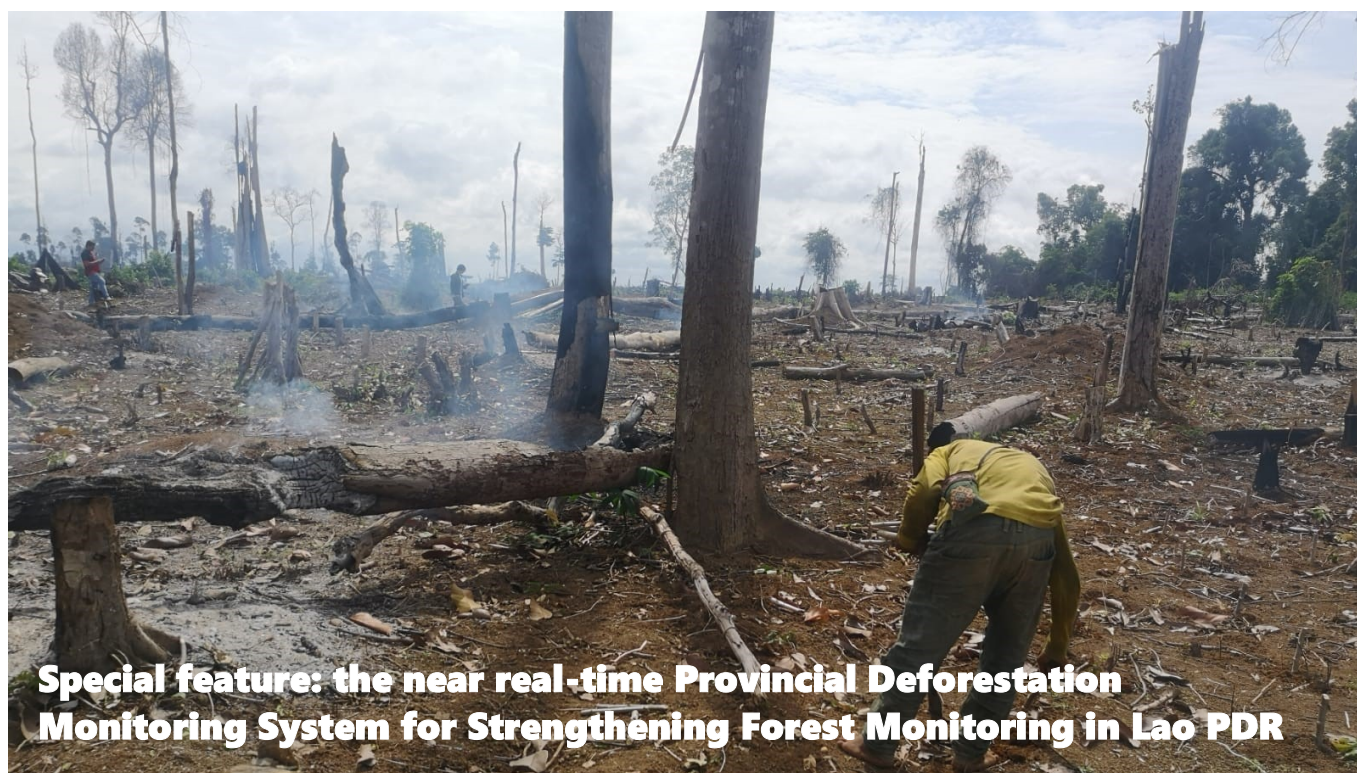


F-REDD 2 Newsletter

The Project for Enhancing Sustainable Forest Management in
Collaboration with REDD+ Programs and REDD+ Funds (F-REDD 2)
Feb 2022 - Jan 2027

The F-REDD 2 was formulated under the Government of Laos and JICA (Japan International Cooperation Agency), aiming to support access to and the implementation of REDD+ results-based payments, to strengthen the capacity for sustainable forest management through the implementation of the Forest Strategy 2035, and to further promote the implementation of REDD+ actions.



Special feature: the near real-time Provincial Deforestation Monitoring System for Strengthening Forest Monitoring in Lao PDR

■ Purpose and role of forest monitoring system

The government of Lao PDR is promoting various initiatives to conserve and restore forests with the aim of achieving 70% forest coverage. However, due to the expansion of cash crop cultivation and livestock grazing, as well as other development projects, forests that should be conserved have been cleared and converted to agricultural land and other purposes. In order to control such deforestation, it is necessary to strengthen the monitoring of the target forests for conservation; however, the challenge is that the forest monitoring system and methodology are not well developed.

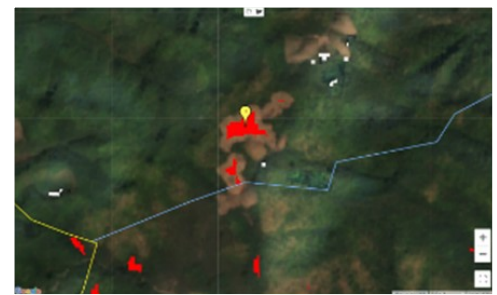
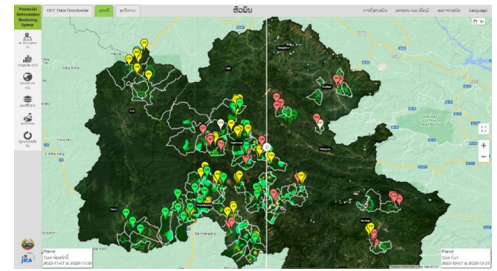
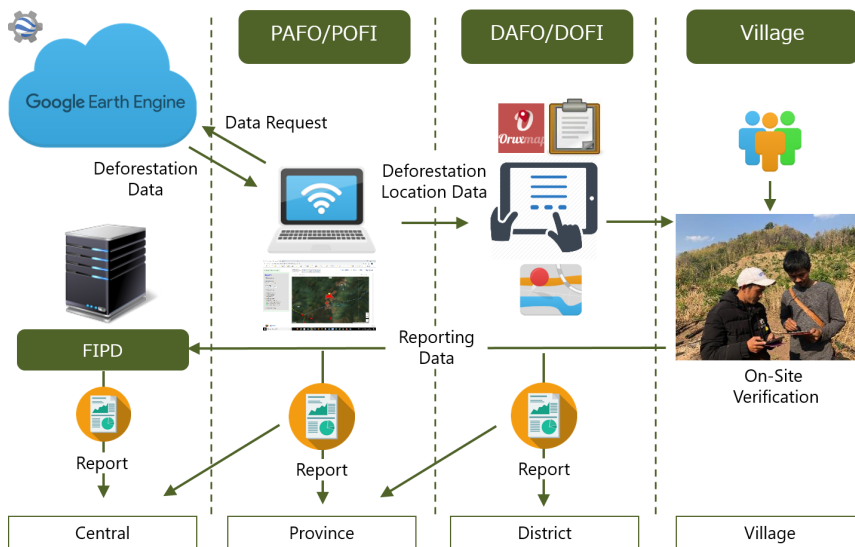
Against this background, Laos has recently been strengthening its forest monitoring with the support of various development partners. The JICA-F-REDD 2 Project has developed the near real-time Provincial Deforestation Monitoring System (PDMS) — which is a forest monitoring tool that combines near-real-time monitoring of land use changes based on satellite information and field surveys and is being introduced to the provinces.

■ PDMS Monitoring Targets

The PDMS can be used in all target forests for conservation in every province of Lao PDR. Currently, the system is mainly used to monitor illegal logging and illegal clearing for agricultural use that occurs in national parks, conservation forests, protection forests and production forests designated by the relevant national and provincial governments.

Overview of the PDMS

Forest monitoring using the PDMS is divided into three main steps.



① Satellite image analysis to identify deforestation areas (provincial forestry officer)

The system semi-automatically detects the deforestation areas of more than 0.2 hectares using machine learning scripts from satellite imagery (Sentinel-2 MSI Level-2A: 10 m resolution, five-day frequency) running on Google Earth Engine, a cloud-based geospatial analysis platform. Further, using higher-resolution satellite imagery (NICFI Planet monthly imagery), deforestation areas can be visually verified individually — whether deforestation is indeed occurring in the target forests for conservation. Once deforestation areas have been identified by this process, plot data is then sent to the district forest officer's email account. These tasks are carried out by the provincial forestry officer and can be executed with a web application on a laptop computer.

② Field surveys of deforestation areas to check the current state of deforestation (district forestry officers)

Upon receiving the deforestation plot data sent by the provincial forestry officer, the district forestry officer displays the location of that deforestation area on the map application of a tablet or smartphone and goes to the village where the deforestation has occurred. After confirming the location of the deforestation area together with the villagers, the forestry officer uses the survey form application on these devices to input the necessary data, including the date and time of the survey, the location of the deforestation area, the purpose of the land conversion and the land area of deforestation. At this point, if necessary, the offender will be given instructions to stop logging.



③ Compile and report the results of deforestation monitoring

Data recorded in the field are semi-automatically transferred to and stored on a central server at the Forest Inventory and Planning Division (FIPD) of the Department of Forestry (DOF). The relevant departments compile this information as required and utilize it for reporting.

Provincial Deforestation Monitoring System				Savannakhet	
<div>Monitoring Plot</div> <div>Forest Loss</div> <div>Satellite Image</div> <div>Base Map</div> <div>Target Area</div> <div>Related Image</div>	GEE Data Downloader		Map	Plot List	
	Plot number	Process	Registration date	Date of Survey	
	39	Report from village and field observation		Jan. 26, 2023	
	92	Completed (including field investigation)		Feb. 9, 2023	
<div>Monitoring Plot</div> <div>Forest Loss</div> <div>Satellite Image</div> <div>Base Map</div> <div>Target Area</div> <div>Related Image</div>	93	Report from village and field observation		Feb. 9, 2023	
	94	Report from village and field observation		Feb. 9, 2023	
	95	Report from village and field observation		Feb. 10, 2023	
	96	Report from village and field observation		Feb. 10, 2023	
	97	Report from village and field observation		Feb. 10, 2023	
	99	Started field investigation	Feb. 28, 2023		
	106	Completed field investigation	Mar. 1, 2023	Mar. 27, 2023	
	140	Report from village and field observation		Mar. 3, 2023	
	141	Report from village and field observation		Mar. 3, 2023	
	142	Report from village and field observation		Mar. 3, 2023	
	143	Completed field investigation	Mar. 3, 2023	Mar. 3, 2023	
	144	Report from village and field observation		Mar. 6, 2023	
	145	Report from village and field observation		Mar. 6, 2023	
	148	Completed field investigation	Mar. 26, 2023	Mar. 27, 2023	
	150	Completed field investigation	Mar. 26, 2023	Mar. 27, 2023	
	151	Completed field investigation	Mar. 26, 2023	Mar. 27, 2023	

■ Key benefits of the PDMS

The PDMS has been evaluated as a practical monitoring tool that can dramatically change the method of forest monitoring in Lao PDR.

- Feedback from Users -

"The PDMS allows us follow a standardized survey form and use our smartphones to record the information necessary for forest monitoring. It's also easier to report the results than before!" (District Forestry Officer, Oudomxay Province)

"Using the PDMS, we were able to identify illegal clearing for agricultural use that occurred in the village conservation forest. We also provided administrative guidance to offenders and collected fines in accordance with regulations. The fines were stored in a village fund and used for village forest patrolling activities." (Provincial Forestry Officer, Oudomxay Province)

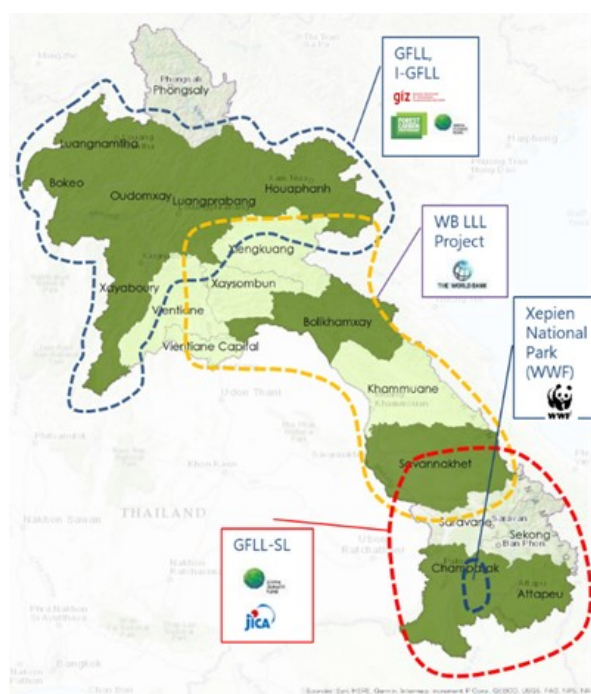
"Previously, monitoring was only carried out when villagers reported to the district office, and it was really hard to know what illegal logging was actually going on. The PDMS has been useful for more accurately identifying deforestation areas.." (Provincial Forestry Officer, Luang Prabang Province)

■ Deployment of the PDMS in Laos

The PDMS was introduced in 2019 in the provinces of Luang Prabang and Oudomxay in northern Laos in support of F-REDD, the phase prior to F-REDD 2. Based on positive results, a PDMS operation manual was developed and, in collaboration with other projects, PDMS introductory training was provided to each target province. A total of 351 forestry officers have been trained to date. As a result, as of July 2023, 10 out of 18 provinces of Lao PDR are deploying PDMS as an effective tool for forest monitoring.

PDMS Target Area	Collaborative Donor
<u>Northern Laos</u> Luang Prabang, Houaphan, Sayaburi, Oudomxay, Bokeo and Luang Namtha provinces.	I-GFLL (GCF/GIZ) GFLL (World Bank FCPF Emission Reduction Programme)
<u>Central Laos</u> Bolikhamsay and Savannakhet provinces.	LLL (World Bank) F-REDD 2 (JICA)
<u>Southern Laos</u> Xe Pian National Park (Champasak and Attapeu provinces)	FORREDD (WWF).

(As of June 2023)



■ Future developments of the PDMS

PDMS introductory training is also planned for new provinces for the expansion of the PDMS in 2024; these provinces include Vientiane, Xaysomboun, Xiengkhouang and Khammouane, which are the target areas under the World Bank's Lao Landscapes and Livelihoods (LLL) project. In addition, F-REDD 2 also supports technical follow-up, working with each project to ensure forest monitoring using the PDMS.

Moreover, to make the PDMS a more user-friendly forest monitoring tool, F-REDD 2 will work on improving and upgrading the system based on user requests, while also improving the efficiency of forest monitoring operations by introducing drones, improving reporting, and creating a dashboard to "visualize" survey results.

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