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Introduction

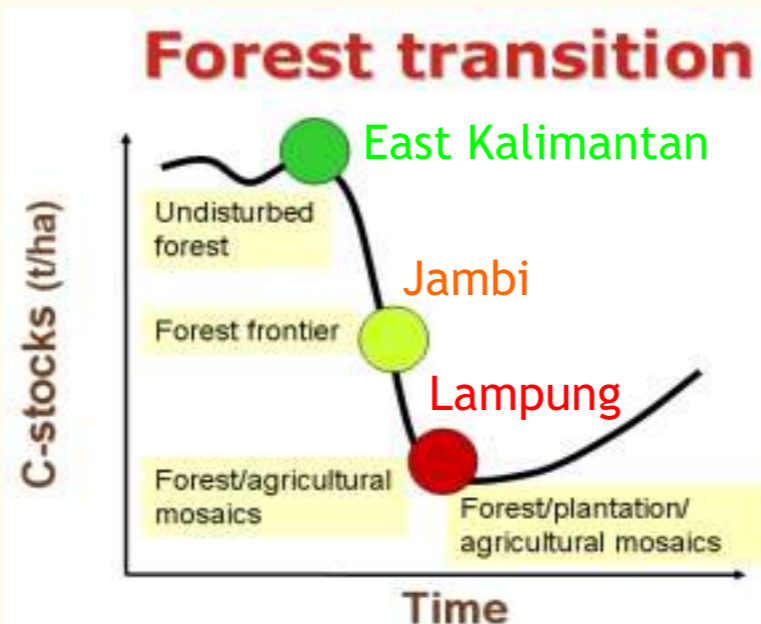
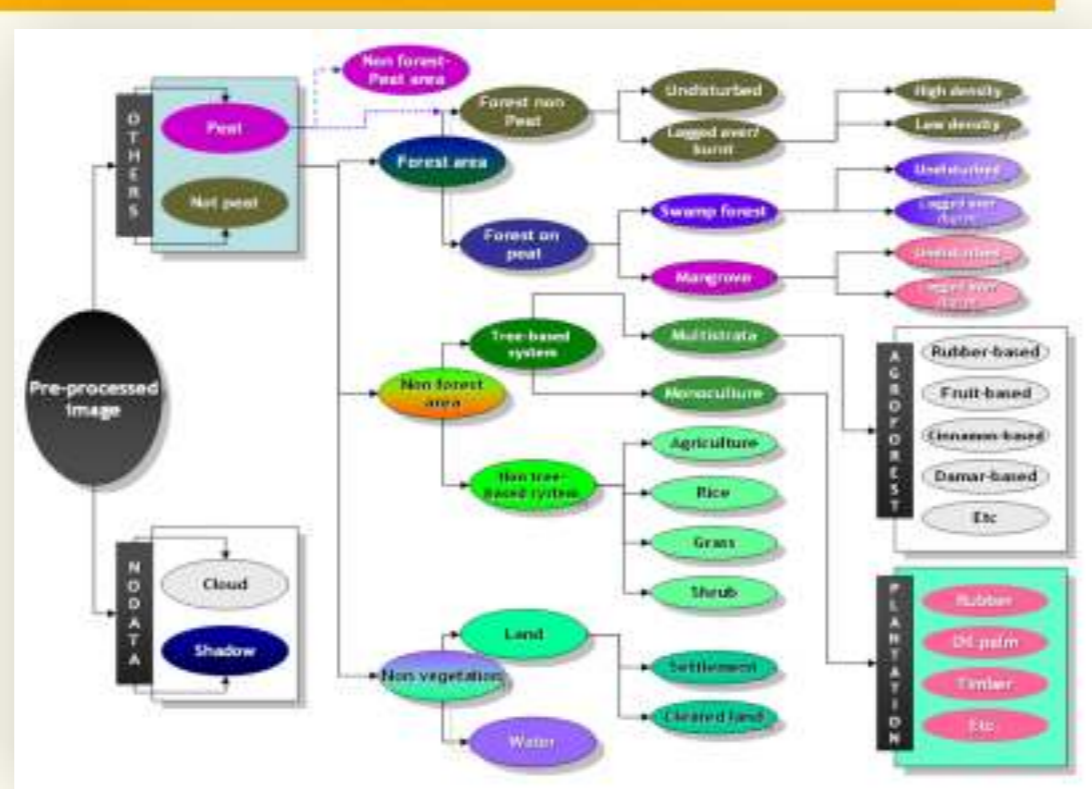
Understanding land use/cover change in a landscape is an important step in most of land use-related research activity. Such analysis cover heterogeneity of land use/cover types and its possible changes over time with regard to forest transition stage.

As a part of Avoided Deforestation for Sustainable Benefits research, we conduct land use/cover change in three province of Indonesia using time series Landsat images of 1990-2005. The three provinces jointly cover 16.2% of the land area of Indonesia, and ranged in forest cover from 14% to 85% in 1990 and from 8% to 79% in 2005.

Method

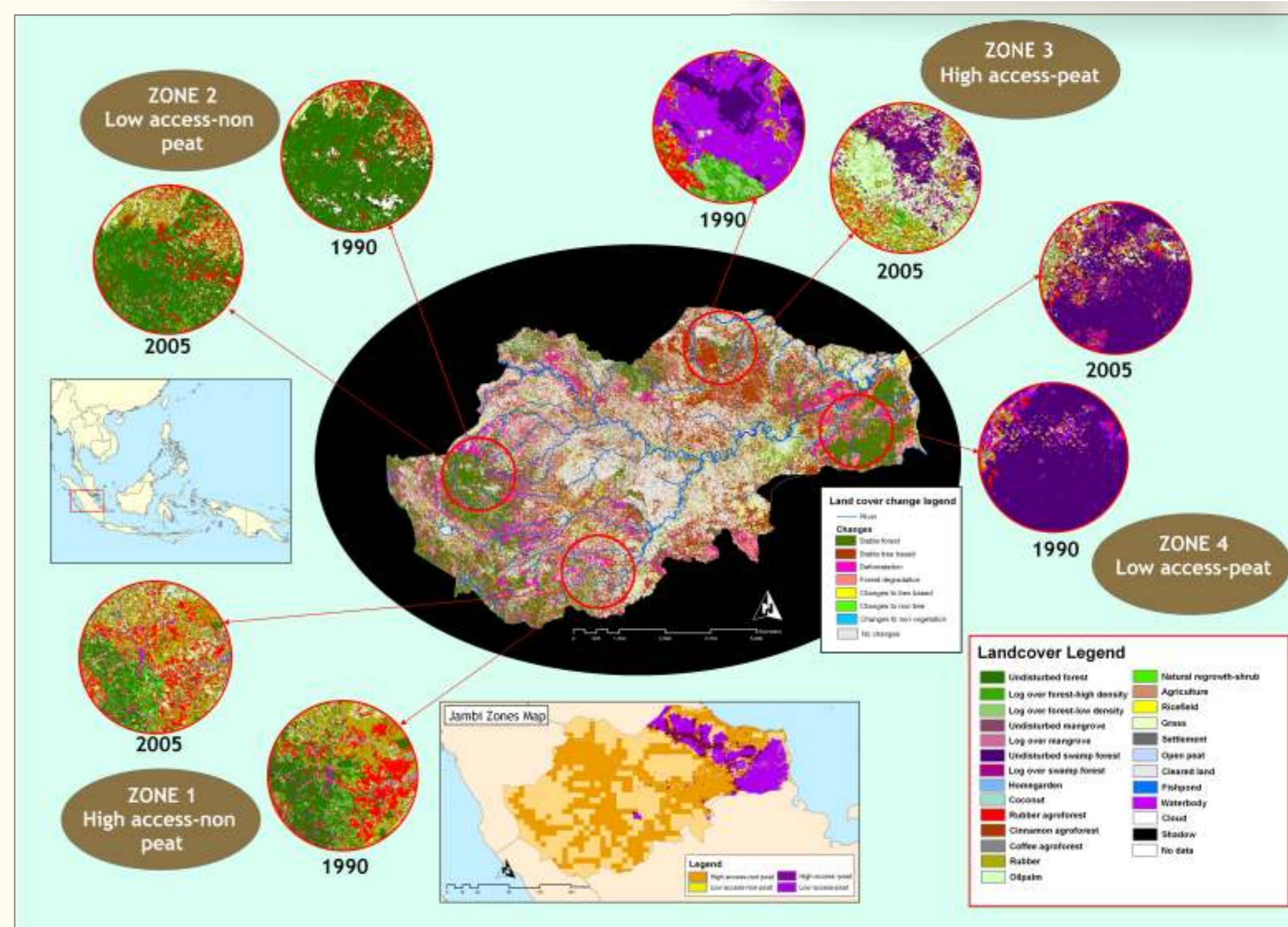
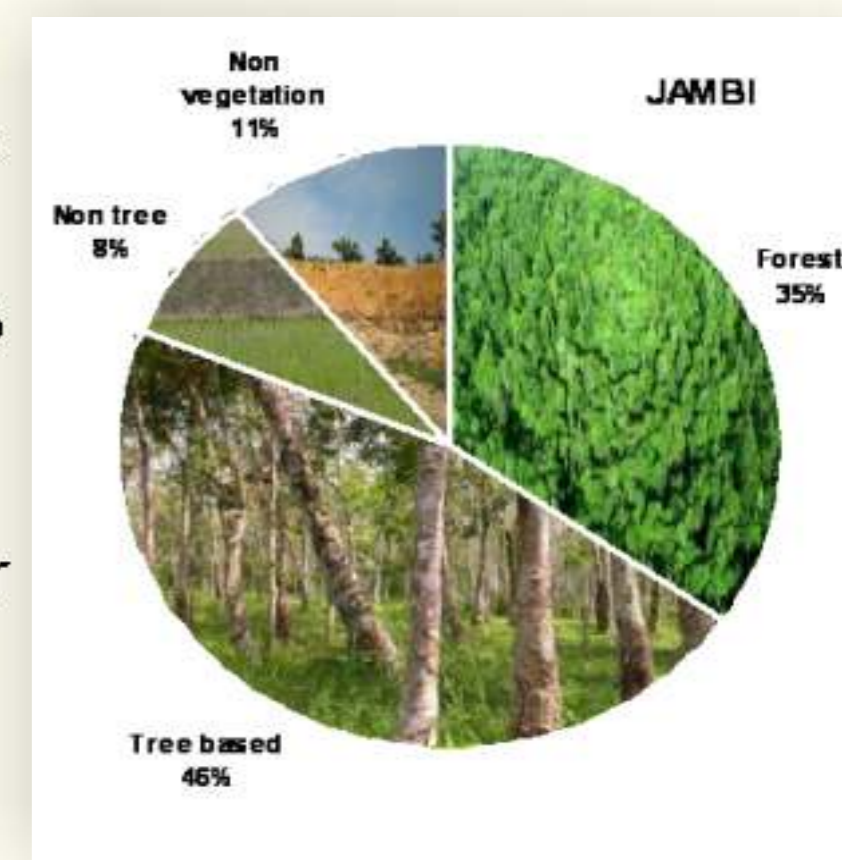
We used object based-hierarchical classification approach. The hierarchy consists of 4 levels:

- (i) land use/cover distinguishable visually, i.e forested area and water body;
- (ii) land use/cover identifiable by visual interpretation and some simple spectral indices ;
- (iii) land use/cover of more complex natures identifiable only by the means of statistical analysis on spectral signatures
- (iv) land use/cover that are inseparable by spectral signature alone.



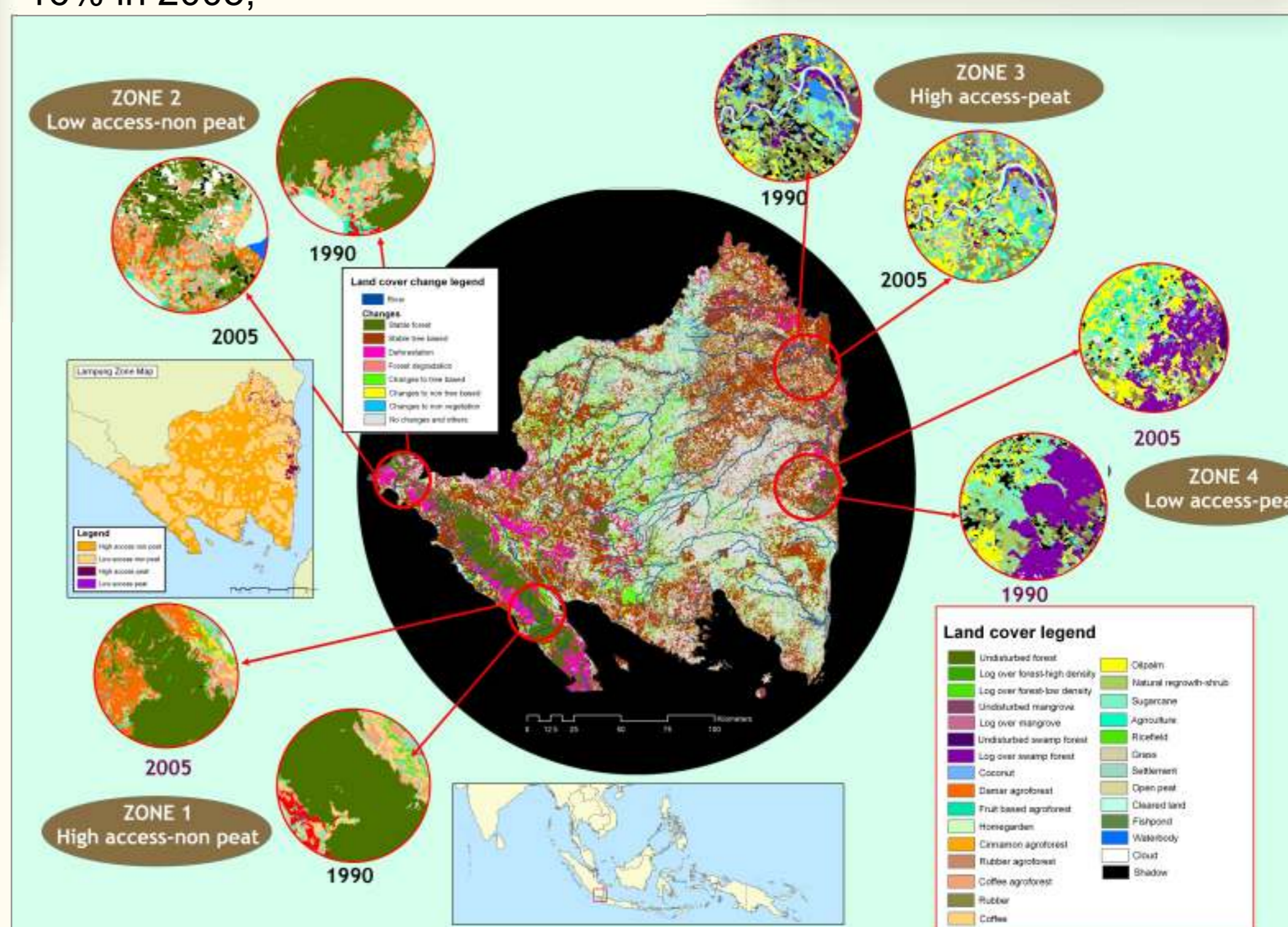
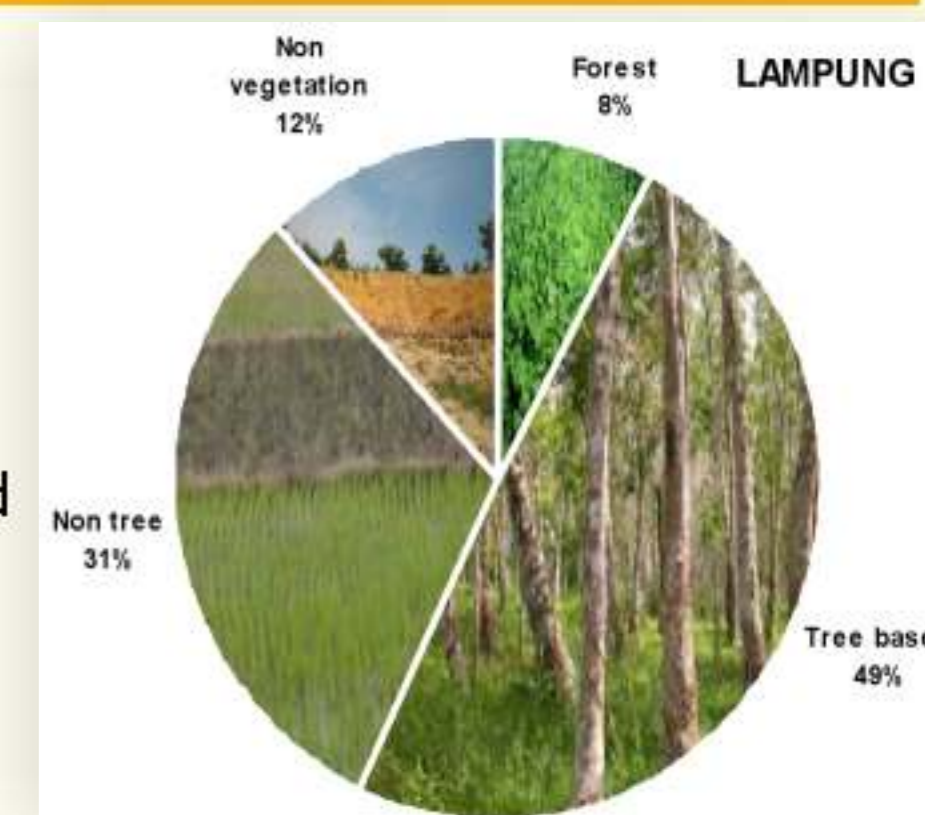
Jambi - Rapid transition towards intensified landscape

Jambi province is rapidly moving toward a much intensified landscape. Forest decline from 54% in 1990 to 34% in 2005. Undisturbed forest was declining from 34% to 21%. The obvious trend is clearly conversion to plantation. Today, its rubber area (agroforest and monoculture) is larger than forested area. Oilpalm also increased sharply from only 3% in 1990 to more than 11% in 2005.



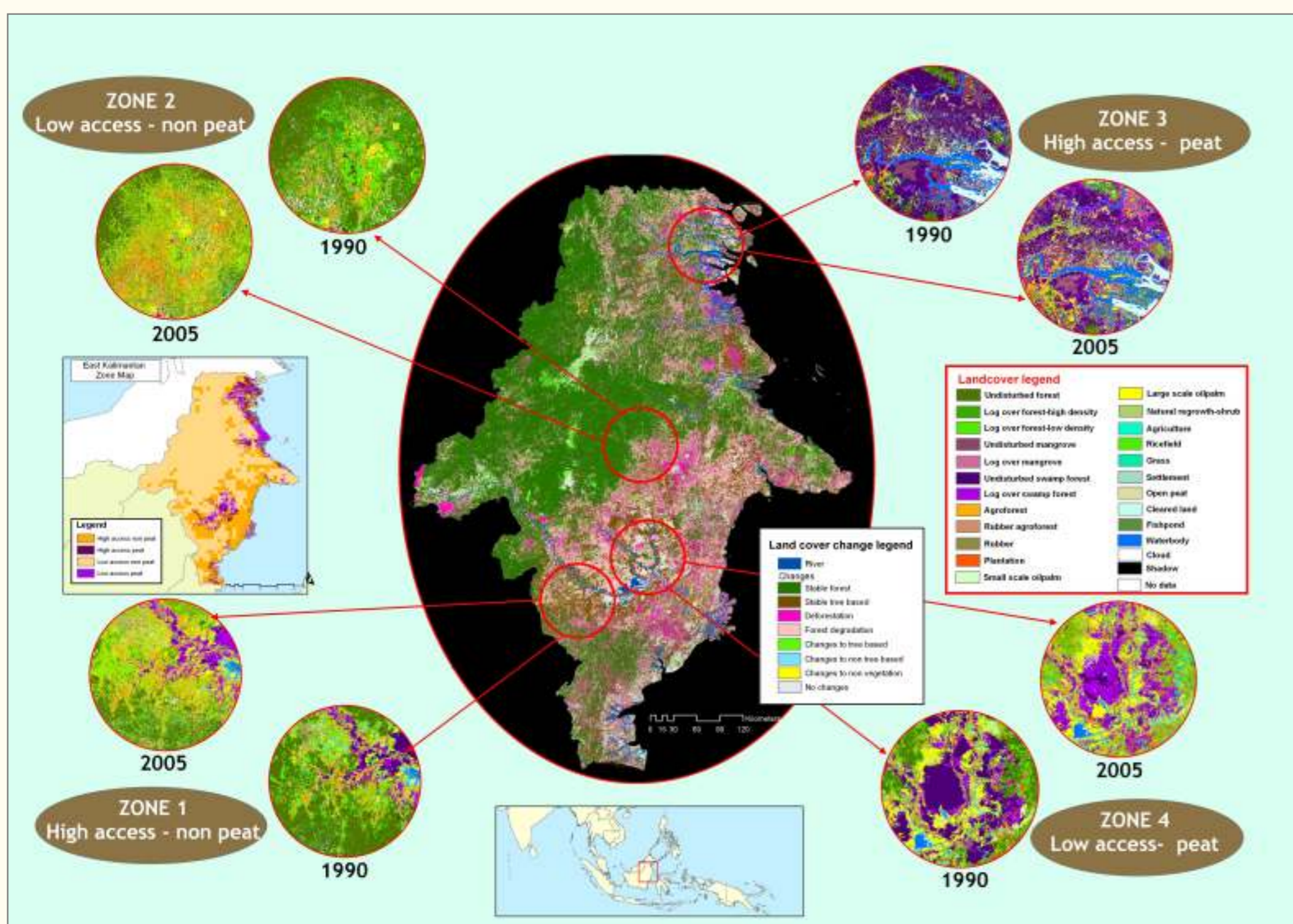
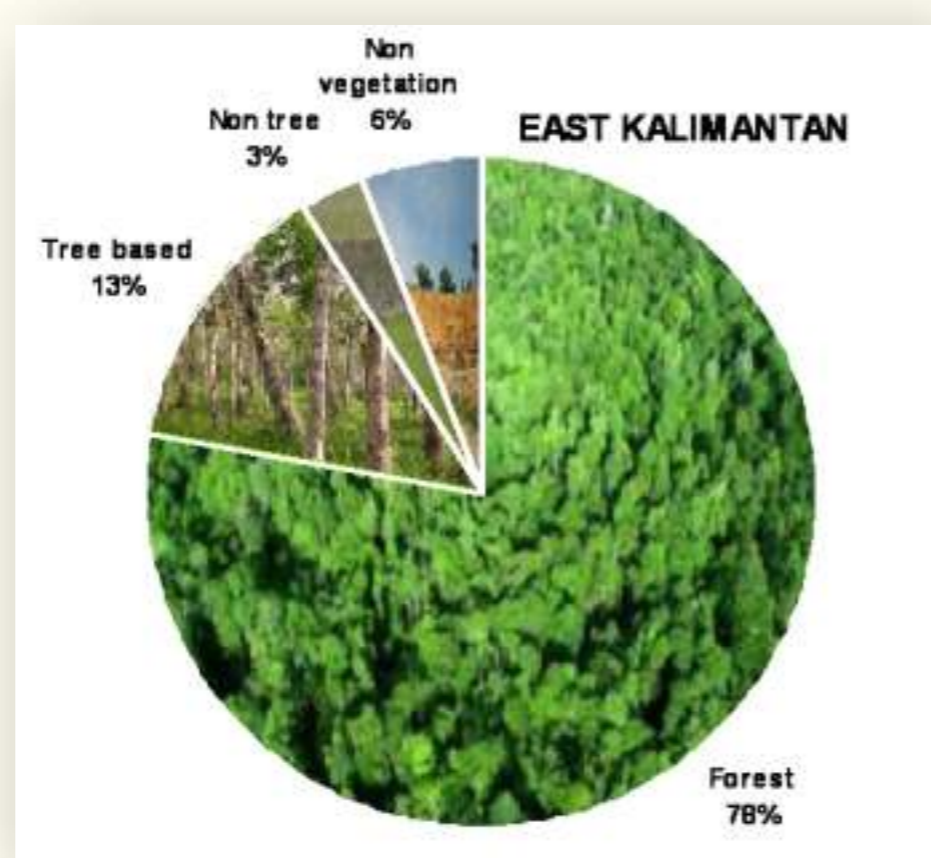
Lampung - Least Forest More Tree

Lampung has the lowest forest cover, only 8% in 2005, down from 14% in 1990. The most dominant land cover type in Lampung today is coffee cultivation and oilpalm plantation. Land cover change analysis showed the trend is moving toward agroforestry system. This is indicated by increase of coffee agroforest area from 13% in 1990 to 16% in 2005,



East Kalimantan - Largest forest-highest degradation

In East Kalimantan, logging and forest degradation dominates changes. Area of forest declined from 89.5% in 1990 to 79.4% in 2005, while area of undisturbed forest declined from 73.8% to 51.7%. The intensity of logging activity in East Kalimantan is highest, which is clearly indicated by the increase in area of logged over forest increases from 13.7% in 1990 to 27.7% in 2005.



Conclusion

Patterns of land use/cover changes varied among the three provinces, representing different stages of forest transition. East Kalimantan was dominated by logging from natural forest, while the trend in Jambi is conversion to perennial crop of high economic value, Lampung has little forest left, and currently in starting point of "re-treeing" process.