Bags: Summary Information from various sources

In 2010 the number of thin plastic bags given out by supermarkets in England was 6.3 billion. By 2014 this number had risen to more than 7.6 billion before the national introduction of a 5p charge for each of these bags.
Concerns are frequently expressed in many countries about plastic bags causing litter in towns and countryside as well as damaging coastlines, seas and wildlife.

Comparison of bags made of different materials can be complex.

For instance an apparently simple question about whether paper, plastic or cotton bags are better may be difficult to answer.

A simple response might be that paper and cotton bags will be better because paper comes from trees and cotton from cotton plants which are natural and renewable sources and that used paper bags or cotton bags will do no harm to the environment. Whereas plastic bags are made from oil which is a non- renewable source and used plastic bags do cause environmental damage as indicated above.

However **the production of paper** is a complex process involving a number of stages, which may happen at different sites involving the need for transport between sites. Additionally huge quantities of water and energy are used with possible damage to the environment.

When paper bags have been used they may be thrown away after a single use and may be composted or included in paper recycling schemes.

The recycling involves washing, bleaching and chemical treatments to ensure the fibres are clean before being made into paper. The quality of the paper produced from recycled pulp may be lower than from new pulp. Again transport and energy costs and effects have to be considered.

Pesticides, insecticides and large quantities of water are used when cotton is grown.

Plastic bags are generally made from oil which is a non-renewable source. The production and manufacture process involves a number of stages which may happen at a number of sites. Each stage involves large amounts of energy much of which is provided by burning fossil fuels.

Single use plastic bags may be recycled in a process which can be described simply as involving re-melting the bags and re-shaping the plastic to form new bags. This involves bags being collected at collection points or by extraction from general refuse and then being transported to a processing plant. Transportation and processing involve large amounts of energy (possibly as much as two-thirds as that required to make new plastic).

The plastic produced by recycling is of a lower quality than new plastic.

Note
Some thin plastic bags are made from plastics described as 'biodegradable plastics'. These bags are made from plastics made from oil but contain particular additives that cause them to decay more rapidly in the presence of light and oxygen. These plastics sometimes break into small pieces and leave behind a toxic residue and are generally unsuitable for composting.
'Bioplastic' bags may be made from natural materials such as corn starch. Although they look very similar to other plastic bags they are compostable. They contain slowly absorb water and break apart into small fragments that bacteria can digest more readily. These bags decay fairly quickly into natural materials that blend harmlessly with soil.

Comparison of bags made of different materials are further complicated by:

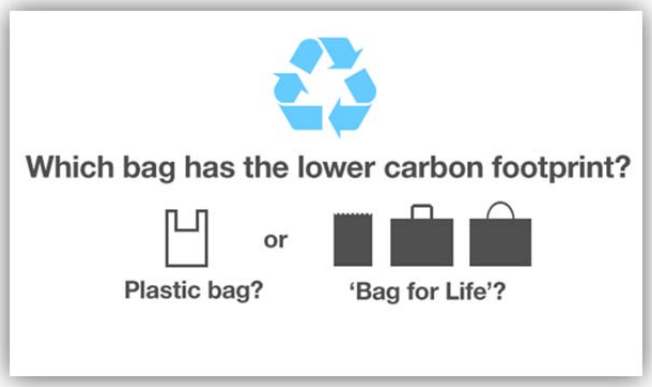
- variations in the amount of material used to make each bag
- use of pesticides and quantities of water in cultivation and production of natural materials
- processes and resources used in production of the material
- air and water pollution from production of the material
- the number of times the bags are used
- varied local and national systems available for recycling
- processes and resources needed for recycling of materials
- air and water pollution from recycling of materials
- the quality of the recycled materials

Another complicated question relates to whether multi-use or re-usable bags are better than single- use bags.

In reality, unless damaged, all bags are re-usable and decisions about environmental effects of different bags will depend on how often they are used.

Stronger, heavier, re-usable bags of bags of any material will have a greater environmental impact as more resources are used in their production. Many of these bags are made of more than one material which can make recycling of the materials more difficult.

Light plastic bags may be the most environmental choice if a bag is only used one. Reusable cotton bags may have to be used 131 times to match the environmental performance of light plastic bags. Heavier plastic bags might need to be used 4 or more times.



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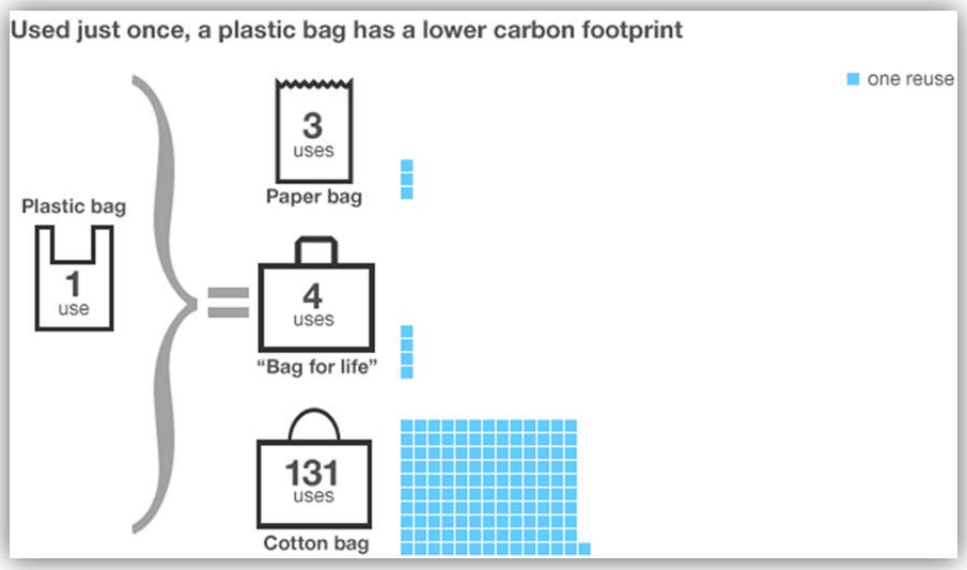

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So if a plastic bag is used just once, then a paper bag must be used three times to compensate for the larger amount of carbon used in manufacturing and transporting it, a plastic "bag for life" must be used four times, and a cotton bag must be used 131 times.

The balance of the diagram would change if a plastic bag is reused, when of course, its carbon footprint, per use, decreases further - and the number of times the alternatives have to be used to match this low footprint would have to be multiplied.