Climate change risks for forests

There are a number of sources of data which have found that even without a climate change scenario, the future climate is likely to have more extreme weather than what has been recorded for the last 130 years.

This data provides plausible scenarios of reduced water availability, lower soil moisture and increased bushfire risks.

Indicators for impacts of climate change risks on forest management

The 2019-2020 bushfires were at the end of the worst drought on record for many parts on NSW. The 2017-2020 drought saw:

- The lowest rainfall on record in most parts of NSW
- High evaporation rates
- Higher than average temperatures

Understanding the likelihood of experiencing similar weather events to the 2017-2020 drought can help us assess the likelihood of similar bushfire seasons and how climate risks could impact on forestry operations. To do this analysis, we could look at:

- **Droughts:** The probability of a drought like the 2017-20 drought (or worse) occurring again and inflows into rivers and dams – this will give a proxy of likely changes to rainfall volumes and patterns under climate change scenarios and the probability of extended droughts, which could be followed by major bushfire seasons. Droughts and water availability will impact on tree growth and timber yields.
- **Hot weather and bushfires:** average fire weather is likely to change
- **Soil moisture:** Evapotranspiration will impact on soil moisture

The table pulls out NSW Government published data on these climate risk indicators. As a summary:

- The probability of a drought similar to the 2017-20 drought re-occurring could go from a 1% probability (1 in 100 year event) to a 5% probability (1 in 20 year event) under a dry climate change scenario.
- Rainfall is likely to decrease on average by 8%.
- Evapotranspiration is likely to increase by 3-6%
- There will be more severe fire weather in severe bushfire season (summer)

Indicator	Namoi	South Coast	North Coast
Hot weather (above 35 degrees)	Additional 7 hot days in the near future and 24	Additional 3 hot days per year in the near future and	The region, on average, is projected to experience an additional 3 hot days

Indicator	Namoi	South Coast	North Coast
	more hot days in the far future[1]	up to 8 more hot days in the far future[2]	in the near future and 9 more hot days in the far future[3]
Average fire weather	Increase in average and severe fire weather Average fire weather is projected to increase by up to two more days every year in summer, spring and winter, potentially impacting on prescribed burning periods (spring) and the peak fire risk season (summer)[4]	Increase in average and severe fire weather Up to 2 more days of severe fire weather every five years by 2030, projected to occur in prescribed burning periods (spring) and the peak fire risk season (summer)[5]	Increase in severe and average fire weather in the near future and the far future. Increases by up to 1 additional day every two years in prescribed burning periods (spring) and the peak fire risk season (summer)[6]
What is the probability of having droughts similar or worse than the 2017-2020 drought	1% if the future climate is similar to our long-term historic climate projections. This equates to a 1 in 100-year event. 5% of the time if a dry climate change scenario was to occur (1 in 20-year event).[7]	TBC – data is not published but we can source if needed	TBC – data is not published but we can source if needed
Rainfall and water availability	Water inflows into major dams could reduce by 50% by 2070[8]	Decrease in annual rainfall by up to 8% per year with larger decreases during winter months[9]	Decrease in rainfall by up to 5% per year[10] 13-35% reduction in water flowing into rivers annually on

[1] https://adaptnsw.prod.acquia-sites.com/my-region/new-england-and-north-west
[2] https://adaptnsw.prod.acquia-sites.com/my-region/south-east-and-tablelands
[3] https://adaptnsw.prod.acquia-sites.com/my-region/north-coast
[4] https://adaptnsw.prod.acquia-sites.com/my-region/new-england-and-north-west
[5] https://adaptnsw.prod.acquia-sites.com/my-region/south-east-and-tablelands
[6] https://adaptnsw.prod.acquia-sites.com/my-region/north-coast
[7] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0009/354267/namoi-strategy.pdf
[8] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0011/563987/namoi-regional-water-strategy-executive-summary.pdf
[9] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0010/545095/final-south-coast-regional-water-strategy.pdf
[10] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0006/545091/final-north-coast-regional-water-strategy.pdf

Indicator	Namoi	South Coast	North Coast
			average into major rivers[11]
Evapotranspiration	Increase by 6% up to by 2070 compared to levels between 1990 and 2009[12]	3–6% by 2070 compared to levels between 1990 and 2009[13]	5–6% by 2060 compared to levels between 1990 and 2009[14]

[11] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0006/545091/final-north-coast-regional-water-strategy.pdf
[12] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0011/563987/namoi-regional-water-strategy-executive-summary.pdf
[13] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0009/545094/executive-summary.pdf
[14] https://www.dpie.nsw.gov.au/__data/assets/pdf_file/0008/545093/executive-summary.pdf