

'PlasTax' could cut UK CO₂ emissions by 240,000 tonnes

Sustainability experts Best Foot Forward have calculated that a well thought-out 'PlasTax' could reduce UK carbon emissions by 240,000 tonnes per year.

Their analysis approaches the plastic bags issue by examining a post and pre 'PlasTax' United Kingdom. In the pre-tax UK, 13 billion plastic bags are purchased each year by about 40 million shoppers. In their post-tax UK, the punitive charge results in a 95% reduction in plastic bag usage (as was seen in the Republic of Ireland).

Using their Footprinter™ tool, Best Foot Forward analysts have calculated the production of a lightweight plastic bag results in emissions of 24g of carbon dioxide. So on the face of it, a reduction of at least 290,000 tonnes of CO₂ could be achieved. This is the equivalent of removing 100,000 cars from the road every year.

However the story does not end there ... these plastic bags need to be replaced by another form of grocery bag which create their own greenhouse gas emissions. And to confuse matters even further, consumer studies have shown that a significant proportion of shoppers re-use some of their plastic carrier bags as bin liners. As a result, a bag tax would undoubtedly result in an increase in bin liner sales, and the emissions which are associated with that manufacturing sector. Data on these changes is not so easy to come by – and hotly contested by the plastic bag industry.

Their analysis suggests that if UK shoppers were to replace plastic bags with organic cotton ones that lasted for at least 10 years, emissions from bag production could fall by as much as 98%. However, if this resulted in an additional 1.2bn bin liner sales (based on figures from a study for the Scottish government) then the cuts would be slightly less impressive but still very worthwhile – in the region of 80% (a saving of 240,000 tonnes CO₂ per year). And as we move towards more waste recycling – which doesn't need bin liners – these savings would improve over time.

Looking at the bigger picture however these carbon savings are more modest – it equates to a reduction of about 4kg of CO₂ per person per year – a very small percentage of a UK person's annual emissions (thought to be in the order of 11 -18 tonnes of CO₂ depending on what boundaries your draw).

Best Foot Forward Director Craig Simmons said: "This relatively small carbon reduction is no reason to forget a UK 'PlasTax'. Disposable shopping bags create other well documented environmental impacts and have become symbolic of our throw-away society. As such, introducing a tax on their use would be one more way of encouraging changes in behaviour essential for avoiding catastrophic climate change."

Notes to the editor:

- Founded in 1997, Best Foot Forward has worked with over three hundred organisations and has carried out projects ranging from measuring the ecological footprint of a single apple to the entire city of London.
- It has worked with businesses in many different sectors including manufacturing, construction, transportation and commerce.
- In 2005 Best Foot Forward was awarded the Queen's Award for Enterprise in Sustainable Development for its work in this area.
- For more information visit www.bestfootforward.com or www.footprinter.com

Analysis assumptions and data sources for calculations

- UK population: 60,776,238 (Office of National Statistics)
- Plastic bags consumed per annum in UK: 13,000,000,000 (Defra website)
- Plastic bag use per shopper (using official pre PlasTax Ireland data as proxy for UK shopper): 328
- Plastic bag use per shopper (using official post PlasTax Ireland data as proxy for UK shopper): 16
- Plastic bag (LDPE) weight: 10g (from Proposed Plastic Bag Levy Report for Scottish Government, 2005)
- Pedal bin liner (LDPE) weight: 15g (from Proposed Plastic Bag Levy Report for Scottish Government, 2005)
- Average LDPE (plastic film) has embodied CO₂ equivalents/kg material: 2.35583 (Boustead database). Does not include final processing and transport of bag to shops.
- Cotton 'Bag for Life' weight: 125g (Department of Environment and Heritage & Environment Australia study)
- Cotton embodied CO₂ equivalents/kg material: 8.0511 (Bath ICE database). Does not include final processing and transport of bags to shops.
- Number of cotton 'Bags-for-Life' per shopper: 9.1 (Department of Environment and Heritage & Environment Australia study)
- Increase in bin liner purchasing: 77% (Department of Environment and Heritage & Environment Australia study)
- Existing bin liner purchasing in UK: Scotland figures (from Proposed Plastic Bag Levy Report for Scottish Government) were increased pro rata to UK level by number of households:
 - UK households (2005): 25,771,000 (Office of National Statistics)
 - Scotland households (2005): 2,270,000 (Office of National Statistics)
 - Scotland bin liner purchasing (2005): 118 million/year (from Proposed Plastic Bag Levy Report for Scottish Government)
- Replacement rate of 'Bags-for-life': 1 every ten years (Best Foot Forward estimate)

- The rate of cotton bag purchasing in pre-tax UK was ignored due to lack of data.
- No other alternative bag types exist in this analysis e.g. recycled plastic, hemp, paper. Although clearly in real world there would be other alternatives that would need to be modelled.
- For comparison with cars, calculation assumes average emissions per car km of 0.216809 kgCO₂e and average non-business driving of 13,222km per annum.