What is the estimated cost when a container is not recycled?

The simple explanation

When an empty drink container is not recycled, it does not simply disappear.
It may be sent to landfill, left as litter or lost from the recycling system. This creates costs for councils, businesses, communities and the environment. Some costs happen immediately, such as collecting litter. Others may not be felt until years later, such as needing more landfill space or replacing materials that could have been recycled.

Economists call the combined value of these impacts the **cost of not recycling**.
The cost of not recycling is not a bill that one organisation receives. It is a way of estimating what the community and environment lose each time a container is not recovered.

What costs are included?

The cost of not recycling can include:

- collecting, transporting and disposing of containers in landfill
- using up limited landfill space
- cleaning up litter from streets, parks, waterways and beaches
- environmental damage caused by litter
- losing valuable materials that could have been made into new products
- extracting and processing more new, or “virgin”, materials
- additional energy use and greenhouse gas emissions
- missed opportunities for recycling infrastructure, innovation, jobs and community benefits.

Not every cost can be easily measured. For example, we can calculate how much a council spends collecting litter, but it is harder to put an exact dollar value on a polluted beach, harm to wildlife or the loss of landfill space that future generations may need.

This means the cost of not recycling is an estimate, rather than one exact and directly observable price.

Why is this important for scheme pricing?

Container Exchange, or COEX, manages Queensland's Containers for Change scheme. COEX incurs costs when eligible containers are returned, including refunds and the costs of collecting, transporting and processing the containers.

If scheme prices only recognised the cost of recycling returned containers, materials with high recovery rates could appear more expensive simply because more of those containers are being collected and recycled.

At the same time, materials with lower recovery rates could appear cheaper because fewer containers are coming back through the scheme. This could unintentionally favour materials that are recycled less often.

The proposed pricing approach considers both:

1. the cost of recycling containers that are returned; and
2. the estimated cost of containers that are not returned.

Think of it like a classroom clean-up. It costs money to collect and sort the rubbish placed in the correct bins. But rubbish left in the playground also has a cost because somebody must find it, clean it up and deal with any damage it causes.

Looking at both sides gives a more complete picture of the cost associated with each container.

The size of the cost of not recycling matters. If it is close to the cost of recycling, differences in material recovery rates will have less influence on pricing. If the cost of not recycling is much higher, materials with lower recovery rates will carry more of the estimated cost associated with containers that are not returned.

How was the cost estimated?

Because there is no single bill showing the cost of not recycling, the report used two main approaches.

1. Learning from other recycling schemes

The report reviewed cost-benefit studies from New South Wales, Victoria, Western Australia, the Australian Capital Territory, New Zealand, the United Kingdom and Scotland. These studies compare the costs of running recycling schemes with the benefits created by recycling.

The studies commonly use a benefit-cost ratio.

For example, a ratio of 2 means that every $1 spent on recycling produces $2 in benefits. If recycling costs 20 cents per container, a ratio of 2 suggests that avoiding the cost of not recycling is worth about 40 cents per container.

Based on the studies reviewed, the report used:

- 1.4 as a central benefit-cost ratio
- 2.0 as a higher estimate.

2. Looking at the cost of recycling in Queensland

The second approach starts with a simple idea: recycling delivers a benefit when it costs less to recycle a container than the harm avoided by recycling it.

This means the efficient cost of recycling can be used as a starting point, or "floor", for estimating the cost of not recycling. The true cost of not recycling would generally be expected to be higher because it also includes environmental and broader community impacts.

COEX's average recycling cost in the 2024 financial year was estimated at between 16.5 and 21 cents per container, depending on how much of the 10-cent refund is treated as compensating people and businesses for the time and cost involved in returning containers.

The report also considered:

- the average cost of recycling the most expensive material, liquid paperboard
- the additional, or marginal, cost of increasing Queensland's recovery rate towards the 85 per cent target.

As recovery increases, the next containers can become more expensive to collect. The easy-to-recover containers are generally collected first, while reaching the remaining containers may require additional refund points, transport or collection effort.

What did the report find?

The report does not identify one single "correct" cost of not recycling. Instead, it presents several reasonable ranges:

- Lower-bound estimate: 16.5 to 21 cents per container
- Estimate based on the highest-cost material: 22.3 to 26.8 cents
- Central cost-benefit estimate: 23 to 29.4 cents
- Estimate based on the marginal cost of recycling: 27.5 to 32 cents
- Upper-bound estimate: 32.9 to 42 cents.

These ranges reflect different ways of examining the issue. The lower range mainly reflects the observed cost of recycling. The higher ranges give greater recognition to the wider economic, environmental and community benefits that recycling provides.

The analysis also involves unavoidable uncertainty. Some impacts are difficult to measure, values can differ between materials and locations, and care is required to avoid counting the same benefit twice.

Why did you adopt 29.4c?

COEX has adopted a cost of not recycling parameter of 29.4 cents per container. This decision is based on the following:

- The central cost-benefit estimate was selected because it provides the most balanced and evidence-based assessment of the benefits of container recycling. It draws on Australian and international container refund scheme studies to estimate both the value created through container returns and the economic, environmental and social costs avoided by reducing litter and diverting containers from landfill.
- The central cost-benefit estimate produces a range of 23.0 to 29.4 cents per container, based on a central benefit-cost ratio of 1.4 derived from Australian and international container refund scheme studies.
- The application of the CBR to COEX's observed average recycling cost of 21 cents per container; and
- The upper end of the central estimate range (29.4 cents per container) includes the full 10-cent refund as it represents a real cost to the scheme and is seen as a reasonable proxy for the time, travel and other participation costs incurred by consumers and businesses when returning containers for recycling.

The key takeaway

Not recycling a container is not cost-free.

Even when the cost is not shown on a receipt, it is still carried somewhere through landfill use, litter clean-up, lost materials, environmental impacts or costs passed to future generations.

Including the cost of not recycling in the scheme pricing framework would allow pricing to recognise both what it costs to recycle returned containers and what is lost when containers are not recovered. It would also help avoid unintentionally favouring materials simply because fewer of them are returned for recycling.