

## Explainer

A plain language explainer for decision-makers about research from the Climate Science for Service Partnership (CSSP) Brazil

# Overlooked degradation of the Amazon Rainforest

In 2004, 2.5million hectares of the Amazon rainforest was deforested in Brazil, releasing 376million tonnes of carbon into the atmosphere (Brazil, 2018). Despite a reduction in subsequent years, deforestation is on the rise again, and is one of the leading causes of carbon emissions in Brazil. However, a recent study by Qin et al. (2021) has found that forest degradation - when a forest loses vegetation, or the vegetation is damaged - is worse than deforestation, releasing more than twice as much carbon.

### Importance

On April 22<sup>nd</sup> 2016, 175 countries, including Brazil, signed the Paris Agreement, pledging to keep global temperature rise due to global warming below 2°C (UNFCCC 2015). Global warming, induced by human activities, is predicted to have a huge effect on the climate of Brazil, with anticipated impacts ranging from increased wildfires (Burton et al. 2021) to higher risk from flash floods and landslides (Marengo et al. 2021). However, limiting global temperature rise to 2°C will reduce the impact of these changes.

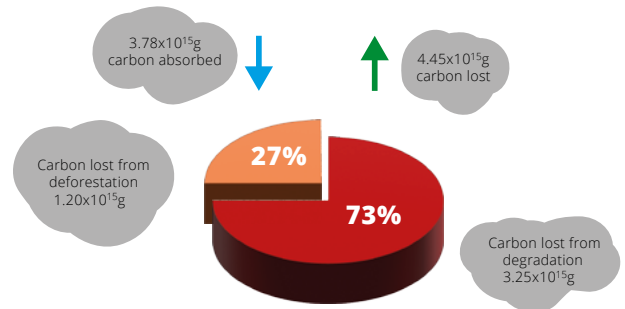
To ensure that global warming is limited to 2°C, it is essential that Brazil produces an accurate carbon budget. However, so far, carbon loss from forest degradation has not been included in reports (Silva Junior et al. 2021).

Causes of forest degradation include:

- Forest fires
- Drought
- Fragmentation
- Storms
- Selective logging
- Edge effects

### Approach

Qin et al. (2021) looked at maps showing the amount of aboveground biomass and forest area in North Brazil, obtained from satellite images, between 2010 and 2019. The region was split into 5,656 grid cells, each of around 25km<sup>2</sup>, and the authors calculated the total gain or loss of biomass and forest area each year across all the cells.



### Next Steps

Further research will be needed to further determine the causes of forest degradation, but the results of this study are very clear: forest degradation must be a priority for policy decisions and carbon released from forest degradation should be reported in carbon budgets.

This research was supported by NASA, IAI, NSF, CNES, ESA, H2020, CSSP Brazil, ERC, NSFC, CSC, and CAS.

### References

Brazil (2018), REDD+ submission on proposed reference level | Burton et al. (2021), DOI: 10.1002/cli2.8  
Marengo et al. (2021), DOI: 10.3389/fclim.2021.610433 | Qin et al. (2021), DOI: 10.1038/s41558-021-01026-5  
Silva Junior et al. (2021), DOI: 10.1038/s41561-021-00823-z | UNFCCC (2015), Paris Agreement