# Spatial Database for Environmental Impact Assessment of Large-Scale Projects in the Lowlands of Sumatra

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**Policy Question**:

In Indonesia, rapid development has brought extensive land use changes, especially in Sumatra where large scale immigration and other large scale projects took place. A basic hypothesis of ASB research is that smallholder slash-and-burn accounts for a large share of forest conversion. However, until now, this hypothesis has not been tested in Sumatra. Two fundamental questions remain: how much land use change has resulted from large-scale (>10,000 ha) projects, like transmigration schemes and treecrop estates, and how much is the result of smallholder activity?

In this project the extent and spatial distribution of large scale projects are analyzed.

**Hypotheses:**

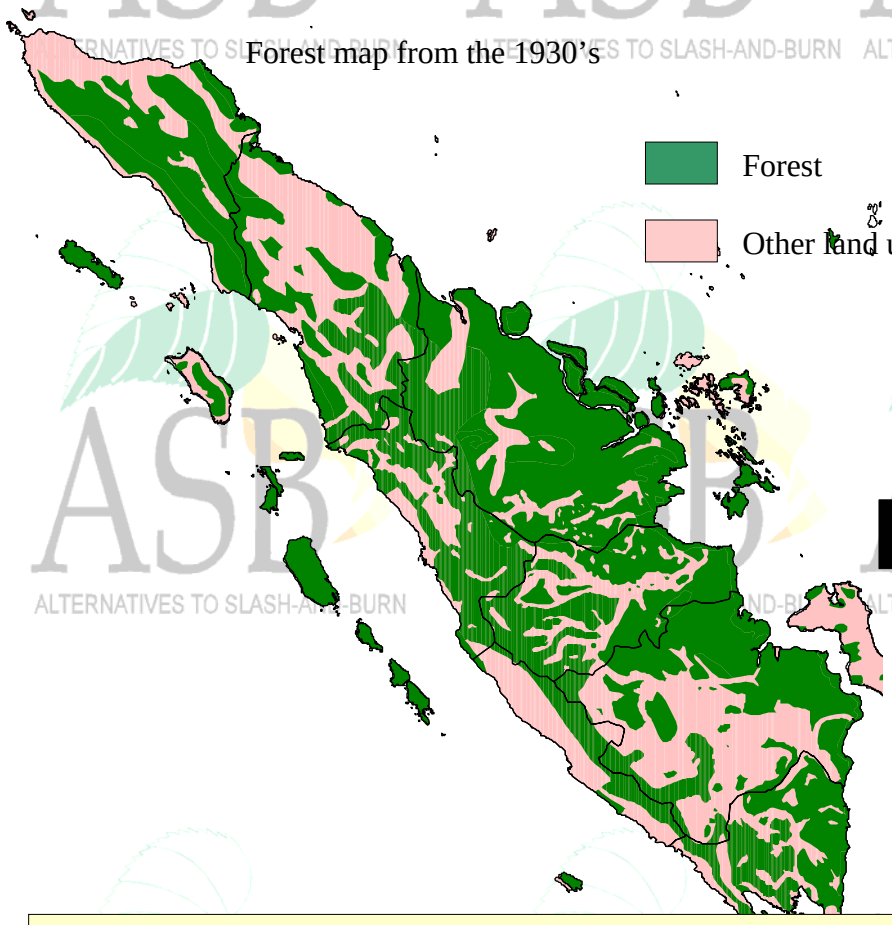
Large scale projects have a major direct impact on land use change**.**

**Data and Methods:**

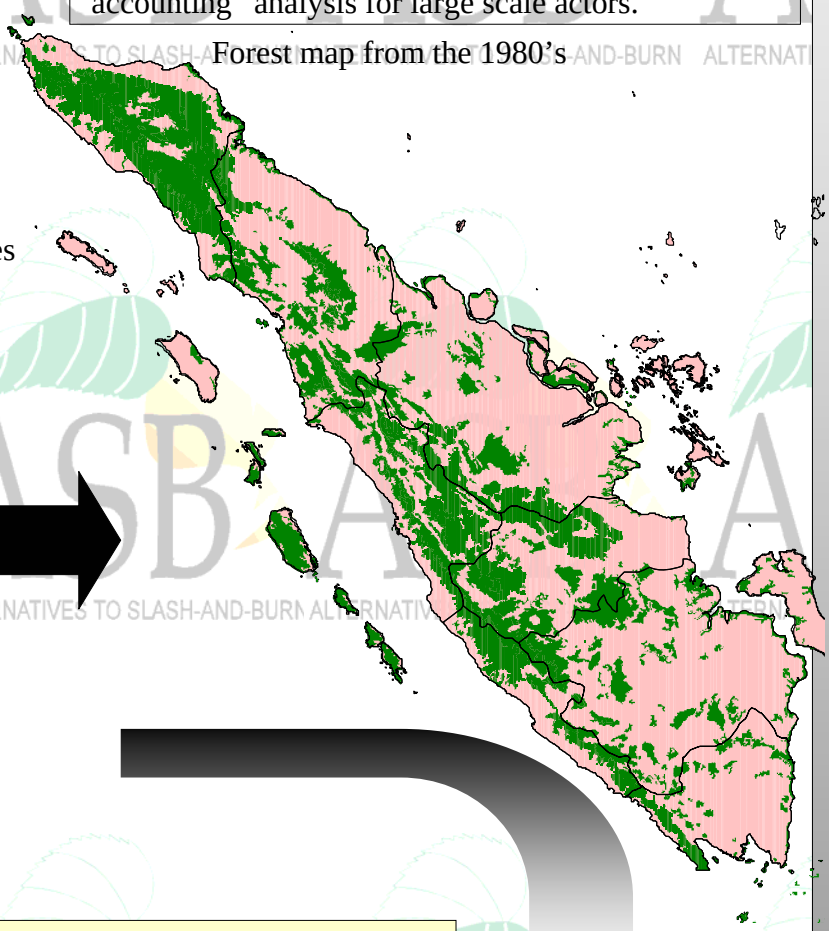
The main aim is to compile a database for five provinces spanning the lowlands of Sumatra: North Sumatra, Riau, Jambi, South Sumatra, and Lampung. This database will consist of spatial referenced data for land use at three dates (1976, 1986 and 1996) and spatial data for large scale projects with dates.

Both databases will then be used in a land use "accounting" analysis for large scale actors.

Forest map from the 1930's




Forest map from the 1980's



**Preliminary Facts and figures** ***Area in Ha***

Per Province

| | Forest 30's | Forest 80's | Large scale Transmigration projects | Total area |
|---|---|---|---|---|
| Aceh | 4 300 000 | 3 800 000 | 43 000 | 5 600 000 |
| Sumatra Utara | 3 700 000 | 2 500 000 | 40 000 | 7 200 000 |
| Riau | 7 800 000 | 5 400 000 | 200 000 | 9 500 000 |
| Jambi | 3 400 000 | 2 700 000 | 120 000 | 4 900 000 |
| Sumatra Selatan | 4 600 000 | 3 000 000 | 240 000 | 10 000 000 |
| Lampung | 2 200 000 | 580 000 | 20 000 | 3 400 000 |
| Bengkulu | 830 000 | 1 100 000 | 10 000 | 2 100 000 |
| Sumatra Barat | 3 100 000 | 2 000 000 | 26 000 | 4 200 000 |
| Sumatra | 30 000 000 | 20 000 000 | 750 000 | 47 000 000 |

**Preliminary results:** This preliminary assessment indicates transmigration sites directly account for only about 7 % of forest conversion that has occurred in Sumatra over the past 50 years. However, if transmigration schemes attract other 'spontaneous' migrants, these large projects may have an important indirect effect on land use change. When this database is complete, it will be possible to examine whether proximity to a large project, like a transmigration scheme, affects probability of forest conversion.

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