

# CARBON AND ECONOMIC BENEFITS OF WASTE AND RESOURCE MANAGEMENT

## The WRAP Strategy in the UK

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## About WRAP



WRAP helps individuals, businesses and local authorities to reduce waste and recycle more, making better use of resources and helping to tackle climate change.



## Progress To Date

We have a strong track record of achievements, including our contribution to:

- **5.8 million tonnes** of extra processing capacity.
- **£182m** of new investment in the recycling sector.
- **£1.3bn** annual turnover in the UK recycling sector.
- **15 million tonnes** of CO<sub>2</sub> equivalent avoided.



## Targets for 2008-2011

### **Target 1**

8 million tonnes less  
waste to landfill.

### **Target 2**

5 million tonnes of  
CO<sub>2</sub> emissions saved.

### **Target 3**

£1.1 billion of  
economic benefits.







## Climate Change Targets

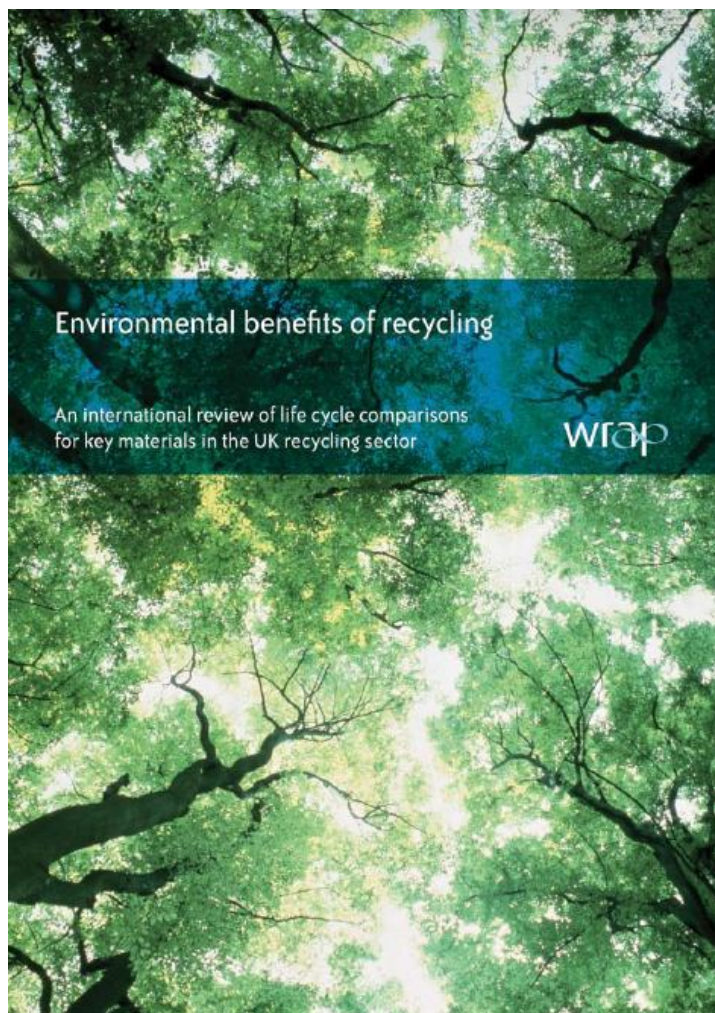
**UK Climate Change Act (2008)** – 80% reduction in UK GHG emissions by 2050 (based on 1990 baseline)

**Stern Report** – calls for immediate action to avoid higher mitigation costs

**Low Carbon Transition Plan (LCTP)** - 18% reduction by 2020 (from 2008 levels)



# Strategic Review of Waste Management Options



## Environmental Benefits of Recycling (2006)

Review of published LCAs

Purpose: to identify trends in findings of studies

7 key materials

Range of Environmental Indicators

Recycling generally preferable.





## The Contribution of Resource Efficiency?

“...reducing the environmental impact of the consumption and production of goods and services over their full life cycle.”

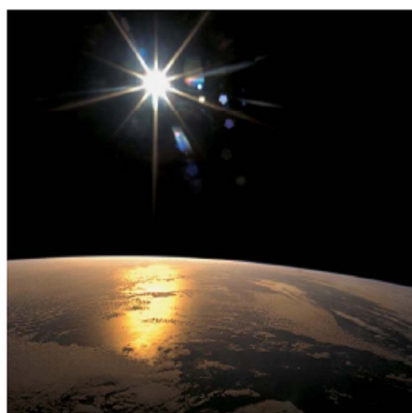
Cropper A. (2009) Decoupling Economic Growth from Environmental Degradation – The Crucial Role of Resource Efficiency, speech notes to the Resource Panel of the United Nations of the Division of Technology, Industry and Economics. Available from:  
[http://www.unep.fr/scp/rpanel/pdf/opening\\_angela\\_cropper.pdf](http://www.unep.fr/scp/rpanel/pdf/opening_angela_cropper.pdf)





# The Contribution of Resource Efficiency

Meeting the UK climate change  
challenge: The contribution of  
resource efficiency

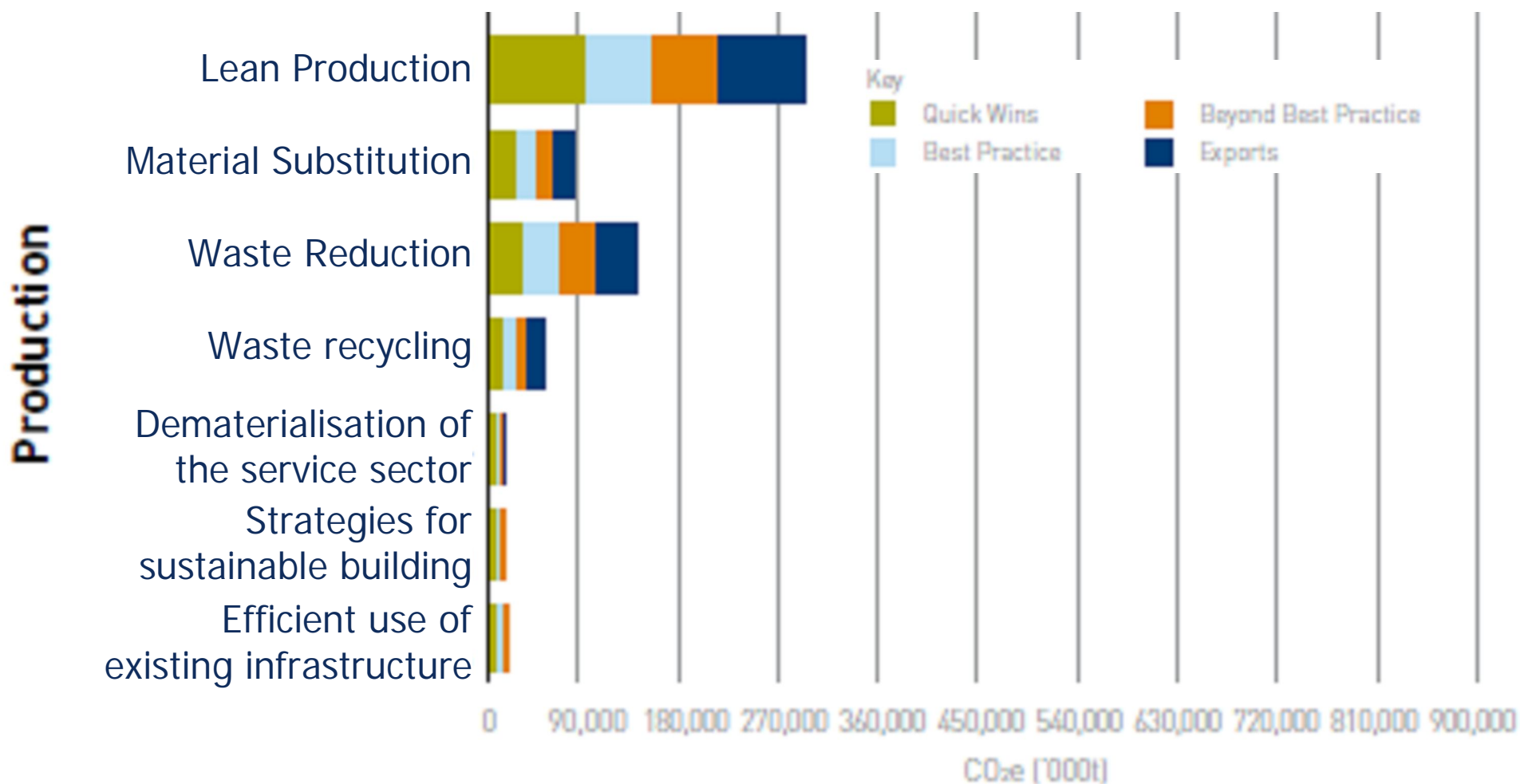


Reference Scenario  
Quick Wins  
Best In Class  
Beyond Best In Class

All based on current  
technology



# Production Strategies



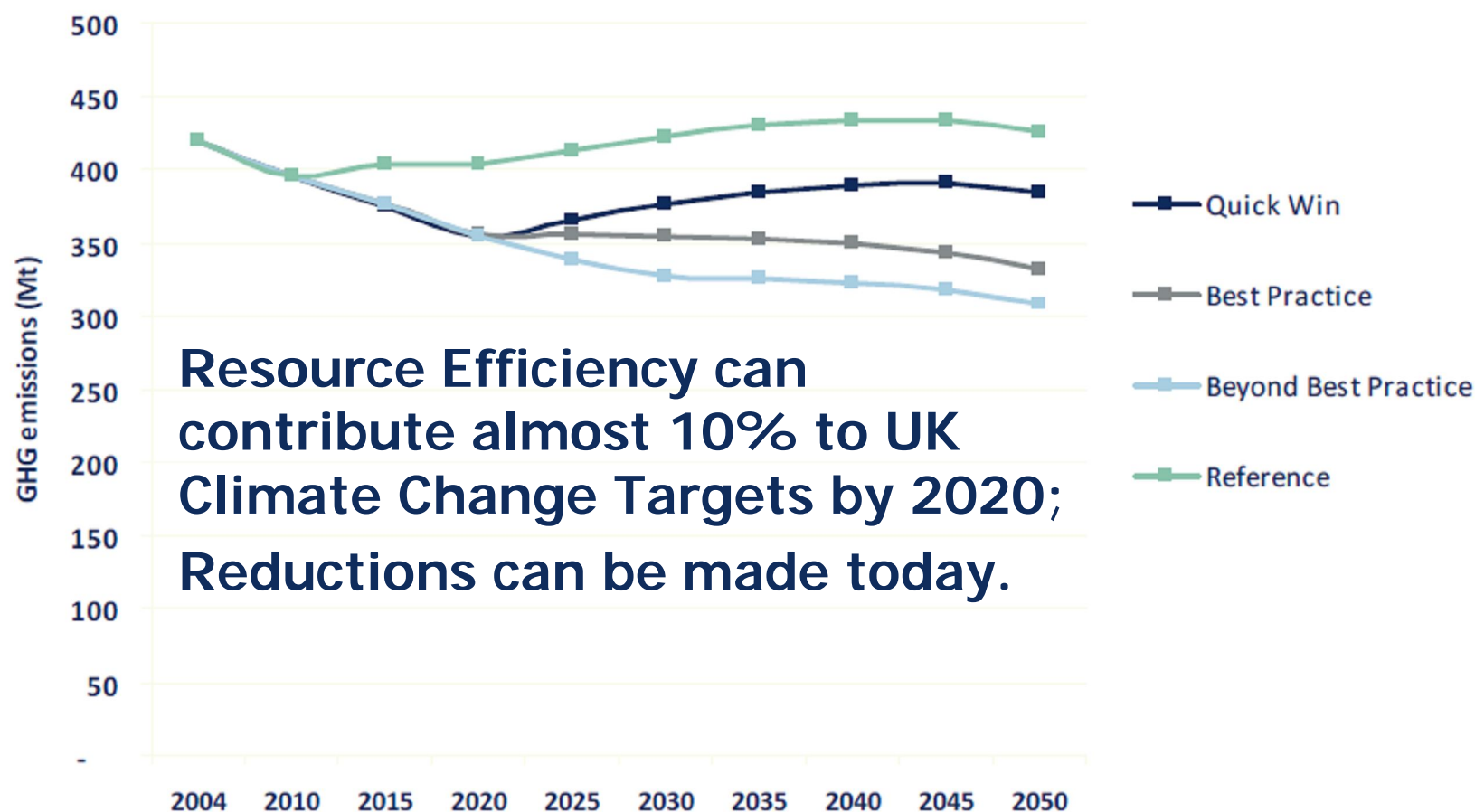


# Consumption Strategies





## The Contribution of Resource Efficiency









## Economic Consequences

No net change in GDP;

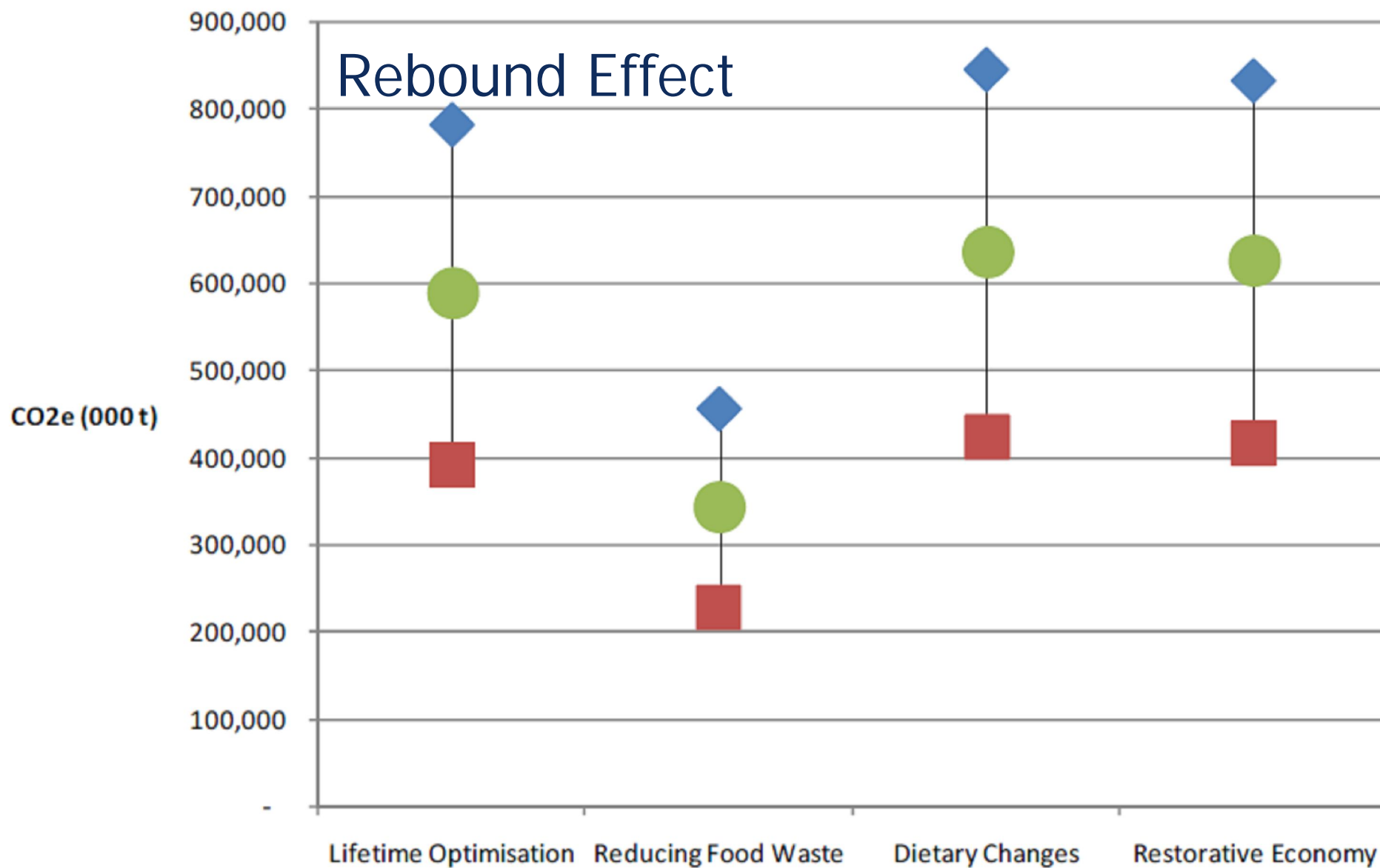
Affects £billions expenditure;

Make money available for investment.

How would money be redistributed?



## Rebound Effect





## Next Steps

Develop 13 strategies and identify appropriate WRAP activities;

Carry out additional research;

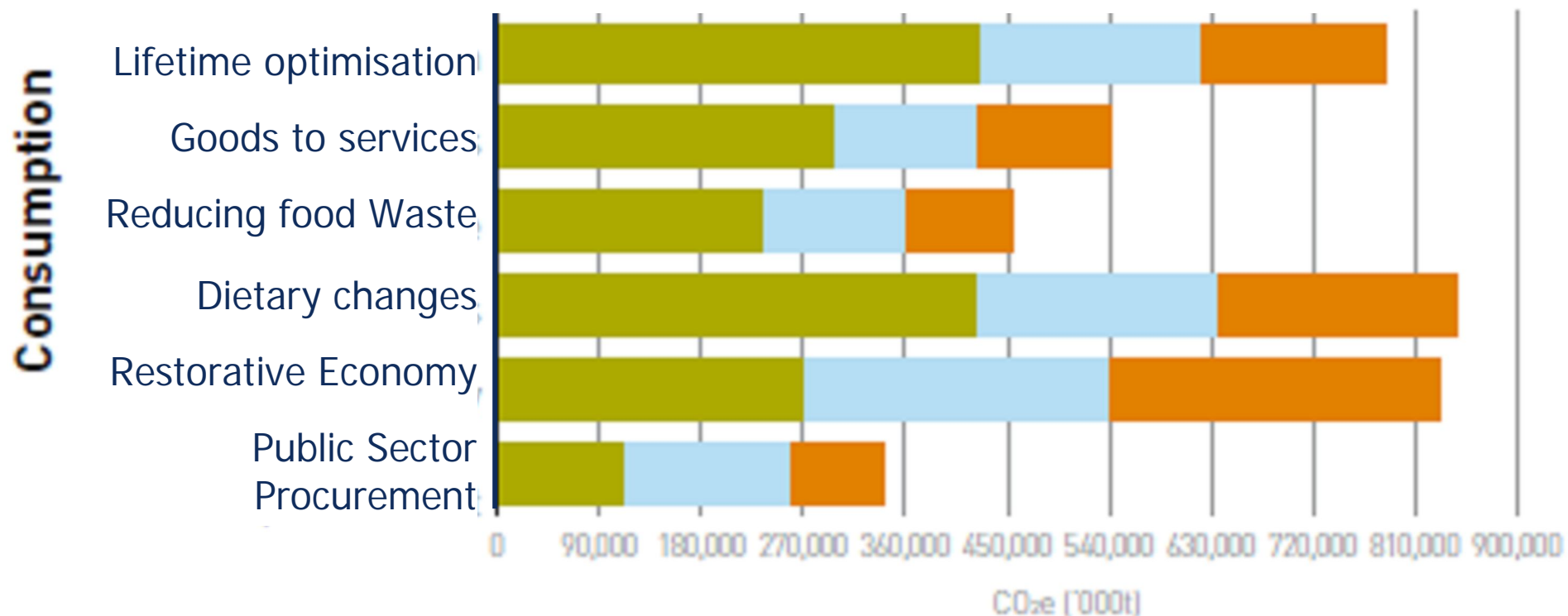
Ensure that we understand and avoid unintended consequences;

Don't forget continued importance of waste management...





# Consumption Strategies



# 2009 Glass – 1.65 Mt Recycled



Containers: 640 ktpa



Glass wool: 120 ktpa



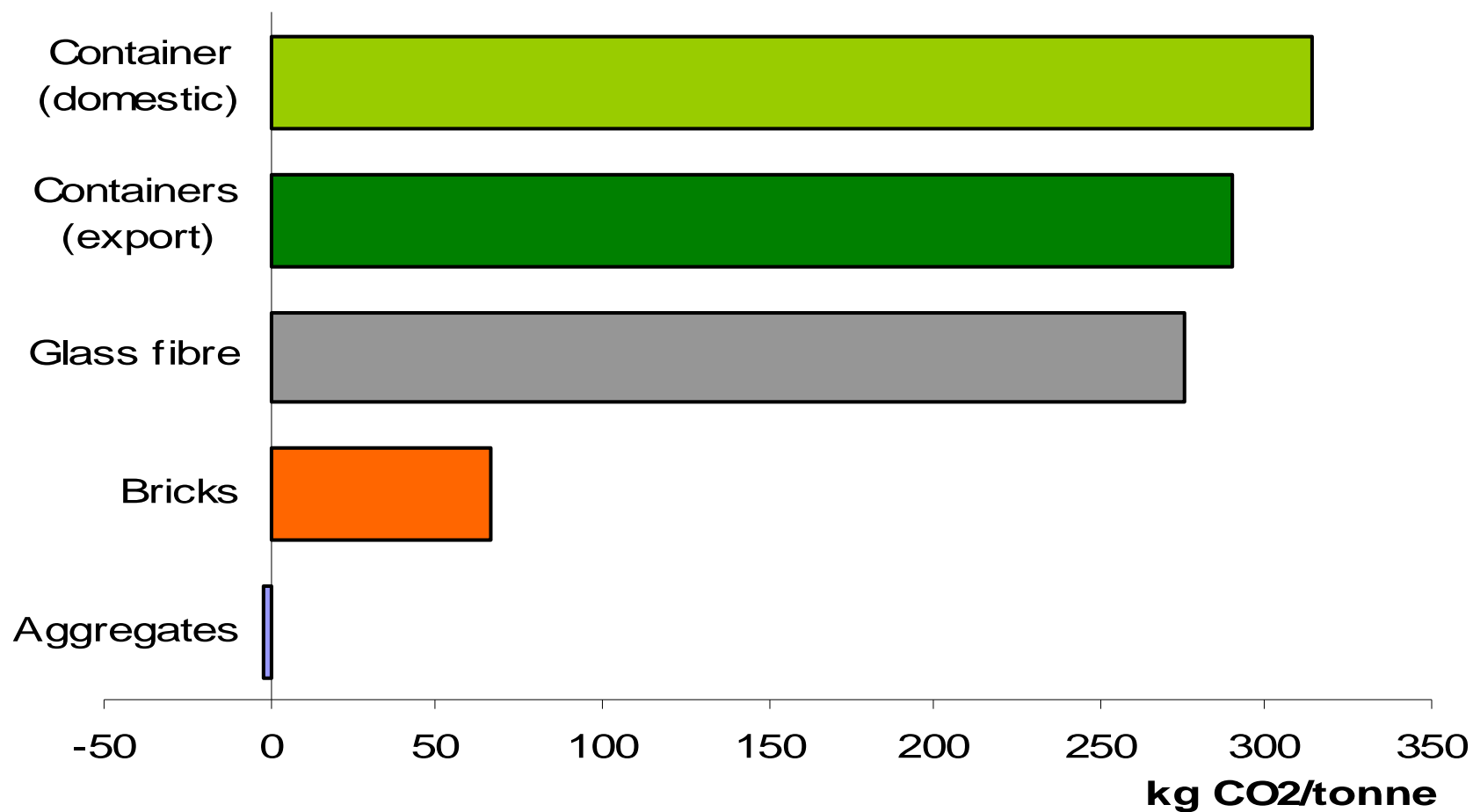
Export: 364 ktpa



Aggregates: 534 ktpa



# Glass Recycling and CO<sub>2</sub>

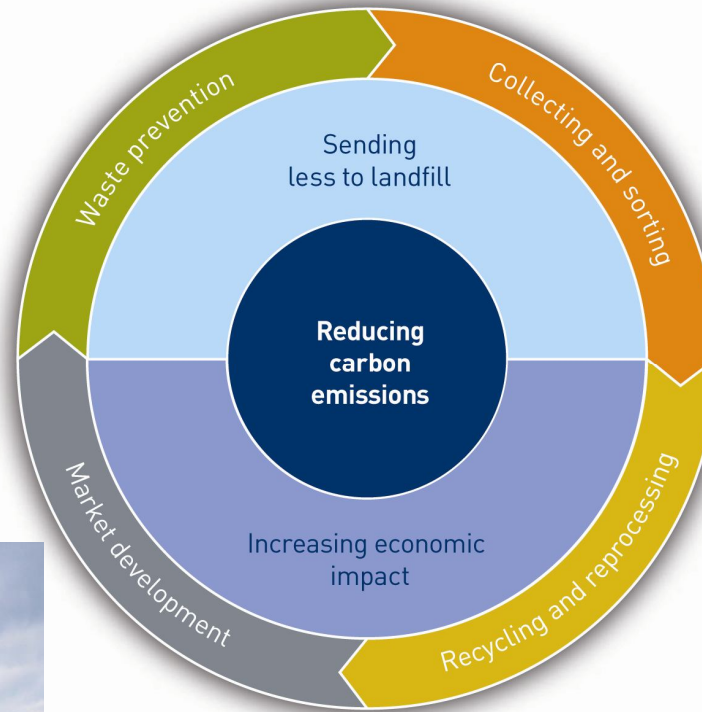


Source: Enviros (2003)





Material change for  
a better environment







## Glass Lightweighting





## Recycled Content: Adnams

**Adnams bottle contains an average of 50% amber cullet (recycled glass)**

### Benefits:

- 1 tonne of cullet makes 1 tonne of new glass, but 1.2 tonnes of raw materials are required to make 1 tonne of new glass.
- melting cullet uses 25% less energy than melting virgin materials.









## How much?

- 16-18 Mt/y total
- Over 8 Mt/y from households
- Most could be eaten
- Costs £12 billion/y
- Worth nearly £700 per year for families
- Wastes 20 Mt/y of CO<sub>2</sub>e



Food production, distribution, storage, preparation and disposal accounts for 20% of greenhouse gas emissions from UK consumption





## Key foods thrown away whole and untouched



**Potatoes**  
**5.1 million a day**



**Loaves of bread**  
**1 million a day**



**Apples**  
**4.4 million a day**



**Sausages**  
**1.2 million a day**



**Yoghurts**  
**1.3 million a day**



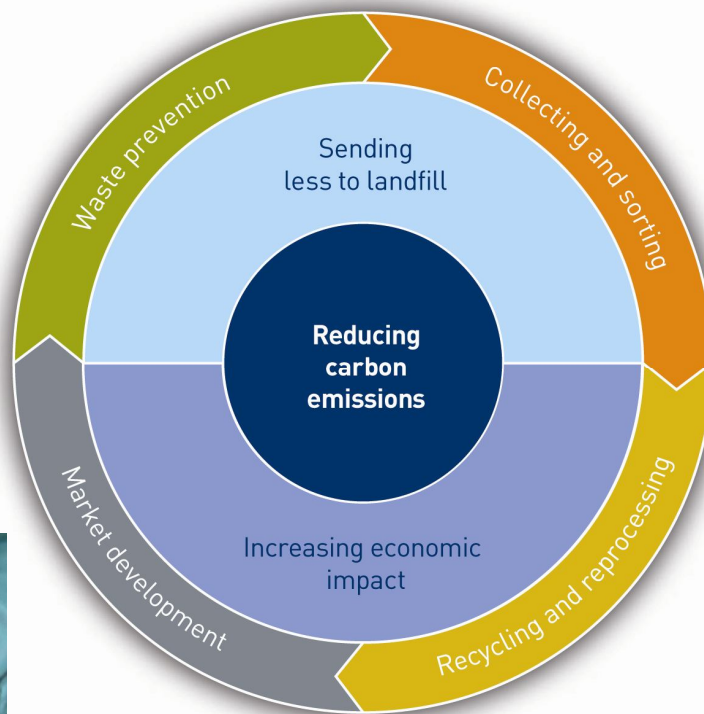
**Packets of crisps**  
**300,000 a day**



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LOVE  
FOOD  
hate waste





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## PASTA LOVERS hate waste

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lovefoodhatewaste.com has more tips and recipes to help you waste less food and save up to £50 a month.



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LOVE  
FOOD  
hate waste

## APPLE LOVERS hate waste

Apples are simply my favourite fruit. I always put them in the fridge so they last longer. After a good peel, even bruised ones make a scrumptious smoothie. Or pop them in a blender with a banana and yoghurt for some jolly healthy smoothies that I can enjoy later. Delicious.

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hate waste

## CHICKEN LOVERS hate waste

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## BROCCOLI LOVERS hate waste

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## FISH LOVERS hate waste

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FOOD  
hate waste

## LAMB LOVERS hate waste

It's so easy using up roast lamb leftovers. Just let them cool down, wrap them in foil, then stick them in the fridge. They're good for two days and spot on for a shepherd's pie, which the kids love. All I do is give the lamb a good chop, add some stock, onions, carrots and a dash of Worcestershire sauce. Job done.

lovefoodhatewaste.com has more tips and recipes to help you waste less food and save up to £50 a month.



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hate waste



## Progress

- 2 million households say they have reduced food waste
- 42% of consumers are making conscious attempts to reduce food and drink waste\*

\* (Verdict/Datamonitor)



**APPLE LOVERS hate waste**

Apples are simply my favourite fruit. I always put them in the fridge so they last longer. After a good peel, even bruised ones make a scrumptious crumble. Or I pop them in a blender with a banana and yoghurt for some jolly healthy smoothies that I can enjoy later. Delicious.

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**wrap** Potential change for a better world

**LOVE FOOD hate waste**



# A Hidden Resource

## Anaerobic Digestion

Food  
Waste



1 tonne food = 300kWh electricity





## Biomethane uses





## Facts

- Biofertiliser can be used as a direct replacement for inorganic fertilisers on farms.
- Cost savings of between £180 per hectare by using digestate
- 1 tonne of CO<sub>2</sub> equivalent is saved per tonne of food diverted from landfill
- 5 tonnes of CO<sub>2</sub> equivalent saved per tonne of nitrogen displaced.





## Towards a Lighter Footprint

- Resource efficiency strategies significantly reduce use of fossil fuel resources, water and our ecological footprint
- We will lead by example with targets aligned to programmes.
- Work with partners to deliver on our commitments.



Get involved

**Now is the time to act.**

Everyone must play a part in lightening the world's carbon footprint.

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