



# Oil Container Product Stewardship Situational Assessment

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## Key Findings

- In 2019, an estimated 20.7 million lubricant oil containers were sold, with volumes ranging from 1 litre to 20 litres. About 68% of the number of containers sold were 1 litre containers. Another 22% were 5 litre containers. On a weight basis, about 28% of the oil container packaging material was in 1 litre containers, with 40% being 5 litre containers and 23% being in 10 litre and 20 litre containers.
- The vast majority of used oil containers are currently landfilled.
- Other product stewardship schemes in Australia and overseas provide useful lessons for a used oil container product stewardship scheme in terms of design and operation.
- A scheme aimed at increasing the recycling of used oil containers faces significant challenges relating to industry participation, consumer participation, collection and transport infrastructure and financial sustainability.
- A scheme also faces significant challenges with respect to recycling used oil containers efficiently and safely. Reprocessing applications exist in Australia however, that could readily utilise significant quantities of recovered HDPE from used oil packaging.
- Overall, there are sound reasons why a product stewardship scheme should be introduced to promote the recovery of used oil containers in Australia.
- Preliminary evaluation of alternative scheme models indicates that three models - regulatory linked to PSO; co-regulatory; and voluntary accredited - have the potential to deliver an effective product stewardship scheme for used oil containers.

# Executive Summary

## Introduction

Approximately 330 million litres of lubricants are sold in Australia each year. About 20% of sales are lubricants sold to retail and small commercial customers, packaged in small containers ranging in sizes from 1 litre to 20 litres. These containers are typically made from high-density polyethylene (HDPE). **Plastic lubricant oil containers are an environmental and safety hazard and cannot be recycled via kerbside collection systems due to residual oil contamination.** Due to difficulties with reprocessing and lack of a clear recovery pathway, it is likely that the vast majority of oil containers, estimated to be about 20 million containers per year, currently end up in landfill.

A voluntary plastic lubricant oil container product stewardship scheme operated in Australia for over ten years from 2004. The scheme closed in 2016 however, due to significant free rider issues, with lubricant oil suppliers representing at least half the market for packaged lubricants not financially contributing to the scheme.

While volumes of used oil containers are relatively small compared to other packaging streams, significant impacts associated with their current disposal pathways warrant efforts to promote alternative pathways that involve recovery of the containers. Since the end of the earlier recycling scheme therefore, oil containers have been included as **a priority for action on the Commonwealth Environment Minister's product stewardship list.**

Australian Packaging Covenant Organisation (APCO) is the independent administrator of the Australian Packaging Covenant. APCO sought and received a grant from the Australian Government under the National Product Stewardship Investment Fund (NPSIF) to develop a comprehensive product stewardship framework for plastic oil containers.

This report presents the results of a situational analysis, which is the first part of developing a product stewardship scheme.

## Market Structure

### Supply of lubricants

In 2019-2020, total sales of lubricants in Australia were about 330 million litres. Of this total, automotive lubricants comprised 224 million litres, representing about 68% of all lubricant sales. The major users of lubricants are industrial and mining companies, primary producers, transport companies and the automotive industry. These users account for an estimated 85 per cent of sales of lubricants. Sales of these lubricants are mostly in bulk, supplied directly from the lubricating oil companies or their distributors. Sales of packaged lubricants account for only 20-25% of all lubricant sales (Figure ES 1).

## Oil container packaging

In 2019, an estimated **20.7 million lubricant oil containers were sold**, ranging in volume from 1 litre to 20 litres. These had an estimated total weight of 3,050 tonnes<sup>1</sup>. The number and weight of containers sold in 2020 fell to 15.5 million containers and 2,292 tonnes respectively. This decline was probably due to the impact of the Covid 19 pandemic.

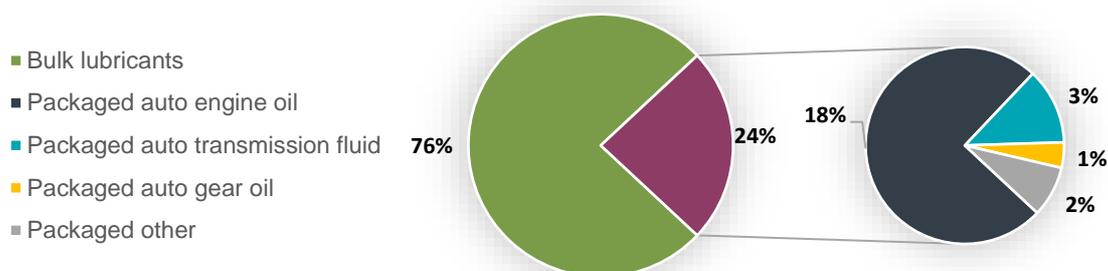


Figure ES 1: Percentage sales of lubricants in Australia, bulk and packaged, 2019

Source: Marsden Jacob Analysis drawing on DISER, 2021, Australian Petroleum Statistics; GlobalData. (Global Data purchased by APCO)

In 2020, approximately 68% of the number of containers sold were 1 litre containers (Figure ES 2). Another 22% were 5 litre containers. On a weight basis however, only about 28% of the oil container packaging material was in 1 litre containers, with 40% being 5 litre containers and a further 23% being in 10 litre and 20 litre containers. Similar percentages are evident in the data for 2019.

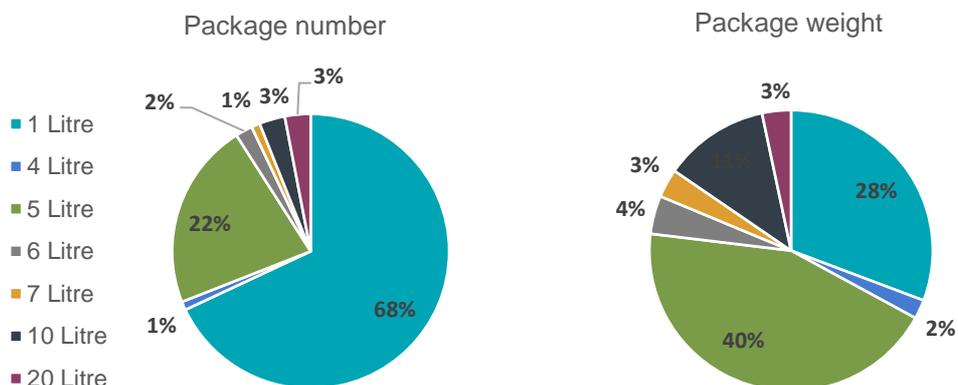


Figure ES 2: Percentage splits of packed oil containers sold in Australia by number and weight, 2020

Source: Marsden Jacob and Envisage Works analysis drawing on GlobalData 2021. (Global Data purchased by APCO)

<sup>1</sup> Based on an average weight per container and assuming nearly all containers are made from HDPE. This assumption needs to be verified in subsequent, more detailed, material flows analysis.

## Review of product stewardship schemes

We reviewed a range of product stewardship schemes for this situational analysis. The review of the schemes addressed questions relating to scheme objectives, scheme funding and scheme performance. Reviewed schemes covered a range of stewardship arrangement types - regulatory, co-regulatory and voluntary. These schemes provide lessons, in terms of scheme design and operation, for a new product stewardship scheme for used oil containers. The schemes reviewed include the AIP Used Oil Container Scheme, the Product Stewardship for Oil (PSO) scheme, drumMUSTER, the Battery Stewardship Scheme, National TV and Computer Recycling Scheme (NTCRS) and the Automotive Materials Stewardship (Ontario, Canada).

## Challenges for a new used oil container scheme

Figure ES 3 provides an overview of the key challenges faced by a scheme aimed at increasing the recycling of used oil containers. These challenges were identified when reviewing the previous scheme for used oil containers and other product stewardship schemes. Most of the challenges (1-4) are not unique to used oil containers, being similar in nature to the challenges faced by product stewardship schemes targeting other products. Other product stewardship schemes have a range of features that have helped to address these challenges, with varying degrees of success.



Figure ES 3: Challenges for a used oil container product stewardship scheme

## Recycling of used oil containers

Used oil containers are a low value form of used packaging, and have significant challenges with respect to collection, reprocessing and remanufacturing efficiently and safely. Challenges include residual surface oil contamination, absorbed oil contamination and the common use of carbon black as pigment, which restricts end-market options for recycle.

Mechanical recycling is the main recovery pathway for scrap plastics in Australia. Mechanical recycling is most economically viable for plastics that are available in large quantities, in a clean and homogenous (or sortable) form, and in locations with reasonable access to recycling facilities. Mixed and/or contaminated plastics can also be recycled in this way, however they are more challenging as they either need to be separated or recycled into a reduced range of mixed polymer product types.

On the positive side, many large and non-food contact applications exist in Australia, which could readily reprocess substantial quantities of recovered HDPE from used oil packaging. Most of these end-market products are tolerant or even favourable towards the presence of high levels of carbon black pigment. Future opportunities for recovery of used oil containers may also be available through chemical recycling. Decisions may need to be made at scheme design stage however, as to whether reprocessing or energy recovery of containers are desirable outcomes consistent with the waste hierarchy.



## Preliminary evaluation of alternative scheme models

Analysis in earlier sections of this report has led us to a series of ‘success’ criteria that we believe should guide development of a new product stewardship scheme for used oil containers. These criteria, combined with administrative criteria provide the basis for a preliminary evaluation of alternative scheme models.

Table ES 1 summarises how each of the alternative scheme models performs against the evaluation criteria. A traffic light system is used to provide a qualitative assessment. **Red** indicates low efficacy, **orange** medium efficacy or uncertain, and **green** indicates high efficacy in promoting the achievement of the success principles and administrative criteria.

Table ES 1: Preliminary evaluation of alternative scheme models, overview

Model	Description	Prevents free riders?	Financially sustainable?	Consumer participation?	Collection & transport?	Maximises recycling?	Ease of deployment?	Accountable?
1	Regulatory scheme linked to PSO							
2	New regulatory scheme							
3	New co-regulatory scheme							
4	Voluntary accredited ACCC authorisation							
5	Voluntary non-accredited							

The following points can be made about the results of the evaluation:

- None of the models provide a straightforward answer to the challenge of recycling used oil containers or are without complications
- It is apparent however, that three models at least – Model 1 (regulatory linked to PSO), Model 3 (co-regulatory) and Model 4 (voluntary accredited) have the potential to deliver an effective product stewardship scheme for used oil containers.
- There are one or more serious question marks against the other two models.

## Conclusions

**An estimated 20.7 million small lubricant oil containers (≤20 litre), with a total weight of about 3,000 tonnes, were sold in 2019.** It is likely that most of the used packaging from these products were disposed to landfill. While volumes of used oil containers are relatively small compared to other packaging streams, there are a number of reasons why a product stewardship should be introduced to promote recovery of the containers. These include environmental impacts associated with the disposal of containers to landfill and illegally dumped containers, the potential for a scheme to reduce contamination in kerbside recycling bins, and the value of a scheme in demonstrating the feasibility of recovering challenging materials.

A review of the previous used oil container scheme, and other product stewardship schemes currently in operation indicates that significant challenges will need to be overcome to establish an effective and efficient new product stewardship scheme for used oil containers. There are also opportunities arising from a well-designed scheme, however.

Three models have the potential to deliver an effective product stewardship scheme for used oil containers. These are a regulatory scheme linked to the Product Stewardship for Oil scheme, a new co-regulatory scheme and a voluntary scheme that is accredited and has ACCC authorisation.

There are significant information gaps relating to the supply chain of used oil containers. Stakeholder consultation will be important for addressing some of these information gaps.



## GET IN TOUCH

If you have any questions,  
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