Questions and answers

Webinar 2: “Carbon balance of NSW forests”

NSW Forest Monitoring and Improvement Program has committed to host annual stakeholder forums. This is an opportunity for people to learn more about the program, ask questions and provide feedback.

The Commission hosted a webinar in October 2022 with a panel of members from a team of scientists from leading universities, NSW agencies and the private sector.

This paper:

- Responds to questions not answered in the webinar
- Lists questions answered in the recorded webinar.

The webinar is available on the Commission’s website.

Response to questions not answered in webinar

	Question	Response
1	What data did you use for calculating carbon sinks in regenerating forests?	A combination of remotely sensed data and growth models was used to calculate carbon sinks in regenerating forests. Landsat remote sensed data identified where forests have regenerated, then a forest growth model estimated change in forest carbon. Further detail is within the report https://www.nrc.nsw.gov.au/fmip-baselines-carbon-cycles.
2	Is there accounting for harvested wood products being burnt in power stations?	Biomass for energy was not accounted for in the carbon balance of NSW forests project.
3	Data used by CSIRO in a 2021 climate change paper used data that understated typical ground fuel levels by 50% +++ and excluded the understorey from the forest fuel load. Is the data used in your modelling more representative of the real forest, than that used by CSIRO?	No comparison of input data has been conducted with the CSIRO paper referred to. Forest fuel loads are modelled as the balance between the inputs into the dead organic matter pool from turnover, fire, harvesting, or land clearing, and the outputs from decomposition. The decomposition rates vary with rainfall and temperature. Further detail is within the report https://www.nrc.nsw.gov.au/fmip-baselines-carbon-cycles.
4	Why do you classify Energy from Biomass as carbon neutral when burning wood is more carbon intensive than coal?	Biomass for energy was not included in the carbon balance of NSW forests.

	Question	Response
5	How are calculations made during harvesting between wood products removed and waste product burnt on site as part of forestry practice?	When there is a harvesting event, different proportions of living biomass (stems, branches, leaves, bark) are moved into different 'dead' pools. This includes into harvested wood products (of different types) as well as into the dead organic matter. All these pools then decay through time. Further detail is within the report https://www.nrc.nsw.gov.au/fmip-baselines-carbon-cycles.
6	Is there any data accounted for soil loss due to forestry operations as well as fire and the associated soil carbon loss?	No. Soil Organic Carbon was not included in the final results, although this could be included in future iterations.
7	Could you please say more about how the model predictions were validated against inventory data?	The validation was a comparison against the results from FullCAM, the model used by the National Greenhouse Gas Inventory, which also underpins the State and Territory Greenhouse Gas Inventory.
8	How does the model measure carbon loss due to bushfire? Is it a % loss or lack of canopy zeroes the carbon present in the pixel? If trees recover post fire, how then does the model measure it? As Year 1 or % or????	Prior to 2017, binary fire types were used – wildfire and controlled fires. These did not account for any variation in fire severity. From 2017 FESM data was used to incorporate the impacts of different fire severity classes. Higher severity classes burned more biomass than low severity fires. The recovery is based on an age-based adjustment, such that the forest will regrow the lost carbon at different rates depending on the severity of the fire. Further detail is within the report https://www.nrc.nsw.gov.au/fmip-baselines-carbon-cycles.
9	What dataset is used to differentiate carbon content of different forest types and ages if accounted for at all?	The modelling incorporates thousands of individual data layers that influence the growth rate of the forests. This includes fire history data, harvest history, and climate data. Through tracking the disturbances estimates are made of the standing carbon stock – such that less disturbed forests will have a higher carbon content than disturbed forests. This is also coupled with remotely sensed forest cover data to detect changes in forest extent, allowing the system to differentiate newly regenerated forests from mature forests.

Questions answered in webinar

	Question
1	In the spin-up period since 1935, did you apply harvest events to then State Forest/now National Park?? If so, how?
2	Did you have a look at protection versus operation areas?
3	The soil carbon values in the report are much higher than those reported by the SLGA, and gradually increasing. How do you explain/justify this increase in soil carbon? Is there a risk, with this type of modelling, to distract from the need for sustainable resource management

	Question
4	How do you account for carbon stored in timber products removed? (Question answered during the presentation)
5	Why isn't forest clearing and harvesting separated? I assume you can? Sustainable timber harvesting was recognised by the Independent Biodiversity Panel as "not land clearing" and shouldn't be treated as such.
6	Is there a way to differentiate loss of trees from drought mortality when you have grass and subcanopy layers coming up underneath trees that have died?
7	Does this modelling account for forest degradation e.g. reductions in canopy cover within forested areas? Do you have a sense of how important or possible this might be?
8	More a comment, but Australia's forest definition is areas with *potential* mature stand height > 2 m and *potential* crown cover ≥ 20%, so a forest that is subject to a temporary disturbance (such as fire) doesn't stop being a forest. **Answer** - Yes - We're looking at land cover, not land use. So, we didn't make this distinction. Certainly, for land use the is an important point!
9	How wide are the uncertainty margins of the forest carbon estimates for individual grid cells and how did you quantify the uncertainty of state-wide total forest carbon? **Answer** - The uncertainty at the cell level wasn't quantified, we really looked to qualify the potential uncertainty. Much of the data used in the modelling was from the National Inventory System without specific uncertainty values. This is described more in the report.
10	Is there a report of this study (with full details of methods) available? Can the data layers be used for research? Where can they be downloaded from some website? **Answer** - The carbon balance of NSW forests report and links to data can be found on the Commission's website