Forest and land fires occur almost every year in the dry season, encouraging Indonesia to develop an early detection and early warning system to monitor and control forest and land fires. This effort is one of seriousness at work to prevent forest and land fires.

A. Early Detection of Forest and Land Fires

In Minister of Environment and Forestry Regulation No. 32/2016 concerning the Forest and Land Fires Management, it is stipulated in Article 71 paragraph 2 that the application of early detection can be done through various methods of observation such as detection through fire lookout towers, the application of various types of cameras/CCTV, remote sensing (aerial portraits or satellite imagery). There are examples of methods in terms of early detection as follows:

1) Hotspot Monitoring

The Ministry of Environment and Forestry (MoEF) has begun to use hotspot information as an indicator of the incidence of forest and land fires since 1997 (at that time, the Ministry of Forestry) using data from NOAA satellites. In line with technological development, in 2015 MoEF developed an early detection system of forest and land fires that can be accessed through sipongi.menlhk.go.id as an early detection tool for forest and land fires. Sources of data and information on hotspots that are used in Indonesia come from LAPAN and it has been agreed by MoEF, BMKG, and LAPAN. In addition to MoEF, BMKG also displays hotspot information, as well as LAPAN has made a hotspot detection system application that can be installed on an Android-based smartphone device.
B. Early Warning on Forest and Land Fires

In the MoEF Regulation No. 32/2016 on Forest and Land Fires Management, it is stipulated in article 52 paragraph 6 that early warning facilities on forest and land fire consist of fire-prone maps or other similar maps, work maps, fire control resource databases, supporting prevention policies based on fire-prone and develop spatial planning maps.

Fire-prone map is one of the tools of early warning system of forest and land fires control. The map is part of prevention facilities that must be developed by each management unit as stipulated in MoEF Regulation No. 32/2016 on Forest and Land Fires Management.

2) Fire Danger Rating System (FDRS)

The MoEF has developed FDRS from the Automatic Weather Station (AWS) in collaboration with BMKG, BPPT and Canadian Government since 2000-2003 and the FDRS has been implemented in Daops Manggala Agni (Local Fire Station) in 2004. FDRS is needed as a complement to the hotspot information that obtained from satellite and is needed for anticipation regarding locations that have the potential to burn. Currently FDRS information can also be accessed daily through the bmkg.go.id and lapan.go.id.

2) Fire Lookout Tower

This tower is usually still used by small and medium scale companies to monitor their plantation areas from forest and land fires.

3) Thermal cameras or CCTV

The utilization of thermal cameras in controlling forest fires is usually carried out by large companies to oversee the concession area.

Some examples of early warning facilities are as follows:

1) Fire prone map

This map was created to assist officers in the field or Fire Manager in carrying out operations to control forest and land fires. Based on fire prone map, officers in the field can identify the characteristics of the location of forest and land fires, identify factors that affect forest and land fires, identify prone areas to forest and land fires, and formulate forest and land fire prevention policies based on fire-prone and develop spatial planning maps.

Fire-prone map is one of the tools of early warning system of forest and land fires control. The map is part of prevention facilities that must be developed by each management unit as stipulated in MoEF Regulation No. 32/2016 on Forest and Land Fires Management.