

LCA of NZ Post courier bags: In a nutshell

April 2021

This is a synopsis of a wider LCA study - for full report go to <http://LCA-NZPost.thinkstep-anz.com>

thinkstep-anz helped NZ Post select a more environmentally friendly alternative to replace their A5 courier bags. We carried out a Life Cycle Assessment (LCA) to compare the impact of packaging alternatives.

We compared five alternatives to the original bag

NZ Post's original A5 courier bags were made in China from virgin Low Density Polyethylene (LDPE). We compared the performance of five alternatives to their original bag:



Original plastic courier bag

100% Low Density Polyethylene (LDPE), a plastic derived from oil.



NZ made recycled plastic courier bag

LDPE bag with 80% recycled plastic



Chinese made recycled plastic courier bag

LDPE bag with 80% recycled plastic



Home compostable plastic courier bag

Material derived from both plants and oil (made in China)



Flat paper courier bag

Kraft paper flat courier envelope (made in Australia)



Padded paper courier bag

Kraft paper courier bag padded with recycled newspaper (made in Australia)

Reusable bags weren't included in our study

The purpose of our study was to identify the best-performing single-use courier bag available. Logistics and costs mean there is currently no feasible re-usable bag option.

Because the flat paper bag may be perceived as an envelope, we included the padded bag.

New Zealand made recycled plastic courier bags have the best environmental performance

The carbon footprint of locally manufactured LDPE bags with 80 percent recycled content was the lowest of all options we considered.

NZ Post will more than halve their carbon emissions from courier bags by choosing to replace their original courier bags with this New Zealand made recycled plastic bag

In addition to the carbon footprint (the primary indicator), we assessed all bags using other indicators, such as water consumption and waste production. The recycled LDPE bags made in New Zealand performed the best in 11 of 14 indicators.



We looked at the entire life cycle of each bag

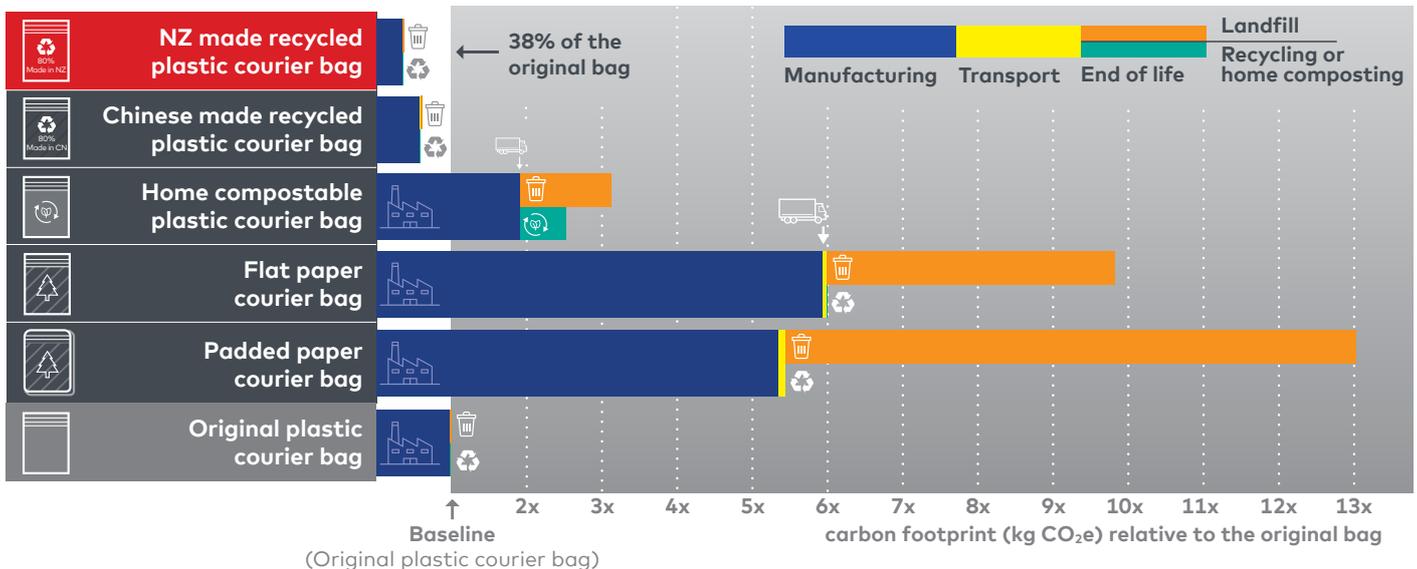
The study has a 'cradle-to-grave' scope, covering the impact of the bags over their entire life cycle.

We investigated three different disposal options: landfill, recycling, and composting.



New Zealand made recycled bags have the lowest carbon footprint

This study follows ISO 14044:2006 and ISO 14067:2018 and has undergone a critical review by three independent experts.



Small change – big impact

Changing over to the New Zealand made recycled bags will lead to a saving of 191,000 kg CO₂e annually across all consumer and commercial bags*.



* Excluding size XL mailers & bubble mailers, where a 50% recycled plastic LDPE mailer and a 30% recycled plastic LDPE mailer are required (respectively) for additional durability and protection of large or fragile items.

Additional environmental indicators show the wider impacts of the bags

In addition to carbon footprint, we used 13 indicators to make sure that we were taking all relevant environmental impacts into account.

Results are presented as a percentage relative to the impacts of the virgin LDPE bag, landfilled at end-of-life.

Indicator	rLDPE bag (NZ)	rLDPE bag (CN)	Home comp. bag	Flat paper bag	Padded paper bag
Human toxicity, total	45%	52%	1152%	915%	962%
Acidification potential of land and water	35%	36%	100%	69%	81%
Eutrophication potential	45%	56%	731%	467%	470%
Photochemical ozone formation potential	34%	47%	139%	266%	308%
Abiotic depletion potential – elements	69%	73%	357%	838%	739%
Abiotic depletion potential – fossil fuels	32%	40%	127%	136%	154%
Non-renewable primary energy as energy carrier	32%	41%	128%	144%	160%
Total primary energy demand	42%	44%	158%	395%	356%
Water scarcity footprint	47%	57%	1621%	229%	288%
Hazardous waste disposed	77%	87%	204%	4614%	3437%
Non-hazardous waste disposed	105%	105%	6%	176%	328%
Net use of fresh water	134%	67%	1372%	415%	410%
Material Circularity Indicator	0.2	0.2	0.1	0.1	0.4

New Zealand made recycled bag is a step in the right direction

Taking a holistic view, the New Zealand made recycled bag has the lowest environment footprint of all bags considered in this study.

It performs the best across 11 of the 14 environmental indicators we assessed, and is not significantly worse for the remaining three.

About New Zealand Post

NZ Post is about delivery – delivering parcels, packages and mail for businesses and consumers. We're committed to delivering your parcels in the most sustainable way, starting with our pledge to use 100% reusable, recyclable, or compostable packaging by 2025. That's how we're delivering for good.

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About thinkstep-anz

At thinkstep-anz, we are passionate about enabling organisations to succeed sustainably. We underpin sustainability initiatives with facts and figures to contribute quantifiable business value. Our clients value our ambition to tailor solutions to their specific needs, no matter how large or small.

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