



Steel and Aluminium

Producing aluminium and steel products is energy intensive, using finite natural resources and resulting in greenhouse gases emissions. Sending steel and aluminium to landfill is a waste of resources because less energy is required to reprocess the recycled steel and aluminium than it was to originally produce them.

The Problem

Scope of the Problem

Aluminium and steel are extremely versatile materials and feature in a wide range of products from drink cans to vehicles and buildings. It is estimated that Australians consume 450,000 tonnes of aluminium for building and construction, packaging and transport every year.¹

Not only is Australia a large consumer of aluminium, we are also the 5th largest producer of primary aluminium in the world.¹ As a major producer of aluminium, we are responsible for the environmental impacts of production. In addition to aluminium making its way into the waste stream, a great deal of energy is used to manufacture raw steel and aluminium. Production involves the use of water, energy and virgin resources. Extraction leads to greenhouse gas emissions and destruction of natural environments. When the aluminium product is no longer needed, it enters the waste stream unless recycled or reused.

Drink can waste

Australians use over 3 billion aluminium cans annually, with approximately 350,000 aluminium cans made every minute. Only 56% of these cans are recycled and many become litter.²

In the Clean Up Australia Day Report 2013³, results showed that for the first time in 20 years beverage containers and their associated rubbish outstripped cigarette butts as the Number 1 rubbish group within the National Top 10. Since 2013 – 2016, this statistic has remained the same.

Making steel from recycled cans uses 75% less energy than when producing steel from raw materials².

Steel Waste

Steel can be recycled very efficiently – in terms of tonnage, it is the most recycled material in the world.

Twenty one percent of all steel consumed in Australia is used in engineering construction. Recycling rates are relatively high with some 80-90% of steel being reused or recycled.⁴

Global Warming

How does production of steel and aluminium contribute to climate change?

Alumina is found in bauxite and used in the production of aluminium. Production of alumina from bauxite requires direct consumption of energy for heat and steam, as well as indirect consumption of energy as electricity.⁵

Steel is an alloy of iron and carbon and much energy is required to produce heat during the production process. Most electricity is generated by burning fossil fuels, which releases greenhouse gases into the atmosphere, contributing to global warming.

Transport of steel and aluminium materials is also energy intensive: fossil fuels are required for energy to transport materials at every stage of the product life cycle. This includes from mine-site to manufacturing facility to retail outlet to waste management facility.

Did you know?

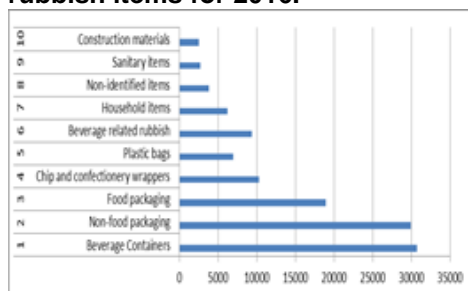
- Aluminium recycling saves energy: current global energy savings are equivalent to Australia's total annual electricity consumption.⁵
- Only 56% of cans being returned for recycling despite 94% of households having access to recycling facilities.²
- In Australia 97% of end of life structural steel and 82% of all scrap and waste steel is recycled into prime new steel products.⁴



Benefits of Recycling Steel and Aluminium

The Solution

Table: The table shows the top ten rubbish items for 2016.³



Container Deposit Legislation (CDL)

Australia first introduced CDL in SA in the 1970's and is slowly moving closer to nationwide container deposit law. By mid 2017/18 it could be that the only states without container deposit schemes will be Tasmania, Victoria and WA. In areas such as SA where CDL has been introduced there has been lower levels of container litter and increased return rates for CDL containers.⁹

Benefits of Recycling

Aluminium

Aluminium is particularly well suited to recycling. Remelting used aluminium saves up to 95% of the energy needed to produce the primary product.⁶

Steel

Every tonne of recycled steel saves 1131kg of iron ore, 633kg of coal and 54 kg of limestone.²

The Recycling Process

Aluminium Recycling

If aluminium is not contaminated, it is melted and reprocessed. If it is contaminated with other metals, such as steel and iron, the aluminium is separated and then melted into alloys and used predominantly for aluminium castings.⁷

Steel Recycling

Magnets are often used to separate steel from other materials. Steel is then melted and reshaped before being used in the production of items as diverse as bikes, paper clips or new drink cans.⁸

How to find Recyclers in your Local Area

Go to PlanetArk's *Recycling Near You* website: www.recyclingnearyou.com.au

Why buy Recycled Steel and Aluminium?

Sustainability Benefits of Recycling Aluminium and Steel

Conserve valuable natural resources and raw materials

Avoid air and water pollution: using recycled materials generally creates less pollution

Save landfill space by closing the loop: steel can be recycled indefinitely keeping it out of the waste stream. Recycling also ensures materials don't become litter!

Reducing the need to dig for virgin materials conserves soil integrity and wildlife habitats

Save energy: recycled products require less energy to manufacture thus conserving oil and reducing greenhouse gas emissions

Steel and Aluminium into the Future

Australians are increasingly demanding that producers conserve finite natural resources and reuse steel and aluminium products.

However, a significant amount of steel and aluminium continues to enter the waste stream and to litter our environment. Because of the unique properties of aluminium and steel, it is important that all Australians work together towards a 100% recycling rate.

References

1 Australian Aluminium Council [Industry Description](#)

2 Townsville City Council [Steel and Aluminium](#)

3 Clean Up Australia Ltd [Rubbish Reports 2016](#)

4 Australian Steel Institute [website](#)

5 Australian Aluminium Council [2012 Sustainability Report](#)

6 European Aluminium Association [Recycling](#)

7 Capral [Sustainability](#)

8 Recycle Now [Cans – How they are recycled](#)

9 EPA SA [CDL SA Factsheet](#)