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Renewable Energy Directive

The Directive introduces an exemption from these limits for biofuels, bioliquids and biomass fuels certified as low ILUC-risk.

In order to implement this new approach, this proposal sets out specific criteria both for:

- determining the high ILUC-risk feedstock for which a significant expansion of the production area into land with high carbon stock is observed; and
- certifying low ILUC-risk biofuels, bioliquids and biomass fuels.

- How does expansion relate to deforestation?
- Why 2008-2015?

| Crop | 2008-2015 | | average tCO ₂ e per ha | gross planted area increase kha | % of deforestation in planted area increase | share of deforestation on peat forest |
|------------|--|---------------------------------|-----------------------------------|---------------------------------|---|---------------------------------------|
| | deforestation (>10% canopy cover) (ha) | emissions (MtCO ₂ e) | | | | |
| maize | 1,548,906 | 527 | 340 | 37,135 | 4% | N/A |
| soybean | 5,512,769 | 2,039 | 370 | 7,834 | 70% | 18% |
| rapeseed | 21,045 | 5 | 230 | 3,719 | 1% | N/A |
| sorghum | 1,212,805 | 301 | 248 | 27,898 | 4% | N/A |
| sugar beet | 637 | 0 | 176 | 678 | 0.1% | N/A |
| sugar cane | 198,176 | 66 | 335 | 3,725 | 5% | N/A |
| sunflower | 73,069 | 20 | 269 | 5,244 | 1% | N/A |
| wheat | 134,252 | 39 | 283 | 11,646 | 1% | N/A |

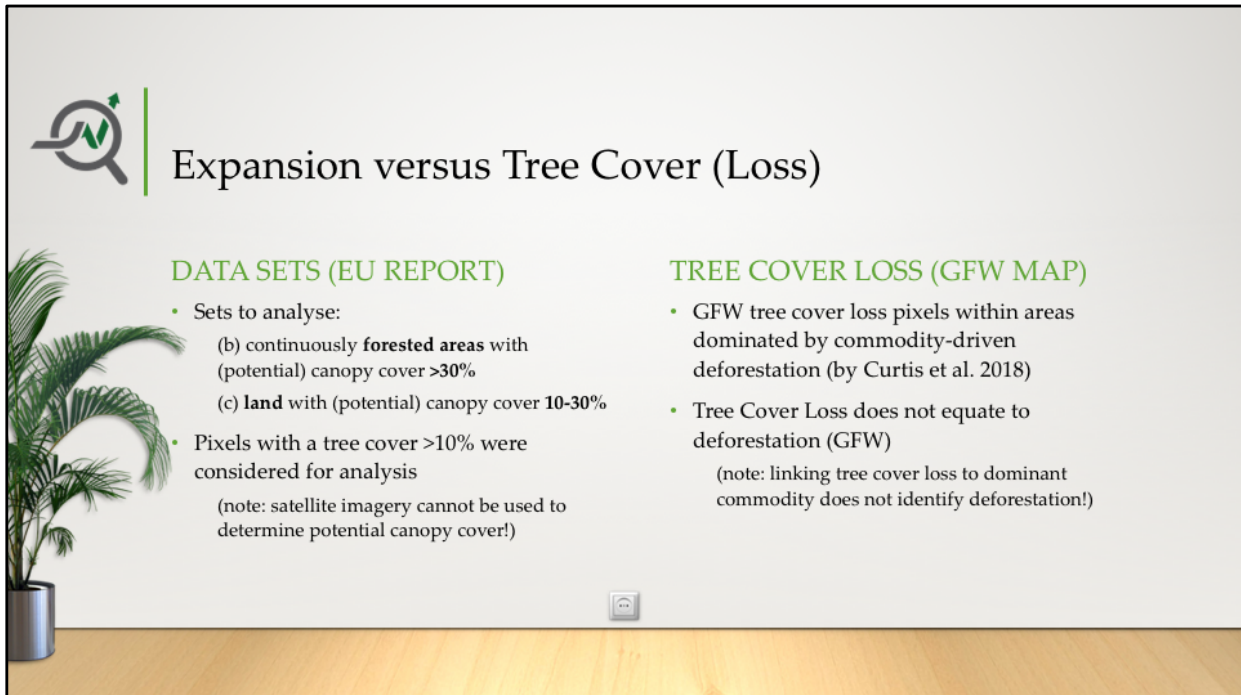
It is important to keep in mind that this directive covers sources for bio-energy for the EU only. Is that a market worth pursuing?

- As described in Box 2 of EU Report, this saving could be negated by biofuels produced on new crop areas if more than about 14% of the expansion is at the expense of forest.
- it appears appropriate to set a more conservative threshold of 10% to determine the level of significant expansion.

Image

- EC 2019 Report _ on the status of production expansion of relevant food and feed crops worldwide (draft)





Expansion versus Tree Cover (Loss)

DATA SETS (EU REPORT)

- Sets to analyse:
 - (b) continuously **forested areas** with (potential) canopy cover >30%
 - (c) **land** with (potential) canopy cover 10-30%
- Pixels with a tree cover >10% were considered for analysis
(note: satellite imagery cannot be used to determine potential canopy cover!)

TREE COVER LOSS (GFW MAP)

- GFW tree cover loss pixels within areas dominated by commodity-driven deforestation (by Curtis et al. 2018)
- Tree Cover Loss does not equate to deforestation (GFW)
(note: linking tree cover loss to dominant commodity does not identify deforestation!)

EU 2019 Report ... on the status of production expansion of relevant food and feed crops worldwide (draft)

- Indicates that 10-30% tree cover is debatable, but the continues to work with >10% threshold
- Ignores potential for forest to grow as well as actual land use, as satellite imagery cannot accurately identify either
- Assumes deforestation is solely driven by the main commodity, a serious oversimplification

GFW: "Loss" indicates the removal or mortality of tree cover and can be due to a variety of factors, including mechanical harvesting, fire, disease, or storm damage. As such, "loss" does not equate to deforestation.

(<http://commodities.globalforestwatch.org/#v=map&x=4&y=-26.07&l=3&lyrs=tcc%2ChansenLoss>) For more information, see http://earthenginepartners.appspot.com/science-2013-global-forest/download_v1.5.html.

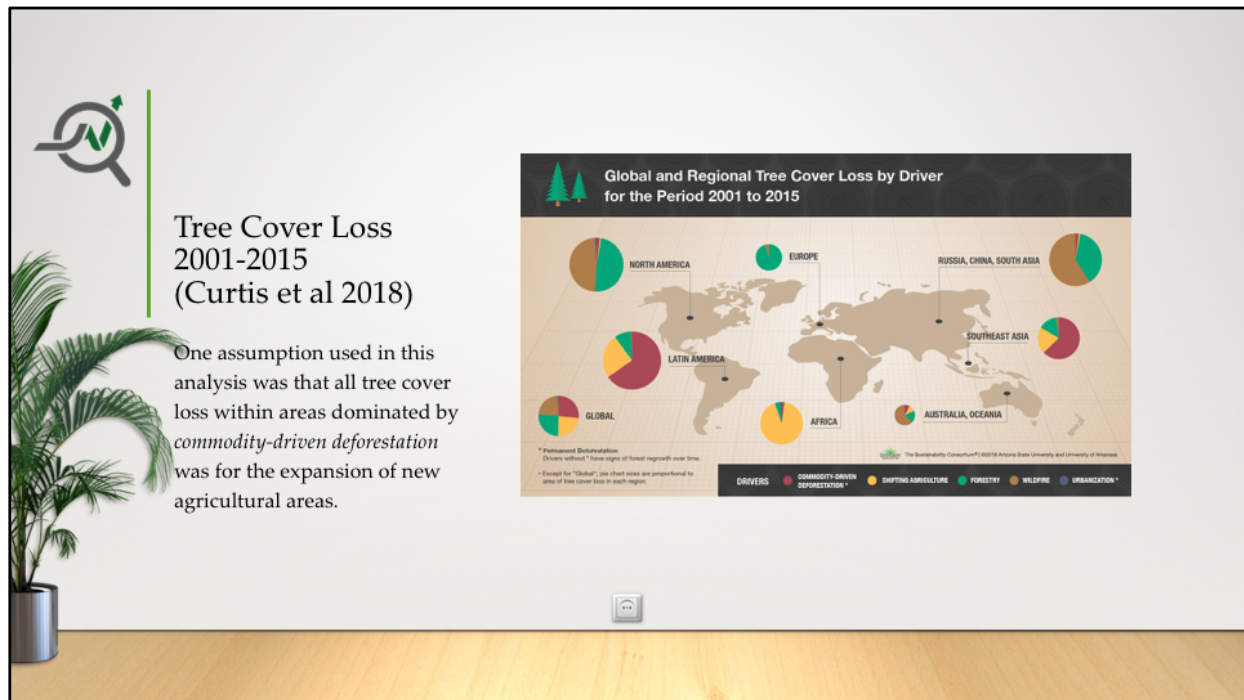
Ergo, no link between EU's 'expansion' and the identified tree cover loss.



Setting the proper thresholds is crucial in the debate over tree cover loss, especially when used to estimate direct deforestation!

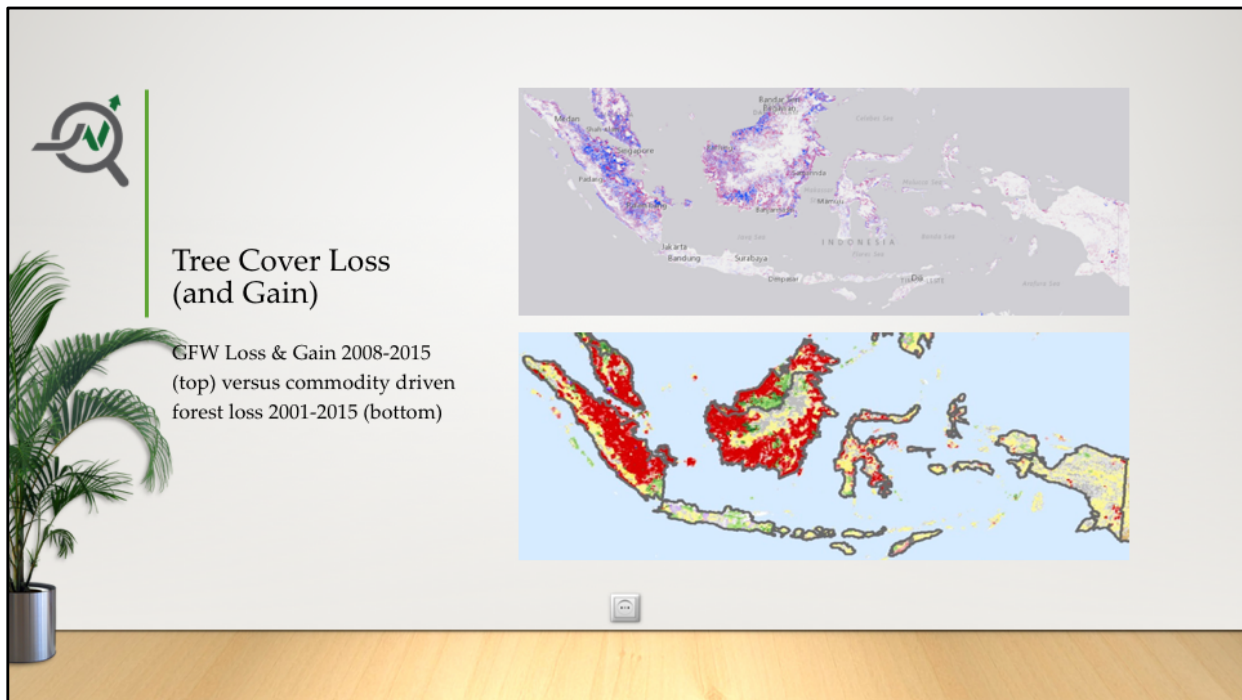
Images

- Hansen/UMD/Google/USGS/NASA, accessed through Global Forest Watch (<http://commodities.globalforestwatch.org/#v=map>)



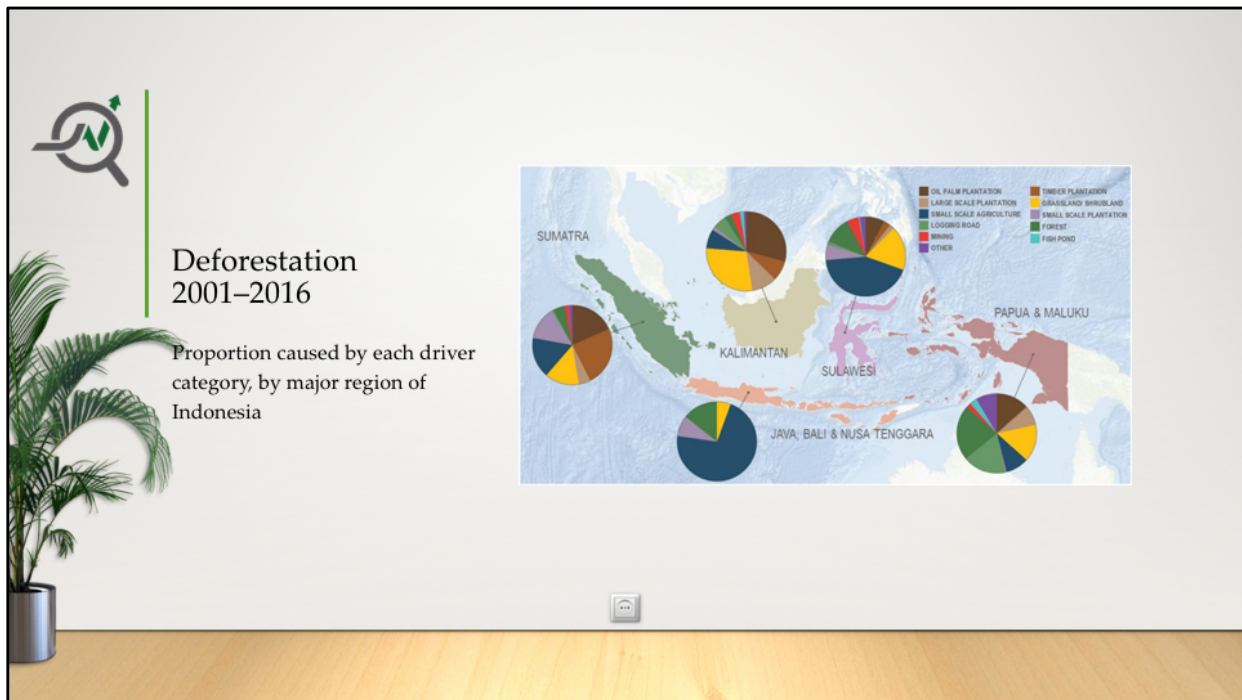
Image

- Curtis et al 2018 Classifying drivers of global forest loss (Infographic)



Images

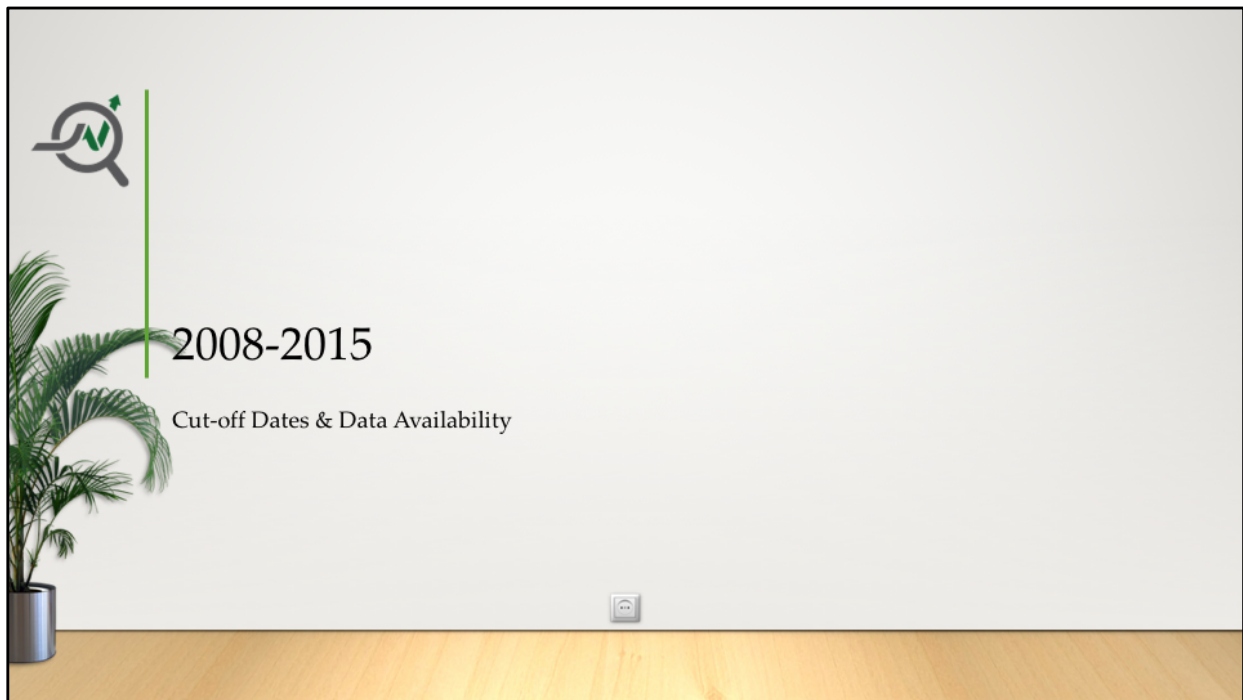
- Hansen/UMD/Google/USGS/NASA, accessed through Global Forest Watch (<http://commodities.globalforestwatch.org/#v=map>)
- Curtis et al 2018 Classifying drivers of global forest loss (Loss_Classified_EasternHemisphere_2)



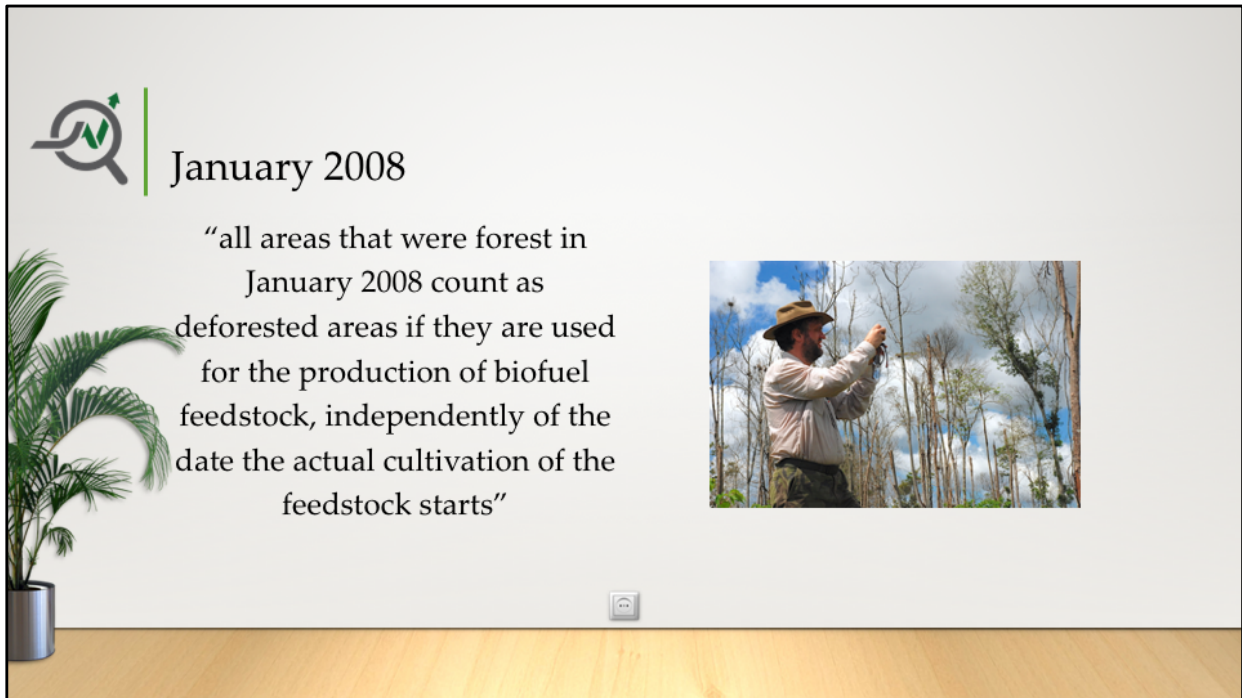
EU Report cannot provide a clear link between expansion and deforestation, the choice of data (tree cover loss/gain) is seriously flawed. Peer reviewed research shows significantly **lower** contributions of oil palm to deforestation than presented.


Image

- Austin et al 2019 What causes deforestation in Indonesia?
(<https://iopscience.iop.org/article/10.1088/1748-9326/aaf6db/meta>)




- EU Report aims to capture the trends in expansion of biofuel feedstock observed since 2008. It argues this reflects **cut-off dates** and **data availability**?
 - (for the protection of highly biodiverse land and land with high carbon stock set out in Article 29 of the Directive)

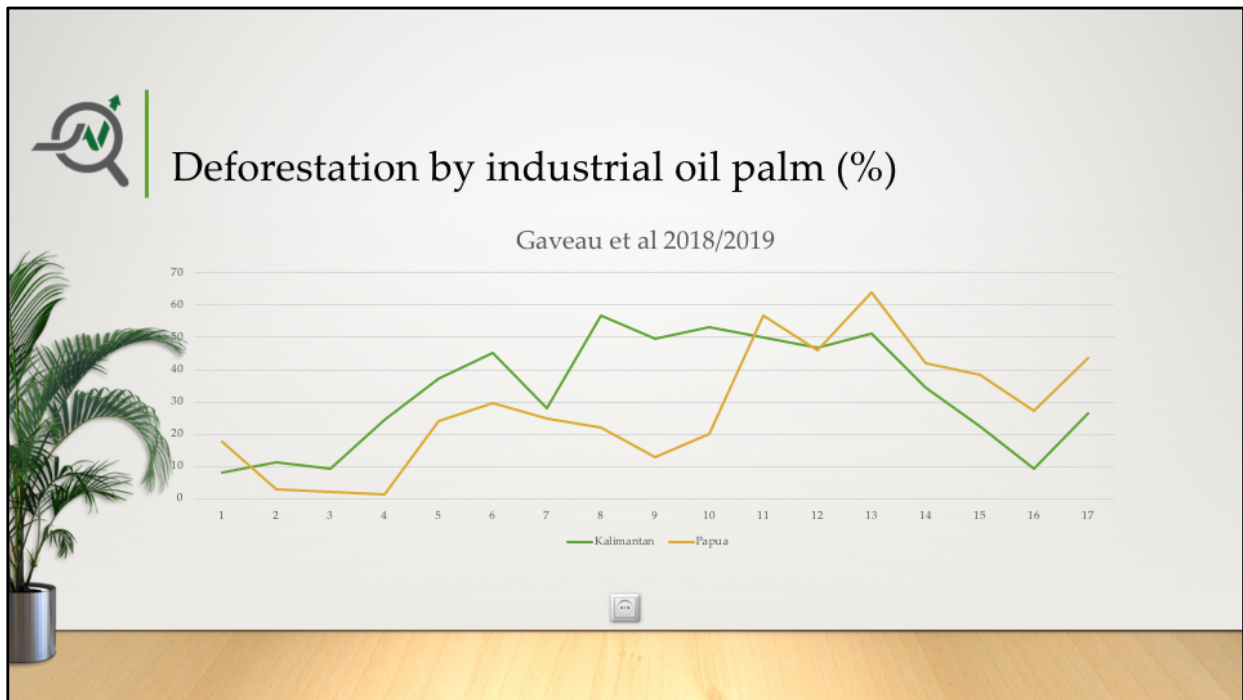


 January 2008

“all areas that were forest in January 2008 count as deforested areas if they are used for the production of biofuel feedstock, independently of the date the actual cultivation of the feedstock starts”



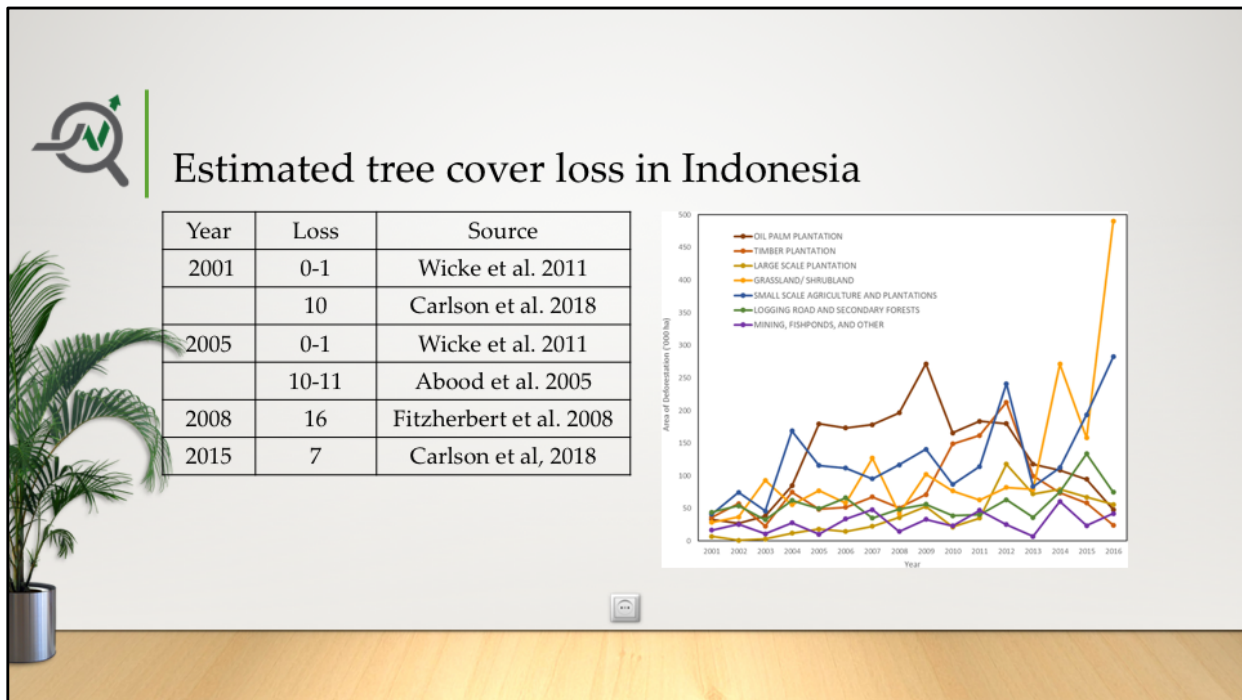
Does EU know what >10% tree cover actually looks like? Not merely a desk-top exercise, but real verification in the field of what 10% tree cover is? Areas like shown in the image right would be included if they were large enough.



Data availability only up to 2015?

Gaveau et al (2018) Rise and fall of forest loss and industrial plantations in Borneo (2000–2017)

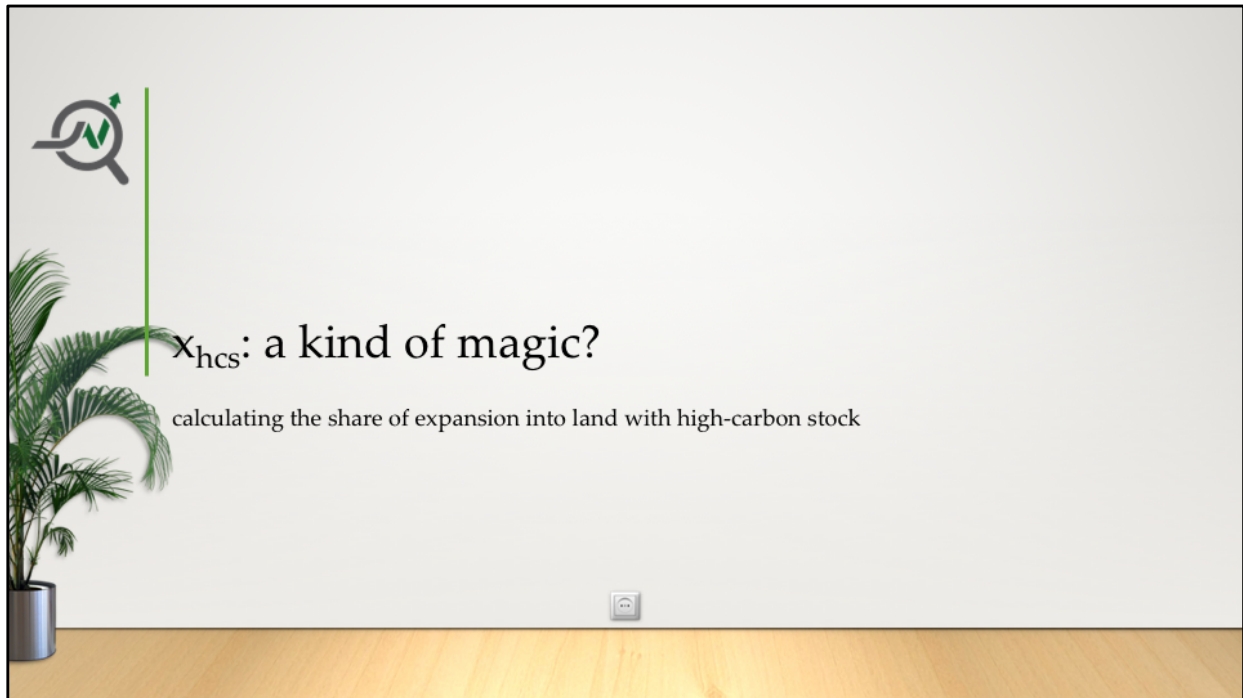
- This forest loss has been caused by expansion of industrial and smallholder plantations, immigration, urbanization, infrastructure developments, open-pit mining, flooding (dam projects), and fires.

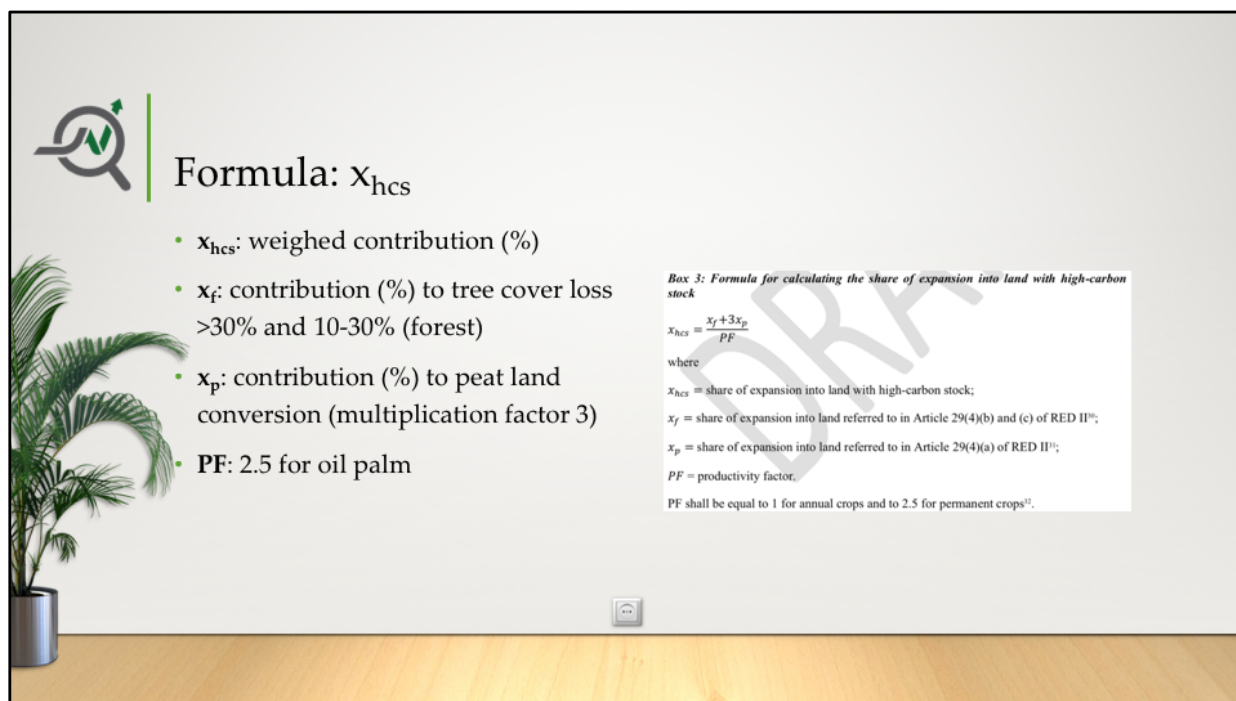


Austin et al (2019): The area ('000 ha) of deforestation in Indonesia, annually 2001–2016, by driver category. To improve legibility we combine mining, fishpond and other driver categories, secondary forest and logging road categories, and small-scale agriculture and small-scale plantation categories.

Image

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Formula: x_{hcs}

- x_{hcs} : weighed contribution (%)
- x_f : contribution (%) to tree cover loss >30% and 10-30% (forest)
- x_p : contribution (%) to peat land conversion (multiplication factor 3)
- PF: 2.5 for oil palm

Box 3: Formula for calculating the share of expansion into land with high-carbon stock

$$x_{hcs} = \frac{x_f + 3x_p}{PF}$$

where

x_{hcs} = share of expansion into land with high-carbon stock;

x_f = share of expansion into land referred to in Article 29(4)(b) and (c) of RED II¹⁰;

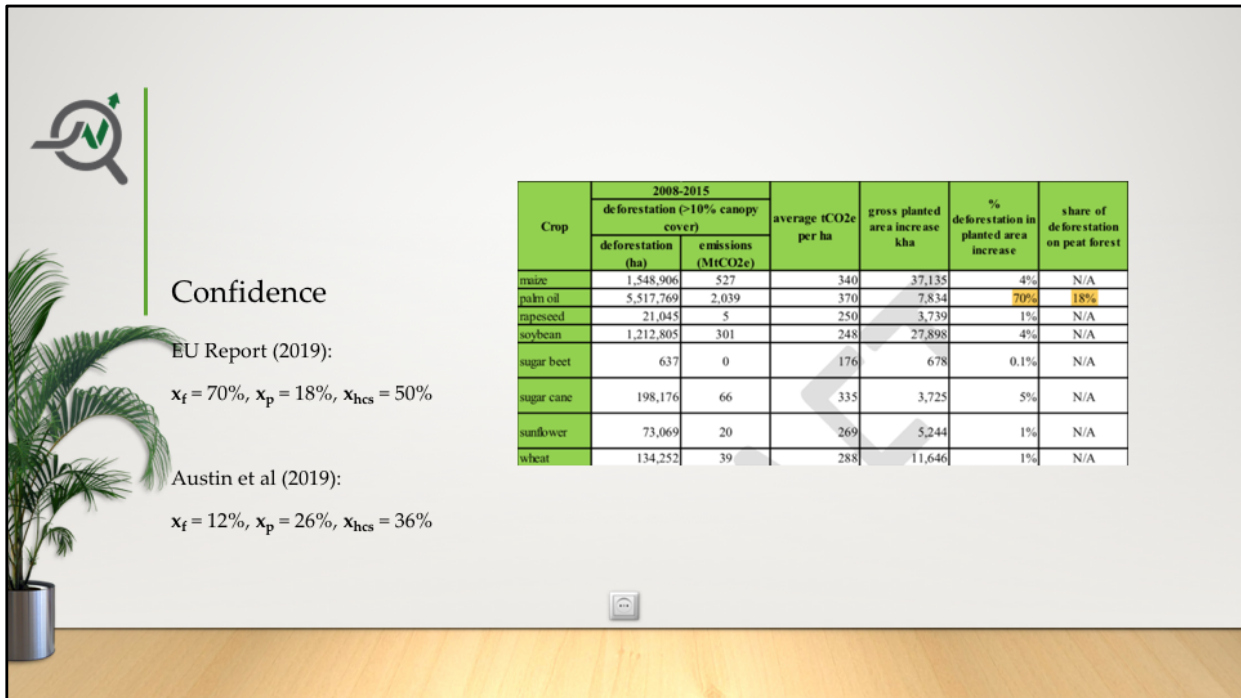
x_p = share of expansion into land referred to in Article 29(4)(a) of RED II¹⁰;

PF = productivity factor.

PF shall be equal to 1 for annual crops and to 2.5 for permanent crops¹¹.

Image

- EC 2019 Report _ on the status of production expansion of relevant food and feed crops worldwide (draft)



Confidence

EU Report (2019):
 $x_f = 70\%$, $x_p = 18\%$, $x_{hcs} = 50\%$

Austin et al (2019):
 $x_f = 12\%$, $x_p = 26\%$, $x_{hcs} = 36\%$


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- EC 2019 is based on period 2008-2015/2016 (not always clear on the latter), while Austin et al 2019 is based on **period 2001-2016 (and needs to be recalculated)**
- The significant reduction x_f is mostly cancelled out by the multiplication factor for x_p .

Image



- EC 2019 Report _ on the status of production expansion of relevant food and feed crops worldwide (draft)





Alternative bio-energy crops

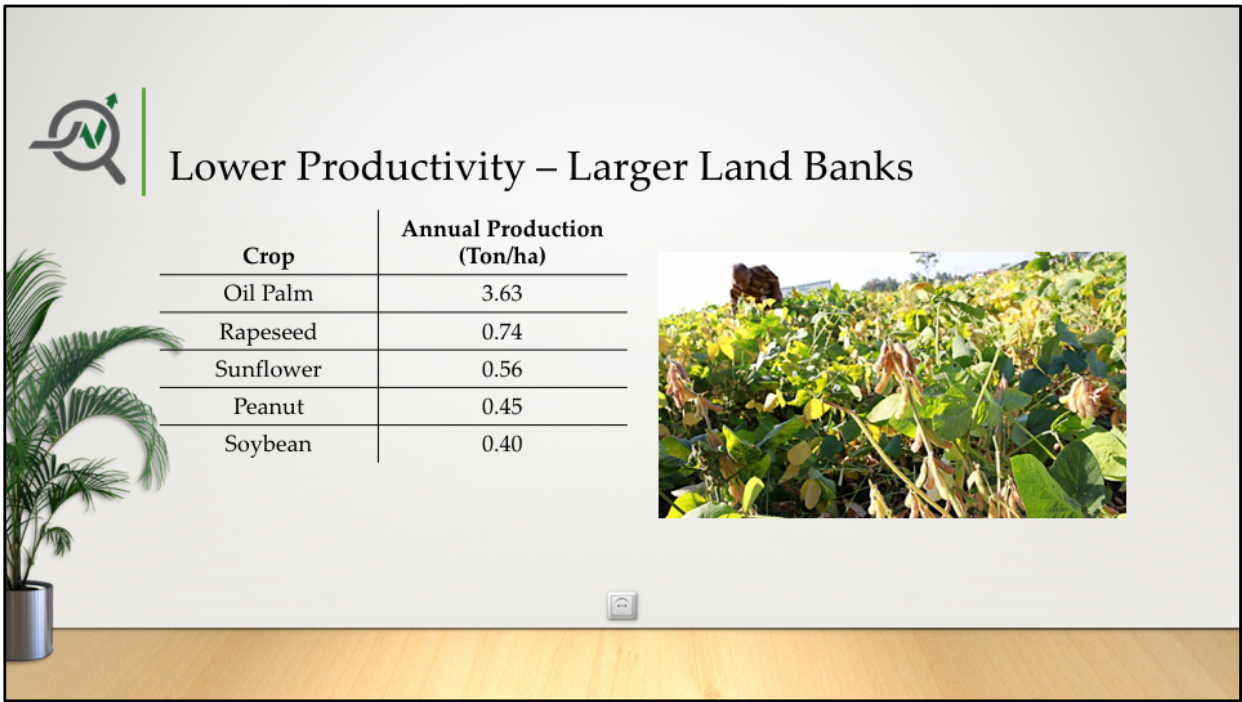
- “In order to identify [low ILUC risk] production, two types of measures are available, i.e. increasing productivity on existing land and cultivation of feedstock on unused land, such as abandoned land, or severely degraded land.”



May cause a shift to other crops, such as sugar palm...

Image

- <http://wiranurmansyah.com/agrowisata-di-phetchaburi-thailand>



... of soy bean
(data from Gunstone 2009, PASPI 2016)

Image

- <https://bisnis.tempo.co/read/419817/pemerintah-siapkan-lahan-kebun-kedelai-di-ntt/full&view=ok>