

DATA & METHODS REPORT

SABAH JURISDICTIONAL SUSTAINABILITY PROFILE

This form references data and methods used for the reporting of indicators of the jurisdictional sustainability profile of Sabah, Malaysia, in *The State of Jurisdictional Sustainability* published by Earth Innovation Institute and the Center for International Forestry Research, in 2018. Find more at the report website <https://earthinnovation.org/state-of-jurisdictional-sustainability> and <http://gcfimpact.org>.

Indicator: Deforestation

The deforestation extent shown in the map and the annual deforestation series (2001-2017) correspond to areas and figures derived by the authors from the analysis of CIFOR Borneo map and Hansen deforestation.

Source: Figures derived from forest and deforestation map of Borneo produced by CIFOR ([Gaveau, et al, 2014,2016](#)) and Hansen/UMD/Google/USGS/NASA data.

Temporality: The data shown in the plot includes annual deforestation 2001-2017. The map presents total deforestation from 1973 through 2017.

Methods: The authors calculated the extent of spatial explicit annual deforestation during the period 2001-2017 considering the forest loss reported by Hansen/UMD/Google/USGS/NASA data in areas mapped as forest by the CIFOR map prior to 2001. The CIFOR map is the result of a peer-reviewed study to map dynamics of oil palm and timber harvest in the area based on the analysis of Landsat satellite images. The Hansen data results from the time-series analysis of Landsat images in characterizing global forest extent and change from 2000 through 2017.

URL: <http://www.cifor.org/map/atlas/>
https://earthenginepartners.appspot.com/science-2013-global-forest/download_v1.5.html

Indicator: Forest cover

Forest cover shown in the map corresponds to remaining intact forest and logged forest in 2016 as mapped by CIFOR.

Source: CIFOR ([Gaveau, et al, 2014,2016](#)).

Temporality: 2016.

Methods: The CIFOR map is the result of a peer-reviewed study to map dynamics of oil palm and timber harvest in the area based on the analysis of Landsat satellite images. The map distinguishes between intact and logged forest. Logged forest where identified based on the identification of infrastructure activities in forest areas.

URL: <http://www.cifor.org/map/atlas/>

Indicator: Average deforestation during the FREL period

Forest Reference Levels are benchmarks for assessing a country's performance in implementing REDD+

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activities. FRELs are voluntarily constructed and formally submitted to the UNFCCC (<https://redd.unfccc.int>). The Malaysian FREL/FRL is based on historical average deforestation during the periods 1992-2005, 1997-2010 and 2002-2015. We show the average deforestation during 2002-2015 period as a benchmark of performance in the state.

Source: Annual deforestation calculated by the authors as indicated above. FREL period derived from reference level submitted by Ministry of Natural Resources and Environment, Malaysia.

Temporality: 2002-2015.

Methods: The jurisdictional reference deforestation level shown in the plot is derived from the performance criteria defined by the Malaysian government in its submitted FREL. The state FREL is constructed from the average deforestation during 2002-2015 period.

URL: <http://www.nre.gov.my>

<https://redd.unfccc.int/submissions.html?country=mys>

Indicator: Average annual emissions from deforestation (Million tons CO₂e per year)

This indicator represents the average carbon dioxide (CO₂e) emissions from deforestation activities considering the carbon pools defined by the Malaysian FREL submitted by the Ministry of Natural Resources and Environment to the UNFCCC, namely: above-ground and below-ground biomass. Average emissions are calculated using activities from the period 2010-2015.

Source: Deforestation area extent derived as documented above and carbon stocks derived from literature and previous reports in the area.

Temporality: Average of yearly emissions for the period 2010-2015.

Methods: Average emissions calculated by multiplying the spatially explicit deforestation (derived as documented above) with the average carbon density of 135 Tons ha⁻¹. Reduction from carbon atomic weight to CO₂ equivalent emissions using a factor of 44:12.

Indicator: Drivers of deforestation

Identifies proximate drivers of deforestation and forest degradation in the jurisdiction. Proximate drivers are direct human actions (i.e. agriculture, mining, cattle ranching, land and resource uses). Natural causes such as floods, droughts and pests are also considered.

Source: Jurisdictional LED-R survey undertaken by CIFOR and Earth Innovation Institute in Governors' Climate and Forest Task Force member jurisdictions.

Temporality: Survey conducted in 2018.

Methods: LED-R Survey implemented in the state based on a questionnaire administered by a designated enumerator to an expert or group of experts in the state.

Indicator: Main economic activities

Indicates the main economic activities in the state based on economic output.

Source: Jurisdictional LED-R survey undertaken by CIFOR and Earth Innovation Institute in Governors' Climate and Forest Task Force Member Jurisdictions.

Temporality: Survey conducted in 2018

Methods: LED-R Survey implemented in the state based on a questionnaire administered by a designated enumerator to an expert or group of experts in the state.

Indicator: GINI of income

The Gini coefficient is used as an indicator of equitable social systems. Values close to 0 indicate greater equality of income while values close to 1 greater inequality

Source: Department of Statistics of Malaysia

Temporality: 2016

Methods: Data downloaded directly from the DOSM website.

URL: <https://www.dosm.gov.my>

Indicator: Population

Indicates the estimated population in the state in 2017.

Source: Department of Statistics of Malaysia.

Temporality: 2017.

Methods: The projection is based on the 2010 Demographic Census of the Department of Statistics of Malaysia.

Indicator: Rural and urban population

Proportion of population living in rural and urban areas.

Source: Department of Statistics of Malaysia.

Temporality: 2010