Adaptation-Relevant Risk Assessment for the Indonesian National Roads Network

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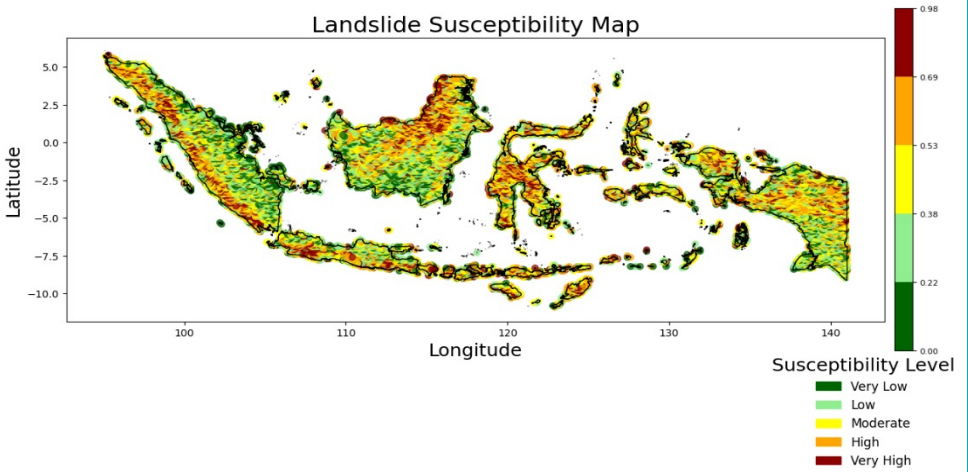
4 December 2025

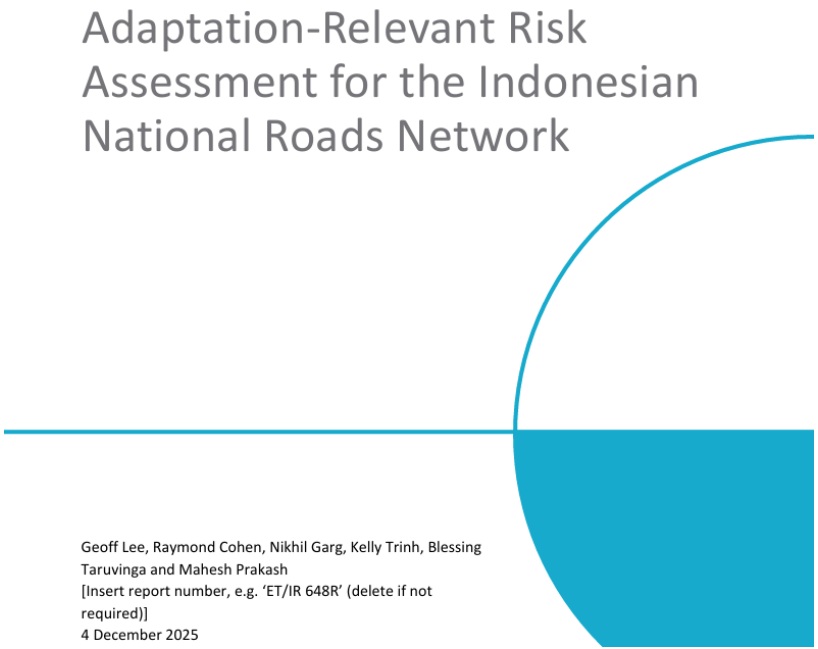


Mapping landslide hazard in Indonesia

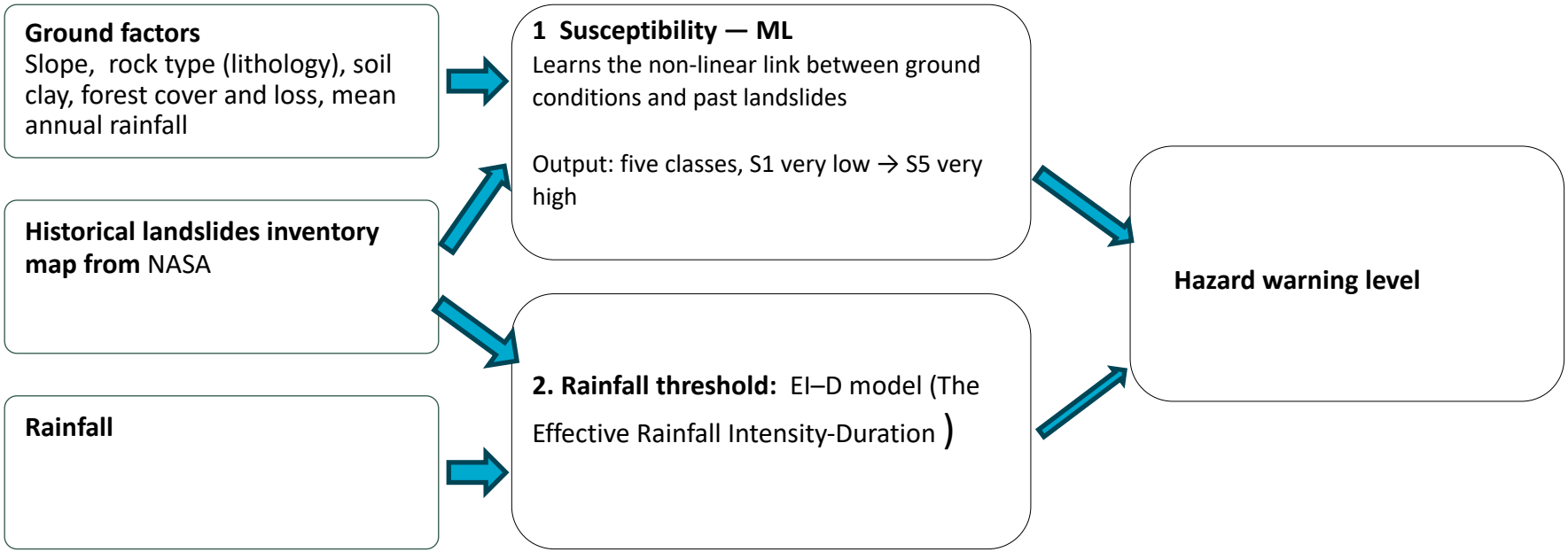
Kelly Trinh, CSIRO

Adaptation-relevant risk assessment for the Indonesian national roads network

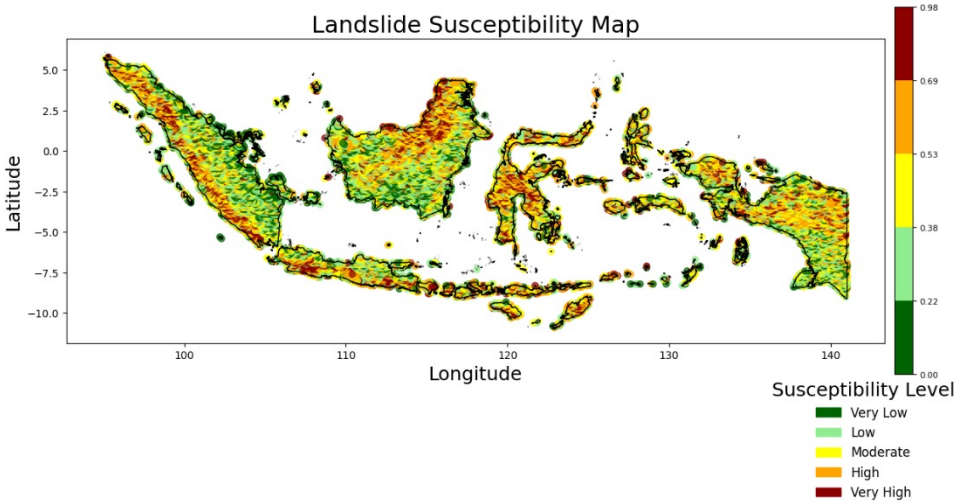
- Indonesia sits in the top third of countries for climate risk. Floods, heat and landslides already damage roads, rail and power.
- Infrastructure losses are around IDR 50–100 trillion a year, 10–20% of the national infrastructure budget, plus IDR 100–200 trillion (~USD 5-10 billion) in lost access to services.
- National planning treats infrastructure as a tool for resilience, not as an asset at risk.
- **Can we map where, and how often rainfall will trigger landslides so that infrastructure investment goes where the hazard is?**

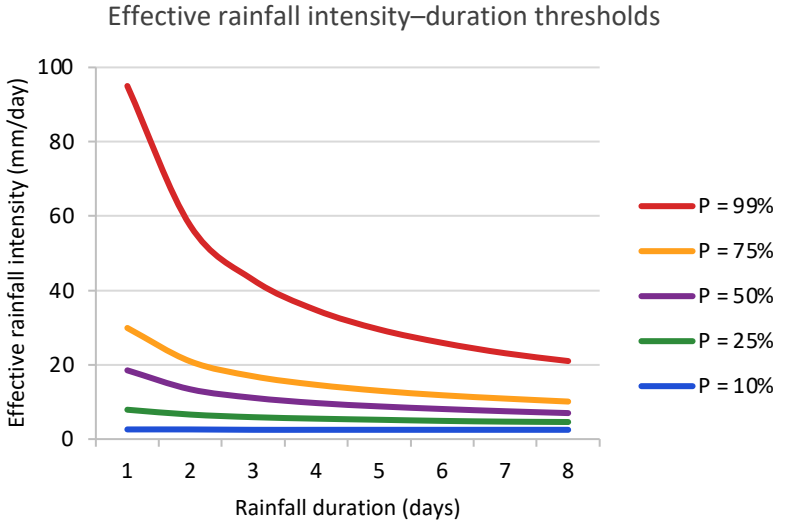


Landslide hazard = susceptible terrain × how often rain exceeds the trigger threshold



Java, Sumatra and Sulawesi are most prone; 75% of recorded landslides were triggered by 30 mm/day storm

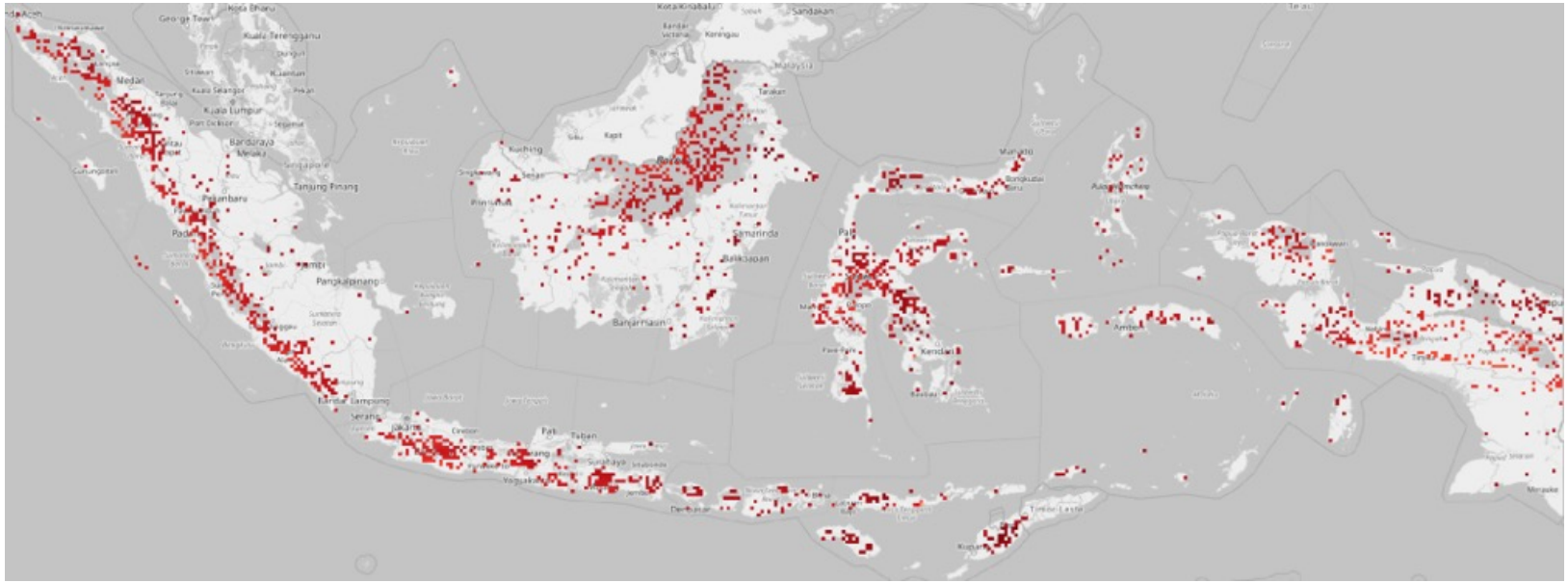




Susceptibility Very-high zones concentrate on Java, West and North Sumatra and Sulawesi.

EI–D thresholds from quantile regression on recorded landslides. At the 75% curve(30 mm in a one-day storm or 17 mm/day over three days) is the rainfall that three-quarters of past landslides stayed below. It is used as the severe-event threshold.

In the most prone areas, triggering rainfall occurs 1–2 times a year



Thank you

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