

240 million people now – one estimates 500 million people in 2040 200 million ha of land, with >50% forest cover Ever-growing middle class: higher demand for goods and services with quality

Hard-to-control yet inter-connected externalities

Price and technology

e.g., shale-gas discovery in the US

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Population pressure

Food security, competing demand for land

Fuel subsidy

Fossil fuel subsidy affect biofuel production

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These various externalities in supply-demand of fuel may affect the policies on biofuel development

Some proposes the use of degraded land

- <u>6 million hectares</u> of degraded land "available for oil palm expansion" according to a senior official of the Indonesia Investment Coordinating Board (Reuters 2010).
- <u>7 million hectares</u> of unused/abandoned degraded land ("tanah terlantar yang kondisinya sangat kritis") according to Ministry of Forestry, February 2010.
- 8.5 million hectares of alang alang grassland (Garrity 1997).
- <u>7-14 million hectares</u> of degraded, abandoned lands that may be used for agricultural development according to Fitrian Ardiansyah, director of climate and energy WWF-Indonesia, (Jakarta Post 2010).
- <u>12 million hectares</u> of "idle land" the National Land Agency (BPN) indicates could be used for business purposes, according to the Forestry Minister (Jakarta Post 2010).
- <u>31 million hectares</u> of "unused land" considered "suitable" and "available" for agriculture (Agricultural Research & Development Body 2007, cited in Indonesia's draft REDD+ policy).
- <u>40 million hectares</u> of "degraded forests" within the forest estate according to the Forestry Minister (Jakarta Post 2010).

Indonesia needs consistent definition and map as reference

Degraded land is not instantly usable it has to be socially, environmentally, economically viable

Example:

Overlay of forestry-plantation-mining areas in Pasir District (East Kalimantan)

Protected Forest and Conservation Area...

...overlay with HPH and HTI areas...

...overlay with plantation areas...

...overlay with mining area

Integrated license database can be used as starting point to solve license overlaps





