

Delayed palm oil conversion after forest loss

Improving burned areas or land speculation?

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WWF



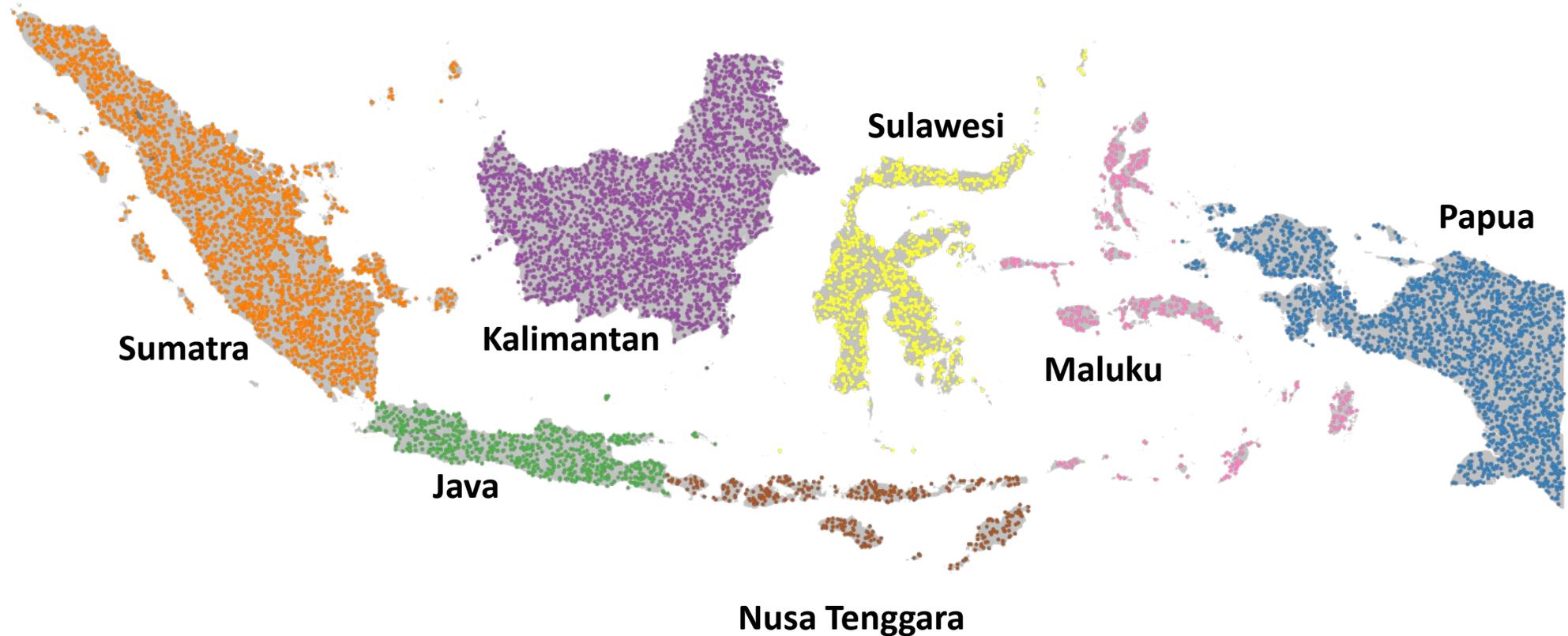
Mongabay-Indonesia

Study design

10,000 30x30 meter pixels selected proportionally from seven regional strata

Allowed us to quantify uncertainty (consistent with scientific good practices and IPCC guidelines)

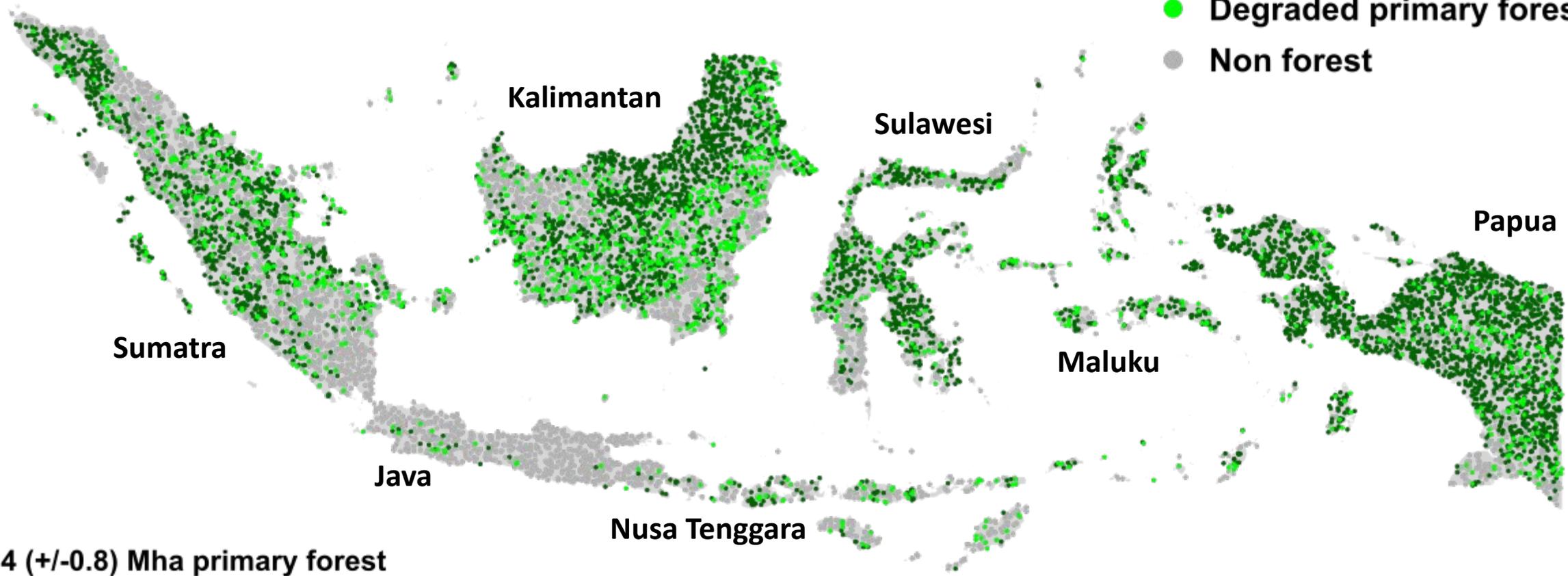
Useful when creating a wall-to-wall map would be difficult based on available data





1990

- Intact primary forest
- Degraded primary forest
- Non forest



115.4 (+/-0.8) Mha primary forest



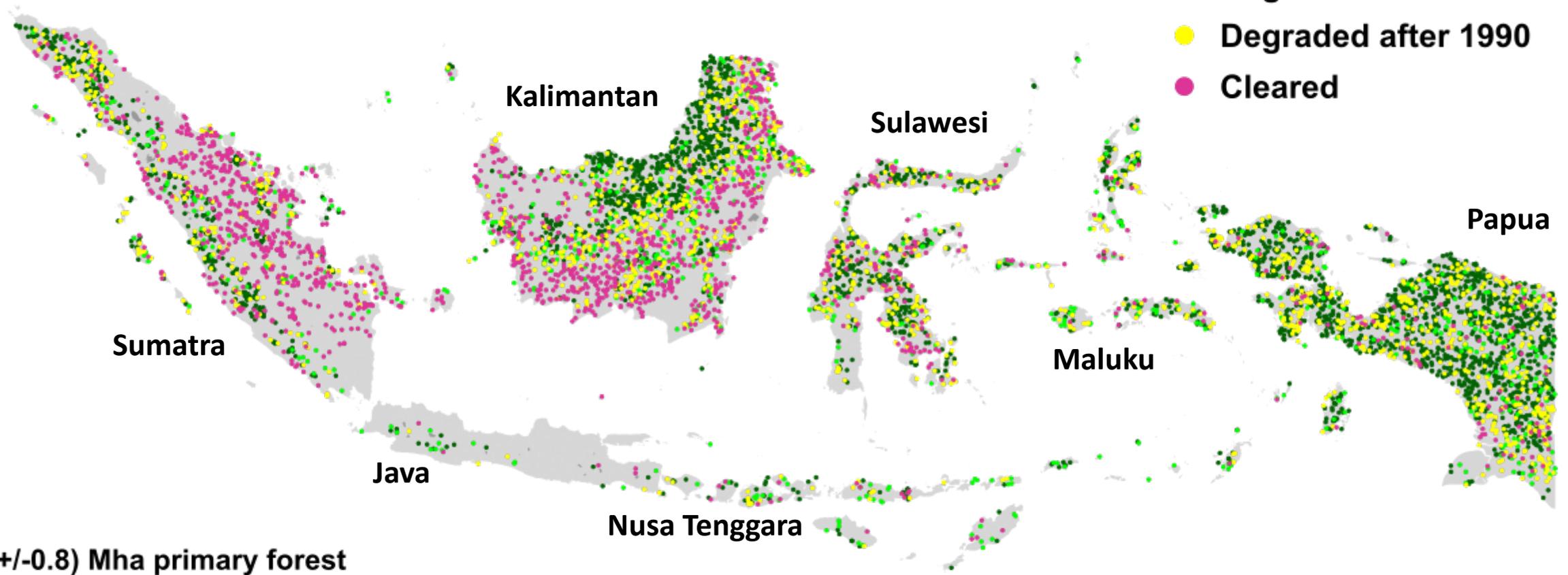
89 (+/-0.9) Mha intact

26.4 (+/-0.6) Mha degraded



2020

- Intact primary forest
- Degraded before 1990
- Degraded after 1990
- Cleared



87 (+/-0.8) Mha primary forest



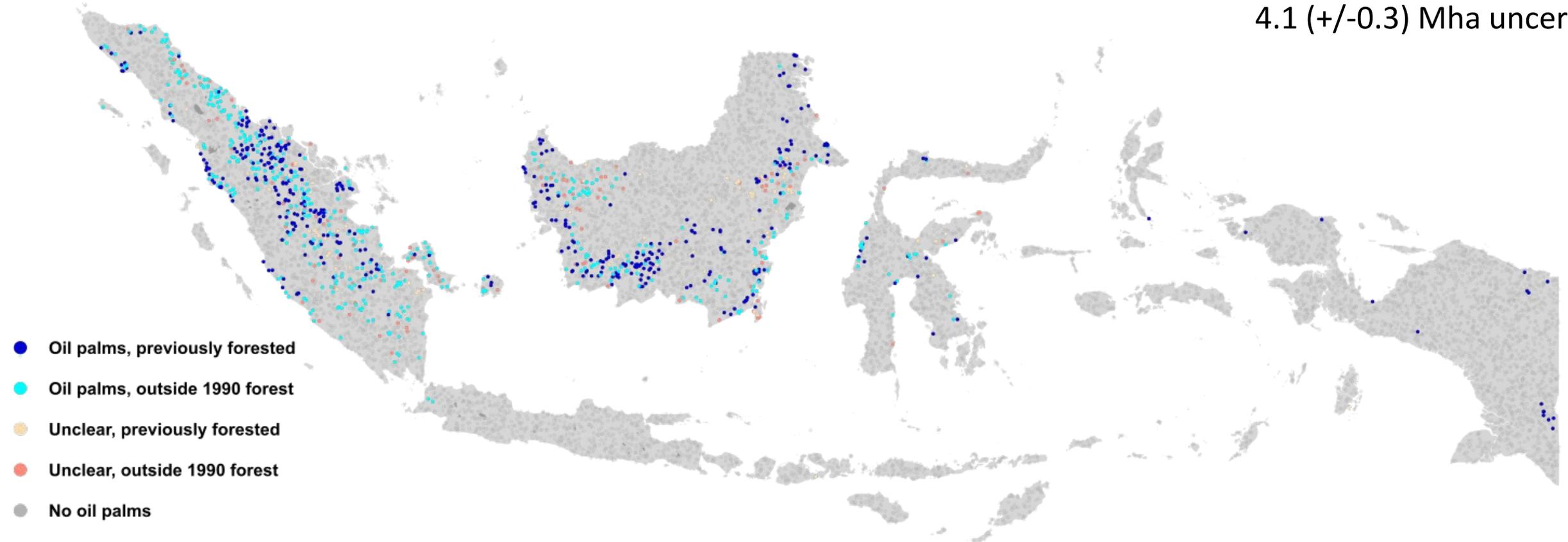
48.6 (+/-0.8) Mha intact

38.4 (+/-0.7) Mha degraded

28.4 (+/-0.7) Mha cleared

16 (+/-0.5) Mha under oil palm cultivation in 2020

4.1 (+/-0.3) Mha uncertain



- Oil palms, previously forested
- Oil palms, outside 1990 forest
- Unclear, previously forested
- Unclear, outside 1990 forest
- No oil palms

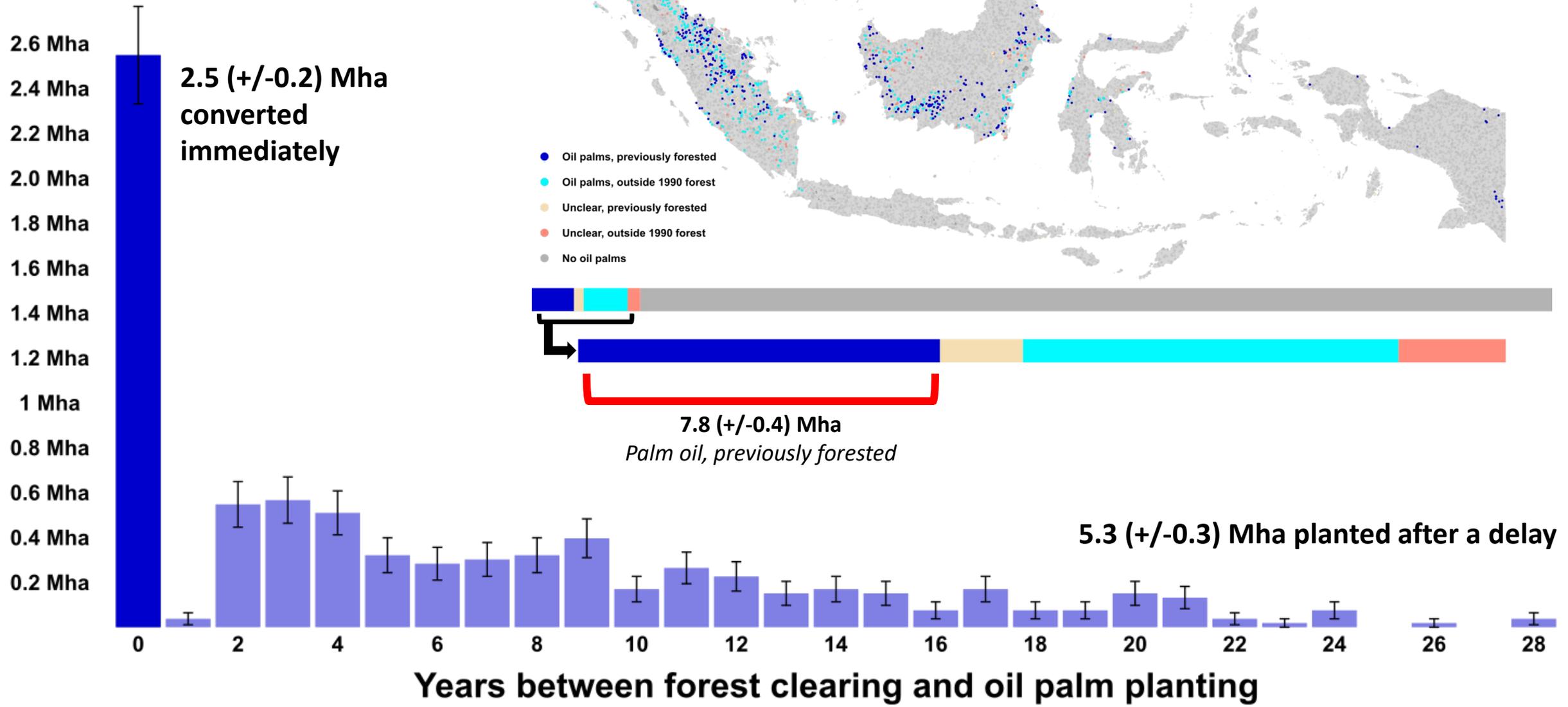


7.8 (+/-0.4) Mha
*Palm oil,
previously forested*

1.8 (+/-0.2) Mha
*Unclear,
previously forested*

8.1 (+/-0.4) Mha
*Palm oil,
not forested in 1990*

2.3 (+/-0.2) Mha
*Unclear,
not forested in 1990*





a. Land use immediately after clearing





a. Land use immediately after clearing





a. Land use immediately after clearing

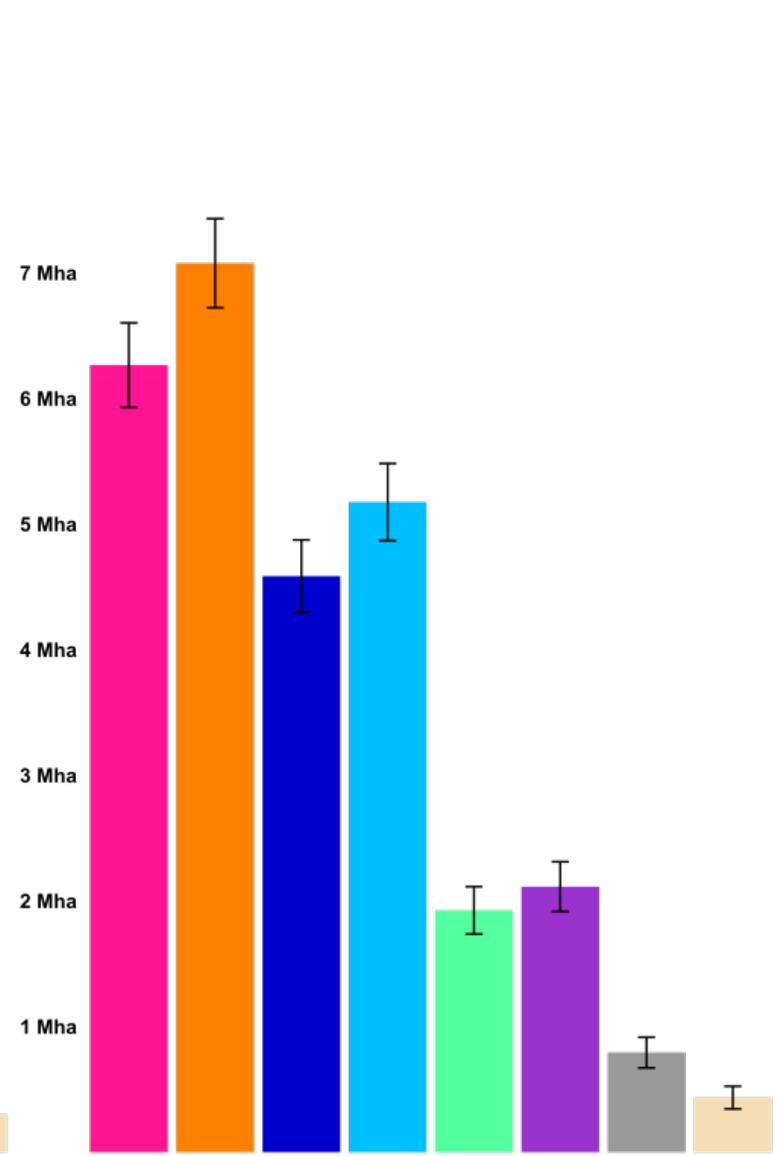
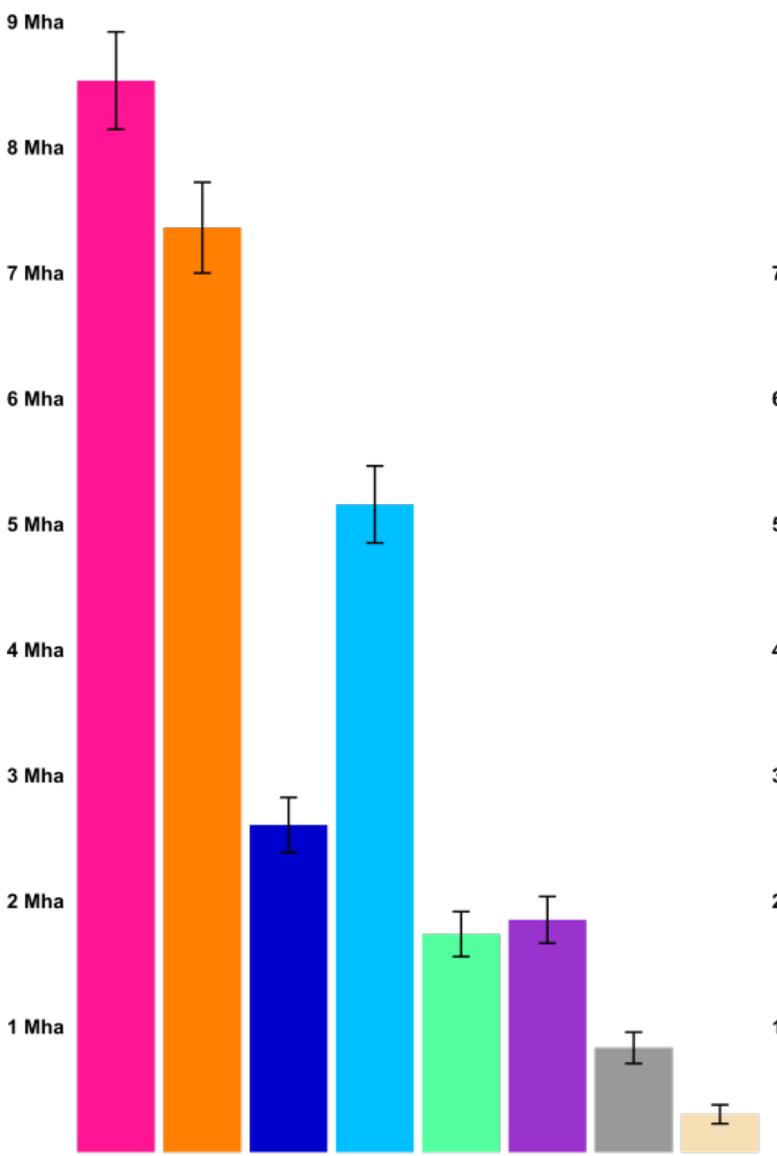




a. Land use immediately after clearing

b. Land use five years after clearing

- Land use category:**
- Actively cleared unplanted land
 - Forest fire clearing
 - Palm oil
 - Smallholder land use
 - Tree plantations
 - Other
 - Built up
 - Land use uncertain

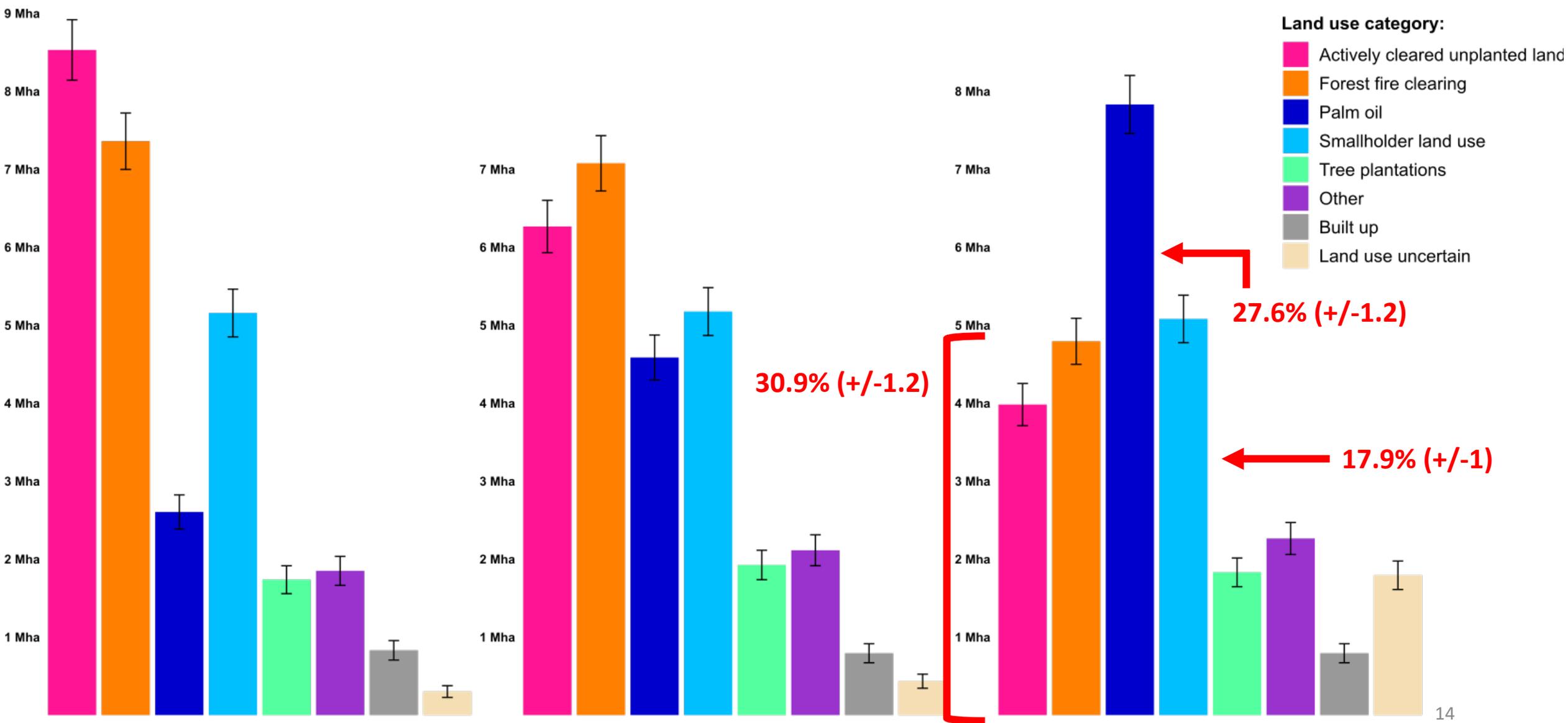




a. Land use immediately after clearing

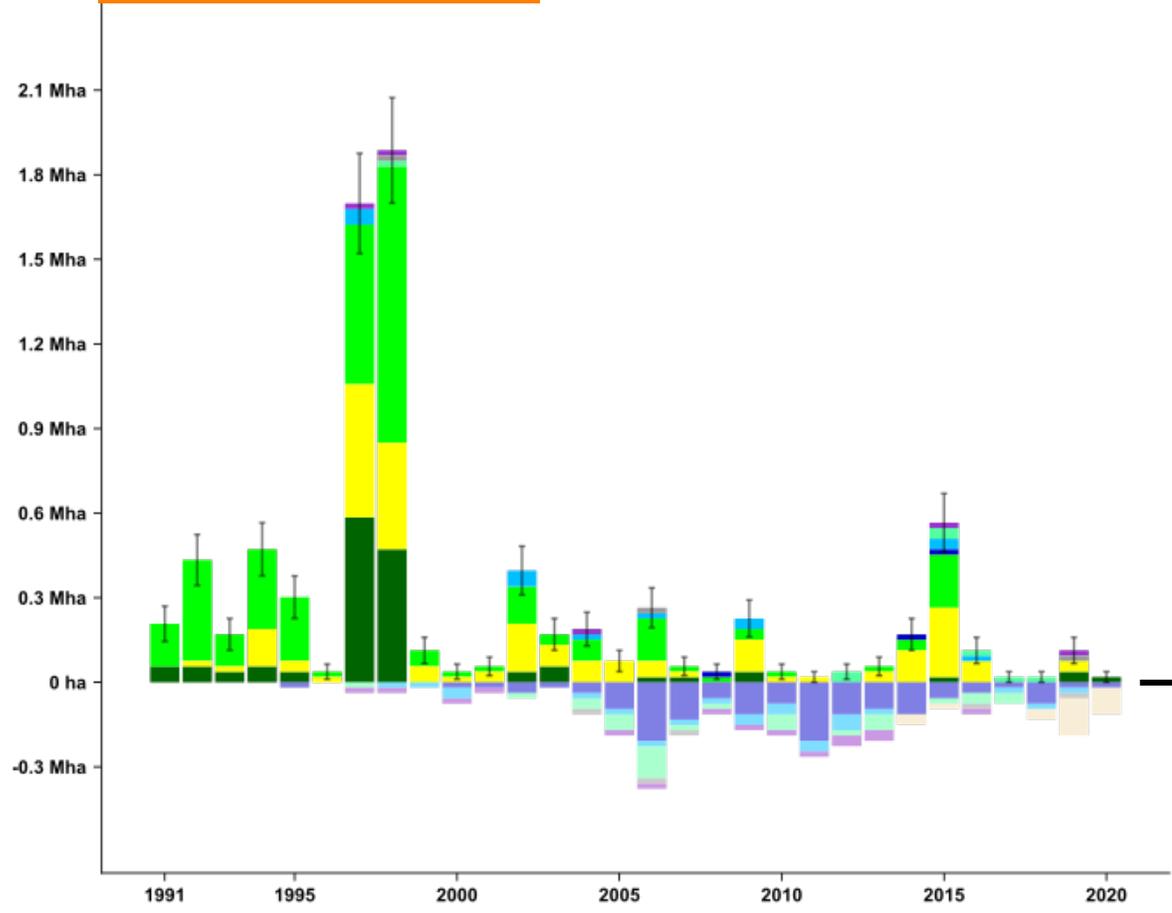
b. Land use five years after clearing

c. Land use in 2020





Fire cleared land

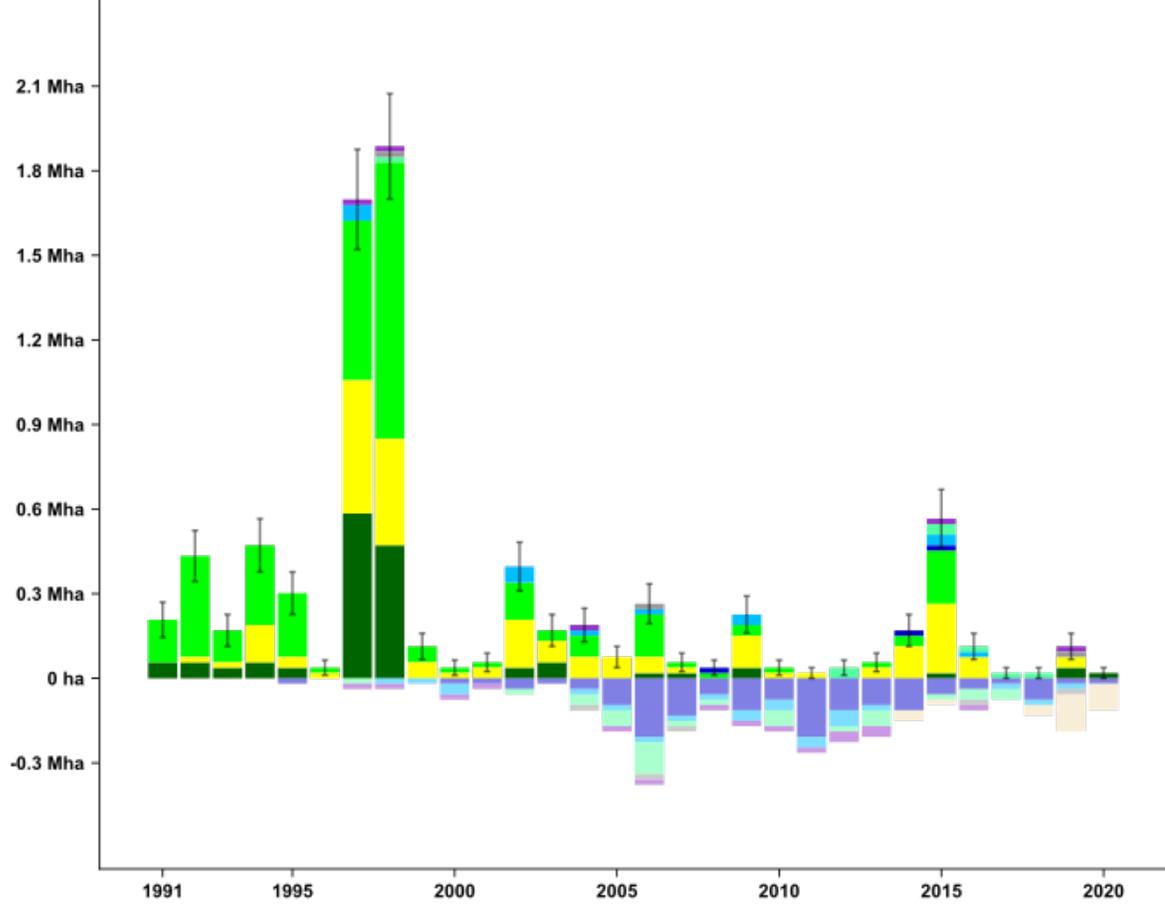


Land newly cleared by fire

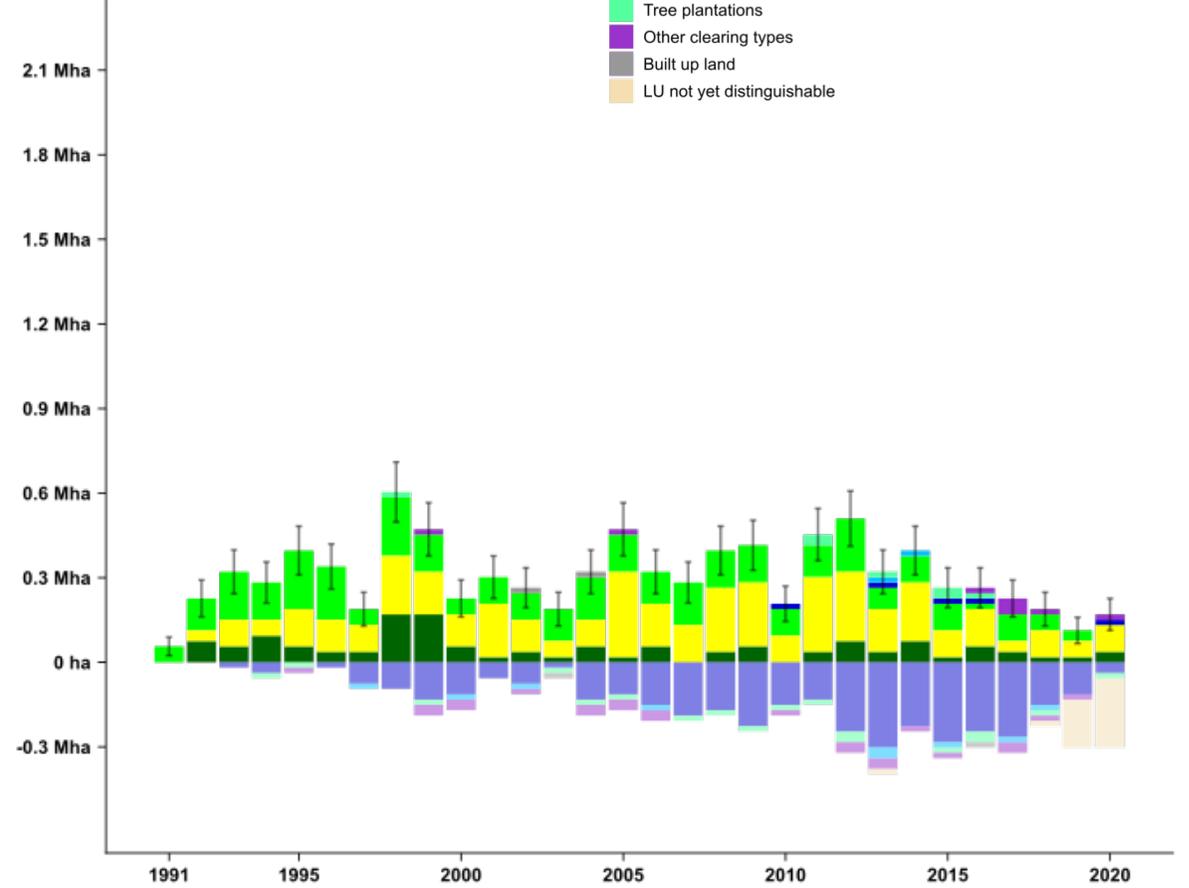
Later land use establishment



Fire cleared land



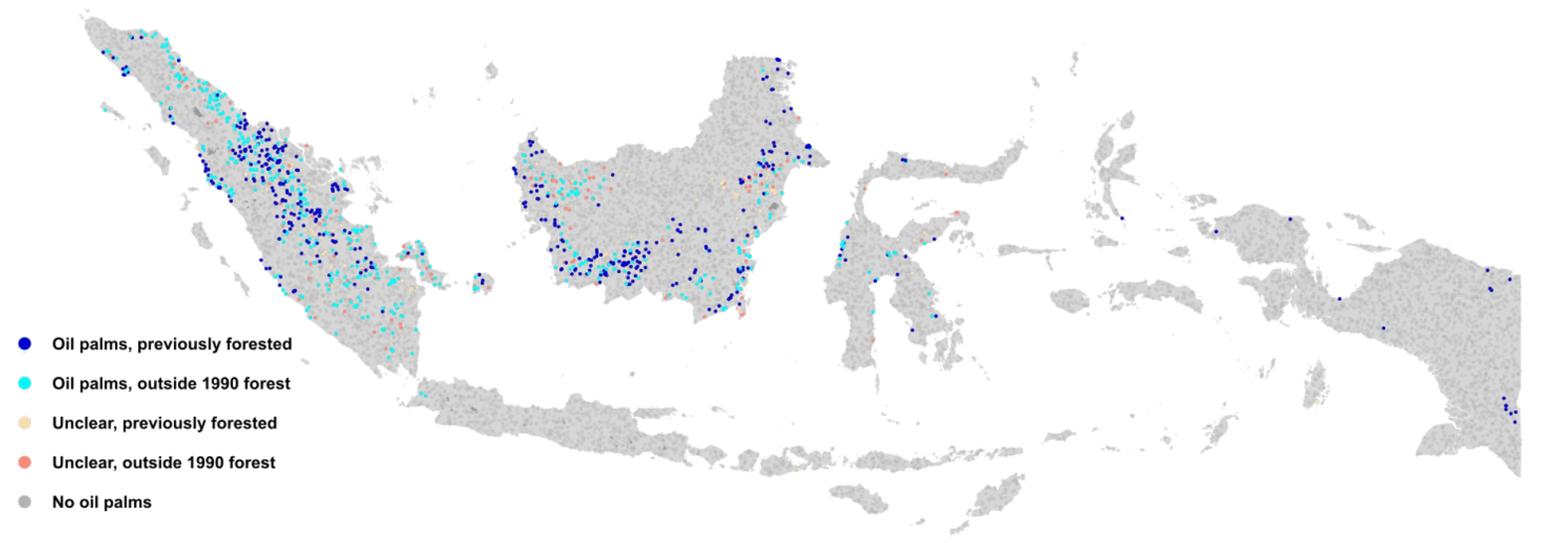
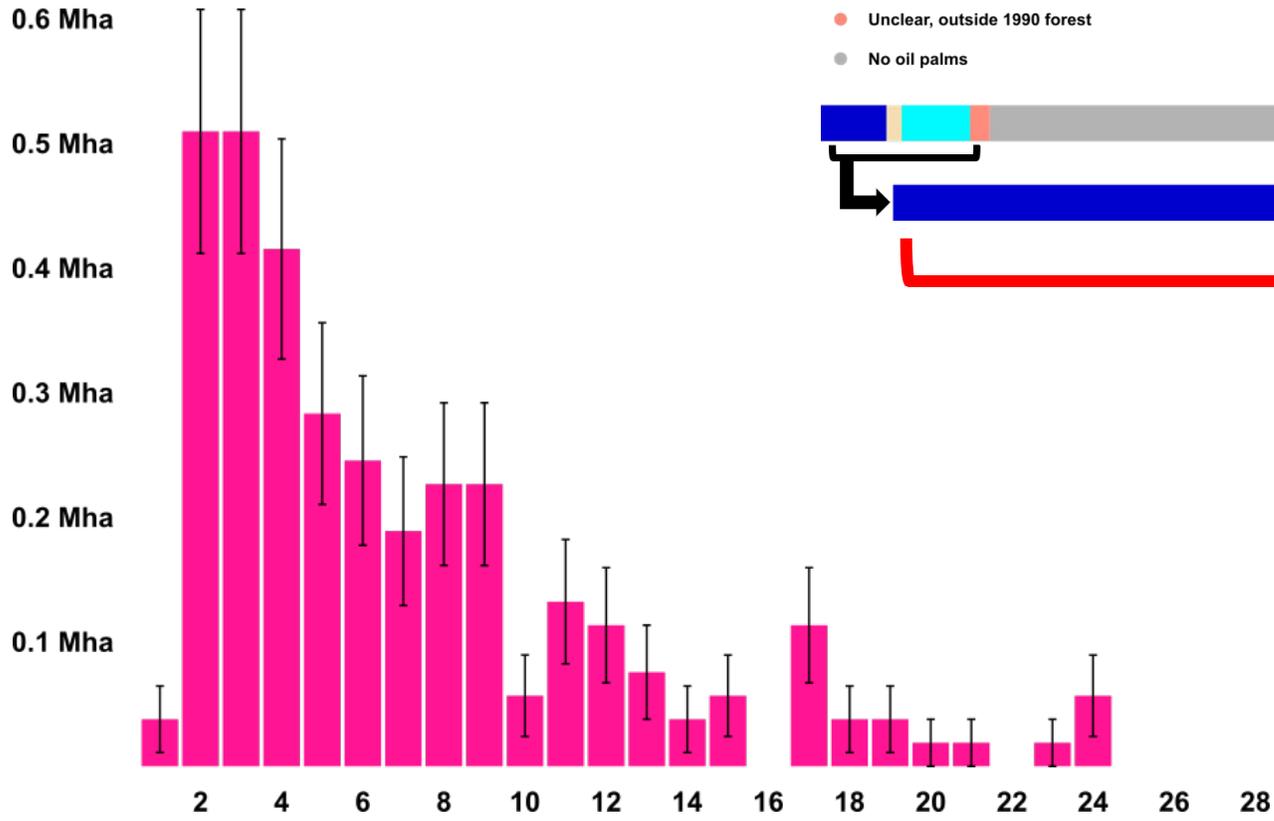
Unplanted land



- | | |
|---|---|
| Converted from (positive y-axis): | Converted to (negative y-axis): |
| ■ Intact, cleared directly | ■ Palm oil plantations |
| ■ Degraded before 1990 | ■ Smallholder land use |
| ■ Degraded after 1990 | ■ Tree plantations |
| | ■ Other clearing types |
| | ■ Built up land |
| | ■ LU not yet distinguishable |
| ■ Palm oil plantations | |
| ■ Smallholder land use | |
| ■ Tree plantations | |
| ■ Other clearing types | |
| ■ Built up land | |
| ■ LU not yet distinguishable | |



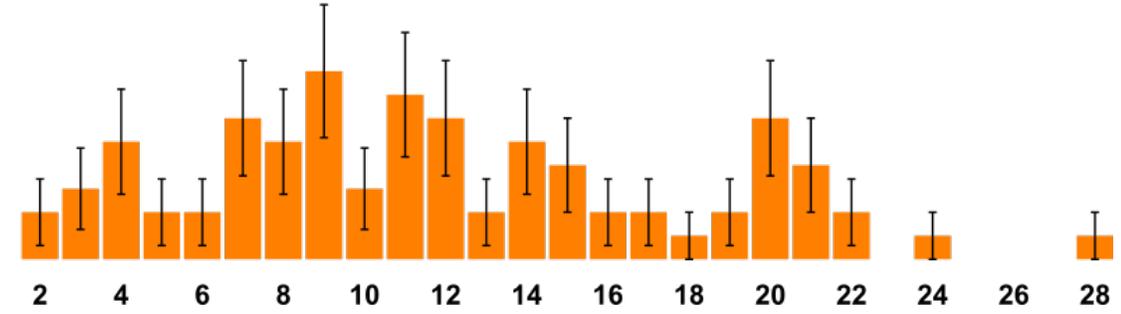
3.4 (+/-0.2) Mha initially unplanted (actively cleared)



- Oil palms, previously forested
- Oil palms, outside 1990 forest
- Unclear, previously forested
- Unclear, outside 1990 forest
- No oil palms



1.5 (+/-0.2) Mha initially cleared by fire





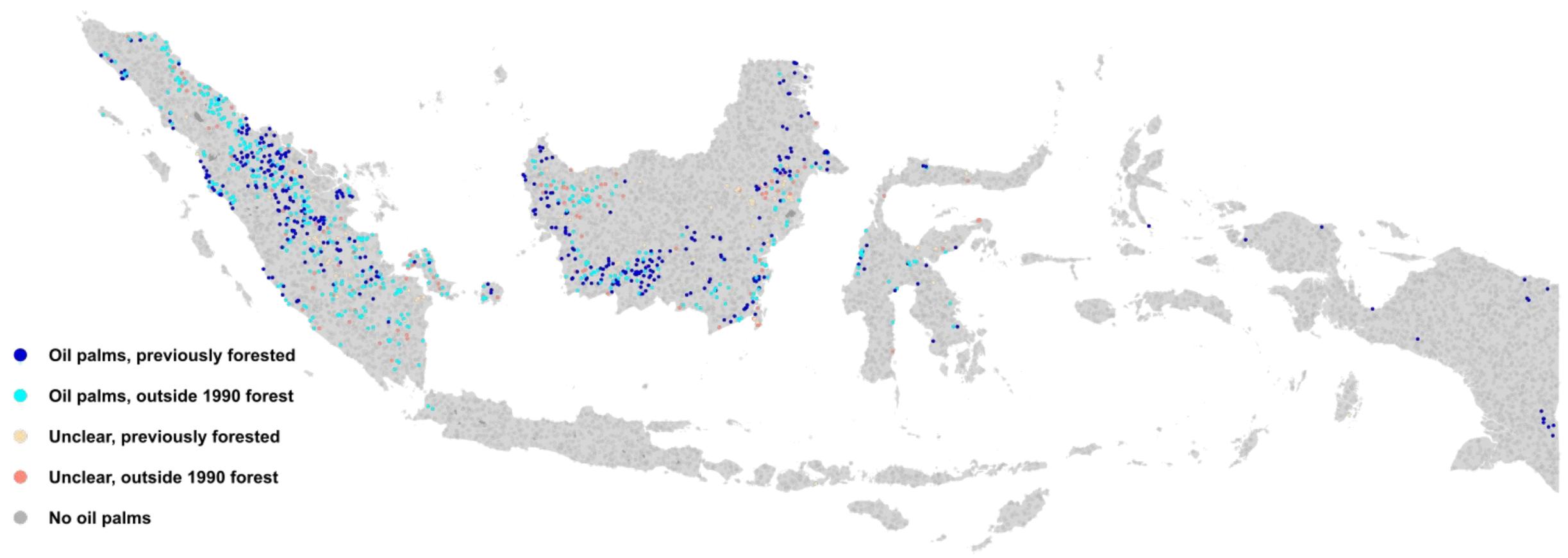
Navigation controls including a compass with 'N', a pan button, a street view pegman, and a vertical zoom slider with '+' and '-' buttons.

Image © 2022 CNES / Airbus

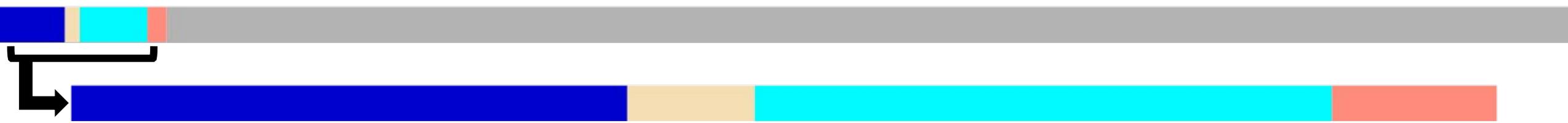
Google Earth

1985

Imagery Date: 7/19/2013 2°20'13.28" N 100°20'27.88" E elev 89 ft eye alt 2561 ft



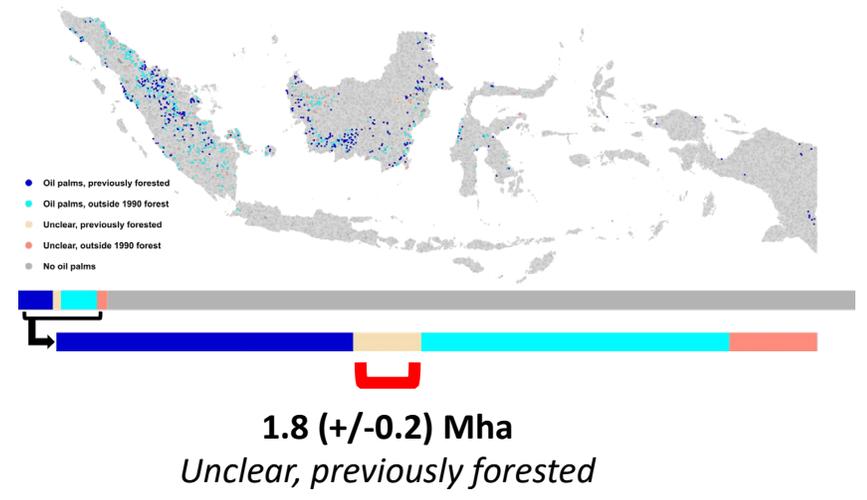
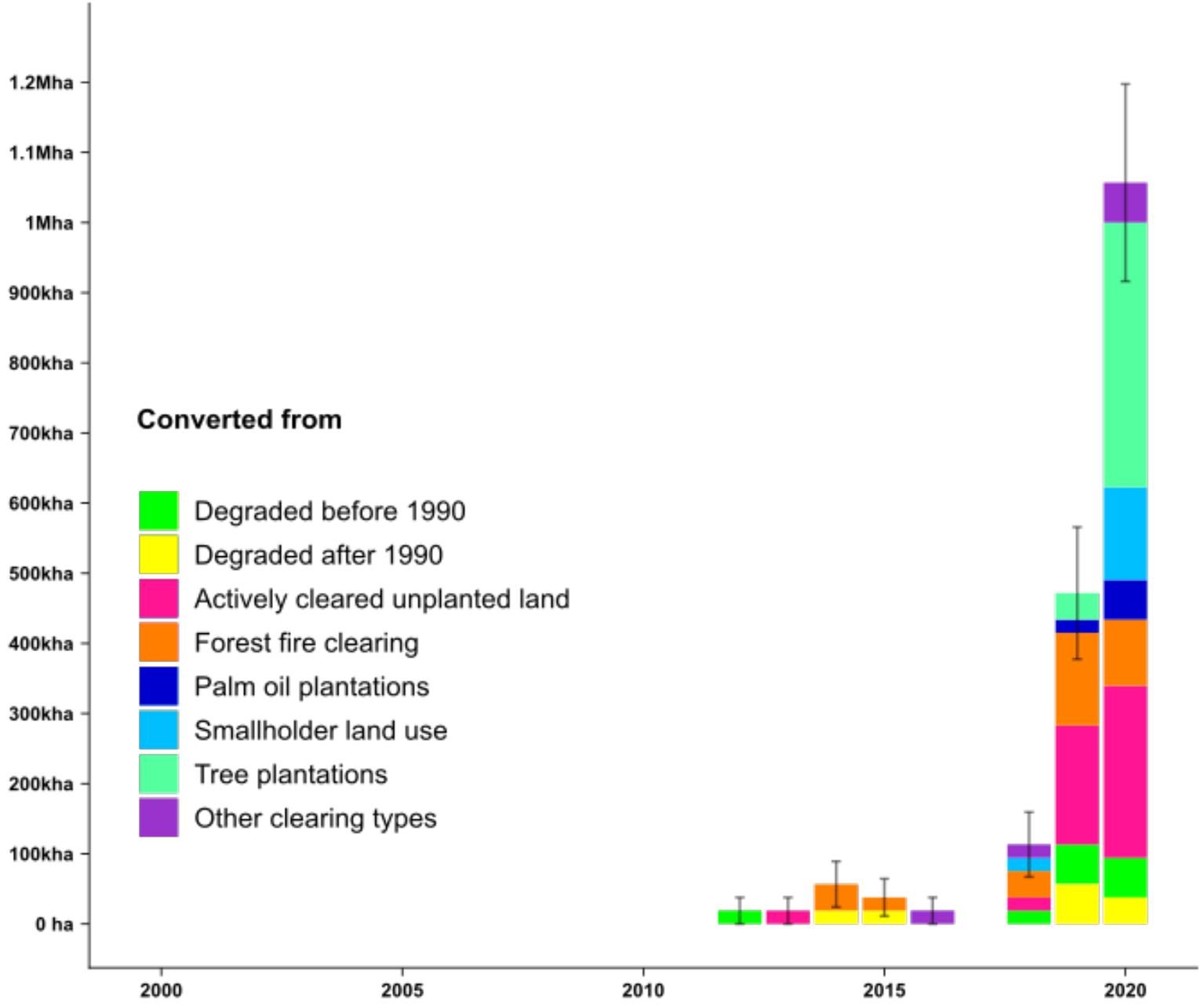
- Oil palms, previously forested
- Oil palms, outside 1990 forest
- Unclear, previously forested
- Unclear, outside 1990 forest
- No oil palms



1.8 (+/-0.2) Mha
Unclear, previously forested

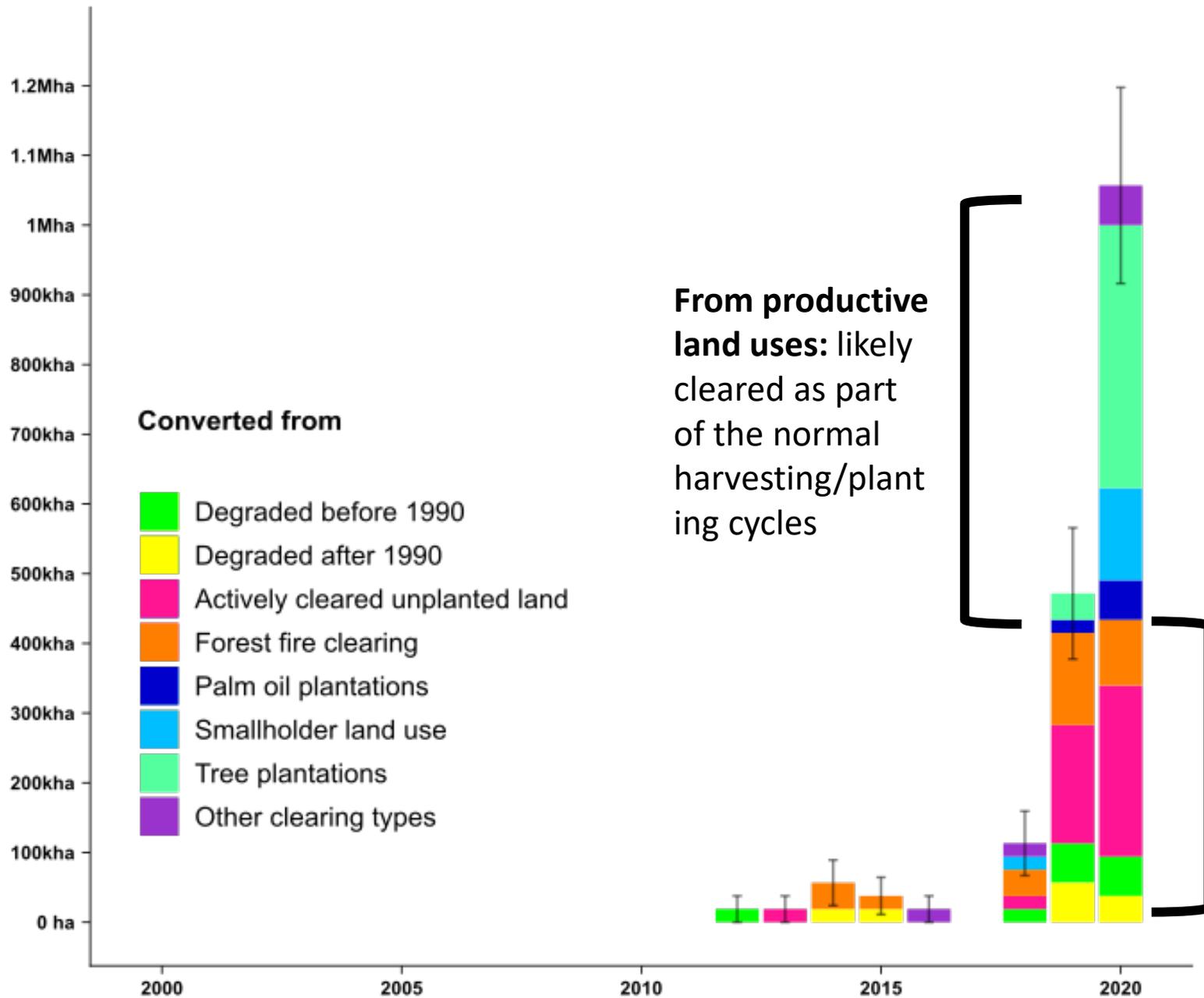


Annual expansion of “unclear” land (cannot confirm final land use)

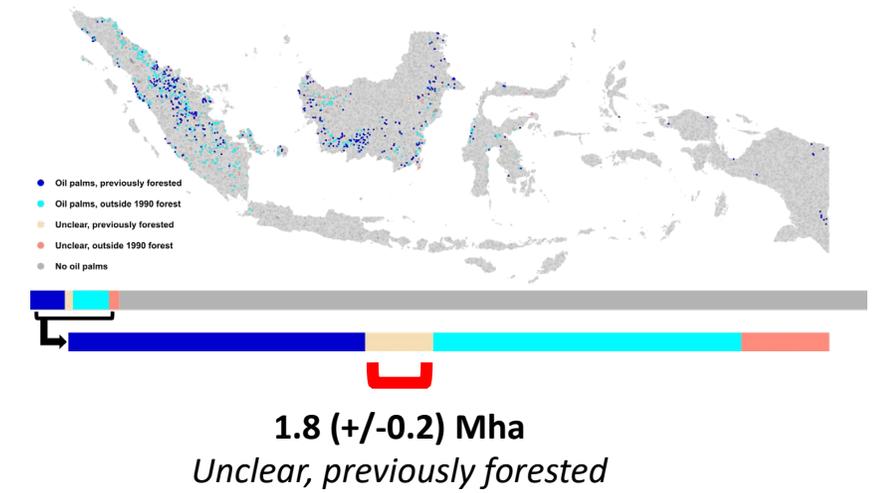




Annual expansion of “unclear” land (cannot confirm final land use)



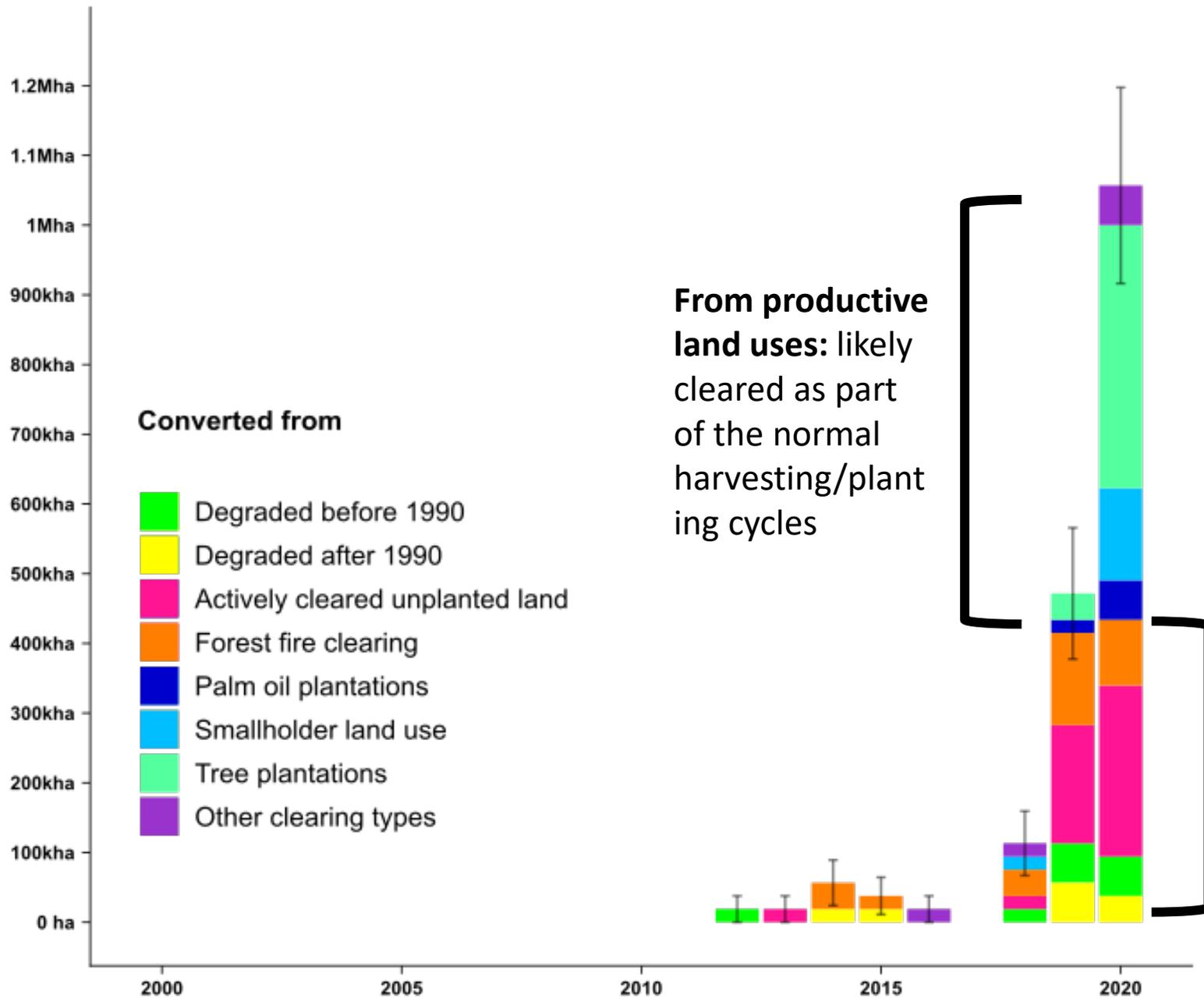
From productive land uses: likely cleared as part of the normal harvesting/planting cycles



From primary forest or unproductive land: possible oil palm

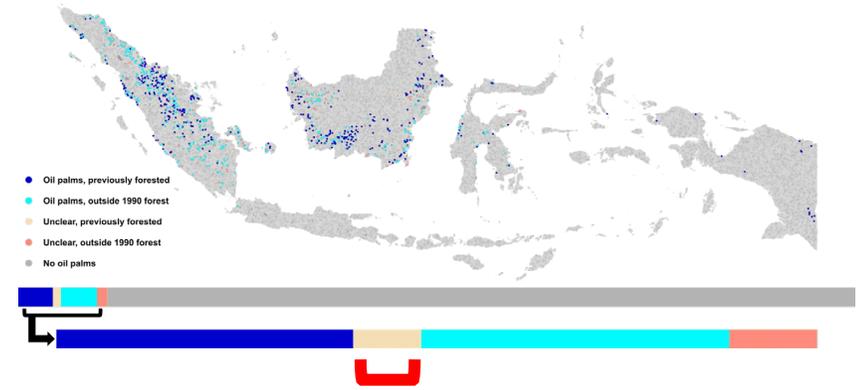


Annual expansion of “unclear” land (cannot confirm final land use)



From productive land uses: likely cleared as part of the normal harvesting/planting cycles

From primary forest or unproductive land: possible oil palm



1.8 (+/-0.2) Mha
Unclear, previously forested

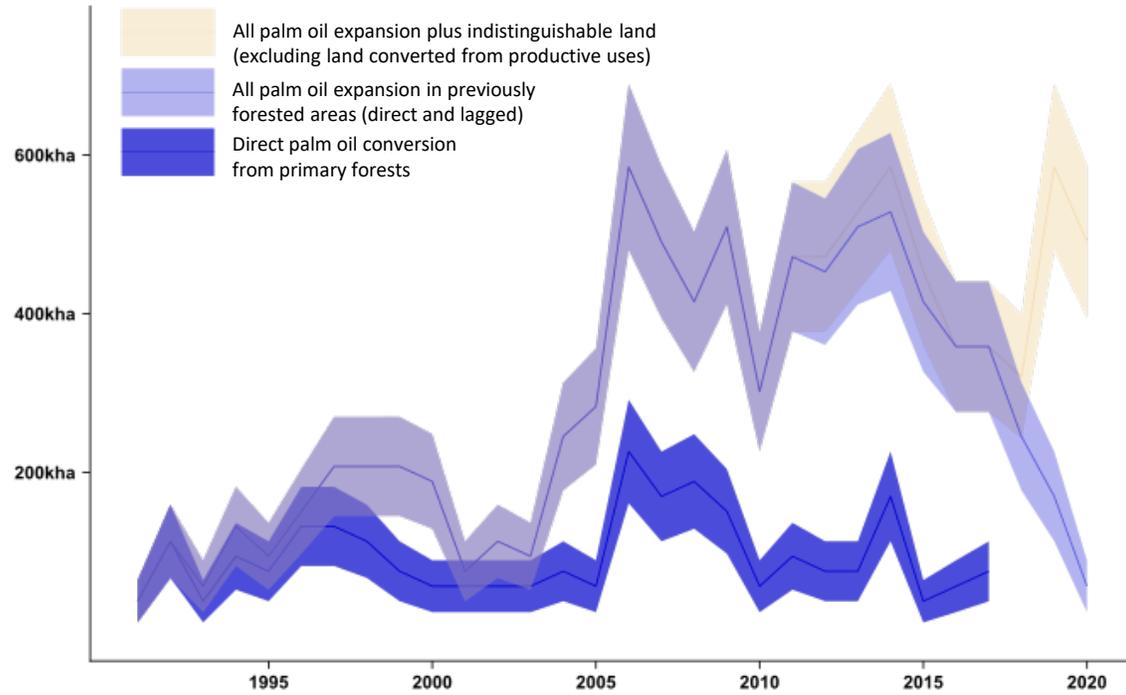
From previous oil palm: 0.1 (+/-0) Mha

From unplanted land: 0.5 (+/-0.1) Mha
From fire-cleared land: 0.3 (+/-0.1) Mha
From forest: 0.3 (+/-0.1) Mha

From other productive uses: 0.7 (+/-0.1) Mha



Annual palm expansion

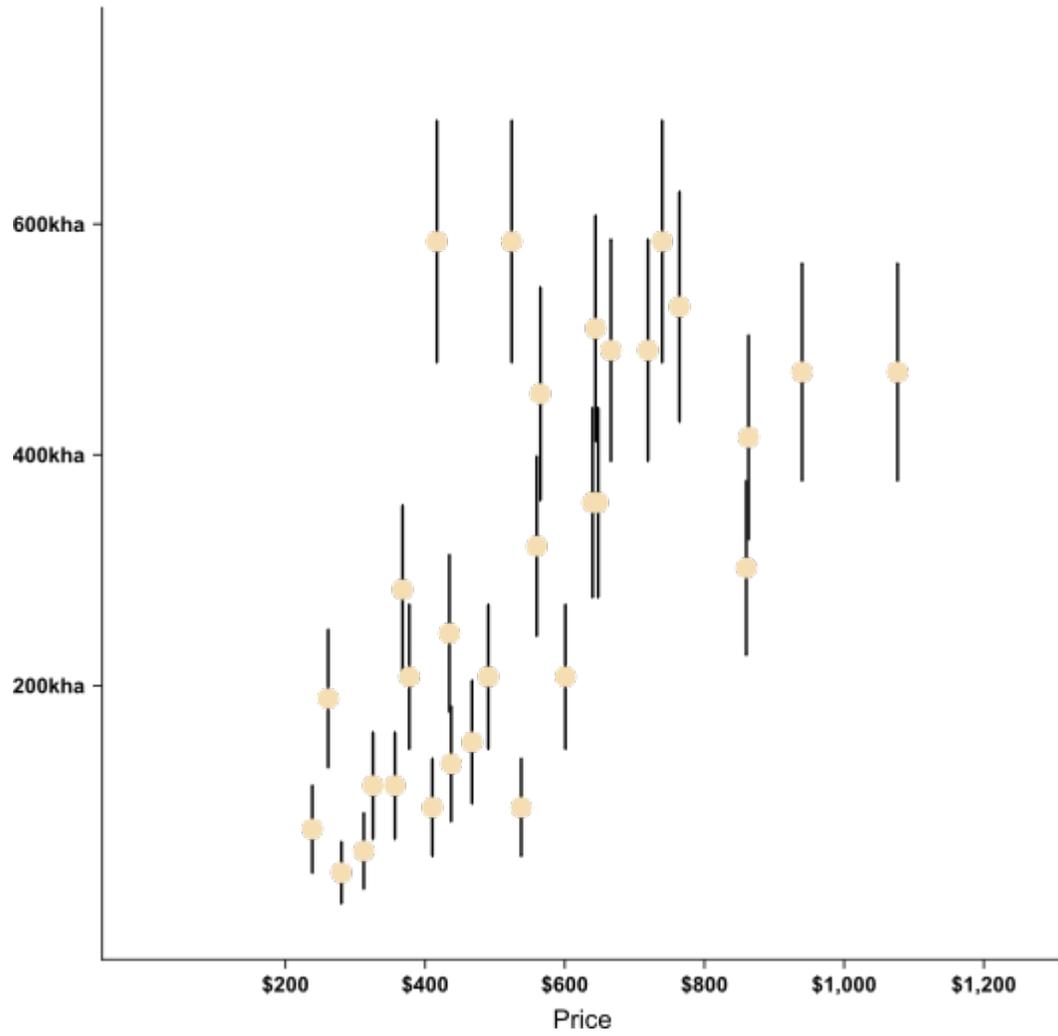


Palm oil price (USD per metric ton)

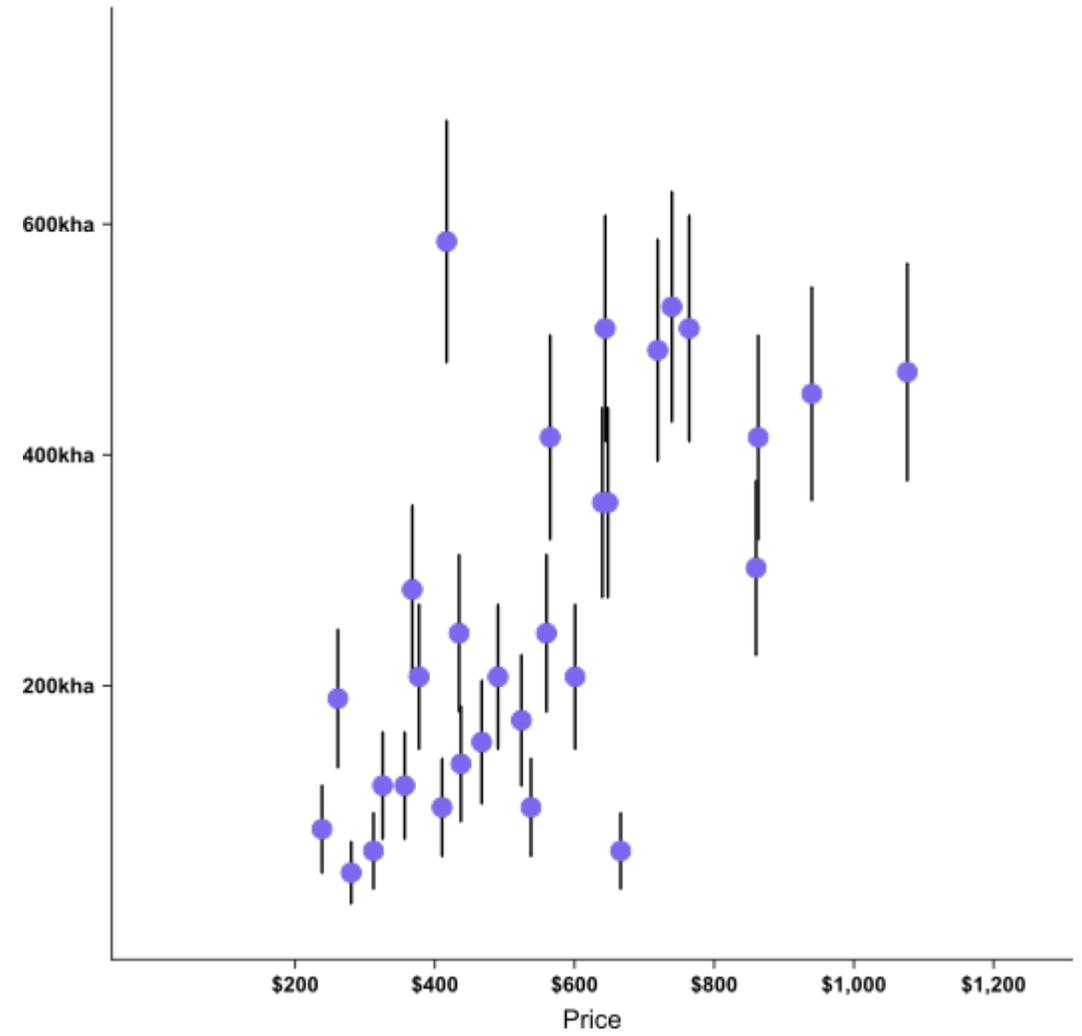


Data source: International Monetary Fund

Confirmed expansion plus indistinguishable land

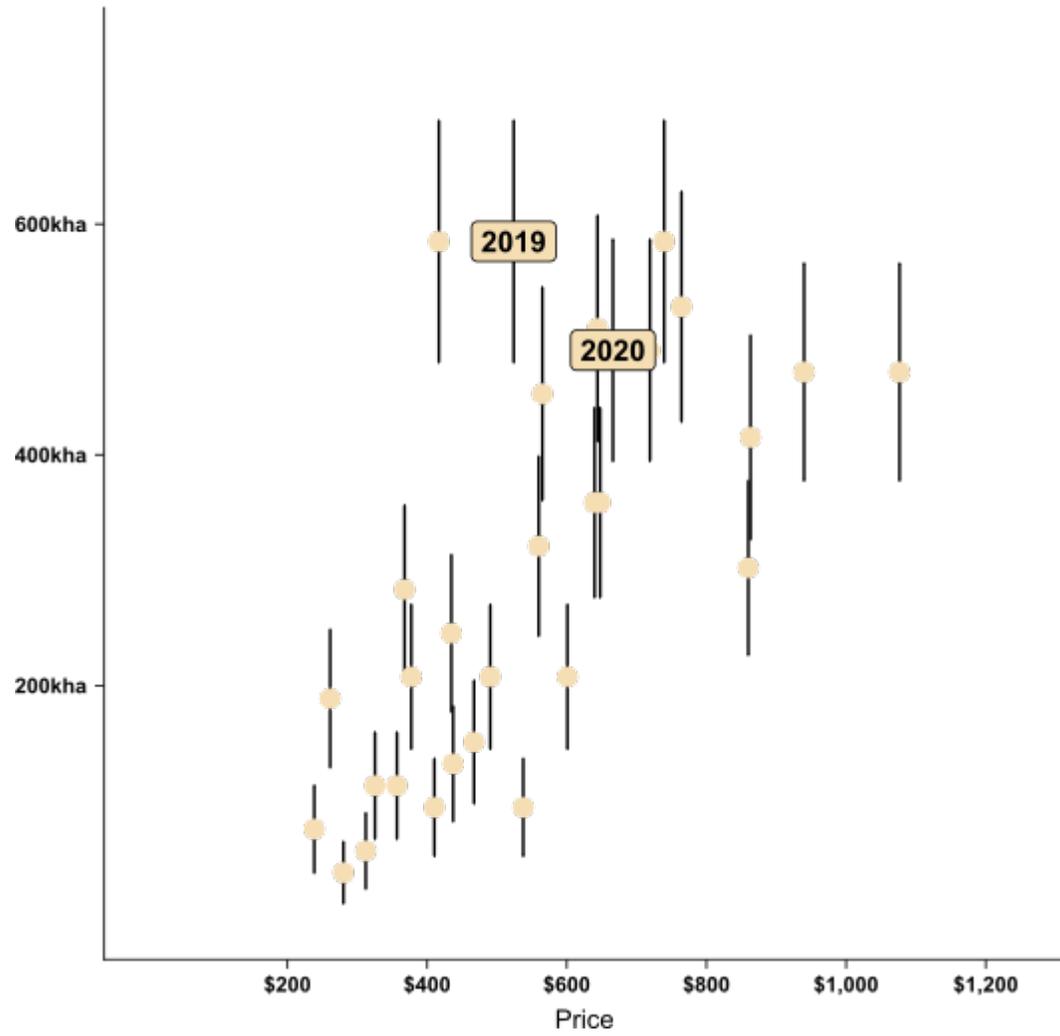


Confirmed expansion only

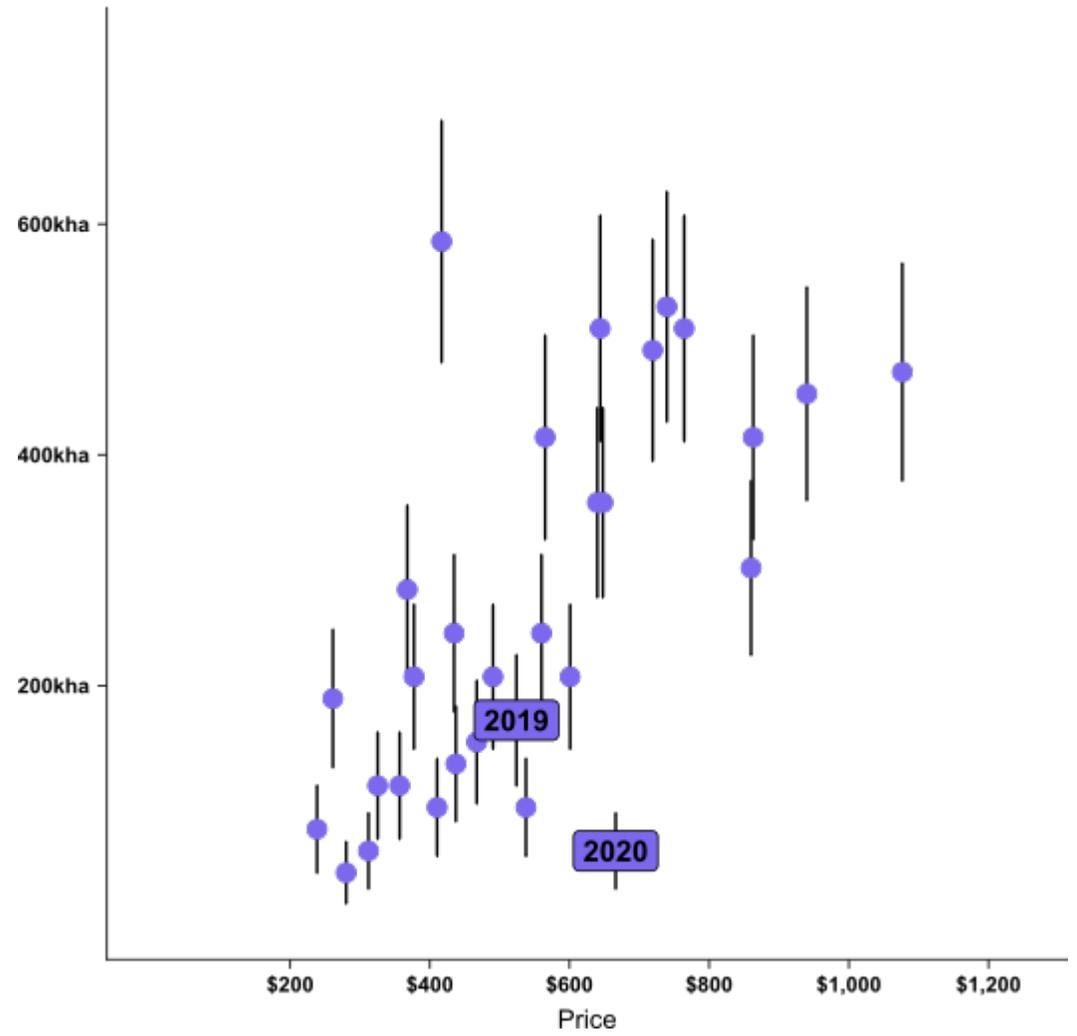




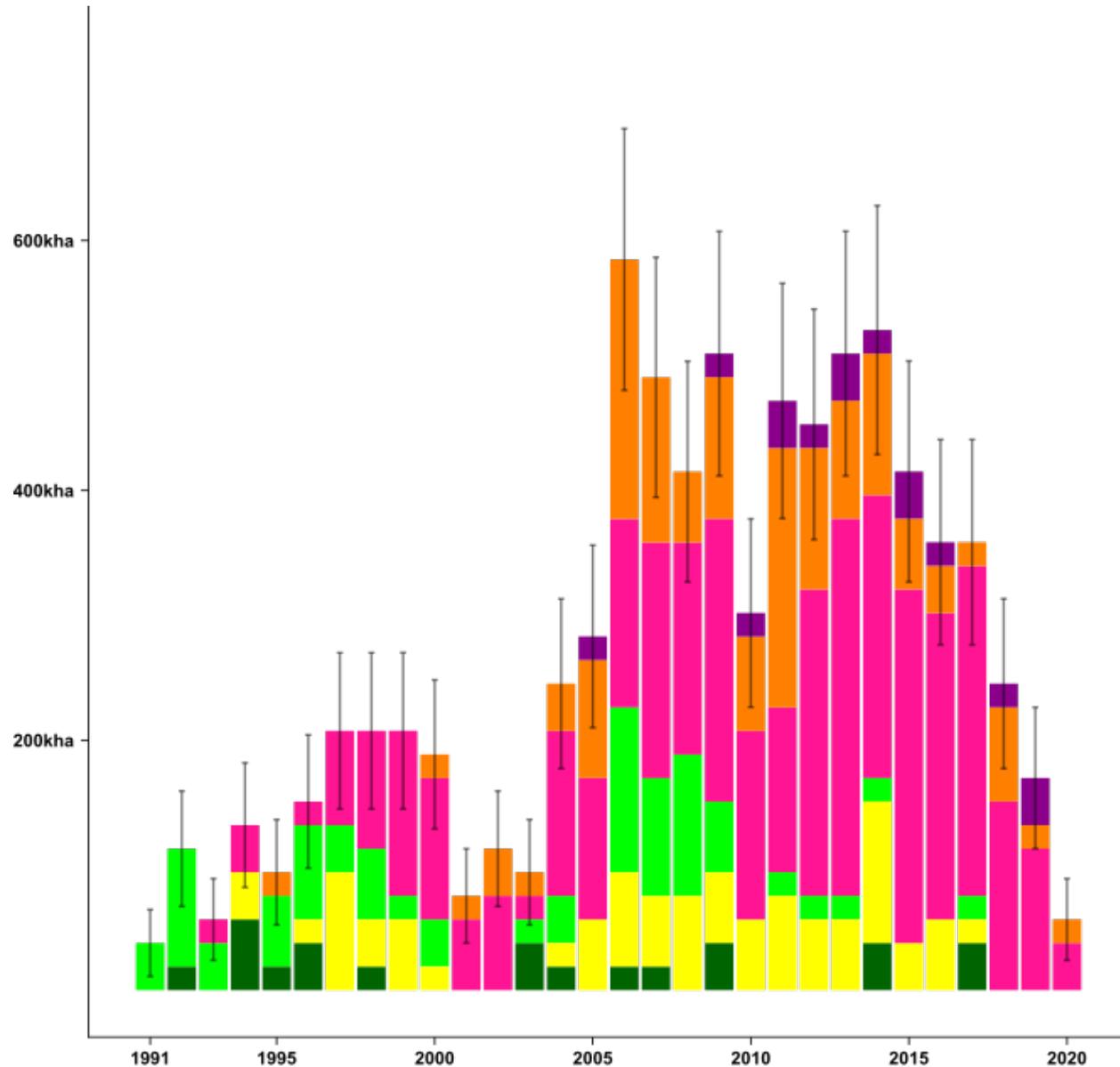
Confirmed expansion plus indistinguishable land



Confirmed expansion only

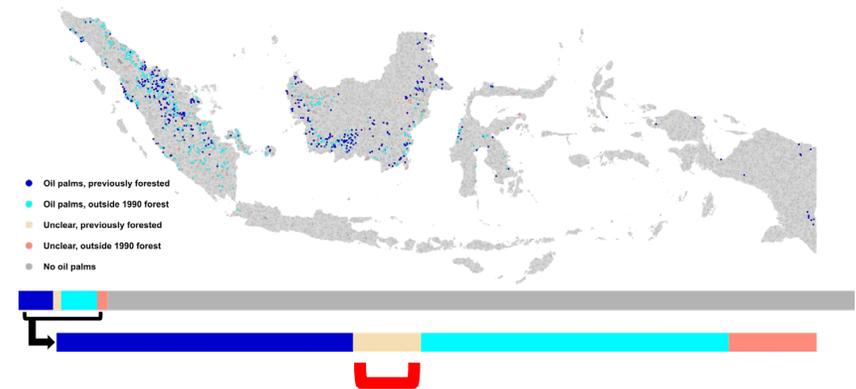


Annual palm oil expansion in previously forested land



Land cover before palm oil conversion:

- Intact, cleared directly
- Degraded before 1990
- Degraded after 1990
- Actively cleared unplanted land
- Forest fire clearing
- Non-palm productive land use



1.8 (+/-0.2) Mha

Unclear, previously forested

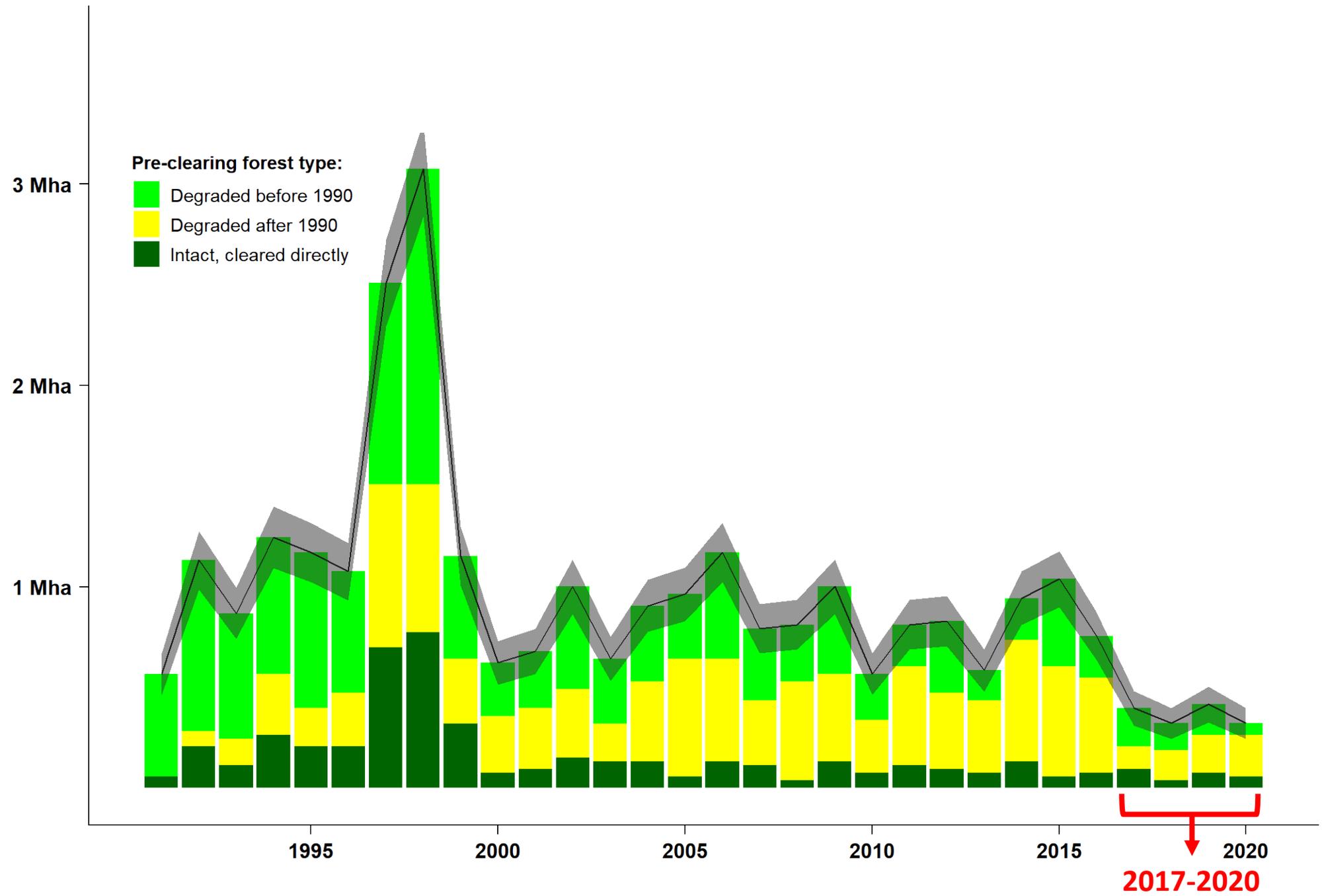
From previous oil palm: 0.1 (+/-0) Mha

From unplanted land: 0.5 (+/-0.1) Mha

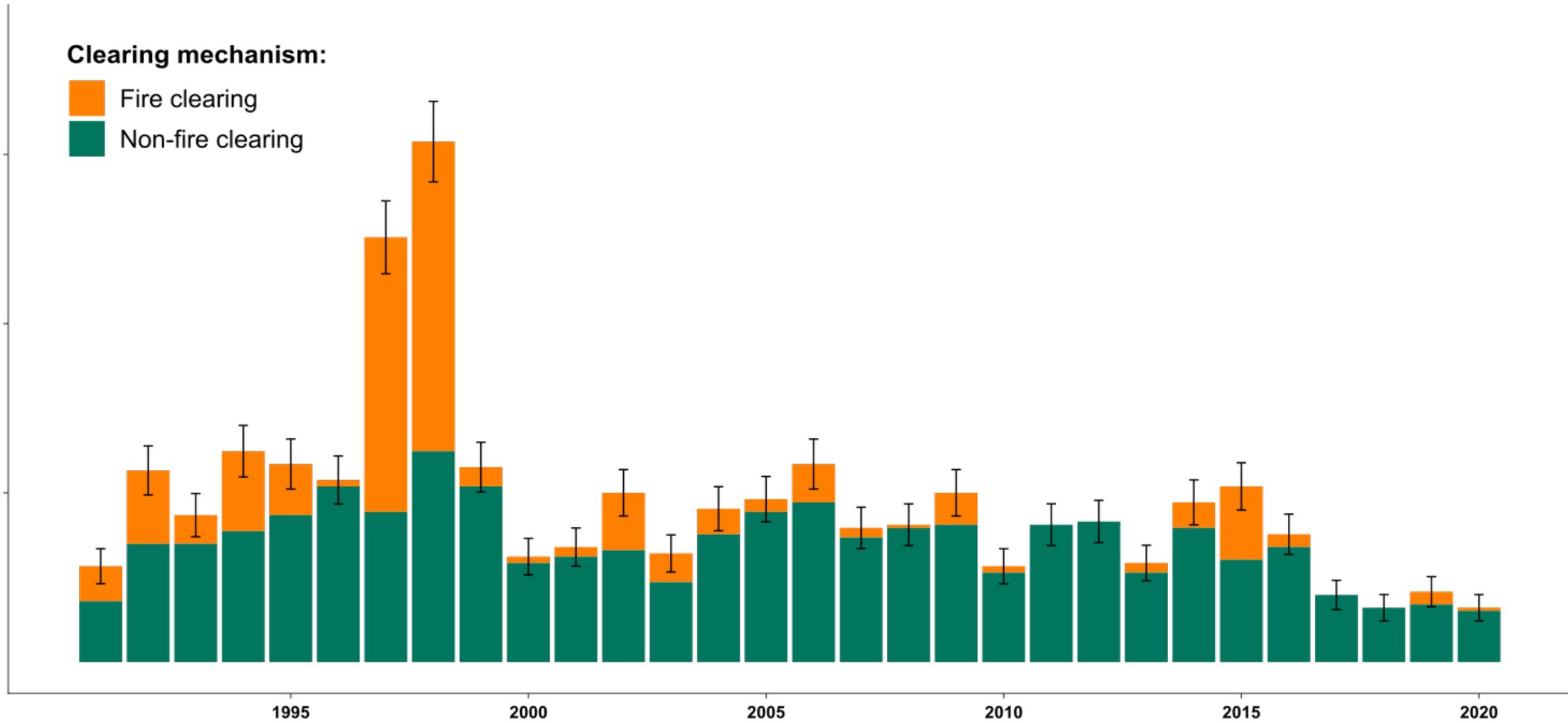
From fire-cleared land: 0.3 (+/-0.1) Mha

From forest: 0.3 (+/-0.1) Mha

From other productive uses: 0.7 (+/-0.1) Mha



2017-2020





Questions?