FOREST MANAGEMENT PLANNING INFORMATION SYSTEM – WEB APPLICATION

Drafted: 02 December 2025

1. Introduction

1.1 Purpose

The web application aims to visualize the map data which integrated into forest management planning (FMP) information system (e.g., FLUZ data, forest disturbance data, forest categories, forest types, elevation, slope, rainfall...).

1.2 Key Features

Key features of web application are:

- Visualize and display the map data through thematic layers
- View information/ parameters of integrated data (e.g., FLUZ data, forest disturbances data....)

1.3 Target Users / Audience

The web application is published, so everyone can access the web application to view the data (view only, not edit the data).

The users can be classified into two groups:

- **Group 1**: Users working directly in the forestry sector, including DoF, FIPD, forestry companies, forest management boards...
- **Group 2**: Users who are interested in the forestry sector and want to view the data (e.g., individuals, organizations...).

1.4 Dataset availability

In this version of web application, available datasets are listed as below table:

#	Layer Name	Description	Data source
1	Lao boundary	Boundary of Lao PDR	Project

#	Layer Name	Description	Data source
2	Province boundary	Boundary of provinces	Project
3	District boundary	Boundary of districts	Project
4	Village boundary	Boundary of villages (only core villages currently)	FIPD
5	House/Building location	Location of houses and buildings, derived from high resolution satellite imagery	Open data
6	New disturbances 2025	Areas disturbed newly in the first 5 months of 2025	Project
7	New disturbances 2024	Areas disturbed newly in 2024	Project
8	Forest category	Forest category (Protected areas; Protection forest areas; Production forest areas).	Project
9	Preliminary FLUZ- Good forest zone	Preliminary good forest zone identified and used for FLUZ mapping	Project
10	Preliminary FLUZ- Agroforestry/non-forest zone	Preliminary agroforestry/Non- forest zone identified and used for FLUZ mapping	Project
11	FLUZ- Good forest zone	Good forest zone from FLUZ data validated by village	FIPD
12	FLUZ- Agroforestry/non-forest zone	Agroforestry/Non-forest zone from FLUZ data validated by village	FIPD
13	FLUZ- Village conservation forest	Village conservation forest, derived by FLUZ data	FIPD
14	FLUZ- Village protection forest	Village protection forest, derived by FLUZ data	FIPD
15	FLUZ- Village use forest	Village use forest, derived by FLUZ data	FIPD
16	Forest not disturbed last 15 years	Forests not disturbed last 15 years (2009-2023)	Project
17	Forests disturbed 8-15 years ago	Forests disturbed 8-15 years (2009-2016)	Project
18	Forests disturbed last 7 years	Forests disturbed last 7 years (2017-2023)	Project
19	Forests disturbed last 15 years	Forests disturbed last 15 years (2009-2023)	Project
20	Permanent non forest	Permanent non forest	Project
21	Slope	Slope classified (0-15°; 15-25°;25-35°; >35°)	Project
22	Elevation	Elevation classified (<200m; 200-500m; 500-1000m; 1000-1500m; 1500-2000m; 2000-2500m; >2500m)	Project

#	Layer Name	Description	Data source
23	Forest type 2022	Forest types from National forest inventory data grouped into 7 classes (Current forest; Potential forest; Other vegetated areas; Cropland; Settlement; Other lands; Above-ground water source)	FIPD
24	NDVI	Normalized Difference Vegetation Index, derived from Sentinel-2 imagery in 2025 (Currently)	Free data
25	Sentinel-2, 2025	Sentinel-2 imagery in 2025	Free data
26	Sentinel-2, 2023	Sentinel-2 imagery in 2023	Free data

1.5 Environment and Internet connection

The web application can access using web browsers with internet connection.

2. Getting Started

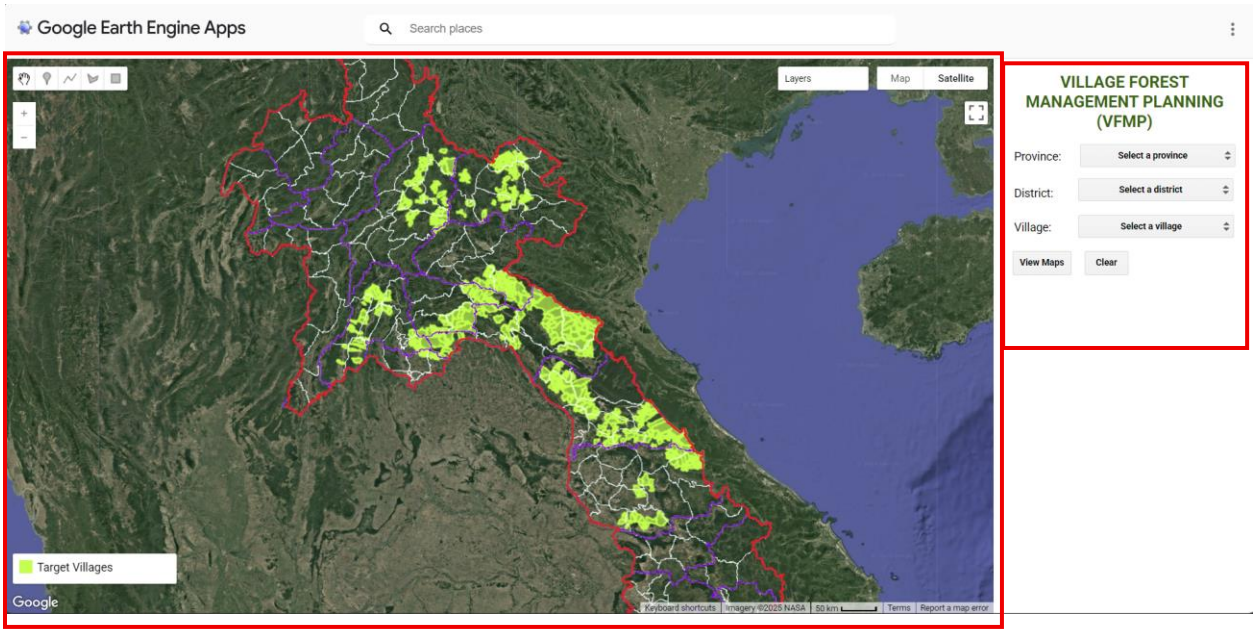
2.1 Accessing the Web App (URL)

The web application of FMP information system can access via:

https://ee-dongformis.projects.earthengine.app/view/fmplllv2

The users can use popular web browsers (e.g., Google Chrome, Moniza Firefow, Microsoft Edge, Safari (Mac, Iphone) ...) to access the FMP web application.

2.2 Web application user interface (UI)



The web application UI includes key components, including:

- **Map window**: Map window is the main area of web application in which the map is displayed. In the map window, users can change the basemap (Satellite, Terrain…), interactive layers (admin boundary, FLUZ, forest categories, forest type/NFI…), zoom controls (Zoom in/ Zooom out, scroll wheel), Pan tool (click and drag to move the map)
- **Village forest management planning (VFMP) window**: This window allows users to navigate to each village and visualize map data by village.

3. Using the Application Features

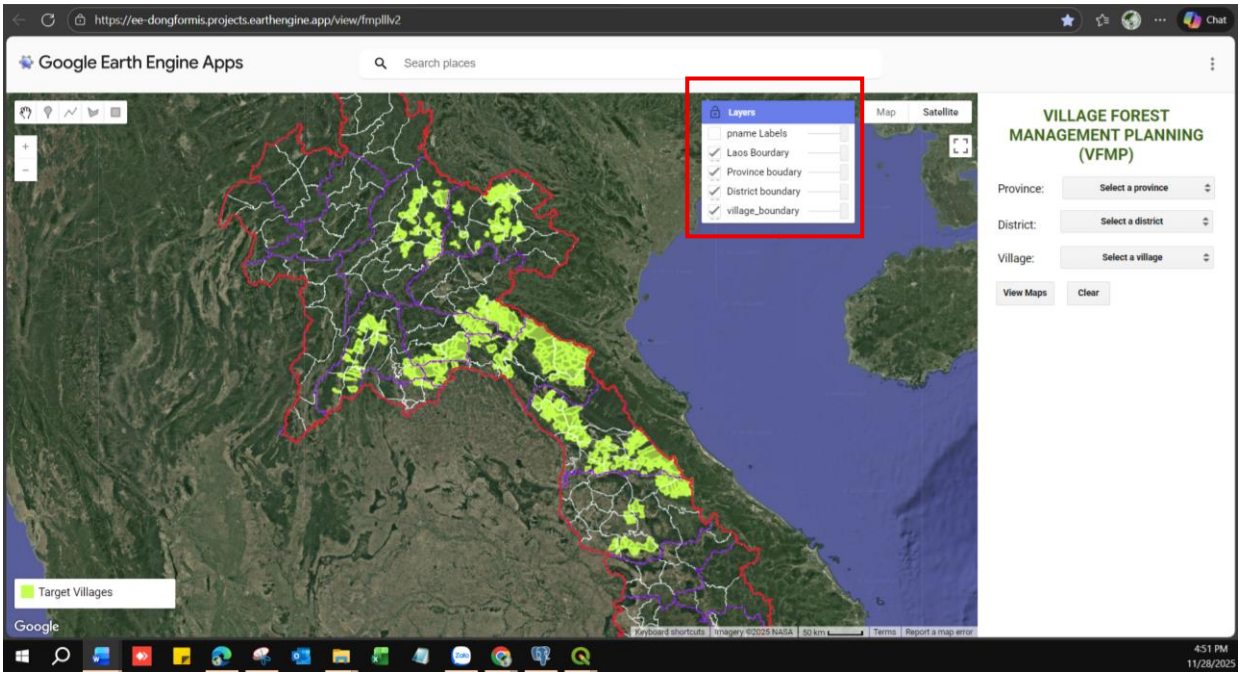
3.1 Visualize administrative boundary data

The web application allows users to visualize and display administrative boundaries of nation, province, district and villages.

In this function, the user can view map data and names of administrative data, including:

- National boundary of Lao PDR
- Provincial boundary
- District boundary
- Village boundary

- Names of admin units (Depending on the map scales / Zoom levels, the names will be shown in the web application).



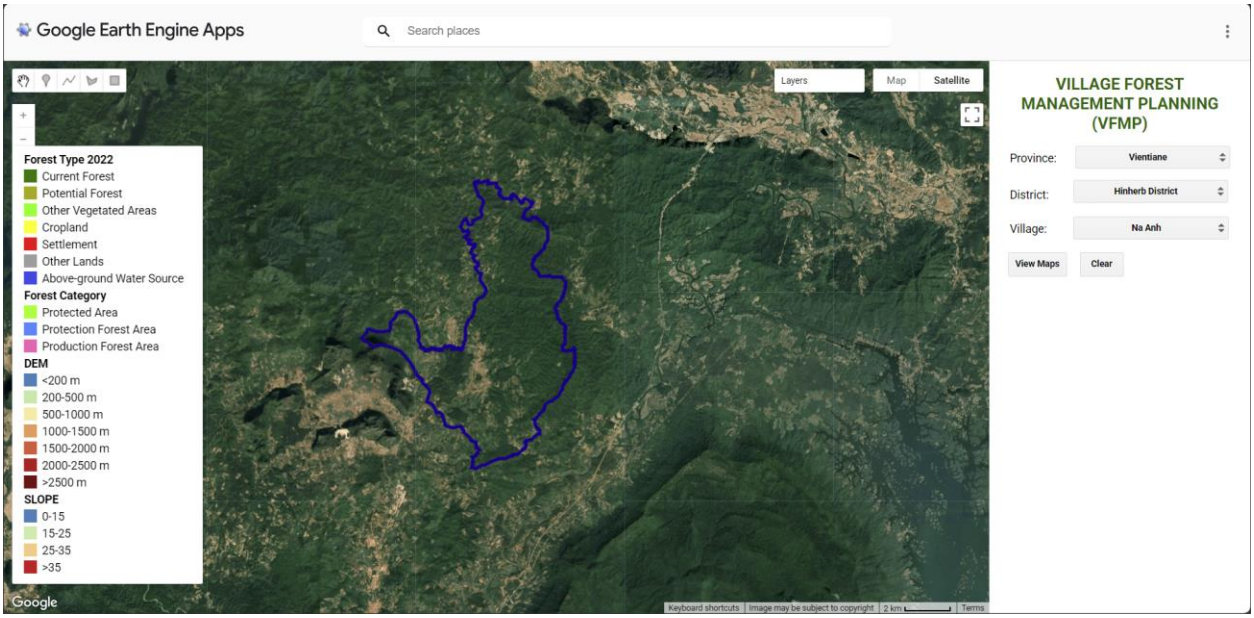
A note is that administrative layers can turn on or turn off in the “Layers” panel list.

3.2 Navigate to the village data

On the VFMP window, users navigate to a village by selecting the drop-down list:

- Select a province
- Select a district
- Select a village

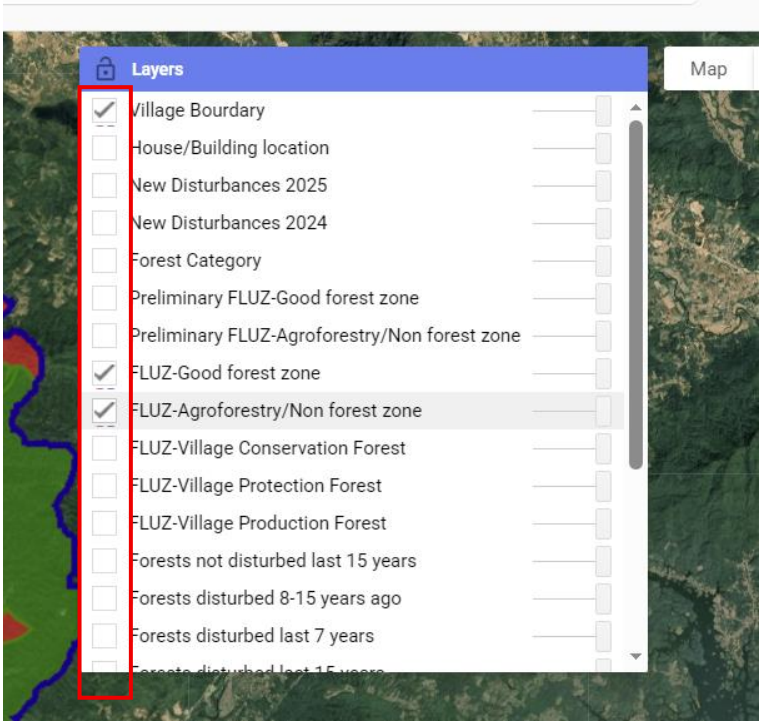
After, selecting a village, the user click on “View Maps” button to visualize and display the integrated maps.

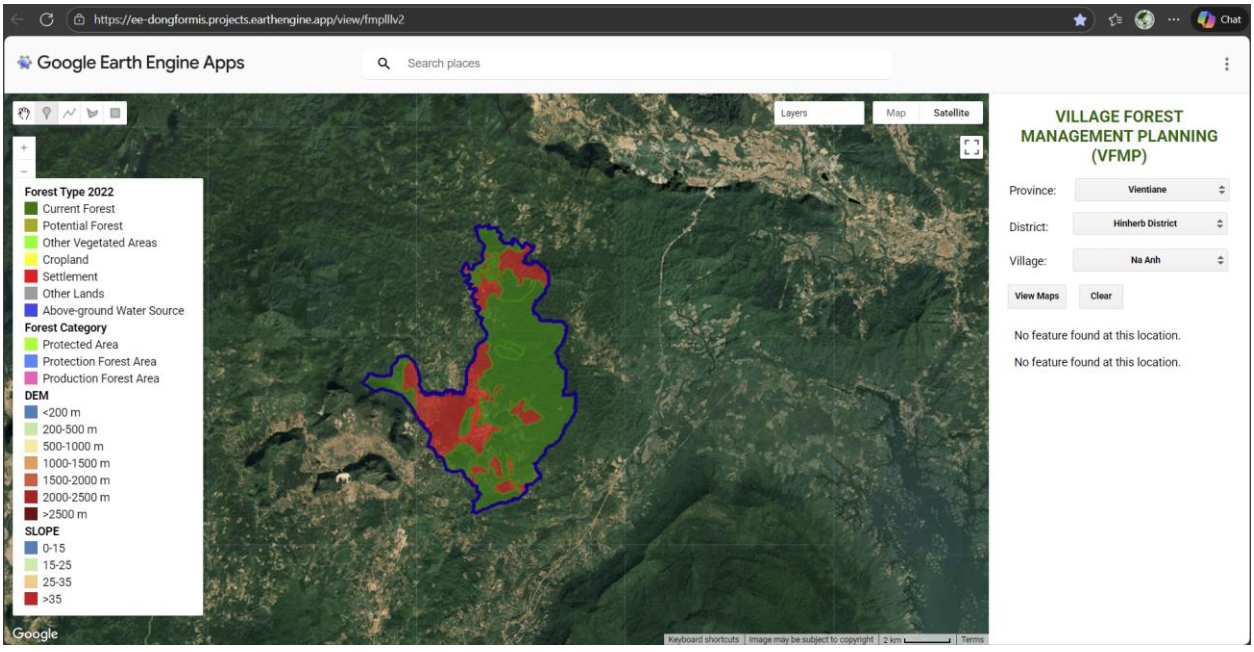


3.3 Visualize integrated datasets

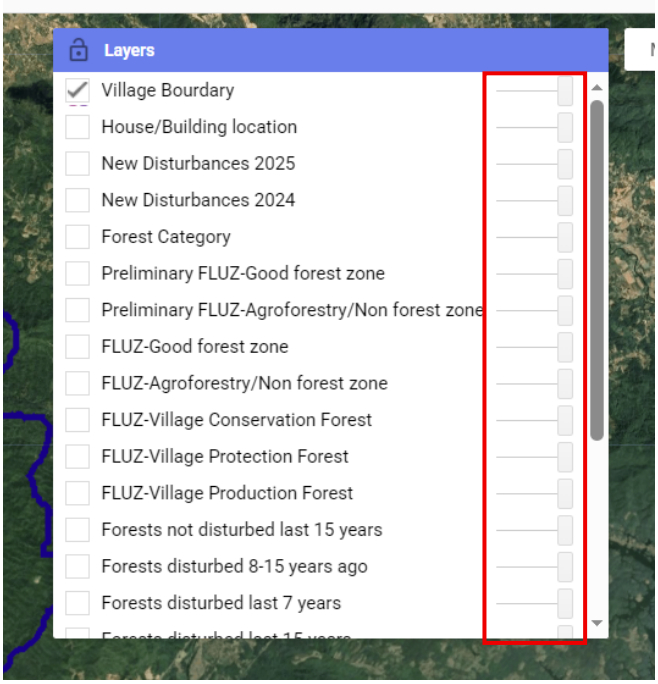
After navigating to a village, users can see the list of data sets in “Layers” list.

In order to display or hidden the layers, the users can turn on or turn off to each layer.



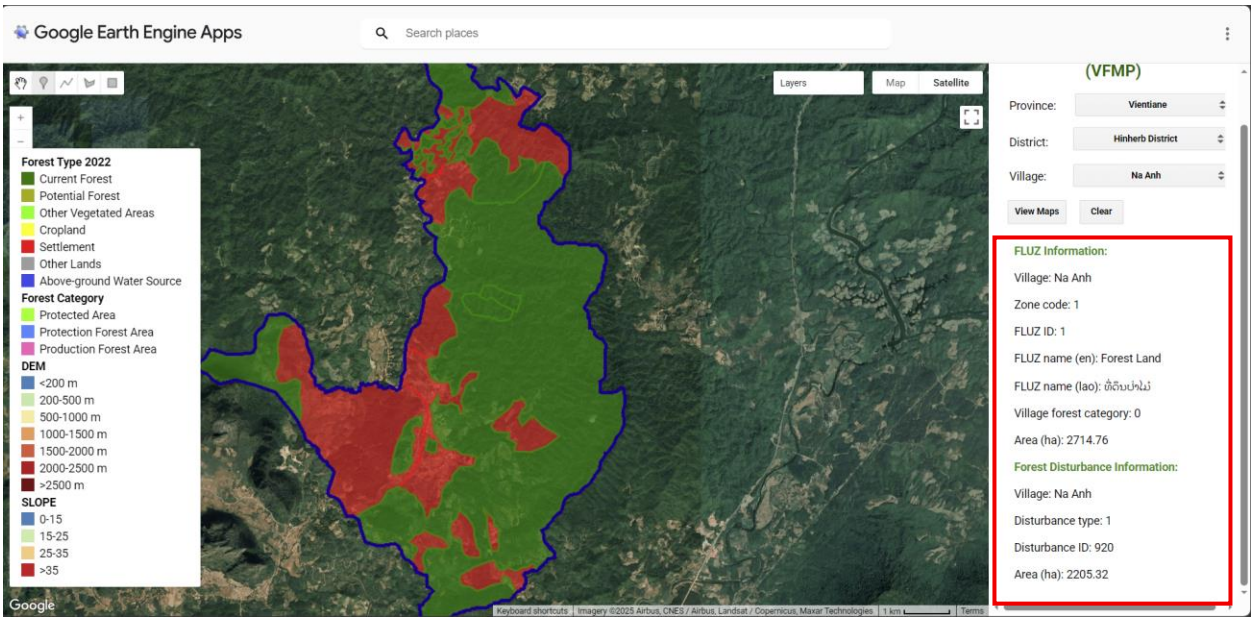


Users can change the transparency level for each layer using the transparency sidebar.



3.4 View information of FLUZ data and Disturbance data

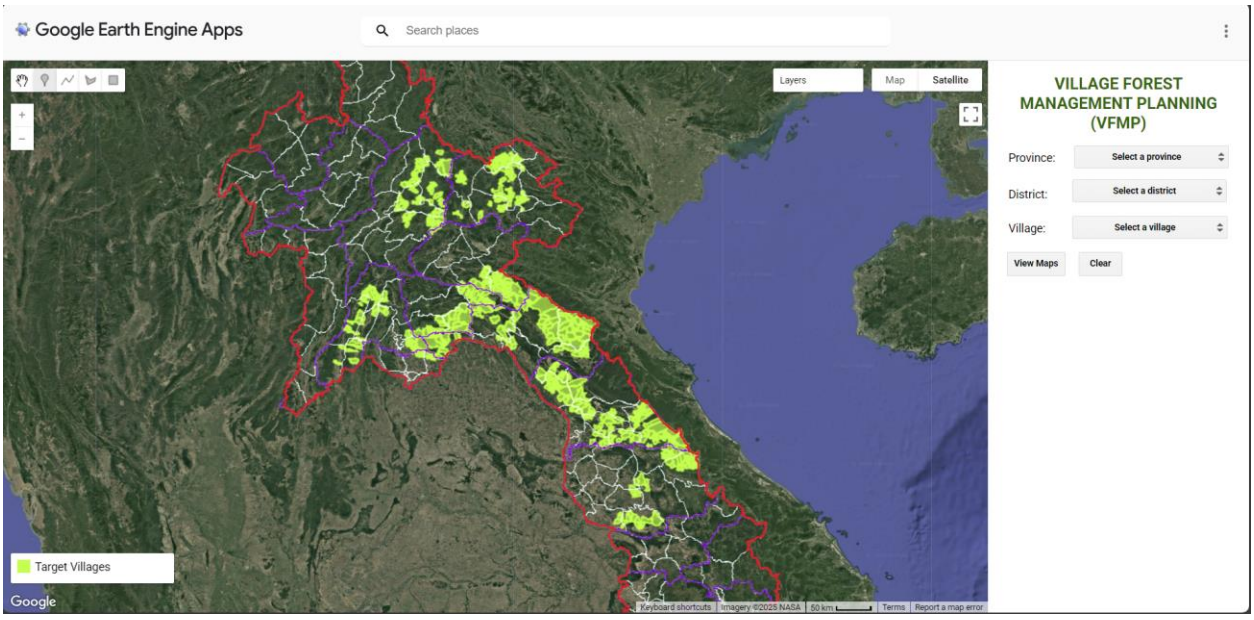
Users can view information of each FLUZ data and forest disturbance data, by clicking on the polygon.



4. Characteristics and visualization of data layers

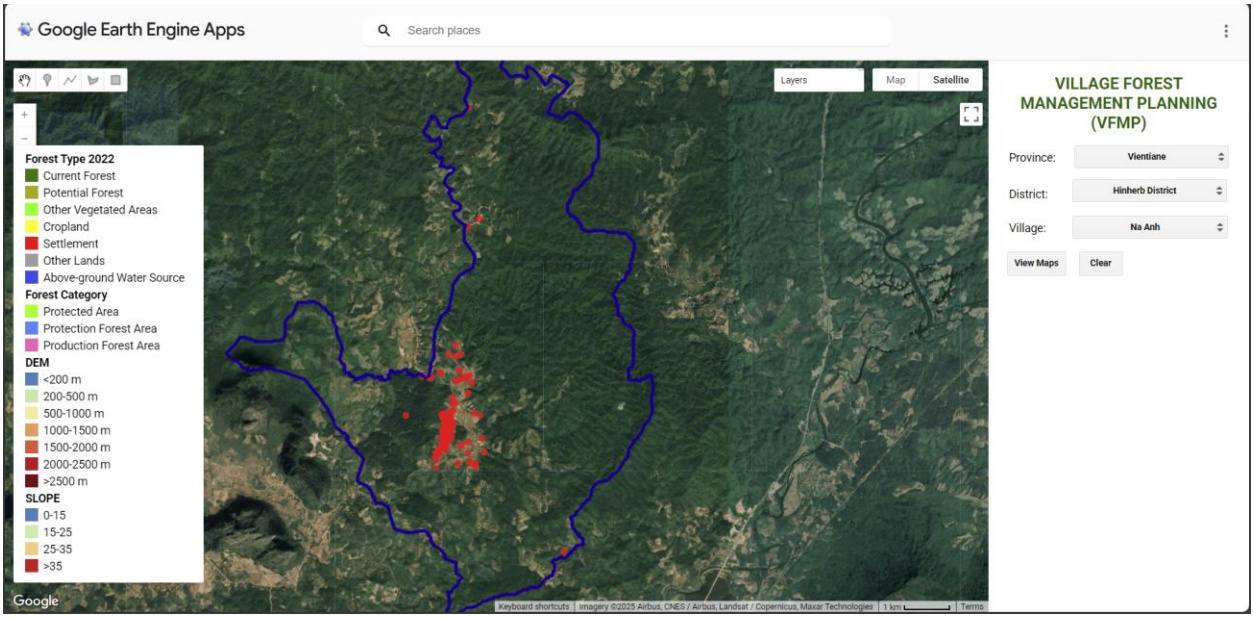
Visualize administrative boundaries

The administrative boundaries of Nation, province, district and village will be shown in the map window.



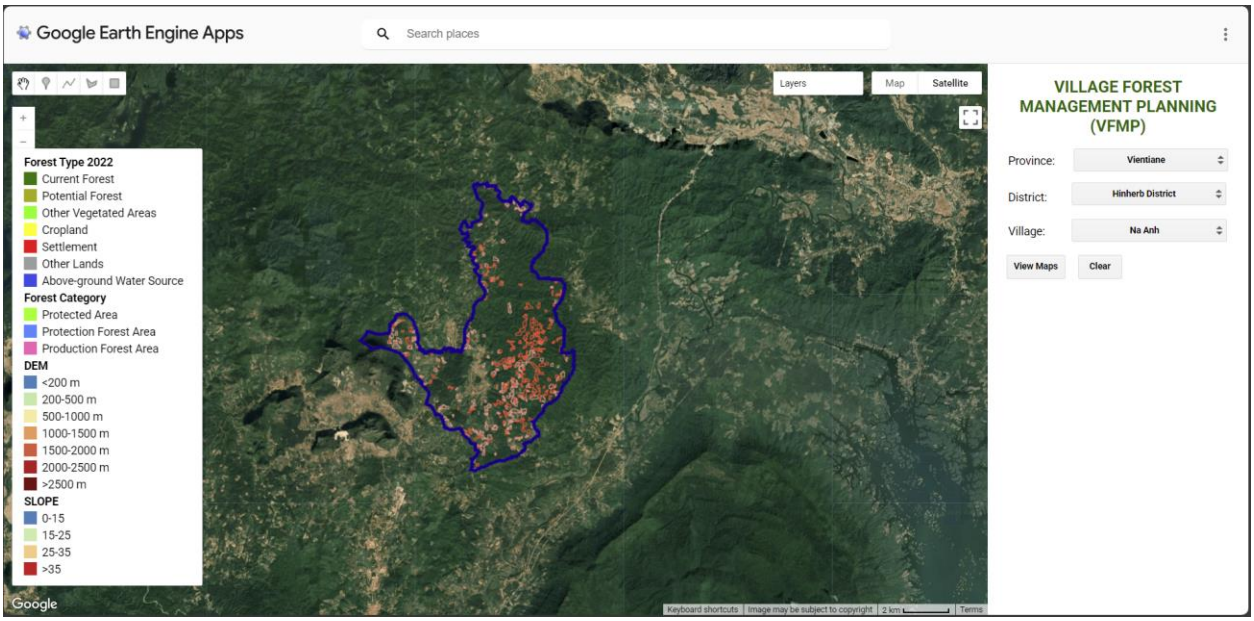
Visualize House/Building location

The house/building location is extracted from Open building V3, derivedfrom high-resolution 50 cm satellite imagery.



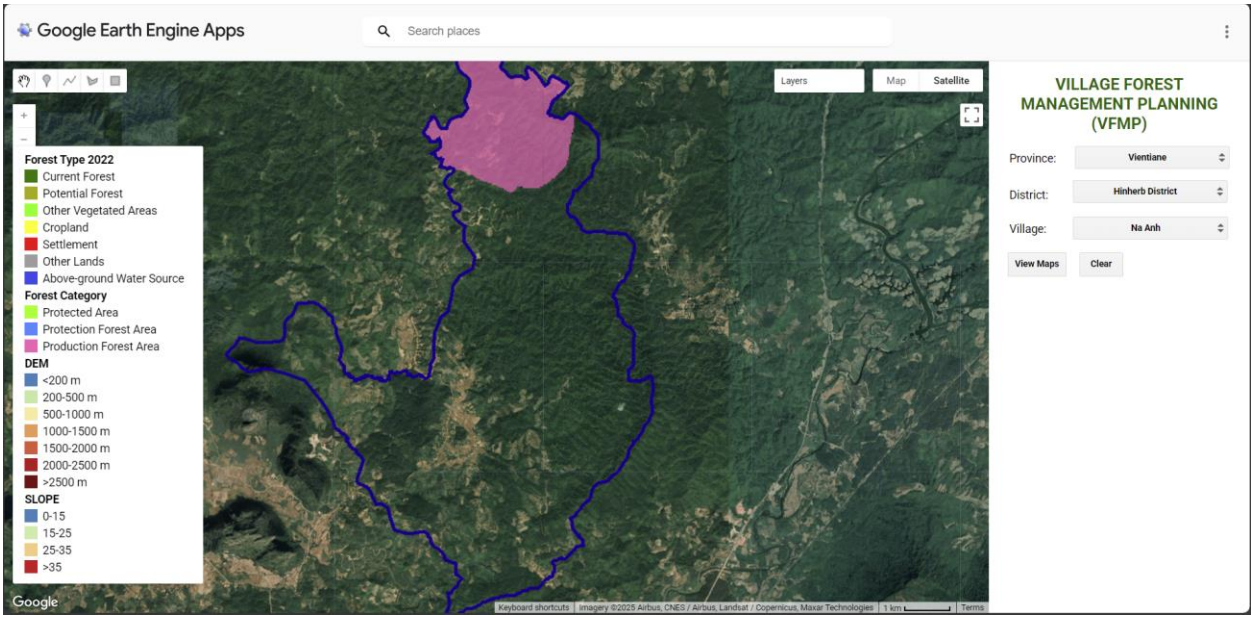
Visualize forest disturbances newly 2024 and 2025

The new forest disturbances are derived from satellite imagery for 2024 and the first months of 2025



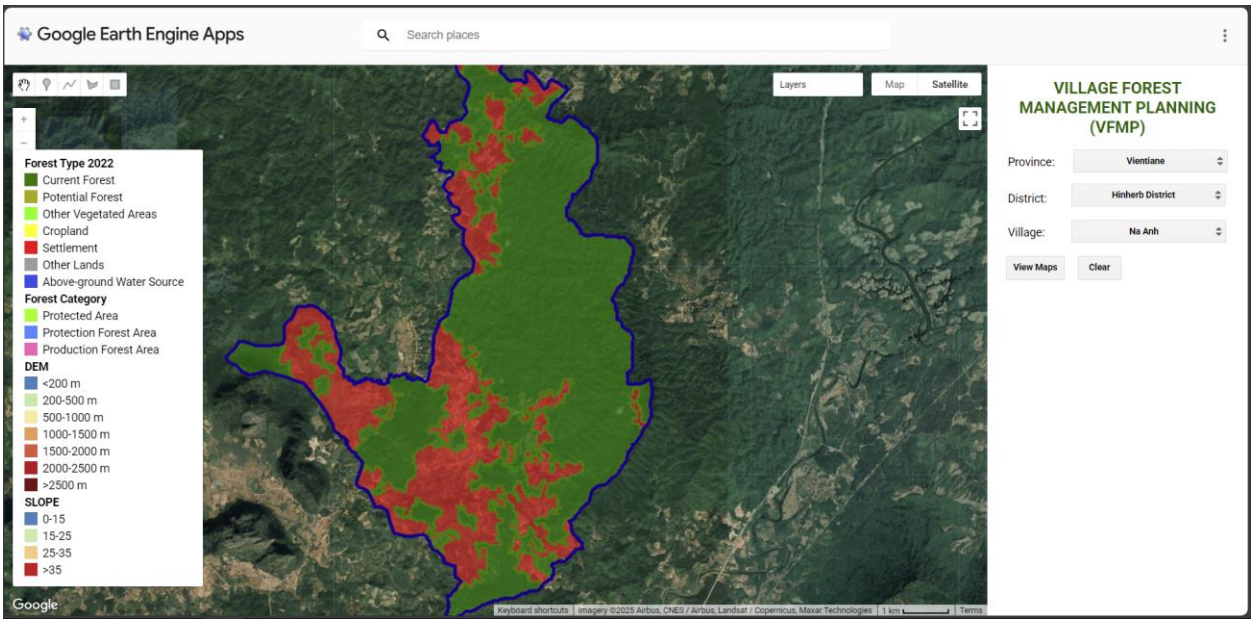
Visualize forest category (PA, PtFA, PFA)

This dataset includes areas of three forest categories in Laos, including i) Protected areas/forest conservation area (PA), ii) Protection forest area (PFA) and iii) Production forest area (PFA).



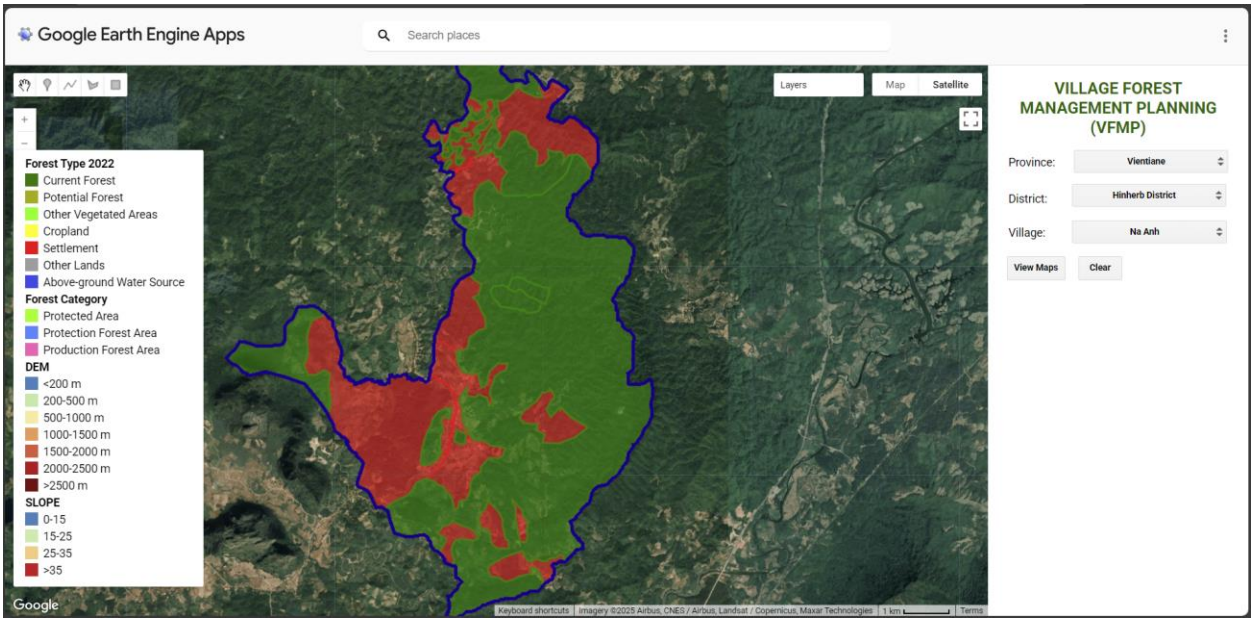
Visualize preliminary FLUZ data

The dataset is processed based on forest disturbance in the period of 15 years (2009-2023).



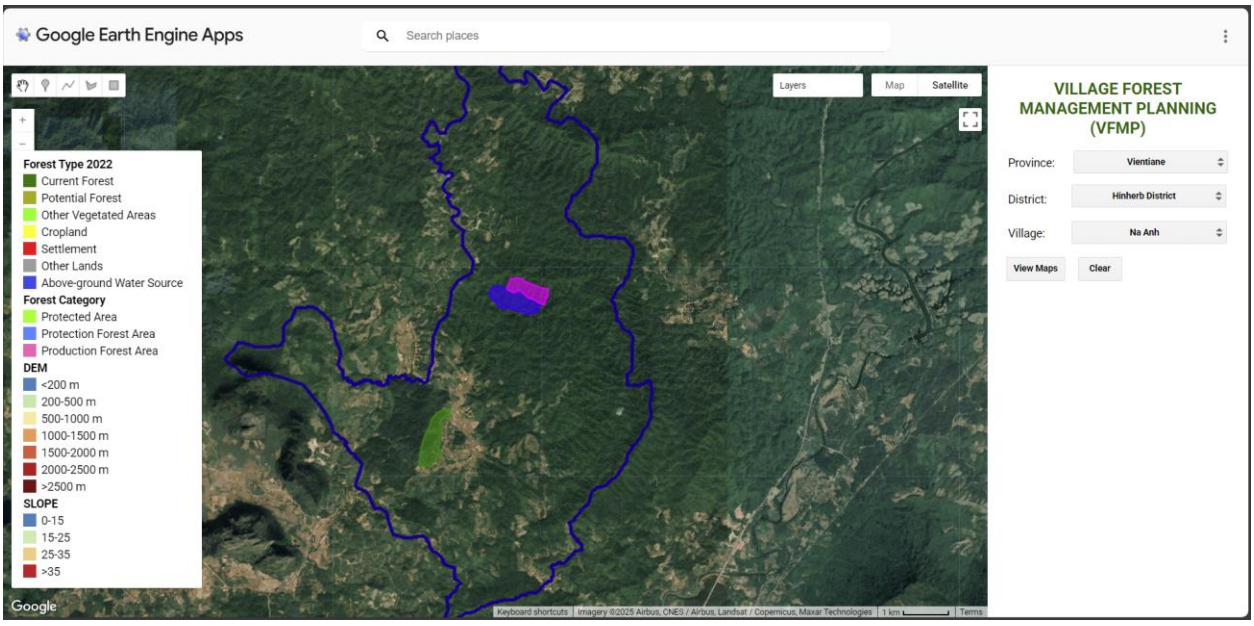
Visualize FLUZ data

FLUZ data is validated by village



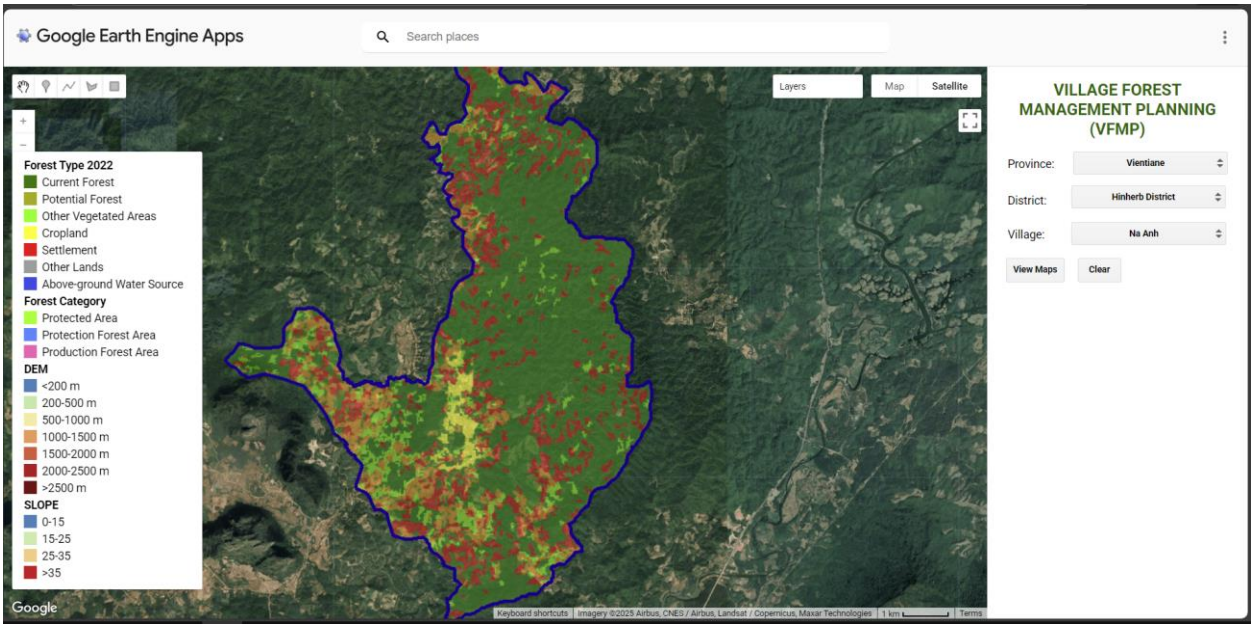
Visualize village forest category

This layer is a part of FLUZ data, the data includes i) village conservation fores, ii) village protection forest, and iii) village production forest.



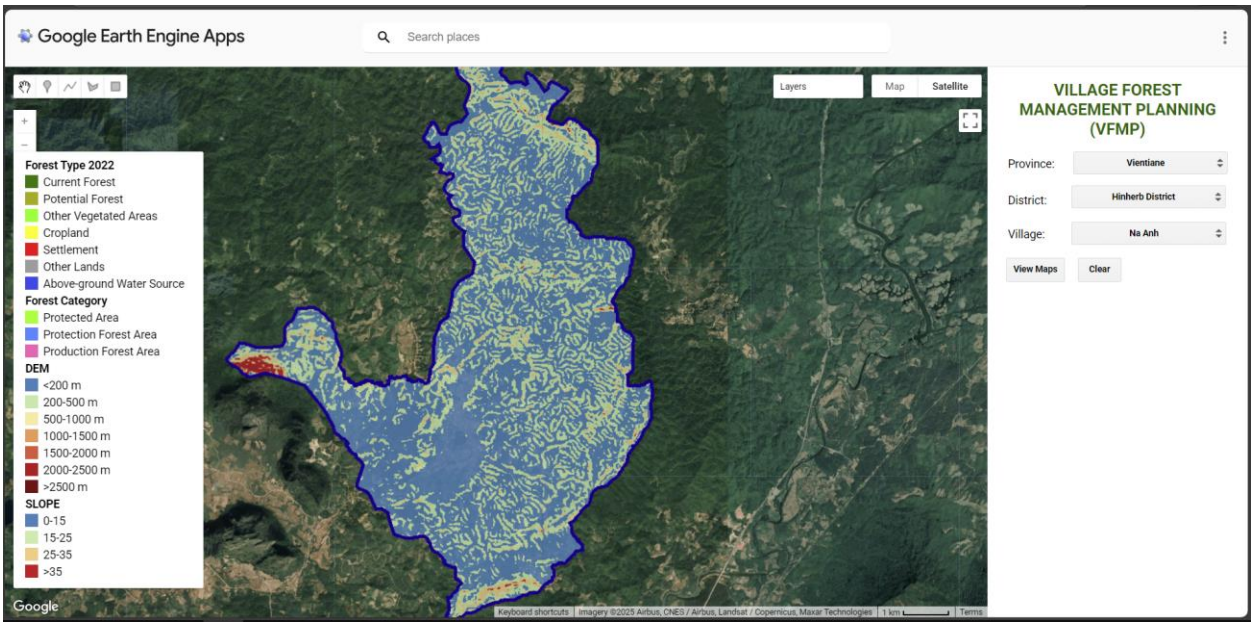
Visualize forest disturbances

The dataset is processed based on forest disturbance in the period of 15 years (2009-2023). It is divided into 5 classes: i) forests not disturbed during 15 years; ii) forests disturbed in 8-15 years ago; iii) forests disturbed during the past 7 years; iv) forests disturbed during the past 15 years, and v) non-forests.



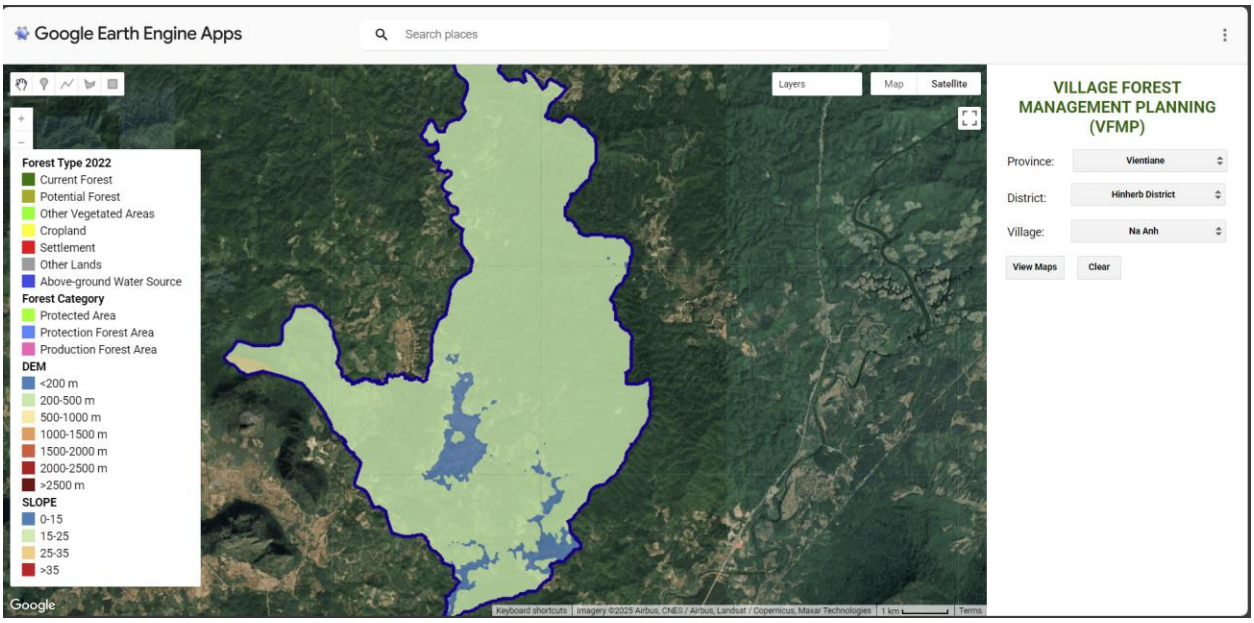
Visualize slope classification

Slope data is derived from digital elevation data. The slopes are classified into 4 classes: slope <15; slope from 15 to 25; slope from 25-35; and slope >=35



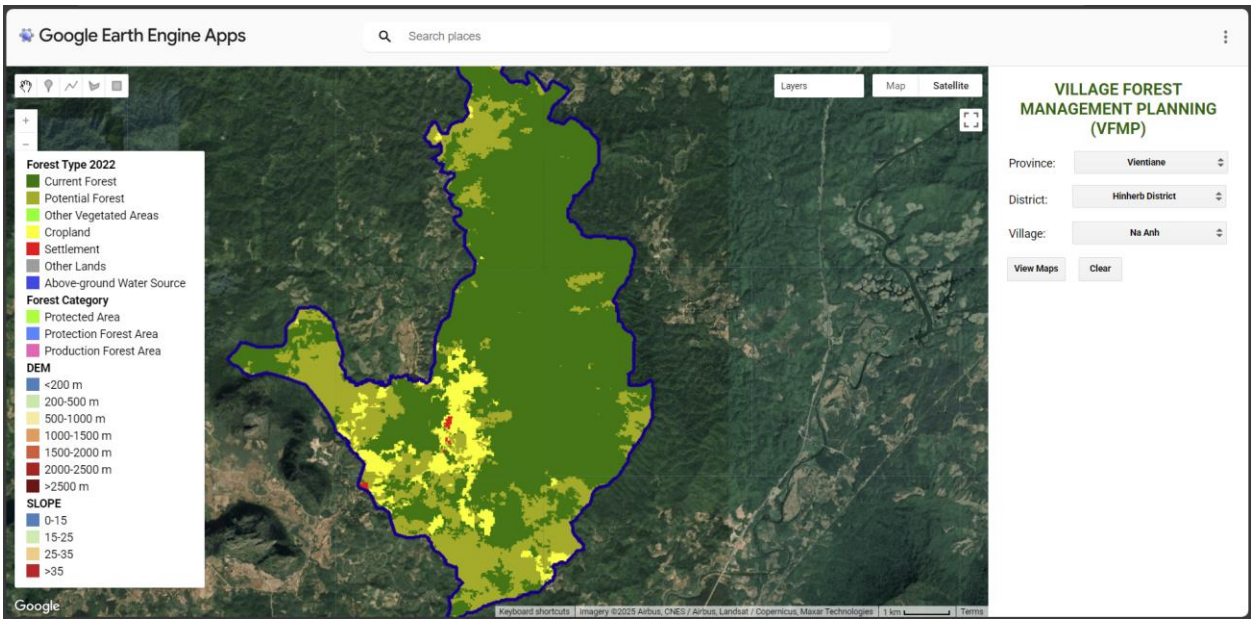
Visualize elevation data

The elevations are classified into 7 classes: elevation <200m; elevation from 200-500m; elevation from 500-1000m; elevation from 1000-1500m; elevation from 1500-2000m; elevation from 2000-2500m; and elevation >=2500 m.



Visualize forest type data 2022

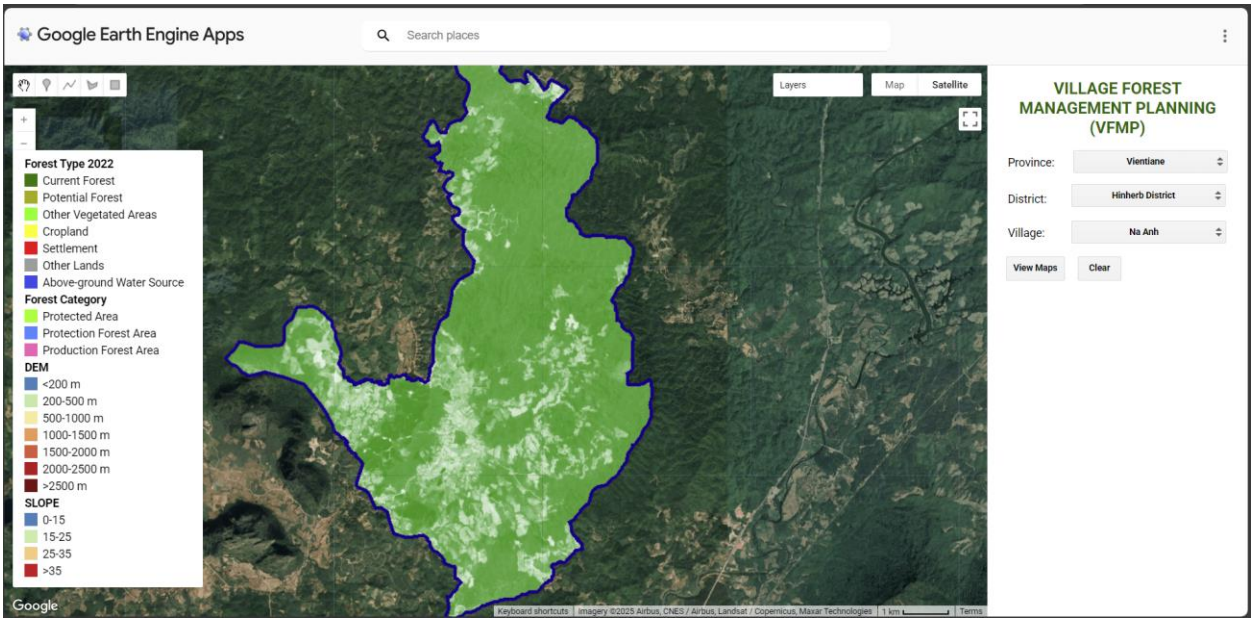
The forest types are derived from the most recent of National forest inventory (NFI) program. The forest types are grouped into 7 classes: current forest; potential forest; other vegetated areas; cropland; settlement; other lands; and above-ground water sources.



Visualize the current NDVI data

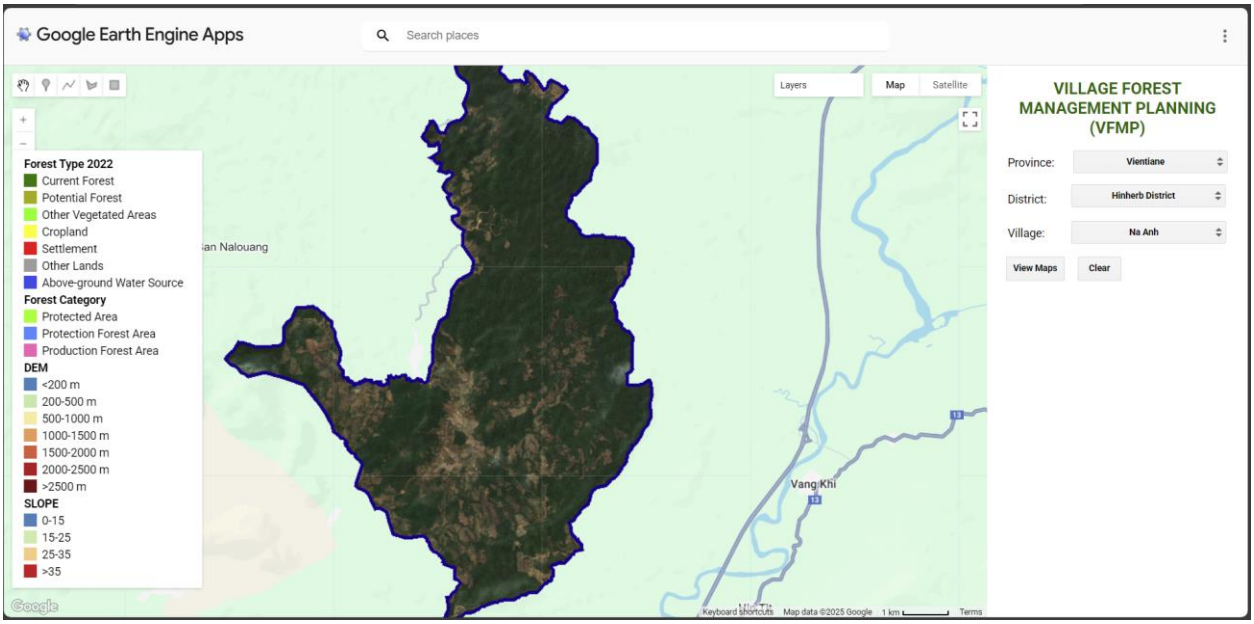
NDVI is one of the most widely used vegetation indices in remote sensing for measuring vegetation health and density.

In the web application, Normalized Difference Vegetation Index (NDVI) is derived from Sentinel-2 imagery in 2025. NDVI ranges from -1 to 1, when NDVI is high, it means the areas has healthy, strong and green plants.



Visualize the Sentinel-2 satellite imagery 2025 (Current)

This imagery is captured by the Sentinel-2 mission, part of the European Union's Copernicus Programme. It provides high-resolution multispectral data useful for vegetation monitoring, land use mapping, water assessment, disaster management, and more. The displayed imagery in the web application has a resolution of 10m and is captured in 2025.



Visualize the Sentinel-2 satellite imagery 2023 (before FLUZ)

The displayed imagery in the web application has a resolution of 10m, is captured in 2023.