

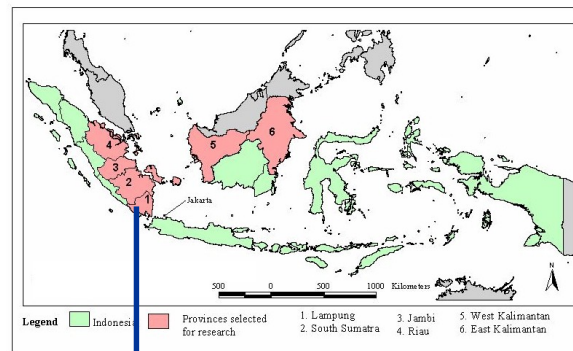
The Underlying Causes and Impacts of Fires in Indonesia

Case Study 1: The North- Eastern Fringes of Bukit Barisan Selatan National Park, Lampung, Sumatra

Background

The site is mountainous with an elevation between 800 and 1200 meters. Most of the area falls within a national park with major encroachment from smallholder coffee gardens. In 1997 this area was badly affected by both intentional fires and wild fires.

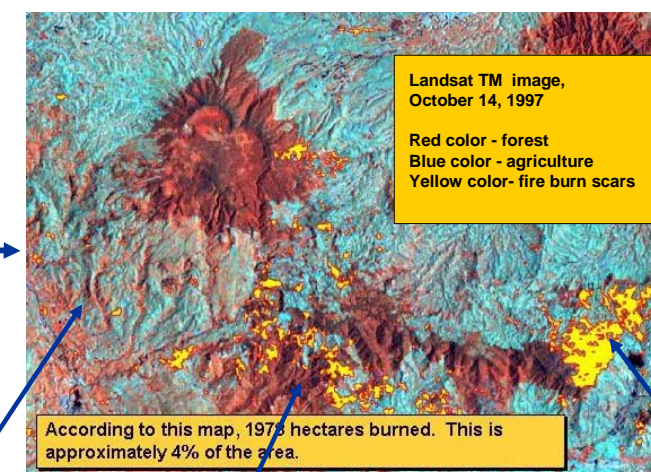
Location of CIFOR/ICRAF Fire Research Sites in Indonesia



Location of Case Study 1



Burn Scar mapping in Case Study 1

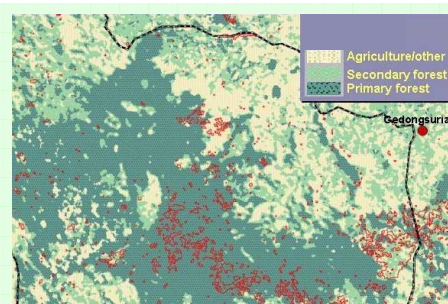


The image on the right shows areas (in yellow) identified as burn scars in the study area in October 1997.

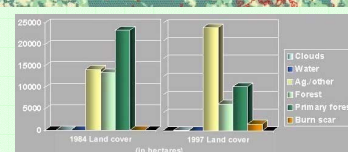
The three images below show different types of burn scar patterns.

Impacts

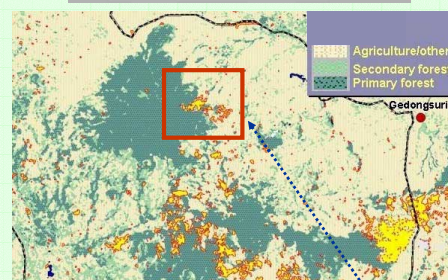
Land Cover Change Mapping using Remote Sensing



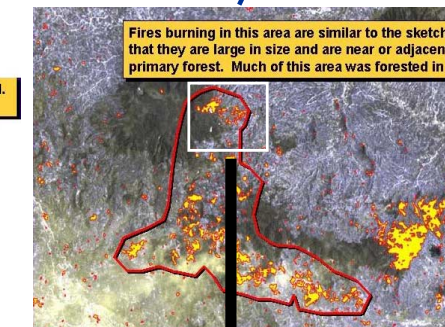
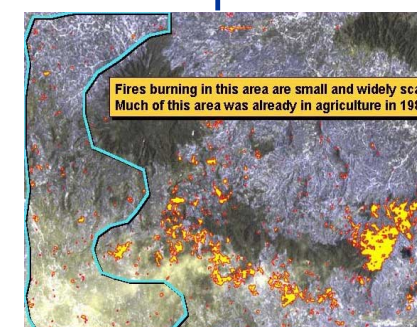
The map on the left shows land cover in the study area in 1984 derived from Landsat MSS imagery. The red polygons show primary forest areas that were later burned in 1997.



Land cover change estimates derived from interpretation of Landsat imagery.



The map above shows land cover in the study in 1997 derived from Landsat TM imagery. This map shows that many of the burnt areas (yellow/red) were adjacent to primary forest.



Findings

- Based on Landsat TM and MSS image classification, we found :
 - A high rate of conversion of forest to non-forest between 1985 and 1997.
 - Most of the fires in 1997 were adjacent to primary forest.
- Research on social science found :
 - Fires in 1997/1998 in the Sekincau site can be categorized as controlled fires and wild (accidental) fires. Controlled fires resulted from land clearing activities for establishment of coffee gardens by smallholders.
 - We found the underlying causes of fire in Sekincau relate to deforestation, migration, and land tenure.
 - There are two sources of deforestation: establishment of coffee gardens by smallholders, and illegal logging activity. The establishment of coffee gardens greatly increased with the increase in migration and profitability of coffee production.
 - The perception of security of informal land tenure in the park has increased in recent years, thus attracting more migrants to the study site. Approximately half are temporary migrants. During a drought period, such as El Niño, fire from land clearing and illegal-logging activities easily spreads to burn natural forest and becomes an uncontrolled forest fire. The amount of land burned and impacts of uncontrolled fires are much greater than the area burned by controlled fires started by smallholders.

Policy implications

Field Observations Concerning 1997 Fires



In Sekincau, the underlying causes of fires relate to:

- Deforestation
- Migration
- Land tenure



Based on information collected at the local level deforestation resulted mainly from two activities:

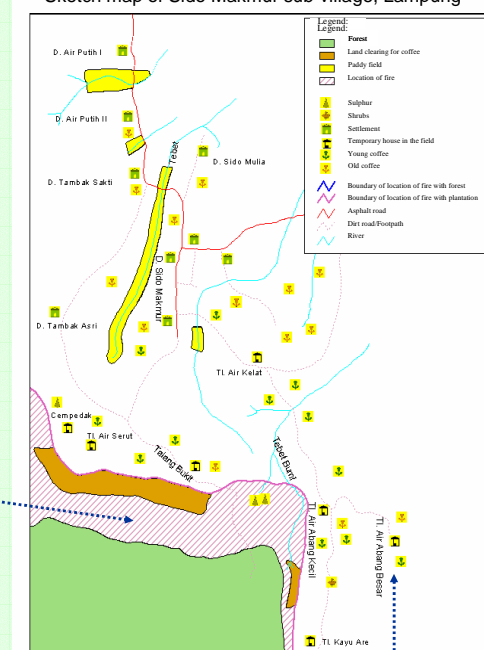
- Establishment of coffee gardens
- Illegal logging activity



New migration in the Sekincau area: The establishment of coffee gardens has increased as the profitability of coffee production has increased. This has brought migration to the area.

Participatory mapping

Sketch map of Sido Makmur sub-village, Lampung



Participatory mapping and group interviews were conducted at the study site. Rural appraisals and sketch maps of the fires were developed for study areas.



Transect sketch of land cover in 1977.



Transect sketch of land cover in 1997.