



Plastic Shopping Bag Report

Introduction

Plastic shopping bags are becoming a major environmental concern in many countries around the world. The bags have blocked drains and caused severe floods over the last couple of decades in Bangladesh, costing thousands of people their lives. They have assumed a new identity as the 'national flower' of South Africa getting caught up in trees and fences and in Ireland the 'Clean and Green' image was seriously threatened by intense littering of plastic bags - until halting measures were taken.

The environmental implications of polyethylene bags, that take hundreds of years to decompose, are harsh. Negative outcomes include: the wasted resources locked away in the millions of plastic bags in landfills, the littering of landscapes and waterways, threats to wildlife (100,000 mammals and turtles are killed by plastic debris annually), and toxic gas emissions through burning. Numbers of plastic bags used by shoppers are also an indicator of our consumption.

A number of countries are beginning to take positive measures to tackle this problem including charging consumers a levy, or banning them from the market place altogether. New technologies such as 'bio plastics' are also being commercially introduced. These suit organic waste recovery systems and other specific uses but are no substitute for reducing excessive usage in the first place.

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The Irish experience

Ireland and New Zealand are comparable in that they are both renowned for their 'Clean and Green' image creating a competitive advantage in a number of areas, particularly food and tourism. However, in response to the growing visible threat to the environment Ireland has called for tough measures to be implemented to tackle the growing plastic shopping bag problem.

"Plastic bags are a visible and persistent component of litter pollution in urban, rural and coastal settings and they undermine Irelands' green image". (Dept. of Environment, Ireland)
The introduction of a plastic bag levy was one measure taken towards minimising threats to the environment.

The primary purpose of raising the levy was not to generate revenue but to instigate a shift in consumer attitude and a reduction in the use of plastic bags that end up as litter.

Background

An estimated 1.2 billion plastic bags were being handed out at shopping counters each year in Ireland. In a country with a population of less than 3.8 million this figure equates to 325 bags per person going to landfill.

The plastic bag tax was initially promised by Fianna Fail, the party that held government following the 1997 election, but Friends of the Earth Ireland were calling for the tax prior to that.

A consultants' report to the Minister for the Environment, Noel Dempsey, recommended a levy of between 4.5 and 15 euro cents (equivalent to 9 – 30 NZc) on plastic bags. However, while the report recommended that the levy should be paid by supermarkets or by the suppliers of plastic bags, the Minister decided that the shopper should pay. He felt consumers had to be hit as hard as possible if they were to change their shopping habits.

With the few usual exceptions there was almost unanimous support from the general public for the idea. Polling carried out two years ago found that the general public were massively in favour of the levy.

Initially there was a negative response from retailers. The reason it took two years for the tax to be imposed was because supermarkets were opposed to the idea.

The tax finally came into force on March 4, 2002.

Aims of the Bill

The central aims of the Bill are to:

- Provide for the introduction of an environmental levy on plastic shopping bags and for a levy on the landfill of waste,
- Reduce the number of plastic shopping bags sent to landfill by encouraging shoppers to recycle or use alternative methods of carrying groceries and other goods,
- Establish an Environment Fund, to be funded from revenue from the new levies.

How it works

A 15 euro cent levy is charged on all plastic bags except: bags used solely to contain fresh meat, fish, ice, poultry, loose fruit & vegetables and other unpackaged foods; strong, thick reuseable bags that are sold for 70 euro cents (NZ\$1.40) and a mesh type bag sold for 1 Euro (\$2).

The levy must be itemised separately on the customer's till receipts. Retailers then have to repay the levy to the Revenue Commissioners.

Environment fund

Revenues raised from the plastic shopping bag levy will be assigned to the new Environment Fund (which will also receive funding from a proposed landfill levy). This fund will be used to support appropriate waste management, litter prevention and other environmental initiatives.

It is estimated that 180 million euros (NZ\$360 million) could be raised. However, it is hoped this amount will not be raised due to Ireland achieving maximum reduction of plastic bag waste.

Changes in behaviour

The implementation of the tax has, so far, been a huge success.

The change in behaviour by shoppers was immediately evident. One of the larger chain stores reported a distribution reduction in plastic shopping bags of 97.5%. Consumers have accepted the change and are using a range of reuseable bags offered by the supermarkets. Stores have reported a very low take-up of bags carrying the Government levy. It is expected that shoppers will use 40 – 50% fewer of the disposable bags within several months.

One supermarket, Tesco, which had been issuing 220 million plastic bags a year, has introduced 'Bag for Life', a heavy duty reuseable plastic bag. They estimate that the levy will reduce the number of bags provided by at least 40 % in the first year - a saving of 88 million bags from Tesco customers alone.

Recent figures suggest the reduction in use of plastic bags has been maintained at 90% since the introduction of the measure in March. Noel Dempsey (former Environment Minister), who introduced the plastic bag tax, said that almost overnight there had been a drastic reduction in volume of bags going to landfill or litter.

Contacts

The Irish Department of the Environment and Local Government for information on the levy, a retailers guide to the levy and waste management regulations for 2001.

Go to www.environ.ie/environ/envindex.html

Friends of the Earth Ireland – Earthwatch – History of campaign

foeire@iol.ie

Chamber of Commerce – www.chambersireland.ie

Aine Suttle, Local Campaigner for more information about the campaign –

asuttle@eircom.net

Other plastic bag campaigns around the world

- In the **UK**, Environment Minister Michael Meacher is investigating the Irish model of raising levies on plastic bags. If no serious problems are found he will be arguing strongly for introducing something similar in the UK in a few months time.

- **Australia** – the Australian Retailers Association and Environment has developed, in agreement with the Environment Protection and Heritage Council, a code of practice for the managed reduction and recycling of lightweight HDPE plastic bags.

Go to http://www.environment.sa.gov.au/zerowaste/plastic_bags.html for more details.

An example of local government action is in Coles Bay, Tasmania where they declared themselves plastic bag free in 2003 and enlisted the support of all the retail outlets to ban plastic bags at the checkout.

- **Hong Kong** – 15 million plastic bags are thrown out every day, equivalent to 8 per cent of Hong Kong's municipal solid waste.

In May 1994 a 'Use Fewer Plastic Bags' campaign was launched with an initial target of reducing use by 10%. More than 1,500 retail outlets agreed to take part in the drive and devised action plans to achieve the target.

The campaign was a resounding success. In its first year more than 30% of participating retailers achieved or surpassed the 10% reduction target, leading to an overall reduction of more than 35 million plastic bags.

For more details go to:

www.consumersinternational.org/rightsday97/chapter6/hongkong.html or
www.info.gov.hk/epd/english/environmentinhk/waste/guide_ref/guide_factsheets01.html

- **Taiwan** is moving towards banning the free distribution of plastic bags.

- The **Singapore** government is launching a campaign to discourage their use.

- November 2003, **Shanghai** reports that selected supermarkets will begin charging customers for plastic bags from 2004 in a bid to reduce waste going to landfill and littering problems.

- In March 2002, **Bangladesh** totally banned all polythene bags as they were discovered to be a culprit in the 1988 and 1998 floods. The discarded bags were choking the drainage system.

For further information go to the website of the Environmental and Social Development Organisation of Bangladesh www.esdobd.org.

- In **South Africa**, plastic bags are known as the "national flower" because so many are seen flapping from fences and caught in bushes. In November last year, the Environment and Tourism Minister reported that the plastics industry had been given 12 months to phase out the production of thin plastic shopping bags handed out free in stores and replace them with thicker ones. However it appears that they may have relaxed this enforcement due to fierce opposition from industry. (Reuters May 9th 2002)

- The Supreme Court of **India** recently appointed a committee to look into the various issues surrounding plastic waste.

In **Mumbai** (formally Bombay) last year, the Council banned plastic bags as they were littering the streets and clogging up the drainage and sewerage systems. Market traders now hand out recycled paper bags. Factories and shops suspected of manufacturing and supplying plastic bags are raided by the police. This campaign has been a success and they have seized over 2000kg of plastic bags since it began.

The state of **Tamil Nadu**, under its Pollution Control Board, has taken a number of steps to mitigate environmental problems posed by plastics. It is also educating the public on the dangers of improper disposal and the advantages of alternatives, using bus advertisements, mobile exhibitions and a large media campaign.

The Tamil Nadu Plastics Bill to ban non-recyclable plastics from being sold, stored, transported and used was recently introduced by the State Government (for approval in the State Assembly).

For more information contact Rajesh Rangarajan from Toxics Link Chennai at tlchennai@vsnl.net

Panaji, Goa – Government laws to tackle the problem of plastic bags have not been effective so a community project is leading the campaign. Plastic is already being found to be the "most troublesome" of the solid wastes that find their way into the municipal waste disposal system, often choking drains which leads to overflowing sewerage (causing severe health problems and flooded streets during the monsoons). Part of their campaign, led by The Peoples Movement for Civic Action, involves donating old newspapers and magazines by individuals to local charitable organisations. These are cut into paper-bags of various sizes and sold to volunteering shops or pharmacies to reduce the use of plastic bags. Income generated from these bags is in turn helping the charity organisations to buy much needed provisions and medicines. Posters and leaflets highlighting the problems of plastic have been put up in some areas.

- In **Canada**, almost all of the big grocery chain stores accept bags for recycling. In Nelson for instance, supermarkets such as Safeway, Extra Foods, and Save-On Foods stores have containers just inside the entrance doors for the public to place used plastic bags in.

The Bluewater Recycling Association in Ontario has some interesting facts about plastic bag use in Canada: The average household produces 8.88 kilograms of plastic bags per year. 2.46% of the total waste stream consists of plastic bags and locally 44.93% of all plastic bags produced are recovered.

For more details go to http://www.bra.org/plastic_bags.htm

The publication Northumberland Today says 25 million plastic bags are produced every day in Canada.

For more details go to <http://www.northumberlandtoday.com/Fourm/May31/Cconsidering.html>

- **California** passed a law approximately a decade ago that required plastic trash bags (manufactured for waste disposal rather than shopping) to be made up of a minimum of 30% recycled content by 1/1/95 (for bags greater than or equal to 0.75 mil thick). On January 1, 1998, California's requirement changed requiring plastic trash bag manufacturers to comply with one of the following two options:

- (1) ensure that its plastic trash bags intended for sale in the state contain a quantity of recycled postconsumer plastic equal to at least 10% of the weight of the regulated bags; or
- (2) ensure that at least 30% of the weight of the material used in all of its plastic products intended for sale in the state is recycled postconsumer plastic.

For more information, check out the California Law Web site at

<http://leginfo.ca.gov/calaw.html>

Select the public resources code and type in: plastic+trash+bag.

- Here in **New Zealand** an estimated 90% of supermarket bags are imported into New Zealand (according to Plastics NZ) and we use around 800,000,000 per year. Few measures exist to recover them. The budget supermarket chain "Pak'n Save" charges 10c for each plastic bag at the checkout although this is a cost cutting exercise rather than a drive towards environmental responsibility. Some Foodtown and Countdown stores operate a take back scheme and have said they currently store the bags for recycling. However, schemes of this sort are not clearly advertised and recycling bins need to be more obviously placed in order to improve usage. Recyclers say the main problem with collecting post-consumer shopping bags

is the high amount of contamination (till receipts, food etc) and while the market for HDPE supermarket bags is not developed the industry hopes the markets will improve and develop.

For further information on plastic bag recyclers contact the Recycling Operators of New Zealand (RONZ) at info@ronz.org.nz or 09 488 9449

The objective of the draft New Zealand Packaged Goods Accord 2004 is to 'improve the sustainability of packaging used in New Zealand'. Proposals include:

- Brand owners and retailers accepting the primary responsibility for product stewardship over the full packaging life cycle
- Improved material and energy efficiency in the production, use and recovery of packaging materials
- Supply chain initiatives to foster markets for sustainably produced packaged goods, including greater utilisation of recovered packaging materials.

For more information go to <http://www.packaging.org.nz/>

Alternatives do exist!

A number of practical, reusable bags are now on the market in New Zealand. These include:

The Green Bag Foundation (a consortium of organisations) is distributing the 'Green Bag' in New Zealand to provide an alternative to plastic bags for consumers.

The Green Bag is washable and made from recyclable non-woven polypropylene.

It has been designed with input from checkout staff and customers - the handles fit neatly over the checkout-packing stand.

One bag holds the same volume of purchases as 3-4 plastic shopping bags

Ten cents from each bag sold will be channelled into a fund and distributed to community waste minimisation groups

Go to www.greenbag.co.nz for more details.

The Auckland Waste Managers Forum produced a design for cloth bags. Cloth bags have been supplied to many Pak'n'Save, Four Square and New World stores from Taupo up to the Northland and East Coast of the North Island. All Councils in the Auckland region have bought bags and are distributing them from libraries and Council offices.

The bags are made from unbleached cotton and the design uses vegetable based inks. The original order specified no child labour to be used in the production of the bag. Alternatives to cotton are now being investigated.

Go to www.arc.govt.nz for more details.

The bioplastic option

Biodegradable plastic bags and packaging are becoming an attractive option to those involved in the collection of putrescibles and to the food packaging industry.

They aren't an end solution to replacing non-degradable plastic bags in supermarkets and retail stores however, as they do not decompose in properly managed landfills. They also support the throwaway mindset and the use of landfills as an acceptable disposal method and do not discourage over-use in the first place.

In his book 'Green Plastics: An Introduction to the new science of Biodegradable Plastics, 'E.S. Stevens provides an excellent overview of the issues associated with plastic consumption and alternatives being made available.

This book illustrates some glaring facts about plastics production and consumption; for example, over \$300 million worth of plastic related products are produced annually by 1.5 million workers in the USA and more than 100 million tonnes of plastics are produced annually worldwide. The largest single use is in packaging (30%). Plastics account for about 18% of the total volume of municipal solid waste in the USA.

Biodegradable plastics may seem a radical alternative but are in fact not a new phenomenon – natural resins such as amber and shellac have been well known since Roman times. Henry Ford experimented with agri-plastics for car parts and in 1941 introduced a prototype car body made entirely from soymeal and cellulose.

With pressures including the threat to raw materials such as oil, due to over consumption, fast decreasing landfill space and dangers associated with incineration of oil-based plastics, bioplastics are the next most obvious choice for the food packaging industry. There are a large number of sources of natural polymers in abundance, such as starch, cellulose and calcium carbonate. Many of these alternatives are ready for commercial use.

The current situation could change if more restrictions were placed on the use of plastic, industry was required to use bioplastics and more funding was provided for research and development into this technology. This could be helped along by private industry as they come to realise that adopting sustainable practices can save them money. Cost savings include reduced energy consumption and chemical inputs. A paradigm shift is the last piece of the puzzle needed to solve this problem.

“We can take nature’s building materials and use them for our purposes, without taking them out of nature’s cycles. We can be borrowers, not consumers, so that the process can continue indefinitely”. (E.S. Stevens, Green Plastics)

(Review from Conscious Choice Magazine, May 2002, Dave Aftandilian)

DEFINITIONS OF BIOPLASTICS:

- **Compostable** plastic: A plastic that undergoes biological degradation during the composting process (up to 2-3 months in a windrow) to yield carbon dioxide, water, inorganic compounds and biomass at a rate consistent with other known compostable materials and leaves no visually distinguishable or toxic residues.

- **Biodegradable** plastic: A degradable plastic in which the degradation must result from the action of naturally occurring microorganisms over a period of time (up to 2-3 years in a landfill).

- **Degradable** plastic: An oil based plastic containing a chemical additive that undergoes significant change in its chemical structure causing it to break down into smaller particles. The degradation process is triggered only when material is exposed to specific environmental conditions (such as UV, heat and moisture). Residues are *not* food matter for microorganisms and are *not* biodegradable or compostable.

For a full article on degradable plastics for composting, refer to Biocycle, March 2002, P. 60. Copies of the article are available from the Zero Waste Office.

Some examples of bioplastics and other packaging include:

New Zealand Potato Plate Company, based in Blenheim, makes “100% biodegradable and compostable” disposable packaging, such as plates, from potato starch. Its products are sold through supermarket chains Progressive and Foodstuffs in the South Island. The company is promoting the products as being suitable for all fast food, microwave, and freezer use and says that they have excellent insulation qualities and fully degrade in days after use.

The company's next project is to produce the 'hot wet cup' which will be capable of storing liquid without the product dissolving and will hopefully lead to the production of trays for raw meats and all types of fruit and vegetables. (Currently some supermarkets are using the trays to display organic fruit and bakery items.)

All products are made from food-grade raw materials with no preservatives or toxins of any form. The used product is put straight on the compost heap and worm bin or fed to pigs.

The National Business Review rated them as the fifth most exciting company in New Zealand (March 2002).

For more information on biodegradable and compostable food packaging go to www.potatopak.com and www.earthshell.com

Novamont, Italy manufactures Mater-Bi. Their promotional material says that it is a new generation of bioplastics derived mainly from natural renewable resources, including starch. Minimizing environmental impact it maintains the same characteristics of plastics but is "completely biodegradable within a composting cycle". www.novamont.com

The BioBag, formerly made by Biocorp (which went into bankruptcy at the end of 2001) is made of Mater-Bi and can be used for organic waste collections. It has also been certified for use in the food production industry.

Bio Bag New Zealand Ltd is now marketing their version, 'Bio-Bag', in New Zealand (a completely different material than the BioBag mentioned above). These bags are produced from oil based plastic resins and incorporate Totally Degradable Plastic Additives (TDPA) developed by Environmental Products Inc (USA). The company says this causes the bags to completely degrade over time when subjected to the usual elements associated with biodegradation. For further information visit www.biobag.co.nz or email bradtaylor@biobag.co.nz.

For detailed information on TDPA visit www.degradableplastics.com

The Cooperative Research Centre for International Food Manufacture and Packaging Science (Melbourne) says it has developed "the most advanced biodegradable packaging in the world", made from cornstarch. It eventually disintegrates when exposed to water and in the long term disappears completely. This product would be suited to some aspects of putrescible collections, food packaging and farming. (Ref: www.theage.com.au)

Plantic Technologies, Australia, has developed Bioplastic packaging – "biodegradable" food packaging that it says is cheap enough to compete with conventional plastic. The cornstarch-based material has the look, feel and flexibility of conventional plastic and can be used for a range of items, from cellophane to plant pots and medical devices. It biodegrades at 33 degrees Fahrenheit, after exposure to both moisture and microorganisms in the soil. (Ref. Wired, 26/06/02)

Other contacts and resources

The Institute for Local Self Reliance created the 'Carbohydrate Economy Clearinghouse' to provide accessible, up-to-date information spanning all facets of the 'carbohydrate economy'. (Carbohydrates, the building blocks of plant matter, can be converted into chemicals, energy, textiles, building materials, paper, and many other industrial products. They call this new materials base a 'carbohydrate economy'.)

Go to www.carbohydrateeconomy.org for more details. Go to the search function and type in packaging and here you will find comprehensive information on plant matter-based products, cutting edge companies (and cooperatives) producing them and reports on developments in this rapidly expanding field.

The International Biodegradable Products Institute (BPI) is a multi-stakeholder association of key individuals and groups from government, industry and academia which

promotes the use and recovery of biodegradable polymeric materials. BPI aims to accomplish this goal through education, adoption of scientifically based standards and cooperative activities with other organizations in the USA, Canada, Europe and Japan. Ever since the introduction of 'biodegradable plastics' fifteen years ago, confusion and scepticism about claims and product performance has prevailed. This situation stems largely from plastic products that did not biodegrade as expected, yet were able to make claims because no scientifically based test methods and standards existed. However, along with the advancement of technology, standards have been developed.

The 'Compostable Logo' has been designed for consumers, composters, regulators and others to reduce confusion about bioplastics. It is a recognisable brand (that can be placed on the actual product, packaging materials and sales literature) and builds credibility and recognition for products that meet the American Society for Testing and Materials Standards

Go to www.bpiworld.org for more details.

Other useful websites include:

US Composting Council <http://www.compostingcouncil.org/index.cfm>

American Society for Testing and Materials
<http://www.astm.org/cgi-bin/SoftCart.exe/index.shtml?E+mystore>

Biocycle Magazine <http://www.biocycle.net/>

Biobased Information Services, a comprehensive source for biobased information, connecting biobased information to websites and consumers around the globe. www.biobased.org

Solutions for New Zealand

There are many possible solutions to the problem of New Zealand's plastic shopping bag consumption. Four examples are:

1. Raise a levy on all plastic shopping bags supplied by supermarkets and retail stores, following the Irish model
2. Require manufacturers/importers to meet minimum recycled content for plastic shopping bags
3. Promote long-life sustainable alternatives
4. Introduce legislation requiring the food packaging industry and organic recovery system operators to use bioplastic materials.

Another report from Zero Waste New Zealand Trust office:

Putrescibles report summary – a thorough overview of organic waste collection and processing operations in New Zealand and overseas. June 2002

“The most concise document on the role of composting in waste management and the difficulties in implementing organics diversion I’ve read in a while”, Fred Wendt, Waste Resource Analyst, Halifax Regional Municipality, Nova Scotia, Canada.

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