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Members
Local Government and Environment Committee
Youth Parliament 2016

Inquiry into how much is our retail industry doing to improve New Zealand's impact on the environment, and if regulation on the cost and usage of plastic bags is required

The Local Government and Environment Select Committee has been asked to conduct an inquiry into: "How much is our retail industry doing to improve New Zealand's impact on the environment – is regulation on the cost and usage of plastic bags required?" on 19 July 2016. This paper has been prepared to assist the Committee with its examination. Issues are identified and possible lines of inquiry are provided for the Committee to consider. The Committee may also wish to raise these matters with the witnesses who have been asked to appear before the Committee to give evidence on this inquiry.

Introduction

To aid the Committee with its inquiry two definitions are necessary:

- *Plastic bag*: a bag made of a thin, flexible plastic material.
- *Plastic carrier bags*: a bag made of a thin, flexible plastic material, which has handles supplied by a shop to carry goods purchased there.

Plastic bags can take many forms such as plastic carrier bags, bread bags, frozen food bags and refuse bags. Often plastic bags are designed for single-use and if no secondary use for them can be found, in most cases they become waste.

At a global level, it is estimated that over one trillion plastic bags are used every year (Kasidoni, et al., 2015). Anecdotal evidence suggests that between 1 and 1.6 billion plastic carrier bags are used in New Zealand each year. These estimates would increase significantly if the scope was expanded to include all single-use plastic bags used in New Zealand such as bread bags and frozen food bags.

The environmental harm from plastic bags is two-fold – first, resources are used during the manufacturing process that leads to resource depletion and increased emissions, and secondly, if not adequately disposed of, they can enter the environment, effecting ecosystems and biodiversity.

The number of jurisdictions that have introduced measures to combat the use of plastic carrier bags has increased. To date, non-regulatory and regulatory options have been introduced to varying effect. There have been a number of cases where successful

measures have dramatically cut the rates of plastic bag consumption and these examples will be further discussed later in this paper. However, the question remains to what extent should governments intervene to address the retail industries impact on the environment, and whether plastic carrier bags should be directly targeted?

Part one – How much is our retail industry doing to improve New Zealand’s impact on the environment?

As with many environmental issues, it is difficult to accurately estimate or quantify the impact New Zealand’s retail sector is having on the environment. However, it has been suggested that current retail consumption patterns globally are at rates that are not sustainable. In New Zealand we do not have comprehensive data to undertake a complete assessment of the impact that the retail industry is having on the environment. However, New Zealand is a highly developed country and can be linked to a high consumption of goods and services – leading to environmental impacts such as high use of resources and increased emissions.

A 2012 United Nations Environment Programme report stated that: “We are facing deeply interlinked economic, social and environmental crises that stem, in large part, from current unsustainable patterns of consumption and production, and pose serious threats to human development. Health, education, equity and empowerment are all adversely affected. Humanity is now consuming more resources than ever, both per person and in absolute terms, exceeding by far our planet’s regenerative capacity.”

It is estimated that every person in New Zealand disposes of one tonne of waste directly or indirectly each year. The majority of this waste is disposed of in one of the 48 landfills in New Zealand which accept household waste. Of this waste, a significant proportion is packaging waste that may only be used briefly and may not be necessary at all.

Plastic bags (of many kinds) are included within the array of waste that we dispose of. The plastic carrier bag is part of this waste stream and has been consumed in abundance in New Zealand society for decades. They provide a convenient means of bundling and carrying a miscellany of food, groceries, and are normally provided at no charge to customers by thousands of supermarkets, small goods and retail outlets.

The legislative framework for waste in New Zealand

New Zealand Waste Strategy 2010

In 2010, the Government issued the New Zealand Waste Strategy 2010. The Strategy outlines the Government's high-level strategic direction for waste management and minimisation in New Zealand. The Strategy has twin goals to:

- reduce the harmful effects of waste; and
- improve the efficiency of resource use.

The New Zealand Waste Strategy sets out the Government's long-term priorities for waste management and minimisation in New Zealand. This 2010 Strategy replaced the 2002 New Zealand Waste Strategy, which had more prescriptive targets. The 2010 strategy deliberately has high level targets to allow flexibility in its application. A flexible approach allows waste management and minimisation activities to be developed as appropriate for local situations.

Waste Minimisation Act 2008

In New Zealand, waste minimisation is encouraged through the Waste Minimisation Act 2008 (WMA). The purpose of the WMA is to encourage waste minimisation and a decrease in waste disposal in order to:

- protect the environment from harm; and
- provide environmental, social, economic and cultural benefits.

Key features of the WMA include:

- the introduction of a \$10 per tonne (excluding GST) levy on all waste disposed of in municipal landfills to generate funding to help local government, communities and businesses minimise waste;
- establishment of a process for government accreditation of product stewardship schemes which recognises those businesses and organisations that take responsibility for managing the environmental impacts of their products; and
- that product stewardship schemes to be developed for certain 'priority products' where there is a high risk of environmental harm from the waste or significant benefits from recovering the product allows for regulations to be made. To date, no waste streams have been declared priority products.

Other relevant legislation

The Resource Management Act 1991 (RMA) provides the framework for land use decisions in New Zealand. The disposal of waste to land is controlled through the frameworks of the RMA. For example Regional and Local Councils issue consents for landfill operations and can include conditions that must be met.

Littering in New Zealand is managed through the Litter Act 1979. The objective of the Litter Act is to make better provision for the abatement and control of litter. The Litter Act provides mechanisms to enforce littering, including the following functions:

- establishing enforcement officers and litter wardens who may issue fines and abatement notices for litter offences;
- allowing territorial authorities to force the removal of litter; and
- allowing public authorities to make by-laws pursuant to the provisions of the Act.

Voluntary actions from industry

Product stewardship is the responsible management of a product to minimise its environmental impact. It aims to reduce the impact of manufactured products at stages of the product life cycle. To date, 14 voluntary, industry led, product stewardship schemes have been accredited by the Minister for the Environment since the introduction of the WMA in 2008.

The accredited schemes focus on a range of waste streams including; electronic waste, refrigerants and synthetic greenhouse gases, glass packaging, food and beverage packaging and concrete. Achieving accreditation shows that industry is willing and able to take responsibility for the products they are producing to limit environmental harm.

The Packaging Forum in New Zealand demonstrates a good example of a voluntary industry approach to reducing harm to the environment. The Packaging Forum operates the Public Place Recycling Programme which captures all forms of packing waste from public places

preventing leakage of litter into the environment. The scheme's focus is to reduce waste and litter through a multi-pronged approach, including increasing the capture of used packaging, increasingly recycling rates, and growing consumer awareness to 'do the right thing'.

The Packaging Forum also operate the Soft Plastic Recycling Programme. The objective of this initiative is for 70 percent of New Zealanders to have access to a drop-off facility for soft plastics within 20 kilometres of their home. This programme enables soft plastics and soft packaging such as plastic carrier bags, bread bags, frozen food bags and food wrap to be collected and recycled. Bins have been installed at 70 New World, Pak 'n' Save, Countdown and The Warehouse stores in Auckland. The scope of the soft plastics recycling initiative is extended to not only target plastic carrier bags that make up an estimated 0.2 percent of the total waste stream in New Zealand, but all soft plastics.

Industry has also taken a voluntary approach to reducing the number of plastic carrier bags that are used. Some retailers, such as Bunnings hardware stores, no longer offer plastic carrier bags to customers. Other retailers including The Warehouse and Pak'n'Save have decided to charge for plastic carrier bags to discourage their use. The Warehouse has estimated that they have witnessed a 74 per cent drop in the usage of plastic carrier bags after introducing a 10 cent charge.

Countdown on Waiheke Island has also recently announced that they will no longer offer plastic carrier bags to consumers. And, to help customers get on board with the initiative, it will be offering all free re-usable bags to kick-start their new environmental friendly habits. Shoppers can also bring their own bags, buy compostable bags for 15 cents each, or reusable bags for \$1.39.

Part Two – Is regulation on the cost and usage of plastic carrier bags required?

The growth of the plastic carrier bag is ultimately linked to consumerism. Because of this, critics say that plastic carrier bags are the ultimate symbol of our throwaway society. Many also say that plastic carrier bags are a blot on the landscape; littering both the land and the marine environment.

On the other side of the debate, proponents call them a hygienic, odourless, waterproof, robust and convenient way of carrying goods, and that the alternatives have much worse environmental impacts.

Managing the large and ever increasing amount of plastic waste remains a global problem. The Government must consider whether regulation is required to address a specific component, the plastic carrier bag waste stream, within the overall plastic waste stream.

What types of plastic bags would be regulated?

As mentioned previously, plastic bags can take many forms such as plastic carrier bags, bread bags, frozen food bags and refuse bags. Introducing policy measures for plastic bags would capture a large variety of plastic bag types in New Zealand and it would be difficult to overcome the practicalities of some measures such as a complete ban or levy.

Many businesses, communities and individuals use plastic bags to hygienically contain and transport food products or to collect household refuse. Some do so as a requirement of the food safety regulations. A ban on plastic bags would apply to a significant amount of locally made and imported products for sale in New Zealand.

The environmental harm from plastic carrier bags

Plastic carrier bags can be harmful to the environment because of their persistent nature in the natural environment. Incorrect disposal of plastic can lead to accumulation of plastic material on land, in rivers, lakes, and oceans. They are also harmful because of the energy, resources and emissions that are associated with their production.

Plastic carrier bags create aesthetic disturbances and can create socio-economic impacts from flooding caused by blocked drains and sewer pipes (the frequency of these impacts is unknown). In addition, plastic material takes years to break down and in many cases will not fully break down. Estimates vary, but suggest plastic carrier bags can take between 20 and 1000 years to fully degrade in the environment.

Globally, plastic carrier bags are used in huge numbers. Most often consumers do not face a direct charge for plastic bags and we use them in high numbers, perhaps making them the number one consumer item. It is estimated that on average plastic carrier bags are used for between 10 and 12 minutes.

In 2015, a survey of New Zealand's national litter was completed by WasteNot consulting. A total of 18,620 items of litter were counted in the National Litter Survey.¹ Plastic carrier bags did not feature as one of the ten most common litter items identified. The survey concluded that plastic carrier bags made up 1.5 percent of all litter and represented 0.5 items per 1000m². The greatest litter source noted in the survey was plastic packaging.

Marine litter in the global environment

Plastic in the marine environment is becoming a significant global problem. Marine debris (which is primarily made up of a range of plastics) directly affects marine and coastal life and ecosystems and potentially human health. Seabirds, fish and marine mammals can be affected as they become entangled in debris or can ingest it. Contamination from toxic chemicals is a secondary consequence of ingestion. Compared to other consumer items discarded in the oceans, fishing gear poses the greatest ecological threat followed secondly by plastic carrier bags.²

A 2015 study (Jambeck) published in *Journal Science* has investigated the input of plastic waste from land-based sources into the ocean. The study quantified the amount of mismanaged plastic waste generated annually by 192 coastal countries, including New Zealand. The study estimates that plastic waste released into the oceans globally exceeds 4.8 million tonnes per year and may be as high as 12.7 million tonnes. A relatively small number of countries are the largest contributors to this discharge. The analysis was based on the rate of generation of waste, the composition of plastic within that waste, and the effectiveness of local waste-management systems when collecting and processing waste.

The study noted 20 countries account for 83 percent of the mismanaged plastic waste available to enter the ocean. Further to this, over 50 percent of the total mismanaged plastic waste enters the marine environment from just five countries: China, Indonesia, Philippines, Vietnam and Sri Lanka. New Zealand did not rank as one of the top 20 countries and was placed in the lowest tranche of contributing countries.

Following the release of the study, the Ocean Conservancy Group (a non-governmental organisation) developed land-based strategies for reducing plastic within the marine environment. The strategies primarily focus on preventing leakage of waste from the

¹ www.glassforum.org.nz/wp-content/uploads/National-Litter-Survey-1415-e.pdf

² Using expert elicitation to estimate the impacts of plastic pollution on marine wildlife

countries that contribute the highest amount of plastic waste to the environment, i.e. the top 20 countries.

The research highlights that not all countries contribute equally to plastic in the marine environment. The largest quantities are estimated to be coming from a relatively small number of countries in Asia and other middle income, rapidly developing countries.

Environmental impacts of plastic carrier bags vs alternatives

Research by the United Kingdom Environment Agency has been conducted to assess the environmental impacts of alternatives to plastic carrier bags. The research found that the environmental impact of all types of carrier bags is dominated by resource use required to produce the bags. Transport, secondary packaging and end-of-life management generally have a minimal influence on the overall environmental impact of bags.

Whatever type of bag is used, the key to reducing the impacts is to reuse it as many times as possible and where reuse for shopping is not practicable, other reuse, such as using plastic carrier bags to replace bin liners, is beneficial. Table one below shows that a re-usable cotton bag would have to be used 173 times in order to be more environmentally beneficial, than a plastic carrier bag, over a full life cycle assessment.

Table 1: The amount of primary use required to take reusable bags below the global warming potential of high-density polyethylene bags (plastic carrier bags) with and without secondary reuse

(United Kingdom Environment Agency)

Type of carrier	HDPE bag (No secondary reuse)	HDPE bag (40.3% reused as bin liners)	HDPE bag (100% reused as bin liners)	HDPE bag (Used 3 times)
Paper bag	3	4	7	9
LDPE bag	4	5	9	12
Non-woven PP bag	11	14	26	33
Cotton bag	131	173	327	393

Intervention options for single-use carrier bags

This Committee will consider if regulation for the cost and usage of plastic bags in New Zealand is required. To limit the scope of the inquiry for the Committee, this paper focuses on policy interventions that target plastic carrier bags only.

There are many possible intervention options to reduce the quantity of plastic carrier bags in New Zealand. The most common policy interventions used in other jurisdictions are outlined below.

- **Ban** – an outright ban on plastic carrier bags.
- **Introducing a levy (or cost)** – most common plastic carrier bag levies place the cost on those businesses that give away plastic carrier bags, as they likely further pass on the costs on to consumers, thereby incentivising reduced consumption.
- **Industry-led voluntary phase out** – normally in the form of an industry agreement to phase out plastic carrier bags through the imposition of a gradually escalated charge.

This option can be supported by co-regulatory measures or government regulation to restrict supply.

- **Advance disposal fee** – A fee charged to consumers to recover the cost of effective disposal methods.

Economic analysis of intervention options

In 2006, at the request of the Australian Environment Protection and Heritage Council, the Allen Consulting Group conducted an analysis of possible costs and benefits of a range of voluntary and regulatory options for reducing the impact of plastic carrier bags on the environment.³

Nine options were assessed within the analysis, including; the elimination of plastic carrier bags and a government imposed levy on plastic carrier bags. The environmental benefit was quantified within the analysis through deriving the value of removing a plastic carrier bag from the environment.

The analysis concluded that in comparison to the scenario under which no further action is taken (status quo), all intervention options identified produce outcomes in which the estimated economic and environmental costs exceed the benefits by substantial margins. The net present value of the options produced consistently negative costs to society ranging from \$ - 45 million to \$ - 85 million a year.

The Australian analysis concluded that voluntary actions are the least costly option to address the issue of plastic carrier bags in the environment. In contrast regulatory options are more likely to achieve greater reductions in plastic bag use, but the costs of these interventions heavily outweigh the costs.

It should be noted that the cost of interventions is made up from any pricing mechanisms introduced, the cost of enforcing the interventions, and administration costs for both industry and consumers.

International experiences

Around the world, communities and governments have taken action on plastic carrier bags. Over 170 states in 30 countries have done so. In some countries where legislative policies have been introduced significant reductions in plastic carrier bag consumption has been witnessed. Some of the policies introduced to date are discussed below:

- In March 2002, the Irish government introduced a levy of €0.15 per plastic carrier bag provided to shoppers at the point of sale in retail outlets. The tax was directly aimed at changing consumer behaviour towards plastic carrier bag use.
- In May 2003, South Africa introduced legislation intended to decrease plastic carrier bag litter. It combined standards and price-based economic tools in an attempt to reduce the public's demand for plastic carrier bags.
- The state of South Australia introduced a ban on lightweight plastic carrier bags on 4 May 2009. South Australia was the first state in Australia to ban their use. Since then, the Northern Territory, Australian Capital Territory and Tasmania have also banned their use.
- In 2011, Wales introduced a plastic carrier bag charge, the first nation in the United Kingdom to do so. Northern Ireland followed in April 2013, Scotland in 2014 and England in 2015.

³ Allen Consulting Group, 'Phasing Out Light-Weight Plastic Bags Costs and Benefits of Alternative Approaches', May 2006, Report to the Environment Protection and Heritage Council.

Some of the key points to note from international experiences are:

- Estimates suggest that since the introduction of the Irish levy plastic carrier bag consumption has dropped by approximately 94 percent (Convery, 2007).
- In the Northern Territory of Australia most shoppers were supportive of the policy, stating they brought their own reusable bags more often, but also purchased more bin liners and kitchen tidy bags as they could no longer reuse the plastic carrier bags. Litter surveys suggest that litter levels may have decreased since the introduction of the ban.
- In the first year of Scotland's levy (5p charge) the number of plastic carrier bags handed out in stores decreased by 80 percent, the equivalent of 650 million bags.
- England has experienced an increase in the number of shoppers resorting to extreme measures to avoid paying the charge, with a spate of trolley and shopping basket thefts.
- Half of English shoppers say they have taken a plastic carrier bag without paying. The research suggests £26.7m worth of plastic carrier bags have been stolen.

Summary

Whenever we debate plastic bags, images of distressed turtles and dead seabirds come to mind. These images generate support and provide the public case for banning plastic carrier bags. However, to pass the evidenced based policy test is much harder.

As stated earlier it is suggested that New Zealander's use between 1 and 1.6 billion plastic carrier bags a year with the majority of these ending up in landfill. They comprise an estimated 1.5 percent of all the litter in New Zealand.

Once in the environment, plastic carrier bags do have an ecological impact, due to plastic's persistence properties. However, plastic bags do not comprise our biggest litter problem, and they are a small waste stream in regards to both plastics and New Zealand's overall waste generation.

Research has highlighted that it is hard to find cost-effective measures to limit the consumption of plastic carrier bags, and many of the alternatives to plastic carrier bags have greater environment impacts and require high rates of secondary use before they become beneficial.

Whilst it is undeniable that introducing regulation on the cost and usage of plastic carrier bags can be very effective at reducing consumption, careful consideration must be made to whether inflicting costs on consumers, industry and government is warranted to achieve such reductions.

Report to the House

The Committee is required to report its findings on this inquiry to the House. The purpose of your report is first to inform the House and encourage debate. In doing so your report should reflect both the oral and written evidence the Committee received, the issues the Committee considered in-depth, and the views of the members. From these the Committee should develop conclusions and recommendations to the Government.

James Ayling
Ministry for the Environment
Report Writer
Youth Parliament 2016

Members may wish to ask:

1. Should we be concerned with current consumption patterns globally and the over use of resources?
 - a. Is it the role of New Zealand's government to intervene with consumption patterns or should consumers be more environmentally conscious?
2. Who is responsible for the environmental harm from retail consumption - the consumer or industry?
 - a. Is the industry doing enough to limit its impact on the environment, or should they be regulated to do more?
3. Are plastic carrier bags an isolated problem or part of a larger problem of plastic waste?
 - a. Should interventions to combat the plastic waste entering the environment focus on one particular waste stream, such as plastic carrier bags, or apply to all plastic products?
4. What kinds of plastic bags would fall into scope for regulation?
 - a. Is it right to target plastic carrier bags when it is likely they make up a small proportion of overall plastic carrier bags?
 - b. Are there practical alternatives to plastic carrier bags available i.e. what would replace bread bags and frozen food bags?
5. Would it be acceptable to place an overall net cost on New Zealanders in order to limit the consumption of plastic carrier bags?
6. Can regulating plastic carrier bags have a flow on effect to stimulate other environmentally friendly consumer behaviour?
 - a. If so, does that warrant government intervention even if the intervention was an overall net cost to society?

References

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

F. Convery, S. McDonnell, and S. Ferreira; The most popular tax in Europe? Lessons from the Irish plastic bags levy; *Environmental Resource Economics*, 2007, pp.1-11.

European Commission Director General Environment; *Assessment of impacts of options to reduce the use of single-use plastic carrier bags, Final Report*, 2011.

R. Hasson, A. Leiman, and M. Visser; The economics of plastic bag legislation in South Africa; *South African Journal of Economics*, 2007, pp.66-83.

J. R. Jambeck, R. Geyer, C. Wilcox, T. R. Siegler, M. Perryman, A. Andrady, R. Narayan and K. L. Law; Plastic waste inputs from land into the ocean; *Science*, 2015, pp. 768-771.

M. Kasidoni, K. Moustakas, and D. Malamis; The existing situation and challenges regarding the use of plastic carrier bags in Europe; *Waste Management and Research*, 2015, pp. 419-428.

K. Lucas, M. Brooks, A. Darton, and J.E. Jones; Promoting pro-environmental behaviour: existing evidence and policy implications; *Environmental Science and Policy*, 2008, pp.456-466.

T. O'Brine; and R. C. Thompson; Degradation of plastic carrier bags in the marine environment; *Marine Pollution Bulletin*, 2010, pp.2279-2283.

Further reading

<http://www.oceanconservancy.org/our-work/marine-debris/threat-rank-report/2016-threat-rank-report.pdf>

<http://www.glassforum.org.nz/wp-content/uploads/National-Litter-Survey-1415-e.pdf>

<http://www.theguardian.com/environment/2015/oct/05/alternatives-to-plastic-bags-must-be-greener>

<http://www.dailymail.co.uk/news/article-1358885/Why-need-use-environmentally-friendly-cotton-carrier-bag-171-times-green.html>

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/291023/scho0711buan-e-e.pdf

http://www.unep.org/pdf/Global_Outlook_on_SCP_Policies_full_final.pdf

<http://blog.mraconsulting.com.au/2016/03/29/bags-not-finding-the-solution-for-australias-plastic-bags/>

<http://blog.mraconsulting.com.au/2015/02/06/banning-plastic-bags-the-tip-of-the-iceberg/>

http://www.ntepa.nt.gov.au/_data/assets/pdf_file/0009/353907/plastic_bag_ban_review_report_rawtec.pdf

<http://www.telegraph.co.uk/finance/economics/11912052/Plastic-bag-charge-the-unintended-consequences-of-the-5p-deterrent.html>

<http://www.telegraph.co.uk/news/earth/environment/12097146/English-shoppers-steal-26.7m-worth-of-plastic-bags-since-5p-charge-introduced.html>

Suggested keywords and phrases for Internet search engines:

- plastic bag regulation
- plastic bags environment

As well as considering this background paper, Youth MPs are welcome to undertake their own research on their committee topic (or on the Bill or any aspect of Youth Parliament 2016). The Parliamentary Library has agreed to accept one question per Youth MP which they will endeavour to answer to inform your work. If you have not already done so, please contact jill.taylor@parliament.govt.nz to take advantage of this opportunity.