

RECYCLED VS CARBON NEUTRAL PAPER

| George Tzintzis

Over the past decade, paper has been a forefront conversation amongst printers and marketers. Are we using paper that's ecologically friendly? Is print media ethical or is it bad for the environment? Relevant as they may be, there is only one question in regards to paper that's pertinent to industry concerns: *Is recycled paper better for the environment than carbon neutral paper?* Truth is, there are pros and cons to both, so let's explore the facts behind the labels to determine which solution works best for you.

Carbon Neutral Paper

Carbon neutral paper means net zero carbon emissions, balanced by offsetting the measured amount of carbon released into the atmosphere by verifiable carbon credits. Everyday activities produce carbon dioxide emissions, so programs have been created by organisations to reduce, offset and manage greenhouse gases, all while restoring natural resources such as reforestation. An offset is an initiative that funds emission free energy projects such as wind farms, which are verifiable and traceable.¹

Carbon neutrality has various levels of credentials, so it's important you know where the calculations begin and end. Best practice is to hire third-party carbon accountants and include a full life cycle assessment from raw material through to the customer: This is called the cradle-to-grave model.

Many paper mills now manufacture with renewable energy and have sustainability practices in place or proposed action plans set over the next few years. Oji Fibre Solutions (NZ) Ltd., a leading producer of market pulp, paper and fibre based packaging, use an innovative portable wastewater treatment plant commissioned at Specialty Boards, Hamilton, New Zealand.²

Paper production sits within the industrial manufacturing sector and carries a high energy intensity. In Japan, the Nippon Paper Industries company has developed technology to capture the energy consumed from paper production and convert this to the national energy grid. This project is executed by using biomass mono-fuel combustion under the slogan "shaping the future with trees".³



The first step in understanding if a carbon neutral solution is a sustainable fit for your business is to first understand the paper mill the paper was produced in. They must demonstrate they have implemented solutions in their manufacturing processes to reduce the CO₂ to as small a footprint as possible before carbon offsetting. Otherwise, carbon offsetting or buying credits could be likened to eating McDonalds every day of the week and having liposuction on Sunday.

To be a strong performer, carbon neutral paper producers must reduce first, then offset.



Recycled Paper

Paper comes from a renewable resource – trees! They are planted, harvested, replanted, and the cycle of nature continues. The paper industry across Australia and New Zealand use planted tree farms or planted forests to harvest the majority of timber for paper or pulp production. Processing pulp to make paper is typically powered by "black liquor", a by-product of the pulp itself composed of different ingredients, such as lignin, hemicellulose, sodium hydroxide (NaOH) and sodium sulphide (Na₂S).⁴ Burning it for heat and electricity to run the mill is approximately carbon neutral, since the carbon you emit into

the air started out in the air before an interim period as tree material. So, if your recycling process generates CO₂ as it makes new paper, recycling could end up increasing emissions.⁵

The case against recycled paper is that whilst recycling is an option, it is a fraction of the solution as paper can only be recycled seven times. And although recycling paper requires 40% less energy than making it from scratch, modern paper mills normally generate their energy from burning waste wood, whereas recycling plants often rely on electricity from fossil fuels.⁶

Another point to make is that recycled paper is often bleached. Chemical pulping with chlorine bleaching is used when a durable, high-brightness product with a more permanent application, such as printing and writing, is required. This process removes virtually all the lignin. The effluent from this process contains a range of organochlorines. Some organochlorines break down quickly, while some, including dioxins and furans, have prolonged lives.⁷ Dioxins are a group of chemically-related compounds that are persistent environmental pollutants (POPs). They are highly toxic and can cause reproductive

and developmental problems, damage the immune system, interfere with hormones and also cause cancer.⁸

Is Low-Carbon Paper the Answer?

Instead of carbon neutral paper or recycled paper, there is an argument to be made that paper mills should focus on low-carbon paper, a product that requires minimum carbon emissions to produce.⁹ Natural gas can be replaced with methane from landfills, electricity can be generated using wind, hydro or solar energy rather than buying electricity from fossil fuel burning power plants, and there are a great number of technologies that can be installed in pulp and paper mills that would consume less energy.

The environmental credentials of paper are, like all products we use, in the detail. Recycled doesn't mean the same across all ranges, carbon neutral and low carbon similarly so. The best approach is to determine your policy, research each paper product that complies to your policy and deduce a certified approved range for use, such as one with a Forest Stewardship Council (FSC) certification, an Australian Forestry Standard (AFS – Responsible Wood) certification, and a Programme for the Endorsement of Forest Certification (PEFC).

If your focus is solely on reducing greenhouse gas emissions, paper recycling isn't the lever you pull. Instead, target the factors surrounding paper recycling, given the success on the greener approach papermills are exploring in today's climate, such as the cradle-to-grave model mentioned earlier. Recycled paper and carbon neutral paper both have their reservations concerning environmentally friendly practices, but ultimately can learn from each other by understanding what operations are sustainable that still adhere to customer satisfaction.

Sources:

¹ Ball & Doggett, 2022

² Oji Fibre Solutions (NZ) Ltd, 2022

³ Nippon Paper Group, 2019

⁴ Black Liquor to Fuel (BL2F), 2020

⁵ Ars Technica, 2020

⁶ BBC Science Focus, 2022

⁷ Australian Government Productivity Commission, 1990

⁸ World Health Organization (WHO), 2016

⁹ Environmental Paper Network, 2009

RECYCLED PAPER

- Uses 'black liquor' to help fuel the recycling process which can be carbon neutral
- Requires 40% less energy than making paper from scratch
- Uses principles of re-use and circular economy extension to virgin resources

VS

CARBON NEUTRAL PAPER

- Uses offsetting, an initiative that funds emission free energy projects such as wind farms
- Some mills capture the energy consumed from paper production and convert this to the national energy grid
- Supports a reforestation industry, plants more than it harvest