**(1) Summary page**

|  |  |
| --- | --- |
| **C:\Users\Administrator\Desktop\New_MKCF LOGO.png** | |
| **Project Classification (check all that applies)** | |
| □ Culture and Tourism  □ Human Resources Development  □ Agriculture and Rural Development  □ Infrastructure   * Information and Communication Technology (ICT) * Environment   □ Non-traditional Security Challenges | |
| **Project Title** | |
| **Information and Communication Technology (ICT) for Adaptation to Climate Change and Forest Fire Management in Mekong Region** | |
| **Brief Description of the Project** | |
| The project is a showcase of technological innovation in the use of Information and Communication Technology (ICT) in fire prevention, detection, monitoring, and management in Viet Nam and Cambodia, among the most susceptible countries to forest fires in the Mekong region. The ICT system will utilize a GIS-based platform to simulate and predict fire-vulnerable areas for timely preventive interventions, and use of the control measures by means of real-time and/or early forest fire detection, foot, and drone patrol, real-time reporting, and deployment of response.  The implementation of the project will build on the smart data-driven forest fire management technological innovation of the Republic of Korea which will be adjusted as a pioneering initiative in both countries taking into account the peculiarities and conditions onsite. In-country (Cambodia and Viet Nam) awareness campaigns, collaborative arrangements, and capacity-building will be administered by the project to enable the government and the public to work together and address the forest fire problem using the ICT-based FFM protocol that will be developed by the project.  The lessons from the implementation will be documented and shared with the other Mekong and AFoCO member countries in the light of expanding the cooperation to promote innovative solutions to the forest fire problem. The project aligns with the initiatives on climate change mitigation and sustainable forest management by AFoCo and is consistent with MKCF environment priorities. It is also envisioned to add value to the international cooperation initiatives in the Mekong region. | |
| **Country / Region** | |
| Cambodia and Viet Nam | |
| **Budget** | |
| Total budget (USD): $1,059,031.00  Total budget requested from MKCF (USD): $996,031.00  Total contribution if any including from third parties (USD): $63,000.00 | |
| **Proponent** | |
| Name | Ricardo L. Calderon, AFoCO Executive Director |
| Address | 8F, 9 Gukhoedaero 62-gil, Yeongdeungpo-gu, Seoul 07236, Rep. of Korea |
| **Date of Submission** | 12/08/2022 |

|  |  |  |  |
| --- | --- | --- | --- |
| **(2)Full Proposal**  **C:\Users\Administrator\Desktop\New_MKCF LOGO.pngMekong-ROK Cooperation Fund (MKCF)**  **Project Proposal** | | | |
| **Project Information** | | | |
| 1.1. Project Title: **Information and Communication Technology (ICT) for Adaptation to Climate Change and Forest Fire Management in Mekong Region** | | | |
| 1.2. Country (s) / Region : **Cambodia and Viet Nam** | | | |
| 1.3. Date of Submission : | | | |
| 1.4. Proponent Contact Details | | | |
| Contact person, position  Organization  Email address  Telephone number  Mailing address | | - Kikang Bae, PhD  - AFoCo Secretariat  - baekikang@afocosec.org  - +82.2.785.8992  - 8F, Forest Vision Center, 9 Gukhoedaero 62-gil, Yeongdeungpo-gu, Seoul 07236, Republic of Korea | |
| 1.5. Project Area (check all that apply) | | | |
| Culture and Tourism  Human Resources Development  Agriculture and Rural Development  Infrastructure  Information and Communication Technology (ICT)  Environment  Non-traditional Security Challenges | | | |
| **Project Milestone** | | | |
| Estimated implementation start date  Estimated implementation end date  Project duration: | | 01/01/2024  30/09/2026  2 years and 9 month (33 months) | |
| **Description of Financial Elements** | | | |
| Project cost (USD)  $996,031.00 | Contribution (in-kind USD) if any  $63,000.00 | | Total Project Cost (USD)  $1,059,031.00 |
| **General description of the organization (***with a maximum length of 250 words)* | | | |
| *Briefly describe the legal status, vision, mission, programs, and relevant experiences to the proposed project*  The technology-driven approach espoused by this project to pilot and demonstrate forest fire detection and monitoring in Cambodia and Viet Nam aligns with the vision, mission, and objectives of AFoCO in promoting action-oriented inter-government cooperation among ASEAN countries on sustainable forest management (SFM) and in combating climate change. These are inclusive of the initiatives on enhancing forest carbon stock, addressing the drivers of deforestation and forest degradation, capacity building, research and development, and establishing and strengthening forest international cooperation that also builds on previous efforts and initiatives of AFoCO and its member countries. The project is also in line with the priorities of the Mekong-Republic of Korea Cooperation Fund (MKCF) for the ICT and the environment sector.  It is supportive and complementary to around 30 projects implemented by AFoCO on forest restoration and sustainable forest management, about 60% of which is in the Mekong Region, and in capacitating local communities in 46 community forests, promotion of ecosystem services benefits in 8 model forest, and development and enhancement of forest-based livelihood programs in 46 villages.  The long-term effects also envisioned having this contributed to improved capacity of ASEAN and GMS member countries in promoting forest fire resilience, adding value to the training and capability-building interventions done by AFoCO for the last 8 years since its inception.  Overall, the project will build on the existing initiatives on forest fire management in Cambodia and Viet Nam and use the advanced technological experiences of the Republic of Korea to beef up or improve their capacity. | | | |
| **Project background and justification** *(with the maximum length of 300 words)* | | | |
| *Briefly describe the reasons behind the selection of the project idea and how is it relevant to the identified priority sector (s) of MKCF and its significance in enhancing regional cooperation among the Mekong countries and RoK*  The project was conceptualized in response to the growing threats of forest fires in the Great Mekong sub-region. Climate change-induced temperature increases combined with human unsustainable land use practices infer a higher susceptibility or vulnerability to forest fire occurrences which can undermine the capacity of each member country to deploy effective response. The project will use ICT-based solutions to raise or improve the capacity of both the government and the public to address this problem.  As it will be set up primarily to protect the forest in the pilot sites, the gains of the project are relevant to the ICT and environment sectors of the MKCF. The project can help improve overall forest protection, and biodiversity conservation, and reduce carbon emissions. Combining this approach with other sustainable forest management initiatives can promote natural regeneration in forest areas that were previously cultivated, improve the condition of biological habitat, and increase the supply of various ecosystem services on which the bigger portion of the population in the GMS is dependent.  Cambodia and Viet Nam present the most strategic location to demonstrate the use of the ICT-based system to address forest fire occurrences and other threats. The use of ICT is advantageous for remote reporting and inter-village or community coordination for speedy and collective forest fire suppression activities, compared to the use of conventional procedures.  Recognizing that forest fire is a transboundary issue, the use of ICT can also facilitate sharing of real-time information and regional coordination among countries in the GMS. Along this line, the experiences and lessons from the project, combined with the established knowledge on the same by the Republic of Korea will be documented and shared with GMS and MKCF member countries for stronger cooperation in promoting fire resiliency in the region. | | | |
| **Problems to be addressed** *(with a maximum length of 300 words)* | | | |
| *Briefly describe the problem (s) and how the project intends to address the problem (s).*  Frequent occurrence of wildfires in both agricultural and forest areas of ASEAN and GMS, particularly Cambodia and Viet Nam, has been recorded in the last decade (Phnom Penh Post, 2018; VietNamnet Global, 2020). A large number of occurrences were the result of combined human activities and the climate change-induced fires and El Niño-Southern Oscillation (ENSO) in Southeast Asia (Scheidel, A., & Work, 2016, & Nguyen, T.L., et. al., 2008). In a 2050 climate change scenario, a 1.5 to 20C rise in temperature (Vietnam COP 26 Report, 2021) forecasts an increased frequency of wildfires and forest fire occurrences in both countries. The 2022 UNEP/GRID-Arendal Report predicts a 50% increase in off-the-chart fires and calls for immediate actions for governments to review approaches to address the problem.  GMS countries have less developed economies and scarce technical and institutional capacity to organize and deploy effective forest fire management (FFM) systems. The project intends to enhance the capacity of the pilot countries on the use of an ICT-based approach to increase forest fire resilience. The ICT system will use a GIS-based platform to simulate and predict fire vulnerable areas for timely preventive interventions. The preventive measures will be combined with forest fire control measures utilizing real-time early forest fire detection, foot and UAV monitoring, real-time reporting, and assessment of forest fire damage.  The project will also help mainstream and institutionalize the initiatives in-country through an awareness campaign, training and capacitating the concerned agencies and stakeholders and facilitating the formulation and enactment of policy adopting the smart technology on forest fire management. Lessons and experiences will be shared with other AFoCO and GMS members for international cooperation in promoting and establishing protocols for forest fire resilience. | | | |
| **Project Objective** *(with a maximum length of 300 words)* | | | |
| *Briefly describe the Overall objective, Specific objectives, and outputs the project intended to reach in contribution to (1) national (2) regional priorities, and (3) consistency to the MKCF Priorities.*  In a broader view, the objectives of the project are:   1. To showcase an ICT-based forest fire management (FFM) system in Cambodia and Viet Nam. 2. To enhance the in-country capability of government and stakeholders in using the ICT-based FFM system and develop a rollout plan. 3. To develop or enhance international cooperation on forest fire and related threats for the Mekong region.   The project has the following specific objectives;   1. Perform forest fire vulnerability and other forest threats assessment. 2. Adapt the Smart ICT technology from the Republic of Korea for application in forest fire detection, monitoring, reporting, and deployment of response in Cambodia and Viet Nam. 3. Carry out Forest fire vulnerability and other forest threats awareness campaigns. 4. Capacitate in-country government agencies, communities, and private partners in mobilizing collaborative forest fire and other threats prevention, detection, monitoring, and reporting using the ICT platform. 5. Share lessons and experiences with the Mekong region and AFoCO member countries.   These will be implemented with the purview of establishing and/or strengthening cooperation among countries in the Mekong region in promoting fire resiliency using the ICT platform. Specific outputs and outcomes of the project include the following;   1. Report with GIS maps of forest fire vulnerability and other threats assessments. 2. ICT application combined with readily available and user-friendly gadgets (e.g., smartphones). 3. Plans prepared for communities and the government integrating ICT approaches in addressing forest fire problems and other threats. 4. Modules and IEC materials for training and awareness campaigns. 5. Documented experiences and lessons and knowledge products developed. 6. Improved capacity of government and stakeholders in using ICT platform for speedy and timely detection, monitoring, reporting, and deployment of response. 7. Policies/protocols for the in-country roll-out of ICT use for FFM.   Enhanced international cooperation in promoting forest fire resilience among countries in the Mekong region These objectives, outputs, and outcomes are supportive of the ICT and environment sector’s priority of the MKCF. | | | |
| **Project Description** *(with the maximum length of 300 words)* | | | |
| *Describe the main activities (Refer to (3) Indicative Work Plan*  *Provide information on how the activities are linked to objectives that the project intends to achieve*  The implementation of the project will be divided into 4 components;  **Component 1.** **Vulnerability assessment related to forest-related disasters, piloting in Cambodia and Viet Nam.** The VA result informs the selection of sites and determines the overall susceptibility of the area to forest fire hazards. The VA will be conducted alongside the assessment of other forest threats such as landslides, pests and diseases, illegal cutting, land conversions, and those that trigger forest fires.Prior consultation and collaboration with government agencies, field appraisal, and data gathering and analysis, and GIS mapping and simulation supported by satellite images and UAV will be done.  **Component 2. Development of an application to monitor forest fires and other forest-related disasters as input to policy and planning/implementation.** Adapting from the ICT FFM system of Korea, this includes the development and enhancement of the ICT protocols using the parameters applicable to Cambodia and Vietnam. It includes training and preparation of plans for the government and forest communities. Specific training in data gathering using mobile phones, and other readily available reporting platforms will be done. Info and data will be consolidated in the computer-driven reporting terminals and analyzed to inform the development of policies and protocols for forest fire management.  **Component 3** **Capacity building of major actors from government, private sector, and communities.** In promoting a collaborative fire response, the project will carry out stakeholders’ awareness campaigns, promote inter-forest villagers’ cooperation, and train government technicians in cooperation with AFoCO Regional Education and Training Center (RETC). The issuance of government FFM policies for rollout is expected to facilitate institutionalization.  **Component 4. Knowledge-sharing across the Mekong.** Envisioned for rollout in the Mekong Region, the project will facilitate stocktaking of the lessons from the ICT FFM piloting in Cambodia and Viet Nam, formulate the guidelines and knowledge products, and share it among GMS and AFoCO member countries. ICT-based FFM protocols may also be developed or enhanced to strengthen cooperation in promoting forest fire resilience in the region. Knowledge sharing will be facilitated by the RETC team of AFoCO. | | | |
| **Regional nature of the project** *(with a maximum length of 300 words)* | | | |
| *Describe how the problem or issue affects more than one Mekong country and requires regional actions and how it will be addressed in the project.*  Anthropogenic and climate change-induced forest fires and wildfires are transboundary and trans-country problems. In 2020 and 2021, there were an increased number of grass and forest fire incidences in the Mekong Delta and those countries in the ASEAN, including Indonesia and Thailand. The destruction caused by forest fires and wildfires in the Mekong region may further bring imbalance to the forest and watershed ecosystems and can also induce and exacerbate long-term catastrophic impacts from flooding, landslides, and other natural and climate change disasters. Added is the adverse impact it can bring to biodiversity which is considered to be life-sustaining for the inhabitants of the region.  The project showcases innovative and long-term solutions to the forest fire problem in the Mekong region through the use of an ICT-based FFM system which is envisaged to provide the foundation for effective prevention measures and response. Collaboration among in-country responsible government agencies (Ministry of Agriculture, Forestry and Fisheries or MAFF in Cambodia and Ministry of Agriculture and Resource Development or MARD in Viet Nam), villagers/communities, and private sectors will be established and institutionalized for long-term and sustainable forest fire management.  The implementation of the project contributes to the Mekong Institute (MI) 2021-2025 Strategic Plan on sustainable energy and the environment, particularly on climate change, and green and creative economy. Across other development focus, it also contributes to digitalization and science, technology, and innovation.  For region-wide collaboration, the project will organize workshops and learning visits among AFoCO and Mekong region member countries to share the experiences from the project and facilitate the formulation of international cooperation agreement/s to promote forest fire resilience, focusing on the technology-driven prediction, detection, monitoring, and timely and effective response. The cooperation may include the roll-out or replication of projects in other member countries. | | | |
| **Target beneficiaries and Project Coverage** *(with the maximum length of 300 words)* | | | |
| *Briefly describe whom the proposed project will directly and indirectly benefit.*  *Geographical coverage of the project.*  The government of both Cambodia and Viet Nam will benefit from the project through the acquisition of new knowledge and technology in addressing forest fire and other related threats, which will enable them to protect their forest effectively and sustain ecosystem services’ benefits for the local people. Similar benefit in terms of upgrading their knowledge and capacity to protect the forest for the communities who will be mobilized to participate in ICT-based forest fire management.  For Cambodia, specific benefit in terms of sustainable supply of ecosystem services is primarily assumed for the pilot site covering at least 1 province. 76% of the more than 15 million population of Cambodia ([Cambodia: Population Statistics, Maps, Charts, Weather and Web Information (citypopulation.de)](https://www.citypopulation.de/en/cambodia/cities/) is living in the rural area which covers the larger part of the forest area. This practically represents an average of around 300-400 people that resides in the villages that may be covered by the pilot site. Taking the same context for Viet Nam, the average number of people that will benefit is around 900,000 for the total average provincial population and 390,000 people in the forest, based on the average area of forest per Province (extrapolated from the figures provided here: https://citypopulation.de/en/vietnam/prov/admin/). Using the same scale for both countries, the project is anticipated to cover a total of around 250,000 hectares of forest, distributed into 230,000 and 19,000 for Viet Nam and Cambodia, respectively.  Addressing deforestation and mitigating climate change impacts are front and center on the use the ICT to promote fire resiliency. At the macro level, the innovative approach of the project can be combined with other approaches to develop a more holistic strategy to promote sustainable forest management that can increase carbon stock, enhance biodiversity, and protect watersheds for the sustainable supply of ecosystem services. The international cooperation can be enhanced for more an expansive pursuit of the same benefiting the entire Mekong region and its people. | | | |
| **Value Added for the MKCF Involvement/ Potential** *(with the maximum length of 200 words)* | | | |
| *Please specify why the MKCF involvement is critical for the project and the potential of the project to contribute to the achievement of the Fund’s objectives*  The project adapts smart ICT-based forest fire management from the Republic of Korea. The application of ICT in Cambodia and Viet Nam is envisioned to raise the forest fire resiliency of both countries. The role of MKCF is crucial as it provides the platform for cooperation in addressing concerns on the key priority areas, including issues of social inclusion and vulnerability, digital economy and innovation, and natural resource management towards sustainable development (MKCF website). The project is in support of MKCF this role through the promotion of innovation and technology-driven solutions to address environmental and natural resources problems and climate-induced disasters. The project brings additional value to the international cooperation initiatives in the Mekong region consistent with MKCF priorities on the environment and natural resources management. | | | |
| **Project Sustainability** *(with the maximum length of 200 words)* | | | |
| *Explain how the project sustainability will be ensured in the long run, after the project is implemented with support from the MKCF*  The use of the ICT-based FFM system provides the means for adaptation to climate change impacts (extreme temperature increase) and the protection of forests and biodiversity from forest fire hazards. It thus anticipates that continuous use and enhancement of the system can result in more improved forest fire prevention and control practices that complement other efforts in sustainable forest management in the Mekong region.  The mechanism for sustainability is inherent in the project activities. Primarily for Cambodia and Viet Nam, awareness campaigns and capacity-building will be conducted with the end view of strengthening collaboration between the government and stakeholders in ICT-based FFM. Complementary to these initiatives, documentation of experiences and lessons will be shared, from which government guidelines and policies will be formulated and enacted to integrate the system into their activities and norms in addressing forest fire, and its causes and related threats.  The lessons will also be shared among Mekong and AFoCO member countries to establish long-term cooperation in addressing the problem. Replication and rollout of the project and inclusion in the cooperation agreement among Mekong countries will be recommended. | | | |
| **Management Arrangement** *(with a maximum length of 300 words)* | | | |
| *Describe the management structure of the project, and coordination mechanism with the Mekong country partners, relevant stakeholders, MKCF secretariat and MoFA.*  The Project will be led by a Project Manager to be supported by two project coordinators, one each for Viet Nam and Cambodia. The technical assistance for project implementation will be provided by two experts, the ICT and FFM Specialist. The in-country implementation will be coordinated by Project Assistants to be provided as counterparts by both countries. Intermittent engagement of some staff will be done on a need basis.  M & E of the Project will be done by the AFoCO Secretariat under the guidance of the Project Steering Committee (PSC). PSC membership may be augmented by the in-country forestry agency representatives. The Project, through the Project Manager and AFoCo, will provide regular reports and updates on the implementation of the Project to the MKCF, including the Ministry of Foreign Affairs of Korea (MoFA) as the main focal point for MKCF.  *Describe briefly the human resource inputs i.e., full-time project staff, part-time staff, Experts, and consultant’s bio and roles and responsibilities (refer to ToR and CV format in appendix 5 and 6)*  The following are the human resources required:   1. **Project Manager:** Dr. Junghwan Park, AFoCO Secretariat,is appointed for the position and will be responsible to oversee the day-to-day implementation of the Project and in higher level cooperation with participating countries. 2. **Project Coordinators:** Two full-time PCs will be engaged. Mr. Chhorn Vireak, Vice Chief of Administration, International Cooperation and ASEAN Office, Forestry Administration of Cambodia, and Mr. Mai Ha An, Lecturer of Department of Informatics, Viet Nam National University of Forestry, are appointed for the position of Cambodia and Viet Nam, respectively. The PC will be responsible for the day-to-day implementation of the activities in line with the work plan. 3. **Project Assistants.** To be provided by the government of Cambodia and Viet Nam and responsible for in-country coordination. 4. **ICT Specialist.** One ICT Specialist, Joo Won Park who is affiliated with Kyungpook National University, will be responsible for setting up the ICT system, preparing manuals and modules, and training participants and partners. 5. **Forest Fire Specialist.** Nominated is Mr. Geonhwi Jung, from Kyungpook National Univ., who will be responsible for leading field appraisal and GIS-modelling and vulnerability assessment. | | | |

**Project Outcomes, Outputs, and Activities**

| **Expected Result** | **Indicators** | **Means of Verification** | **Target** | | **Remarks** |
| --- | --- | --- | --- | --- | --- |
| **Mid-term** | **Final** |  |
| **Outcomes** |  |  |  |  |  |
| 1. Enhanced cooperation on fire prevention and management in Mekong region | ICT-based FFM protocol in Mekong Region | Regional workshops documentation  Draft FFM protocol for Mekong Region and AFoCO members countries | none | 2 regional workshops  1 FFM protocol for Mekong and AFoCo members countries | FFM protocol may be included in the existing cooperation agreement of Mekong and AFoCO member countries |
| 1. In-country policy adopting the ICT-based FFM for roll out | Policies for issuance by MAFF of Cambodia and MARD of Viet Nam | In-country workshop (documentation)  ICT-based FFM policy formulated | At least 2 workshops per country  Draft policy each for Viet Nam and Cambodia | At least 4 workshops  Policies for both countries deliberated and considered for adoption/ enactment | Awareness campaign support will be needed |
| 1. Improved in-country’s capability for the use of ICT-based FFM system | Government structure defined and established for mobilization | Government instructions creating and mobilizing the structure for the implementation g the ICT-based FFM system  No. of government staff mobilized | 1 instruction each from government of Cambodia and Viet Nam  At least 20 staff | Organizational structure for the ICT-FFM operation included in the response protocol/policies of the two countries | Training will be a continuous activity of the project. Certification system will be issued to authenticate capacity to participate and use the ICT-based FFM system |
| 1. Strengthened collaboration for forest fire detection, monitoring, and response | No. of village groups/communities and private sectors mobilized and participated in the ICT-based FFM | Covenant/agreement or government instructions issued for the mobilization of village forest communities in ICT FFM, including collaborative fire response | 5 villages/ communities participating/ mobilized  5 private sectors supporting/ participating in fire response | 10 villages/ communities participating and mobilized  10 private sectors supporting/ participating in fire response | Information, education, and communication campaign will be needed to spread awareness and enjoin stakeholders’ participation |
| 1. Increased awareness and knowledge of GMS and AFoCO member countries on the use and application of the ICT FFM system | Countries participated in the learning visits and cooperation workshops  Knowledge products developed and shared | Documentation of learning visits  Countries participated in the learning visits  Documented success stories/lessons and experiences transformed into knowledge products |  | 1 report  At least 5 countries in the Mekong region participated  At least three knowledge products published and shared | The knowledge products can also be used as the basis for developing guidelines to strengthen cooperation in the Mekong Region |
| **Outputs** |  |  |  |  |  |
| 1. Forest and Disasters Vulnerability Assessment and threats assessment | Forest fire Vulnerability and other forest threats assessed | Forest fire vulnerability Analysis and threat assessment Reports with GIS-derived forest fire/disaster vulnerability maps for priority sites | A completed forest fire and other forest threats assessments in 6 sites |  | This will be supported by actual field work and gathering of data and information as inputs to GIS modeling/ simulation |
| 1. ICT-based forest protection plan (forest fire and other threats management plan) developed and implemented by the communities and government | ICT-based forest protection plan approved adopted by the government  Forest communities/ villagers adopted forest protection plan and integrated to their CF management plans | Government issued decree/memorandum approving the mgt plan  Community plan with ICT-based forest protection plan | 2 plans (1 for each government  5 community plans (for each country) |  | VA and forest threats assessment results will be used as inputs to the forest protection plan |
| 1. ICT-based FFM protocols developed and implemented/ used | CT-based FFM User’s Manual | Manual of ICT-based FFM protocol | 1 manual |  | The manual presents the user-friendly guide in operating the ICT system |
| Reporting terminals established and functional | Hardware and software set up completed and synced for real-time forest fire detection and monitoring, and reporting | All software/ hardware has been set up and functional | Reinforced or enhanced ICT-based FFM system | The functionality of the system should be regularly reviewed and updated for more efficient prediction, detection, monitoring, and deployment of effective response. |
| Trained government staff/technician, and other stakeholders mobilized for fire detection, monitoring, and response | No. of trained MAFF and MARD staff, local communities and private sector | At least 50 participants trained | At least 100 pax trained | Training modules will be developed prior to training. |
| Training modules developed and implemented for the application of ICT-based FFM and reporting terminals | At least 4 trainings/modules developed and implemented for both countries | 6 trainings/ modules implemented for both countries | Part of the training is to share the lessons from in both countries |
| Actual detection, monitoring, and reporting of forest fire and other threats | Real-time data gathered, uploaded and analyzed on a monthly basis through the ICT FFM platform | 8 months’ worth of data on fire detected, monitored, and/or responded | At least 16 months’ worth of data on fire detected, monitored, and/or responded | The result of the analysis will be inputted to improve predictive capability of the system for effective deployment of preventive measures |
| Collaboration with other projects of similar nature (e.g., USAID-supported SERVIR in Thailand) | Collaboration meeting and agreement for learning exchange | 2 meetings and  1 cooperation agreement | 4 meetings and 2 cooperation agreement | The result of this collaboration meetings may be included in international cooperation-level agreement. |

|  |  |
| --- | --- |
| **Activities** | **Description** |
| **Component 1** | **Vulnerability assessment related to forest related disasters, piloting in Cambodia and Viet Nam** |
| * 1. Preparatory consultation and collaboration meeting with government agencies of both countries | Preparatory discussions with in-country government agencies for the implementation of the project. Way forward activities will be agreed on. |
| * 1. Field appraisal and data gathering | Actual field works to gather data/information to be used in GIS modeling and mapping/vulnerability assessment. |
| * 1. Data analysis | Initial analysis of the data to be used for GIS modelling of fire vulnerabilities and in developing the local ICT FFM protocol. |
| * 1. Vulnerability analysis and forest threats/disaster assessment | GIS mapping and modeling of forest fire vulnerability and threats assessment in priority sites. |
| 1.5 Collaboration with the existing initiatives of similar nature (e.g., SERVIR-Mekong in Thailand) | To explore the possibility of stronger collaboration among projects of similar nature and exchange learnings that can be inputted to enhance the project’s initiatives on forest fire prevention and management. This may also be done to strengthen international cooperation. |
| **Component 2** | **Development of an application to monitor forest fires and other forest-related disasters as input to government policy-making and planning/implementation.** |
| 2.1 Development and customization of the ICT-FFM system protocol for Cambodia and Viet Nam and preparation of user’s manual | This is the customization of ICT FFM technology from Korea for its application in Cambodia and Viet Nam in consideration of the differences in site condition, temperature, fuel, rainfall, and others. The required adjustment of the application has to be carefully analyzed and addressed by the ICT Specialist. Instruments such as hydro-meteorological devices, mobile phones, and other gadgets have to be synced up in the ICT system/protocol. A user-friendly guideline or users manual will be prepared for the government and other stakeholders who will be mobilized using the ICT FFM platform. |
| 2.2 Setting up of the customized ICT FFM system and actual application | It includes the actual setting up of the ICT-based FFM system reporting terminal at the government offices and syncing up of other devices for forest fire prediction, detection, monitoring, reporting, and response. |
| 2.3 Formulation of the ICT-based Forest Protection Plan for the government and forest communities/villagers | Using the results of VA and threats assessments as input, a government and forest communities’ forest protection plan (for forest and other threats) will be facilitated and completed as the basis for the implementation of ICT protocols, for allocating budget, and defining responsibilities activities for forest fire and other threats prevention and management. |
| 2.4 Training on ICT FFM system for administrators and monitoring teams | Training on the use of ICT applications prior to their pilot use. Communities and villagers will also be trained on the use of gadgets in data gathering, reporting, and coordination work. The use of drone and GIS mapping will also be included among the competency areas that need to be improved for both the ICT administrators and data gatherers. All the guidelines needed will be consolidated in the ICT-based FFM user’s manual. |
| 2.5 Awareness campaigns on forest fire hazards and vulnerable areas and the use of the ICT-FFM system | Information dissemination and training will increase awareness of the villagers/communities/forest owners and the public on fire hazards and related vulnerabilities and the use of the ICT FFM system. |
| 2.6Assessment of ICT FFM application | Assessment of the pilot use/application of the system and enhancement in preparation for its full operation. |
| **Component 3** | **Capacity building of major actors from government, private sector, and communities.** |
| 3.1 Stakeholders’ consultation, awareness, campaign, and covenant formulation | Forging an agreement to widen participation in fire detection, reporting, and response in support of the whole-of village/society’s efforts in addressing the forest fire problem. |
| 3.2 Training of technicians for ICT-based sustained fire prevention and control efforts | Technicians from the governments (and private sectors) will be continuously trained to provide overarching technical support in the implementation of the ICT-FFM system. They can also serve as trainers for the villagers/communities who will participate in forest fire detection, monitoring, and response. |
| 3.3 Training of policy-makers and development/formulation of ICT-based forest fire response policies/protocol for roll-out | Training of policymakers will be facilitated by the project in preparation for the actual workshop on the formulation of government and community/village level guidelines or policies for the sustained application and roll-out of the ICT FFM system in both Cambodia and Viet Nam. |
| **Component 4** | **Knowledge sharing across the Mekong region through existing/potential platforms and network** |
| 4.1 In-country workshops to consolidate experiences and lessons | Workshops will be facilitated to consolidate the experiences and lessons from the pilot sites in both countries highlighting peculiarities and the general approaches applied and observed in the use of the ICT-based FFM system. |
| 4.2 Development of knowledge products for ICT-based rollout application | Based on the lessons and experiences, guidelines and knowledge materials will be produced on ICT-based FFM for potential rollout application adaptive to the differences, peculiarities, and similarities in Cambodia and Viet Nam, and other countries in the Mekong region. |
| 4.3 Knowledge-sharing workshops among GMS and AFoCO countries and drafting of ICT-based FFM cooperation protocols | Convening key agencies and practitioners on fire detection, prevention, and control and sharing of the experiences and lessons on the use of the ICT FFM system. A draft of cooperation protocols will be developed and discussed among the Mekong region and AFoCO member countries cognizant of the activities and contributions of other projects of similar nature and objectives. |
| 4.4 Learning visit/s | To gain first-hand knowledge and for broader knowledge-sharing on the application of the ICT-based FFM system, the Mekong region and AFoCO member countries will be enjoined to visit pilot demo sites in Cambodia and Viet Nam. |

**Project’s Monitoring and Evaluation (M & E) Framework**

| **Results** | **Result Statement** | **OVI** | **Definition (How calculated?)** | **Baseline** | **Target** | **Data Source/ MoV** | **Frequency** | **Responsible**  **(Who will measure?)** | **Reporting**  **(When to report?)** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Impacts** | 1. Reduced incidence of forest fire in pilot sites (in-country) | Forest fire incidence | Frequency or No. of occurrence | 100% | 50% less | Government Record | Final evaluation of the project  3 years post-project | Government agencies/ AFoCO and MKCF Secretariat | Post project report  During cooperation meeting |
| 1. Enhanced cooperation among Mekong and AFOCO countries on forest fire resilience | Enhanced ICT-based FFM cooperation protocol for the Mekong and AFoCo member countries | No. of draft FFM protocol for Mekong Region | 0 | 1 | AFoCO/ MKCF | Post project | AFoCO and MKCF Secretariat | During cooperation meeting |
| **Outcomes** | 1. In-country policy adopting the ICT-based FFM for roll-out | Policies for issuance by MAFF of Cambodia and MARD of Viet Nam | No. of Govt issued instructions/policies (1 each) | 0 | 2 | Government records | Annual | AFoCO and MKCF Secretariat | Midterm and final project evaluation |
| 1. Improved in-country capability for the use of ICT-based FFM system | The structure defined and established for mobilization | No. instructions issued by the government  No. of government staff mobilized | 0 | 2 instructions  At least 20 | Government records | Annual | AFoCO and MKCF Secretariat | Midterm and final project evaluation |
| 1. Strengthened collaboration for forest fire detection, monitoring, and response | Villager communities and private sectors mobilized and participated in the ICT-based FFM | No. of forest villagers and private sector participants | 0 | At least 5 villagers per country  At least 5 private sectors participated | Government records | Biannual | AFoCO and MKCF Secretariat | Annual |
| 1. Increased awareness and knowledge of GMS and AFoCO member countries on the use of the ICT FFM system | Countries participated in the learning visits and cooperation workshops | No. of represented countries in learning visits and cooperation workshops | 0 | At least 5 countries | AFoCO and project record | once | AFoCO and MKCF Secretariat | Last semester of the project |
| Knowledge products developed and shared | No. of knowledge products documented and packages and shared | 0 | At least 3 | AFoCO and project record | once | AFoCO and MKCF Secretariat | Last semester of the project |
| **Outputs** | 1. Forest fire Vulnerability and other forest threats assessment | Forest Fire Vulnerability and other threats/disaster Assessment | No. of sites | 0 | 6 | Forest fire vulnerability maps & VA and Threats assessment reports | once | AFoCO and MKCF Secretariat | Quarterly/Bi-annual |
| 1. ICT-based forest protection plan (forest fire and other threats management plan) developed and implemented by the communities and government | ICT-based forest protection plan approved and adopted by the government | No approved forest protection plan | 0 | 1 | Project record/government record |  |  |  |
| Forest communities/ villagers adopted forest protection plans and integrated them into their CF management plans | No of the villages that integrated the forest protection plan | 0 | 5 | Project records | Bimanual | AFoCO and MKCF Secretariat | Annual |
| 1. ICT-based FFM protocols developed and implemented/ used | ICT-based FFM Implementation/ User’s Manual | No. of User’s Manual | 0 | 1 | Project publication | once | AFoCO and MKCF Secretariat | Quarterly/Bi-annual |
| ICT FFM system reporting terminals established and functional | No. of reporting terminals established (1 for each country) | 0 | 2 | Hardware and software setup | First-year/once | AFoCO and MKCF Secretariat | Quarterly/Bi-annual |
| Procurement of software and hardware | No. of hardware and software procured and installed | 0 | 100 smartphones (50 per country)  I hydro met per country  (note: computer set up will be provided by respective country) | Procurement record of the project | Biannual | AFoCO and MKCF Secretariat | First year (2nd semester) |
| Trained government staff/technicians, and other stakeholders mobilized for fire detection, monitoring, and response | No. of trained MAFF and MARD staff, local communities, and private sector | 0 | At least 100 pax trained | Training documentation | Biannual | AFoCO and MKCF Secretariat | Annual |
| Modules developed for the application of ICT-based FFM and reporting terminals | 0 | 6 | Project’s training documentation | Biannual | AFoCO and MKCF Secretariat | End of the year |
| Actual field-based Forest fire occurrences and threats data gathering (detection, monitoring, and reporting) and deployment of response | Monthly data gathered and uploaded to the ICT system were analyzed, responded | 0 | At least 16 months’ worth of data on fire occurrences and threats reported, analyzed, and/or responded | ICT FFM system/dashboard | Quarterly | AFoCO and MKCF Secretariat | Quarterly/ Bi-annual |
| 1. Collaboration with other projects | Meetings/ workshops | No. of meetings/ workshop | 0 | 3 | Minutes of meetings/ agreements | Biannual | Internal to the Project | Annual |