sure that the fire is completely put out, called 'blacked out', before leaving the scene to avoid re-ignition of the fire .
- Inform chiefs of the commune and FiAc's triage for information.

b) Meso/massive forest fire cases

If the forest fire appears to be at meso-scale, both the CFFPTs who are doing patrol and the commune chief must take special care for personal safety and act promptly to combat the fire with the following approach:

- The patrol team must promptly cover the mouth and nose with a mask, scarf or sweatshirt to reduce smoke and dust inhalation

- Alert chiefs of the commune and FiAc's triage via phone and/or communication radio about the fire case to get support for fighting the forest fire by transferring the standby power tillers and the fire extinguishing tolls on standby to the scene.
- Used the portable fire extinguishing tools that are taken along to commence fire suppression.
- Mobilize some people who are farming or fishing nearby the scene to help put out the fire with their available tools such as water pumps, power tillers, tractors, water containers, hoses, water cans and so on.
- The commune chief as the leader of the CFFPTs must inform the district governor immediately to send the fire-fighting trucks and the fire-fighting police brigade to the scene to help manage the forest fire suppression.
- The commune also to ask leaders of the villages and the voluntary forest fire-fighting groups of the closest villages to mobilize local people and locally available fire extinguishing tools such as power tillers and/or tractors equipped with water tank and plough, water pumps, watering cans and hoses to help put out the fire. Ask them to cover the mouth and nose with a mask, scarf or sweatshirt for personal health.
- If the fire-fighting vehicles cannot access the burning forest site, those vehicles can be used as a source of water supply to fill the tanks loading on the power tillers that take the water to put out the fire.
- In direct attacks on the ground, power tillers, tractors or bulldozers may be brought in to clear vegetation and dry sediment of organic matter in the grassland to form a control line parallel to the flames to prevent the spread of the fire.
- Make sure the fire is completely extinguished to avoid the reoccurrence of the fire before leaving the scene.
- Develop a report on the forest fire containing the cause of the fire, stakeholders and number of people participated in the fire control, fire extinguishing tools used, scope of damage and recommendations to be considered to apply for the future forest fire suppression.
- The payment for fuel the local participants used for their own power tillers and/or tractors should be considered based on the actual consumption. It is the way to ensure the sustainable participatory forest fire approach.

5.3 Restoration Step (Recovery)

Due to the limited budget for restoration of fire-damaged forests and ecological and physical conditions of the burnt forest areas, the restoration approach here considers two options for the restoration in the floodplain: Assisted Natural Regeneration and Replanting Inundated Seedlings.

5.3.1 Damage assessment

a) Conduct rapid assessment to define technical-sound approach to restore the burnt forest areas

A rapid assessment to the fire-damaged forest areas needs to be conducted to collect information on scope of damage, mapping the restoration sites, physical and ecological aspects, native plant species in the burnt areas to be selected for planting, technical sound restoration and maintenance approach, restoration plan and estimated cost. The assessment would be carried out in early dry season (January) to provide enough time for preparing the restoration.

b) Conduct first meetings at commune level to discuss preparation plan for forest restoration

This is the first meeting among relevant stakeholder including FiAC, local authorities, CFis, CFFPT and involving NGOs to discuss activity plan for restoring the fire-damaged forest sites, which emphasizes site selection for restoration by years, selection of native tree species for planting, tree nursery

establishment and seedling production, tree planting ceremony, site preparation, seedling transportation, mobilization of local people to participate in tree planting events, supporting and monitoring tree planting conducted by local people, survival rate monitoring, logistics, formation of local working groups and their responsibilities to support the forest restoration process and reporting of the tree planting result.

c) Demarcation and mapping the burnt forest sites

FiAC's officers working with the CFFPTs demarcate and map the burnt forest sites for better understanding of the burnt forest areas to be restored and number of concrete poles and signboards required to erect along the borders to prevent the local attempt to use those areas for rice cultivation. The maps include spots (waypoints) for erecting concrete poles and signboards.

d) Demarcate the burnt forest area with concrete poles and small signboards

Following demarcation and mapping, FiAC's officers in close collaboration with village and commune authorities erect concrete poles and signboards along the boundaries of the demarcated fire-damaged forest sites with the specific amounts as pointed in the maps for the purposes of protection of the burnt areas from land claim for agricultural activities and forest restoration.

In the meantime, village and commune leaders should disseminate the protection of the burn forest

sites for restoration and legal actions against offenders who claimed some plots of the sites through administrative village and commune meetings.

e) Site protection

Prevent the restoration sites from grazing by prohibiting the entrance of domestic animals (buffalos and cows) as the animals will devastate natural seedlings. Erecting small signboards to inform the farmers who take care of domestic animals in the floodplain about the forbiddance is necessary. Leaders of the concerned communes and villages should help circulate information about the restoration site protection to villagers to generate the local participation in the successful restoration.

f) Regularly patrol the restoration sites

It is very important that the CFFPTs include the monitoring of all the forest restoration sites (replanting and assisted natural regeneration sites) in their weekly and monthly patrol plans to ensure that all the sites are safe from the harmful disturbances such as agricultural cultivation activities, wildfire and grazing. While on patrol, the CFFPTs must report to chief of the concerned FiAC triage about impacts on seedlings such as suppression of grasses or water hyacinth over the seedlings as well as competition between grass community and tree seedlings for sunlight, water, space and nutrients in order to take actions to liberate the seedlings with silviculture operations. Such activities are very helpful to improve the survival and growth rates of natural seedlings.

5.3.2 Restoration with Assisted natural regeneration

If the burnt forest areas are close to the inundated forest where exist many seed trees, those areas are no need to restore with replanting inundated tree seedlings because the seed trees will produce and drop seeds in early rainy season that will then be dispersed across the forest areas by flood for natural regeneration. However, the burnt forest areas need to be maintained with the following instruction:

The local communities reported that most natural inundated seedlings died under the pressures of dense grasses and water hyacinth as well as forest fires after water receded. Therefore, liberation of natural seedlings in the restoration sites by scraping of competing vegetation, particularly grasses, with weeding 1 meter around the seedlings and removal of dense grasses and water hyacinth that suppress the seedlings during the dry season are needed. Such activities not only help save the life of

natural seedlings from suppression but also improve the seedling growth. The assisted natural regeneration is needed to operate for at least three years to take care of the natural seedlings to get them mature to overcome the grazing, competition and suppression.

5.3.3 Restoration by replanting tree seedlings

a) Conduct training on tree nursery management and flooded forest restoration approach for CFiA's focal officers

FiA's focal officers in cooperation with other specialists develop training manual on Tree Nursery Management and Flooded Forest Restoration Approach. The training manual should contain:

- **Tree nursery management**: site selection, formation of tree nursery group (at least 40 percent of the groups should be women), small-scale tree nursery design and construction, construction materials required, soil selection and treatment, seed and seedlings collection, seed treatment, seedling maintenance, seedling delivery and bookkeeping.
- **Flooded forest restoration approach**: Site selection and mapping, physical and ecological rapid assessment of the selected sites, native species suitable for the ecological and physical situation of the restoration sites, safe seedling transportation, spacing between pits, marking spots for pitting, pit size, removing seedlings from polybags, formation and ToR of local working groups to help manage tree planting and spread sheets needed for monitoring tree planting activities.

b) Support local communities to develop tree nursery and produce tree seedlings

After documentation of the agreed training manual, the two teams will organize a training on tree Nursery Management and Flooded Forest Restoration Approach at provincial level for the focal points of the three target FiACs to improve and refresh their skill/knowledge for both technical and managerial approaches. The training would be organized in April or May so that they can manage the forthcoming tree planting on time. The draft plan for the oncoming tree planting to be discussed as the last session of the training to be a reference for further discussion with local authorities and communities to finalize the plan. Support local communities to establish tree nurseries and produce inundated tree seedlings

Inundated tree seedlings required for the inundated forest restoration should be produced by local communities or CFi because it is part of local capacity development for seedling production and insurance of the forest restoration sustainability. Therefore, after the training the FiAC's focal officers have to go the target commune and villages to work with local authorities, local communities and CFis to support them to produce inundated tree seedlings following the subsequent activities as shown below:

- **Site selection for tree nursery establishment**: Select the most appropriate site for establishing tree nursery following the site selection criteria mentioned in annex 4. Size of the nursey is varied based on the number of seedlings required.
- **Formation of local tree nursery group**: At least 10 people, consisting of minimum 5 women, need to be selected and formed as a tree nursery group to run the seedling production business. Ensure some women-only groups are established as well. The management structure of this local tree nursery - including roles and responsibilities of all the team members and benefit sharing - must be developed in a consultation manner to ensure this business is run well and transparently.
- **Building capacity of the tree nursery group**: The FiAC delivers training on tree nursery management - including nursery installation, seed/seedling collection, seed treatment, soil collection and seedling maintenance - to all members of the tree nursery group to enable them to build a nursery and produce seedlings on their own. Sessions of bookkeeping, activity plan and materials for nursery establishment are included in the training. Due to the

limited sources of locally available materials for establishing tree nursery, the project should provide some materials such as shelter net, wooden pillars, plastic sheets, polybags, metal wires, watering cans, small water pump, hoses and some fertilizers, as raised in the training to support the tree nursery construction.

- **Support to the nursery establishment and seedling production**: The FiAC's assigned officers should go to the field regularly to support the tree nursery group to establish nursery and produce flooded tree seedlings successfully and on time.

c) Conduct 2nd commune-level consultation meeting to refresh the forest restoration plan

The second consultation meeting at commune level to review and finalize the forest restoration plan prepared in the first meeting is necessary to be managed for reviewing and finalizing the plan that will be considered the final one for the real implementation in the upcoming month. The much important of the meeting is to review the local working arrangements committed to be formed after the first meeting and to confirm the mobilization of local communities to participate in the upcoming tree planting event. The participants of the meeting comprise of FiAC, local authorities, CFi, CFFPTs and tree nursery group.

d) Organize an event of tree planting ceremony

An event of inundated tree planting ceremony should be organized in each target district to circulate the joint effort of the forest restoration and promote local participation in prevention, protection and maintenance of the restoration sites from any harmful activity/attempt. Every event should be chaired by the district governor who is the chief of the WGFFM. If possible, inviting the FiA's Directorate General and/or district governor to chair the event to make the event more important and interesting because the event is considered as a significant extension campaign for fisheries resource management besides the forest restoration.

FiAC plays an important role to facilitate a discussion with the district and commune authorities to prepare the event, including invitation of honorable guests and chairpersons, venue arrangement for the ceremony, site preparation for tree planting, mobilization of local participants and logistics.

e) Support and monitor tree planting in the burnt forest areas

To guarantee the tree planting event is implemented well following the technical orientation made in the previous training on Tree Nursery Management and Flooded Forest Restoration Approach, the subsequent activities mentioned below should be followed:

- A brief technical orientation of tree planting highlighting seedling delivery without damage to the seedlings, dimension of pit, spacing between pits, pitting and soil removal, removing polybags, planting seedlings upwards, filling pit up, gently compacting soil in the pits and watering the planted seedlings if the soil is too dry.
- Mark spots to be pitted with bamboo sticks and tree branches to avoid seedlings planted too closely together and under trees.
- Safe delivery of tree seedlings from the tree nursery to the planting sites. Recording number by species of seedlings delivered and damaged during the transportation by power tiller/truck.
- Divide the restoration area into sub-blocks for planting seedlings by groups under monitoring of the local working groups. This way the working groups can easily identify the planting group who carelessly planted the seedlings for replanting or completing the incomplete plantings.
- Support and monitor tree planting by local communities to ensure proper pitted size, filling pits up with soil and soil compacting.

f) Develop tree planting reports

FiAC plays an important role in developing forest restoration reports after finishing the tree planting. The report should be developed at commune, districts and provincial levels as the reports will be submitted to commune chief, district governor and provincial governor respectively.

The tree planting report must be provided precise figures of forest area was restored, number of seedlings by species were planted and number of participants joined the event as is vital for the project's monitoring and evaluation.

g) Maintain the inundated forest restoration sites

To ensure high survival and growth rate of the planted seedlings the forest restoration sites really need to be maintained. There are a few approaches to be applied to maintain both the planted seedlings and natural regeneration, including protection of the restoration sites, seedling clearance from suppression of water hyacinth and grasses, removal of dry organic matter from the restoration sites and protection from domestic animal entry into the restoration sites. The detailed technique for maintaining the forest restoration sites will be incorporated in the training on Fire-Affected Inundated Forest Restoration Approach for the FiAC's focal officers that may be held in early 2022.

h) Conduct seedling survival rate monitoring

It is very essential to conduct survival rate monitoring when the seedlings age oneyear-old in early dry season to get better insight into percentages of mortality and survival rates of the planted seedlings and how to make the current restoration achievement better based on the real situation of the survival seedling status such as replanting seedling to replace the dead, seedling clearance, weeding and prevention the restoration from domestic animals (cows and buffalos).

6. Commitment to work towards Gender Equality and ending child labor in the IFFPMP

In the implementation of the Inundate Forest Fire Prevention and Management plan (IFFPMP), Gender mainstreaming and child protection will be addressed in all activities, including the planning process, implementation and monitoring of the implementation of the IFFPMP in accordance with the framework on Gender equality of the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries, in particular the action plan of the Fisheries Administration for the promotion of gender equality and the elimination of child labor in the fisheries sector (2016-2020).

To contribute to the promotion of equal participation between men and women in activities and decisions in the three working groups (commune/sangkat, district/municipality, and province), especially at the commune /sangkat level, which is the direct project implementer. The Department of Fisheries Conservation and the Department of Fisheries Affairs will coordinate with the Gender Working Group of the Fisheries Administration to ensure that the negative effects of gender inequality are addressed in the implementation of IFFFPMP by providing equal opportunities between Men and women in the management structures of working groups at the provincial, district/municipal and commune/sangkat levels, and taking into account the needs and barriers of women in the implementation of this plan.

Some considerations regarding the establishment of clear implementation mechanisms to achieve gender equality through the promotion of services and legal support are as follows:

- Ensuring equal participation of women and men in all FFFM and decision-making processes (planning, implementation, and monitoring), addressing women's work burden to assist.
- Encouraging women to actively and meaningfully participate in provincial, district, and commune working groups and pay attention to their interests.
- Providing equal opportunities to women on capacity training and consider their capacity training needs and interests.

- Encouraging technologies that are appropriate to women's work.
- Protect children (aged 15 to less than 18 years old) and pregnant women from hazardous work and improve the working conditions and skills of youth by applying the occupational health and safety in the workplace both in-door and out-door trainings and practices.
- Showcasing women's and men's valuable roles in fisheries and conservation in the awareness raising campaign on participatory FFFM management.

7. Inundated Forest Fire Management Plan Framework

At present, FiAC in Battambang province does not have a clear forest fire management plan, management

framework nor enough resources to respond to flooded forest fires. The information on many cases of flooded forest fires has been shared and reported by community fisheries and local people to relevant stakeholders, especially FiAC and local authorities, but they have no budget or equipment to respond on time to the forest fires reported.

Recently, FiA provided some fire extinguishing tools (fire extinguisher cylinder) to the FiAC for flooded forest fire intervention. However, the interventions are challenging as inundated forest fires can be happened in the middle of the dense forest areas where people and fire fighter trucks cannot access easily.

To support the existing implementation of the inundated forest fire management, the CAPFISH project

develop the 5-year inundated forest fires fire prevention and management plan for 2021-2025 with the following framework.

7.1 Period of implementation: 2021-2025

7.2 Goal

The inundated forests in Battambang province are well protected, grow and increased under the effective flooded forest management mechanism at provincial, district and commune levels using a participatory forest fire management approach.

7.3 Objective

To meet the above goal, the achievements of the objectives below will strongly contribute to reach the set goal:

- Awareness and participation on participatory flooded forest fire management of the target communities and stakeholders promoted.
- Flooded forest and grassland area affected by wildfire reduced.
- All the fire-damaged flooded forest areas restored by replanting native tree species to benefit both the ecology and organic food source.

7.4 Outputs

Output 1: Effective review, risk reduction and readiness for forest fire protection.

The first output covers the first 3 R's of reviewing the satiation, reduction risks and ensuring that the authorities, partners and communities are best prepared for each fire season.

Activities planned under this Output include stakeholder planning meetings to clarify roles and responsibilities and to establish fire patrol teams. This Output also includes the procurement of firefighting equipment, tools for raising stakeholder awareness, training and field activities to support practical forest fire patrol, forest fire intervention and forest restoration and maintenance.

Output 2: Improved responsive actions to inundated forest fires

Output 2 focuses on coordinating the response of the authorities and communities to forest fires that are threatening the inundated forests and grasslands. It also aims to strengthen law enforcement and increase number of successful prosecutions in the court system against illegal activities in the inundated forest areas.

Output 3: Improved restoration of fire damaged areas of inundated forests

The last output focuses on improving the demarcation of fire-affected forest areas that are under rehabilitation; and restoring forest areas that have been damaged by fire, either through protection of natural regeneration or the replanting and maintenance of seedlings.

7.5 Cost: The total value of the Plan estimated is around USD **886,205** over the 5 years.

The Flooded Forest Fire Management Plan for Battambang province follows the principles as laid out in the

FAO-CAPFISH (Capture) Project document: Guidelines for developing Tonle Sap Inundated Forest Fire Management Plans and the 5 R's principle, which focus on Review of fire situation, Risk Reduction, Readiness, Response and Recovery. These are very helpful for writing the IFFPMP to cover enough information on the whole process of forest fire management that directs the implementation of the plan to achieve acceptable results met the three outputs above.

The IFFPMP is also built on the principle of Community-Based Fisheries Management (CBFiM), an integrated approach that includes communities in decision making and implementation of the plan. The community-based fire management plan not only involves local communities in the development of a fire management strategy and training on how to suppress forest fires, but also generates local awareness on impacts of forest fires, forest fire and fire-damaged forest management, and prohibitions for cutting/clearing forest and illegal land mentioned in Article 26, 27 and 28 of chapter 6 of the Fisheries Law. Men, women and vulnerable communities play an important role in practical engagement of the five stages of forest fire management.

In this context, however, protection of women and children from hazardous works associated with firefighting must be guaranteed. Therefore, CBFiM is considered an appropriate approach for Tonle Sap Lake's fisheries resource management, given that local communities have a long term interest in preserving these areas and because local people are aware of the impacts generated by forest fires in the landscape in which they live and earn a living.

8. Monitoring and Evaluation Framework

To follow-up through the project implementation, the Monitoring and Evaluation Team (MET) will be established by selecting representatives from the key stakeholders which include National and sub-national levels. At national such as FiA, MAFF, TSA, DWC, MOE. At sub-national level such as WGFFM, relevant provincial departments-PDAFF/FiAC, PDoRAM, , commune and district authorities, CFis and relevant NGO partners in Battambang province.

The Fisheries Administration needs additional information and data as baseline to be used for monitoring the project implementation of this plan. To access this data and information, the Fisheries Administration needs technical and financial support from development partners.

On-going field monitoring will be conducted by the MET to learn how the objectives are being reached, cost effectiveness of the operations and effects of the activities implemented for flooded forest fire management in the province. Furthermore, data collection of fire frequency to be reported contains information on the area reached by the fire, fire-affected vegetation types, size of burned area, causes of fires, scope of damage, people involved, equipment used, costs etc.

These evaluations will be done internally on a yearly basis and would be supported by external consultants. The external evaluations should be conducted twice, in the middle and at the end of the

project. In case of requiring the support from external (national and international) consultants, the DFC and DFA will develop ToR for external evaluation and will process to recruit consultants. The results from the evaluation will be used to generate lessons learnt for future implementation of flooded forest fire management strategic plans in the province. Any weakness/challenges identified will also be taken into account for technical capacity building efforts and future planning.

The drone footage taken during the fieldwork facilitated a detailed look at each area. Local fuel load, traffic and tracks, accessibility and vegetation continuity were examined in each site. This facilitated the identification of potential fire risk, mainly generated by fuel load, and fire management opportunities and access to the area

The DG's FiA, DFC, DFA, Battambang provincial Governor, and relevant MET team members will also conduct occasional monitoring of target communes and districts implementation by using the monitoring framework. This will include spot checks to follow up on plan implementation and accounting.

9. Activity and budget plan for the IFFPMP for BTB province at provincial level for 2021-2025

No	Activities	Indicators (5 years)	Responsible		Budget (2021-2025)	2021 (by quarter)				2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)			
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Output 1: Effective review, risk reduction and readiness for forest fire prevention and intervention.**				**483,855**																				
1.1	**Review forest fire issues, experiences and lessons learnt on flooded forest fire prevention, intervention and restoration approaches have been applied.**				**18.300**																				
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on issues of flooded forest fire management and restoration approaches have been applied so far (45$ x 19 meetings x 5 years).	95 meetings at commune level. 5 reports at provincial level.	FiA and FiAC	Involving stakeholders at commune and village levels.	4,275	855 19 meetings 1 report H			H	855 19 meetings 1 report			H	855 19 meetings 1 report			H	855 19 meetings 1 report			H	855 19 meetings 1 report			H
1.1.2	Conduct site observation at the fire-affected forests to gather coordinates of and information on physical, geographical and topographical situation, scope of damage, land use pattern and land cover in the burnt forest areas for the pre and post periods of flooded forest fire (90$ x 19 communes x 5 years).	95 times at commune level 5 reports at provincial level	FiA/FiAC	FiA triage, CFi and commune authority.	8,550	1,700 19 time 1 report H	H			1,700 19 time 1 report H	H			1,700 19 time 1 report H	H			1,700 19 time 1 report H	H			1,700 19 time 1 report H	H		
1.1.3	Produce maps of the fire-affected forests by target districts (60$ x 4 maps x 5 years).	4 maps at district level	DFA/FiA	FiAC	1,200	240 4 maps H			H	240 4 updated maps H			H	240 4 updated maps H			H	240 4 updated maps H			H	240 4 updated maps H			H
1.2	**Risk Reduction of flooded forest fires by promoting local awareness on and participation in participatory-flooded forest fire prevention and intervention.**				**160,170**																				
1.2.1	Produce posters for promoting awareness of local communities and involved stakeholders on flooded forest fire prevention (1.5$ x 100 posters x 19 communes x 5 years).	9,500 posters	FiA	FAO	14,250	2,850 1,900 posters H				2,850 1,900 posters H				2,850 1,900 posters H				2,850 1,900 posters H				2,850 1,900 posters H			
1.2.2	Erect educational signboards for promoting awareness of local communities and involved stakeholders (300$ x 38 signboards).	38 sets	FiAC	Local authorities	11,400	2,700 9 sets M			M	5,700 19 sets M			M	3,000 10 sets M			M								
1.2.3	Develop and update lists of stakeholders involving in using fisheries resources in Zone 2 and Zone 3 (100$ x 19 communes x 5 years).	19 lists (to be updated yearly)	FiA Triage	Commune authority	9,500	1,900 19 lists				1,900 19 updated lists				1,900 19 updated lists				1,900 19 updated lists				1,900 19 updated lists			
1.2.4	Conduct extension meetings to promote awareness of the target communities on participatory forest fire management, Fisheries Law, forest fire-related sub-decree, norms, policies and regulations (150$ x 2 meetings x 19 communes x 5 years).	190 times	FiAC	Local authorities	28,500	5,700 38 times H	H			5,700 38 times H	H			5,700 38 times H	H			5,700 38 times H	H			5,700 38 times H	H		
1.2.5	Set up and structure FFFPTs at commune level and develop	19 teams	FiAC	Local	1,520	1,520 19 teams																			

	flooded forest fire patrol plan (80$ x 19 communes x 1 year).			authorities		H
1.2.6	Conduct flooded forest fire patrol regularly by FFFPTs, 5 days/month (250$ x 5 months x 19 communes x 5 years).	1,900 days	FFPTs and FiA Triage	Local authorities	95,000	19,000 / 380 days / H H | 19,000 / 380 days / H H | 19,000 / 380 days / H H | 19,000 / 380 days / H H | 19,000 / 380 days / H H
1.3	**<u>Readiness</u>: Establish flooded forest fire management structures at provincial and district levels, and prepare equipment for flooded forest fire prevention and intervention.**				**305,385**	
1.3.1	**Establish and strengthen coordination among WGFFFM at provincial and district levels and FFFPTs at commune level and equip the FFFPTs with flooded forest fire extinguishing tools.**				**211,385**	
1.3.1.1	Meeting with provincial and district administrations to discuss the legal papers required for establishing WGFFFMs at provincial and district levels and FFFPTs at commune level (65$ x 4 meetings).	4 meetings Draft ToRs of WGFFM at provincial and district level.	FiA/FiAC and PDAFF	Provincial and target district administrations	260	260 / 4 meetings / H
1.3.1.2	Set up Working Groups for Flooded Forest Fire Management (WGFFFM) at provincial and district levels (65$ x 4 meetings)	4 working groups	FiA/FiAC and PDAFF	Provincial and target district administrations	260	260 / 4 groups / H
1.3.1.3	Conduct and facilitate WGFFFM meetings at provincial level to discuss challenges faced, interventions to be responded to the challenges and how to better the future prevention and intervention for forest fires (1,500$ x 1 meeting x 5 years).	5 meetings	FiA/FiAC and PDAFF	WGFFM at provincial level	7,500	1,500 / 1 meeting / H H | 1,500 / 1 meeting / H H | 1,500 / 1 meeting / H H | 1,500 / 1 meeting / H H | 1,500 / 1 meeting / H H
1.3.1.4	Conduct quarterly WGFFM meetings at district level to discuss challenges faced in forest fire interventions and finding solutions, find solutions to solve the challenges and develop action plan to support the flooded forest patrol plans at commune level (320$ x 2 meetings x 4 districts x 5 years).	40 meetings	FiAC and PDAFF	WGFFM at district level	12,800	2,560 / 8 meetings / H H | 2,560 / 8 meetings / H H | 2,560 / 8 meetings / H H | 2,560 / 8 meetings / H H | 2,560 / 8 meetings / H H
1.3.1.5	Procure and purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank and 2 water pressure guns with 2 rolls of hose (3,600$ x 15 tillers).	15 units	FiA	FiAC	54,000	28,800 / 8 units / H | 25,200 / 7 units / H
1.3.1.6	Procure and purchase 2 motorized boats equipped with a motor pump and water spray gun with hose for forest fire fighting (3,000$ x 1 motorized boat x 2 communes)	2 units	FiA	FiAC	6,000	3,000 / 1 unit / H H | 3,000 / 1 unit / H H
1.3.1.7	Procure and purchase 32 motorcycles for forest fire patrol (2,300$ x 32 motorcycles)	32 units	FiA	FiAC	73,600	25,300 / 11 units / H H | 25,300 / 11 units / H H | 2,300 / 10 units / H H
1.3.1.8	Procure and purchase forest fire extinguishing tools (first aid, camping tents, knapsacks, portable water pump sprayer, goggle, boot, binocular,..) for the patrol teams (1,200$ x 2 sets x 19 communes)	38 sets	FiA	FiAC	45,600	22,800 / 19 sets / H | 22,800 / 19 sets / H
1.3.1.9	Conduct meetings with FFFPTs at commune level to distribute and guide the teams how to use and condition	38 meetings	FiAC	Commune authority	1,710	405 | 855 / 19 meetings | 450 | 19 meetings

	for using the forest fire extinguishing tools and distribute the tools to them (45$ x 2 meetings x 19 communes).					H		H		
1.3.1.10	ToT at provincial level on Forest Fire Techniques for FiAC officers and WGFFFM's members (45$ x 25 ps x 3 days x 1 trainings)	1 event	FiA	WCS	3,375	3,375 1 event H				
1.3.1.11	Conduct training on Forest Fire Fighting Techniques at district level for FFFPTs (20$ x 30 ps x 2 trainings x 4 districts)	8 courses	FiAC	WGFFM at district level	4,800		2,400 4 courses H		2,400 4 courses H	
1.3.1.12	Fee for trainers and training materials [(45$ x 3 ps) + 50$] x (2 trainings x 4 districts)	8 courses	FiAC	WGFFM at district level	1,480		740 4 courses H		740 4 courses H	
1.3.2	**Build physical infrastructures for flooded forest fire prevention**				**94,000**					
1.3.1	Build watchtowers for the patrol teams to observe flooded forest fires (8,000$ x 5 towers).	5 units	FiA	FiAC	40,000		8,000 1 unit H H	16,000 2 units H H	16000 2 units H H	
1.3.2	Rehabilitate natural ponds to retain water for putting out forest fires and fish conservation (4,500$ x 12 ponds).	12 locations	FiA	FiAC	54,000		18,000 4 ponds H H	18,000 4 ponds H H	18,000 4 ponds H H	
2	**Output 2: Improved actions responding to extinguish flooded forest fires**				**121,040**					
2.1	Follow up daily report and stand by for urgent flooded forest fire intervention as required by the patrol teams (100$ x 3 cases x 19 communes x 5 years).	285 cases	FiA triage	Local authorities	28,500	8,500 85 cases H H	7,100 71 cases H H	5,700 57 cases H H	4,300 43 cases H H	2,900 29 cases H H
2.2	Attend ToT at national level on Collecting Evidence and Preparing Offence Reports for FiAC's trainers (45$ x 3ps x 4 days).	1 course	FiA	FiAC	540		540 1 course H			
2.3	Conduct training at provincial level on Collecting Evidence and Preparing Offence Reports for FiAC's officers (45$ x 20ps x 3 days).	1 course	FiA	FiAC	2,700		2,700 1 course H			
2.4	Strengthen law enforcement against offenders who set forest fires and/or encroached inundated forest lands illegally (180$ x 2 cases x 19 communes x 5 years).	190 cases	FiAC	Local authorities	34,200	10,260 57 cases H H	8,460 47 cases H H	6,840 38 cases H H	5,040 28 cases H H	3,600 20 cases H H
2.5	Fee for maintaining forest fire extinguishing equipment and buying additional required forest fire extinguishing tools (100$ x 5 months x 19 communes x 5 years).	Lump sump	FiA Triage	Commune authority	47,500	9,500 L.sum H H	9,500 L.sum H H	9,500 L.sum H H	9,500 L.sum H H	9,500 L.sum H H
2.6	Organize provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (2,800$ x 1 time).	1 workshops	FiA	FiAC and WGFFFM at provincial level	2,800	2,800 1 workshop H				
2.7	Give some incentive awards to individuals who participated actively or injured in forest fire prevention and intervention (80$ x 60 people).	60 people	FiA triage	Commune authority	4,800	1,280 16 people H H	1,280 16 people H H	960 12 people H H	800 10 people H H	480 6 people H H
3	**Output 3: Improved restoration of fire damaged areas of inundated forests.**				**220,110**					

3.1	Conduct rapid assessment to identify reasonably technical-sound approach for restoration of the burnt forest areas, including mapping (80$ x 3 days x 4 districts x 5 years) + (60$ x 4 maps x 5 years)	5 reports	FiA/FAO	FiAC	6,000	1,200 1 report H	1,200 1 report H	1,200 1 report H	1,200 1 report H	1,200 1 report H
3.2	Mark boundaries of the burnt forest sites by concrete poles with small signboards (60$ x 600 poles).	600 poles	FiAC	Local authorities	36,000	10,800 180 poles H	9,000 150 poles H	7,200 120 poles H	5,400 90 poles H	3,600 60 poles
3.3	Participate in 2 workshops on tree nursery management and flooded forest restoration approach at provincial level (1,700$ x 2 workshops).	2 trainings	FiA and FAO	FiAC	3,400	1,700 1 events H	1,700 1 events H			
3.4	Conduct consultation meetings at commune level with stakeholders to discuss plan for restoration of fire-damaged forest areas (68$ x 19 meetings x 5 years).	95 meetings	FiAC	Local authorities	6,460	1,292 19 meetings H	1,292 19 meetings H	1,292 19 meetings H	1,292 19 meetings H	1,292 19 meetings H
3.5	Support local communities to establish tree nursery and produce flooded forest seedlings for planting in the burnt forest areas (200$ x 1 nursery x 4 district x 5 years).	20 tree nurseries	FiA Triage	CFis	4,000	800 4 nurseries H H	800 4 nurseries H H	800 4 nurseries H H	800 4 nurseries H H	800 4 nurseries H H
3.6	Support and monitor tree planting carried out by local communities in the fire-damaged forest areas, including tree planting materials (45$ x 130ha).	130 hectares	FiAC	Local authorities	5,850	810 18 ha H H	1,260 28 ha H H	1,260 28 ha H H	1,260 28 ha H H	1,260 28 ha H H
3.7	Cost for seedlings, transportation and planting (1$ x 1,100 seedlings x 130 ha).	143,000 seedlings	FiAC	CFi	143,000	17,600 18 ha 19,800 seedlings H	28,600 28 ha 30,800 seedlings H	28,600 28 ha 30,800 seedlings H	28,600 28 ha 30,800 seedlings H	28,600 28 ha 30,800 seedlings H
3.8	Maintain tree seedlings planted in the forest restoration sites (100$ x 130 ha).	130 hectares	FiA Triage	CFi	13,000	1,800 18 ha H H	2,800 28 ha H H	2,800 28 ha H H	2,800 28 ha H H	2,800 28 ha H H
3.9	Conduct seedling survival rate monitoring in the forest restoration sites in the last three years (lump sum: 2,400$/120ha).	120 hectares	FiA/FAO	FiAC	2,400			600 30 ha H	600 30 ha H	1,200 60 ha H
4	**Backstopping, monitoring and evaluation of the implementation of the IFFPMP.**				**61,200**					
4.1	Participate in baseline survey at provincial level to be conducted by the working teams of FiA and FAO-CAPFISH project (lump sum: 1,200$).	1 time	FiA/FAO	FiAC	1,200	1,200 1 time H				
4.2	Participate in monthly backstopping missions of the FiA's officers to support and direct the IFFPMP's implementation (45$ x 2 persons x 6 months x 4 districts x 5 years).	120 times	FiAC	FiAC	10,800	2,160 24 times H H	2,160 24 times H H	2,160 24 times H H	2,160 24 times H H	2,160 24 times H H
4.3	Fee for the FiA's officers to conduct monthly backstopping, monitoring and evaluation missions to support the IFFPMP's implementation (820$ x 2 times x 6 months x 5 years).	60 times	FiA	FiAC	49,200	9,840 12 times H H	9,840 12 times H H	9,840 12 times H H	9,840 12 times H H	9,840 12 times H H

Grand Total:	**886,205**				

10. Activity and budget plan for inundated forest fire management at district level for 2021-2025

10.1 Activity and budget plan of inundated *forest* fire management for Aek Phnom district

No	Activities	Indicators (5 years)	Responsible		Budget (2021-2025)	2021 (by quarter)				2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)			
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Output 1: Effective review, risk reduction and readiness for forest fire prevention and intervention.**				**130,919**																				
1.1	**Review forest fire issues, experiences and lessons learnt on flooded forest fire prevention, intervention and restoration approaches have been applied.**				**4,800**																				
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on issues of flooded forest fire management and restoration approaches have been applied (45$ x 5 meetings x 5 years).	25 meetings at commune level. 5 report at district level.	FiA and FiAC	Involving stakeholders at village and commune levels.	1,125	225 5 meetings 1 report H			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M
1.1.2	Conduct site observation at the fire-affected forests to gather coordinates of and information on physical, geographical and topographical situation, scope of damage, land use pattern and land cover in the burnt forest areas for the pre and post periods of flooded forest fire (45$ x 3 days x 5 communes x 5 years).	5 times 25 reports at district level	FiA/FiAC	FiA triage, CFi and commune authority.	3,375	675 5 time 1 report H	H		H	675 5 time 1 report H			H	675 5 time 1 report H			H	675 5 time 1 report H			H	675 5 time 1 report H			
1.1.3	Produce maps of the fire-affected forest areas by target districts (60$ x 1 map x 5 years).	5 maps at district level	DFA/FiA	FiAC	300	60 1 map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H
1.2	**Risk Reduction: Reduce risks of forest fires by promoting local awareness on and participation in flooded forest fire prevention and intervention.**				**42,150**																				
1.2.1	Produce posters for promoting awareness of local communities and involved stakeholders on participatory flooded forest fire prevention (1.5$ x 100 posters x 5 communes x 5 years)	2,500 posters	FiA	FAO	3,750	750 500 posters H				750 500 posters H				750 500 posters H				750 500 posters H				750 500 posters H			
1.2.2	Erect educational signboards for promoting awareness of local communities and involved stakeholders (300$ x 2 signboards x 5 communes).	10 signboards	FiAC	Local authorities	3,000	600 2 signboard M				1,500 5 signboard M				900 3 signboard M											
1.2.3	Develop and update list of target stakeholders involving in using natural resources in Zone 2 and Zone 3 (100$ x 5 communes x 5 years).	S lists (updated on yearly basis)	FiA Triage	Commune authority	2,500	500 5 lists			H	500 5 updated lists			H	500 5 updated lists			H	500 5 updated lists			H	500 5 updated lists			H
1.2.4	Conduct extension meetings to promote awareness of the target communities on participatory forest fire management, Fisheries Law, forest fire-related sub-decree, norms, policies and regulations (150$ x 2 meetings x 5	50 times	FiAC	Local authorities	7,500	1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H		

	communes x 5 years).																			
1.2.5	Set up structure of Forest Fire Patrol Teams (FFPTs) at commune level and develop forest fire patrol plans (80$ x 5 communes x 1 year).	5 teams	FiAC	Local authorities	400	400 5 teams H														
1.2.6	Conduct flooded forest fire patrol regularly by the FFPTs: 5 days/month (250$ x 4 months x 5 communes x 5 years).	500 times	FFPTs and FiA Triage	Local authorities	25,000	5,000 100 times H H		5,000 100 times H H		5,000 100 times H H		5,000 100 times H H		5,000 100 times H H						
1.3	**<u>Readiness</u>: Establish Working Groups for Forest Fire Management (WGFFM) at provincial and district levels and prepare equipment for flooded forest fire prevention and intervention.**				**83,969**															
1.3.1	**Establish and strengthen coordination among WGFFM at provincial and district levels and FFPT at commune level for forest fire intervention and equip the FFPTs with forest fire extinguishing tools.**				**54,469**															
1.3.1.1	Conduct meeting with provincial and target district administrations to discuss drafts of legal papers required for establishing WGFFMs at provincial and district level and FFPTs at commune level (65$ x 1 meeting).	1 meeting Draft ToR at district level	PDAFF and FiAC	District administration	65	65 1 meeting H														
1.3.1.2	Conduct meeting with the target district administration to set up WGFFM at district level (65$ x 1 meeting)	1 group	PDAFF and FiAC	District administration	65	65 1 group H														
1.3.1.3	Conduct WGFFM meeting at provincial level to discuss challenges faced in forest fire interventions and find solutions to solve the challenges (394$ x 2 meetings x 5 years).	5 meetings	FiA/FiAC and PDAFF	WGFFM at provincial level	1,974	394 1 meeting H H		394 1 meeting H H		394 1 meeting H H		396 1 meeting H H		396 1 meeting H H						
1.3.1.4	Conduct quarterly WGFFM meetings at district level to discuss challenges faced in forest fire interventions, find solutions to solve the challenges and develop action plan to support the flooded forest patrol at commune level (320$ x 1 meeting x 6 months x 5 years).	10 meetings	FiAC and PDAFF	WGFFM at district level	3,200	640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H						
1.3.1.5	Purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank, 2 rolls of hose and 2 high water pressure guns for the patrol teams (3,600$ x 4 tillers).	4 units	FiA	FiAC	14,400			7,200 2 units H H		7,200 2 units H H										
1.3.1.6	Procure and purchase 2 motorized boats equipped with a motor pump, high water pressure guns and hose for forest fire fighting (3,000$ x 1 motorized boat x 2 communes)	2 units	FiA	FiAC	6,000			3,000 1 unit H H		3,000 1 unit H H										
1.3.1.7	Procure and purchase motorcycles for forest fire patrol (2,300$ x 6 motorcycles).	6 units	FiA	FiAC	13,800			4,600 2 units H H		4,600 2 units H H		4,600 2 units H H								
1.3.1.8	Purchase portable forest fire extinguishing tools (first aid, camping tents, 20L knapsack power sprayer with pump, goggle, drone, GPS, walkie talkie, boot, binocular,..) for the patrol teams (1,200$ x 2 sets x 5 communes)	10 sets	FiA	FiAC	12,000	2,400 2 H		6,000 5 H		3,600 3 H										

1.3.1.9	Conduct meeting with FFPTs at commune level to guide the teams the conditional uses of and distribute forest fire extinguishing tools to them (45$ x 2 meetings x 5 communes)	10 meetings	FiAC	Commune authority	450	90 2 meetings H	225 5 meetings H	135 3 meetings H		
1.3.1.10	Attend ToT at provincial level on Forest Fire Techniques for FiAC officers and WGFFM's members (45$ x 7ps x 3 days)	1 course	FiA	WCS	945	945 1 course H				
1.3.1.11	Conduct district-level trainings on Forest Fire Fighting Techniques for FFPTs (20$ x 30ps x 2 trainings)	2 courses	FiAC	WGFFM at district level	1,200		600 1 course H		600 1 course H	
1.3.1.12	Fee for FiAC's trainers to conduct trainings on Forest Fire Fighting Techniques at district level and training materials [(45$ x 3ps) + 50$] x 2 trainings.	2 courses	FiAC	WGFFM at district level	370		185 1 course H		185 1 course H	
1.3.2	**Build physical infrastructures for forest fire prevention and intervention**				**29,500**					
1.3.1.1	Build watch towers for the community patrol teams to observe forest fires (8,000$ x 2 towers).	2 units	FiA	FiAC	16,000		8,000 1 unit H H		8,000 1 unit H H	
1.3.1.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (4,500$ x 3 ponds).	3 locations	FiA	FiAC	13,500		9,000 2 ponds H H	4,500 1 pond H H		
2	**Output 2: Improved response actions to fires in inundated forest areas**				**31,792**					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (100$ x 3 cases x 5 communes x 5 years).	75 cases	FiA triage	Local authorities	7,500	2,200 22 cases H H	1,800 18 cases H H	1,500 15 cases H H	1,200 12 cases H H	800 8 cases H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (45$ x 1ps x 4 days).	1 course	FiA	FiAC	180		180 1 course			
2.3	Conduct training at provincial level on Collecting Evidence, Preparing Offence Reports for FiAC's officers (45$ x 5ps x 3 days).	1 course	FiA	FiAC	675		675 1 course			
2.4	Strengthen law enforcement against offenders who set forest fires and/or encroached/grabbed inundated forest lands illegally (180$ x 2 cases x 5 communes x 5 years).	50 cases	FiAC	Local authorities	9,000	2,700 15 cases H H	2,160 12 cases H H	1,800 10 cases H H	1,440 8 cases H H	900 5 cases H H
2.5	Fee for maintaining forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100$ x 5 months x 5 communes x 5 years).	lump sump	FiA Triage	Commune authority	12,500	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H
2.6	Organize provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (737$ x 1 time).	1 workshop	FiA	FiAC and WGFFFM at provincial level	737	737 1 workshop H				
2.7	Give some incentive awards to individuals who participated actively or injured in forest fire prevention and intervention (80$ x 15 people)	15 people	FiA triage	Commune authority	1,200	400 5 people H H	320 4 people H H	240 3 people H H	160 2 people H H	80 1 people H H

3	**Output 3: Improved restoration of fire damaged areas of inundated forests.**				**55,735**					
3.1	Conduct rapid assessment to identify reasonably technical-sound approach for restoration of the burnt flooded forest areas (80$ x 3 days x 5 years) + (60$ x 1 map x 5 years)	5 reports	FiA/FAO	FiAC	1,500	300 1 report H	300 1 report H	300 1 report H	300 1 report H	300 1 report H
3.2	Mark boundaries of the burnt flooded forest sites by concrete poles with small signboards (60S x 150 poles).	150 poles	FiAC	Local authorities	9,000	2,700 45 poles H H	2,160 36 poles H H	1,800 30 poles H H	1,320 22 poles H H	1,020 17 poles H H
3.3	Participate in workshops at provincial level on tree nursery management and flooded forest restoration approach (425$ x 2 trainings).	2 trainings	FiA and FAO	FiAC	850		425 1 training H		425 1 training H	
3.4	Conduct consultation meetings at commune level with stakeholders to discuss plan for restoration of fire-dama ged flooded forest areas (68$ x 5 meeting x 5 years).	25 meetings	FiAC	Local authorities	1,700	340 5 meetings M	340 5 meetings M	340 5 meetings M	340 5 meetings M	340 5 meetings M
3.5	Support local communities to establish tree nursery and produce flooded forest seedlings for planting in the burnt forest areas (200$ x 1 nursery x 5 years).	5 tree nurseries	FiA Triage	CFi	1,000	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H
3.6	Support and monitor tree planting carried out by local communities in the fire-damaged forest areas (45$x 33ha).	33 hectares	FiAC	Local authorities	1,485	225 5 hectares H H	315 7 hectares H H	315 7 hectares H H	315 7 hectares H H	315 7 hectares H H
3.7	Cost for seedlings, transportation and planting (1$ x 1,100 seedlings x 33 ha).	36,300 seedlings	FiAC	CFi	36,300	5,500 5,500 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H
3.8	Fee for maintaining tree seedlings planted in the forest restoration sites by local communities (100$ x 33 ha).	33 hectares	FiA Triage	CFi	3,300	5,000 5 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H
3.9	Conduct seedling survival rate monitoring in the flooded forest restoration sites (lump sum: 600$/30ha).	30 hectares	FiA/FAO	FiAC	600			150 7.5 ha M M	150 7.5 ha M M	300 15 ha M M
4	**Backstopping, monitoring and evaluation of the implementation of the IFFPMP.**				**15,963**					
4.1	Participate in baseline survey at provincial level to be conducted by the working teams of FiA and FAO-CAPFISH project (lump sum: 316$).	1 time	FiA/FAO	FiAC	316	316 1 time H				
4.2	Participate in monthly backstopping missions of the FiA's officers to support and direct the IFFPMP's implementation (45$ x 2ps x 6 months x 5 years).	30 times	FiAC	FiAC	2,700	540 6 times H H	540 6 times H H	540 6 times H H	540 6 times H H	540 6 times H H
4.3	Fee for the FiA's officers to conduct monthly backstopping, monitoring and evaluation missions to support the IFFPMP's implementation (431.5$ x 6 months x 5 years).	60 time	FiA	FiAC	12,947	2,589 12 times H H	2,589 12 times H H	2,589 12 times H H	2,589 12 times H H	2,589 12 times H H
				Grand Total:	**234,409**					

10.2 Activity and budget plan of inundated forest fire management for Moung Ruessei district

No	Activities	Indicators (5 years)	Responsible		Budget (2021-2025)	2021 (by quarter)				2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)			
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1	**Output 1: Effective review, risk reduction and readiness for forest fire prevention and intervention.**				**123,684**																				
1.1	**Review forest fire issues, experiences and lessons learnt on flooded forest fire prevention, intervention and restoration approaches have been applied.**				**4,800**																				
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on issues of flooded forest fire management and restoration approaches have been applied (45$ x 5 meetings x 5 years).	25 meetings at commune level. 5 report at district level.	FiA and FiAC	Involving stakeholders at village and commune levels.	1,125	225 5 meetings 1 report H			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M
1.1.2	Conduct site observation at the fire-affected forests to gather coordinates of and information on physical, geographical and topographical situation, scope of damage, land use pattern and land cover in the burnt forest areas for the pre and post periods of flooded forest fire (45$ x 3 days x 5 communes x 5 years).	25 times 5 reports at district level	FiA/FiAC	FiA triage, CFi and commune authority.	3,375	675 5 time 1 report H	H		H	675 5 time 1 report H			H	675 5 time 1 report H			H	675 5 time 1 report H			H	675 5 time 1 report H			
1.1.3	Produce maps of the fire-affected forest areas by target districts (60$ x 1 map x 5 years).	5 maps at district level	DFA/FiA	FiAC	300	60 1 map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H
1.2	**Risk Reduction: Reduce risks of forest fires by promoting local awareness on and participation in flooded forest fire prevention and intervention.**				**42,150**																				
1.2.1	Produce posters for promoting awareness of local communities and involved stakeholders on participatory flooded forest fire prevention (1.5$ x 100 posters x 5 communes x 5 years)	2,500 posters	FiA	FAO	3,750	750 500 posters H				750 500 posters H				750 500 posters H				750 500 posters H				750 500 posters H			
1.2.2	Erect educational signboards for promoting awareness of local communities and involved stakeholders (300$ x 2 signboards x 5 communes).	10 signboards	FiAC	Local authorities	3,000	600 2 signboard M				1,500 5 signboard M				900 3 signboard M											
1.2.3	Develop and update list of target stakeholders involving in using natural resources in Zone 2 and Zone 3 (100$ x 5 communes x 5 years).	S lists (updated on yearly basis)	FiA Triage	Commune authority	2,500	500 5 lists			H	500 5 updated lists			H	500 5 updated lists			H	500 5 updated lists			H	500 5 updated lists			H
1.2.4	Conduct extension meetings to promote awareness of the target communities on participatory forest fire management, Fisheries Law, forest fire-related sub-decree, norms, policies and regulations (150$ x 2 meetings x 5 communes x 5 years).	50 times	FiAC	Local authorities	7,500	1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H		
1.2.5	Set up structure of Forest Fire Patrol Teams (FFPTs) at commune level and develop forest fire patrol plans (80$ x 5 communes x 1 year).	5 teams	FiAC	Local authorities	400	400 5 teams H																			

1.2.6	Conduct flooded forest fire patrol regularly by the FFPTs: 5 days/month (250$ x 4 months x 5 communes x 5 years).	500 times	FFPTs and FiA Triage	Local authorities	25,000	5,000 100 times H H		5,000 100 times H H		5,000 100 times H H		5,000 100 times H H		5,000 100 times H H	
1.3	**<u>Readiness</u>: Establish Working Groups for Forest Fire Management (WGFFM) at provincial and district levels and prepare equipment for flooded forest fire prevention and intervention.**				**76,734**										
1.3.1	**Establish and strengthen coordination among WGFFM at provincial and district levels and FFPT at commune level for forest fire intervention and equip the FFPTs with forest fire extinguishing tools.**				**55,234**										
1.3.1.1	Conduct meeting with provincial and target district administrations to discuss drafts of legal papers required for establishing WGFFMs at provincial and district level and FFPTs at commune level (65$ x 1 meeting).	1 meeting Draft ToR at district level	PDAFF and FiAC	District administration	65	65 1 meeting H									
1.3.1.2	Conduct meeting with the target district administration to set up WGFFM at district level (65$ x 1 meeting)	1 group	PDAFF and FiAC	District administration	65	65 1 group H									
1.3.1.3	Conduct WGFFM meeting at provincial level to discuss challenges faced in forest fire interventions and find solutions to solve the challenges (394$ x 2 meetings x 5 years).	5 meetings	FiA/FiAC and PDAFF	WGFFM at provincial level	1,974	394 1 meeting H H		394 1 meeting H H		394 1 meeting H H		396 1 meeting H H		396 1 meeting H H	
1.3.1.4	Conduct quarterly WGFFM meetings at district level to discuss challenges faced in forest fire interventions, find solutions to solve the challenges and develop action plan to support the flooded forest patrol at commune level (320$ x 1 meeting x 6 months x 5 years).	10 meetings	FiAC and PDAFF	WGFFM at district level	3,200	640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H	
1.3.1.5	Purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank, 2 rolls of hose and 2 high water pressure guns for the patrol teams (3,600$ x 4 tillers).	4 units	FiA	FiAC	14,400		H	7,200 2 units H	H	7,200 2 units H					
1.3.1.6	Procure and purchase motorcycles for forest fire patrol (2,300$ x 9 motorcycles).	9 units	FiA	FiAC	20,700		H	6,900 3 units H	H	6,900 3 units H	H	6,900 3 units H			
1.3.1.7	Purchase portable forest fire extinguishing tools (first aid, camping tents, 20L knapsack power sprayer with pump, goggle, drone, GPS, walkie talkie, boot, binocular,..) for the patrol teams (1,200$ x 2 sets x 5 communes)	10 sets	FiA	FiAC	12,000	2,400 2 H		6,000 5 H		3,600 3 H					
1.3.1.8	Conduct meeting with FFPTs at commune level to guide the teams the conditional uses of and distribute forest fire extinguishing tools to them (45$ x 2 meetings x 5 communes)	10 meetings	FiAC	Commune authority	450	90 2 meetings H		225 5 meetings H		135 3 meetings H					
1.3.1.9	Attend ToT at provincial level on Forest Fire Techniques for FiAC officers and WGFFM's members (45$ x 6ps x 3 days)	1 course	FiA	WCS	810	810 1 course	H								
1.3.1.10	Conduct district-level trainings on Forest Fire Fighting Techniques for FFPTs (20$ x 30ps x 2 trainings)	2 courses	FiAC	WGFFM at district level	1,200			600 1 course H				600 1 course H			

1.3.1.11	Fee for FiAC's trainers to conduct trainings on Forest Fire Fighting Techniques at district level and training materials [(45$ x 3ps) + 50$] x 2 trainings.	2 courses	FiAC	WGFFM at district level	370		185 1 course H		185 1 course H	
1.3.2	**Build physical infrastructures for forest fire prevention and intervention**				**21,500**					
1.3.2.1	Build watch towers for the community patrol teams to observe forest fires (8,000$ x 1 towers).	1 unit	FiA	FiAC	8,000				8,000 1 unit H H	
1.3.2.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (4,500$ x 3 ponds).	3 locations	FiA	FiAC	13,500			9,000 2 ponds H H	4,500 1 pond H H	
2	**Output 2: Improved response actions to fires in inundated forest areas**				**31,792**					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (100$ x 3 cases x 5 communes x 5 years).	75 cases	FiA triage	Local authorities	7,500	2,200 22 cases H H	1,800 18 cases H H	1,500 15 cases H H	1,200 12 cases H H	800 8 cases H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (45$ x 1ps x 4 days).	1 course	FiA	FiAC	180		180 1 course H			
2.3	Conduct training at provincial level on Collecting Evidence, Preparing Offence Reports for FiAC's officers (45$ x 5ps x 3 days).	1 course	FiA	FiAC	675		675 1 course			
2.4	Strengthen law enforcement against offenders who set forest fires and/or encroached/grabbed inundated forest lands illegally (180$ x 2 cases x 5 communes x 5 years).	50 cases	FiAC	Local authorities	9,000	2,700 15 cases H H	2,160 12 cases H H	1,800 10 cases H H	1,440 8 cases H H	900 5 cases H H
2.5	Fee for maintaining forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100$ x 5 months x 5 communes x 5 years).	lump sump	FiA Triage	Commune authority	12,500	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H
2.6	Organize provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (737$ x 1 time).	1 workshop	FiA	FiAC and WGFFFM at provincial level	737	737 1 workshop H				
2.7	Give some incentive awards to individuals who participated actively or injured in forest fire prevention and intervention (80$ x 15 people)	15 people	FiA triage	Commune authority	1,200	400 5 people H H	320 4 people H H	240 3 people H H	160 2 people H H	80 1 people H H
3	**Output 3: Improved restoration of fire damaged areas of inundated forests.**				**55,735**					
3.1	Conduct rapid assessment to identify reasonably technical-sound approach for restoration of the burnt flooded forest areas (80$ x 3 days x 5 years) + (60$ x 1 map x 5 years)	5 reports	FiA/FAO	FiAC	1,500	300 1 report H	300 1 report H	300 1 report H	300 1 report H	300 1 report H
3.2	Mark boundaries of the burnt flooded forest sites by concrete poles with small signboards (60$ x 150 poles).	150 poles	FiAC	Local authorities	9,000	2,700 45 poles H H	2,160 36 poles H H	1,800 30 poles H H	1,320 22 poles H H	1,020 17 poles H H
3.3	Participate in workshops at provincial level on tree nursery management and flooded forest restoration approach (425$ x 2 trainings).	2 trainings	FiA and FAO	FiAC	850		425 1 training H		425 1 training H	

3.4	Conduct consultation meetings at commune level with stakeholders to discuss plan for restoration of fire-dama ged flooded forest areas (68$ x 5 meeting x 5 years).	25 meetings	FiAC	Local authorities	1,700	340 5 meetings M	340 5 meetings M	340 5 meetings M	340 5 meetings M	340 5 meetings M
3.5	Support local communities to establish tree nursery and produce flooded forest seedlings for planting in the burnt forest areas (200$ x 1 nursery x 5 years).	5 tree nurseries	FiA Triage	CFi	1,000	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H
3.6	Support and monitor tree planting carried out by local communities in the fire-damaged forest areas (45$x 33ha).	33 hectares	FiAC	Local authorities	1,485	225 5 hectares H H	315 7 hectares H H	315 7 hectares H H	315 7 hectares H H	315 7 hectares H H
3.7	Cost for seedlings, transportation and planting (1$ x 1,100 seedlings x 33 ha).	36,300 seedlings	FiAC	CFi	36,300	5,500 5,500 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H
3.8	Fee for maintaining tree seedlings planted in the forest restoration sites by local communities (100$ x 33 ha).	33 hectares	FiA Triage	CFi	3,300	5,000 5 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H
3.9	Conduct seedling survival rate monitoring in the flooded forest restoration sites (lump sum: 600$/30ha).	30 hectares	FiA/FAO	FiAC	600			150 7.5 ha M M	150 7.5 ha M M	300 15 ha M M
4	**Backstopping, monitoring and evaluation of the implementation of the IFFPMP.**				**15,963**					
4.1	Participate in baseline survey at provincial level to be conducted by the working teams of FiA and FAO-CAPFISH project (lump sum: 316$).	1 time	FiA/FAO	FiAC	316	316 1 time H				
4.2	Participate in monthly backstopping missions of the FiA's officers to support and direct the IFFPMP's implementation (45$ x 2ps x 6 months x 5 years).	30 times	FiAC	FiAC	2,700	540 6 times H H	540 6 times H H	540 6 times H H	540 6 times H H	540 6 times H H
4.3	Fee for the FiA's officers to conduct monthly backstopping, monitoring and evaluation missions to support the IFFPMP's implementation (431.5$ x 6 months x 5 years).	60 time	FiA	FiAC	12,947	2,589 12 times H H	2,589 12 times H H	2,589 12 times H H	2,589 12 times H H	2,589 12 times H H
				Grand Total:	**227,174**					

10.3 Activity and budget plan of inundated forest fire management for Sangkae district

No	Activities	Indicators (5 years)	Responsible		Budget (2021-2025)	2021 (by quarter)				2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)			
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	**4**
1	**Output 1: Effective review, risk reduction and readiness for forest fire prevention and intervention.**				**123,684**																				
1.1	**Review forest fire issues, experiences and lessons learnt on flooded forest fire prevention, intervention and restoration approaches have been applied.**				**4,800**																				
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on issues of flooded forest fire management and restoration approaches have been applied (45$ x 5 meetings x 5 years).	25 meetings at commune level. 5 report at district level.	FiA and FiAC	Involving stakeholders at village and commune levels.	1,125	225 5 meetings 1 report H			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M	225 5 meetings 1 report			M
1.1.2	Conduct site observation at the fire-affected forests to gather coordinates of and information on physical, geographical and topographical situation, scope of damage, land use pattern and land cover in the burnt forest areas for the pre and post periods of flooded forest fire (45$ x 3 days x 5 communes x 5 years).	25 times 5 reports at district level	FiA/FiAC	FiA triage, CFi and commune authority.	3,375	675 5 time 1 report H	H		H	675 5 time 1 report H			H	675 5 time 1 report H			H	675 5 time 1 report H			H	675 5 time 1 report H			
1.1.3	Produce maps of the fire-affected forest areas by target districts (60$ x 1 map x 5 years).	5 maps at district level	DFA/FiA	FiAC	300	60 1 map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H
1.2	**Risk Reduction: Reduce risks of forest fires by promoting local awareness on and participation in flooded forest fire prevention and intervention.**				**42,150**																				
1.2.1	Produce posters for promoting awareness of local communities and involved stakeholders on participatory flooded forest fire prevention (1.5$ x 100 posters x 5 communes x 5 years)	2,500 posters	FiA	FAO	3,750	750 500 posters H				750 500 posters H				750 500 posters H				750 500 posters H				750 500 posters H			
1.2.2	Erect educational signboards for promoting awareness of local communities and involved stakeholders (300$ x 2 signboards x 5 communes).	10 signboards	FiAC	Local authorities	3,000	600 2 signboard M				1,500 5 signboard M				900 3 signboard M											
1.2.3	Develop and update list of target stakeholders involving in using natural resources in Zone 2 and Zone 3 (100$ x 5 communes x 5 years).	25 lists	FiA Triage	Commune authority	2,500	500 5 lists			H	500 5 updated lists			H	500 5 updated lists			H	500 5 updated lists			H	500 5 updated lists			H
1.2.4	Conduct extension meetings to promote awareness of the target communities on participatory forest fire management, Fisheries Law, forest fire-related sub-decree, norms, policies and regulations (150$ x 2 meetings x 5 communes x 5 years).	50 times	FiAC	Local authorities	7,500	1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H			1,500 10 times H	H		
1.2.5	Set up structure of Forest Fire Patrol Teams (FFPTs) at commune level and develop forest fire patrol plans (80$ x 5 communes x 1 year).	5 teams	FiAC	Local authorities	400	400 5 teams H																			

1.2.6	Conduct flooded forest fire patrol regularly by the FFPTs: 5 days/month (250$ x 4 months x 5 communes x 5 years).	500 times	FFPTs and FiA Triage	Local authorities	25,000	5,000 100 times H H		5,000 100 times H H		5,000 100 times H H		5,000 100 times H H		5,000 100 times H H	
1.3	**<u>Readiness</u>: Establish Working Groups for Forest Fire Management (WGFFM) at provincial and district levels and prepare equipment for flooded forest fire prevention and intervention.**				**76,734**										
1.3.1	**Establish and strengthen coordination among WGFFM at provincial and district levels and FFPT at commune level for forest fire intervention and equip the FFPTs with forest fire extinguishing tools.**				**55,234**										
1.3.1.1	Conduct meeting with provincial and target district administrations to discuss drafts of legal papers required for establishing WGFFMs at provincial and district level and FFPTs at commune level (65$ x 1 meeting).	1 meeting Draft ToR at district level	PDAFF and FiAC	District administration	65	65 1 meeting H									
1.3.1.2	Conduct meeting with the target district administration to set up WGFFM at district level (65$ x 1 meeting)	1 group	PDAFF and FiAC	District administration	65	65 1 group H									
1.3.1.3	Conduct WGFFM meeting at provincial level to discuss challenges faced in forest fire interventions and find solutions to solve the challenges (394$ x 2 meetings x 5 years).	5 meetings	FiA/FiAC and PDAFF	WGFFM at provincial level	1,974	394 1 meeting H H		394 1 meeting H H		394 1 meeting H H		396 1 meeting H H		396 1 meeting H H	
1.3.1.4	Conduct quarterly WGFFM meetings at district level to discuss challenges faced in forest fire interventions, find solutions to solve the challenges and develop action plan to support the flooded forest patrol at commune level (320$ x 1 meeting x 6 months x 5 years).	10 meetings	FiAC and PDAFF	WGFFM at district level	3,200	640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H	
1.3.1.5	Purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank, 2 rolls of hose and 2 high water pressure guns for the patrol teams (3,600$ x 4 tillers).	4 units	FiA	FiAC	14,400		H	7,200 2 units H	H	7,200 2 units H					
1.3.1.6	Procure and purchase motorcycles for forest fire patrol (2,300$ x 9 motorcycles).	9 units	FiA	FiAC	20,700		H	6,900 3 units H	H	6,900 3 units H	H	6,900 3 units H			
1.3.1.7	Purchase portable forest fire extinguishing tools (first aid, camping tents, 20L knapsack power sprayer with pump, goggle, drone, GPS, walkie talkie, boot, binocular,..) for the patrol teams (1,200$ x 2 sets x 5 communes)	10 sets	FiA	FiAC	12,000	2,400 2 H		6,000 5 H		3,600 3 H					
1.3.1.8	Conduct meeting with FFPTs at commune level to guide the teams the conditional uses of and distribute forest fire extinguishing tools to them (45$ x 2 meetings x 5 communes)	10 meetings	FiAC	Commune authority	450	90 2 meetings H		225 5 meetings H		135 3 meetings H					
1.3.1.9	Attend ToT at provincial level on Forest Fire Techniques for FiAC officers and WGFFM's members (45$ x 6ps x 3 days)	1 course	FiA	WCS	810	810 1 course	H								
1.3.1.10	Conduct district-level trainings on Forest Fire Fighting Techniques for FFPTs (20$ x 30ps x 2 trainings)	2 courses	FiAC	WGFFM at district level	1,200			600 1 course H				600 1 course H			

1.3.1.11	Fee for FiAC's trainers to conduct trainings on Forest Fire Fighting Techniques at district level and training materials [(45$ x 3ps) + 50$] x 2 trainings.	2 courses	FiAC	WGFFM at district level	370		185 1 course H		185 1 course H	
1.3.2	**Build physical infrastructures for forest fire prevention and intervention**				**21,500**					
1.3.2.1	Build watch towers for the community patrol teams to observe forest fires (8,000$ x 1 towers).	1 unit	FiA	FiAC	8,000			8,000 1 unit H H		
1.3.2.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (4,500$ x 3 ponds).	3 locations	FiA	FiAC	13,500		9,000 2 ponds H H	4,500 1 pond H H		
2	**Output 2: Improved response actions to fires in inundated forest areas**				**31,612**					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (100$ x 3 cases x 5 communes x 5 years).	75 cases	FiA triage	Local authorities	7,500	2,200 22 cases H H	1,800 18 cases H H	1,500 15 cases H H	1,200 12 cases H H	800 8 cases H H
2.2	Conduct training at provincial level on Collecting Evidence, Preparing Offence Reports for FiAC's officers (45$ x 5ps x 3 days).	1 course	FiA	FiAC	675		675 1 course			
2.3	Strengthen law enforcement against offenders who set forest fires and/or encroached/grabbed inundated forest lands illegally (180$ x 2 cases x 5 communes x 5 years).	50 cases	FiAC	Local authorities	9,000	2,700 15 cases H H	2,160 12 cases H H	1,800 10 cases H H	1,440 8 cases H H	900 5 cases H H
2.4	Fee for maintaining forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100$ x 5 months x 5 communes x 5 years).	lump sump	FiA Triage	Commune authority	12,500	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H	2,500 L.sum H H
2.5	Organize provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (737$ x 1 time).	1 workshop	FiA	FiAC and WGFFFM at provincial level	737	737 1 workshop H				
2.6	Give some incentive awards to individuals who participated actively or injured in forest fire prevention and intervention (80$ x 15 people)	15 people	FiA triage	Commune authority	1,200	400 5 people H H	320 4 people H H	240 3 people H H	160 2 people H H	80 1 people H H
3	**Output 3: Improved restoration of fire damaged areas of inundated forests.**				**54,490**					
3.1	Conduct rapid assessment to identify reasonably technical-sound approach for restoration of the burnt flooded forest areas (80$ x 3 days x 5 years) + (60$ x 1 map x 5 years)	5 reports	FiA/FAO	FiAC	1,500	300 1 report H	300 1 report H	300 1 report H	300 1 report H	300 1 report H
3.2	Mark boundaries of the burnt flooded forest sites by concrete poles with small signboards (60S x 150 poles).	150 poles	FiAC	Local authorities	9,000	2,700 45 poles H H	2,160 36 poles H H	1,800 30 poles H H	1,320 22 poles H H	1,020 17 poles H H
3.3	Participate in workshops at provincial level on tree nursery management and flooded forest restoration approach (425$ x 2 trainings).	2 trainings	FiA and FAO	FiAC	850		425 1 training H		425 1 training H	
3.4	Conduct consultation meetings at commune level with stakeholders to discuss plan for restoration of fire-dama ged flooded forest areas (68$ x 5 meeting x 5 years).	25 meetings	FiAC	Local authorities	1,700	340 5 meetings M	340 5 meetings M	340 5 meetings M	340 5 meetings M	340 5 meetings M

3.5	Support local communities to establish tree nursery and produce flooded forest seedlings for planting in the burnt forest areas (200$ x 1 nursery x 5 years).	5 tree nurseries	FiA Triage	CFi	1,000	200 1 nursery H H		200 1 nursery H H		200 1 nursery H H		200 1 nursery H H		200 1 nursery H H	
3.6	Support and monitor tree planting carried out by local communities in the fire-damaged forest areas (45$x 32ha).	32 hectares	FiAC	Local authorities	1,440	200 4 hectares H H		350 7 hectares H H		300 7 hectares H H		350 7 hectares H H		300 7 hectares H H	
3.7	Cost for seedlings, transportation and planting (1$ x 1,100 seedlings x 32 ha).	35,200 seedlings	FiAC	CFi	35,200	4,400 4,400 seedlings H		7,700 7,700 seedlings H		7,700 7,700 seedlings H		7,700 7,700 seedlings H		7,700 7,700 seedlings H	
3.8	Fee for maintaining tree seedlings planted in the forest restoration sites by local communities (100$ x 32 ha).	32 hectares	FiA Triage	CFi	3,200	4,000 4 hectares H H		7,000 7 hectares H H		7,000 7 hectares H H		7,000 7 hectares H H		7,000 7 hectares H H	
3.9	Conduct seedling survival rate monitoring in the flooded forest restoration sites (lump sum: 600$/30ha).	30 hectares	FiA/FAO	FiAC	600					150 7.5 ha M M		150 7.5 ha M M		300 15 ha M M	
4	**Backstopping, monitoring and evaluation of the implementation of the IFFPMP.**				**15,963**										
4.1	Participate in baseline survey at provincial level to be conducted by the working teams of FiA and FAO-CAPFISH project (lump sum: 316$).	1 time	FiA/FAO	FiAC, WGFFFM	316	316 1 time H									
4.2	Participate in monthly backstopping missions of the FiA's officers to support and direct the IFFPMP's implementation (45$ x 2ps x 6 months x 5 years).	30 times	FiAC	FiAC, WGFFFM	2,700	540 6 times H H		540 6 times H H		540 6 times H H		540 6 times H H		540 6 times H H	
4.3	Fee for the FiA's officers to conduct monthly backstopping, monitoring and evaluation missions to support the IFFPMP's implementation (431.5$ x 6 months x 5 years).	60 time	FiA/FAO	FiAC, WGFFFM	12,947	2,589 12 times H H		2,589 12 times H H		2,589 12 times H H		2,589 12 times H H		2,589 12 times H H	
				Grand Total:	**234,409**										

10.4 Activity and budget plan of inundated forest fire management for Thma Koul district

No	Activities	Indicators (5 years)	Responsible		Budget (2021-2025)	2021 (by quarter)				2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)			
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	**4**
1	**Output 1: Effective review, risk reduction and readiness for forest fire prevention and intervention.**				**105,569**																				
1.1	**Review forest fire issues, experiences and lessons learnt on flooded forest fire prevention, intervention and restoration approaches have been applied.**				**3,900**																				
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on issues of flooded forest fire management and restoration approaches have been applied (45$ x 4 meetings x 5 years).	20 meetings at commune level. 5 report at district level.	FiA and FiAC	Involving stakeholders at village and commune levels.	900	180 4 meetings 1 report H			M	180 4 meetings 1 report			M	180 4 meetings 1 report			M	180 4 meetings 1 report			M	180 4 meetings 1 report			M
1.1.2	Conduct site observation at the fire-affected forests to gather coordinates of and information on physical, geographical and topographical situation, scope of damage, land use pattern and land cover in the burnt forest areas for the pre and post periods of flooded forest fire (45$ x 3 days x 4 communes x 5 years).	20 times 5 reports at district level	FiA/FiAC	FiA triage, CFi and commune authority.	2,700	450 4 times 1 report H	H		H	450 4 times 1 report H			H	450 4 times 1 report H			H	450 4 times 1 report H			H	450 4 times 1 report H			
1.1.3	Produce maps of the fire-affected forest areas by target districts (60$ x 1 map x 5 years).	5 maps at district level	DFA/FiA	FiAC	300	60 1 map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H	60 1 updated map H			H
1.2	**Risk Reduction: Reduce risks of forest fires by promoting local awareness on and participation in flooded forest fire prevention and intervention.**				**33,720**																				
1.2.1	Produce posters for promoting awareness of local communities and involved stakeholders on participatory flooded forest fire prevention (1.5$ x 100 posters x 4 communes x 5 years)	2,000 posters	FiA	FAO	3,000	600 400 posters H				600 400 posters H				600 400 posters H				600 400 posters H				600 400 posters H			
1.2.2	Erect educational signboards for promoting awareness of local communities and involved stakeholders (300$ x 2 signboards x4 communes).	8 signboards	FiAC	Local authorities	2,400	600 2 signboard M				1,200 4 signboard M				600 2 signboard M											
1.2.3	Develop and update list of target stakeholders involving in using natural resources in Zone 2 and Zone 3 (100$ x 4 communes x 5 years).	20 lists (updated on yearly basis)	FiA Triage	Commune authority	2,000	500 4 lists			H	500 4 updated lists			H	500 4 updated lists			H	500 4 updated lists			H	500 4 updated lists			H
1.2.4	Conduct extension meetings to promote awareness of the target communities on participatory forest fire management, Fisheries Law, forest fire-related sub-decree, norms, policies and regulations (150$ x 2 meetings x 4 communes x 5 years).	40 meetings	FiAC	Local authorities	6,000	1,200 8 meetings H	H			1,200 8 meetings H	H			1,200 8 meetings H	H			1,200 8 meetings H	H			1,200 8 meetings H	H		
1.2.5	Set up structure of Forest Fire Patrol Teams (FFPTs) at commune level and develop forest fire patrol plans (80$ x 4 communes x 1 year).	4 teams	FiAC	Local authorities	320	320 5 teams H																			

1.2.6	Conduct flooded forest fire patrol regularly by the FFPTs: 5 days/month (250$ x 4 months x 4 communes x 5 years).	400 times	FFPTs and FiA Triage	Local authorities	20,000	4,000 80 days H H		4,000 80 days H H		4,000 80 days H H		4,000 80 days H H		4,000 80 days H H	
1.3	**<u>Readiness</u>: Establish Working Groups for Forest Fire Management (WGFFM) at provincial and district levels and prepare equipment for flooded forest fire prevention and intervention.**				**67,949**										
1.3.1	**Establish and strengthen coordination among WGFFM at provincial and district levels and FFPT at commune level for forest fire intervention and equip the FFPTs with forest fire extinguishing tools.**				**46,449**										
1.3.1.1	Conduct meeting with provincial and target district administrations to discuss drafts of legal papers required for establishing WGFFMs at provincial and district level and FFPTs at commune level (65$ x 1 meeting).	1 meeting Draft ToR at district level	PDAFF and FiAC	District administration	65	65 1 meeting H									
1.3.1.2	Conduct meeting with the target district administration to set up WGFFM at district level (65$ x 1 meeting)	1 group	PDAFF and FiAC	District administration	65	65 1 group H									
1.3.1.3	Conduct WGFFM meeting at provincial level to discuss challenges faced in forest fire interventions and find solutions to solve the challenges (316$ x 2 meetings x 5 years).	5 meetings	FiA/FiAC and PDAFF	WGFFM at provincial level	1,579	316 1 meeting H H		316 1 meeting H H		316 1 meeting H H		316 1 meeting H H		316 1 meeting H H	
1.3.1.4	Conduct quarterly WGFFM meetings at district level to discuss challenges faced in forest fire interventions, find solutions to solve the challenges and develop action plan to support the flooded forest patrol at commune level (320$ x 1 meeting x 6 months x 5 years).	10 meetings	FiAC and PDAFF	WGFFM at district level	3,200	640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H		640 2 meetings H H	
1.3.1.5	Purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank, 2 rolls of hose and 2 high water pressure guns for the patrol teams (3,600$ x 4 tillers).	3 units	FiA	FiAC	10,800		H	7,200 2 units H	H	3,600 1 units H					
1.3.1.6	Procure and purchase motorcycles for forest fire patrol (2,300$ x 8 motorcycles).	8 units	FiA	FiAC	18,400		H	6,900 3 units H	H	6,900 3 units H	H	4,600 2 units H			
1.3.1.7	Purchase portable forest fire extinguishing tools (first aid, camping tents, 20L knapsack power sprayer with pump, goggle, drone, GPS, walkie talkie, boot, binocular,..) for the patrol teams (1,200$ x 2 sets x 4 communes)	8 sets	FiA	FiAC	9,600			4,800 4 sets H				4,800 4 sets H			
1.3.1.8	Conduct meeting with FFPTs at commune level to guide the teams the conditional uses of and distribute forest fire extinguishing tools to them (45$ x 2 meetings x 4 communes)	10 meetings	FiAC	Commune authority	360			180 4 meetings H				180 4 meetings H			
1.3.1.9	Attend ToT at provincial level on Forest Fire Techniques for FiAC officers and WGFFM's members (45$ x 6ps x 3 days)	1 course	FiA	WCS	810	810 1 course	H								
1.3.1.10	Conduct district-level trainings on Forest Fire Fighting Techniques for FFPTs (20$ x 30ps x 2 trainings)	2 courses	FiAC	WGFFM at district level	1,200			600 1 course H				600 1 course H			

1.3.1.11	Fee for FiAC's trainers to conduct trainings on Forest Fire Fighting Techniques at district level and training materials [(45$ x 3ps) + 50$] x 2 trainings.	2 courses	FiAC	WGFFM at district level	370		185 1 course H		185 1 course H	
1.3.2	**Build physical infrastructures for forest fire prevention and intervention**				**21,500**					
1.3.2.1	Build watch towers for the community patrol teams to observe forest fires (8,000$ x 1 towers).	1 unit	FiA	FiAC	8,000			8,000 1 unit H H		
1.3.2.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (4,500$ x 3 ponds).	3 locations	FiA	FiAC	13,500		4,500 1 pond H H	9,000 2 ponds H H		
2	**Output 2: Improved response actions to fires in inundated forest areas**				**25,844**					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (100$ x 3 cases x 4 communes x 5 years).	60 cases	FiA triage	Local authorities	6,000	1,800 18 cases H H	1,500 15 cases H H	1,200 12 cases H H	900 9 cases H H	600 6 cases H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (45$ x 1ps x 4 days).	1 course	FiA	FiAC	180		180 1 course H			
2.3	Conduct training at provincial level on Collecting Evidence, Preparing Offence Reports for FiAC's officers (45$ x 5ps x 3 days).	1 course	FiA	FiAC	675		675 1 course			
2.4	Strengthen law enforcement against offenders who set forest fires and/or encroached/grabbed inundated forest lands illegally (180$ x 2 cases x 4 communes x 5 years).	40 cases	FiAC	Local authorities	7,200	2,160 12 cases H H	1,800 10 cases H H	1,440 8 cases H H	1,080 6 cases H H	720 4 cases H H
2.5	Fee for maintaining forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100$ x 5 months x 4 communes x 5 years).	lump sump	FiA Triage	Commune authority	10,000	2,000 L.sum H H	2,000 L.sum H H	2,000 L.sum H H	2,000 L.sum H H	2,000 L.sum H H
2.6	Organize provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (589$ x 1 time).	1 workshop	FiA	FiAC and WGFFFM at provincial level	589	589 1 workshop H				
2.7	Give some incentive awards to individuals who participated actively or injured in forest fire prevention and intervention (80$ x 15 people)	15 people	FiA triage	Commune authority	1,200	400 5 people H H	320 4 people H H	240 3 people H H	160 2 people H H	80 1 people H H
3	**Output 3: Improved restoration of fire damaged areas of inundated forests.**				**54,150**					
3.1	Conduct rapid assessment to identify reasonably technical-sound approach for restoration of the burnt flooded forest areas (80$ x 3 days x 5 years) + (60$ x 1 map x 5 years)	5 reports	FiA/FAO	FiAC	1,500	300 1 report H	300 1 report H	300 1 report H	300 1 report H	300 1 report H
3.2	Mark boundaries of the burnt flooded forest sites by concrete poles with small signboards (60S x 150 poles).	150 poles	FiAC	Local authorities	9,000	2,700 45 poles H H	2,160 36 poles H H	1,800 30 poles H H	1,320 22 poles H H	1,020 17 poles H H
3.3	Participate in workshops at provincial level on tree nursery management and flooded forest restoration approach (425$ x 2 trainings).	2 trainings	FiA and FAO	FiAC	850		425 1 training H		425 1 training H	

3.4	Conduct consultation meetings at commune level with stakeholders to discuss plan for restoration of fire-dama ged flooded forest areas (68$ x 4 meeting x 5 years).	20 meetings	FiAC	Local authorities	1,360	272 4 meetings M	272 4 meetings M	272 4 meetings M	272 4 meetings M	272 4 meetings M
3.5	Support local communities to establish tree nursery and produce flooded forest seedlings for planting in the burnt forest areas (200$ x 1 nursery x 5 years).	5 tree nurseries	FiA Triage	CFi	1,000	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H	200 1 nursery H H
3.6	Support and monitor tree planting carried out by local communities in the fire-damaged forest areas (45$x 32ha).	32 hectares	FiAC	Local authorities	1,440	200 4 hectares H H	350 7 hectares H H	300 7 hectares H H	350 7 hectares H H	300 7 hectares H H
3.7	Cost for seedlings, transportation and planting (1$ x 1,100 seedlings x 32 ha).	35,200 seedlings	FiAC	CFi	35,200	4,400 4,400 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H	7,700 7,700 seedlings H
3.8	Fee for maintaining tree seedlings planted in the forest restoration sites by local communities (100$ x 32 ha).	32 hectares	FiA Triage	CFi	3,200	4,000 4 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H	7,000 7 hectares H H
3.9	Conduct seedling survival rate monitoring in the flooded forest restoration sites (lump sum: 600$/30ha).	30 hectares	FiA/FAO	FiAC	600			150 7.5 ha M M	150 7.5 ha M M	300 15 ha M M
4	**Backstopping, monitoring and evaluation of the implementation of the IFFPMP.**				**13,311**					
4.1	Participate in baseline survey at provincial level to be conducted by the working teams of FiA and FAO-CAPFISH project (lump sum: 253$).	1 time	FiA/FAO	FiAC, WGFFFM	253	253 1 time H				
4.2	Participate in monthly backstopping missions of the FiA's officers to support and direct the IFFPMP's implementation (45$ x 2ps x 6 months x 5 years).	30 times	FiAC	FiAC, WGFFFM	2,700	540 6 times H H	540 6 times H H	540 6 times H H	540 6 times H H	540 6 times H H
4.3	Fee for the FiA's officers to conduct monthly backstopping, monitoring and evaluation missions to support the IFFPMP's implementation (345$ x 6 months x 5 years).	60 time	FiA/FAO	FiAC, WGFFFM	10,358	2,071 12 times H H	2,071 12 times H H	2,071 12 times H H	2,071 12 times H H	2,074 12 times H H
				Grand Total:	**198,874**					

11.Annex

Annex 1: List of flooded tree species in Battambang province's floodplain areas

ល.រ	ឈ្មោះខ្មែរ (Khmer Name)	ឈ្មោះវិទ្យាសាស្ត្រ (Scientific Name)
១	កក់ត្រែង ឬ តាទូក	*Cyperus elatus*
២	កក់ភ្លាម	*Cyperus kyllingia or nemoralis*
៣	កប្បាសព្រៃ	*Croton krabas or Cochlopermum religiosum*
៤	កន្ធើតាឈរាទ	*Capparis microcantha* (Dc.)
៥	កន្ធៀត	*Neptunia oleracea*
៦	កណ្តក់	
៧	កន្ទុយអន្ទង់	
៨	កន្ទាំងលែ	*Polygonum tomentosum*
៩	កណ្តាប់ចង្អេរ	*Pouzolzia zeylamica*
១០	កន្ធង	*Xanthophyllum glancam*
១១	កន្ធ្រៀវ	
១២	ឃុម	*Nauclea officinalis*
១៣	ក្តុល	*Mimusops elengil*
១៤	កាត្រឹង ឬ ចឹត្រឹង	*Cordia Sp*
១៥	កាវៅ " ដៃថ្ងូរ "	*Raphanus sativus*
១៦	កាឆឹង ឬ ក្រចៅ	*Corchorus capsularis*
១៧	កំដង់ត្នុំ	
១៨	កំដឹងឈូសស (ព្យី)	*Catharanthus roseus*
១៩	កំដឹងឈូសក្រហម (ឈ្មោល)	*Ludwigia adscenden*
២០	កំព្រាម	*Acacia caesia*
២១	កំប្លុក " ឈ្លើយ "	
២២	កំភ្លោក	*Eichhornia crassipes*
២៣	ក្រ ឬ ក្រាស	*Quassia harmandiana*
២៤	ក្រគោះ (ផុះក្នុងព្រៃកោងកាង)	*Sindora maritima*
២៥	ក្រគោះព្រៃក	*Sindora " Meritima ? "*
២៦	ក្រចាប់	*Trapa bicornis*
២៧	ក្រញឿបស	*Lumnitzera racemosa* (Willd)
២៨	ក្រញឿបក្រហម	*Lumnitzera coccinea* (W & A)
២៩	ក្រពៅតែនតំ	*Hydnocarpus anthelminthica*
៣០	ក្រពៅតែនដូច	*Hydnocarpus saigonensis*
៣១	ក្រវៀម	*Pentapetes phoenicea*
៣២	ក្រវ៉ាន់	*Popowia diospyrifolia*
៣៣	ក្រាស់	*Samandura harmendii*
៣៤	កោងកាងឈ្មោល	*Rhizophora mucronata*
៣៥	កោងកាងញី	*Rhizophora conjugata* (Linné)
៣៦	ខ្លាស់	*Diospyros sylvatica* (Roxb)
៣៧	ខ្លាឃមាន់	*Dalbergia herrida*
៣៨	ខ្លាឈ (ផុះក្នុងព្រៃកោងកាង)	*Heritiera littoralis*
៣៩	ខ្លឹង (ផុះក្នុងព្រៃកោងកាង)	*Calophillum inophillum*
៤០	ខ្លូម	*Stephegyne pavirfolia* or *Mitragyna brunonis*
៤១	ខ្លូមម៉ឹក	*Stephegyne " Diversifolia ? "*
៤២	ខោសតាលក្រវៀម	*Castanopsis pierres*
៤៣	ឃ្លាឈ	*Heritiera littoralis*
៤៤	ឃ្លូ	*Cudrania cambodiana*
៤៥	ឆកតំ	*Pistia stratiotes*
៤៦	ឆកដូច	*Phoenix paludosa*
៤៧	ឆកតាឈើ	*Lemna minor*
៤៨	ឆង្គុមក្រជើ	
៤៩	ឆត្តល់ភ្នំ ឬ រជ្ជីឆាល់ត្រី	*Marsilia quadrifolia*
៥០	ឆា	*Butea frondosa* (Roxb)
៥១	ឆាក	*Nipa fruticans*
៥២	ចំបក់តាំង (ផុះក្នុងព្រៃកោងកាង)	*Terminalia catappa*
៥៣	ចំបក	*Albizia lebbekoides*
៥៤	ចំប្លង	
៥៥	ច្រកែង	*Coccoceras anisopodum*
៥៦	ចៅក្រោម	
៥៧	ឆ្នឹងឆស់	*Milichdes moulins* or *Euphorbia millii ch-des moulins*
៥៨	ឆំឈូឈ្មោល " ធៅកំពត ហៅ ស្ថីឈ្មោល "	*Avicennia intermedia* or *Avicennia marina intermedia* (Griff)
៥៩	ឆាំត្រឹង	*Cynometra " Inaequifolia ? "*
៦០	ឆើងចាប	*Dasymaschalon lomentaceum*

៦១	ឈូក	*Nelumbo nucifera*
៦២	ឈើទាល	*Excoecaria agallocha* (Lu)
៦៣	ញ	*Morinda*
៦៤	ញទឹក ឬ ញស្វាត	*Morinda persicaefolia*
៦៥	ដោះគួម	
៦៦	ដង្កៀបក្ដាម	*Antidesma ghaesembilla*
៦៧	ដោះគង់	*Tetracera scabdens* (L) or *Tetracera sarmentosa*
៦៨	ដៃខ្លា	*Gardenia Sp* or *Angkorensis pitard*
៦៩	តាបូន " តាប៊ូន "	*Carapa moluccensis*
៧០	តាម៉ែង	
៧១	តាសែង " តាសែន "	*Xanthophyllum glaucum*
៧២	តាសៀរ	*Phyllanthus Sp*
៧៣	តាអាន	*Oncosperma*
៧៤	ក្តួរ	*Terminalia cambodiana*
៧៥	ត្រកួន	*Ipomoea aquatica*
៧៦	ត្រចៀកក្រាញ់	*Acanthus ilicifolius* (L)
៧៧	ត្រសក់	
៧៨	ត្រមក់	
៧៩	ត្រាវអណ្តូត	*Colocasia esculenta*
៨០	ទាន់	*Crateva andansonii or odorata*
៨១	ទូក់ទឹក	*Xyris indica*
៨២	ទាង	
៨៣	ទ្រើមអណ្តើក	*Ixora cuneifolia, Var.varians*
៨៤	ទន្លា	*Crataeva religiosa* (Bl)
៨៥	ទន្លា	*Crataeva nurvata* (Ham)
៨៦	ទន្លាប់	*Crataeva nurvala* (Buch)
៨៧	ទន្លាប់	*Diospyros Sp*
៨៨	ទ្រនំប្រទេស	
៨៩	ទ្រនំអាមួត ឬ ទ្រនំល្អួត	*Albizia myriophylla*
៩០	ទ្រាលស្បាតស្វា	*Uvaria rufa*
៩១	ទៀនព្រៃ	*Vitex holpadenon*
៩២	ធ្នុងកញ្ចុះ	*Randia longifera* (Benth)
៩៣	ធ្នុញត្រី ឬ ធ្នុញត្រីរៀ	*Bridelia cambodiana* (Bl)
៩៤	ធ្នុញត្រី	*Bridelia ovata*
៩៥	បន្លាយួន (បន្លាមួយាស ឬ មជូបយក្ស)	*Mimosa pigra*
៩៦	បន្លាស្អិត ឬ ពាយរំពើប	*Acacia spiralis*
៩៧	បបុស	*Cynodon dactylon*
៩៨	បរពាទ	
៩៩	ប៉ីង " រំងង "	*Phoenix paludosa* (Roxb)
១០០	ពាក់បង	*Gardenia philastrei*
១០១	បើស	*Hibiscus tiliaceus*
១០២	ប្រង់ ឬ ប្រាង	*Acrostichum aureum* (L)
១០៣	ប្របុន " សំពូព្រែក "	*Carapa obovata* (Keon)
១០៤	ប្របុយ ឬ ប្របុយមេ	*Croton caudatus*
១០៥	ប្របុយឈ្មោល	*Croton joufra*
១០៦	ប្រពាទ	
១០៧	ប្រកេញឈ្មោល	*Phyllanthus Sp*
១០៨	ប្រកេញញី	*Phyllanthus lasodiifolius*
១០៩	ប្រសក់ឈ្មោល " ឬ ធំ "	*Bruguiera caryophylloides*
១១០	ប្រសក់ញី " ឬ តូច "	*Bruguiera gymnorhiza* (Lam)
១១១	ប្រសាក់ (ដុះក្នុងព្រៃកោងកាង)	
១១២	ឫស្សីព្រៃ	*Bambusa arundinacea*
១១៣	ស្លប	*Mimusops ?*
១១៤	ស្នាំ	
១១៥	ផ្តៅទឹក	*Calamus Sp*
១១៦	ផ្ទៅ	*Stenochlaena palustris*
១១៧	ផ្ទោល	*Diospyros bejaudii*
១១៨	ព្រលិតអាចម៍មាន់	*Nymphaea lotus*
១១៩	ព្រលិតឈូង	*Nymphaea stelata*
១២០	ពោធិ៍ខ្លែ (ដុះក្នុងព្រៃកោងកាង)	*Hernandia*
១២១	ភូង	
១២២	ភ្ញីភ្លូង	*Hymenocardia wallichii*
១២៣	ភ្នែកព្រាប	*Breynia rhamnoides*
១២៤	រទាំង ឬ អាទាំង	*Homalium brevidens*

១២៥	រទាំង ឬ កាទាំង	*Homalium griffithianum*
១២៦	រនាក់ទឹក ឬ រនាក់	*Calamus salifolius* (Bece)
១២៧	រំចង់	*Nymphaea nouchali*
១២៨	រំយៃឫស្សីក	*Elaeocarpus madopetalus*
១២៩	រំយៃទឹក	*Elaeocarpus Sp*
១៣០	រំយៃភ្នំក	*Elaeocarpus griffithii*
១៣១	រុក្ខជាតិស្បោត (ផ្នែកក្នុងព្រៃកោងកាង)	*Scaevita*
១៣២	រុន	*Schumannianthus dichotomus*
១៣៣	រាំងទឹក (រាំងភ្លើង)	*Barringtonia acutangula*
១៣៤	រាំងទឹក (រាំងតាល)	*Barringtonia micrantha*
១៣៥	រំទឹក	*Homonoia riparia*
១៣៦	លាខតូច	*Fluggea microcarpa* (Bl) or *Fluggea virosa*(Roxb ex willd)Baill
១៣៧	ល្វា	*Ficus hispida*
១៣៨	ល្បាង	*Cratoxylum cochinchinense*
១៣៩	រល្មីទឹកឃោះ	*Euphorbia hirta*
១៤០	រល្មីខ្សែស	*Calycopteris floribunda*
១៤១	រល្មីតុល	*Parameria glandulifera* or *Streptocaulon juventos*
១៤២	រល្មីល្អងព្រៃ	*Quisqualis densiflora*
១៤៣	រល្មីត្រី	*Ichnocarpus frutescuns* (L)
១៤៤	រល្មីត្រពិត	*Cayratia trifolia*
១៤៥	រល្មីត្រស់	*Combretum trifoliatum* (Vent)
១៤៦	រល្មីតារើក	*Merremia hederacea* (Burm f.)
១៤៧	រល្មីប្រេង	*Derris trifolia*
១៤៨	រល្មីអណ្តាតត្រកួត	*Aniscia martinicensis*
១៤៩	សណ្តាន់	*Garcinia loureiri*
១៥០	សម្បរ	*Uncaria homomalla*
១៥១	សន្លែ	
១៥២	ស្លងដើ	*Nymphoides indica*
១៥៣	ស្លងអំពោះ	*Nyphoides hydrophylla*
១៥៤	ស្តី	*Crudia chrysantha*
១៥៥	ស្វាយ	*Ficus helerophylla*
១៥៦	សារាយសាប	*Utricularia aurea*

១៥៧	សារាយទ្ង	*Hydrilla verticillata*
១៥៨	ស្លាឫស្សី (ផ្នែកក្នុងព្រៃកោងកាង)	
១៥៩	ស្លាបតប់	
១៦០	ស្លាបចា	*Cammelina salicifolia*
១៦១	ស្លាឥ " កម្រមាន " (ផ្នែកក្នុងព្រៃកោងកាង)	*Malaleuca leucadendrom*
១៦២	ស្លាឥស្រឃម (ផ្នែកក្នុងព្រៃកោងកាង)	*Eugenia zeylamica*
១៦៣	ស្លាយទឹក	*Grewia sinuala*
១៦៤	សំបែត	
១៦៥	សំរក	*Melanolepis vilifolia*(Oktze) or *Grewia urenaefolia*(Gagnep)
១៦៦	សេរ៉ា ស	*Lophopetalum fimbrialum*
១៦៧	សេរ៉ា ក្រហម	*Cryptocarya oblongifolia*
១៦៨	ស្លា	*Sesbania javanica*
១៦៩	ស្មៅ (ផ្នែកក្នុងព្រៃកោងកាង)	*Canavalis*
១៧០	ស្មៅ (ផ្នែកក្នុងព្រៃកោងកាង)	*Ipomaca pescaprae*
១៧១	ស្មៅ (ផ្នែកក្នុងព្រៃកោងកាង)	*Tribulus terrestris*
១៧២	ស្មៅអន្ទក់ទឹក ឬ ស្មៅឆ្នក់ទឹក	
១៧៣	ស្មៅអំពៅដៃប្រាប	
១៧៤	ស្វែ	*Ceriops roxburghians* or *Ceriops decandra*
១៧៥	ស្វែខ្មែរ	*Ceriops candolleana*
១៧៦	ស្វែស្បៃម " ដេរទឹកសាប ឃរៅ តាចាស៊ "	*Avicennia officinallis*
១៧៧	ស្វែងក្រចិ	*Desmondium heterocarpon*
១៧៨	ស្វូលទឹក	*Dalbergia nigrescens*
១៧៩	ស្វើក	
១៨០	អញ្ជាស	*Gmelina asiatica*
១៨១	អញ្ជែង	
១៨២	អណ្តែង	
១៨៣	អំពា (សំពា)	*Sonneratia alba* or *Sonneratia acida*
១៨៤	អំពុស	*Sonneratia griffithi*
១៨៥	អំពិលទឹកព្រៃ	*Cynometra " Dongnaiensis ? "*
១៨៦	អាឈ្ញ ឬ រញ្ជា	*Schoutenia godefroyana*
១៨៧	អាវក្រវី (អាវក្រោះ)	*Stixis obtusifolia*

Annex 2: List of biodiversity in floodplain areas of Battambang province

□□□□□ □□□□□	English names	□□□□□□□□□□ □□□□□	កំណត់សម្គាល់
Fish (**ត្រី**)			
ត្រីដំរី	Marble goby	Oxyeleotris marmorata	
ត្រីសណ្តាយ	Wallago	Wallago attu	
ត្រីរ៉ស់	Striped Snakehead	Channa striata	
ត្រីឆ្លាំង	Asian redtail catfish	Hemibagrus nemarus	
ត្រីរៀល	Siamese mud carp	Cirrhinus siamensis	
ត្រីខ្មាន់	Spotted hampala barb	Hampala dispar	
ត្រីកំភ្លាញ	Gourami	Trichogaster Microlepis	
ត្រីឆ្តោ	Giant snakehead	Cyclocheilichthys enoplos	
ត្រីក្រាញ់	Climbing perch	*Anabas testudineus*	
ត្រីឆ្ពញ	Peacock eel	*Macrognathus facus*	
ត្រីឆ្ពិន	Mekong silver barb	*Hypsibarbus pierrei*	
ត្រីអណ្តែង	Walking catfish	*Clarias batrachus*	
ត្រីលិញ	Lesser bighead carb	*Thynnichthys Thynnoides*	
ត្រីក្រែស	Dusky face carp	*Osteochilus lini*	
ត្រីច្រកែង	Snail eating barb	*Puntioplites proctozysron*	
ត្រីតាអោន	Trey Taoun	*Ompok eugeneiatus*	
ត្រីកញ្ឆែះ	White-line catfish	*Mystus albolineatus*	
ត្រីស្លាត	Bronze featherback	*Notopterus notopterus*	
□□□□□ (**សត្វស្លាប**)			
ក្រសារប្រផេះ	Purple heron	*Ardea purpurea*	
គ្រាល	Sarus Crane	*Grus antigone*	
ខ្វែក	Eurasian woodcock	Scolopax rusticola	
មាន់ទឹក	White-breasted waterhen	*Amaurornis phoenicurus*	
ក្អែក	Indian Cormorant	*Phalacrocorax fuscicollis*	
កុកគ្រោងធំ	Great White Egret	Ardea alba	
ទុង	Spot-billed pelican	Pelecanus philippensis	
ស្មៅញ	Oriental Darter	Anhinga melanogaster	
ជុំដុំរ	Red-legged Crake	Rallina fasciata	
ទោម	Purple Swamphen	Porphyrio porphyrio	
តូម	Black-backed Swamp hen	Porphyrio indicus	
ត្រដក់ធំ	Greater Adjutant	Leptoptilos dubius	
រនាលពណ៌	Painted Stork	Mycteria leucocephala	
ទាព្រៃ	**Wood duck**	Aix sponsa	
ប្រវឹក	Lesser whistling duck	Dendrocygna javanica	
□□□□□□□ (**ឧរង្គ សត្វ**)			
អណ្តើកស្រែ	Rice field Turtle	*Malayemys subtrijuga*	
អណ្តើកសកល	Yellow-headed temple turtle	*Heosemys annandalii*	
កន្ធាយ	Asiatic soft-shell turtle	*Amyda cartilaginea*	
អណ្តើកព្រិច	Black marsh turtle	*Siebenrockiella crassicollis*	
ពស់ព្រៃ	Posh Trey	Homalopsis buccata	
ពស់ត្រីរ៉ស់	Posh Trey Rosh		
ពស់ព្រលិត	Posh Prolet	Enhydris	

ពស់កាចាន់	Bocouti Posh Kachan		
ពស់ផ្អក			
ពស់ចាន់មម	Bocouti		
ពស់ថ្លាន់	Python	Papuan python	
ពស់ឈើ	Tentacle water snake	Erpeton tentaculatus	
ពស់វែក	Cobra		
□□□□□□□ (**ថនិកសត្វ**)			
ស្វាស	White Monkey		
ស្វាខ្មៅ	Blake Monkey	;	
កញ្ជ្រោង	Fox	Vulpes Vulpes	
ភៅ	Otter	Aonyx cinerea	

Annex 3: Maps of fire-damaged flooded forest areas in Battambong province *Source:*

(Department of Fisheries Affair, Fisheries Administration, 2019, Phnom Penh Cambodia)

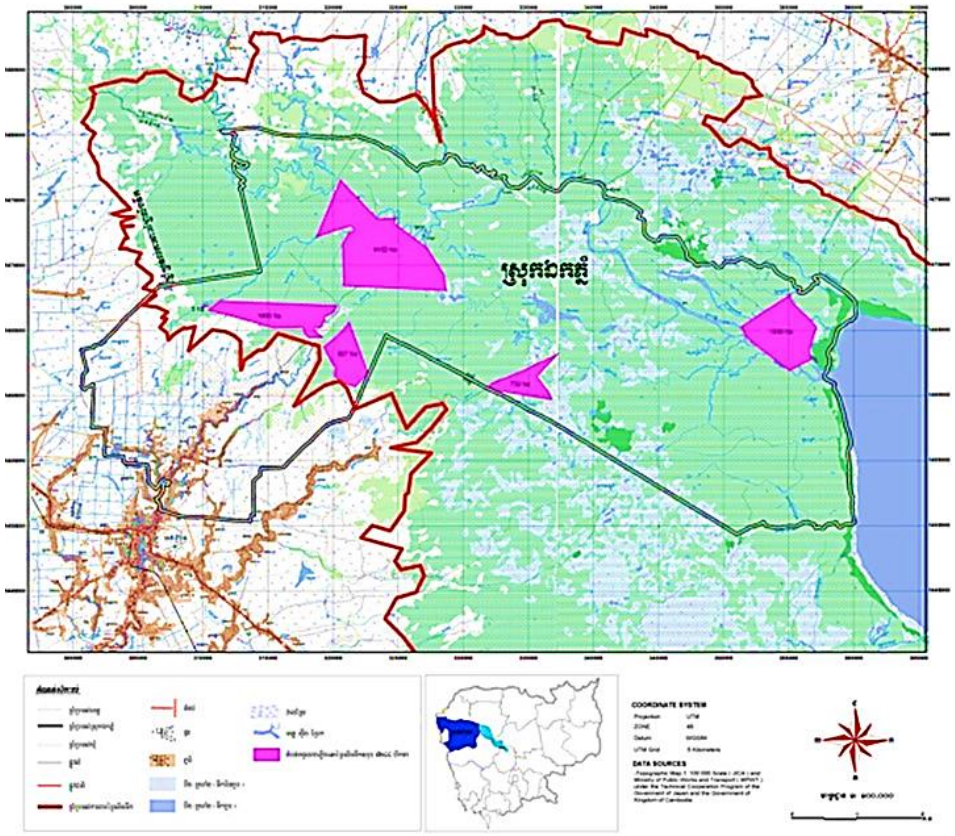

Figure 1: Map of fire-damaged flooded forest areas in Aek Phnum district

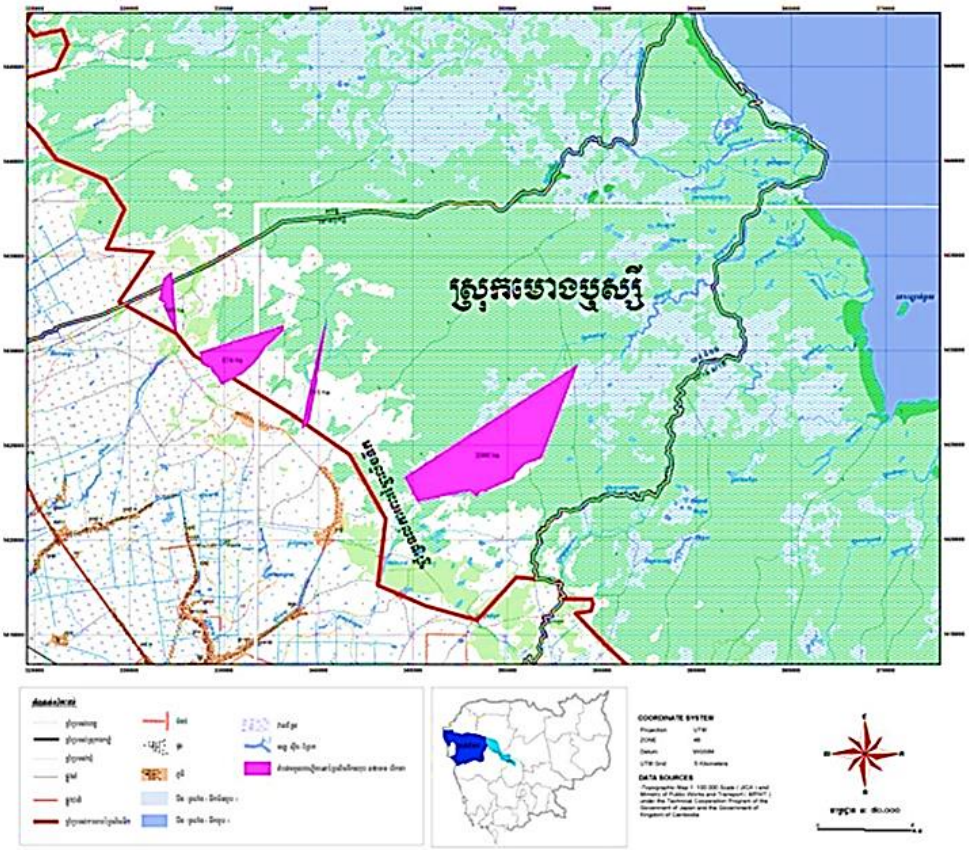

Figure2: Map of fire-damaged flooded forest areas in Moung Ruessei district

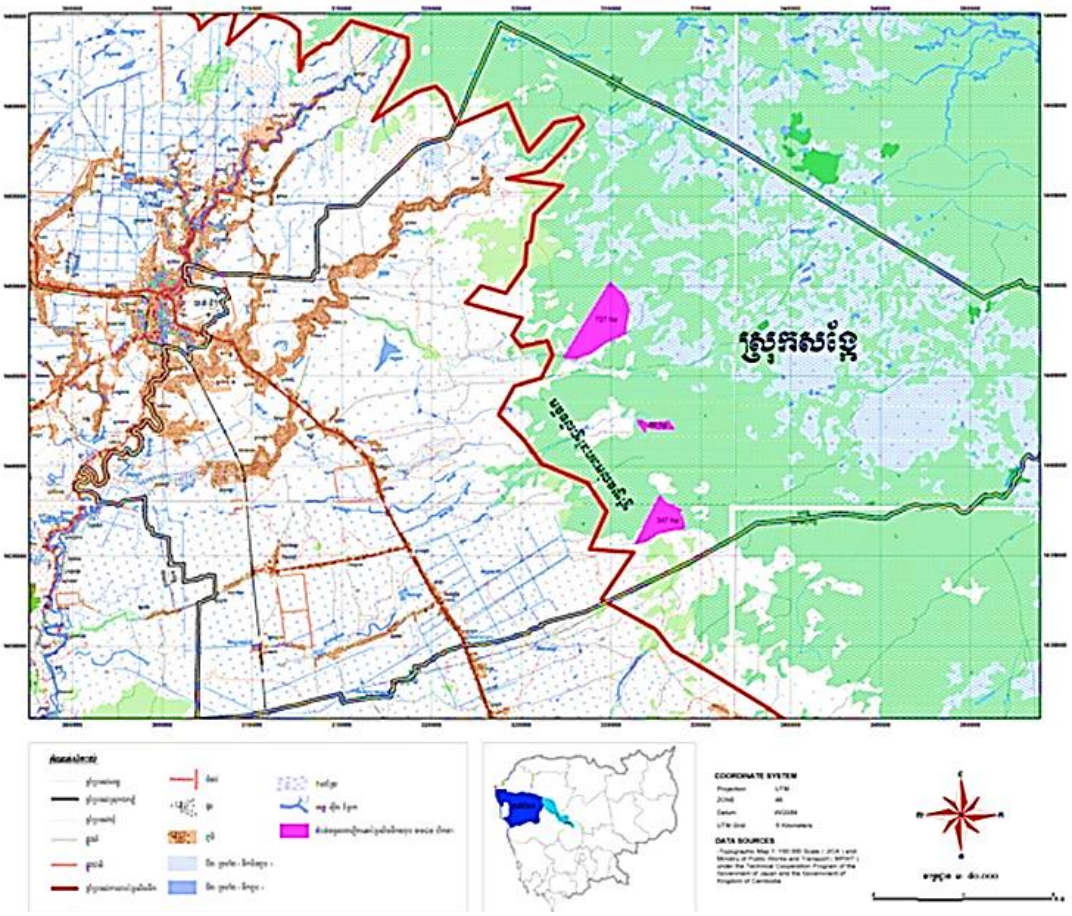

Figure 3: Map of fire-damaged flooded forest areas in Sangkae district

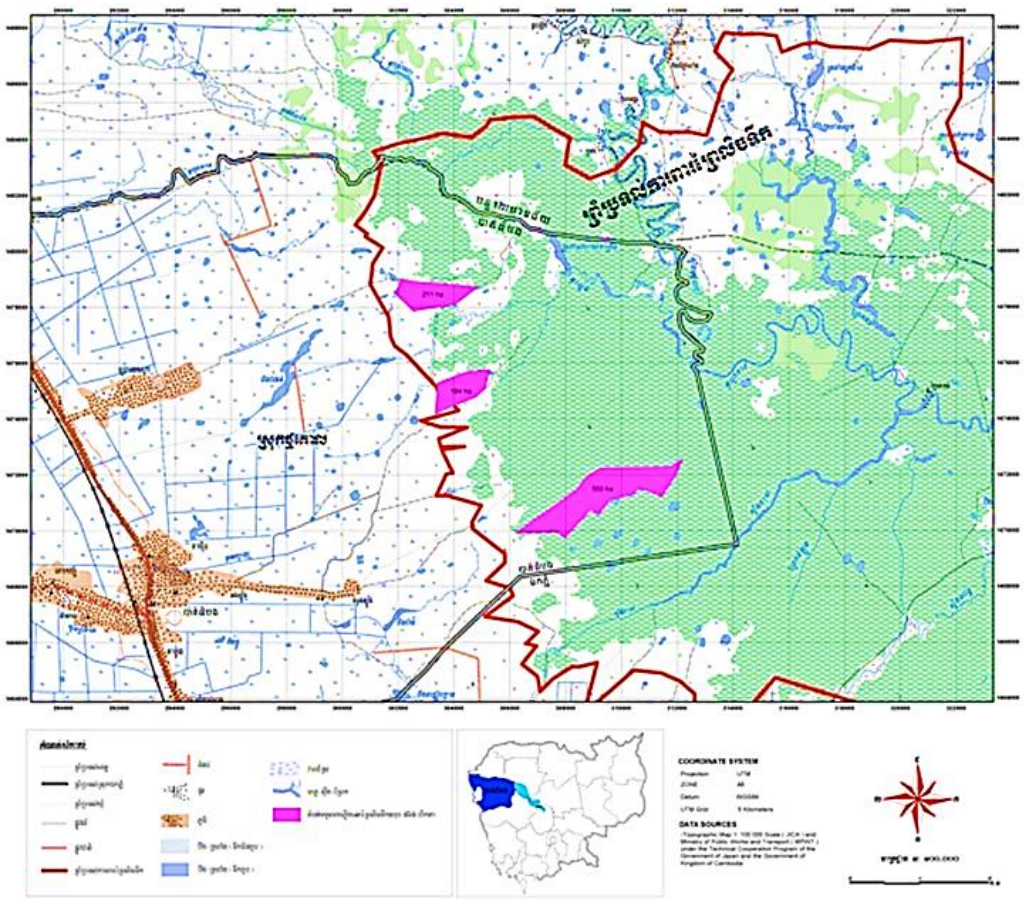

Figure 4: Map of fire-damaged flooded forest areas in Thma Koul district