



Investigation of Issues Associated with Single Use Plastic Bags February 2014

1. Extent of the problem

The concept of using a disposable, petroleum based product to transport purchases was realised in the 1950's, with the invention of the single use plastic bag. By the late 1960's, retailers across the globe were providing this commodity to consumers¹. The most recent data from 2007, suggests that Australians are using 3.9 billion single use High Density Polyethylene (HDPE) plastic bags annually². Plastic bags are considered to be a 'free' commodity, but in reality, add between \$10-15 annually to the price of goods purchased by householders³.

Although as much as two thirds of single use plastic bags are reused once or twice prior to disposal⁴, very few are recycled and some become litter. In fact, the information gathered by Clean Up Australia through its annual clean up days, suggests that between 30-50 million plastic bags could be entering the Australian environment as litter every year⁵⁶. Plastic creates a long term problem for the environment, as it takes many years to break into smaller pieces. The sheer volume of littered plastic bags means that collection services provided by volunteers, Local and State Government agencies are unable to address all littered bags.

Table 1 outlines the estimated rates of lightweight plastic bag consumption, during a period where retailers were required to report this data to the Environment Protection and Heritage Council (EPHC).

Table 1. Estimated HDPE plastic bag consumption (2002-2007)⁷.

Year	Plastic Bags (billions)	% Change From Previous Year
2002	5.95	-
2003	5.24	-11.9%
2004	4.73	-9.6%
2005	3.92	-17%
2006	3.36	-14%
2007	3.93	+17%

Data explaining the degree to which plastic bag recycling occurs in Australia is not particularly sound. It is thought that the introduction of plastic bag recycling bins at some of the major retailers during the 'push' to meet targets (see Section 2), resulted in an increase in the recycling rate from <3%⁸ in 2002 to approximately 15%⁹¹⁰.

¹ Packaging Knowledge (2014). Product History. Great Moments in Plastic Bag History.

² Hyder Consulting for the EPHC (2008). Plastic Retail Carry Bag Use.

³ Government of South Australia (2014). Plastic Bags.

⁴ Australian Bureau of Statistics (2012). 4602.0.55.002 - Environmental Issues: Recycling, Reuse and Disposal.

⁵ Clean Up Australia (2014). Say No to Plastic Bags Campaign.

⁶ Hyder Consulting for the EPHC (2008). Plastic Retail Carry Bag Use. 2006 and 2007 Consumption.

⁷ Hyder Consulting for the EPHC (2008). Plastic Retail Carry Bag Use. 2006 and 2007 Consumption.

⁸ Hyder Consulting for the EPHC (2002). Plastic Shopping Bags in Australia National Plastic Bags Working Group Report to the National Packing Covenant Council.

⁹ Department of Environment (2014). Plastic Bags

¹⁰ NSW Parliamentary Research Service (2013). Plastic bags: an update.

2. Activity by the Federal Government

Following the Federal decision in December 2013 to simplify the COAG structure and remove the Standing Council on Environment and Water, the current Federal Government is yet to clarify what the process is for making decisions on environmental issues. It is unlikely that action on plastic bags will occur at a Federal level in this term of Government. However, previous Governments have initiated high level changes. Figure 1 shows a timeline of various initiatives and the associated results:

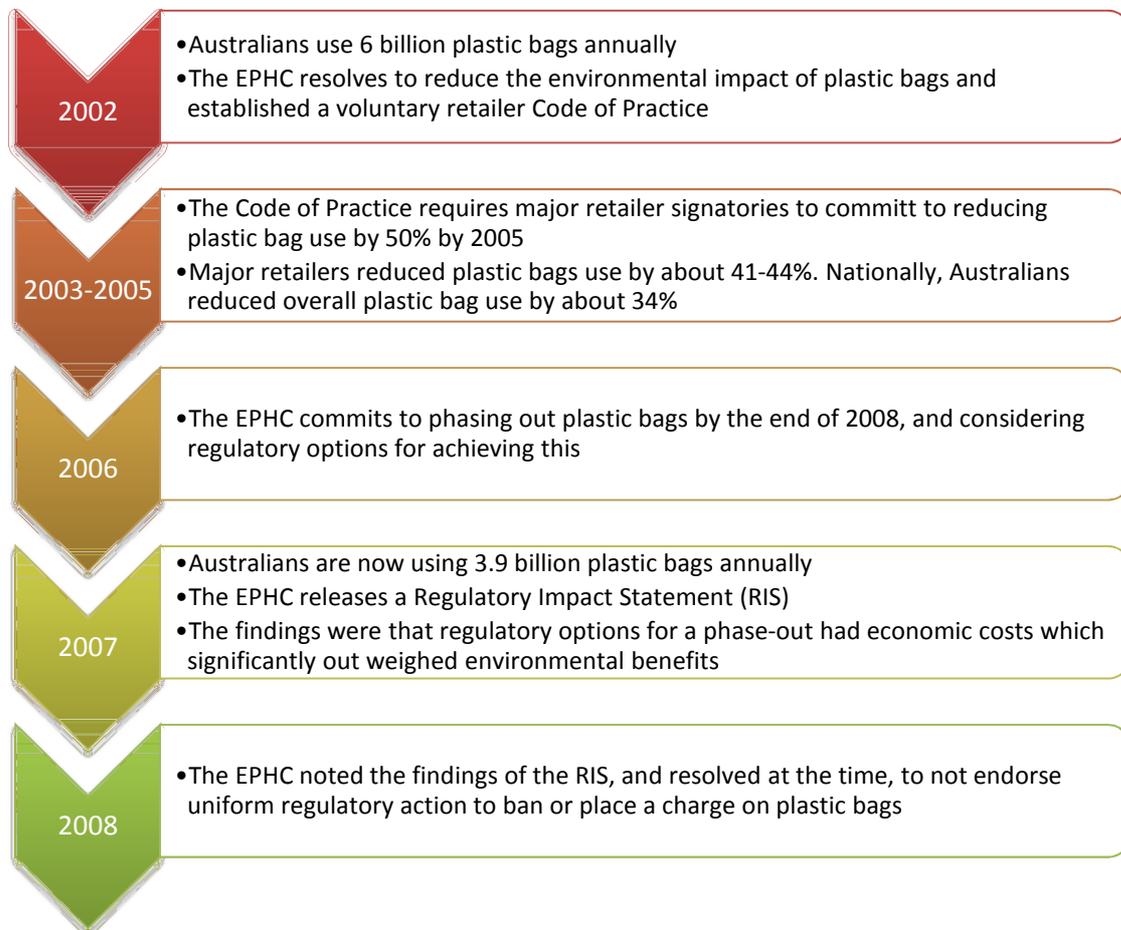


Figure 1. Timeline of Federal initiatives and results¹¹¹².

The implications of the EPHC decision not to pursue uniform action on plastic bags, is quite possibly the reason that in the year after the Code of Practice expired, there was an increase of 17% in the amount of plastic bags consumed by Australians (refer to Table 1).

3. Activities by States and Territories

Despite limited action at a Federal level, four States and Territories have now legislated to ban single use plastic bags and there are a number of towns across Australia that have banned plastic bags, through localised collaborative efforts¹³. These initiatives have occurred despite the opposition of various industry groups. In 2011, NSW began to take steps to ban plastic bags with an announcement to replace plastic bags with

¹¹ Department of the Environment (2014). Plastic Bags.

¹² Standing Council on Environment and Water (2014). EPHC Archive - Product Stewardship.

¹³ Planet Ark (2014). Plastic Bag Reduction.

compostable bags. To date, no activity has occurred¹⁴. A similar situation can be found in Victoria, where there is the legislative head of power in the *Environment Protection Act 1970* to introduce regulations where retailers must charge consumers for plastic bags. The following sections provide an overview of the approaches implemented by the Australian Capital Territory, Northern Territory, South Australia and Tasmania.

Australian Capital Territory ¹⁵		
Head of Power	<i>Plastic Shopping Bags Ban Act 2010</i>	
Implementation	November 2011	
Approach	The ban prohibits retailers from providing single-use, lightweight polyethylene plastic bags of 35 microns or less.	
	What is Banned?	What is not Banned?
	Lightweight, single use plastic bags	Heavier department store plastic bags
	Lightweight plastic bags marked 'degradable'	Compostable bags that comply with AS 4736
		Barrier bags (e.g. fruit and vegetables)
	Paper bags	
	Green bags	
Interim Result (2012)	<ul style="list-style-type: none"> - 58% of shoppers are supportive of the ACT Plastic Bag Ban; - 84% of shoppers now take re-usable bags always or most of the time when shopping (this was 44% prior to the ban); - 70% of shoppers disagreed with a suggestion to overturn the ban; - There was a 41% decrease in the total units of plastic bags distributed; - There was a 31% decrease in the total plastic material sent to landfill; and - Bin liner sales increased by 31%. 	

Northern Territory ¹⁶		
Head of Power	<i>Environment Protection (Beverage Containers and Plastic Bags) Act 2011</i>	
Implementation	September 2011	
Approach	Retailers can no longer supply lightweight, "checkout" style plastic bags, including degradable bags. Consumers are encouraged to use alternative products when shopping.	
	What is Banned?	What is not Banned?
	Lightweight, single use plastic bags	Heavier department store plastic bags
	Lightweight plastic bags marked 'degradable'	Biodegradable or compostable bags that comply with AS 4736
		Barrier bags (e.g. fruit and vegetables)
	Paper bags	
	Green bags	
Result (TBC)	A review will be completed after the two year anniversary of the ban.	

¹⁴ NSW Parliamentary Research Service (2013). Plastic bags: an update.

¹⁵ ACT Government (2012) Interim Review of the Plastics Shopping Bags Ban.

¹⁶ NT Environment Protection Agency (2014). Plastic Bag Ban.

South Australia ¹⁷¹⁸		
Head of Power	<i>Plastic Shopping Bags (Waste Avoidance) Act 2008</i>	
Implementation	May 2009	
Approach	Retailers are banned from selling or giving away plastic bags with handles made of polyethylene polymer less than 35 microns.	
	What is Banned?	What is not Banned?
	Lightweight, single use plastic bags	Heavier department store plastic bags
	Lightweight plastic bags marked 'degradable'	Compostable bags that comply with AS 4736
		Barrier bags (e.g. fruit and vegetables)
	Paper bags	
Result (2012)	<ul style="list-style-type: none"> - Overall, consumers are supportive of the ban (average score of 7.8/10); - 80% of consumers now take their own bags when grocery shopping; - 15% of consumers bought bin liners pre-ban and 80% bought bin liners post-ban; - The percentage of the litter stream consisting of plastic bags fell by 45% between 2008-09 and 2011-12; - 1 in 3 consumers now claim to recycle their reusable bags; and - 56% of consumers were supportive of extending the ban to include heavy and thick plastic bags. 	

Tasmania ¹⁹		
Head of Power	<i>Plastic Shopping Bags Ban Act 2013</i>	
Implementation	November 2013	
Approach	Retailers can no longer supply shoppers with a plastic shopping bag for the purpose of enabling goods sold, or to be sold, by the retailer, to be carried from the retailer's premises.	
	What is Banned?	What is not Banned?
	Lightweight, single use plastic bags	Heavier department store plastic bags
	Lightweight plastic bags marked 'degradable'	Compostable bags that comply with AS 4736
		Barrier bags (e.g. fruit and vegetables)
		Plastic bags that are an integral part of packaging (e.g. bread, frozen foods)
	Re-sealable zipper storage bags	
Result (TBC)	A review is yet to be completed.	

4. Activity in Western Australia

There has been limited interest from the current WA Government to address problematic packaging. In 2010, the *Plastic Shopping Bags (Waste Avoidance) Bill* was introduced by the Hon. Dr Sally Talbot into Parliament. This Bill was defeated in March 2012²⁰.

¹⁷ Government of South Australia (2014). Plastic Bag Ban.

¹⁸ M. Aspin (2012). Review of the Plastic Shopping Bags (Waste Avoidance) Act 2008.

¹⁹ Tasmanian Government (2014). About Tasmania's Plastic Bag Ban.

²⁰ Parliament WA (2012). Plastic Shopping Bags (Waste Avoidance) Bill 2010.

However, a number of towns in Western Australia have previously taken localised action on single use plastic bags, though voluntary efforts. Examples include Coral Bay, Esperance, Exmouth, and Port Hedland²¹.

In February 2012, the City of Fremantle responded to community concerns by resolving to develop the *Plastic Bag Reduction Local Law 2012*²². The process of adopting a Local Law involves drafting, and advertising the proposed Local Law, as well as liaising with the Department and the Joint Standing Committee on Delegated Legislation. The Local Law was adopted by the City of Fremantle on 30 January 2013, and published in the Government Gazette on 22 February. It came into effect on 21 August 2013, but was not implemented. In this case, the Joint Standing Committee was unable to reach a determination, and referred the matter to the Legislative Council. On 29 October 2013, the Legislative Council disallowed the City of Fremantle's Local Law, based on a clause permitting retailers to charge a 10c minimum fee for a compliant biodegradable bag.

The City of Fremantle is currently in the process of redrafting the Local Law, to address the concerns of the WA Government.

5. International Activity

Many countries have previously taken action to reduce the impact of single use plastic bags. The following sections provide an overview of some of the approaches taken. Please note this is far from an exhaustive list.

China ²³²⁴²⁵		
Head of Power	<i>Plastic Bag Restriction Order</i>	
Implementation	February 2008	
Approach	The production, sale or use of plastic shopping bags with a thickness of less than 25 microns is prohibited. Retailers must charge a fee when providing free plastic bags.	
	What is banned?	What is not banned?
	Plastic bags less than 25 microns thick	Fabric bags and other reusable bags
	Plastic shopping bags designed for re-use (provided the retailer charges a fee that is higher than operating costs)	
Result (2011)	Plastic bag use in retail places dropped by approximately two-thirds. There have been issues with the implementation of the ban, in open-air and wholesale markets and roadside stalls.	

Ireland ²⁶	
Head of Power	<i>Waste Management (Environmental Levy) (Plastic Bag) Regulations, 2001</i>
Implementation	March 2002
Approach	A levy is applied to each bag consumed. All funds raised are submitted to an Environment Fund.

²¹ Ministerial Media Statements (2005). Rottneest to be plastic bag free.

²² City of Fremantle (2014). Plastic Bags.

²³ China News (2011). Plastic Bag Ban.

²⁴ China Daily (2011). Ban on free plastic bags paying off.

²⁵ Grist (2013). China's plastic-bag ban turns five years old.

²⁶ Department of Environment, Community and Local Government (2014). Plastic Bags.

	What is subject to the levy?	What is not subject to the levy?
	Single use plastic carry bags	Barrier bags (e.g. fruit, vegetables), that are less than 225mm wide (exclusive of any gussets), 345mm deep (inclusive of any gussets), and 450mm in length, (inclusive of any handles)
	Biodegradable polymer bags	Plastic bags for carrying goods that are sold on board ships or aircrafts, or sold in ports or airports
		Plastic shopping bags designed for re-use (provided the retailer charges at least 70c per bag)
Result	The introduction of a levy had an immediate effect on consumer behaviour with a decrease in plastic bag usage from an estimated 328 bags per capita to 21 bags per capita overnight. The levy was initially 15c per bag, and was increased to 22c per bag in 2007, in response to an increase in the use of plastic bags.	

Italy ²⁷²⁸²⁹		
Head of Power	<i>DECRETO (18 March 2013) Identification of Technical Characteristics of Bags for the Removal of the Goods. (13a02536)</i>	
Implementation	January 2011 (initially)	
Approach	Shopkeepers are banned from handing out non-biodegradable plastic bags.	
	What is subject to the ban?	What is not subject to the ban?
	Traditional single-use plastic bags	Biodegradable and compostable plastic shopping bags
		Plastic bags thicker than 200 microns thick, containing at least 30% recycled plastic if intended for food use
		Plastic bags thicker than 100 microns and containing at least 10% recycled plastic if not intended for food use
		Carry bags made of reusable paper, fabrics of natural fibers, polyamide fibers and materials other than polymers.
Result	There were major issues during the implementation of the ban, which was initially scheduled to begin in January 2011. Various groups and governments including the United Kingdom opposed the ban, on the basis that it breached EU law (i.e. packaging waste directive and free trade laws). The EU has now begun the process of investigating the impact of plastic bags, and methods of reducing this impact.	

²⁷ European Environmental and Packaging Law (2011). Italy furious as EU blocks plastic bag ban under UK pressure.

²⁸ Environment News Service (2013). Italy Clarifies Plastic Bag Law, Enforcement Starts in May.

²⁹ Cereplast (2013). DECRETO (18 March 2013).

Rwanda ³⁰³¹		
Head of Power	<i>Law N° 57/2008 Relating to the Prohibition of Manufacturing, Importation, Use and Sale of Polythene Bags in Rwanda</i>	
Implementation	September 2008	
Approach	The manufacture, importation, use and sale of polythene bags that are used to package various products is prohibited. Institutions in charge of controlling the use of polythene bags include the police, customs staff, environment management authority staff, and Local Authorities. Offenders can be imprisoned from between six to twelve months and be subject to various fines.	
	What is prohibited?	What is not prohibited?
	As above	There is a list of polythene bags that can be used in exceptional cases in Rwanda (e.g. healthcare applications). This list is updated from time to time.
		Anyone wishing to manufacture, import, use, and to sell polythene bags must apply for a written authorisation from the Rwanda Environment Management Authority (outlining the need and the ways in which polythene waste will be managed)
Result	In the short term, community based associations were established to make bags from locally available, environmentally friendly materials. Private businesses re-structured their business model towards recycling or manufacturing bags. Rwanda has become a much cleaner country as a result of the ban.	

6. Environmental Analysis of Alternatives

There have been a number of studies completed on the environmental impact of alternative products to single use plastic bags. These studies typically focus on the type of resources used, the manufacturing process, transport to end markets and disposal routes. The UK Environment Agency carried out this type of assessment in 2011³². The most recent Australian analysis was completed by Nolan-ITU in 2003³³. These studies found that alternative bags made from natural materials (namely, paper, cotton and starch) had a higher environmental impact than single use plastic bags. This is largely due to the impacts of securing resources and manufacturing the alternatives. Figure 2 clearly demonstrates these impacts.

³⁰ Rwanda Environment Management Authority (2014).

³¹ The Delicious Day (2012). Rwanda First Country in the World to Ban the Plastic Bag.

³² UK Environment Agency (2011). Life cycle assessment of supermarket carrier bags: a review of the bags available in 2006.

³³ Nolan-ITU, RMIT (2003). The impacts of Degradable Plastic Bags in Australia.

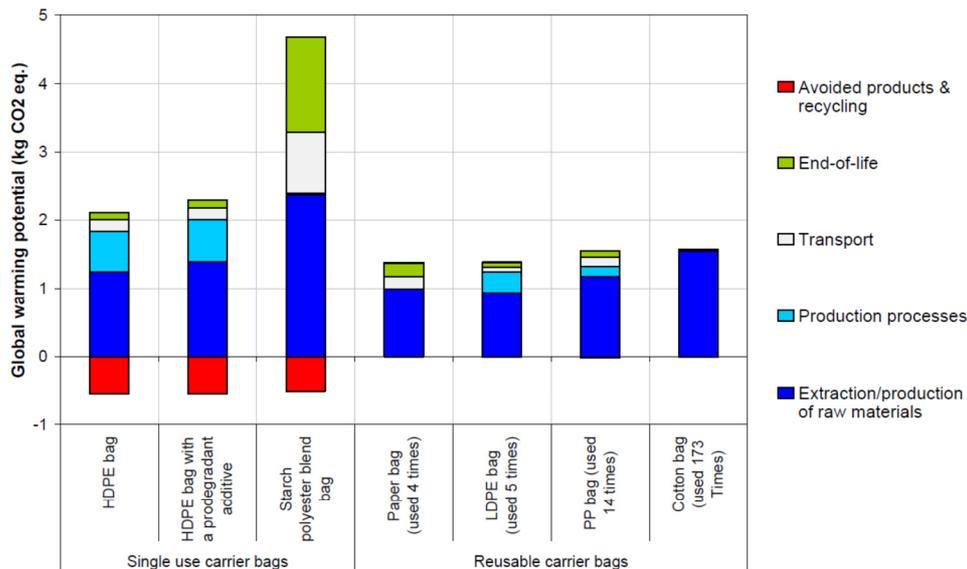


Figure 2. The global warming potential impacts of carrier bags (reproduced from UK Environment Authority (2011) figure 5.2)³⁴.

Both studies found that using sturdy reusable plastic bags (such as the ‘green bags’ supplied by major retailers) resulted in the greatest environmental gains over a full life cycle. The UK Environment Agency found that paper bags would need to be reused at least 4 times, and cotton bags at least 173 times to have a lower environmental impact than single-use plastic bags in terms of resource use, energy and greenhouse outcomes.

Unfortunately, economists have historically been hesitant to determine the ‘price’ of the environmental impact of littered single use plastic bags in the environment. In fact, the following assumptions were used in the Nolan 2003 study:

“... an estimate of an average time a piece of litter may remain in the litter stream was needed. The data used for different materials was as follows:

- Plastics (both single use and multiple use but not biodegradable polymers) – 5 years.
- Paper and biodegradable polymers – 6 months.
- Calico bags – 2 years.”

However, these estimates do not include the impact of small particles of plastic in the marine environments. Environmental groups, state it could be within the range of 15 - 1000 years³⁵ before plastic bags actually break down. In terms of biodegradable bags, products are now available that comply with AS 4736-2006, and can completely break down within six to eight weeks in commercial composting processes³⁶.

It is vital that one message is communicated to the public masses on which type of alternative should be used, to ensure compatibility with waste processing requirements.

Bin Liners

In addressing consumption of single use plastic bags, it is essential to explore the use of bin liners. This is because:

³⁴ UK Environment Agency (2011). Life cycle assessment of supermarket carrier bags: a review of the bags available in 2006. Figure 5.2.

³⁵ Planet Ark (2014). Plastic Bags and the Environment.

³⁶ Cardia Bioplastics (2014). Wholesale and Retail Products.

- a) 9 out of 10 households line their general waste bins with either single use plastic bags, or specific bin liners³⁷; and
- b) Industry groups opposing a ban on single use plastic bags know this, and use it as one of their key arguments when carrying out lobbying activities.

The review of the South Australian plastic bag ban, found that the sale of bin liners had substantially increased during the ban. 15% of consumers were purchasing bin liners before the ban, compared with 80% after the implementation of the ban³⁸. This shift in consumer behaviour means that Local Governments considering action on single use plastic bags must also communicate acceptable methods of lining household bins that are compatible with waste processing requirements. Whilst bio-degradable plastic bin liners that meet AS 4736-2006 may be an appropriate solution in some situations, it should be noted that they do not break down well in modern, highly compacted landfills.

Other practical solutions include³⁹⁴⁰:

- Reusing or composting leftover food;
- Wrapping food scraps in sheets of newspaper prior to disposal (if this is done properly, the waste will not 'sweat' and begin to smell as it does in plastic bags);
- Lining bins with several layers of newspaper; and
- Freezing food scraps prior to the scheduled collection day.

7. Opportunities for Action

The two key motivations for Local Government in seeking action on plastic bags are:

- Reduce litter in the terrestrial and marine environment: this reduces impacts on the environment and the need for Local Government clean-up activities.
- Reduce plastic bag contamination of alternative waste treatment plants and composting facilities: this increases the value of the compost and reduces the amount of pre-treatment necessary.

This second point is particularly important, given the State Government's preference for a three bin collection system that allows for the recovery of organics⁴¹. Holistic action on plastic bags and flexible packaging is required, to improve the quality of compost products, and in turn begin to address market acceptance.

³⁷ ZeroWasteSA (2012). Review of the Plastic Shopping Bags (Waste Avoidance) Act 2008.

³⁸ ZeroWasteSA (2012). Review of the Plastic Shopping Bags (Waste Avoidance) Act 2008.

³⁹ Ban the Bag (2009). Lining your bin.

⁴⁰ Treading My Own Path (2013). How to...line your rubbish bin without a plastic bag.

⁴¹ Waste Authority (2014). Better Practice. Better Bins Kerbside Collection Guidelines.

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UK Environment Agency (2011). Life cycle assessment of supermarket carrier bags: a review of the bags available in 2006. Available online. <http://www.environment-agency.gov.uk/research/library/publications/129364.aspx>.

UK Environment Agency (2011). Life cycle assessment of supermarket carrier bags: a review of the bags available in 2006. Figure 5.2

Planet Ark (2014). Plastic Bags and the Environment. Available online. <http://plasticbags.planetark.org/about/environment.cfm>.

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