

## = Food waste in the United Kingdom =

Food waste in the United Kingdom is a subject of environmental , economic and social concern that has received widespread media coverage and been met with varying responses from government . Since 1915 , food waste has been identified as a considerable problem and has been the subject of ongoing media attention , intensifying with the launch of the " Love Food , Hate Waste " campaign in 2007 . Food waste has been discussed in newspaper articles , news reports and television programmes , which have increased awareness of it as a public issue . To tackle waste issues , encompassing food waste , the government @-@ funded " Waste & Resources Action Programme " ( WRAP ) was created in 2000 .

A significant proportion of food waste is produced by the domestic household , which , in 2007 , created 6 @,@ 700 @,@ 000 tonnes of food waste . Potatoes , bread slices and apples are respectively the most wasted foods by quantity , while salads are thrown away in the greatest proportion . A majority of wasted food is avoidable , with the rest being divided almost equally by foods which are unavoidable ( e.g. tea bags ) and unavoidable due to preference ( e.g. bread crusts ) or cooking type ( e.g. potato skins ) .

Reducing the amount of food waste has been deemed critical if the UK is to meet international targets on climate change , limiting greenhouse gas emissions , and meet obligations under the European Landfill Directive to reduce biodegradable waste going to landfill . Equally great emphasis has been placed on the reduction of food waste , across all developed countries , as a means of ending the global food crisis that leaves millions worldwide starving and impoverished . In the context of the 2007 ? 2008 world food price crisis , food waste was discussed at the 34th G8 summit in Hokkaido , Japan . UK prime minister Gordon Brown said of the issue " We must do more to deal with unnecessary demand , such as by all of us doing more to cut our food waste " .

In June 2009 , then Environment Secretary Hilary Benn announced the government 's " War on waste " , a programme aimed at reducing Britain 's food waste . The proposed plans under the scheme included : scrapping best before and limiting sell by labels on food , creating new food packaging sizes , constructing more " on @-@ the @-@ go " recycling points and unveiling five flagship anaerobic digestion plants . Two years after its launch , the " Love Food , Hate Waste " campaign was claiming it had already prevented 137 @,@ 000 tonnes of waste and , through the help it had given to over two million households , had made savings of £ 300 million .

## = = History = =

Food waste was identified as a problem in the UK as early as World War I. Combating food waste was one of the initial goals of the Women 's Institutes ( WI ) , set up in 1915 , and remains a subject of their campaigns . Rationing was adopted during World War I , although it was voluntary , from February 1917 ; it was only between December 1917 and February 1918 that rationing began , in stages , to be made compulsory . As well , there is no evidence to suggest that by 1918 fines were imposed on either individuals or businesses for wasting food . Meanwhile , in the USA ( where shortages were hardly comparable ) , legislators considered laws restricting the distribution of food in order to cut waste , breaches of which might be punishable by fines or imprisonment .

During World War II , rationing was imposed almost immediately . Restrictions were immediately more stringent than in the Great War as with effect from 8 January 1940 ration books were issued and most foods were subject to ration . By August 1940 , legislation was passed that made the wasting of food a prisonable offence . Posters encouraged kitchen waste to be used for feeding animals , primarily swine but also poultry .

Many of the methods suggested by current campaigns to prevent food waste have taken inspiration from those of World War II . Despite this , it remains debatable whether the waste campaigns and rationing , during and post WWII , achieved any long @-@ term change in people 's attitudes towards waste ; WRAP 's report on domestic household waste found older people to waste as much avoidable waste as younger people . Further , as early as 1980 , only twenty five years after all foods were " de @-@ rationed " , a journal article published that year found significant levels of

waste at home , in restaurants and in sectors of the food industry . However , the rising amount of food waste could also be attributed to a change of lifestyle , for instance the buying of produce which has a shorter shelf life , which would involuntarily lead to more food being thrown away .

By the late 1990s , things had worsened , and the food manufacturing sector was estimated to be generating over 8 million tonnes of food waste annually . A documentary in 1998 revealed tonnes of edible food being discarded at a Tesco store , provoking a renewed response on the issue of food waste . In 2000 , the government created the Waste & Resources Action Programme ( WRAP ) , a government @-@ funded , not @-@ for @-@ profit company that advises on how to reduce waste and use resources efficiently . In 2007 , WRAP launched the " Love Food , Hate Waste " campaign and returned food waste to the forefront of the news and public agenda . Two years later , the " Love Food , Hate Waste " campaign claimed to have prevented 137 @,@ 000 tonnes of waste being sent to landfill and saved £ 300 million .

In 2005 , facing " limited information about the amounts and types of food waste produced " , WRAP launched a " major research programme " which would lead to the publishing of " The food we waste report " on 8 May 2008 . Believed at the time to be " the first of its kind in the world " , the report interviewed 2175 householders and collected waste from 2138 of them .

Since the developments of 2007 @-@ 8 , food waste has continued to be a subject of attention , discussed in almost every major UK newspaper , often with issues such as climate change and famine in African nations . To reduce the impact of the aforementioned , food waste has been among the topics of discussion at recent International Summits ; food waste was debated during the 34th G8 summit in Hokkaido , Japan , as part of the discussion on the 2007 ? 2008 world food price crisis .

In June 2009 , Environment Secretary Hilary Benn announced the " War on waste " , new government plans aimed at reducing Britain 's food waste . Planned is the removal of " best before " labels and the limiting of " sell by " labels on foods . New food packaging sizes are planned to be introduced , coming as EU rules on packaging sizes are lifted and people are increasingly living alone . Five flagship anaerobic digestion plants that will demonstrate " cutting @-@ edge technology " are to be built before the end of March 2011 ; they will together receive a grant of £ 10 million from WRAP 's " Anaerobic Digestion Demonstration Programme " . Liz Goodwin , WRAP Chief Executive Officer , said of the five projects : " These projects are truly ground @-@ breaking . Between them , they demonstrate how anaerobic digestion can help the UK efficiently meet the challenges of reducing carbon emissions and improving sustainable food production . "

= = Impact = =

Food waste puts a large burden on the finances of each household and local councils in the UK ; wasted food is estimated to cost each British household £ 250 ? £ 400 per year , accumulating to £ 15 @,@ 000 ? £ 24 @,@ 000 over a lifetime . This comes from the total purchasing cost of the food against what is thrown away uneaten . Additionally , households pay for the collection and disposal of food waste by their local council in the form of council tax . For councils , the cost of food waste comes from its collection and disposal as a part of the waste stream ; this is especially an issue for councils that run separate food waste collections .

Food waste is generally considered to have a damaging effect on the environment ; a reduction in food waste is considered critical if the UK is to meet obligations under the European Landfill Directive to reduce biodegradable waste going to landfill and favourable considering international targets on climate change , limiting greenhouse gas emissions . When disposed of in landfill , food waste releases methane , a relatively damaging greenhouse gas , and leachate , a toxin capable of considerable groundwater pollution . The food supply chain accounts for a fifth of UK carbon emissions ; the production , storage and transportation of food to homes requires large amounts of energy . The effects of stopping food waste that can potentially be prevented has been likened to removing one in five cars from UK roads .

Internationally , food waste 's effect on the environment has been an issue . Ireland is facing fines of millions of euros if the amount of biodegradable waste it sends to landfill does not fall below the

maximum quantity set by the European Union 's Landfill Directive . By 2010 , the same directive will impose fines of £ 40m a year across England , rising to £ 205m by 2013 , if its own targets on biodegradable municipal waste are not met ; the amount of biodegradable municipal waste being sent to landfill in 2010 must be 75 % of that sent in 1995 , by 2013 it must be 50 % and by 2020 it must be 35 % .

In the context of the 2007 ? 2008 world food price crisis and potential food shortages , food waste is an important and impacting issue . The United Nations Environment Programme ( UNEP ) identified food waste as being a critical problem , a view shared by a Cabinet Office report on food ; it said that doing nothing to solve it would lead to severe food shortages , which may trigger food price climbs of up to 50 % . With a third of food purchased in the UK never eaten , the country was singled out in the report . UNEP Executive Director Achim Steiner said that : " Over half of the food produced today is either lost , wasted or discarded as a result of inefficiency in the human @-@ managed food chain . There is evidence within the report [ The Environmental Food crises : Environment 's role in averting future food crises ] that the world could feed the entire projected population growth alone by becoming more efficient while also ensuring the survival of wild animals , birds and fish on this planet . "

= = Response = =

= = = Prevention = = =

To reduce the food waste produced ( often unintentionally or unavoidably , due to lifestyle ) by consumers , advisory campaigns and articles have put forward varying advice and suggestions . The following strategies : planning before food shopping , understanding food date labels and using leftovers in other meals , are universally agreed to be effective in preventing food waste .

Planning , before food shopping , and knowing what purchases are necessary is among ways of reducing food waste ; buy one , get one free ( BOGOF ) offers have been criticised for encouraging customers to purchase food items that are eventually thrown away ; as part of its own campaign on food waste , supermarket retailer Morrisons is to offer ? One Free to Freeze ? as a replacement for BOGOFs , with hopes that these promotions will encourage customers to plan ahead .

Understanding food storage and food date labels is an important , but currently problematic , measure ; in 2008 , research by the Food Standards Agency ( FSA ) showed that food dates were poorly understood by consumers ; only 36 per cent of people interpreted a best before date as a use by date and only 55 per cent correctly interpreted use by dates . Food date labels are planned to undergo radical changes as part of the " War on waste " .

Leftover foods can and are encouraged to be used in other meals ; currently this is not widely undertaken due to a " lack of confidence " . Specialist cookbooks and waste campaigns include recipes which are designed to incorporate typical leftovers and require minimal cooking skill .

Sectors of the food industry ( manufacturing and retail ) have pledged to reduce the amount of food they directly waste , and additionally what they cause households to waste indirectly . This is planned to happen through a combination of : effective labeling , pack size range , storage advice and packaging that extends the duration of food freshness . The latest initiative in May 2009 , rather than a new policy , is seen as an expansion to ongoing attempts to reduce the wider food packaging . The aim is to cut UK household food waste by 155 @,@ 000 tonnes ( 2 @.@ 5 % of total waste ) before the end of 2010 by helping UK households prevent food going to waste .

" Food charities " , the most widely known being " FareShare " , distribute surplus food from the food industry among disadvantaged people in the communities . As of 2006 , three of the ' Big Five ' supermarkets ? Marks & Spencer , Sainsbury 's and Tesco ? are working with FareShare and similar charities to reduce the amount of waste they produce going to landfill .

= = = Collection = = =

The majority of UK authorities ( some have varying or specific policy ) collect food waste together with municipal waste ; estimates made in 2007 put the amount of food waste collected separately , for either composting or anaerobic digestion , at only 2 % of what is available . Where food waste is collected separately , it is usually incorporated into an existing garden waste collection . If applicable , separate collections for garden and food waste typically run on intervening fortnightly weeks to those of municipal waste and share infrastructure and transport .

It has been suggested that given its proportion of the waste stream and the lack of distinct collections , food waste is not currently being targeted appropriately . However proposals by the European Union , which would require local authorities to provide separate collection of food and garden waste , have been met with opposition ; critics of the proposals argue that local authorities understand the specific needs of the areas they serve , and that they should decide waste policy . Advocates of the proposals say that it will ensure energy is not wasted in sorting biodegradable waste from other materials .

Figures from WRAP revealed the most efficient method of collecting food waste to be separate collections , followed by mixed green and food waste on a weekly basis . A mixed fortnightly collection was shown to be the worst performing . This was considered confirmation of earlier suspicions that , if carried out correctly , separate collections can result in less wastage of biodegradable waste . A widespread pilot scheme for separate food waste collection , involving nineteen English local authorities , achieved success and ' high levels of satisfaction ' from households .

One option for separating food waste at source is the in @-@ sink food @-@ waste disposer ( FWD ) . It was invented in 1928 and is used in 50 % of households in the USA , 34 % in New Zealand , 20 % in Australia and increasingly in some European countries , notably Sweden . A FWD has no blades or knives , it has a grind chamber , the floor of which is a spinning disc with lugs spin the waste against the perforated wall of the chamber , particles exit when they are small enough. measured particle size distribution and found 98 % < 2mm . They also measured settleability and found the ground waste would be carried / resuspended easily in conventionally designed sewers. estimated the Global Warming Potentials ( 100 year ) of options for food waste management were landfill + 740 kgCO<sub>2</sub>e / t food waste , incineration + 13 , centralised composting -14 and that anaerobic digestion was about -170 kgCO<sub>2</sub>e / t food waste whether it was kerbside collected and transported by truck or FWD to sewer to AD at a wastewater treatment works . In a follow @-@ up paper , analysed data from Surahammar , Sweden comparing the time when there were no FWD with the present when 50 % of households have FWD . This study verified laboratory etc. work published earlier by other workers . They found there was no increase in wastewater treatment works ' cost , nor the volume of wastewater but that there was a 46 % increase in biogas .

= = = Disposal = = =

Food waste remains primarily disposed to landfill ( 54 per cent of total municipal waste was disposed of in this way in 2007 / 8 ) , although year @-@ on @-@ year the amount being sent to landfill is decreasing .

Composting , the purposeful biodegradation of organic matter by microorganisms , is among the most simple ways of treating food waste and thereby preventing it being sent to landfill . Since all biodegradable materials will eventually oxidise to become compost , the process can be undertaken at home with no running costs , although equipment can accelerate the process . Most components of food waste are putrescibles and will be broken down in a compost , however some exceptions will not ( e.g. cooked foods and feces ) and can attract vermin . The effectiveness of composting food waste depends on the available space ( or storage capacity in the case of a compost bin ) and the method of composting . Unlike in landfill , where it is mixed with other ( non @-@ biodegradable ) materials , food waste decomposing in a compost does not release harmful gases . Similarly to compost created from other waste sources , composted food waste can be used to return nutrients to the soil if spread on the garden ( see uses of compost ) .

Anaerobic digestion ( AD ) , the breaking down of biodegradable material by microorganisms in the

absence of oxygen , is recognised as an effective method of waste disposal , with the potential to address the food waste problem nationally . AD technology has a small environmental impact , producing less greenhouse gas emissions than composting . However , although the process is well established in the water industry , it is less so within the waste sector . Despite this , the AD industry is being ( and planned to be further ) expanded by local councils and retailers to deal with food waste ; several local authorities in the UK are planning to build anaerobic digestion plants , with the largest , to be located in Selby , due to operate from 2010 . Supermarket chains Tesco and Sainsbury 's are both adopting AD technology to dispose of their waste , while Tesco 's head of waste and recycling said : " As renewable energy technologies now become mainstream , there is no excuse for sending waste to landfill that could actually be put to positive use . " AD technology remains an experimental field though , and there is potential for advancements to increase efficiency . In July 2014 Sainsbury 's began powering one of its stores using anaerobic digestion .

Incinerating waste has traditionally been viewed as a method with the main purpose being the destruction of the waste involved . Recovering the energy generated from this process has become of greater importance , and all incineration facilities in England now operate as energy @-@ from @-@ waste plants ( with many operating as combined heat and power facilities ) . Critics question the safety of the pollutants emitted during the process and argue that , as incinerators require constant levels of waste to operate , it encourages more waste . However , the levels of emissions from the incinerating process has been greatly reduced by developments in technology and legislation .