

# Case Study: InaSAFE to formulate Tsunami Contingency Plan in Ambon.

## Background

Contingency plan is very important for Ambon City. As a capital city, it is the most populated area in Maluku province, where government affairs and important infrastructures that connect the province to other area in Indonesia are all hosted there. Geographically, it is located on the Molucca Sea Collision Zone, which makes the area prone to several types of natural disaster such as earthquake, tsunami, flood and cyclone. The 2013 Indonesia Disaster Risk Index classifies all of the 11 districts/cities in Maluku Province as high risk.

This case study discusses the implementation of OpenStreetMap, QGIS and InaSAFE training to help the local government in Ambon formulating contingency plan for tsunami disaster. The training was hosted through a cooperation between Mercy Corps, Disaster Management Innovation (DMMI) and Humanitarian OpenStreetMap Team (HOT) Indonesia, and the local Disaster Management Agency, while the participants were the local government bodies.

## Implementation

The training was held in five days. Day 1 – 3 focused on the use of OSM to lay the foundational knowledge, while materials about QGIS and InaSAFE were taught on the fourth and fifth day respectively.

### Day 1: Overview of OSM, QGIS dan InaSAFE to create contingency plan

The training was started with an overview and introduction of OSM, QGIS and InaSAFE to support formulation of contingency plan, in order to lay a foundation of knowledge among participants. Several materials were delivered such as introduction to OSM, how to create OSM account, digitation of objects into Java OpenStreetMap (JOSM), softwares that could be used to edit, add and erase data on OSM, and explanation about data types and format that are suitable for OSM.



Figure 1. Overview of OSM, QGIS and InaSAFE

## Day 2: Field Survey

A field survey was conducted on the second day to collect the attribute data of several important spots in especially in two sub-districts displayed on the OSM map, which was produced on the previous day. For practicalities reason, the survey was implemented in villages in two sub-districts, *Sirimau* and *Nusaniwe* Sub—District, that are nearest to the venue.



**Figure 2.** Field Survey and Interview

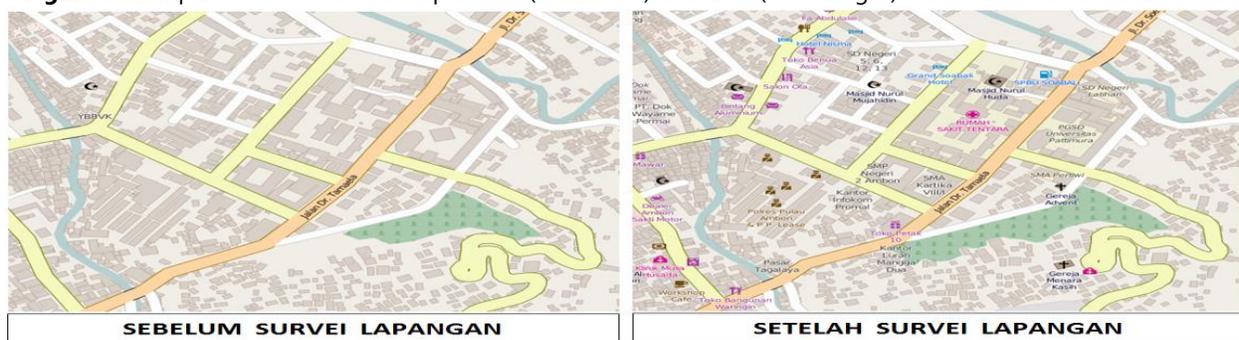
The participants were divided into four groups, and each group was equipped with field-papers, GPS and survey forms. Each group discussed among themselves to decide the technicalities and survey routes. The survey focused on collecting attribute data such as buildings, public facilities and crucial spots, which will be inserted into the OSM map that was created on the previous day.

## Day 3: Data Input

On the third day, the participants entering the field data into OSM using JOSM. In addition to this, the participants were assisted to download OSM data in digital map format and conduct some initial steps to ensure quality control and validation of OSM data. Several tools and download media was presented to the participants to explain their respective advantage and disadvantage.

The figure below is an example of the map before and after it was complemented by data collected during the field survey.

**Figure 3.** Comparison between the map before (on the left) and after (on the right) the attribute data was inserted

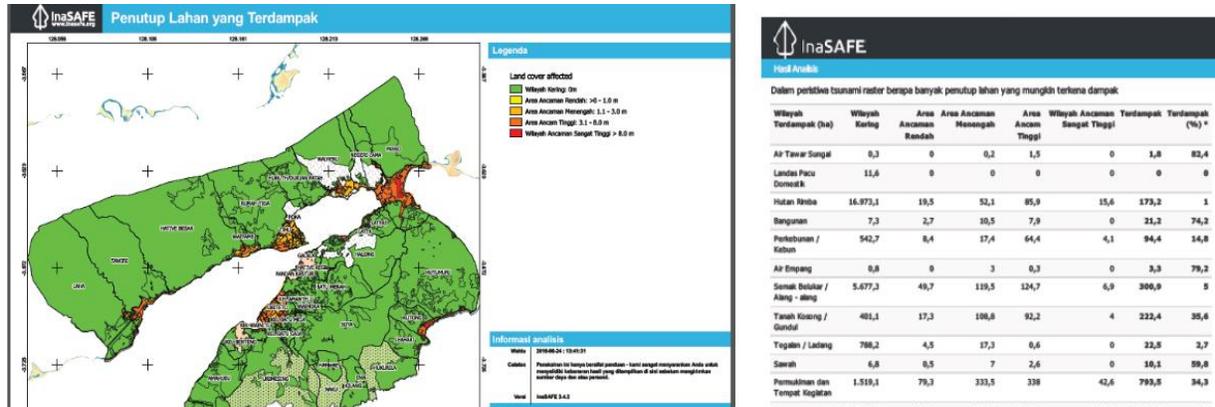


By the end of the session, a demonstration was presented to show how the data from OSM could be opened in QGIS, which would be explored further on the next day.

## Day 4: QGIS Training

The fourth day of training focused on QGIS, which covered several relevant materials such as introduction to QGIS, introduction to vector data and how to identify object, introduction to projection system, symbolism, labeling and map composer. For the symbolism, labelling and map composer practice, dataset of Ambon City from the previous field survey was used. By the end of the day, the participants produced map of Evacuation Area in Ambon City.

Figure 4. Map produced by participants using QGIS



## Day 5: InaSAFE

On the fifth day, the participants learned further about QGIS using InaSAFE to develop tsunami impact scenario on population, buildings, infrastructures, road and land use. This scenario was used as the basis of contingency plan and eventually, it is expected that the participants would gain the skills to develop impact scenario and contingency plan for other type of disaster using InaSAFE.

## Results

There are two main results produced from the training. First, in terms of building OSM data, the training had helped to collect and upload data of public facilities attribute in Ambon City. The updated map on OSM could be used to support the works of local government efforts by providing a more updated referral map. Secondly, in terms of capacity building of local government staffs, it had successfully helped them learning about OSM, QGIS and InaSAFE to produce maps and support the formulation of contingency plan. By the end of the training, the participants had learned about entering survey data into OSM, created ready-to-print map on QGIS, and developed a number of tsunami impact scenarios using InaSAFE.

## Lessons learned

There are several lessons learned from the training that might be useful for any other stakeholders, who might be interested to held the same event. They could be summarized to several points below:

1. Expect limited facilities and technologies

Working in poor regions and remote area could provide a significant challenge especially in terms of provision of facilities and technologies. Some of these challenges include the difficulties to find the right venue at the right size with adequate electricity and internet connection. Moreover, the local government staffs from often do not have the adequate computer and laptop with the technology that could keep up with the required specification to run different GIS application.

2. Using relevant local data helps learning process

The use of relevant local data when working with the local government staffs, brings several advantages. First, it helps the learning process, as the local staffs are somewhat familiar with the data presented. Secondly, it helps building the local knowledge and data by bringing the attention of the local staffs together to develop and strengthen local data. Last but not least, the participants are more likely to be eager and interested with the data that represents their works and their area compares to data that describes other district or province or country.

3. The importance of laying the foundational knowledge

The first day of the training, which lays the foundational knowledge, is very crucial because the training materials were related to each other and the later material of the training represents a more advance knowledge than the previous. Ensuring that sufficient time allocation for participants to learn and allocating trainers with the best delivering skills becomes crucial to ensure that the participants could continue to keep up with a more advance material.