

# Sustainability Committee

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## Keep Wales Tidy Evidence on PET (3) - 03-07

### Paper 2 - Petition: Banning Plastic Bags

#### Executive Summary

Keep Wales Tidy supports efforts by the National Assembly and Welsh Assembly Government to tackle the problem of plastic bags in Wales. This paper considers:

the problems caused by plastic bags;

issues relating to introducing a ban on disposable plastic bags; and

suggests alternative ways of tackling the problem such a levy.

The paper argues that we need to look at reducing, re-using and recycling bags (in that order) and that introducing a levy would provide a more effective way of tackling the problem of disposable plastic bags than an outright ban.

#### Introduction

Keep Wales Tidy (KWT) is an independent National Voluntary organisation with Charity status working to achieve a Clean, Safe and Tidy Wales.

Key elements of our work include:

seeking to improve the quality of the local environment;

tackling anti-social behaviour such as litter, flytipping, dog fouling, vandalism, graffiti and flyposting;

developing innovative ways to reducing environmental problems;

supporting people to look after their own local environment; and

developing a sense of pride amongst people for their own area.

Central to our work is dealing with the quality of local environments and contributing to the schemes and strategies of the Welsh Assembly Government such as the environment strategy, social justice, sustainable development and environmental education.

Among the programmes run by Keep Wales Tidy are

Tidy Towns which supports volunteers across Wales to adopt areas of the local environment and keep them clear of litter;

the Eco-Schools programme which supports school pupils to undertake work on education for sustainable development and global citizenship;

Local Environmental Audit and Management System - which provides a validation survey for the Streetscene Performance indicator;

Tidy Wales Week - which supports volunteers to look after their environment;

Coastal Awards - such as the Blue Flag, Green Coast Award and Seaside Award, which recognizes good practice in terms of coastal management.

#### Keep Wales Tidy's view on plastic bags

According to our research:

490 million plastic bags are used in Wales every year(1);

This is the equivalent of 168 bags per person, per year or 9.5 million bags used per week(2);

According to research by B&Q, the majority of people receive between three and ten plastic bags every week(3);

It is estimated that a plastic bag will take up to 1000(4) years to decompose and they will continue to pollute the environment for centuries.

Plastic bags contribute 0.1- 1% of visible litter in the UK(5)

2% of total litter on UK beaches is made up of plastic bags(6).

In the summer of 2006 Keep Wales Tidy prepared two documents, which outline our view on plastic bags (both papers are included as an annex):

Plastic Bag Litter Position paper (Annex A); and

How to Become Plastic Bag Free - A Guide for Communities (Annex B)

The papers highlight the following problems caused by plastic bags:

they cause problems in the environment, particularly the marine environment, society's knowledge of which is rather poor; and they form a substantial component of litter in Wales.

The main arguments included in these documents were that:

the competent legislative authority should introduce legislation for Wales that mandates the application of a levy to plastic carrier bags in order to reduce the defacement caused by these items to the Welsh environment; and

communities should be encouraged to take steps to become plastic bag free.

Since the papers were published the following has changed:

the 2006 Government of Wales Act and the proposed Legislative Competence Order on Environmental Protection and Waste Management means that potentially the power to tackle the problem of plastic bags in Wales has moved from the UK Parliament to the National Assembly for Wales. This is significant as over the past 18 months Ministers of the Welsh Assembly Government have made positive statements about tackling the problem of plastic bags. However, they have not had the power to act. While the UK Government has had the power to act but until recently decided not to use this power;

over the past year public opinion towards the use of plastic bags has changed with the public being far more open towards action to reduce the use of plastic bags;

Campaigns against plastic bags have been run by newspapers such as the Daily Mail;

in February 2007 a Voluntary Code was agreed with the retail sector to reduce the use of plastic bags. This Voluntary Code has seen UK retailers agreeing to reduce the overall impact of their carrier bags by 25 per cent by the end of 2008(7). While this is being achieved in several ways, not all of the methods used lead to a reduction in plastic bag use, for example some retailers use less plastic in their bags, incorporate recycled content or provide more recycling facilities for carrier bags. With estimates of the number of plastic bags being used in the UK varying from 8 billion(8) to 17.5 billion(9) per year, even if the Voluntary Code is successful we will still have several billion plastic bags littering our environment;

companies such as Marks and Spencer have announced that they intend charging for plastic bags; and

in May 2007 Modbury in Devon announced that it was going to become a plastic bag free town, which provided an impetus for other communities across the UK to follow their lead. Amongst the towns that have announced that they intend working to become plastic bag free are Hay on Wye, Chepstow, Lampeter, Abergavenny, Llangollen, Porthcawl, Monmouth and Newcastle Emlyn.

As a result of this the Assembly has an opportunity to lead the way on tackling the problem of plastic bags.

Keep Wales Tidy considers that plastic bags:

have a negative impact on the Welsh environment;

make a significant contribution towards litter;

are a source of danger to wildlife.

It is also practical to significantly reduce the use of plastic bags. Annex C outlines how other countries have tackled the problem of plastic bags.

However, we consider that any action needs to emphasise the need to reduce and reuse bags and move away from the culture of single use bags.

We consider that Government needs to use its available powers to encourage this process.

### **Keep Wales Tidy response to the petition seeking to Ban Plastic bags**

Keep Wales Tidy welcomes the petition seeking to Ban Plastic Bags. We consider that this has provided a key impetus towards placing the issue high up on the agenda.

As far as we are aware, the National Assembly does not currently have the power to ban plastic bags or take any other action to reduce their use. However, we believe that if the Legislative Competence Order on Environmental Protection and Waste Management is passed then this will provide the opportunity for both the National Assembly and the Welsh Assembly Government to take action to reduce plastic bags.

Our evidence is based on the premise that the Legislative Competence Order on Environmental Protection and Waste Management is passed.

### **Key Issues**

Keep Wales Tidy considers that for legislation to be effective it is necessary to have a clear idea of what is being proposed. In this case we need to clearly define what we meant by "plastic, disposable carrier bags" and also to consider the practical implications of introducing a ban.

### **Definition**

The wording of the petition asks for the "banning of plastic, disposable carrier bags in Wales". When considering the merits of this petition we need to consider the potential implications of introducing a ban. Consideration should be given to the following:

### **Definition of carrier bags?**

Carrier bags come in a variety of molecular structures that may be composed from virgin materials, various percentages of recycled materials and different additives. Conventional virgin material plastic bags are composed of carbon and hydrogen atoms and these have been classified into seven types. Out of these types the two most commonly used for plastic carrier bags are High Density Polyethylene (HDPE) and Low Density Polyethylene (LDPE). They both have the same composition as oil ( $\text{CH}_2\text{CH}_2$ )<sub>n</sub>. (10)

High Density Polyethylene (HDPE) bags have a density of 0.94-0.96 grams per cubic centimetre (g/cc) and are commonly used as grocery and retail carrying bags. They can be recognised with the symbol "4". They have the same molecular formula as LDPE however as the molecules in the HDPE chain are long and continuous the strands are able to fold back on each other which results in a higher density(11).

The lighter-weight plastic bags made from Low Density Polyethylene (LDPE) are flexible with a density of 0.91-0.93g/cc and are designated with the symbol "2". They are termed low density as the molecular chains have multiple branches and therefore result in a less dense organisation of molecules. They are commonly used as dry cleaning bags and at takeaways(12).

Bags also have varying degrees of end life, with bags claiming to be degradable, photodegradable or biodegradable, and compostable over various time periods. These are described below in order of environmental impact.

### **Photo-degradable Plastic**

Plastic which will undergo a significant change in its chemical structure under specific environmental conditions resulting in a loss of some properties. Please note that there is no requirement that the plastic has to be degraded from the action of "naturally occurring microorganism" or any of the other criteria required for compostable plastics. This includes photo-degradable, which is when the degradation of the plastics is enhanced by UV light from the sun, however this can occur less in landfills.(13)

### **Biodegradable plastic**

Plastic which will degrade from the action of naturally occurring microorganism, such as bacteria, fungi etc. over a period of time. Note that there is no requirement for leaving "no toxic residue" as well as no requirement for the time it takes to biodegrade.

### **Compostable plastic**

Plastic which is capable of undergoing biological decomposition in an industrial size compost site as part of an available program, such that the plastic is not visually distinguishable and breaks down to carbon dioxide, water, inorganic compounds, and biomass at a rate consistent with known compostable materials (e.g. cellulose) and leaves no toxic residue. There are recognised standards for compostability, the most commonly used is the European Standard EN13432:2000 Packaging. Requirements for packaging recoverable through composting and biodegradation. Additionally bags can be OK Compost or OK Compost Home (break down can occur in a normal home compost bin) accredited. In many cases however no information is included.

A plastic therefore may be degradable but not biodegradable or it may be biodegradable but not compostable (that is, it breaks down too slowly to be called compostable or leaves toxic residue).(14)

To ease the process of recycling consideration should be given to make it mandatory for all bags to carry a symbol or number identifying their composition and possible way of disposing them.

All plastic bags, regardless of their plastic component or the source of this component can end up as litter. From a litter point of view a bag made from recycled plastic is just as bad as a bag made from plastic. Even more environmentally friendly options such as cornstarch bags can also end up as litter if they are not disposed of correctly. These will normally take around three months to compost completely(15), however, during this period they will be classed as litter.

There are also a variety of sizes of bags depending on their intended use. Some plastic carrier bags can carry one or two small items, while a much larger bag to carry clothes could also be described as a carrier bag.

If legislation was introduced to ban plastic carrier bags then there would be a need to provide a definition of what bags are banned. A broad definition would need to be used to prevent retailers merely changing to using plastic bags outside the scope of the legislation.

### **Definition of Disposable**

The legislation would need to define the word 'disposable'. The Carrier Bag Industry often argue that that plastic bags are re-used. A National Opinion Polls Survey, commissioned by DEFRA in 2000 suggests that 80% of people re-use their plastic bags.(16) However, this simply means that 80% of people re-use some of their plastic bags some of the time.(17) Furthermore, research undertaken by the Scottish Waste Awareness Group indicates that most of these are ultimately used as bin liners.(18) A study commissioned by WRAP in 2005 determined that the main reuse of plastic bags was as a bin liner or other waste receptacle.(19) 79% of respondents either used them once in this manner or simply discarded them.(20) When developing legislation there is a need to avoid creating any loop holes that could provide retailers with a way of ignoring the legislation. If a 'disposable plastic bag' was defined as one that is used just once, then all retailers could legitimately argue that their bags are used more than once and continue to use their current plastic bags. In addition, this could lead to an increased use of thicker plastic bags, which are more likely to be re-used a few times.

### **Practical implications of introducing a ban**

There is a need to ensure that the legislation is practical and enforceable. Issues to consider include:

### **Alternatives to plastic bags**

While legislation to ban plastic bags seeks to encourage behavioural change to reduce and re-use bags, we need to accept that people will still need some way of carrying goods. In view of this it is important to provide alternatives. There is a need to provide a range of alternatives to suit different needs, for example a bag that is used to carry groceries may not be suitable to carry a takeaway. Additionally, there is a need to ensure that there are suitable alternatives to pack and carry goods such as meat and fish, where cleanliness and health and safety considerations may influence the use of bags. The selection of an alternative must also take into consideration their overall impacts and specifically their disposal.

#### **Some alternatives to plastic bags are:**

##### **Cotton bags**

Material and Source - Manufactured from cotton fibres.

Cost - £5 per bag for cotton string bags(21) or approximately £1 per cotton shopper bag bought wholesale.(22)

Durability - Less durable than the other fibrous bags (Jute and Hemp).

Manufacturing Impacts - Growth can require fertilisers and insecticides.(23)

Disposal - Naturally biodegradable material.

##### **Hemp bags**

Material and Source - comprised of plant based fibres, that is, fibre collected from the bast or skin of the plant.

Cost - Around £13 per bag(24)

Durability - Outlasts cotton by up to 4 times and repels growth of bacteria, fungus, mold and mildew.

Manufacturing Impacts - Uses less pesticides than for cotton.

Disposal - Naturally biodegradable material. Less degradable than shorter term plastic and paper alternatives, however due to price and lifespan it is less likely to become litter and more likely to be re-used.

##### **Jute (also called Hessian)**

Material and Source - Vegetable fibre composed primary of the plant materials cellulose (major component of plant fibre) and lignin (major components of wood fibre). Therefore it is a lingo-cellulosic fibre that is partially a textile fibre and partially wood.

Cost - £3.50 per bag(25)

Durability - Outlasts cotton

Manufacturing Impacts - Long reed stalks are harvested and dried before being partially fermented and then fibres stripped(26)

Disposal - Naturally biodegradable and recyclable material. Lignin would increase the time required for degradation of this component.

##### **Starch based (corn/maize or potato)**

Material and Source - These bags are starch based which is a major component of corn. Starch ( $C_6H_{10}O_5$ )<sub>n</sub> consists of the 2 polymers (i.e. composed of repeating structural units) amylose and amylopectin.

Cost - Approximately 8 pence per corn starch bag(27).

Durability - Corn starch bags have a shelf life of over 18 months(28).

Manufacturing Impacts - They do not consume non-renewable fossil fuels(29).

Disposal - Cornstarch bags can break down in a composting environment into carbon, oxygen and hydrogen. 90 per cent of the product can compost down within a 12 week period.(30)

##### **Paper bags**

Material and Source - Amalgamation of fibres, typically vegetable fibres composed of cellulose which are subsequently held together by hydrogen bonding. Fibres are usually natural in origin however a wide variety of synthetic fibres such as polypropylene and polyethylene may be incorporated into paper as a way of imparting desirable physical properties. It takes more energy to produce than a traditional plastic bag. Paper bags may use virgin sources or recycled sources (including mill waste, preconsumer waste and postconsumer waste).

Cost - 25 bags for £3.50 (£0.14 each)(31) or 1000 bags for £50 (£0.05 each) for bulk(32)

Durability - shown to be less durable after three uses than plastic bags(33)

Manufacturing Impacts - generate 60% more green house gas emissions than plastic bags (7,621t per 100 million bags compared with 3,097 for plastic). Consume 4% more water than needed to produce plastic bags. Consume 40% more energy and generate 80% more solid waste in manufacture, therefore they have a greater total non-renewable energy consumption than plastic bags.(34)

Disposal - Produce twice the CO2 emissions if composted compared to landfilled paper.(35)

## **Boxes**

Material and Source - Can be either cardboard (basically heavy paper) which is sourced from primary materials or re-used boxes that have previously packaged products. They can also be plastic.

Unit Cost - Usually re-used primary packaging in-store freely rather than having a unit cost for a virgin product. If new cardboard boxes were provided for multiple use then the cost would be £11.50 for 20 boxes of size 215mm square.(36) An example of a plastic box shopping version is 32 litre Folding Crate and Cool Bag with handles for £16 or a Folding Crate for £8.(37)

Durability - Can be used multiple times depending on content type and wear.

Manufacturing Impacts - Depends on content of virgin fibre versus recycled fibres. If it is a re-use option and not a directly manufactured product for shopping, the manufacturing impacts are less applicable to this option.

Disposal - Cardboard boxes are an excellent source of fibre for recycling, re-use by consumers rather than direct recycling fulfils the requirements of the waste hierarchy. Potentially take up greater volume if sent to landfill rather than recycled at the stores or if not recycled at home. Would biodegrade faster than the degradation of standard bags. Plastic boxes are likely to be more expensive and thus less likely to be littered, however they would take longer to degrade and occupy a greater landfill space than the cardboard alternative or other carrier options.

There are a number of options that can be introduced to replace the plastic bag. This provides significant scope for reducing the number of bags produced and used. However, some alternatives, while having a reduced impact in terms of litter may be equally as bad or even worse than plastic bags in terms of waste or carbon reduction. When introducing legislation there is a need to ensure that there are no unintended consequences to the legislation. This emphasises the need for action to be taken to reduce and re-use bags.

## **Enforcing the legislation**

If legislation is introduced to ban disposable plastic carrier bags then it is likely to be an offence to be in possession of a plastic carrier bag or to give one away. The effectiveness of any legislation is dependent on its implementation and enforcement. There are many examples of environment legislation on the statute book that are rarely used, or in some cases such as legislation relating to littering or dog fouling it is difficult to catch perpetrators. It is unlikely that the enforcement of legislation relating to use possession of plastic carrier bags would be a priority for any enforcement authority. Without this commitment the legislation would be meaningless. In view of this it is essential that any legislation is written in a way that can be easily enforced.

## **Changing customer behaviour**

Since most plastic bags are given away for nothing then they have no value for the customer. People will use as many as they want and they will discard them when it becomes inconvenient to carry them, in the knowledge that they can get other free bags in almost any shop. The banning of plastic carrier bags will not change the behaviour of customers. Most retailers will change to using alternatives, which will probably be given away for nothing. Under such circumstances they will continue to have no value and will continue to be discarded as litter. There is a need to ensure that the legislation changes people behaviour and leads to a reduction in single use bags of all materials.

## **Conclusion**

Despite the issues mentioned above Keep Wales Tidy considers that the proposal to ban plastic bags is practical. Annex C shows that action has been taken in a number of countries to reduce or remove the impact of plastic bags. In addition, in May 2007, the town of Modbury in Devon, became the first town in the UK to become plastic bag free. Traders in that town have agreed a voluntary code to stop using plastic bags and reports indicate that trade has continued as normal.

However, if a ban is introduced there is a need to ensure that it:

clearly defines what type of bag is banned;

introduces powers that are possible to enforce; and

does not lead to an increase in other forms of carrier bags that may be equally or more polluting to the environment; and

contributes towards reducing the number of bags produced and used by embedding a culture of re-use.

## **Other options to reduce or remove the use of Plastic Carrier Bags**

In addition to banning plastic bags the National Assembly and Welsh Assembly Government could consider the following to reduce or remove the use of plastic carrier bags.

Introducing a levy on plastic carrier bags

Keep Wales Tidy supports the introduction of a levy on plastic bags to be paid by the consumer at point of sale i.e. a charge paid by a customer in return for a bag. A levy would embed the principle of "reduction" with a clear signal that the more bags people use, the more it will cost them.

If this option is within the powers available to the National Assembly we would also like it extended to other bags in order to try and encourage customers to re-use their bags as often as possible. A 10p levy on a long life bag that could be used 200 times would be a negligible cost, while a 10p levy on a thin plastic carrier bag likely to be used just once would be more significant and would hopefully encourage people to use the first option. A levy option would not restrict customer choice but would clearly benefit individuals that re-use their bags.

The introduction of a levy on plastic bags in the Republic of Ireland has led to a reduction of over 90% in the use of plastic carrier bags.(38) This shows that introducing a levy is a practical option that can significantly reduce the use of plastic bags. The evidence from Ireland shows that most people will turn to reusable bags, instead of single use bags such as paper bags, under a levy scenario. Some groups have claimed that sales of refuse sacks in the Republic of Ireland increased by as much as 300% following the plastic bag tax.(39) Evidence provided to the Scottish Executive agreed that there was a 77% increase in sale of plastic kitchen bags, which equates to 70 million bags.(40) The 90% reduction in carrier bags equated to a reduction of 1 billion bags, leaving a net reduction of 930 million bags.(41)

From the example of the Republic of Ireland the introduction of a levy option leads to a change in behaviour which reduces the use of plastic bags. A levy would also initially create a fund of money that could be used to promote positive environmental behavior, although the hope is that the levy influences the behavior of customers leading to less use of single use bags and therefore less money would be collected from the levy.

In the Republic of Ireland the levy is collected from retailers through the VAT system with the cost administering the levy at around 4% of the income raised.

While this approach has many positive features we are unsure if the National Assembly has the power to introduce a levy. If the Assembly doesn't have the power to introduce a levy then it should consider lobbying the UK Government to introduce legislation to enable it to introduce a levy.

#### Banning giving plastic bags away for nothing

Under this scenario the Assembly or Assembly Government would bring forward legislation to ban retailers from giving away plastic carrier bags, or possibly all carriers bags, for nothing. This could lead to a mandatory charge of, for example 10p on all bags. This proposal would have all the positive impact of a levy with the only difference to the levy option being that the money would be kept by the retailer and not passed onto Government. This approach mirrors the approach taken by the London Councils.

We are not sure if the Assembly will have the power to implement the proposal, however, we assume that if the Assembly has the power to ban the use of plastic carrier bags it would also have the power to ban the giving away of bags for nothing.

#### Banning advertising on plastic bags

Many retailers use their carrier bags as a method of advertising. A ban on advertising on plastic bags would encourage retailers to use other forms of bags that would be exempt for a ban.

#### Strengthen the Voluntary Code on plastic bags

If the National Assembly or Assembly Government does not have the power to legislate then it needs to consider how it can strengthen the Voluntary Code on plastic bags to make it far more ambitious. Evidence provided to the London Assembly Environmental Committee suggests that some companies have achieved their 25% cut a year ahead of schedule.(42) This suggests that there is scope for a much more ambitious code. As part of a new Voluntary Code there should be targets to reduce the number of bags used, not just their impact, and also a need to ensure that good work by some sectors does not mask less effort by other sectors.

The Welsh Assembly Government should either seek to negotiate a Voluntary Code for Wales or if this is not practical due to the UK wide operation of many retailers they need to lobby DEFRA and WRAP for a far more ambitious code.

#### Supporting communities to become plastic bag free

The movement started by Modbury has led to a number of towns within Wales working towards being plastic bag free. While there is no standard definition of what is meant by being plastic bag free these initiatives lead to a reduction in plastic bags in their communities. The Assembly Government could provide support to enable more towns to become plastic bag free.

### **Recommendation from Keep Wales Tidy**

Keep Wales Tidy considers that the National Assembly and Welsh Assembly Government need to take action to reduce or remove the impact of plastic bags on the Welsh landscape. We consider that any action needs to meet the following criteria:

lead to a significant reduction or removal of plastic, carrier bags from Wales;

be practical to implement;

facilitate behavioural change amongst the people of Wales away from using disposable bags towards bags that are re-used over the long term;

ensure that the action does not lead to a change from disposable bags made from plastic to disposable bags made from other materials. This would be achieved by applying any measure to carrier bags of all materials.

**In view of this we would argue the following order of preference. Starting with the most effective:**

#### **1. Introducing a levy on all carrier bags**

If the National Assembly has the power to introduce a levy then this would be the most effective way of tackling the problem of disposable carrier bags. There is a tried and tested method in the Republic of Ireland, which led to a 90% reduction in the use of plastic carrier bags. The levy would provide an effective way of facilitating a change in behaviour and we would like the levy extended to all types of carrier bags. We would also like to see any income generated from a levy being used to promote positive environmental behaviour. If the National Assembly does not have the powers to introduce a levy we would suggest that members of the Assembly lobby the UK Government to legislate make this possible.

## **2. Banning giving carrier bags away for nothing**

If the option of introducing a levy is not within the powers of the National Assembly then the same impact can be achieved banning giving carrier bags away for nothing. From an administration and enforcement point of view this method would be easier to implement than the levy option. However, this method would not create a fund to promote positive environmental behaviour.

## **3. Banning plastic bags**

This option would remove all plastic bags from Wales. However, for the option to be effective careful consideration would need to be given to the scope of the legislation and its enforcement. We do not believe that a ban would be as positive a vehicle for changing people's behavior as the previous two options and we are concerned that without this behavioural change element plastic bags littering the environment would be replaced by cornstarch bags littering the environment.

## **4. Strengthen the Voluntary Code on plastic bags**

If it isn't possible for the Assembly Government to legislate then efforts need to be made strengthen and expand the scope of the Voluntary Code on plastic bags.

## **5. Supporting communities to become plastic bag free**

Support should be given to communities to become plastic bag free communities. This could either be financial support to facilitate and promote initiatives or by providing advice.

## **6. Banning advertising on plastic bags**

Many retailers would not wish to lose the free advertising provided by carrier bags, therefore a ban on advertising on plastic bags may encourage retailers to use more environmentally friendly bags which would allow advertising.

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