

**KINGDOM OF CAMBODIA  
NATIONAL RELIGION KING**



**INUNDATED FOREST FIRE PREVENTION  
AND MANAGEMENT PLAN  
FOR PURSAT PROVINCE  
2022 - 2026**



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**Fisheries Administration and Pursat Administration**



## Preface

The Kingdom of Cambodia is rich in natural resources, especially the Tonle Sap Lake, which has a wide range of fishery resources such as fish, mammals, reptiles, birds, aquatic plants and flooded forests to support the biodiversity and livelihoods of humankind that need to be managed and protected to balance between sustainable use and conservation. The Tonle Sap fishery resources not only play an important role in supplying fish and meat to Cambodian on a daily basis, but also protect and stabilize the Tonle Sap ecosystem, as well as provide excellent tourism services.

The Royal Government of Cambodia has always taken action and developed a number of important policies related to protection, conservation and sustainable management of fishery resources and ecosystem, which are home to hundreds of thousands of Cambodian families, especially people living in and around the Tonle Sap Lake in subsistence, food security and nutrition.

Under the pillar I on Capture Fisheries and Management of the Strategic Planning Framework for Fisheries covering the years 2015-2024 is to achieve the vision of "damaged fisheries resources and ecosystems are restored, conserved and protected to contribute to ensuring food security and nutrition for people livelihood in the present and the future".

Pursat province, consisting a large area of the Tonle Sap's floodplain, has a great potential for promoting national economic development through fisheries, agricultural production and ecotourism development but these resources are under threat, especially flooded forest fires occur every year, causing loss of fish habitat, affecting fisheries resource stock, environment and society. Therefore, the Fisheries Administration of the Ministry of Agriculture, Forestry and Fisheries cooperates with FAO under the Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector: Capture Component (CAPFISH-Capture) with the participation of sub-national administrations and relevant authorities to develop five-year Inundated Flooded Forest Fire Prevention and Management Plan for 2022 - 2026 for Pursat province.

On behalf of the Fisheries Administration, I fully support the preparation and implementation of this important management plan to ensure effective management of flooded forest fires and reforestation for the benefits of fisheries resource conservation and the contribution to improving livelihoods of local communities.


On behalf of Pursat's Provincial Administration, I would like to support and officially announce the launch of the five-year flooded forest fire prevention and management plan for Pursat province. The provincial administration is always ready to intervene in the implementation of this plan to ensure that our fishery resources are managed sustainably to support livelihoods of the people in the present and in the future.

Phnom Penh, date 24 Octo, 2022



**Poum Sotha**  
Delegate of the Royal Government  
Director General of Fisheries Administration

Pursat, date 26/10/ 2022



**កែវ ឈី**  
Governor  
Pursat province

## Acknowledge

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The special thanks also referred to the FAO Country Representative, Ms. **Rebekah Bell**, 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 Pursat 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.

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## **Acronyms and abbreviations**

BMC	: Banteay Meanchey
BTB	: Battambang
CAPFISH	: Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector
CBFIM	: Community Based Fisheries Management
CFPT	: Community Forest Fire Patrol Team
CFi	: Community Fisheries
CFiMC	: Community Fisheries Management Committee
DCF	: Department of Community Fisheries
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
KCN	: Kampong Chhnang
FCA	: Fisheries Conservation Area
KTM	: Kampong Thom
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 Water Resources and Meteorology
PS	: Pursat
SMS	: Short Messaging Service
SR	: Siem Reap
TSA	: Tonle Sap Authority
UNESCO	: United Nations Educational, Scientific and Cultural Organization
WGFFFM	: Working Group for Flooded Forest Fire Management

## **1. Introduction**

The Tonle Sap 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 favorite shelters for fish and some of the world's most threatened water birds to access to spawning, breeding and feeding. According to the Fisheries Administration (FiA), fish captured from the Tonle Sap Lake provide over 80% of protein intake in the Cambodian diet.

As Cambodia's population and economy continue to grow steadily, competition of human in harvesting fisheries resources and deforestation of flooded forests for agricultural purposes, the fisheries resources in Tonle Sap Lake Region are being threatened day by day and affected negatively on fishes, wildlife, water birds and biodiversity of the Tonle Sap Lake.

In the last few years, the water level of the Tonle Sap Lake has reached low levels due to climate change, especially increase in heat, drought and storms. These factors exacerbate flooded forest fires and as a result, adversely affect Fisheries Conservation Areas (FCAs), fish and water bird refuges for spawning, breeding and food supply, particularly Prek Toal Ramsar site, the largest bird sanctuary in Southeast Asia.

There are two main factors of intentional and negligent human activities considered to be the causes of flooded forest fires in Tonle Sap's floodplains are due to accidental and intentional human activities. The accidental cases causing flooded forest fires include using fires to harvest bee honey, discarding lit cigarette butts, and leaving cooking fires without putting them out. The intentional cases are cutting and burning flooded forests to grab the land for agricultural purposes, burning dry water hyacinth for hunting turtle wildlife and clear shrubs for paving paths to place fishing gears so-called Bor and small Dai) across streams.

The flooded 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 forests will lead to the decreases in both species and population of fishes, reptiles and birds. If flooded forest was burned repeatedly it would turn into grasslands.

Similarly, the consequence of flooded forest wildfires in Tonle Sap's floodplains in the province have contributed significantly to the gradual decline in fisheries resources, including population and species of fishes, aquatic plants, birds, reptiles and mammals and lastly impact on livelihoods of fishing communities.

Seeing this consequence the Fisheries Administration (FiA), in collaboration with the FAO's complementary component of the CPAFISH project being implemented "Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector - CAPFISH-Capture" has identified and worked with key stakeholders involved in flooded forest fire management provincial, district, commune and community levels in Pursat province to prepare and implement Inundated Forest Fire Prevention and Management Plan (IFFPMP) in order to reduce risks of flooded forest fires in the province. That is why the IFFPMP is developed in a participatory manner to ensure the timely responses or interventions will be implemented flexibly and smoothly.

A technical team, consisting of 12 officers from Department of Fisheries Conservation (DFC) of Department of Fisheries Affairs (DFA) and Fisheries Administration of FiA, Fisheries Administration Cantonment (FiAC), and the FAO's technically advisory team visited burnt flooded forest sites, gathered primary and existing data/ information at local level to prepare the IFFPMP for implementation at district and provincial levels.

The field missions were launched in June 2021 to meet relevant communities and stakeholders in target communes and districts to gather information on causes of and actions taken against flooded forest fires, institutions involved in prevention and extinguishment of flooded forest fires, existing mechanism for flooded forest fire management and its effectiveness, flooded forest restoration approaches, the need of equipment and physical infrastructure for preventing and fighting flooded forest fires. Meanwhile, GPS coordinates of burnt flooded forest sites were collected for mapping.

## **2. Overview of geography, social-economics and biodiversity in Pursat province**

### **2.1 Overview of geography and social-economics of Pursat province**

Pursat province is in the northwest of the Kingdom of Cambodia, 189 km from Phnom Penh and has 3 main transport routes: national road No.5, railways and waterways (Tonle Sap River and Lake). The province borders on the north by Smlaut, Koas Krala and Moung Russei districts of Battambang province and Tonle Sap Lake; on the south by Aoral district of Kampong Speu province and Thma Bang and Mondol Seima districts of Koh Kong province, on the east by Tonle Sap Lake and Boribo and Teuk Phos districts of Kampong Chhnang province, and on the west by Thailand.

Pursat province covers a total area of 1,269,200 ha, including 888,227 ha of upland forests and 94,042 ha of flooded forests in the zone 3 of Tonle Sap Lake's floodplains, 120,000 ha of agricultural land and 163,564 ha of other land uses. The province is administratively divided into one municipality and six districts, including 07 communes, 42 communes and 511 villages. The province's total population is 492,800 (250,293 women), equivalent to 116,2315 households, of which 85% engage in agriculture, 13% are artisans, traders and service providers, and another 2% involve in mixed occupations (Source: <https://www.pursat.gov.kh>).

The province is rich in natural resources both above and below ground, such as forests, sand, marble, freshwater fish and underground minerals. The main sectors supporting the provincial economy are agricultural production (fruit tree plantations and rice) and 120-megawatt hydropower plant provides electricity in excess of domestic demands and is exported to other provinces. Apart from this, Pursat province is also famous for its marble sculpture handicrafts which are available in the provincial and district towns.

## **2.2 Status of biodiversity in the floodplains of Pursat province**

Pursat province is one of the six provinces around Tonle Sap Lake consisting of Tonle Sap's floodplains, flooded forests and Tonle Sap multiple use areas, covering some 10% of the province's total land area located in the northeast of the province and national road No.5 within Krakor, Kandieng and Bakan districts. The Lake receives rainwater from the ranges of Cardamom and Samkos mountains in the northern part of the province at about 1,070 meter altitude with the slope of more than 15% from west to east through three main streams of Pursat, Phlea Ma-Orm and Svay Doun Kaev.

Pursat's floodplains are divided into Zone 1, Zone 2 and Zone 3 by the Tonle Sap Authority, which covers flooded forests, grasslands, wetlands, streams, ponds, dry and rainy season rice paddies and farmlands. **According to Sub-Decree No. 197 dated on 29 August 2011, the flooded forest in Zone 3 within Pursat province is 94,042 hectares located in 3 targeted districts; Bakan, Kandeang and Krakor district which are involve with flooded forest management. Furthermore, Sub-Decree No. 101 dated 27 May 2022 on the cutting out of 3,448 hectares, 77 Acres and 77 Cents of Zone 3 into Zone 2 of Tonle Sap Area, Pursat province for local people use and dependency.**

The soil in the floodplain is Lacustrine Alluvia Soil divided into two types: old and new sediments consisting of sufficient proportion of potassium, lime and phosphoric acid as well as composition of mixed clay, sand and gravel. Such a soil is good for rice, mungbean, corn, chili and sugar cane that are sources of high protein and income for Cambodian people, especially the farmers and fisherfolks who live around the Lake. Therefore the flooded forests have been the subject of illegal clearance for agricultural production purpose and most of the flooded forests remain in Zone 3 while very little in Zone 2.

In addition to the forest clearance for farming, the significant loss and degradation of flooded forests are observably caused by forest fires, generating by intentional and unintentional human activities. Notably, in 2021, forest fire did not occur due to the prolongation of the rainy season.

The loss and degradation of flooded forests as well as improper practices of agricultural techniques have adversely affected Tonle Sap Lake's biodiversity such as the extinction of reptiles (crocodiles, water monitors and turtles), and threats to habitats and living condition of wild birds, decline in both size and yield of freshwater fish, shallowness of natural water system in the floodplain and damage to homes due to strong winds. All of the negative affects make the livelihoods of the fishing communities slowly developed.

Pursat province has a total of 35 community fisheries located in 5 out of the 6 districts of the province (except Veal Veng) covering a total fishing area of approximately 86,700 ha. Additionally, the province has 43 CFRs in 5 municipality and districts and 6 FCAs covering an area of 22,950 ha located in Krakor, Kandieng and Bakan districts. It still has four protected areas of Central Cardamom Mountains and Southern Cardamom National Parks, Phnom Samkos Wildlife Sanctuary and Tonle Sap's multiple use area.

Recently, according to Sub-Decree No. 101 ANKPK of the Royal Government dated on 27 May 2022, 3,448.77 hectares of rice lands in Zone 3 are moved to Zone 2 within Pursat province and hand over to 1,658 families to access for utilization.

## **3. Overview of geography, social-economics and biodiversity in target districts**

### **3.1 Overview of geography, social-economics and biodiversity in Krakor district**

#### **3.1.1 Overview of geography and social-economics of Krakor district**

Krakor district is one of the three target districts in Pursat province located in the northeast of the province at about 30 km from the municipality. Krakor district is divided into 11 communes and 105 villages,



bordering Tonle Sap Lake and Kandieng district of Pursat province in the north, Phnum Kravanh district of Pursat province and Tuek Phos district of Kampong Chhnang province, Baribo district of Kampong Chhnang in the east, and Kandieng district and Pursat municipality of Pursat province in the west.

Krakor district has a total population of 110,653 people (56,393 women), equivalent to 27,923 families, of which 74.4% engage in agriculture as the main occupation: short and long term agriculture (rice, corn, sweet potato, cassava, mango, cashew, orange and longan), animal husbandry (cows, buffalo, goat, pig, chicken and duck), fish culture (1.1%) and fishing (4.5%). In addition, another 25.1% engage in production and service delivery (civil servants, NGO staff, company staff, factory and construction workers, businesses, repairing machinery and electrical devices, transportation, etc.), and another 0.5% engage in handicrafts such as furniture and sculptures (Source: Document on socio-economic situation of Krakor district, 2021, Provincial Department of Planning, Pursat province).

### **3.1.2 Overview of biodiversity and flooded forest fires in Krakor district**

Based on the geographical location and current fishery resources, especially flooded forests, Krakor district has 7 out of 11 communes (Ansa Chambak, Kbal Trach, Anlong Thnaot, Sna Ansa, Kampong Luong, Ou Sandan and Kampong Pou) consist of about 20% of the total land area of each commune in the north is the floodplains, directly adjacent to Tonle Sap Lake. Kampong Luong commune is a fishery commune with less agricultural land, so most of the fishing families live on floating houses that change locations following the water fluctuation.

The areas directly adjacent to the Lake are mainly wetland covered by grasses and reeds where are not susceptible to fires. In general, the flooded forest species and area in the seven communes are the same, except Anlong Thnaot commune that has the least flooded forest. However, flooded forests in all the seven communes are reportedly burnt every year, except in 2021 duo to the prolongation of the rainy season with heavy rainfalls.

Due to the presence of flooded forests and issues of flooded forest fires, these seven communes are identified as the target communes for implementing the IFFPMP by the CAPFISH-Capture Programme. In addition, the nine CFis, covering a total area of 8,626 ha, in the seven communes will play an important role in preventing and putting out flooded forest fires.

## **3.2 Overview of geography, social-economics and biodiversity in Kandieng district**

### **3.2.1 Overview of geography and social-economics of Kandieng district**

Kandieng district is one of the 3 target districts located in the northeast of the province about 29 km from the provincial town, bordering on the north by Tonle Sap Lake, on the south by Pursat municipality, on the west by Bakan district, and on the east by Krakor district and Tonle Sap lakes.

Kandieng district is administratively divided into 9 communes and 110 villages, some of which are floating villages in Reang Til commune located next to the Tonle Sap Lake. The district has a total population of 70,639 people (36,389 women), equivalent to 17,582 families, of which 75.60% engage in agriculture (rice, mungbean, corn, mango and Pursat oranges), animal husbandry (cows, buffalos, goats, pigs, chickens and ducks), aquaculture (crocodiles, lobster and fish), and fishing (4.90%). Besides agriculture, another 24.20% engage in service delivery (working for government institutions/ NGOs/private sectors, trading, repairing machinery and electrical devices, transportation, factory and construction workers, working abroad, etc.) and another 0.20% engage in handicrafts such as furniture and sculpture.

In the agricultural sector, especially rice, Kandieng district has a total area of 24,168 ha, including 5,660 ha of dry season rice fields (average rice yield: 3.70 tons/ha) and 18,508 ha rainfed rice fields (average rice yield of 2.10 tons/ha). Almost all dry season lands are located in the floodplain, especially in zone 2 and 3. The area of dry season rice area increased from 4,482 to 5,660 ha during the last three years (Source: Social-Economic document, Kandieng district, 2021, provincial department of Planning, Pursat province).

### **3.2.2 Overview of biodiversity and flooded forest fires in Kandieng district**

The district has nine CFis covering a total area of 30,408 ha located in Reang Til, Sya, Kanhchor, Srae Sdok and Anlong Vil communes, and 2 FCAs of Reang Til and former fishing lot No.6 covering a total area of 5,274 ha. Only seven out of the nine CFis located in Reang Til, Sya, Kanhchor and Srae Sdok communes have flooded forest.

The district has 4 communes which consist of a big part in the north located in the floodplains respectively, of which Sya, Kanhchor and Srae Sdok communes consist of their own floodplain about 80% of the total commune land area is, while the entire area of Reang Til commune is in the floodplains. Therefore, Reang Til,

Kanhchor and Srae Sdok communes are selected as the target communes for the direct implementation of the FFFPMP, while Sya commune is the target commune for promoting local awareness on participatory flooded forest fire management.

Based on the geographical location and the current presence of fishery resources, especially flooded forests and the challenges of flooded forest fires, only five communes out of the nine communes of the district - namely Reang Til, Sya, Srae Sdok, Kanhchor and Kandieng communes – have about 50% of their own total land in the northern and northeastern part are the floodplains adjacent to the Lake. Reang Til commune are occupied by fishing communities and most of them are earning and living on floating houses.

Three of out the five communes - namely Reang Til, Srae Sdok and Kanhchor - consist of shrub-dominant flooded forests with 2-3meter height. They see much Giant mimosa growing in the thin shrubs (< 50% of grown cover). Reang Til commune has the most flooded forests following by Srae Sdok communes while Kanhchor commune has the least.

There are a number of natural waterbodies (streams and ponds) in the district's floodplains and almost of them dry up in the dry season. Generally, there are no flooded forests around the natural ponds but grasslands that have been burn every year. Local people have stayed temporarily there in dry season for herding domestic animals. Apart from this, there are vast grasslands located along Reang Til canal which may be the result of improper cropping in former flooded forests for many years, making the soil degraded (infertile), abandoned and covered with high grasses.

Most of flooded forest fires happened in the four communes came from burning rubbishes in the nearby rice fields and shrubs cut to pave strips for putting fishing gears. Additionally, since hundreds of cattle belonging to people of Srae Sdok, Kanhchor and Sya communes are freely grazed in the flooded forests in the dry season, those herders are suspected to be people caused the forest fires.

### **3.3 Overview of geography, social-economics and biodiversity of Bakan district**

#### **3.3.1 Overview of geography and social-economics of Kandieng district**

Bakan district covering a total area of 12,692 Km<sup>2</sup> borders Tonle Sap Lake in the north, Phnum Kravanh district of Pursat province in the south, Kandieng district and Pursat municipality of the province in the east, and Moug Russey and Rukhak Kiri districts of Battambang province in the west. The district is administratively divided into 10 communes and 31 villages.

The district has a total population of 121,701 people (62,289 women) equivalent to 28,672 families, of which 75.70% engage in short and long-term agriculture as the main occupation (rice, corn, sesame, mungbean, peanut, cassava, sweet potato, sugarcane, dragon fruit, longan, mango, cashew, Pursat orange), animal husbandry, fishing (1.6%), fish culture (0.5%) and lobster culture (0.1%). In addition, 24.3% work as service providers for government and non-government institutions, NGOs and the private sector, trading, repairing machinery and electric devices, construction and factory workers, etc.), and handicrafts such as furniture and sculptures.

#### **3.3.2 Overview of biodiversity and flooded forest fires in Bakan district**

Bakan district has 12 CFis covering a total area of 46,675 ha in Svay Doun Kaev, Me Teuk, Ou Ta Paong, Boeng Bat Kandal and Snam Preah communes. Four communes of Boeng Bat Kandal, Me Teuk, Snam Preah and Ou Ta Paong of the district border Tonle Sap Lake in the north and about 70% of their total land areas are in the Lake's floodplains, where consist of many natural waterbodies (streams and ponds) but many of them dry up in the middle of the dry season.

Regarding flooded forests, they are seen in three out of the four communes - namely Ou Ta Paong, Me Teuk and Boeng Bat Kandal - the most forest in Zone 3 while very few forests left dispersedly between rice fields in Zone 2 resulted from illegal flooded forest land claims by nearby communities.

Since the flooding forests in Bakan district is degraded dominated by shrubs and rich in dry biomass residues and organic matter in the dry season, grasslands located between the flooded forests, wild bamboos along stream banks in the southern of the floodplains and rice fields adjacent to the flooded forest in the south, driving the flooded forests burnt in dry season every year. Moreover, some of the flooded forest fore cases are suspected to cause by negligent activities of people who do cooking, farming, fishing, firewood collection, herding cattle, hunting wildlife and honey bee, etc.

### 3.4 Target districts and communes for flooded forest fire management

Based on the geo-physical situation of the floodplains, flooded forest fire condition and flooded forest deforestation for rice cultivation in Pursat province, 10 target communes in 3 districts of the province as mentioned in Table 1 below are identified for participatorily implementing flooded forest fire management and restoration.

Table 1: Target districts and communes for flooded forest fire management in Pursat province

Target districts	Target communes	
1. Krakor district (4 communes) Chong Khlong, Kampong Pou, Beng, Kampong Prak, Thkoul Thum, Chhrolong, Krang Veang and Kampong Ior.	1	Kampong Pou
	2	Sna Ansa
	3	Anlong Thnaot
	4	Ou Sandan
2. Kandieng district (3 communes) Trabek, Andet, Samraong, Phlov Luong, Srae Sdok, Pring Khpos, Kdey Chhvit, Thlea Ampil, Troang, Chharos, Tin and Oraek villages.	5	Reang Til
	6	Srae Sdok
	7	Kanhchor
3. Bakan district (3 communes) Ruessei Ta Man, Beng Romeas, Chen Tay, Ou Preal, Ka-Orm Samnor, Prek Kror, Prey Krabau, Sdok Khlouk and Ta Nai villages	8	Ou Ta Paong
	9	Boeng Bat Kandal
	10	Me Tuek
3 districts	10 communes	

## 4. Challenges of flooded forest fire management in Pursat province

For more than a decade, flooded forest fires in the floodplains have been occurring yearly at small and large scale and are largely uncontrollable. According to reports from the communities living in the concerned area revealed that all cases of flooded forest fires are caused by intentional and unintentional human activities. Fires have long been used as a means for burning newly cut flooded forests to grab the lands for cropping, clearing residues in farmlands, cooking, burning dry shrubs for placing fishing gears, hunting wildlife, honey bee collection, and so on.

Long-standing flooded forest fires impact negatively on fisheries resources, including flooded forests, grasslands and riparian vegetation that are favorite and safe habitats for fish, reptiles and birds to breed and spawn. The latest negative impacts are the extinction of some fish species, the decline in fish size and catch, and the decreases in fisherfolk's daily income, forcing them to switch from fishing to agriculture and clear flooded forests for cultivating rice and other crops according to the market demands. Through consultation meetings with stakeholders at commune, district and provincial levels, the main causes of flooded forest fires were identified as mentioned below:

### 4.1 Target districts and communes for flooded forest fire management

Referring to the report compiled by the FiA's working group in charge of flooded forest fire management in the province after the 2<sup>nd</sup> meetings in all the target communes confirmed the key causes of the flooded forest fires as follows:

- Burning hangover of dry rice stumps or weeds in rice fields to increase soil fertilizer and clean rice fields makes the fires spread to near grasslands or/and flooded forests inadvertently.
- Burning newly cut flooded forest and shrubs for the purpose of farmland expansion.
- Clearing and burning shrubs to open strips for placing the fishing gear "Bor".
- Uncontrolled cooking fires before leaving by fisherfolks, wildlife hunters, firewood collection, honey bee collectors and animal herders.
- Inadvertently dumping lit cigarette butts into dry grasses and shrubs, bushes and piles of organic matter by smokers resulted in frequently flooded forest fires, especially along the ways in the floodplains.
- Due to negligent use of fires for collecting honey bee in the dry season, the fires spread at large scale and burnt dry grasses and flooded forests uncontrollably.
- Climate change, especially prolongation of the drought during the dry season, delays the dryness of vegetation hangover on the topsoil, increasing the likelihood of flooded forest fire occurrences.
- There are no any report regarding natural phenomena such as thunderstorms and lightning that caused flooded forest fires.

The causes of flooded forest fires, as mentioned above, are the intentional, unintentional and negligent actions of people who used fires in the floodplains. Details of these causes are researched in depth for using as a basis information for analyzing, interpreting and defining appropriate approaches to deal with flooded forest fires effectively in specific locations in the target communes.

All causes and problems of flooded forest fires raised by the stakeholders are included in the IFFPMP for Pursat to ensure all issues are resolved successfully within the 5 years of the IFFPMP's implementation.

## 4.2 Locations and areas of flooded forest fires

According to the data of the flooded forest fires given by the FiAC, there were 48 cases of flooded forest fires in Zone 2 and Zone 3 with a total area of 2,518.80 ha happened in nine out of all the ten target communes in a period between 2015 and 2010 as shown in the table 2 below.

**Table 2: List of burnt flooded forest sites and areas in Pursat province**

Commune	Burnt flooded forest site	Area of burnt flooded forest (ha)						Total	
		2015	2016	2017	2018	2019	2020		
Kandieng district		290	65	60	162	371	310	1258	
Reang Til	Boeng Bey	100						100	
	From Chhroy Khsam to Praek Charos				120			120	
	From Praek Toal to Chroy Khsom					250	50	300	
	Chroy Ta keo	30	15					45	
	Chroy Ta kot	15	10					25	
	Phlov Lork	40	15	10	12			77	
	Phlov Lork Saleut and Kralok Antung Dek						200	200	
	Chroy Koh Keo					10	30	40	
Kanhchor	Chroy Ta Koy and Chroy Hal Sla			50	30	40		120	
	Boeng Thlork Chork Bei	35						35	
	Toul Krapeu	40						40	
	Boeng Phdao Khnong	30						30	
	Boeng Phdao Krao						30	30	
	Boeng Kamphleanh		25					25	
	Chong Praek Ta Chan					15		15	
	Boeng Veng					20		20	
Bakan district	Praek Ta Chan					21		21	
	Beung Lolea					15		15	
	Bakan district		217	185	225	234	255	1,786	670
	Me Tuek	N/A	217	185	225	234	255	1,786	670
	Krankor district		103	110	84	71	73	149.8	590.8
	Sna Ansa	Boeng Ta Out Me and Boeng Braveng	13						13
		Boeng Khnat Leu and Boeng Khnat Kroam		38					38
		Boeng Khdak Ta Prum			18				18
Boeng Angong Thom					13			13	
Boeng Chhangkral Dek						17		17	
Bort							10	10	
Ansa Chambak	Yey Hing Kampong Thkol	10						10	
	Along the road going to Kampong Thkol road		4					4	
	Phlov Khach La-Et			3				3	
	Phlov Yey Hing					5		5	
Kbal Trach	Eastern part of Kampong Loung along the road down to Komnang Khneas, eastern part of Chroy Sdao	50						50	
	Chamnoch Khnea		25	10				35	
	The road going down to Kampong Keas				4			4	
	The road going down to Kampong Keas, eastern part of Chroy Sdao					3	2	5	
Kampong Luong	Khang Lech Phlov	12	3					15	
	Khang Lech Phlov			8	4	3	1.8	16.8	
Ou Sandan	Boeng Ta Deat and Boeng Krapeu	8						8	
	Wester part of Kralok Thmenh		30					30	
	Chong Thnal Dach Boeng Khouch			25				25	
	Boeng Khdam				20			20	
	Boeng Trapeang Pea and Boeng Chab Thkol					15		15	
	Dambon Khang Keut Kbal Teuk Samnab boeng Romeas and kbal Thkov						11	11	
Kampong Pou	Boeng Phdao	10						10	
	Kbal Steung Braveng abd Khla Kham Phe		10					10	



	Khang Krom Boeng Phdao and Reusei 100 Kum			20				20
	Koh Cha-Eh and Chhong Kambet Sneat				30			30
	Day Lech Phe and Peam Day Lech Phe					30		30
	Chakeng Srang and Kralok Srang						125	125
9	48 cases	610	360	369	467	699	2,245.8	2,518.8

### 4.3 Stakeholders and their responsibilities involve in flooded forest fire management

Flooded forests, wood shrubs, aquatic plants, grasslands, floodplains, waterbodies and wetlands are important for the lives of fauna and flora living on the land and in the water, and the Tonle Sap Basin's biodiversity is important for livelihoods of Cambodian and provides sources of high protein foods, income generation and as part of supporting the national economy.

Since the potential of fishery resources, especially flooded forests in the floodplains, benefits Cambodian societies and the nation as a whole, many stakeholders were identified and invited to a series of meetings organized at national and sub-national levels to discuss their roles and responsibilities as described in Table 2 below.

**Table 3: Relevant institutes and responsibilities involve in flooded forest fire management**

Stakeholder	Review	Risk Reduction	Readiness	Response	Recovery
<b>Local communities</b>	Follow up weather forecast related to the prolongation of the dry season and the delay of the rainy season.	Reduce access to inundated forest areas.	Disseminate information on the importance of inundated forests and impacts of flooded forest fires to biodiversity, ecology, wildlife and human life.	Participate in extinguishing flooded forest fires Support forest fire-fighting equipment (power tillers, tractors, pumps, water tanks, hoses ...) as much as possible.	Join planting flooded forest seedlings in flooded forest areas degraded by wildfires and clearance for cropping. Protect and maintain natural and planted tree seedlings in flooded forest restoration sites. Maintain poles and signs placed along borders of flooded forest restoration sites.
<b>Village Security Guards</b>	Study and observe identification and movement of local people in zone 2 and 3.	Participate in extension meetings on importance of flooded forests and effects of flooded forest fires, and help disseminate further the information to the public. Participate in strengthening the implementation of the Fisheries Law.	Participate in and help watch flooded forest fires.	Mobilize local people to join flooded forest firefighting, using locally available tools such as tractors, power tillers, pumps, water cans, hoes, and so on as much as possible.	Join planting flooded forest seedlings in flooded forest areas degraded by wildfires and clearance for cropping. Help maintain poles and signs placed along borders of flooded forest restoration sites.
<b>Community Fisheries</b>	Record names of people accessing the inundated forest areas with their purposes during the dry season.	Participate in extension meetings on importance of flooded forests and effects of flooded forest fires, and help disseminate further the information to the CFI members.	Participate in pond/stream rehabilitation streams and conserve water for extinguish flooded forest fires Establish and maintain firebreaks to prevent the spread of flooded forest fires Readily prepare flooded forest firefighting tools for urgent needs.	Mobilize local people and participate in flooded forest firefighting, using locally available tools for putting out flooded forest fires.	Join planting flooded forest seedlings in flooded forest areas degraded by wildfires and clearance for cropping. Participate in placing and maintaining poles and signs along borders of flooded forest restoration sites.
<b>Commune councils</b>	Study and identify people accessing the inundated forest areas in their own territory	Disseminate measures to prevent and extinguish	Reserve some commune/Sangkat funds to pay for	Mobilize people to join in extinguishing	Cooperate and participate in flooded forest restoration in

	with their purposes.	flooded forest fires Provide flooded forest fire equipment to the patrol teams. Send people to support the patrol teams as requested. Strengthen fisheries law enforcement based on the policy reform of decentralization and de-concentration in natural resource management of Commune/Sangkat.	extinguishing flooded forest fires, pond/stream rehabilitation, extinguishers, fuel, and so on) Repair and prepare readily flooded forest fire extinguishers for emergency needs.	flooded forest fires. Participate in managing flooded forest fires directly. Gather and send firefighting tools to the scene upon requests from the patrol teams.	flooded forest areas were burnt and cleared for farming and burnt. Support budget to place poles and signs bel flood protection forest Disseminate the protection and maintenance of flooded forest restoration areas to the people.
<b>Civil Society Organizations /NGOs</b>	Study status of flooded forests and the uses of fishery resources in the floodplains to develop a plan to support the implementation of flooded forest fire management plan of FiA/FiAC and MoE/PDE.	Produce extension materials and conduct awareness raising campaign on importance of flooded forests, effects of flooded forest fires, protected area law and regulations related to flooded forest fire management.	Support budget and human resources to deliver training on flooded forest fire patrol techniques for the patrol teams.	Support budget and logistics for extinguishing flooded forest fires as possible.	Support budget and participated in flooded forest restoration process.
<b>District and commune Police</b>	Prepare lists of owners of tractors, cattle and farm lands, fisherfolks, honey bee collectors, and so on to identify easily the suspects who cause flooded forest fires.	Join patrols with the flooded forest fire patrol teams. Cooperate with the FiAC to prohibit and control strictly the uses of land and flooded forests in Zone 3.	Prepare firefighters and vehicles to support flooded forest fire fighting immediately.	Support firefighting equipment and participate in extinguishing flooded forest fires	Support and participate in planting flooded forest seedlings. Participate in enforcing fisheries laws against offenders who clear flooded forest and caused flooded forest fires.
<b>District administration</b>	Collect and sore documents/data related to flooded forest management. Issue declarations or guidance on flooded forest management, including flooded forest fires.	Disseminate information on importance of inundated forest, impacts of flooded forest fires, and law and regulations related to flooded forest fires.	Cooperate with FiAC to provide resource persons as trainers for training of flooded forest firefighting techniques for the patrol teams.	Send forces and equipment to participate in inundated forest fire-fighting as requested by the commune chiefs.	Participate in flooded forest restoration and push local authorities to help protect and maintain the forest restoration sites.
<b>Provincial Department of Agriculture, Forestry and Fisheries (PDAFF)</b>	Reviews reports on flooded forest fires prepared by the FiAC to comment and take measures to prevent and extinguish flooded forest fires effectively.	Supports FiAC to promote local awareness on importance of flooded forests, effects of flooded forest fires, and laws and regulations related to flooded forest management. Supports Fisheries Law enforcement.	Reports to the provincial administrative unity command on the flooded forest fire issues to get the relevant institutions at provincial level informed and ready to participate in extinguishing flooded forest fires.	Participates in extinguishing flooded forest fires and requests the intervention from district and provincial administrative unity commands.	Participate and cooperate with district, commune and village authorities and NGO partners to support the process of flooded forest reforestation.
<b>Provincial administration and relevant entities.</b>	Identify relevant entities at provincial level and formulate policies supporting flooded forest fire management.	Disseminate measures to prevent and manage flooded forest fires to the relevant entities. Take legal action against persons and units which have cleared and burned flooded forests.	Provide high risk level warnings when necessary Readily prepare forces and means to support flooded forest fire extinguishment. Provide flooded forest fire	Send forces and means to participate in extinguish flooded forest fires urgently.	Join tree planting events. Support budget for the inundated forest restoration.

			extinguishers to the patrol teams and CFis.		
<b>Tonle Sap Authority</b>	Study situation of flooded forests and the uses of fishery resources in the floodplains in order to develop strategies for managing flooded forest  Inspect the poles placed along zone 3 border and place additional pole(s) within a space where distance between the 2 poles are far apart.	Produce extension materials and conduct awareness raising campaigns on importance of flooded forests, effects of flooded forest fires on people, animals, biodiversity and ecosystem of Tonle Sap basin.	Provide flooded forest fire extinguishers to the patrol teams and CFis.	Participate in extinguishing flooded forest fires by other means.	Participate and support the process of flooded forest restoration  Encourage relevant entities at sub-national level to help protect and maintain the forest rehabilitation sites.
<b>Fisheries Administration &amp; Fisheries Administration Cantonments</b>	Collect and store documents related to flooded forest fire management recorded causes, extent of damage, methods of extinguishment and flooded forest fire maps.  Regularly monitor flooded forest fires to update situation of flooded forests.  Research and document fishery resources, ecology and livelihoods in the floodplains, especially in Zone 3.	Produce extension materials and conduct awareness raising on importance of flooded forests, effects of flooded forest fires, and laws and regulations related to flooded forest fires.  Strengthen Fisheries Law enforcement.	Coordinate and support the patrol teams to monitor flooded forest fires.  Coordinate and raise funds to support flooded forest fire prevention and management.  Provide and monitor the uses and maintenance of firefighting equipment for urgently putting out flooded forest fires.	Lead and coordinate in extinguishing of flooded forest fires.  Report and request the relevant entities for immediate actions to help extinguish flooded forest-fires.  Investigate, follow up, explore and document illegal cases causing flooded forest fires in accordance with the procedure stated in the Fisheries Law.	Organize tree planting ceremonies.  Protect and maintain natural and planted flooded tree seedlings in flooded forest restoration sites.  Assess survival and growth rate of flooded tree seedlings in flooded forest reforestation sites.
<b>Ministry of Environment</b>	Conduct ecological and livelihood surveys in inundated forest areas to develop flood forest fire management plan for the Tonle Sap Lake Biosphere Reserve in conjunction with the IFFPMP of FiA.	Produce extension materials and conduct awareness raising campaign on importance of flooded forests, effects of flooded forest fires, protected area law and regulations related to flooded forest fire management.	Provide training on flooded forest fire patrol techniques to rangers and community protected area.  Supply and monitor the uses and maintenance of flooded forest fire extinguishers.	Assign rangers to help fight flooded forest fires occurring in and outside protected areas.  Inform Provincial Department of Environment to monitor and participate in extinguishing flooded forest fires as requested by the provincial administration.	Participate in planting flooded forest seedlings and maintain flooded forest restoration sites within protected area.

The stakeholder identification is indispensable for the planning that takes into account the various target groups and their involvement at different stages (flooded forest fire prevention and control and flooded forest reforestation) of flooded forest fire management as mentioned in the five-year IFFPMP.

The stakeholders include those suspected of causing flooded forest fire to be educated, FFPTs, CFis, fisheries resource user groups, local communities, local farmers, local authorities, government institutions, civil societies, civil society, NGOs supporting flooded forest fire management, flooded forest fire management mechanisms at district and provincial level.

#### 4.4 Challenges for taking measures to respond flooded forest fires

According to the history of flooded forest fire management in Pursat province, it revealed that until now, no any flooded forest fire management structure at provincial, district or commune level has been established to address the flooded forest fire problems. This is caused by a number of the factors as shown below:

- **Lack of flooded forest fire management mechanism:** Many cases of flooded forest fires have been occurred every year, especially in 2019s and 2020s, while flooded forests in zone 2 and zone 3 were heavily cleared for rice cultivation. CFis and local people informed the concerned FIA triage, relevant competent agencies and local authorities of the forest fire cases for helping control but only a few cases of interventions offered. This may be caused by the absence of flooded forest fire management mechanism at all levels to prepare manpower, tools and budgets for preventing and extinguishing flooded forest fires in a timely manner.
- **No flooded forest fire management plan:** Due to the absence of a mechanism or coalition group consisting of members from relevant stakeholders established for flooded forest fire management at the provincial level, a systematic IFFPMP has not been developed and let flooded forest fires freely happened without controllable. In the past, despite some efforts made by CFis to put out flooded forest fires in their territories but they got less results due to lack of the readiness and equipment.
- **Limited local knowledge of flooded forest fire-related laws and the effects:** Most local people are aware of the laws related to illegal fishing as many extension meetings on this topic were organized locally and such information are shared publicly through social media such as posters, banners, radio, television, Telegram, Facebook, etc. Thus, local communities seem to have little understanding of the laws/declarations associated with flooded forest fires because the extension campaigns and materials related to participatory flooded forest fire prevention and management were delivered and distributed inadequately.

Due to the limited understanding of flood forest fire prevention and management, when local people experience flooded forest fires being occurred and are willing to put them out, but do not know clearly the reporting mechanism to report to request helps/intervention to extinguish the fires in time.

- **Difficult access to flooded forest fire areas:** Due to the geographically complex situation of the floodplains covering by dense shrubs and having no accessible road for motorized vehicles (motorcycle, power tiller and locally processed transportation vehicle), the effort for transporting water and fire extinguishers to fight the on-going flooded forest fires at the scene is hampered. The inaccessibility allows flooded forest fires to spread freely and uncontrollably until they go out on their own.
- **Lack of water:** Due to climate change in the 2019s and early 2020s in connection to the prolongation of the dry season and deposition of sediments into natural waterbodies resulted from deforestation and improper land preparation for agricultural practices in the upstream areas and, pumping ponds for fishing and irrigating dry season rice, most of natural streams and ponds dry up during dry season. This phenomena is the major constraint that restricts the extinguishing operation of flooded forest fires.
- **Lack of budget and equipment:** Extinguishment of flooded forest fires is a very difficult task that requires all involved stakeholders at sub-national level to participate under an effective management mechanism with enough budget and equipment. The sub-national stakeholders include competent departments/entities, three-type armed forces, local authorities, government and non-government organizations, CFis and local communities. The leading organizations for flooded forest fire control are PDAFF/FiAC, PDE and provincial, district and commune authorities. They, however, have not yet been able to fulfill this roles fully due to the lack of funds and equipment.

Due to the obstacles mentioned above, when a flooded forest fire occurred the relevant departments only had ideas on how to prevent and reduce cases of flooded forest fires, but no any unified option was implemented effectively.

#### 4.5 Law enforcement to prevent flooded forest fires

Flooded forest fires occur every year in the province that are most likely caused by the local people living in the concerned villages and communes rather than outsiders. However, some fisherfolks and farmers from neighboring communes have entered into the floodplains in dry season for fishing, fuelwood collection, hunting wildlife, and cleaning farmlands. Therefore some cases of flooded forest fires can be caused by these groups through their careless activities of cooking, burning wastes in farmlands, cutting and burning shrubs for placing fishing gears, lighting dry water hyacinth for catching reptile, setting fire to honey bee collection, and discarding lit cigarette butts into dry bushes or/and grasses.



Flooded forest land claims and deals of agricultural lands in zone 2 and 3 in the province are common. Some land brokers or rich people hired local people by providing some money and machineries to clear and convert flooded forests into rice fields as much as they can for selling purpose. Some concrete poles put up along zone 3's border were damaged by unknown people in order to deceive the eyes of competent agencies in reason of flooded forest land encroachment and rice field expansion in zone 3.

So far, the FiA Cantonment has investigated, prepared offense letters, arrested and sent some suspects who involved in causing flooded forest fires and clearing flooded forest lands to the provincial court for further legal action.

## **5. Implementation process of the IFFPMP**

To ensure the effective and timely implementation of participatory IFFPMP in accordance with the 5 "R" principles and the 3 key stages: 1.Prevention (review, risk reduction and readiness) 2.Response to flooded forest fires, and 3.Flooded forest reforestation as stated in the guidelines on the development of flooded forest fire management plan, the IFFPMP for Pursat province should be implemented as the following procedure.

### **5.1 Prevention**

As mentioned above, the flooded forest fire prevention step is divided into three sub-steps: 1. Review of knowledge and experience on flooded forest fire management, 2. Reduction of the probability of flooded forest fires, and 3. Readiness for prevention and extinguishing on flooded forest fires.

#### **5.1.1 Review**

Review of experiences, information, data and understanding of causes of flooded forest fires made by human or natural phenomena, wildfire behaviors, meteorological forecasts, climate, humidity situation and dry biomass and vegetation susceptible to fires in the given area and the effects of flooded forest fires in different sites over the years in the province are important to the preparation of strategic plan for prevention and management of flooded forest fires in accordance with the real situation and condition in each target commune. This review should be carried out following activities below:

##### **A. Consultation meetings on flooded forest fire issues**

Consultation meetings with FiAC, relevant sub-national government departments, local authorities, NGOs, civil society, CFIs and local community representatives were held subsequently to gather the most updated information and data on causes and behavior of flooded forest fires, elements causing the fires (drought, heat, humidity, air, biomass residues and organic matter), groups of people suspected of causing the fires, effects of flooded forest fires, how to prevent and extinguish the fires, flooded forest restoration approaches that have been implemented so far and stakeholders involved in flooded forest fire management process.

The information gathered at this stage will be used to determine effective methods for flooded forest fire management, in particular for flooded forest fire prevention.

##### **B. Field observation at flooded forest fire sites**

Direct observation of flooded forest fire sites is conducted after the consultation meetings to gather additional information on geo-physical situation, temporary accommodation locations in or near the flooded forest fire sites, signs of flooded forest fire causes, land use patterns, land and forest cover, flooded forest species, and scope of the damage. Coordinates of the burnt locations must be collected during the observation for producing maps of flooded forest fire sites.

#### **5.1.2 Risk reduction**

The action to reduce the risk of flooded forest fires is aimed at reducing the number of the forest fire cases maximally from the beginning of the dry season, which is the most important part of flooded forest fire prevention with low cost to reduce the damages by the wildfires, focusing on the potential causes of flooded forest fires and preventing those causes from occurring.

##### **A. Extension material design and printing out**

In order to obtain simple, easy-to-understand and meaningful extension materials for raising local awareness, the working group in charge of flooded forest management must consider the following options:

- In case there is a soft copy of existing media material on the topic of flooded forest fire prevention and management and Fisheries Law enforcement against offenders who caused flooded forest

fires, the working group should use it to produce extension materials as needed as it saves times and budget.

- In case the existing data has no enough meaning, the team should consider designing images and messages for developing the new extension material with the support from the FAO's communication officer to obtain simple, easy to read and understand and meaningful one to raise the awareness of relevant stakeholders.

## **B. Meetings at commune level on plan for conduction local awareness raising**

Meeting with representatives of WGFFFM at the district and commune levels, FFFPTs and CFIs to:

- Locate sites for placing billboards;
- Identify target groups, villages and locations for the extension campaign of participatory flooded forest fire management. The number of men and women of each target group to be invited to participate in the campaign should be equally. Use the list of those involved in using lands and fisheries resources in zone 2 and 3 to facilitate this identification.
- Introduce how to read and use the extension materials to raise local awareness to participate in preventing flooded forest fires and clearing flooded forests.
- Develop action plan for conducting extension campaign with the WGFFFM at district and commune levels, specifying their roles and responsibilities, necessary materials to be used (copies of relevant laws and legal papers, VDO spots, banner, posters, loud speakers), invitations of participants, times and venues of the extension meetings.
- Provide posters to district, commune, village administrations and CFIs to help post at the given sites before the extension meeting arrivals.

## **C. Local awareness raising campaign on participatory flooded forest fire management**

- Install signboards, billboards at designated locations.
- Distribute educational materials such as leaflets or posters to local people
- Organize awareness raising meetings for the target groups in villages and at temporary staying locations on participatory prevention and management of flooded forest fires and strict law enforcement against those who cut and burn flooded forests.
- Gather feedbacks on issues related to prevention and extinguishment of flooded forest fires raised in the extension meeting for jointly taking further action.

## **D. Regular flooded forest fire patrol**

The FFFPTs do patrol based on weekly and monthly patrol plans prepared and agreed by the team members and the working group at commune level. Each member must bring a portable forest fire extinguishers with them to putting out flooded forest fires as possible encountered during the patrol. In addition, in the patrol period, the FFFPTs must record activities and events of flooded forest fires and thought to cause flooded forest fires, and coordinates of the events in the distribute spread sheet format. Pictures of flooded forest fires and venues, firefighting activities, suspects of causing flooded forest fires have to be shot as evidences. The patrol team must inform chiefs of the commune and the FiA Triage on a regular basis about patrol situation, cutting flooded forests and flooded forest fire events in order to request timely intervention.

The commune and FiA triage chiefs have to get ready to follow up and communicate the FFFPTs regularly via telephone or communication radio so that they can take action in response to requests for assistance from the patrol teams in a timely manner. The commune chief must also request the immediate interventions from the WGFFFM at district or provincial levels in case that flooded forest fires are at large scale cannot be controlled by the patrol teams.

### **5.1.3 Readiness**

The readiness is the preparation of management structure of working groups at provincial, district and commune levels, infrastructure construction and supplies of necessary tools and equipment for immediate responses to flooded forest fires happened eventually. The readiness also aims to identify stakeholders and required infrastructures and equipment to get ready for timely interventions appropriate to the extents of flooded forest fires to reduce high cost of the extinguishment due to the unpreparedness.

## **A. Formation of working groups for flooded forest fire management (WGFFFM) at provincial, district and commune levels**

- Draft Decision Letter on establishment of Working Group for Flooded Forest Fire Management (WGFFFM) at provincial district and commune levels, including roles and responsibilities of the working group, and send this draft to the concerned provincial and district governors and commune chiefs for review and correction by their own administrative affairs.
- Collaborate with the target provincial and district administrations to organize meetings with relevant units at provincial and district levels to establish WGFFFM formally at provincial and district levels.
- Meet commune councilors and relevant stakeholders to establish Flooded Forest Fire Patrol Teams (FFFPTs) at commune-level.

#### **B. Annual WGFFFM meeting at provincial level**

Pursuant to the roles and duties of the WGFFFM at provincial level as stated in the Decision Letter signed by the H.E. Governor of Pursat province, the FiAC, in cooperation with the provincial administration, organizes a yearly WGFFFM meeting at the provincial level to be chaired by chief of the WGFFFM (H.E. provincial governor or deputy governor) at the beginning of each year to help push and strengthen the IFFPMP's implementation at the local level effectively and timely with good cooperation from all relevant stakeholders. Participants of the meeting are all members of the WGFFFM at provincial, district and commune levels.

The agenda and objectives of the meeting is to present the annual IFFPMP at provincial level, recall roles and responsibilities of the WGFFFM and raise key issues related to communication, law enforcement, means of flooded forest fires extinguishment and budget, to be addressed immediately before the provincial governor to review and advise to ensure the IFFPMP will be implemented smoothly and effectively.

Prior to the meeting, the FiAC's officials should submit a formal request for organizing the meeting, attached with the meeting agenda, the Decision Letter of the provincial-level WGFFFM establishment, the annual IFFPMP, report of quarterly WGFFFM meeting(s) at district level, map of flooded forest fires, map of flooded forest restoration and relevant document to the working group chief for information, taking action and distributing to the relevant districts and communes to be ready to participate.

After the meeting, the FiAC shall prepare and send the meeting report to the PDAFF's director and the WGFFFM's chief for review and signing. This report will be sent further to FiA and all relevant institutions at provincial, district and commune levels for information and taking action.

#### **C. Quarterly WGFFFM meeting at district level**

The FiAC, in cooperation with the district authority, organizes WGFFFM meeting at district level on quarterly basis or as necessary to provide an opportunity for the FFFPT, the WGFFFM and the FiAC to meet and review the results of flooded forest fire management in the last three months and lay the outstanding problems on the table to be solved by the working group, especially the District Unity Command (DUC), to give suggestions and recommendations, and take action to solve those problems in time. It would be good if representatives of the FiA and the WGFFFM at provincial level attend the meeting to make the solutions more effective and cooperative.

After this meeting, the FiAC shall prepare and send the meeting report to the district governor/deputy governor, chief of the meeting, for review and signing. This report will then be sent to all relevant departments and offices at the provincial, district and commune levels for information and action.

#### **D. Monthly FFFPT meeting at commune level**

Monthly FFFPT meeting at commune level to be chaired by the concerned commune and FiA Triage chiefs should be held on monthly basis to share experiences on flooded forest fire prevention and extinguishment among the patrol teams, raise challenges encountered during patrols and seek solutions from the chairpersons for solving all the challenges to encourage the patrol teams to carry out further their duties.

After attending the training on flooded forest fire patrol techniques, the patrol team understood well the roles and responsibilities of the team, preparation of patrol plan, recording patrol events, flooded forest fire-fighting methods, extinguisher management, and relevant laws and regulations (Fisheries Law, Land Law, Sub-Decree No.197, etc.), so the monthly meeting is also aimed to review and remind the existing knowledge and provide new information and news that has just been received.

At the same time, the monthly patrol team meeting also aims to review its management structure to strengthen the roles and responsibilities of the team, which may be disrupted by some members are

inactive, sick, busy with his/her own businesses or resigned from the group. The meetings are also held to inspect the condition of forest firefighting equipment to determine whether which equipment are damaged to be repaired and lost to be purchased the new ones to ensure the patrol team has enough extinguishers for putting out flooded forest fires.

Women members are encouraged to speak out the challenges of the women faced in the patrols for addressing and to encourage more women to participate in this action, especially to increase woman roles in managing flooded forests in their respective villages and communes.

Minutes of meeting must be developed at once at the end of the meeting to report to the commune chief, the WGFFFM at district level and the FiAC's chief for information and taking action to respond to the facing challenges timely.

#### **E. Building physical structures for flooded forest fire prevention and response**

As mentioned above, the necessary physical structures to be constructed for prevention and extinguishment of flooded forest fires include placement of additional concrete poles along zone 3 border, planting poles along borders of the flooded forest fire sites, construction of flooded forest fire watching towers, and rehabilitation of ponds or streams. Due to limited budget, not all the structures needed are constructed only in the first year, but from year to year according to the priority needs set in consultation meetings at commune level and available budget. According to the procurement principles and techniques, the construction of the physical infrastructure will be carried out following the below process:

- Organize 1<sup>st</sup> consultation meeting with commune and village leaders, CFis and FFFPTs to determine the locations for construction of flooded forest fire watching towers, ponds to be rehabilitated and burnt flooded forest sites to be marked with poles and signs.
- Study technical specifications and estimated costs of every infrastructure for bidding.
- Prepare bidding documents and manage bidding process (public announcement, screening qualified engineering companies for the bidding, conduct and monitor the bidding, selected awarded engineering companies) for physical restructuring to support the flooded forest fire management.
- Sign the construction contract, inspect the construction and disbursement.

This procurement task is generally carried out by the Procurement Team of the Fisheries Administration in collaboration with the EU Procurement officers who support CAPFISH-Capture.

#### **F. Improvement of knowledge and skill of the FFFPTs**

- Prepare training manuals on flooded forest fire patrol techniques focusing on roles and responsibilities of the FFFPTs, importance of flooded forests, impacts of flooded forest fires on ecosystem of the Lake's floodplains and socio-economic, strategic flooded forest fire patrol, using smart devices to monitor and report, uses and maintenance of flooded forest fire extinguishers, how to disseminate information through social media via smart phones, Fisheries Laws and legal papers associated with flooded forest fires activity planning and report writing to be prepared by the Fisheries Administration in collaboration with NGO partner organizations
- Organize training on flooded forest fire patrol techniques for the FFFPTs at commune level to provide opportunities to all the patrol team members to share and learn experiences from each other through practical exercises by using modern techniques and tools.
- Conduct weekly and monthly meetings regularly to allow all members of the patrol teams participate  
in discussion on the patrol plan in a voluntary and ownership manner for implementing after the meeting. The patrol plan will be then reviewed and signed by the relevant commune chief.
- The FIA Triage and commune chiefs have to monitor and improve the practices of the knowledge gained from the training to ensure the quality and effectiveness of flooded forest fire patrol.

#### **G. Equipping the FFFPTs with flooded forest fire-fighting tools**

Equipment to be used by the FFFPTs commonly and individually for personal safety, including portable dry powder extinguisher cylinders, pump backpack sprayers, smartphones, drones, walkie-talkie, first aid kits, masks, goggles, gloves, helmets, fire-fighting shoes, hammocks, machetes, torches, motorbikes equipped



with water pumps, hoses and water guns, and so on, will be purchased and distributed to the patrol teams for uses as needed.

Regulation on the use of fire extinguishers to be used by patrol team must be developed and disseminated to all of the team members through commune-level meeting to ensure the equipment are used in accordance with the guidance stated in the regulation and maintained well and long lasting.

Additional training at the commune level on the proper uses and maintenance of forest fire equipment will be provided to all the patrol teams to ensure that the extinguishers are used effectively, safely and long-lasting.

## **5.2 Response**

The interventional phase focuses on flooded forest fire extinguishment, Fisheries Laws enforcement and regular patrol of flooded forest fires by the patrol teams under direct support of the FiA Triage and commune chiefs. In order to strengthen and empower the patrol teams to control flooded forest fires effectively, the FiA Triage and commune chiefs should instruct the patrol team to consider and implement the following important activities.

In case the patrol teams encounters flooded forest fires occurring during the patrol, each member must take measures to extinguish the wildfires according to the following instructions:

### **A. Small-scale flooded forest fire cases**

When the patrol teams meet flooded forest fires at small scale, controllable case, the team members have to use the mobile forest fire extinguishers they brought with or items locally available there as instructed below:

- Cover mouth and nose with a mask, soaked scarf or T-shirt to reduce the absorption of smoke, ashes and dust.
- Use twigs to put out the fires.
- Use shovels or hoes to dig the soil to cover/extinguish the fires or create firebreaks for preventing the spread of fires.
- Use water in the portable tanks to put out the fires.
- Make sure the fires are completely extinguished before leaving the scene to avoid the fire re-occurrence.
- Take photos and report the incident to chiefs of the commune and FiA Triage via mobile phone, communication radio or smart phone application.

### **B. Meso/big-scale flooded forest fire cases**

If the flooded forest fire is at large scale, the patrol teams and local firefighters must be vigilant to protect their own safety by taking flooded forest fire measures following the below instruction:

- Cover mouth and nose with a mask, soaked scarf or T-shirt to reduce the absorption of smoke, ashes and dust.
- Inform chief of the village, commune and FIA Triage via phone or communication radio about the incident in order to get helps (forces and equipment) for flooded forest firefighting from the commune, district and provincial authorities.
- Use portable fire extinguishers as much as possible to prevent the spread of flooded forest fires, keeping a safe distance from the fire to avoid eventual hazards.
- Mobilize people nearby the scene to help put out flooded forest fires by using available tools such as water pumps, power tillers, tractors, water tanks, water cans, pipes, etc.
- The commune chief must immediately notify the district governor for requesting assistance of fire-fighting trucks and fire-fighters to come to the scene to help control the flooded forest fires.
- Commune chiefs and village chiefs must mobilize people living in the villages closest to the flooded forest fire sites by bringing available equipment such as power tillers, tractors, water pumps, hoses, water tanks and cans to help extinguish the wildfires urgently.
- If fire trucks are unable to reach flooded forest fire sties, they will be used as the water supply to fill water tanks loaded on power tillers or locally processed trucks to transport the scenes for putting out the wildfires.

- In extinguishing flooded forest fires, power tillers and tractors can be used to clear strips as firebreaks where possible (grasslands, wood shrubs or bushes) to prevent the wildfire spread.
- Make sure flooded forest fires are completely extinguished to avoid the fire recurrence before leaving the scene.
- Prepare a report on the flooded forest fires, describing location, burnt flooded forest areas, causes of fires, stakeholders and number of people involved in extinguishment, types of extinguishers used, scope of damage and recommendations for considering better measures of flooded forest fire fighting to be applied in the future.

### 5.3 Restoration

Flooded forests in Tonle Sap's floodplains are divided into two classifications: flooded forests and flooded wood shrubs<sup>1</sup>. Flooded forests are 07-15 meters high, mostly grow on the bank of Tonle Sap Lake and wetlands and along streams. Flooded wood shrubs are 02-04 meters high and consist of flooded trees scattering throughout the shrubs with an average stand density of about 25-30 trees/ha.

During the rainy season, flooded forests and wood shrubs are completely submerged, unable to grow because there is not enough sunlight to photosynthesis. At this stage, all the leaves fell, rotted and became fish feeds and made the environment of the flooded forest areas more biological.

Every year, flooded forests and shrubs release large amounts of green and organic matters (barks, roots, branches and fruits) that are decomposed under natural influence into minerals such as calcium, potassium, phosphate, sulfate, etc. and disintegrated by microorganisms into salts and minerals for plant growth and soil quality maintenance with black soil. Additionally, flooded forests and shrubs help maintain water quality by providing oxygen to water and absorbing toxins such as nitrate, nitrous dioxide and calcium nitrate.

In the floodplains, there is a lot of organic debris that originates from its flooded forest and shrubs and from the upper reaches, which decomposes and develop plankton and Zoobentos to feed on fish.

In Pursat province, the flooded forest susceptible to fires is dense wood shrub with canopy of about 70% - 90% and height up to 4 meters. The wood shrub species include *Croton caudatus*, *Acacia spiralis*, *Uncaria homomalla*, *Ixora cuneifolia*, *Cratoxylon prunifera*, *Crataeva religiosa*, *Zizyphus sp.*, *Hymenocardia wallichii*, *Vitex holpadenon*, *Morinda Persicaefolia*, *Antidesma ghasembilla*, *Breynia rhamnoides*, *Breynia rhamnoides*, etc.). Flooded forest trees (*Barringtonia acutangula*, *Mitragyna bruninisa*, *Combretum triforatum*, *Xanthophyllum glancam* and *Terminalia Cambodiana*) stand scattered about 20-25 meters apart in the shrubs. The ground layers of the shrub forest consist of many herbs and vines and *Mimosa pigra* are seen growing in places where shrub canopy lesser than 50%. Generally, the shrubs, underground plants and *Mimosa pigra* dry and fall off their leaves in the dry season, so such a flooded forest is more prone to wildfires in the dry season, starting from March.

In the flooded forest areas located far from streams where were burned two or three years ago, many natural regenerations are seen but most of them are shrub species and *Giant Mimosa* at 2-3 meter height. Very few tree seedlings of *Barringtonia acutangula* are growing under the shrubs and the thorny bushes which very low growth rate due to the stresses of the micro-climate (competition of sunlight, spaces, water, and nutrients).

The flooded forest areas next to the streams where were burnt for many years, especially in Kandieng district, are now covered by dense grasses and reeds of about 2-meter height, so flooded forest and shrub seedlings cannot be survived. This may be the result of repeated wildfires in that locations.

According to the limited budget for the restoration, the geographical situation and biodiversity in the burnt flooded forest location, the reforestation approaches there should be considered two options: protection and maintenance of natural regeneration and planting flooded forest seedlings in the areas where have no or very few seed trees.

#### 5.3.1 Rapid assessment on flooded forest restoration approaches

##### A. Field assessment to define flooded forest restoration approaches

Rapid assessment of flooded forest fire sites is carried out to gather information/data on the extent of damage, geographical, physical, biodiversity and ecological aspects of fire-affected flooded forest areas, tree species to be selected for planting, low-cost restoration and maintenance methods, produce flooded forest restoration map, prepare low-cost flooded forest restore plan and estimated budget. This assessment will be

<sup>1</sup> Cambodia forest cover 2014, UN-REDD, Sept 2016

conducted annually at the beginning of the dry season to provide sufficient time for preparation and implementation of the restoration plan.

#### **B. 1<sup>st</sup> Commune-level meeting on flooded forest restoration plan**

This is the first commune meeting with relevant stakeholders, including the FiA Triage, local authorities, the FFFPTs, CFIs and NGO partners to discuss action plan for flooded forest restoration, emphasizing restoration site selection, restoration with enrichment planting and protection and maintenance of natural seedlings, tree species selection, nursery establishment, seedling production by seeds or/and natural seedlings collection, site preparation, seedling transportation, mobilization of local people to participate in tree planting, support to and monitoring of tree planting, organizing tree planting ceremony, maintenance of natural and planted seedlings, assessment of seedling survival and growth rates, formation of local working groups to support the flooded forest restoration, budget needed, and writing report on results of the restoration.

#### **C. Demarcation and mapping degraded flooded forests to be restored**

The FiAC's officials, working with the FFFPTs and CFIs, locate burnt flooded forest sites to be restored with different methods, collect GPS coordinates of all the sites for mapping of flooded forest restoration, and post concrete poles and poles and signs along the boundaries of the sites to prevent them from the attempts to use land in the sites for growing rice or other crops. The map to be produced shall include the point at which concrete poles with the signs will be put up.

At the same time, village chiefs and commune chiefs should inform the people through village and commune meetings about the locations and protection of all the flooded forest restoration sites in their administrative areas and take legal action against those who did cropping or let animals into the restoration sites.

#### **D. Protection of flooded forest restoration area**

Prohibition and protection of flooded reforestation sites from releasing cattle to grazing is essential as animals will trample on flooded forest seedlings, so be sure to put up signs to inform cattle herders about the ban about prohibition of animal entry into the flooded forest restoration sites. All relevant commune and village chiefs must help disseminate this information to the local people in order to increase their participation in the reforestation in order to achieve satisfactory results.

#### **E. Patrolling flooded forest restoration sites**

It is very important that the patrol team include the inspection of the flooded forest reforestation sites in their weekly and monthly plans to ensure that all the restoration sites are safe and avoid any disruptive activities such as grazing domestic animals, cropping and wildfires that affect the seedling survival and growth.

Meanwhile, when inspecting the flooded forest restoration sites, the FFFPTs must report to the concerned chief of FiA Triages respectively about negative impacts on seedlings caused by suppression of thick grasses or water hyacinth, pests and weeds invasion making some seedlings stressed and died due to lack of sunlight, water, spaces and nutrients in order to take measures to save seedlings with silviculture operation for the sake of improvement of seedling survival and growth rate.

#### **5.3.2 Flooded forest restoration by Assisted Natural Regeneration (ANR)**

If flooded forest fire sites are near flooded forests rich in seed trees, the flooded forest restoration by enrichment planting is not necessary as the seed trees will drop and scatter seeds throughout the burnt forest areas in December, and natural seedlings will grow in late December or in January if the soil is still moist. But, if the soil is dry, the seeds will delay sprouting until the beginning of the next rainy season after three or four heavy rains. Although there are many natural seedlings, the restoration sites must be still maintained following the below guidance.

Natural regeneration of flooded forest (*Barrintonia acutangula*, *Diospyros cambodiana*, *Mitragyna bruninisa*, etc.) died under the pressures of dense shrubs and grasses, oppression of water hyacinth, trampling by domestic cattle and flooded forest fires. Therefore, maintenance and liberation of seedlings in the forest restoration sites by clearing grasses within one meter around seedling base, suppression or cutting grasses in the restoration sites, removal of water hyacinth pressing down on seedlings, and protection of the restoration sites from domestic cattle entry in the first three to four years are a must. These activities not only save the lives of tree seedlings from micro-climate pressure, but also enhance their growth.

This maintenance method is called "Assisted Natural Regeneration (ANR)" that must be applied for at least the first 3 years to keep the seedlings strong enough to overcome the competition for sunlight, nutrients, spaces and water against weeds, grasses and vegetation growing around them.

### 5.3.3 Flooded forest restoration by enrichment planting

#### A. Workshop on tree nursery management and flooded forest fire restoration approaches

The FiA's officers, in collaboration with technical staff of relevant institutions, prepare documents related to tree nursery management and flooded forest restoration approaches, which focuses on:

- **Tree nursery management:** site selection, establishment of tree nursery team (at least 40% of the total number of team members are women), designing and construction of tree nurseries, required materials, soil selection, soil mixing and placing in polybags, seed collection and propagation, natural seedling collection, care of seedlings, seedling transportation and bookkeeping.
- **Flood forest restoration approaches:** starts from site selection, rapid assessment of geography, physics, ecology and ecology of flooded forest restoration sites to determine appropriate restoration approaches for each of them and mapping. The restoration approaches include tree planting methods (cluster planting, alternative planting, mixed plating and stripped planting), selection of tree species to be planted, pit size, seedling/pit spacing, transplanting seedlings, care of seedlings, forming local teams to support flooded forest restoration (seedling planting, protection and maintenance), implementing times by stages, and papers for recording flooded forest restoration activities.

#### B. Support to tree nursery establishment

Flooded tree seedlings for forest restoration should be produced by CFIs that live near the forest restoration site as it is part of local capacity development in tree nursery management and sustainability of flooded forest restoration. Therefore, the FiAC's officials who attended the workshop on "Tree Nursery Management and Flooded Forest Restoration Approaches" have to support the CFIs to establish tree nursery for producing flooded tree seedling following below instructions:

- **Site selection for tree nursery establishment:** The most suitable location for setting up a nursery is the site where: having permanent water, non-flooded area in rainy season, near residential land easy to access the nursery for maintenance, having road for transporting nursery materials and near the restoration site to reduce seedling transportation costs. Nursery size is varied depending on the number of seedlings to be produced.
- **Formation of seedling production group:** At least 10 people, including at least 5 women, are selected and organized as a seedling production group. The group management structure includes roles and responsibilities of the team members and benefit sharing is developed through consultation meetings among the team members to ensure the seedling production runs smoothly, successfully and transparently.
- **Strengthen capacity of seedling production group:** The FiAC will provide training through on-the-job-training on tree nursery management with practical activities of nursery installation, soil mixing, placing mixed soil in polybags, seed collection, seed propagation, seedling maintenance to the group members to ensure they can run on their own. At the same time, the FiAC has to provide knowledge to the group on seedling nursery production planning, bookkeeping to monitor and record times and activities carried out by each team member, materials used for the seedling production, number of seedlings by species and costs.

As locally available materials for seedling production are limited, the FiAC should provide some materials such as nets, pillars, plastic bags, watering cans, wire and fertilizer as mentioned in the training to support the tree nursery installation and flooded forest seedling production.

- **Technical support to seedling production group:** Every FiA Triage involved in flooded forest restoration has to assign an officer to assist the seedling production teams established within the FiA Triage on a regular basis to prepare tree nursery and maintain flooded forest seedlings by actual stages.

### **C. 2<sup>nd</sup> Commune-level meeting on action plan for flooded forest restoration**

A 2<sup>nd</sup> consultation meeting at commune level to review and finalize the flooded forest restoration plan drafted in the 1<sup>st</sup> meeting is necessary for implementing next month. More importantly, it examines the local working arrangements that have been promised to be done after the first meeting and confirms the mobilization of local communities to participate in upcoming tree planting events. The participants of the meeting include FiAC's officers, local authorities, CFIs and FFFPTs.

### **D. Organizing tree planting ceremony**

Flooded tree planting ceremony should be held in each target district to promote joint efforts from every milieu for flooded forest protection, flooded forest fire management and flooded forest restoration. The ceremony has to be held under chairmanship of the district governor, and if possible, the presence of the provincial governor and/or the FiA's Director General as chair of the event will mark it historically important and be considered as a nationwide outreach campaign for fisheries resource management and flooded forest restoration in Cambodia.

Information, messages and pictures of the flooded tree planting ceremony are widely shared through public media as part of education to raise public awareness on fisheries resource management, in particular the flooded forest management in the Tonle Sap Lake region.

The FiAC will play an important role in facilitating the discussions with the WGFFFM at district and commune levels on organization of tree planting ceremony, including inviting honorable guests, venue preparation, seedling transportation, master of ceremony, tree planting materials, snacks, sharing information through public media and logistics.

### **E. Supporting and monitoring tree planting**

To ensure the tree planting is carried out well, after attending the workshop on "Tree Nursery Management of Flooded Forest Fire Restoration Approaches", the FiAC's officers in charge of flooded forest restoration should follow the below activities:

- Briefly review the tree planting techniques before planting seedlings, specifying safe seedling transportation, pit size, pit spacing, pitting, tearing polybags, transplanting seedlings, filling up pits and tamping down the soil after planting, strengthening seedlings with wooden sticks, and watering if the soil is too dry.
- Mark spots to be pitted with wooden/bamboo sticks to avoid planting seedlings too close together and under tree shade or in the bush.
- During transportation of seedlings from the nursery to the restoration sites, the nursery team leader must record numbers of seedlings taken out and damaged by the transportation by species, specifying the damaging reasons.
- Divide a flooded forest restoration site into sub-blocks for tree planting by different groups to be easy for monitoring by the local working teams. This will help the teams to determine numbers of seedlings planted, seedlings planted technically incorrect, seedlings damaged during planting and identification of the responsible planting groups for replanting.
- Support and monitor tree planting by local people to ensure dug pit size, transplanting seedlings, seedling species, filling up pits, strengthening of seedlings and polybag collection are applied in accordance with the technical guidance.
- **Prepare report on planting flooded forest seedlings:** The FiAC plays an important role in preparing reports on the results of the planting after the event is completed. This report has to be reviewed and approved by the PDAFF's director and copied to WGFFFM's at provincial and district levels and the relevant commune chiefs for information. This report must provide accurate figures on planting area, numbers of planted and damaged seedlings by species, planting methods, number of participants and the reforestation map as it is important for monitoring and evaluation of the IFFPMP's implementation.

### **F. Maintenance of flooded forest restoration sites**

To ensure high survival and growth rates, both planted and natural seedlings in the forest restoration sites need to be maintained. Based on the actual situation of each restoration site, the seedling maintenance methods to be applied include the protection of the restoration sites from invasion of domestic animals,

cropping and wildfires as well as liberation of seedlings from oppression by water hyacinth, weeds and shrubs. Detailed techniques of flooded tree seedling maintenance are included in the training on "Tree Nursery Management and Flooded Forest Restoration Approaches" to be organized for FiAC's officers.

### **G. Seedling survival and growth rates monitoring**

It is important to assess the survival rate and growth of seedlings at the beginning of the dry season of the second year of flooded forest seedling age to know mortality and growth rates of seedlings by species and location. This assessment should be performed every two years at the same sample sites.

The main purpose of the assessment is to find out the factors that cause seedlings to die and grow slowly and to recommendations on methods to make the seedlings that were planted and will be planted in the future survived and grown better in actually geographical and biological conditions of each area, such as protection of flooded forest restoration sites from various disturbance activities, prevention of forest fires, enrichment and replacement planting, seedling maintenance and liberation, etc.

## **6. Gender Equality and child labor in implementation of the IFFPMP**

In the implementation of the IFFPMP, gender mainstreaming and child protection will be addressed in all activities, including planning process, implementation and monitoring of the plan implementation in accordance with the framework on gender equality of the FiA the MAFF, in particular the action plan of the FiA for promoting gender equality and elimination of child labor in fisheries sector (2016-2020).

To contribute to boost the equal participation of men and women in decision making and activity implementation in the working groups at commune, district, provincial levels, the Departments of Fisheries Conservation and Fisheries Affairs will work with the Gender Working Group of the FiA to ensure the negative effects of gender inequality are addressed in the implementation of this plan, providing equal opportunities for men and women in the composition of the flooded forest fire management structures at all levels, and the consideration of women's needs and barriers in the implementation of this plan.

Some considerations regarding the establishment of clear implementation mechanism to achieve gender equality through awareness raising, services and legal support are outlines below:

- Ensure equal participation of women and men in all activities of flooded forest fire prevention and management and decision-making in planning, implementation and monitoring of plan implementation, emphasizing women's workloads in it.
- Encourage women to actively participate in the WGFFM at provincial, district and commune levels, paying attention to the objectives and interests of women.
- Provide equal opportunities for women to participate in skill training and consider their needs and interests.
- Promote the application of modern technology appropriate to women's abilities and work.
- Protect children under age of 18 and pregnant women from potentially dangers of flooded forest fire extinguishment and improve working conditions and skills for youth participation in the forest fire management by ensuring health and working safety at anywhere.
- Demonstrate the valuable roles and responsibilities of women and men in fisheries development and conservation as well as in awareness raising campaigns on participatory flooded forest fire management.

## **7. Framework of the IFFPMP**

Currently, Pursat's FiAC has no the IFFPMP and lack of resources to respond to flooded forest fires. Many cases of flooded forest fires were reported by CFis and local people to the relevant units, especially the FiAC and commune authority, but no any immediate intervention were acted effectively to respond the reported wildfires. Remote locations of flooded forest fires, inaccessible roads, lacks of manpower, budget and equipment also contribute to the failure. Lately, the DFC provided a number of dry powder fire extinguishing cylinders to CFis through the FiAC for use to put out flooded forest fires as needed.

In order to support the forest fire management efforts that have been carried out by relevant stakeholders at sub-national level, the FiA in collaboration with the FAO of CAPFISH-Capture, developed the 5-year IFFPMP for 2022-2026) with the following framework.

## 7.1 Implementation period

The mandate of the flooded forest fire prevention and management plan is five year (2022 – 2026).

## 7.2 Goal

Flooded forests in Pursat province are well managed and protected and flooded forest cover increased under the effective management of flooded forest fire management mechanisms at provincial, district and commune levels with fully participation of relevant stakeholders.

## 7.3 Objective

To meet the above objectives, achieving some of the following goals will contribute significantly to meet the set objectives:

- Participatory awareness and participation in prevention and management of flooded forest fires enhanced.
- Areas of flooded forests and grassland affected by wildfires dropped down significantly.
- All fire-damaged flooded forests restored through protection, maintenance and enrichment replanting to benefit ecosystems, high-nutrient organic food sources and fishing community livelihood.

## 7.4 Expected outputs

### **Expected output 1: Readily effective review, risk reduction and readiness for forest fire protection and response.**

The first result of responding to 3 "R" out of 5 "R" is a review of flooded forest fire challenges, reducing risks of flooded forest fires, and readiness of forces and equipment to put out flooded forest fires immediately in good cooperation with local authorities at all levels, relevant stakeholders, NGO partners and local communities.

Activities to be implemented to meet the first expected outputs include meetings with relevant stakeholders to discuss establishment of WGFFFM at district and provincial levels, formation of FFFPTs at commune level, extension materials needed, local awareness raising, required flooded forest fire extinguishers, training on flooded forest fire patrol techniques, supporting and strengthening flooded forest fire patrol, and Fisheries Law enforcement to prevent flooded forest destruction and fires.

### **Expected output 2: Improved responsive actions to inundated forest fires**

The second expected result focuses on coordination with local authorities, relevant institutions, CFIs and local communities to get timely intervention in extinguishing flooded forest fires. This expected output also aim to strengthen Fisheries Law enforcement and increase successful rate of prosecution against illegal activities in flooded forest destruction, both inside and outside the judicial system.

### **Expected output 3: Improved restoration of fire-damaged and degraded flooded forests**

The third expected output focuses on improvement of cover of fire-affected flooded forests through application of different flooded forest restoration approaches such as prevention of flooded forest encroachment for farming, banning domestic animal grazing in the restoration sites, prevention of reoccurrence of forest fires, enrichment planting and Assisted Natural Regeneration (ANR).

Protection and maintenance of flooded tree seedlings as part of Assisted Natural Regeneration will be carried out in places where natural generation and planted seedlings do not grow well, some seedlings die after growing for a while, seeds do not germinate, low density of natural flooded tree seedlings (<200 seedlings/ha) and low seedling growth rate due to natural barriers. Planting flooded forest seedlings (*Barringtonia acutangula*, *Diospyros cambodiana*, *Peltophorum pterocarpum*, etc) will be applied in places the areas where no seed trees nearby or flooded forest seedlings.

## 7.5 Estimated budget

The budget for implementing the five-year IFFPMP is estimated at about US\$ 715,330.00 in total.

The IFFPMP for Pursat province is compiled in accordance with “**Guidelines for Developing Tonle Sap Inundated Forest Fire Management Plans**” developed by CAPFISH-Capture Project and 5 R’s Principle (Review, Risk Reduction, Readiness, Response and Restoration). This principle is very useful in providing sufficient information to write the IFFPMP for the implementers to ensure that they can achieve the above three expected outputs.



The IFFPMP is also developed based on Community Fisheries Management Plans (CFiMPs), which is a way to integrate community decisions into implementation of the IFFPMPs as part of the implementation of CFiMPs. This plan not only engages all stakeholders provide techniques, equipment and workforces in strategic implementation of prevention and management of flooded forest fires but also raise local awareness on impacts of the forest fires, flooded forest restoration approaches as well as the law, sub-decrees and regulations related to clearing and burning flooded forests, which are stated in Articles 26, 27 and 28, Chapter 6 of the Fisheries Law and Sub-Decree No.197 on Boundary Demarcation of Flooded Forests Surrounding Tonle Sap Lake in the Six Provinces.

Both men and women, especially those vulnerable to flooded forest fires, play an equally important role in participating in the 5 R's principle for flooded forest fire prevention and management. In this context, however, protection of women and children from hazardous works of flooded forest fires must be guaranteed.

On the other hand, local authorities and CFis that have experienced flooded forest fires in their management areas must make the local people aware of the importance of the wildfire prevention and management in connection with public interest of fisheries resources in the areas as majority of the local communities depend on fishery resources, including the use of floodplain lands for agricultural production.

## 8. Monitoring and Evaluation Framework

To monitor and evaluate the IFFPMP's implementation thoroughly, a monitoring and evaluation team must be set up with members from representatives of relevant institutions at national and sub-national levels, such as:

- **Relevant institutions at national level:** DFC and DFA of FiA, Ministry of Agriculture, Forestry and Fisheries, Tonle Sap Authority, Ministry of Water Resources and Meteorology, Department of Inland Water Conservation of Ministry of Environment, and development partners (FAO, UNESCO, WCS, RECOFTC, FACT, JICA, CSLEP, and so on),
- **Relevant institutions at sub-national level:** Local authorities at provincial, district and commune levels, PDAFF, FiAC, provincial department of Environment, provincial department of Water Resources and Meteorology, Office of Agriculture, Natural Resources and Environment, community fisheries and
- **Civil societies** partners.

The FAO's Monitoring and Evaluation Officer (MEO) will support FiA to do a survey on flooded forest fire prevention and management and develop baseline survey to be used by the Monitoring and Evaluation Team (MET) to follow up, monitor and evaluate the impact of the IFFPMP's implementation.

The MOE will continue assisting the MET to develop the monitoring and evaluation system and update the monitoring and evaluation based on reports on the results of the plan. A brief framework for monitoring and evaluation of the IFFPMP's Implementation will be prepared separately for chiefs of the MET and senior officials of relevant institutions to use easily in a short time period for monitoring and evaluation of the results of the plan implementation.

This monitoring and evaluation will be carried out by the MET to determine the extents of the IFFPMP's objectives, goals and expected outputs achieved, cost effectiveness and the overall impacts of flooded forest fire prevention and management in Pursat province.

Additionally, the MET will gather the most updated information/data on number of cases, locations and scopes of flooded forest fires, plant species burnt, suspects caused flooded forest fires, workforces participated and equipment used in flooded forest fire management process, flooded forest fire intervention effectiveness, operational costs and strategic challenges, etc. to recommend, direct and better the IFFPMP's implementation.

Internal assessment will be conducted annually. Assessment by external experts should be carried out twice a year, in the middle of and before the end of the IFFPMP's implementation. The DFC and DFA prepare terms of reference of the external evaluators, manage the recruitment process and oversee the assessment result.

Strengths, weaknesses and challenges identified by the assessment will be used to improve knowledge and experiences for steering the IFFPMP's implementation in the presence and future.

Aerial photos shot by drones during field mission provide help detailed views in each area of topography, land and forest covers, land use patterns, flooded forest sites newly cleared and burnt, dry flammable wastes on the land, hotspot areas where are sources of causing flooded forest fires, existing physical

infrastructures, routes for traveling and transporting (waterways and by land), etc. Such images will help identify flooded forest fire locations susceptible to wildfires, factors that can trigger flooded forest fires, access to the floodplain for extinguishing flooded forest fires that provide easiness for developing the IFFPMP.

The leaders of the FiAC and the provincial and district administrations who are the chiefs of the WGFFFM will monitor and evaluate the implementation of the IFFPMP as needed in the fields by using the monitoring and evaluation framework to evaluate the actual results, impacts of the plan implementation and accountability.

## 9. Activity and budget of the IFFPMP at provincial level for Pursat province (2022-2026)

No	Activities	Indicators (5 years)	Responsible		Budget (2022- 2026)	2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)				2026 (by quarter)							
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<b>1</b>	<b>Output 1: Effective review, risk reduction and readiness for forest fire protection.</b>				<b>309,860</b>																								
<b>1.1</b>	<b>Review forest fire behavior and lessons learnt on forest fire prevention and intervention and for restoration approach have been applied.</b>				<b>15,200</b>																								
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on forest behavior and forest fire prevention, intervention and restoration approach have been applied (100\$ x 10 meetings x 5 years).	50 meetings at commune level 15 reports at district level.	FiA	FiAC	5,000	1,000				1,000				1,000				1,000				1,000				1,000			
						10 meetings 5 reports				10 meetings 5 reports				10 meetings 5 reports				10 meetings 5 reports				10 meetings 5 reports				10 meetings 5 reports			
						H			H				H				H				H				H				H
1.1.2	Conduct site observation at fire-affected forests to gather information on physical condition, scope of damages, land use patterns, coordinates and mapping fire-affected flooded forests at district level [(60\$ x 3 days x 10 communes) + (60\$ x 3 maps) x 5 years.	15 reports at district level	FiA	FiAC	9,900	1,980				1,980				1,980				1,980				1,980				1,980			
						3 reports				3 reports				3 reports				3 reports				3 reports				3 reports			
						H	H			H	H			H	H			H	H			H	H			H	H		
1.1.3	Organize provincial workshop to present and endorse the IFFPMP	1 meeting	FiA	FiA	300	300																							
						1 meeting																							
						H																							
<b>1.2</b>	<b>Risk Reduction: Reduce risks of forest fires by promoting local awareness on participatory forest fire prevention and intervention.</b>				<b>84,500</b>																								
1.2.1	Produce and distribute posters for promoting awareness of local communities and involved stakeholders (1.5\$ x 100 posters x 10 communes x 5 years).	5,000 posters	FiA	FiAC	7,500	1,500				1,500				1,500				1,500				1,500				1,500			
						1,000 posters				1,000 posters				1,000 posters				1,000 posters				1,000 posters				1,000 posters			
						H				H				H				H				H				H			
1.2.2	Produce and erect educational signboards at crowded sites and along main roads in the floodplains (300\$ x 2 signboards x 10 communes).	20 signboards	FiAC	Local authorities	6,000					3,000				3,000															
						10 signboards				10 signboards				10 signboards															
						H				H																			
1.2.3	Develop lists of stakeholders (tractor/power tiller owners, farmers, fisherfolks, buffalo/cowherds, hunters, and so on) involved in businesses in Zone 2 and 3 at commune level (100\$ x 10 communes x 5 years).	10 lists to be updated on yearly basis.	FiAC	Local authorities	5,000	1,000				1,000				1,000				1,000				1,000				1,000			
						10 lists				10 updated lists				10 updated lists				10 updated lists				10 updated lists				10 updated lists			
									H				H				H				H				H				H
1.2.4	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 10 communes x 5 years).	100 meetings	FiAC	Local authorities	15,000	3,000				3,000				3,000				3,000				3,000				3,000			
						20 meetings				20 meetings				20 meetings				20 meetings				20 meetings				20 meetings			
						H	H			H	H			H	H			H	H			H	H			H	H		
1.2.5	Set up, structure and restructure Flooded Forest Fire Patrol Teams (FFFPTs) and develop monthly forest fire patrol plan (100\$ x 1 meeting x 10 communes).	10 teams	FiAC	Local authorities	1,000	1,000																							
						10 teams																							
						H																							
1.2.6	Conduct regular forest fire patrol, 5 days/month (250\$ x 4 months x 10 communes x 5 years).	1,000 days	FiAC	Local authorities	50,000	10,000				10,000				10,000				10,000				10,000				10,000			
						200 times				200 times				200 times				200 times				200 times				200 times			
						H	H			H	H			H	H			H	H			H	H			H	H		
<b>1.3</b>	<b>Readiness: prepare structures, equipment and personnel for forest fire prevention and intervention.</b>				<b>210,160</b>																								
<b>1.3.1</b>	<b>Equip FFFPTs with forest fire extinguishing tools and strengthen coordination among WGFFM at provincial and district and CFFPTs at commune level.</b>				<b>129,160</b>																								
1.3.1.1	Meeting with district and provincial administrations to establish WGFFM at district and provincial levels (100\$ x 8 meetings).	-1 WGFFM at provincial level -3 WGFFM at district level	FiA	PDAFF/FiAC	800	800																							
						8 meetings																							
						H																							

1.3.1.2	Organize annual WGFFM meetings at provincial level to discuss challenges faced, interventions to respond the challenges for better future prevention and intervention to flooded forest fires (1,800\$ x 1 meeting x 5 years).	5 meetings	FiA, FiAC & PDAFF	WGFFM at provincial level	9,000	1,800	1,800	1,800	1,800	1,800
						1 meeting	1 meeting	1 meeting	1 meeting	1 meeting
						H H	H H	H H	H H	H H
1.3.1.3	Conduct quarterly WGFFM meetings at district level to discuss challenges faced, find solutions to solve the challenges and monthly forest fire patrol plan (450\$ x 2 meeting x 3 districts x 5 years).	30 meetings	FiAC	WGFFM at district level	13,500	4,500	4,500	4,500	4,500	4,500
						6 meetings	6 meetings	6 meetings	6 meetings	6 meetings
						H H	H H	H H	H H	H H
1.3.1.4	Procure and purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank and 2 water pressure guns and 2 roles of hose (3,800\$ x 1 unit x 10 communes).	10 units	FiA	FiAC	38,000		19,000	19,000		
							5 units	5 units		
							H	H		
1.3.1.5	Procure and purchase 20 motorcycles for forest fire patrol (1,520\$ x 2 motorcycles x 10 communes)	20 units	FiA	FiAC	30,400		15,200	15,200		
							10 units	10 units		
							H H	H H		
1.3.1.6	Procure and purchase portable forest fire extinguishing tools (first aid, camping tents, knapsacks, portable water pump sprayer, goggle, boot, binocular,..) to the patrol teams (1,200\$ x 2 sets x 10 communes)	20 sets	FiA	FiAC	24,000		12,000		12,000	
							10 sets		10 sets	
							H		H	
1.3.1.7	Conduct meetings with CFFPTs at commune level to distribute and guide the teams how to use and condition for using the forest fire extinguishers (100\$ x 2 meetings x 10 communes).	20 meetings	FiAC	Commune authority	2,000		1,000		1,000	
							10 meetings		10 meetings	
							H		H	
1.3.1.8	Attend ToT at provincial level on Flooded Forest Fire Patrol Techniques for FiAC officers and WGFFM's members (45\$ x 3ps x 5 districts x 4 days x 2 trainings)	2 courses	FiA	FiAC	3,240	1,620		1,620		
						1 course		1 course		
							H		H	
1.3.1.9	Conduct 2-day training on Flooded Forest Fire Patrol Techniques at district level for FFFPTs [(20\$ x 25 ps x 2 days) + (45\$ x 3 days x 2 trainers) + (100\$ training materials)] x 3 districts x 2 trainings.	6 courses	FiAC	WGFFM at district level	8,220		4,110		4,110	
							3 courses		3 courses	
							H		H	
<b>1.3.2</b>	<b>Build physical infrastructures for forest fire prevention</b>				<b>81,000</b>					
1.3.2.1	Build watch towers for the commune forest fire patrol teams to observe forest fires (8,000\$ x 6 towers).	6 units	FiA	FiACs & local authorities	48,000		16,000	16,000	16,000	
							2 unit	2 units	2 units	
							H H	H H	H H	
1.3.2.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (5,500\$ x 6 ponds).	6 locations	FiA	FiACs & local authorities	33,000		16,500	16,500		
							3 ponds	3 ponds		
							H H	H H		
<b>2</b>	<b>Output 2: Improved response actions to fires in inundated forest areas</b>				<b>83,620</b>					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (200\$ x 3 cases x 10 communes x 5 years).	150 cases	FiAC	Local authorities	30,000	9,000	7,400	6,000	4,400	3,200
						45 cases	37 cases	30 cases	22 cases	16 cases
						H H	H H	H H	H H	H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (45\$ x 4 ps x 4 days).	1 course	FiA	FiAC	720		720			
							1 course			
							H			
2.3	Strengthen law enforcement against offenders who set forest fires and/or encroached inundated forest lands illegally (180\$ x 2 cases x 10 communes x 5 years).	100 cases	FiAC	Local authorities	18,000	5,400	4,500	3,600	2,700	1,800
						30 cases	25 cases	20 cases	15 cases	10 cases
						H H	H H	H H	H H	H H
2.4	Maintain forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100\$ x 5 months x 10 communes x 5 years).	Lump sump	FiAC	Local authorities	25,000	5,000	5,000	5,000	5,000	5,000
						L.sum	L.sum	L.sum	L.sum	L.sum
						H H	H H	H H	H H	H H
2.5	Organizing provincial workshop for exchanging lessons learnt and	1 workshop	FiA	FiAC	3,900			3,900		

	experiences on flooded forest fire prevention and intervention (3,900\$ x 1 time).									1 workshop						
2.6	Reward individuals who participated actively or injured in the forest fire prevention and intervention (100\$ x 60 people)	60 people	FiAC	Local authorities	6,000	1,800	1,500	1,200	900	600						
						18 persons	15 persons	12 persons	9 persons	6 persons						
						H H	H H	H H	H H	H H						
<b>3</b>	<b>Output 3: Improved restoration of fire damaged areas of inundated forests.</b>					<b>317,200</b>										
3.1	Conduct rapid assessment to identify reasonably technical-sound approaches for flooded forest restoration, including mapping [(100\$ x 3 days x 5 districts) + (60\$ x 3 maps)] x 5 years	5 reports at provincial level	FiA/FAO	FiAC	5,400	1,080	1,080	1,080	1,080	1,080						
						1 report	1 report	1 report	1 report	1 report						
						H	H	H	H	H						
3.2	Mark boundaries of burnt forest sites by concrete poles with small signboards (60\$ x 600 poles).	600 poles	FiAC	CFis & local authorities	36,000	10,800	9,000	7,200	5,400	3,600						
						180 poles	150 poles	120 poles	90 poles	60 poles						
						H H	H H	H H	H H	H H						
3.3	Participate in workshops on tree nursery management and flooded forest restoration approaches (1,700\$ x 2 workshops)	2 workshops	FiA	FAO	3,400		1,700		1,700							
							1 workshop		1 workshop							
							H		H							
3.4	Conduct consultation meetings at commune level with stakeholders to discuss flooded forest restoration plan (150\$ x 10 meetings x 5 years).	50 meetings	FiAC	Local authorities	7,500	1,500	1,500	1,500	1,500	1,500						
						10 meetings	10 meetings	10 meetings	10 meetings	10 meetings						
						H	H	H	H	H						
3.5	Support CFis to establish tree nursery and produce flooded forest seedlings for planting in flooded forest restoration sites (800\$ x 1 nursery x 3 districts x 5 years).	15 nurseries	FiAC	CFis	12,000	2,400	2,400	2,400	2,400	2,400						
						3 nurseries	3 nurseries	3 nurseries	3 nurseries	3 nurseries						
						H H	H H		H H					H H		
3.6	Support and monitor tree planting carried out by local communities in fire-damaged flooded forest sites, including tree planting materials.	225 hectares	FiAC	CFi/local communities	9,000	1,800	1,800	1,800	1,800	1,800						
						45 ha	45 ha	45 ha	45 ha	45 ha						
						H H	H H	H H	H H	H H				H H		
3.7	Cost for seedlings, transportation and planting (1\$ x 1,000 seedlings x 225 ha).	225 ha 225,000 seedlings	FiAC	CFi/local communities	225,000	45,000	45,000	45,000	45,000	45,000						
						-45 ha	-45 ha	-45 ha	-45 ha	-45 ha						
						-45,000 seedlings	-45,000 seedlings	-45,000 seedlings	-45,000 seedlings	-45,000 seedlings						
						H	H	H	H	H				H		
3.8	Maintain flooded tree seedlings in the forest restoration sites (lump: 16,200\$/225 ha)	225 hectares	FIAC	CFis	16,200	1,350	2,700	4,050	4,050	4,050						
						45 ha	90 ha	135 ha	135 ha	135 ha						
						H H	H H	H H	H H	H H				H H		
3.9	Conduct seedling survival and growth rate monitoring in 180 ha of forest restoration sites (lump sum: 2,700\$/180ha).	180 hectares	FiAC	CFis	2,700			675	675	1,350						
								45 ha	45 ha	90 ha						
								H	H	H				H		
<b>4</b>	<b>Backstopping, monitoring and evaluation of the implementation of the IFFPMP.</b>					<b>4,950</b>										
4.1	Participate in baseline survey to be conducted by the working teams of FiA and CAPFISH project (lump sum: 900\$).	1 time	FiA/FAO	FiAC, WGFFM	900	900										
						1 time										
						H										
4.2	Participate in monthly backstopping missions of FiA's working teams to support and direct the IFFPMP's implementation (45\$ x 1 time x 6 months x 3 districts x 5 years).	90 times	FiAC	FiAC, WGFFM	4,050	810	810	810	810	810						
						18 times	18 times	18 times	18 times	18 times						
						H H	H H	H H	H H	H H				H H		
<b>Grand Total:</b>					<b>715,630</b>											

## 10. Activity and budget of the IFFPMP at district level for 2022-2026

### 10.1 Activity and budget of inundated forest fire management for Krakor district

No	Activities	Indicators (5 years)	Responsible		Budget (2022-2026)	2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)				2026 (by quarter)					
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4		
<b>1</b>	<b>Output 1: Effective review, risk reduction and readiness for forest fire protection.</b>					<b>116,207</b>																					
<b>1.1</b>	<b>Review forest fire behavior and lessons learnt on forest fire prevention and intervention and for restoration approach have been applied.</b>					<b>6,060</b>																					
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on forest behavior and forest fire prevention, intervention and restoration approach have been applied (100\$ x 4 meetings x 5 years).	-20 meetings at commune level. -5 reports at district level.	FiA	FiAC	2,000	400		400		400		400		400		400		400		400		400					
						4 meetings 1 report					4 meetings 1 report					4 meetings 1 report					4 meetings 1 report						
						H			H			H			H			H			H			H			
1.1.2	Conduct site observation at fire-affected forests to gather information on physical condition, scope of damages, land use patterns, coordinates and mapping fire-affected flooded forests at district level [(60\$ x 3 days x 4 communes) + (60\$ x 1 map) x 5 years	5 reports at district level	FiA	FiAC	3,960	792		792		792		792		792		792		792		792		792		792			
						1 reports					1 reports					1 reports					1 reports						
						H	H				H	H				H	H				H	H			H		
1.1.3	Organize provincial workshop to present and endorse the IFFPMP	1 meeting	FiA	FiA	100	100																					
						1 meeting																					
						H																					
<b>1.2</b>	<b>Risk Reduction: Reduce risks of forest fires by promoting local awareness on participatory forest fire prevention and intervention.</b>					<b>33,800</b>																					
1.2.1	Produce and distribute posters for promoting awareness of local communities and involved stakeholders (1.5\$ x 100 posters x 4 communes x 5 years).	2,000 posters	FiA	FiAC	3,000	600		600		600		600		600		600		600		600		600		600			
						400 posters					400 posters					400 posters					400 posters						
						H					H					H					H				H		
1.2.2	Produce and erect educational signboards at crowded sites and along main roads in the floodplains (300\$ x 2 signboards x 4 communes).	8 signboards	FiAC	Local authorities	2,400			1,200		1,200																	
											4 signboards					4 signboards											
											H				H												
1.2.3	Develop lists of stakeholders (tractor/power tiller owners, farmers, fisherfolks, buffalo/cowherds, hunters, and so on) involved in businesses in Zone 2 and 3 at commune level (100\$ x 4 communes x 5 years).	4 lists to be updated on yearly basis.	FiAC	Local authorities	2,000	400		400		400		400		400		400		400		400		400		400			
						4 lists					4 updated lists					4 updated lists					4 updated lists						
											H				H						H				H		
1.2.4	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		1,200		1,200		1,200		1,200		1,200		1,200		1,200		1,200		1,200			
						8 meetings					8 meetings					8 meetings					8 meetings						
						H	H				H	H				H	H				H	H			H		
1.2.5	Set up, structure and restructure Flooded Forest Fire Patrol Teams (FFFPTs) and develop monthly forest fire patrol plan (100\$ x 1 meeting x 4 communes).	4 teams	FiAC	Local authorities	400	400																					
						4 teams																					
						H																					
1.2.6	Conduct regular forest fire patrol, 5 days/month (250\$ x 4 months x 4 communes x 5 years).	400 times	FiAC	Local authorities	20,000	4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000		4,000			
						80 times					80 times					80 times					80 times						
						H	H				H	H				H	H				H	H			H		
<b>1.3</b>	<b>Readiness: prepare structures, equipment and personnel for forest fire prevention and intervention.</b>					<b>76,347</b>																					
<b>1.3.1</b>	<b>Equip FFFPTs with forest fire extinguishing tools and strengthen coordination among WGFFM at provincial and district and CFFPTs at commune level.</b>					<b>49,347</b>																					
1.3.1.1	Meeting with district and provincial administrations to establish WGFFM at district and provincial levels (267\$ x 2 meetings).	1 WGFFM at district level	FiA	PDAFF/FiAC	267	267																					
						2 meetings																					
						H																					

1.3.1.2	Participate in annual WGFFM meetings at provincial level to discuss challenges faced, interventions to respond the challenges for better future prevention and intervention to flooded forest fires (600\$ x 1 meeting x 5 years).	5 meetings	FiA	FiAC/PDAFF & WGFFM at provincial level	3,000	600	600	600	600	600
						1 meeting	1 meeting	1 meeting	1 meeting	1 meeting
						H H	H H	H H	H H	H H
1.3.1.3	Conduct quarterly WGFFM meetings at district level to discuss challenges faced, find solutions to solve the challenges and monthly forest fire patrol plan (450\$ x 2 meeting x 5 years).	10 meetings	FiAC's division	District authority	4,500	900	900	900	900	900
						2 meetings	2 meetings	2 meetings	2 meetings	2 meetings
						H H	H H	H H	H H	H H
1.3.1.4	Procure and purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank and 2 water pressure guns and 2 roles of hose (3,800\$ x 1 unit x 4 communes).	4 units	FiA	FiAC	15,200		7,600	7,600		
							2 units	2 units		
							H	H		
1.3.1.5	Procure and purchase motorcycles for forest fire patrol (1,520\$ x 2 motorcycles x 4 communes)	8 units	FiA	FiAC	12,160		6,080	6,080		
							4 units	4 units		
							H H	H H		
1.3.1.6	Procure and purchase portable forest fire extinguishing tools (first aid, camping tents, knapsacks, portable water pump sprayer, goggle, boot, binocular,..) to the patrol teams (1,200\$ x 2 sets x 4 communes)	8 sets	FiAC	Local authorities	9,600		4,800		4,800	
							4 sets		4 sets	
							H		H	
1.3.1.7	Conduct meetings with CFFPTs at commune level to distribute and guide the teams how to use and condition for using the forest fire extinguishers (100\$ x 2 meetings x 4 communes).	8 meetings	FiAC	Commune authority	800		400		400	
							4 meetings		4 meetings	
							H		H	
1.3.1.8	Attend ToT at provincial level on Flooded Forest Fire Patrol Techniques for FiAC officers and WGFFM's members (45\$ x 3ps x 4 days x 2 trainings)	2 courses	FiA	FiAC	1,080	540		540		
						1 course		1 course		
							H		H	
1.3.1.9	Conduct 2-day training on Flooded Forest Fire Patrol Techniques at district level for FFFPTs [(20\$ x 25 ps x 2 days) + (45\$ x 3 days x 2 trainers) + (100\$ training materials)] x 2 trainings	2 courses	FiAC	WGFFM at district level	2,740		1,370		1,370	
							1 course		1 course	
							H		H	
<b>1.3.2 Build physical infrastructures for forest fire prevention</b>					<b>27,000</b>					
1.3.2.1	Build watch towers for the commune forest fire patrol teams to observe forest fires (8,000\$ x 2 towers).	2 units	FiA	FiACs & local authorities	16,000		8,000	8,000		
							1 unit	1 unit		
							H H	H H		
1.3.2.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (5,500\$ x 2 ponds).	2 locations	FiA	FiACs & local authorities	11,000		5,500	5,500		
							1 pond	1 pond		
							H H	H H		
<b>2 Output 2: Improved response actions to fires in inundated forest areas</b>					<b>33,140</b>					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (200\$ x 3 cases x 4 communes x 5 years).	60 cases	FiAC	Local authorities	12,000	3,600	3,000	2,400	1,800	1,200
						18 cases	15 cases	12 cases	9 cases	6 cases
						H H	H H	H H	H H	H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (240\$).	1 course	FiA	FiAC	240		240			
							1 course			
							H			
2.3	Strengthen law enforcement against offenders who set forest fires and/or encroached inundated forest lands illegally (180\$ x 2 cases x 4 communes x 5 years).	40 cases	FiAC	Local authorities	7,200	2,160	1,800	1,440	1,080	720
						12 cases	10 cases	8 cases	6 cases	4 cases
						H H	H H	H H	H H	H H
2.4	Maintain forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100\$ x 5 months x 4 communes x 5 years).	Lump sum	FiAC	Local authorities	10,000	2,000	2,000	2,000	2,000	2,000
						L.sum	L.sum	L.sum	L.sum	L.sum
						H H	H H	H H	H H	H H



2.5	Organizing provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (1,300\$ x 1 time).	1 workshop	FiA	FiAC	1,300			1,300		
								1 workshop		
								H		
2.6	Reward individuals who participated actively or injured in the forest fire prevention and intervention (100\$ x 24 people)	24 people	FiAC	Local authorities	2,400	700	600	500	400	200
						7 persons	6 persons	5 persons	4 persons	2 persons
						H H	H H	H H	H H	H H
<b>3</b>	<b>Output 3: Improved restoration of fire damaged areas of inundated forests.</b>				<b>108,993</b>					
3.1	Conduct rapid assessment to identify reasonably technical-sound approaches for flooded forest restoration, including mapping [(100\$ x 3 days) + (60\$ x 1 map)] x 5years	5 reports at provincial level	FiA/FAO	FiAC	2,160	432	432	432	432	432
						1 report	1 report	1 report	1 report	1 report
						H	H	H	H	H
3.2	Mark boundaries of burnt forest sites by concrete poles with small signboards (60\$ x 240 poles).	240 poles	FiAC	CFis and local authorities	14,400	4,320	3,600	2,880	2,160	1,440
						72 poles	60 poles	48 poles	36 poles	24 poles
						H H	H H	H H	H H	H H
3.3	Participate in workshops on tree nursery management and flooded forest restoration approaches (566\$ x 2 workshops)	2 workshops	FiA	FAO	1,133		566		567	
							1 workshop		1 workshop	
							H		H	
3.4	Conduct consultation meetings at commune level with stakeholders to discuss flooded forest restoration plan (150\$ x 4 meetings x 5 years).	20 meetings	FiAC	Local authorities	3,000	600	600	600	600	600
						4 meetings	4 meetings	4 meetings	4 meetings	4 meetings
						H	H	H	H	H
3.5	Support CFis to establish tree nursery and produce flooded forest seedlings for planting in flooded forest restoration sites (800\$ x 1 nursery x 5 years).	5 nurseries	FiAC	CFis	4,000	800	800	800	800	800
						1 nursery	1 nursery	1 nursery	1 nursery	1 nursery
						H H	H H	H H	H H	H H
3.6	Support and monitor tree planting carried out by local communities in fire-damaged flooded forest sites, including tree planting materials (Lump: 3,000\$).	75 hectares	FiAC	CFi/local communities	3,000	600	600	600	600	600
						15 ha	15 ha	15 ha	15 ha	15 ha
						H H	H H	H H	H H	H H
3.7	Cost for seedlings, transportation and planting (1\$ x 1,000 seedlings x 75 ha).	75,000 seedlings	FiAC	CFi/local communities	75,000	15,000	15,000	15,000	15,000	15,000
						-15 ha -15,000 seedlings	-15 ha -15,000 seedlings	-15 ha -15,000 seedlings	-15 ha -15,000 seedlings	-15 ha -15,000 seedlings
						H	H	H	H	H
3.8	Maintain flooded tree seedlings in the forest restoration sites (lump: 5,400\$/75 ha)	75 hectares	FiAC	CFis	5,400	450	900	1,350	1,350	1,350
						15 ha	30 ha	45 ha	45 ha	45 ha
						H H	H H	H H	H H	H H
3.9	Conduct seedling survival and growth rate monitoring in 180 ha of forest restoration sites (lump sum: 900\$/60ha).	60 hectares	FiAC	CFis	900			225	225	450
								15 ha	15 ha	30 ha
								H	H	H
<b>4</b>	<b>Backstopping, monitoring and evaluation of the implementation of the IFFPMP.</b>				<b>1,710</b>					
4.1	Participate in baseline survey to be conducted by the working teams of FiA and CAPFISH project (lump sum: 900\$).	1 time	FiA/FAO	FiAC, WGFFM	360	360				
						1 time				
						H				
4.2	Participate in monthly backstopping missions of FiA's working teams to support and direct the IFFPMP's implementation (45\$ x 1 time x 6 months x 5 years).	30 times	FiAC	FiAC, WGFFM	1,350	270	270	270	270	270
						6 times	6 times	6 times	6 times	6 times
						H H	H H	H H	H H	H H
<b>Grand Total:</b>					<b>260,050</b>					

## 10.2 Activity and budget plan of inundated forest fire management for Kandieng district

No	Activities	Indicators (5 years)	Responsible		Budget (2022- 2026)	2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)				2026 (by quarter)								
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4					
<b>1</b>	<b>Output 1: Effective review, risk reduction and readiness for forest fire protection.</b>					<b>96,827</b>																								
<b>1.1</b>	<b>Review forest fire behavior and lessons learnt on forest fire prevention and intervention and for restoration approach have been applied.</b>					<b>4,570</b>																								
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on forest behavior and forest fire prevention, intervention and restoration approach have been applied (100\$ x 3 meetings x 5 years).	-15 meetings at commune level. -5 reports at district level.	FiA	FiAC	1,500	300		300		300		300		300		300		300		300		300		300		300		300		
						3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	
						H				H				H				H				H				H				
1.1.2	Conduct site observation at fire-affected forests to gather information on physical condition, scope of damages, land use patterns, coordinates and mapping fire-affected flooded forests at district level [(60\$ x 3 days x 3 communes) + (60\$ x 1 map) x 5 years	5 reports at district level	FiA	FiAC	2,970	594		594		594		594		594		594		594		594		594		594		594		594		
						1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		1 reports		
						H	H			H	H			H	H			H	H			H	H			H	H			
1.1.3	Organize provincial workshop to present and endorse the IFFPMP	1 meeting	FiA	FiA	100	300																								
						1 meeting																								
						H																								
<b>1.2</b>	<b>Risk Reduction: Reduce risks of forest fires by promoting local awareness on participatory forest fire prevention and intervention.</b>					<b>25,350</b>																								
1.2.1	Produce and distribute posters for promoting awareness of local communities and involved stakeholders (1.5\$ x 100 posters x 3 communes x 5 years).	1,500 posters	FiA	FiAC	2,250	450		450		450		450		450		450		450		450		450		450		450		450		
						300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		300 posters		
						H		H		H		H		H		H		H		H		H		H		H		H		
1.2.2	Produce and erect educational signboards at crowded sites and along main roads in the floodplains (300\$ x 2 signboards x 3 communes).	6 signboards	FiAC	Local authorities	1,800			900		900																				
								3 signboards		3 signboards																				
						H		H		H		H		H		H		H		H		H		H		H		H		
1.2.3	Develop lists of stakeholders (tractor/power tiller owners, farmers, fisher-folks, buffalo/cowherds, hunters, and so on) involved in businesses in Zone 2 and 3 at commune level (100\$ x 3 communes x 5 years).	3 lists to be updated on yearly basis.	FiAC	Local authorities	1,500	300		300		300		300		300		300		300		300		300		300		300		300		
						3 lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		3 updated lists		
								H		H		H		H		H		H		H		H		H		H		H		
1.2.4	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 3 communes x 5 years).	30 meetings	FiAC	Local authorities	4,500	900		900		900		900		900		900		900		900		900		900		900		900		
						6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		6 meetings		
						H	H			H	H			H	H			H	H			H	H			H	H			
1.2.5	Set up, structure and restructure Flooded Forest Fire Patrol Teams (FFFPTs) and develop monthly forest fire patrol plan (100\$ x 1 meeting x 3 communes).	3 teams	FiAC	Local authorities	300	300																								
						3 teams																								
						H																								
1.2.6	Conduct regular forest fire patrol, 5 days/month (250\$ x 4 months x 3 communes x 5 years).	300 times	FiAC	Local authorities	15,000	3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		
						60 times		60 times		60 times		60 times		60 times		60 times		60 times		60 times		60 times		60 times		60 times		60 times		
						H	H			H	H			H	H			H	H			H	H			H	H			
<b>1.3</b>	<b>Readiness: prepare structures, equipment and personnel for forest fire prevention and intervention.</b>					<b>66,907</b>																								
<b>1.3.1</b>	<b>Equip FFFPTs with forest fire extinguishing tools and strengthen coordination among WGFFM at provincial and district and CFFPTs at commune level.</b>					<b>39,907</b>																								
1.3.1.1	Meeting with district and provincial administrations to establish WGFFM at district and provincial levels (267\$/2 meetings).	1 WGFFM at district level	FiA	PDAFF/FIAC	267	267																								
						2 meetings																								
						H																								

1.3.1.2	Participate in annual WGFFM meetings at provincial level to discuss challenges faced, interventions to respond to the challenges for better future prevention and intervention to flooded forest fires (600\$ x 1 meeting x 5 years).	5 meetings	FiA	FiAC/PDAFF & WGFFM at provincial level	3,000	600 1 meeting	600 1 meeting	600 1 meeting	600 1 meeting	600 1 meeting
						H H	H H	H H	H H	H H
1.3.1.3	Conduct quarterly WGFFM meetings at district level to discuss challenges faced, find solutions to solve the challenges and monthly forest fire patrol plan (450\$ x 2 meeting x 5 years).	10 meetings	FiAC's division	District authority	4,500	900 2 meetings	900 2 meetings	900 2 meetings	900 2 meetings	900 2 meetings
						H H	H H	H H	H H	H H
1.3.1.4	Procure and purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank and 2 water pressure guns and 2 roles of hose (3,800\$ x 1 unit x 3 communes).	3 units	FiA	FiAC	11,400		7,600 2 units	3,800 1 unit		
							H	H		
1.3.1.5	Procure and purchase motorcycles for forest fire patrol (1,520\$ x 2 motorcycles x 3 communes)	6 units	FiA	FiAC	9,120		4,560 3 units	4,560 3 units		
							H H	H H		
1.3.1.6	Procure and purchase portable forest fire extinguishing tools (first aid, camping tents, knapsacks, portable water pump sprayer, goggle, boot, binocular,..) to the patrol teams (1,200\$ x 2 sets x 3 communes)	6 sets	FiAC	Local authorities	7,200		3,600 3 sets		3,600 3 sets	
							H		H	
1.3.1.7	Conduct meetings with CFFPTs at commune level to distribute and guide the teams how to use and condition for using the forest fire extinguishers (100\$ x 2 meetings x 3 communes).	6 meetings	FiAC	Commune authority	600		300 3 meetings		300 3 meetings	
							H		H	
1.3.1.8	Attend ToT at provincial level on Flooded Forest Fire Patrol Techniques for FiAC officers and WGFFM's members (45\$ x 3ps x 4 days x 2 trainings)	2 courses	FiA	FiAC	1,080	540 1 course		540 1 course		
							H		H	
1.3.1.9	Conduct 2-day training on Flooded Forest Fire Patrol Techniques at district level for FFFPTs [(20\$ x 25 ps x 2 days) + (45\$ x 3 days x 2 trainers) + (100\$ training materials)] x 2 trainings	2 courses	FiAC	WGFFM at district level	2,740		1,370 1 course		1,370 1 course	
							H		H	
<b>1.3.2</b>	<b>Build physical infrastructures for forest fire prevention</b>				<b>27,000</b>					
1.3.3.1	Build watch towers for the commune forest fire patrol teams to observe forest fires (8,000\$ x 2 towers).	2 units	FiA	FiACs & local authorities	16,000		8,000 1 unit	8,000 1 unit		
							H H	H H		
1.3.3.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (5,500\$ x 2 ponds).	2 locations	FiA	FiACs & local authorities	11,000		5,500 1 pond	5,500 1 pond		
							H H	H H		
<b>2</b>	<b>Output 2: Improved response actions to fires in inundated forest areas</b>				<b>25,240</b>					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (200\$ x 3 cases x 3 communes x 5 years).	45 cases	FiAC	Local authorities	9,000	2,600 13 cases	2,200 11 cases	1,800 9 cases	1,400 7 cases	1,000 5 cases
						H H	H H	H H	H H	H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (240\$).	1 course	FiA	FiAC	240		240 1 course			
							H			
2.3	Strengthen law enforcement against offenders who set forest fires and/or encroached inundated forest lands illegally (180\$ x 2 cases x 3 communes x 5 years).	30 cases	FiAC	Local authorities	5,400	1,620 9 cases	1,440 8 cases	1,080 6 cases	720 4 cases	540 3 cases
						H H	H H	H H	H H	H H
2.4	Maintain forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100\$ x 5 months x 3 communes x 5 years).	Lump sump	FiAC	Local authorities	7,500	1,500 L.sum	1,500 L.sum	1,500 L.sum	1,500 L.sum	1,500 L.sum
						H H	H H	H H	H H	H H

2.5	Organizing provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (1,300\$ x 1 time).	1 workshop	FiA	FiAC	1,300			1,300		
								1 workshop		
								H		
2.6	Reward individuals who participated actively or injured in the forest fire prevention and intervention (100\$ x 24 people)	18 people	FiAC	Local authorities	1,800	500	400	400	300	200
						5 persons	4 persons	4 persons	3 persons	2 persons
						H H	H H	H H	H H	H H
<b>3</b>	<b>Output 3: Improved restoration of fire damaged areas of inundated forests.</b>				<b>104,103</b>					
3.1	Conduct rapid assessment to identify reasonably technical-sound approaches for flooded forest restoration, including mapping [(100\$ x 3 days) + (60\$ x 1 map)] x 5 years	5 reports at provincial level	FiA/FAO	FiAC	1,620	324	324	324	324	324
						1 report	1 report	1 report	1 report	1 report
						H	H	H	H	H
3.2	Mark boundaries of burnt forest sites by concrete poles with small signboards (60\$ x 180 poles).	180 poles	FiAC	CFis and local authorities	10,800	3,240	2,700	2,160	1,620	1,080
						54 poles	45 poles	36 poles	27 poles	18 poles
						H H	H H	H H	H H	H H
3.3	Participate in workshops on tree nursery management and flooded forest restoration approaches (566\$ x 2 workshops)	2 workshops	FiA	FAO	1,133		566		567	
							1 workshop		1 workshop	
							H		H	
3.4	Conduct consultation meetings at commune level with stakeholders to discuss flooded forest restoration plan (150\$ x 3 meetings x 5 years).	15 meetings	FiAC	Local authorities	2,250	450	450	450	450	450
						3 meetings	3 meetings	3 meetings	3 meetings	3 meetings
						H	H	H	H	H
3.5	Support CFis to establish tree nursery and produce flooded forest seedlings for planting in flooded forest restoration sites (800\$ x 1 nursery x 5 years).	5 nurseries	FiAC	CFis	4,000	800	800	800	800	800
						1 nursery	1 nursery	1 nursery	1 nursery	1 nursery
						H H	H H	H H	H H	H H
3.6	Support and monitor tree planting carried out by local communities in fire-damaged flooded forest sites, including tree planting materials (Lump: 3,000\$).	75 hectares	FiAC	CFi/local communities	3,000	600	600	600	600	600
						15 ha	15 ha	15 ha	15 ha	15 ha
						H H	H H	H H	H H	H H
3.7	Cost for seedlings, transportation and planting (1\$ x 1,000 seedlings x 75 ha).	75,000 seedlings	FiAC	CFis and local communities	75,000	15,000	15,000	15,000	15,000	15,000
						-15 ha seedlings	-15 ha seedlings	-15 ha seedlings	-15 ha seedlings	-15 ha seedlings
						H	H	H	H	H
3.8	Maintain flooded tree seedlings in the forest restoration sites (lump: 5,400\$/75 ha)	75 hectares	FiAC	CFis	5,400	450	900	1,350	1,350	1,350
						15 ha	30 ha	45 ha	45 ha	45 ha
						H H	H H	H H	H H	H H
3.9	Conduct seedling survival and growth rate monitoring in 180 ha of forest restoration sites (lump sum: 900\$/60ha).	60 hectares	FiAC	CFis	900			225	225	450
								15 ha	15 ha	30 ha
								H	H	H
<b>4</b>	<b>Backstopping, monitoring and evaluation of the implementation of the IFFPMP.</b>				<b>1,620</b>					
4.1	Participate in baseline survey to be conducted by the working teams of FiA and CAPFISH project (lump sum: 900\$).	1 time	FiA/FAO	FiAC, WGFFM	270	270				
						1 time				
						H				
4.2	Participate in monthly backstopping missions of FiA's working teams to support and direct the IFFPMP's implementation (45\$ x 1 time x 6 months x 5 years).	30 times	FiAC	FiAC, WGFFM	1,350	270	270	270	270	270
						6 times	6 times	6 times	6 times	6 times
						H H	H H	H H	H H	H H
<b>Grand Total:</b>					<b>227,790</b>					

### 10.3 Activity and budget of the IFFPMP for Bakan district

No	Activities	Indicators (5 years)	Responsible		Budget (2022-2026)	2022 (by quarter)				2023 (by quarter)				2024 (by quarter)				2025 (by quarter)				2026 (by quarter)							
			Lead	Support		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
<b>1</b>	<b>Output 1: Effective review, risk reduction and readiness for forest fire protection.</b>				<b>96,827</b>																								
<b>1.1</b>	<b>Review forest fire behavior and lessons learnt on forest fire prevention and intervention and for restoration approach have been applied.</b>				<b>4,570</b>																								
1.1.1	Conduct consultation meetings with stakeholders at commune level to collect information on forest behavior and forest fire prevention, intervention and restoration approach have been applied (100\$ x 3 meetings x 5 years).	-15 meetings at commune level. -5 reports at district level.	FiA	FiAC	1,500	300		300		300		300		300		300		300		300		300		300		300		300	
						3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report	3 meetings	1 report
						H			H			H			H			H			H			H			H		
1.1.2	Conduct site observation at fire-affected forests to gather information on physical condition, scope of damages, land use patterns, coordinates and mapping fire-affected flooded forests at district level [(60\$ x 3 days x 3 communes) + (60\$ x 1 map) x 5 years]	5 reports at district level	FiA	FiAC	2,970	594		594		594		594		594		594		594		594		594		594		594		594	
						1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports	1 reports
						H	H		H	H		H	H		H	H		H	H		H	H		H	H		H	H	
1.1.3	Organize provincial workshop to present and endorse the IFFPMP	1 meeting	FiA	FiA	100	300		1 meeting																					
						H																							
<b>1.2</b>	<b>Risk Reduction: Reduce risks of forest fires by promoting local awareness on participatory forest fire prevention and intervention.</b>				<b>25,350</b>																								
1.2.1	Produce and distribute posters for promoting awareness of local communities and involved stakeholders (1.5\$ x 100 posters x 3 communes x 5 years).	1,500 posters	FiA	FiAC	2,250	450		450		450		450		450		450		450		450		450		450		450		450	
						300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	300 posters	
						H			H			H			H			H			H			H			H		
1.2.2	Produce and erect educational signboards at crowded sites and along main roads in the floodplains (300\$ x 2 signboards x 3 communes).	6 signboards	FiAC	Local authorities	1,800			900		900																			
								3 signboards	3 signboards																				
								H			H																		
1.2.3	Develop lists of stakeholders (tractor/power tiller owners, farmers, fisher-folks, buffalo/cowherds, hunters, and so on) involved in businesses in Zone 2 and 3 at commune level (100\$ x 3 communes x 5 years).	3 lists to be updated on yearly basis.	FiAC	Local authorities	1,500	300		300		300		300		300		300		300		300		300		300		300		300	
						3 lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	3 updated lists	
								H			H			H			H			H			H			H			
1.2.4	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 3 communes x 5 years).	30 meetings	FiAC	Local authorities	4,500	900		900		900		900		900		900		900		900		900		900		900		900	
						6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	6 meetings	
						H	H		H	H		H	H		H	H		H	H		H	H		H	H		H	H	
1.2.5	Set up, structure and restructure Flooded Forest Fire Patrol Teams (FFFPTs) and develop monthly forest fire patrol plan (100\$ x 1 meeting x 3 communes).	3 teams	FiAC	Local authorities	300	300		3 teams																					
						H																							
1.2.6	Conduct regular forest fire patrol, 5 days/month (250\$ x 4 months x 3 communes x 5 years).	300 times	FiAC	Local authorities	15,000	3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000		3,000	
						60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	60 times	
						H	H		H	H		H	H		H	H		H	H		H	H		H	H		H	H	
<b>1.3</b>	<b>Readiness: prepare structures, equipment and personnel for forest fire prevention and intervention.</b>				<b>66,907</b>																								
<b>1.3.1</b>	<b>Equip FFFPTs with forest fire extinguishing tools and strengthen coordination among WGFFM at provincial and district and CFFPTs at commune level.</b>				<b>39,907</b>																								
1.3.1.1	Meeting with district and provincial administrations to establish WGFFM at district and provincial levels (267\$/2 meetings).	1 WGFFM at district level	FiA	PDAFF/FiAC	267	267		2 meetings																					
						H																							

1.3.1.2	Participate in annual WGFFM meetings at provincial level to discuss challenges faced, interventions to respond to the challenges for better future prevention and intervention to flooded forest fires (600\$ x 1 meeting x 5 years).	5 meetings	FiA	FiAC/PDAFF & WGFFM at provincial level	3,000	600 1 meeting	600 1 meeting	600 1 meeting	600 1 meeting	600 1 meeting
						H H	H H	H H	H H	H H
1.3.1.3	Conduct quarterly WGFFM meetings at district level to discuss challenges faced, find solutions to solve the challenges and monthly forest fire patrol plan (450\$ x 2 meeting x 5 years).	10 meetings	FiAC's division	District authority	4,500	900 2 meetings	900 2 meetings	900 2 meetings	900 2 meetings	900 2 meetings
						H H	H H	H H	H H	H H
1.3.1.4	Procure and purchase power tillers equipped with 2 motorized pumps, 1,000-liter water tank and 2 water pressure guns and 2 roles of hose (3,800\$ x 1 unit x 3 communes).	3 units	FiA	FiAC	11,400		7,600 2 units	3,800 1 unit		
							H	H		
1.3.1.5	Procure and purchase motorcycles for forest fire patrol (1,520\$ x 2 motorcycles x 3 communes)	6 units	FiA	FiAC	9,120		4,560 3 units	4,560 3 units		
							H H	H H		
1.3.1.6	Procure and purchase portable forest fire extinguishing tools (first aid, camping tents, knapsacks, portable water pump sprayer, goggle, boot, binocular,..) to the patrol teams (1,200\$ x 2 sets x 3 communes)	6 sets	FiAC	Local authorities	7,200		3,600 3 sets		3,600 3 sets	
							H		H	
1.3.1.7	Conduct meetings with CFFPTs at commune level to distribute and guide the teams how to use and condition for using the forest fire extinguishers (100\$ x 2 meetings x 3 communes).	6 meetings	FiAC	Commune authority	600		300 3 meetings		300 3 meetings	
							H		H	
1.3.1.8	Attend ToT at provincial level on Flooded Forest Fire Patrol Techniques for FiAC officers and WGFFM's members (45\$ x 3ps x 4 days x 2 trainings)	2 courses	FiA	FiAC	1,080	540 1 course		540 1 course		
							H		H	
1.3.1.9	Conduct 2-day training on Flooded Forest Fire Patrol Techniques at district level for FFFPTs [(20\$ x 25 ps x 2 days) + (45\$x3 daysx2 trainers)+(100\$ training materials)] x2 trainings	2 courses	FiAC	WGFFM at district level	2,740		1,370 1 course		1,370 1 course	
							H		H	
<b>1.3.2 Build physical infrastructures for forest fire prevention</b>					<b>27,000</b>					
1.3.2.1	Build watch towers for the commune forest fire patrol teams to observe forest fires (8,000\$ x 2 towers).	2 units	FiA	FiACs & local authorities	16,000		8,000 1 unit	8,000 1 unit		
							H H	H H		
1.3.2.2	Rehabilitate natural ponds to retain water for putting forest fires and fish conservation (5,500\$ x 2 ponds).	2 locations	FiA	FiACs & local authorities	11,000		5,500 1 pond	5,500 1 pond		
							H H	H H		
<b>2 Output 2: Improved response actions to fires in inundated forest areas</b>					<b>25,240</b>					
2.1	Follow up daily report and stand by for urgent forest fire intervention as required by the patrol teams (200\$ x 3 cases x 3 communes x 5 years).	45 cases	FiAC	Local authorities	9,000	2,600 13 cases	2,200 11 cases	1,800 9 cases	1,400 7 cases	1,000 5 cases
						H H	H H	H H	H H	H H
2.2	Attend ToT at national level on Collecting Evidence, Preparing Offence Reports for FiAC's trainers (240\$).	1 course	FiA	FiAC	240		240 1 course			
							H			
2.3	Strengthen law enforcement against offenders who set forest fires and/or encroached inundated forest lands illegally (180\$ x 2 cases x 3 communes x 5 years).	30 cases	FiAC	Local authorities	5,400	1,620 9 cases	1,440 8 cases	1,080 6 cases	720 4 cases	540 3 cases
						H H	H H	H H	H H	H H
2.4	Maintain forest fire extinguishing equipment and buy additional required forest fire extinguishing tools (100\$ x 5 months x 3 communes x 5 years).	Lump sump	FiAC	Local authorities	7,500	1,500 L.sum	1,500 L.sum	1,500 L.sum	1,500 L.sum	1,500 L.sum
						H H	H H	H H	H H	H H



2.5	Organizing provincial workshop for exchanging lessons learnt and experiences on flooded forest fire prevention and intervention (1,300\$ x 1 time).	1 workshop	FiA	FiAC	1,300			1,300		
								1 workshop		
								H		
2.6	Reward individuals who participated actively or injured in the forest fire prevention and intervention (100\$ x 24 people)	18 people	FiAC	Local authorities	1,800	500	400	400	300	200
						5 persons	4 persons	4 persons	3 persons	2 persons
						H H	H H	H H	H H	H H
<b>3</b>	<b>Output 3: Improved restoration of fire damaged areas of inundated forests.</b>				<b>104,103</b>					
3.1	Conduct rapid assessment to identify reasonably technical-sound approaches for flooded forest restoration, including mapping [(100\$ x 3 days) + (60\$ x1 map)] x 5 years	5 reports at provincial level	FiA/FAO	FiAC	1,620	324	324	324	324	324
						1 report	1 report	1 report	1 report	1 report
						H	H	H	H	H
3.2	Mark boundaries of burnt forest sites by concrete poles with small signboards (60\$ x 180 poles).	180 poles	FiAC	CFis and local authorities	10,800	3,240	2,700	2,160	1,620	1,080
						54 poles	45 poles	36 poles	27 poles	18 poles
						H H	H H	H H	H H	H H
3.3	Participate in workshops on tree nursery management and flooded forest restoration approaches (566\$ x 2 workshops)	2 workshops	FiA	FAO	1,133		566		567	
							1 workshop		1 workshop	
							H		H	
3.4	Conduct consultation meetings at commune level with stakeholders to discuss flooded forest restoration plan (150\$ x 3 meetings x 5 years).	15 meetings	FiAC	Local authorities	2,250	450	450	450	450	450
						3 meetings	3 meetings	3 meetings	3 meetings	3 meetings
						H	H	H	H	H
3.5	Support CFis to establish tree nursery and produce flooded forest seedlings for planting in flooded forest restoration sites (800\$ x 1 nursery x 5 years).	5 nurseries	FiAC	CFis	4,000	800	800	800	800	800
						1 nursery	1 nursery	1 nursery	1 nursery	1 nursery
						H H	H H	H H	H H	H H
3.6	Support and monitor tree planting carried out by local communities in fire-damaged flooded forest sites, including tree planting materials (Lump: 3,000\$).	75 hectares	FiAC	CFi/local communities	3,000	600	600	600	600	600
						15 ha	15 ha	15 ha	15 ha	15 ha
						H H	H H	H H	H H	H H
3.7	Cost for seedlings, transportation and planting (1\$ x 1,000 seedlings x 75 ha).	75,000 seedlings	FiAC	CFis and local communities	75,000	15,000	15,000	15,000	15,000	15,000
						-15 ha -15,000 seedlings	-15 ha -15,000 seedlings	-15 ha -15,000 seedlings	-15 ha -15,000 seedlings	-15 ha -15,000 seedlings
						H	H	H	H	H
3.8	Maintain flooded tree seedlings in the forest restoration sites (lump: 5,400\$/75 ha)	75 hectares	FiAC	CFis	5,400	450	900	1,350	1,350	1,350
						15 ha	30 ha	45 ha	45 ha	45 ha
						H H	H H	H H	H H	H H
3.9	Conduct seedling survival and growth rate monitoring in 180 ha of forest restoration sites (lump sum: 900\$/60ha).	60 hectares	FiAC	CFis	900			225	225	450
								15 ha	15 ha	30 ha
								H	H	H
<b>4</b>	<b>Backstopping, monitoring and evaluation of the implementation of the IFFPMP.</b>				<b>1,620</b>					
4.1	Participate in baseline survey to be conducted by the working teams of FiA and CAPFISH project (lump sum: 900\$).	1 time	FiA/FAO	FiAC, WGFFM	270	270				
						1 time				
						H				
4.2	Participate in monthly backstopping missions of FiA's working teams to support and direct the IFFPMP's implementation (45\$ x 1 time x 6 months x 5 years).	30 times	FiAC	FiAC, WGFFM	1,350	270	270	270	270	270
						6 times	6 times	6 times	6 times	6 times
						H H	H H	H H	H H	H H
<b>Grand Total:</b>					<b>227,790</b>					



# 11. Annexes

## Annex 1: List of flooded forest species in the floodplains of Tonle Sap Great Lake

ល.រ	ឈ្មោះខ្មែរ ( Khmer Name )	ឈ្មោះវិទ្យាសាស្ត្រ ( Scientific Name )
១	កក់ត្រុង ឬ តាតុក	<i>Cyperus elatus</i>
២	កក់ត្រាម	<i>Cyperus kyllingia or nemoralis</i>
៣	កប្បាសព្រៃ	<i>Croton krabas or Cochlopermum religiosum</i>
៤	កញ្ជើចាម	<i>Capparis microcantha (Dc.)</i>
៥	កង្កែប	<i>Neptunia oleracea</i>
៦	កណ្តក់	
៧	កង្កួលអង្គុំ	
៨	កង្កែបវែង	<i>Polygonum tomentosum</i>
៩	កណ្តាច់អៀរ	<i>Pouzolzia zeylamica</i>
១០	កង្កួល	<i>Xanthophyllum glancam</i>
១១	កង្កួរ	
១២	ក្រូច	<i>Nauclea officinalis</i>
១៣	ក្រូច	<i>Mimusops elengil</i>
១៤	កាក្រីង ឬ ឱត្រីង	<i>Cordia Sp</i>
១៥	កាណេ " ឆៃថ្មី "	<i>Raphanus sativus</i>
១៦	កាណិល ឬ ក្រូច	<i>Corchorus capsularis</i>
១៧	កំលង់ត្នី	
១៨	កំពិលប្លូល ( រឿ )	<i>Catharanthus roseus</i>
១៩	កំពិលប្លូលក្រហម ( ឈ្មោល )	<i>Ludwigia adscenden</i>
២០	កំប្រាម	<i>Acacia caesia</i>
២១	កំប្រុក " ឈ្លើយ "	
២២	កំប្រុក	<i>Eichhornia crassipes</i>
២៣	ក្រូច ឬ ក្រាស	<i>Quassia harmandiana</i>
២៤	ក្រូចកោះ ( មុះពូងព្រៃកោះកាម )	<i>Sindora maritima</i>
២៥	ក្រូចកោះព្រៃ	<i>Sindora " Meritima ? "</i>
២៦	ក្រូចចំ	<i>Trapa bicornis</i>
២៧	ក្រូចរឿង	<i>Lumnitzera racemosa (Willd)</i>
២៨	ក្រូចរឿងក្រហម	<i>Lumnitzera coccinea (W &amp; A)</i>

២៩	ក្រូចក្រវិញ	<i>Hydnocarpus anthelminthica</i>
៣០	ក្រូចក្រវិញ	<i>Hydnocarpus saigonensis</i>
៣១	ក្រូចរឿង	<i>Pentapetes phoenicea</i>
៣២	ក្រវិញ	<i>Popowia diospyrifolia</i>
៣៣	ក្រាស់	<i>Samandura harmendii</i>
៣៤	កោះកាមឈ្មោល	<i>Rhizophora mucronata</i>
៣៥	កោះកាមរឿង	<i>Rhizophora conjugata (Linné)</i>
៣៦	ខ្នាស់	<i>Diospyros sylvatica (Roxb)</i>
៣៧	ខ្នាស់មាត់	<i>Dalbergia herrida</i>
៣៨	ខ្នាស់ ( មុះពូងព្រៃកោះកាម )	<i>Heritiera littoralis</i>
៣៩	ខ្នាស់ ( មុះពូងព្រៃកោះកាម )	<i>Calophyllum inophyllum</i>
៤០	ខ្នាស់	<i>Stephegyne pavifolia or Mitragyna brunonis</i>
៤១	ខ្នាស់មីក	<i>Stephegyne " Diversifolia ? "</i>
៤២	ខ្នាស់ចាមក្រូច	<i>Castanopsis pierres</i>
៤៣	ឃ្មោល	<i>Heritiera littoralis</i>
៤៤	ឃ្មោល	<i>Cudrania cambodiana</i>
៤៥	មកត់	<i>Pistia stratiotes</i>
៤៦	មកត្រូច	<i>Phoenix paludosa</i>
៤៧	មកត្រូច	<i>Lemna minor</i>
៤៨	មកត្រូច	
៤៩	មកត្រូច ឬ រឿងខ្នាស់	<i>Marsilia quadrifolia</i>
៥០	មា	<i>Butea frondosa (Roxb)</i>
៥១	មា	<i>Nipa fruticans</i>
៥២	មីកកំបាំង ( មុះពូងព្រៃកោះកាម )	<i>Terminalia catappa</i>
៥៣	មីក	<i>Albizia lebbekoides</i>
៥៤	មីក	
៥៥	មីក	<i>Coccoceras anisopodum</i>
៥៦	មីក	
៥៧	មីក	<i>Milichdes moulinis or Euphorbia millii ch-des moulinis</i>
៥៨	មីកឈ្មោល " កោះកំបាំង កោះ ឆ្នាំឈ្មោល "	<i>Avicennia intermedia or Avicennia marina intermedia (Griff)</i>
៥៩	មីក	<i>Cynometra " Inaequifolia ? "</i>
៦០	មីក	<i>Dasymaschalon lomentaceum</i>

៦១	ឈូក	<i>Nelumbo nucifera</i>
៦២	ឈើសំ	<i>Excoecaria agallocha (Lu)</i>
៦៣	រៀ	<i>Morinda</i>
៦៤	រៀមឹក ឬ រៀស្បាត	<i>Morinda persicaefolia</i>
៦៥	រោងក្អម	
៦៦	រមៀបក្តាម	<i>Antidesma ghaesembilla</i>
៦៧	រោងកង	<i>Tetracera scabdens (L) or Tetracera sarmentosa</i>
៦៨	រំដេង	<i>Gardenia Sp or Angkorensis pitard</i>
៦៩	តាបុត “ តាតុត ”	<i>Carapa moluccensis</i>
៧០	តាមែម	
៧១	តាសែម “ តាសែន ”	<i>Xanthophyllum glaucum</i>
៧២	តាសៀវ	<i>Phyllanthus Sp</i>
៧៣	តាសោន	<i>Oncosperma</i>
៧៤	ត្នូ	<i>Terminalia cambodiana</i>
៧៥	ត្រកូន	<i>Ipomoea aquatica</i>
៧៦	ត្រឡាត្រាវៀ	<i>Acanthus ilicifolius (L)</i>
៧៧	ត្រសោក	
៧៨	ត្រសក់	
៧៩	ត្រាវង្សណ្តូក	<i>Colocasia esculenta</i>
៨០	ត្រាវង	<i>Crateva andansonii or odorata</i>
៨១	ត្រាវងឹក	<i>Xyris indica</i>
៨២	ត្រាវង	
៨៣	ត្រើមអណ្តើក	<i>Ixora cuneifolia, Var. varians</i>
៨៤	ត្រោ	<i>Crataeva religiosa (Bl)</i>
៨៥	ត្រោ	<i>Crataeva nurvata (Ham)</i>
៨៦	ត្រោប៉	<i>Crataeva nurvala (Buch)</i>
៨៧	ត្រោប៉	<i>Diospyros Sp</i>
៨៨	ត្រង់ប្រសេម	
៨៩	ត្រង់អាមូត ឬ ត្រង់ឈូត	<i>Albizia myriophylla</i>
៩០	ត្រាលស្បាតស្នា	<i>Uvaria rufa</i>
៩១	ត្រេងព្រៃ	<i>Vitex holpadenon</i>
៩២	ត្រុងកប្បុរៈ	<i>Randia longifera (Benth)</i>

៩៣	ត្រេងត្រី ឬ ត្រេងត្រីរឿ	<i>Bridelia cambodiana (Bl)</i>
៩៤	ត្រេងត្រី	<i>Bridelia ovata</i>
៩៥	បន្ទាបូន ( បន្ទាមូលីល ឬ មតូបយក្ស )	<i>Mimosa pigra</i>
៩៦	បន្ទាស្លឹក ឬ តាបេរ៉ាណិក	<i>Acacia spiralis</i>
៩៧	បបួល	<i>Cynodon dactylon</i>
៩៨	បាតា	
៩៩	ប៊ុន “ ហែម ”	<i>Phoenix paludosa (Roxb)</i>
១០០	បាក់អង	<i>Gardenia philastreii</i>
១០១	បើស	<i>Hibiscus tiliaceus</i>
១០២	ប្រង់ ឬ ប្រាង	<i>Acrostichum aureum (L)</i>
១០៣	ប្របុត “ តំពូត្រែក ”	<i>Carapa obovata (Keon)</i>
១០៤	ប្របូយ ឬ ប្របូយមេ	<i>Croton caudatus</i>
១០៥	ប្របូយឈ្មោល	<i>Croton joufra</i>
១០៦	ប្រតា	
១០៧	ប្រទេស្សឈ្មោល	<i>Phyllanthus Sp</i>
១០៨	ប្រទេស្សរឿ	<i>Phyllanthus lasodiifolius</i>
១០៩	ប្រសក់ឈ្មោល “ ឬ តំ ”	<i>Bruguiera caryophylloides</i>
១១០	ប្រសក់រឿ “ ឬ តូត ”	<i>Bruguiera gymnorhiza (Lam)</i>
១១១	ប្រសាក់ ( បុក្ខុនប្រៃកោងកាង )	
១១២	ប្រស្សីប្រៃ	<i>Bambusa arundinacea</i>
១១៣	ប្រស	<i>Mimusops ?</i>
១១៤	ប្រសំ	
១១៥	ប្រសឹក	<i>Calamus Sp</i>
១១៦	ប្រសី	<i>Stenochlaena palustris</i>
១១៧	ប្រសោល	<i>Diospyros bejandii</i>
១១៨	ប្រសើតអាមមីមាត់	<i>Nymphaea lotus</i>
១១៩	ប្រសើតមូង	<i>Nymphaea stelata</i>
១២០	ប្រសើត្រៃ ( បុក្ខុនប្រៃកោងកាង )	<i>Hernandia</i>
១២១	ប្រស	
១២២	ប្រស្សី	<i>Hymenocardia wallichii</i>
១២៣	ប្រស្សីប្រៃ	<i>Breynia rhamnoides</i>
១២៤	ប្រសើ ឬ អាចាំង	<i>Homalium brevidens</i>

១២៥	រទាំង ឬ កាទាំង	<i>Homalium griffithianum</i>
១២៦	រតាមដឹក ឬ រតាម	<i>Calamus salifolius (Bece)</i>
១២៧	រំទង់	<i>Nymphaea nouchali</i>
១២៨	រំរេញវិដូក	<i>Elaeocarpus madopetalus</i>
១២៩	រំរេញដឹក	<i>Elaeocarpus Sp</i>
១៣០	រំរេញដុក	<i>Elaeocarpus griffithii</i>
១៣១	រុក្ខជាតិស្បាត ( មុះកូនព្រៃពោធិកាង )	<i>Scaevita</i>
១៣២	រុន	<i>Schumannianthus dichotomus</i>
១៣៣	រាំងដឹក ( រាំងឆ្មើង )	<i>Barringtonia acutangula</i>
១៣៤	រាំងដឹក ( រាំងតាយ )	<i>Barringtonia micrantha</i>
១៣៥	រំដឹក	<i>Homonoia riparia</i>
១៣៦	លាចក្នុះ	<i>Fluggea microcarpa (Bl) or Fluggea virosa(Roxb ex willd )Baill</i>
១៣៧	ល្វា	<i>Ficus hispida</i>
១៣៨	ល្វៀង	<i>Cratoxylum cochinchinense</i>
១៣៩	រំដឹកកណោះ	<i>Euphorbia hirta</i>
១៤០	រំដឹកខ្ពស់	<i>Calycopteris floribunda</i>
១៤១	រំដឹកចូល	<i>Parameria glandulifera or Streptocaulon juvenos</i>
១៤២	រំដឹកម្លូងព្រះ	<i>Quisqualis densiflora</i>
១៤៣	រំដឹកត្រី	<i>Ichnocarpus frutescens (L)</i>
១៤៤	រំដឹកត្រីពិត	<i>Cayratia trifolia</i>
១៤៥	រំដឹកត្រីសំ	<i>Combretum trifoliatum (Vent)</i>
១៤៦	រំដឹកតាដឹក	<i>Merremia hederacea (Burm f.)</i>
១៤៧	រំដឹកប្រេង	<i>Derris trifolia</i>
១៤៨	រំដឹកអណ្តាតក្រូតូត	<i>Aniscia martinicensis</i>
១៤៩	សណ្តាន់	<i>Garcinia loureiri</i>
១៥០	សម្បូរ	<i>Uncaria homomalla</i>
១៥១	សន្លែ	
១៥២	ស្នួនដំរី	<i>Nymphoides indica</i>
១៥៣	ស្នួនអំពោះ	<i>Nymphoides hydrophylla</i>
១៥៤	ស្នួន	<i>Crudia chrysantha</i>
១៥៥	ស្នួត	<i>Ficus heterophylla</i>
១៥៦	សារាយសាប	<i>Utricularia aurea</i>

១៥៧	សារាយតូ	<i>Hydrilla verticillata</i>
១៥៨	ស្នួនព្រៃ ( មុះកូនព្រៃពោធិកាង )	
១៥៩	ស្នួនតប់	
១៦០	ស្នួនតា	<i>Cammelina salicifolia</i>
១៦១	ស្នួន “ ក្រុមមាត ” ( មុះកូនព្រៃពោធិកាង )	<i>Malaleuca leucadendrom</i>
១៦២	ស្នួនក្រុមម ( មុះកូនព្រៃពោធិកាង )	<i>Eugenia zeylamica</i>
១៦៣	ស្នួនដឹក	<i>Grewia sinuala</i>
១៦៤	សំរឹត	
១៦៥	សំរឹត	<i>Melanolepis vilifolia(Oktze) or Grewia urenaefolia(Gagnep)</i>
១៦៦	សេរា ស	<i>Lophopetalum fimbrialum</i>
១៦៧	សេរា ក្រុមម	<i>Cryptocarya oblongifolia</i>
១៦៨	សេរា	<i>Sesbania javanica</i>
១៦៩	សេរា ( មុះកូនព្រៃពោធិកាង )	<i>Canavalis</i>
១៧០	សេរា ( មុះកូនព្រៃពោធិកាង )	<i>Ipomaea pescaprae</i>
១៧១	សេរា ( មុះកូនព្រៃពោធិកាង )	<i>Tribulus terrestris</i>
១៧២	សេរាអណ្តាតដឹក ឬ សេរាស្នួនដឹក	
១៧៣	សេរាអំពៅខ្សែប	
១៧៤	ស្នួន	<i>Ceriops roxburghians or Ceriops decandra</i>
១៧៥	ស្នួនខ្មែរ	<i>Ceriops candolleana</i>
១៧៦	ស្នួនស្រូវ “ ឆៅដឹកសាប ហៅ កាតព្យ ”	<i>Avicennia officinallis</i>
១៧៧	ស្នួនក្របី	<i>Desmondium heterocarpon</i>
១៧៨	ស្នួនដឹក	<i>Dalbergia nigrescens</i>
១៧៩	ស្នួន	
១៨០	ស្នួនរាជ្យ	<i>Gmelina asiatica</i>
១៨១	ស្នួនរាជ្យ	
១៨២	ស្នួនរាជ្យ	
១៨៣	ស្នួន ( សំរា )	<i>Sonneratia alba or Sonneratia acida</i>
១៨៤	ស្នួនស	<i>Sonneratia griffithi</i>
១៨៥	ស្នួនស្នួនដឹកព្រៃ	<i>Cynometra “ Dongnaiensis ? ”</i>
១៨៦	ស្នួនរាជ្យ ឬ រាជ្យ	<i>Schoutenia godefroyana</i>
១៨៧	ស្នួនក្របី ( អារក្រោះ )	<i>Stixis obtusifolia</i>

**Annex 2: List of existing biodiversity in Pursat's floodplains**

English Name	Scientific Name	Local name	Remark
<b>Fish</b>			
Marble goby	<i>Oxyeleotris marmorata</i>	ត្រីដំរី	
Wallago	<i>Wallago attu</i>	ត្រីសណ្តាយ	
Striped Snakehead	<i>Channa striata</i>	ត្រីវីស័	
Asian redbtail catfish	<i>Hemibagrus nemarus</i>	ត្រីឆ្មាំង	
Siamese mud carp	<i>Cirrhinus siamensis</i>	ត្រីរៀល	
Spotted hampala barb	<i>Hampala dispar</i>	ត្រីខ្មាន់	
Gourami	<i>Trichogaster Microlepis</i>	ត្រីកំភ្លាញ	
Giant snakehead	<i>Cyclocheilichthys enoplos</i>	ត្រីឆ្មៅ	
Climbing perch	<i>Anabas testudineus</i>	ត្រីក្រាញ់	
Peacock eel	<i>Macragnathus facus</i>	ត្រីឆ្មុញ	
Mekong silver barb	<i>Hypsibarbus pierrei</i>	ត្រីឆ្មិន	
Walking catfish	<i>Clarias batrachus</i>	ត្រីអណ្តែង	
Lesser bighead carb	<i>Thynnichthys Thynnoides</i>	ត្រីលីញ	
Dusky face carp	<i>Osteochilus lini</i>	ត្រីក្រុស	
Snail eating barb	<i>Puntioplites proctozysron</i>	ត្រីប្រកែង	
Trey Taoun	<i>Ompok eugeneiatus</i>	ត្រីតាអោន	
White-line catfish	<i>Mystus albolineatus</i>	ត្រីកញ្ចុះ	
Bronze featherback	<i>Notopterus notopterus</i>	ត្រីស្លាត	
<b>Turtle</b>			
Rice field Turtle	<i>Malayemys subtrijuga</i>	អណ្តើកស្រែ	
Yellow-headed temple turtle	<i>Heosemys annandalii</i>	អណ្តើកសកល	
Asiatic soft-shell turtle	<i>Amyda cartilaginea</i>	កន្ទាយ	
Black marsh turtle	<i>Siebenrockiella crassicollis</i>	អណ្តើកព្រិច	
<b>Bird</b>			
Purple heron	<i>Ardea purpurea</i>	ក្រសារប្រផេះ	
Sarus Crane	<i>Grus antigone</i>	គ្រាល	
Eurasian woodcock	<i>Scolopax rusticola</i>	ខ្វែក	
White-breasted waterhen	<i>Amaurornis phoenicurus</i>	មាន់ទឹក	
Indian Cormorant	<i>Phalacrocorax fuscicollis</i>	ក្អែក	
Kong			
Toung	<i>Spot-billed pelican</i>	ទុង	
Oriental Darter	<i>Anhinga melanogaster</i>	ស្មៅញ	
Dom Dor			
Ktoum			
Black-backed Swamp hen	<i>Porphyrio indicus</i>	តូម	
Greater Adjutant	<i>Leptoptilos dubius</i>	ត្រជក់ធំ	
Painted Stork	<i>Mycteria leucocephala</i>	រនាសពណ៌	
<b>Wood duck</b>	<i>Aix sponsa</i>	ទាព្រៃ	
Lesser whistling duck	<i>Dendrocygna javanica</i>	ប្រឺក	
<b>Snake</b>			

Posh Trey	Homalopsis buccata		
Posh Trey Rosh			
Posh Prolet	Enhydris		
Bocouti Posh Kachan			
Posh Pha Ok			
Bocouti (Posh Channa Mom)			
Python	Papuan python	ពស់ថ្លាន់	
Tentacled snake	Erpeton tentaculatus		
Cobra		ពស់វែក	
<b>Others</b>			
White Monkey		ស្វាស	
Blake Monkey		ស្វាខ្មៅ	
Fox		កញ្ជ្រាង	
Otter		កើ	



Annex 3: Maps of flooded forest fire sites in Pursat province

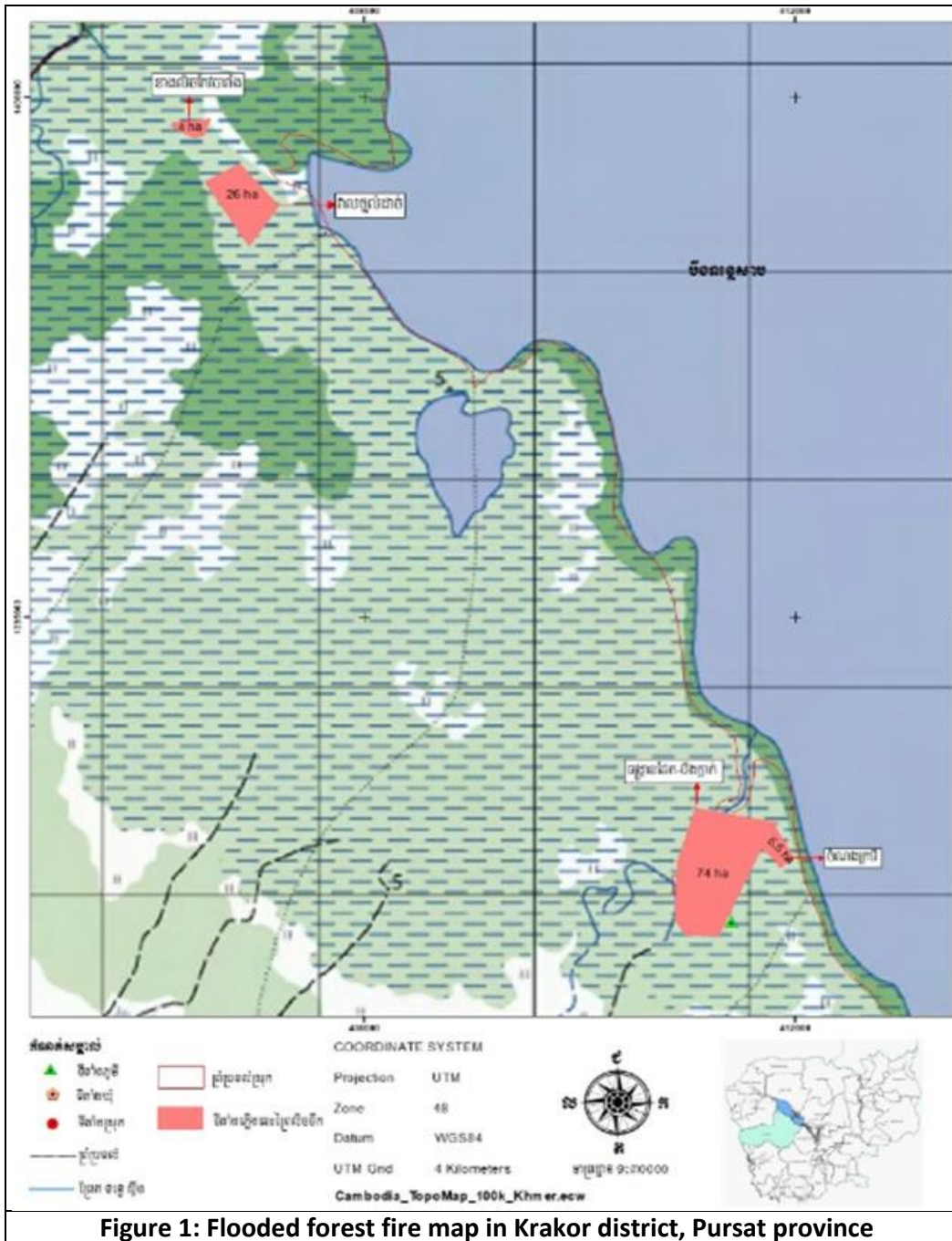


Figure 1: Flooded forest fire map in Krakor district, Pursat province

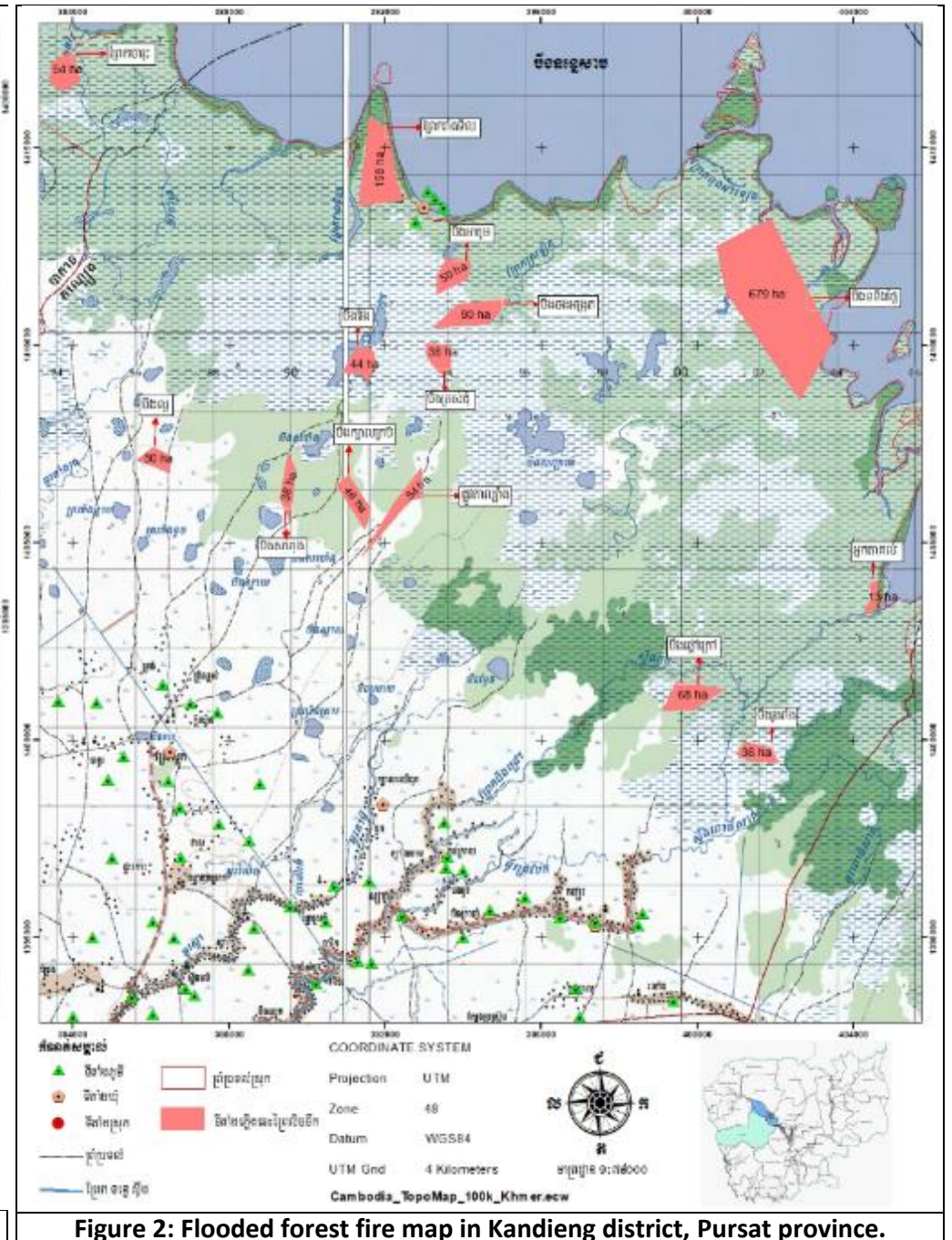


Figure 2: Flooded forest fire map in Kandieng district, Pursat province.



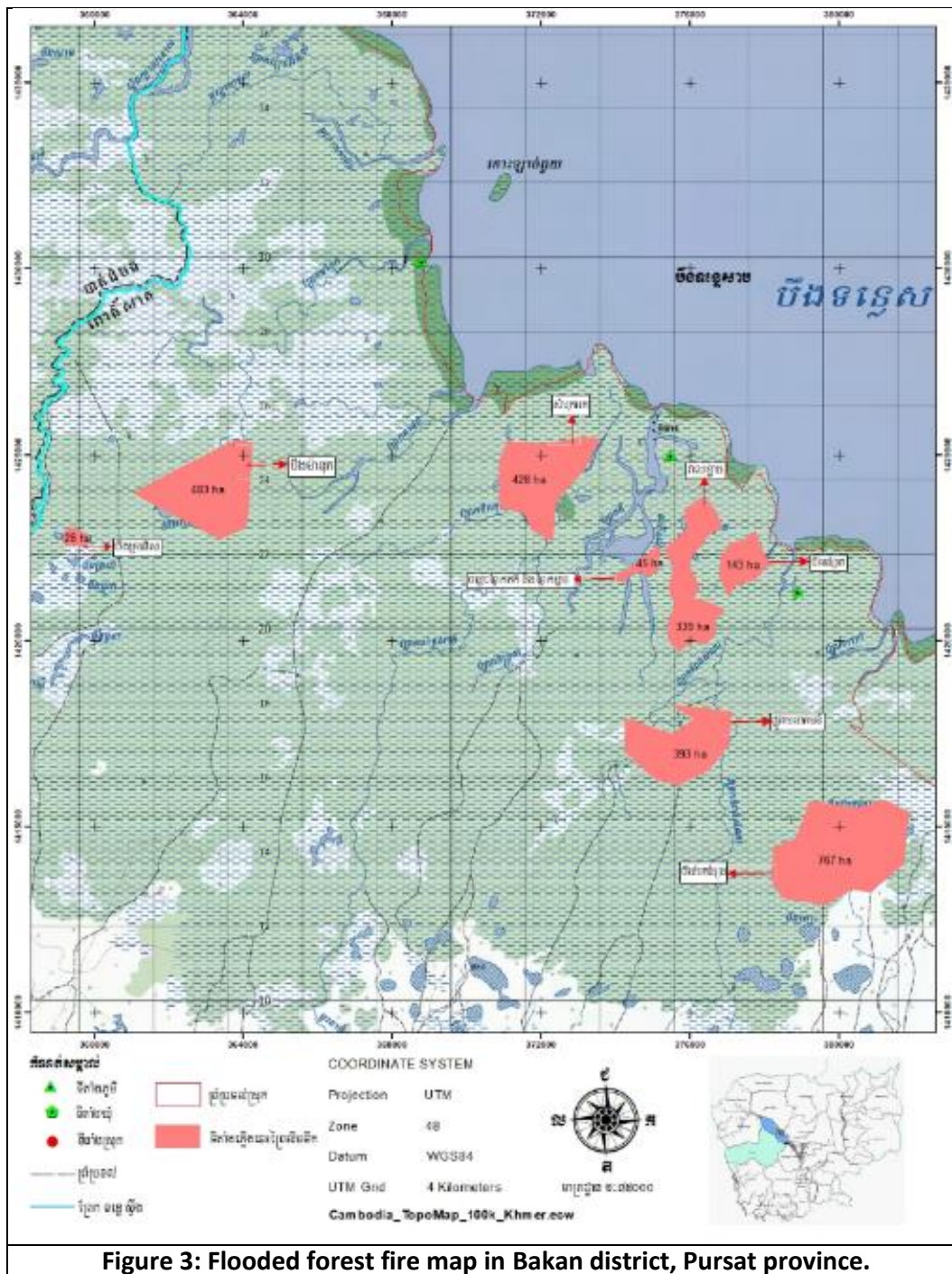


Figure 3: Flooded forest fire map in Bakan district, Pursat province.





# កម្មវិធីជំរុញកំណើនវិស័យផលិតផលប្រកបដោយចីរភាព និងបរិយាប័ន្ន (ផ្នែកនេសាទ)

Cambodia Programme for Sustainable and Inclusive Growth in the Fisheries Sector: Capture Component

( ខាមឃ្វីស-ខាមនី ) ( CAPFISH-Capture )



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**Fisheries Administration**

No. 186, Norodom Boulevard, Tonle Basac, Chamcar Mon, Phnom Penh, Cambodia, P.O. Box 582  
Tel: (855) 23 215 470 Facebook: <https://fia.maff.gov.kh/>