

# Modelling the impact of lifestyle changes on household waste arisings

Defra Waste Research Evidence Programme Project (WR0107)  
Annex 2: Inception Report  
August 2005



*This research was commissioned and funded by Defra.  
The views expressed reflect the research findings and the author's interpretation.  
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## Important Research Update (September 2009)

*The innovative input-output model (forecasting tool) that was constructed as a part of this research, was developed using the most up-to-date data on waste arisings available in 2005, at the project start, i.e. up to and including data for 2003/04. Following completion of the initial research and model development in July 2006, new data on waste arisings became available, which highlighted a divergence between the model predictions and reported data from 2002-2006.*

*Additional research indicated that it would be necessary to include a range of as-yet-not-understood factors within the model in order to develop more accurate predictions. Defra have commissioned further research to try to understand other factors that may have influenced changes in waste growth patterns. The Information Note published with this report gives more detail on this research and the background.*

*The divergence observed between the model forecasts and recent waste growth currently limits the application of the model for policy purposes, and means that caution should be used with respect to interpreting the figures contained in this report and the associated research documents (e.g. quantification of future waste tonnages). However, this project still allows exploration of future trends in waste composition, if not total quantity.*

## **Project purpose and objectives**

- Overall, the purpose of the project will lead to the development of an innovative and flexible model that:
  - Integrates socio economic impacts with waste data and understanding of policy initiatives
  - Provides a robust basis for forecasting waste arising from a range of policy initiatives
- The model will assist Defra by providing better tools for forecasting outcomes and planning waste management policy

## **The purpose of this Inception Report**

- To report on the scoping study undertaken to assess the range and quality of data and research available to the project
- To describe the plan for developing the model in the light of the findings from the scoping study
- To provide a refined workplan for building the model and undertake the necessary consultation and adjustments

## **Contents**

1. Findings from the scoping study
  1. Evaluation of household waste data available
  2. Assessment of wider lifestyle and trend information
  3. Outputs from the literature review
2. Proposed model scope and development
  1. Input output modelling as an approach
  2. Key questions we will need to answer
  3. Integrating lifestyle data and trends into the model
3. Analysis and consultation
  1. Objectives of the first workshop
  2. Second phase consultation and validation
4. Project timetable

Appendix 1: Waste Legislation Review

Appendix 2: Behaviour Change Summary

## **1.1 Evaluation of household waste data available to the project**

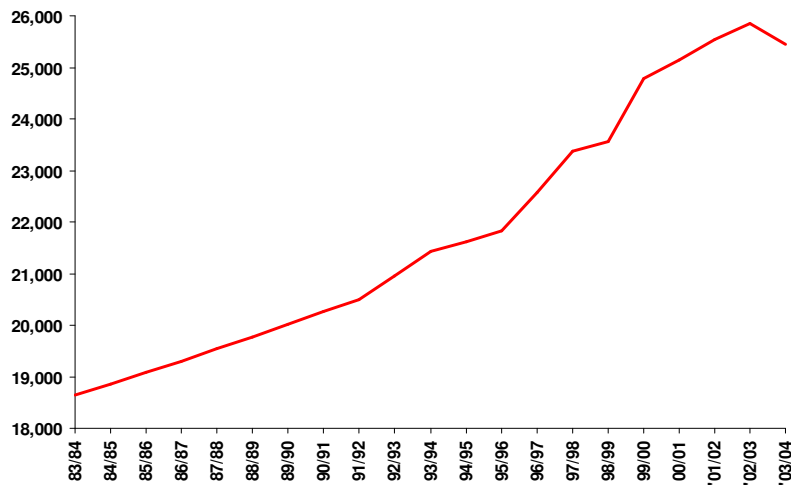
## Data gathering process

- Initial meeting of the project team, 24<sup>th</sup> June 2005 to initiate the scoping study and data gathering process
- Meetings arranged with Pat Kilby, Defra (22<sup>nd</sup> July 2005) and Julian Parfitt, WRAP (2<sup>nd</sup> August 2005)
- Historic data sources researched including, for example, MWM Survey, CIPFA, CIWM
- Second project team review meeting held, 26<sup>th</sup> July 2005 to review data and agree proposed modelling approach

## Overall data for Waste (1)

- The best time series data on household waste (for England) appears to be Defra/Cipfa which provides 20 years of annual data (some years interpolated)
- This data shows that household waste has only grown by 1.6%pa over the twenty year period 1983/84 – 2003/04. This is well below the 3% plus figures quoted in paper's such as the Strategy Unit's 'Waste Not Want Not'
- Growth over the years 1996 – 2000 was 3.2% pa. This, however, appears to be an unusual period
- Growth in household waste of 1.6% pa over the 20 years is well below GDP growth which averaged 2.6% pa. However, looking at Eurostat data (cross country comparisons does have its problems)
  - the EU25 for the period 1995 – 2003 GDP growth averaged 2.3%pa, while municipal waste growth averaged 2%pa
  - In the US for the period 1995 – 2000 waste grew at 0.4% pa, compared to GDP growth of 4.1%pa
  - In Japan for the period 1995 – 2000 waste grew at 0.3% pa, compared to GDP growth of 1.3%pa

## Household Waste in England (000 tonnes) Data from Defra/CIPFA



Source publication: Municipal Waste Management Survey, Published March 2005

## Overall data for Waste (2)

- For household waste real consumers' expenditure would actually be a better measure to look at rather than GDP
- Over the 20 years to 2003/04 real consumers' expenditure grew by an average 2.7%pa
- In fact looking at elements of consumer spending that actually produce waste that enters the household waste stream (essentially goods rather than services) volume growth has been 2.9%pa
- This would need one (or several) of the following to have occurred :
  - The mix of spending has changed – to goods generating less waste
  - Physical weight of goods to have fallen (in terms of kg per £ of expenditure)
  - Amount of product waste has fallen (primarily for food purchased and consumed in the home)
  - Amount of packaging per item has fallen (by weight)
  - Goods are being kept for increasing lengths of time (i.e. the 'stock' of goods in people's homes is increasing)
  - More waste is being disposed of outside the household waste stream (for a variety of possible reasons)

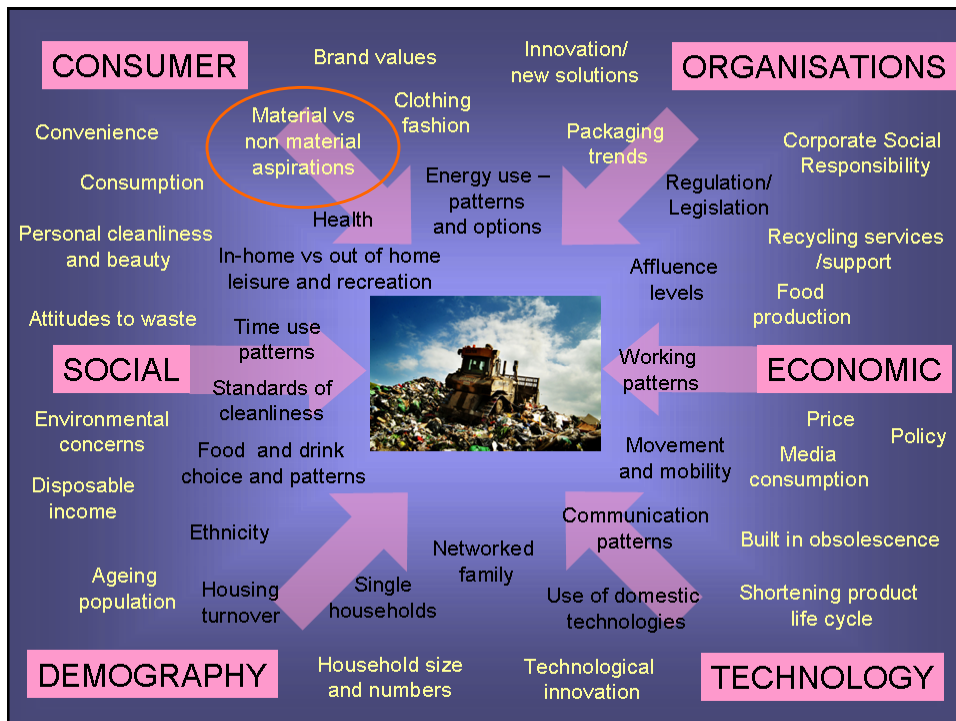
## **The composition of waste**

- There is no consistent compositional data on a time series basis
- Calculations of composition of waste stream are fraught with difficulties
- A reasonably comprehensive snap shot of waste composition was carried out by Julian Parfitt in around 2001. This is quite detailed and covers household waste
- Apparently there was a broad snapshot undertaken in the early 1990s – which could be used against the most recent snapshot
- Building up time series from the currently available data will not be possible

## **1.2 Assessment of wider lifestyle and trend information**

## Desk research process

- Taking the original schematic from the proposal (overleaf) we have collated over 300 PowerPoint charts organised under the headings which relate to lifestyle trends
- These have been drawn from the Future Foundation's proprietary on-line insight service, nVision, and a range of wider sources identified by the literature review
- This process highlights that within each of these, there are many other contributing factors that make up the overall impact on lifestyle changes and future behaviour
- Here we provide some examples from just one heading – Material/non material aspirations – to demonstrate how multifaceted the relationship between lifestyle and waste production is in reality

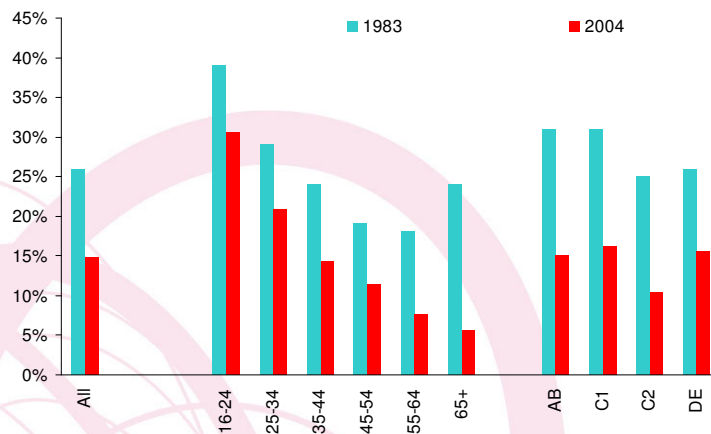


### Example: Material vs non-material aspirations

- Good example of how there are a significant number of trends and counter trends under every heading highlighted
- Currently seeing a range of paradoxical and complex shifts in purchasing and behaviour
- Despite saturation levels in many markets, we are seeing growth in purchase and interest of premium products and services, leading to the democratisation of luxury – the idea that everyone can have access to something special
- There appears to be a strong growth in the gift market which highlights the way in which consumption may be becoming ‘other directed’ and creates further packaging challenges
- At the same time, there is evidence that non-material values and ‘alternative’ activities are becoming more mainstream - including the need to de-stress and de-clutter
- Increasing proportion of expenditure is going into services and purchasing intangible items and experience
- This forms the basis of the experience economy which links to the fact that we are spending more time out and about

### Decline in concern with self expression through clothing or products

Proportion concerned about expressing their personality through clothing/products

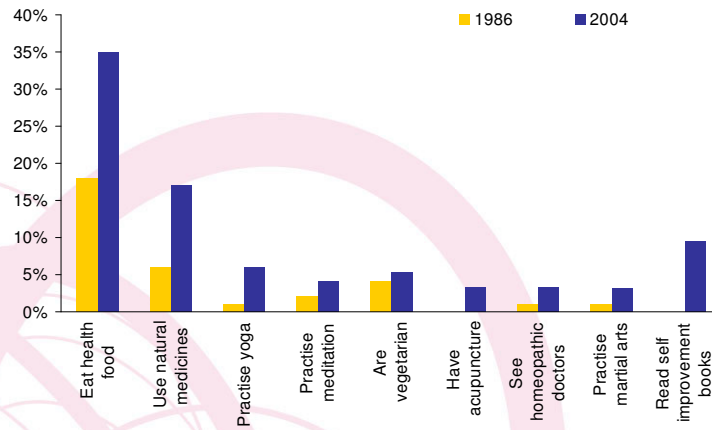


Source: 'Changing Lives', nVision/Taylor Nelson Sofres  
Base: 1000 adults aged 16+, UK



## Growth in alternative lifestyle choices

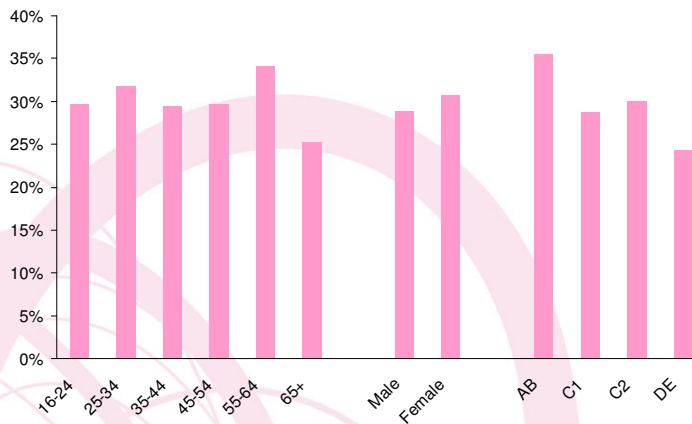
Proportion who participate in various activities



Source: 'Changing Lives', nVision  
Base: 1000 adults 16+, UK

## Preference for 'premium quality' toiletries, by age, gender and social grade

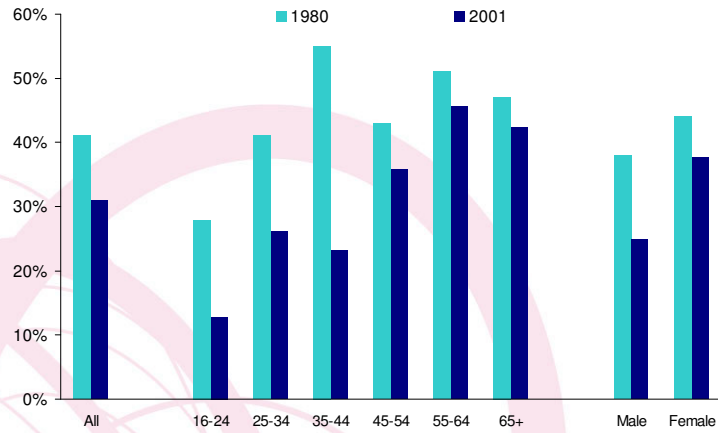
Proportion of shoppers who chose premium quality over basic quality last time they bought toiletries for themselves



Source: 'Changing Lives', nVision  
Base: 967 adults aged 16+, UK, 2003

## People are less angry about packaging nowadays

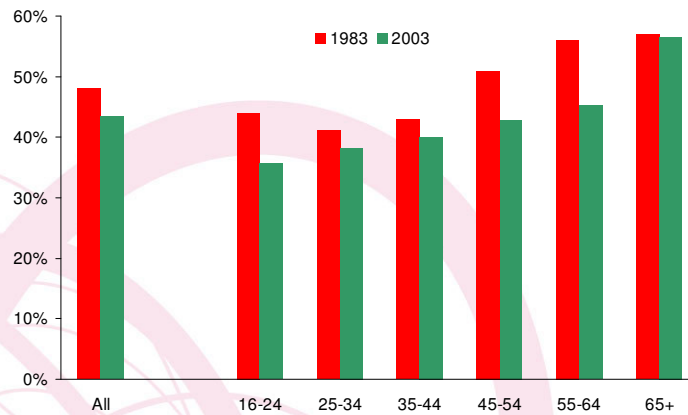
% saying that it makes them very angry when manufacturers spend a lot on packaging for their products which is unnecessary, by age and gender



Source: 'Changing Lives', nVision/Taylor Nelson Sofres  
Base: 1000-2000 adults 16+

## Durables becoming less important

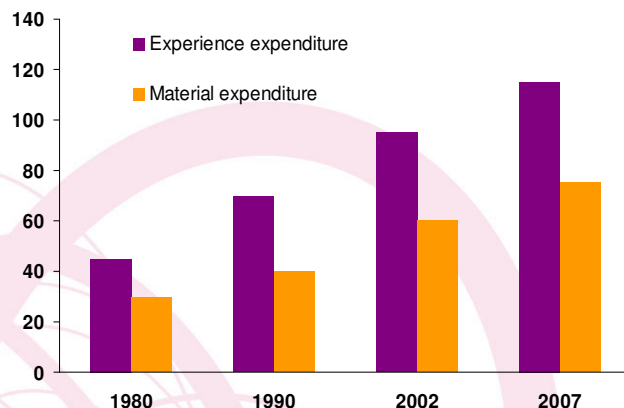
Proportion who agree or strongly agree that they prefer to spend money on durable things they can keep rather than on things that give them temporary enjoyment, by age



Source: 'Changing Lives', nVision/Taylor Nelson Sofres  
Base: 1000 adults 16+, UK

## Fastest forecast growth is in the 'experience economy'

Total annual expenditure on experiences and activities that enrich people's lives (£ billion, at 2002 prices)



Source: Norwich Union Life/The Future Foundation/Family Expenditure Survey, 2003

## Travel - the key component of 'experience' expenditure

|  | £ billion          |
|--|--------------------|
| <b>Travel</b>                          | <b>33.4</b>        |
| Eating out                             | 15.2               |
| Going out for a drink                  | 12.4               |
| Sport or social clubs                  | 6.3                |
| Take aways eaten at home               | 8.8                |
| Hair or beauty treatments              | 3.5                |
| Gardening products or flowers          | 3.4                |
| Toys/hobbies                           | 2.9                |
| Educational classes/leisure activities | 2.4                |
| Social outings                         | 2.1                |
| Alcohol (consumed at home)             | 2.1                |
| Live entertainment                     | 1.1                |
| Other                                  | 1.6                |
| <b>Total</b>                           | <b>£95 billion</b> |

Source: The Future Foundation/Family Expenditure Survey, 2003

### **Assessment of the lifestyle data available**

- There is a wealth of information available that provides valuable insights into the possible relationship between lifestyle changes over the past two decades and household waste production
- However, whilst there is some consistent time series data about attitudes to the environment (for example from Mori) and comparative snapshots on a wide range of factors, there is limited detailed behavioural data suitable for actually modelling
- This, combined with the fact that there is also limited consistent quantitative waste compositional data available to the project, requires that we work creatively with the research and data available

### **Requirements for use in the model**

- Any forecasting and modelling activities require a selection of a limited number of key drivers on the basis of their impact and influence on future outcomes
- In the case of this project, it is envisaged that a maximum of 12 socioeconomic drivers must be selected
- Clearly with so many possible factors to consider, part of the model construction will require a filtering process to identify which of the many drivers should be prioritised
- This is described in detail in the next section

## **Building a picture of the supply side**

- In order to complete the picture of influencing factors and drivers determining household waste composition, we will need to gain greater insights on the supply side to cover the latest trends in packaging, innovation and corporate policy
- This will be included in the next stage of the project

## **1.3 Outputs from the literature review**

## **Legislative overview and behaviour change analysis**

- A detailed overview of recent waste legislation and the timescales over which it has been introduced was conducted to build up a picture of possible trends impacting future waste arisings and composition (see Appendix 1)
- A review of behaviour change activities was conducted to identify some of the key factors that support change and the potential impact upon future waste arisings and composition (see Appendix 2)
- These studies will be further analysed and developed under Objective 2 of this project to determine the variables required in the model construction (Objective 3)

## **Summary of the scoping study**

- The scoping study has shown that the available data on household waste is not as comprehensive or consistent as would be necessary to provide the basis for a quantitative model as a starting point
- The socio economic research and information on lifestyles available is extensive and comprehensive, but there is not enough robust time series data, nor waste data with which to model it!
- Therefore the focus of our work and thinking in this first stage of the project has been to look at ways of overcoming these shortcomings in order to design and build a model that meets the project objectives
- It is also worth noting that the scoping study has highlighted a number areas in which Defra should consider instituting longitudinal research programmes in order to generate robust data for future analysis

## 2. Proposed model scope and development

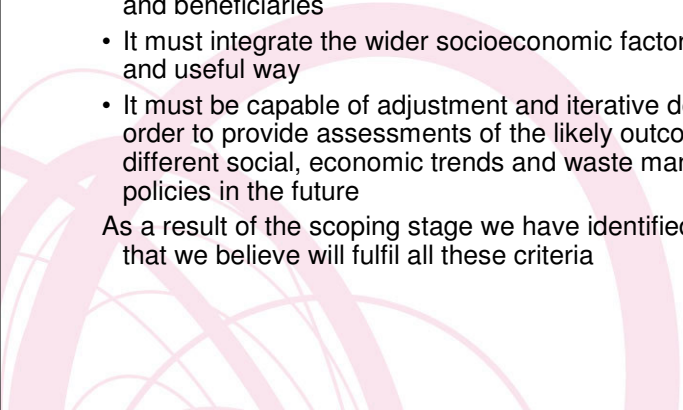


### Requirements of the model

In order to provide Defra with the flexible and usable tool required, it is necessary that the model has certain characteristics:

- It must be robust, rigorous and respected by potential users and beneficiaries
- It must integrate the wider socioeconomic factors in a credible and useful way
- It must be capable of adjustment and iterative development in order to provide assessments of the likely outcomes of different social, economic trends and waste management policies in the future

As a result of the scoping stage we have identified an approach that we believe will fulfil all these criteria



## 2.1 Input output modelling as an approach

- On the basis that all household waste (with the exception of garden waste and mail) is generated from expenditure by consumers, then should be able to use historical data on consumers' expenditure to construct a model of household waste
- Can then use detailed consumer's expenditure forecasts to generate forecasts of waste
- Use consumer's expenditure data back to the mid 1980s to track spending in constant price terms – close to a 'physical' measure of purchases
- For each of the 104 sub-categories in 2004 we will need to work out for the 'average' item:
  - price per kg
  - how much waste created, broken down between 'product waste' and 'packaging waste'
  - how these have changed over time
- Would provide a rich range of outputs

**There are 104 separate consumer spending categories – to this we would have to add data on garden waste and mail. Categories include .....**

- |                          |   |
|--------------------------|---|
| - Bread and cereals      | - Postal services                       |
| - Meat                   | - Telephone and telefax equipment       |
| - Fish                   | - Telephone and telefax services        |
| - Milk, cheese and eggs  | - Audio visual and recording equipment  |
| - Oils and fats          | - Photographic etc equipment            |
| - Spirits                | - Information processing equipment      |
| - Wines, cider and perry | - Recording media                       |
| - Beer                   | - Repairs of audio-visual etc equipment |
|                          | - Major durables for outdoor recreation |



## How we would convert consumer spending data into the production of waste (illustrative example)

Expenditure on bread and cereals (£m) 8,946

Price per kg (£) £2.00

Consumption of bread and cereals (000 tonnes) 4,473

Product waste % 20%

Packaging per kg (g) 50.00

Packaging Waste (000 tonnes) 224

Product Waste (000 tonnes) 895

Total Waste (000 tonnes) 1,118

Total Waste (000 tonnes) 27,507

% of total 4.1%

Would have to make assumptions for the items in blue for each spending category for every year and the item in red for 2004 for each category

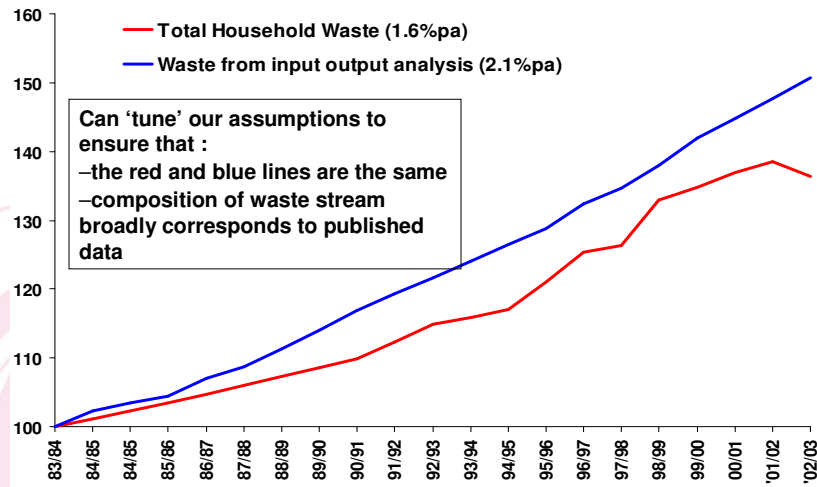
Would need to assess the average length of life before disposal

## By allocating waste from each category to different streams can get a wide variety of estimates on types of waste e.g for bread and cereals (illustrative example)

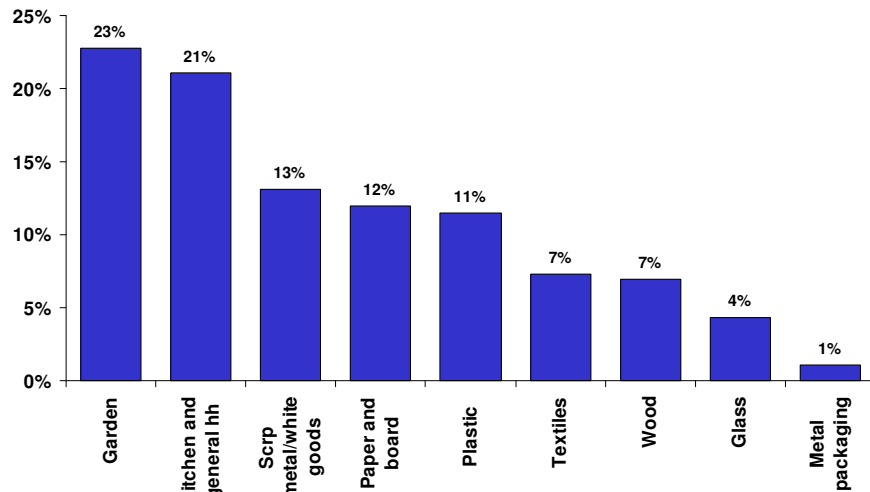
Total Waste in 2004 from bread and cereals (000 tonnes) 1,118

|                        | Waste | Packaging | Waste (000 tonnes) |
|------------------------|-------|-----------|--------------------|
| Garden                 | 0%    | 0%        | 0                  |
| Paper and board        | 0%    | 100%      | 224                |
| Kitchen and general hh | 100%  | 0%        | 895                |
| Glass                  | 0%    | 0%        | 0                  |
| Wood                   | 0%    | 0%        | 0                  |
| Scrp metal/white goods | 0%    | 0%        | 0                  |
| Plastic                | 0%    | 0%        | 0                  |
| Textiles               | 0%    | 0%        | 0                  |
| Metal packaging        | 0%    | 0%        | 0                  |

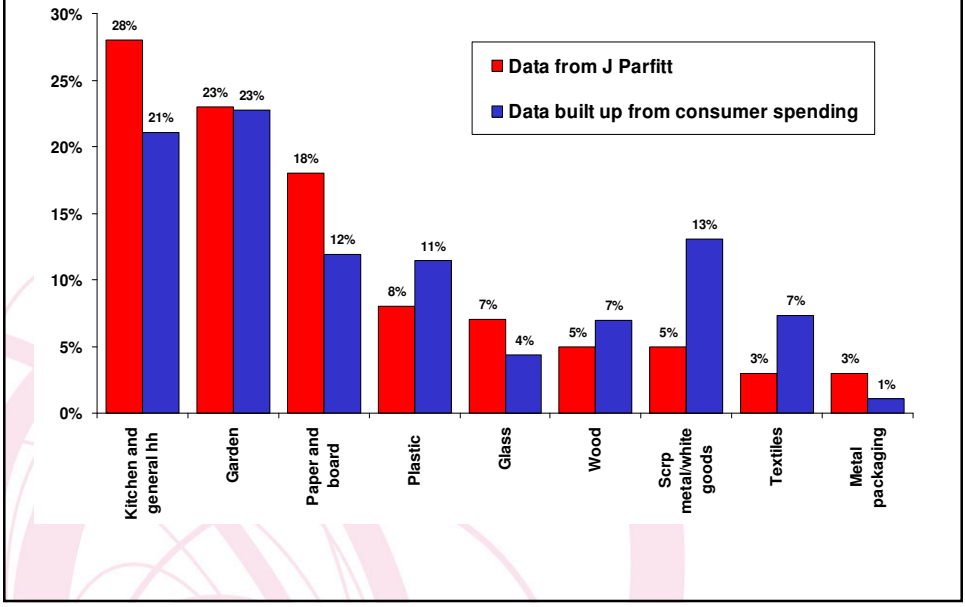
Have built a 'skeletal' model. Waste predicted from input-output approach a little higher than from published data.



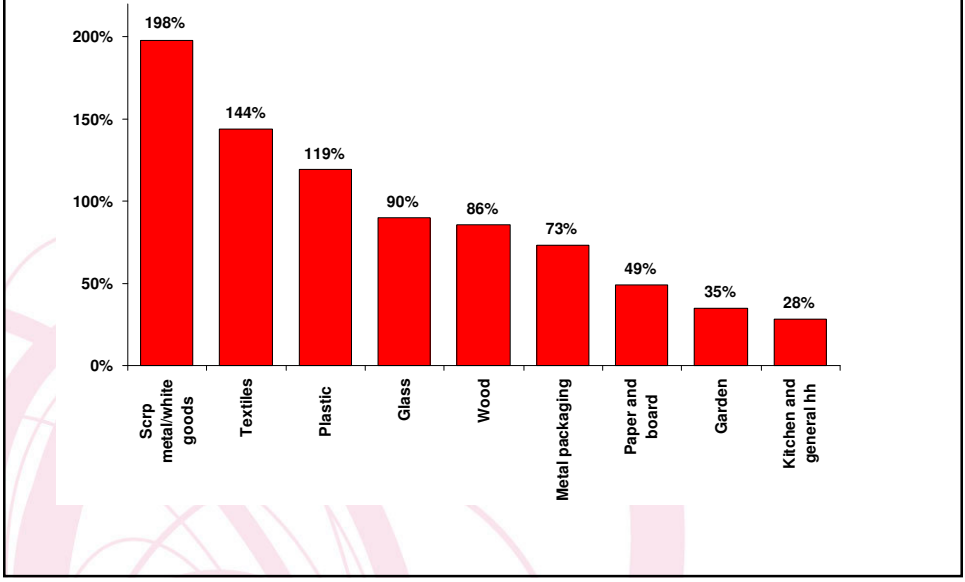
Easy to calculate the composition of the waste stream (illustrative example for 2004)



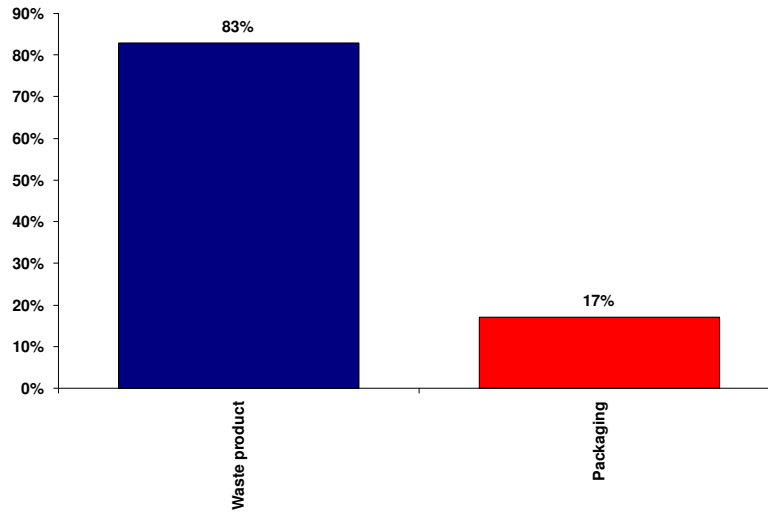
### Which isn't too far from the J Parfitt estimates



### Growth in waste streams 2003/04 – 1983/84 (illustrative example)



### How waste divides between waste from the product itself and from the packaging, 2004 (illustrative example)



### Forecasts

- Having parameterised the model to ensure that we are able to track waste production for the 20 years to 2003/04 we are then in a position to produce forecasts. These forecasts will require an number of inputs to the model :
  1. Forecasts of consumer spending for each of the 104 separate consumer spending categories (these will be based on detailed consumer spending forecasts that the future Foundation generates on a regular basis)
  2. For each category an indication of how the following will change from today:
    - weight of product
    - Proportion of product going into waste stream
    - Amount of packaging used per kg of product
    - Average length of time product kept before disposal into waste stream
- Our views on social, behavioural change and possible legislation will form an important element in the forecasts and assumption in 1. and 2. above

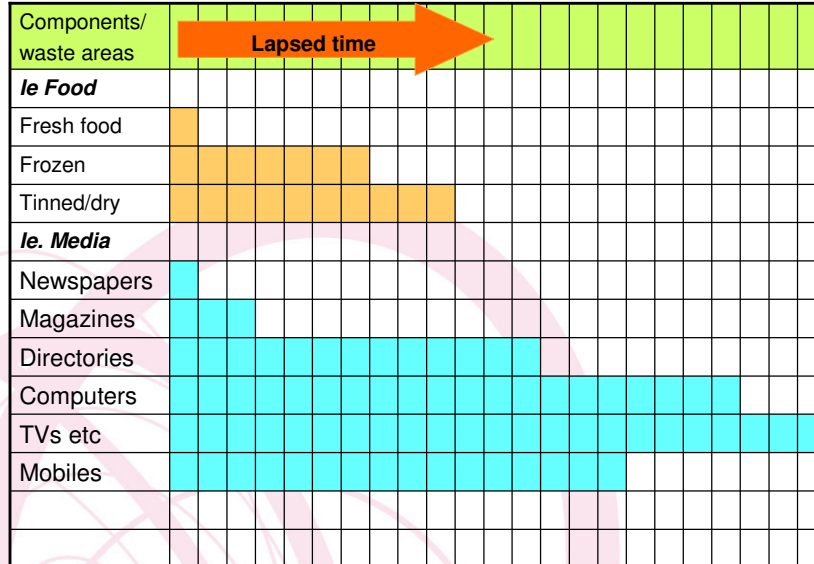
## Summary of input output approach

- Lack of data (particularly compositional information) means that we cannot model the data directly at a macro level
- We appear to have reasonable estimates of the overall growth in household waste in England over the past 20 years and we have a detailed snapshot of composition for 2000/01
- We can use this data to construct and parameterise a model of household waste over the past 20 years using consumer spending data (along with data on such things as the growth in volume of mail)
- The input into the model of a range of assumptions for the various inputs will provide forecasts
- These forecasts will be very 'rich'

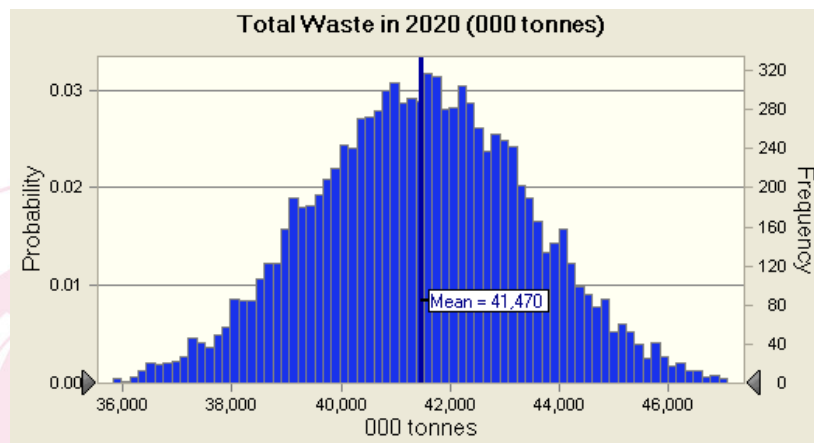
## 2.2 Key questions questions we will need to answer

1. What is the price of a kg of 'average' product
2. How much of the product ends up as waste
3. What is the average life of products in each category
4. What is the weight of packaging for the average item in each category
5. What is the packaging made up of
6. How have these changed over time

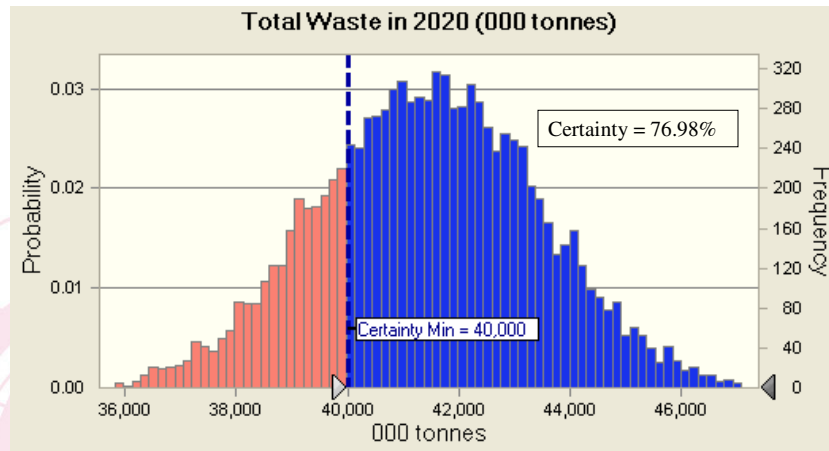
**It will be essential to develop an informed view of product lifecycles in the home**



As each of the assumptions in the model might not be certain – having a range of possibilities – we might use a technique known as Monte Carlo simulations to give a range of possible outcomes for, say waste production in 2020



**So, in this instance we could say we are 77% certain that waste will be at least 40,000 tonnes by 2020**



### **2.3 Integrating lifestyle data and trends into the model**

## Selecting key trends for the input/output model

- As noted, given the plethora of factors and trends, even within one heading, we need to develop an objective and rigorous approach to identifying those will have the greatest impact on the future levels of household waste
- In terms of the modelling process the 'ideal' number will be 12 drivers/trends for which we have a good idea about the likely future direction and impact
- The selection process will be based on a technique called futureproofing – an approach that has been developed and applied successfully to a number of projects

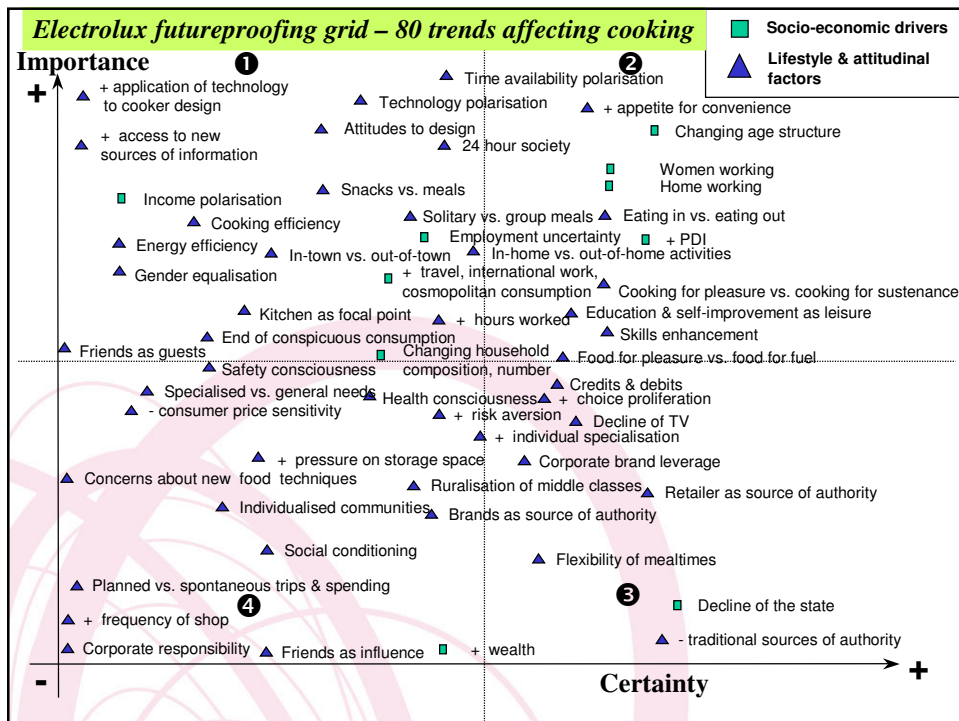
## Proposed futureproofing process

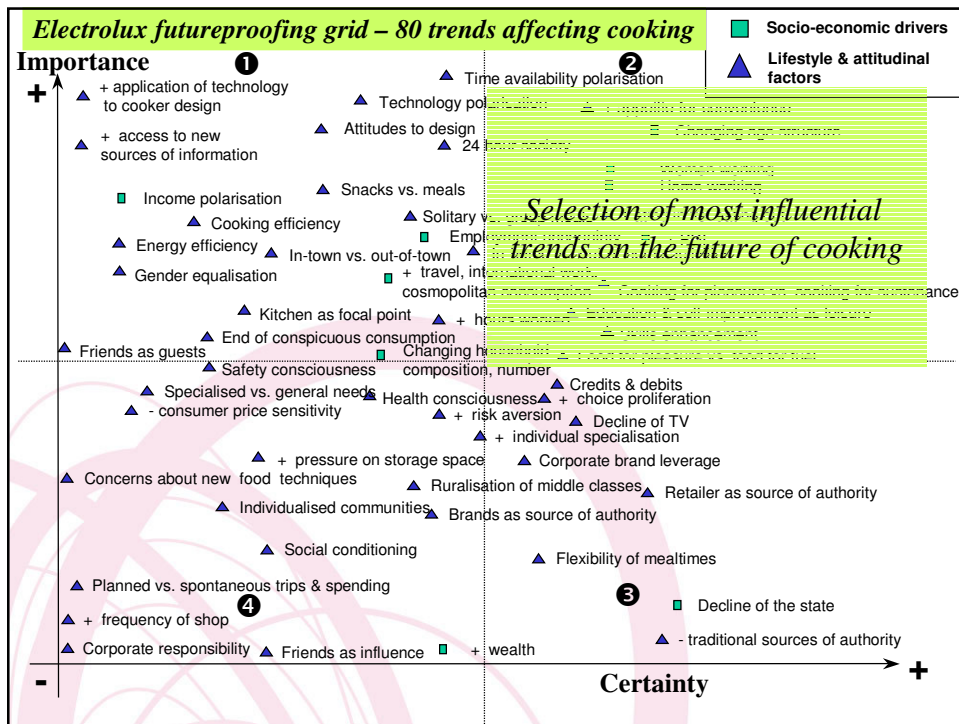
- We have identified an extensive list of possible lifestyle trends affecting household waste production
- The next stage will require an evaluation of all these trends on a specially constructed grid
- This will require that numerical values will be assigned to each factor against degrees of *certainty* and degrees of *impact* on future household waste arisings
- This approach allows us to make the most use of actual forecasted trends (where we have sufficient numerical data for a quantitative forecast) and apply expert judgement and knowledge to other trends where future outcomes can only be assessed more qualitatively
- From this process, we will identify a quadrant on the grid that will highlight the most significant trends for the on-going modelling process



## Previous futureproofing work

- We are confident that the futureproofing approach will deliver the necessary results for the model construction
- It has been used extensively in projects for clients as diverse as The Co-op Group, PostComm, The Consumer's Association
- And has been the subject of a paper delivered at the Market Research Society annual conference and published in their journal
- Overleaf, please find an example of a grid developed as part of a project for Electrolux on the future of cooking. As a result of this project several new prototype cookers were developed which are now going into production for European markets





## How this will feed into the model

- This method will enable us to bring the insights from our social trends analysis into the model output at two levels
- *Firstly*, it will enable us to assess the effects of the top trends on the main assumptions that will determine the relative amounts of waste produced going forward:
  - Changes in levels of consumption
  - Amount of product going to waste
  - The amount of packaging
  - The length of time the product is kept
  - The degree to which items are likely to be re-used
- *Secondly*, we will apply the trends to each of the consumer spending categories included in the model in order to challenge the assumptions underlying future waste projections
- Overleaf, we provide an example of how this would work using 12 hypothesized trends

## Hypothetical future proofing grid

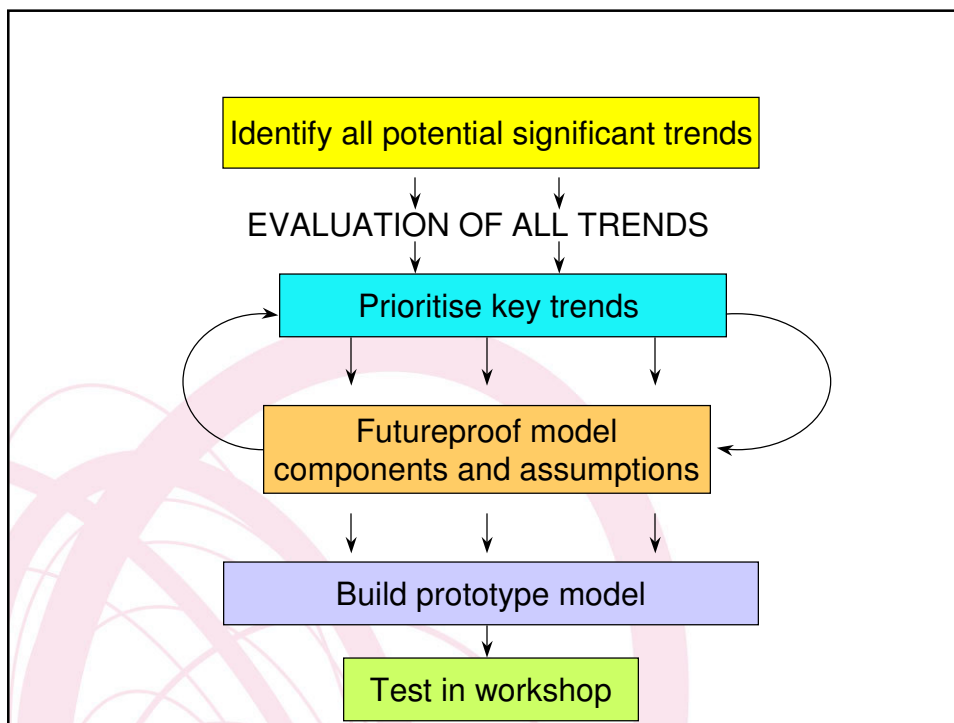
| Key trend/category<br>↓               | Product consumption levels | Product going to waste | Amount of packaging | Length of time product is kept | Tendency to re-use |
|---------------------------------------|----------------------------|------------------------|---------------------|--------------------------------|--------------------|
| Renaissance of collective concerns    | 0                          | --                     | --                  | 0                              | +                  |
| Experience economy                    | --                         | 0                      | ++                  | 0                              | 0                  |
| (in)conspicuous consumption           | --                         | -                      | ---                 | ++                             | +                  |
| 24 hour society/time use changes      | +                          | +                      | 0                   | -                              | 0                  |
| Culture of convenience                | ++                         | ++                     | ++                  | 0                              | --                 |
| Healthy hedonism/beauty myth          |                            |                        |                     |                                |                    |
| Sanitisation of everything            |                            |                        |                     |                                |                    |
| Ethical consumption                   |                            |                        | <i>etc</i>          |                                |                    |
| Over educated/underqualified UK       |                            |                        |                     |                                |                    |
| Longevity and new life courses        |                            |                        |                     |                                |                    |
| Network society & the vertical family |                            |                        |                     |                                |                    |
| Home, sweet home                      |                            |                        |                     |                                |                    |
| Interactivity and communication       |                            |                        |                     |                                |                    |
| Creating the knowledge economy        |                            |                        |                     |                                |                    |

## Application at category level ie. Bread

| Key trend/category<br>↓               | Product consumption levels | Product going to waste | Amount of packaging | Length of time product is kept | Tendency to re-use |
|---------------------------------------|----------------------------|------------------------|---------------------|--------------------------------|--------------------|
| Renaissance of collective concerns    |                            |                        | -                   |                                |                    |
| Experience economy                    |                            |                        |                     |                                |                    |
| (in)conspicuous consumption           | -                          |                        | --                  |                                |                    |
| 24 hour society/time use changes      |                            |                        |                     |                                |                    |
| Culture of convenience                |                            |                        | ++                  | +                              |                    |
| Healthy hedonism/beauty myth          | --                         | -                      |                     |                                |                    |
| Sanitisation of everything            |                            | -                      |                     | --                             |                    |
| Ethical consumption                   |                            |                        |                     |                                |                    |
| Over educated/underqualified UK       |                            |                        |                     |                                |                    |
| Longevity and new life courses        | -                          |                        |                     |                                |                    |
| Network society & the vertical family |                            |                        |                     |                                |                    |
| Home, sweet home                      |                            |                        |                     |                                |                    |
| Interactivity and communication       |                            |                        |                     |                                |                    |
| Creating the knowledge economy        |                            |                        |                     |                                |                    |

## To summarise: the trend analysis process for the next stage of the project

- Evaluate all possible trends identified on a grid to assess certainty and impact on household waste arisings
- This will provide a list of the key trends to include in the futureproofing exercise
- We will evaluate the effect of these trends on the main spending categories and groups of categories to inform the modelling process
- The futureproofing technique can also be used in the workshop – key categories selected for expert input



## **Areas in which we are short of data/trend information to feed into the evaluation stage**

- Innovation and new solutions
- Packaging trends
- Regulation/legislation
- Food production trends
- Pricing
- Built in obsolescence
- Shortening product life cycles
- Impact of corporate social responsibility

## **Summary of model scope and development**

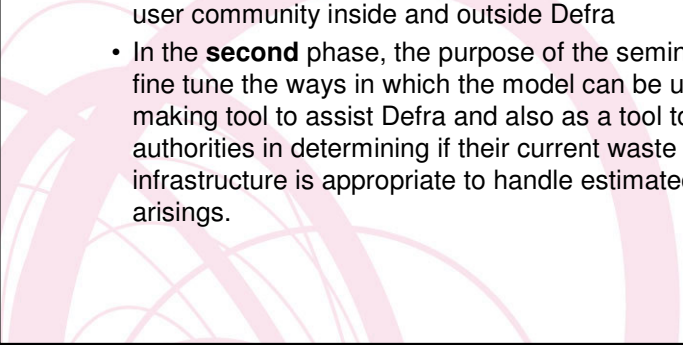
- In light of the shortage of waste data we will create an input-output model using consumer spending data from the Family Expenditure Survey
- This will entail further research into the waste components of each spending category in order to establish the relationship between expenditure and waste production
- A futureproofing exercise will prioritise the top 12 socio economic drivers affecting the quantity and type of household waste production over the next 20 years
- These will form the basis for assessing the future direction of waste arisings within each of the product spending categories to validate the model outcomes and integrate the socio economic factors

### 3. Analysis and consultation



#### Purpose of the analysis and consultation phases

There are two significant phases of consultation planned for the project:

- In this **first** phase the purpose of the consultation seminar is to gain feedback on the model design, construction, and validity to ensure that the end result has real 'buy-in' from the user community inside and outside Defra
  - In the **second** phase, the purpose of the seminars will be to fine tune the ways in which the model can be used as a policy making tool to assist Defra and also as a tool to assist local authorities in determining if their current waste management infrastructure is appropriate to handle estimated future waste arisings.
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### **3.1 Objectives of the first workshop**

- The aim will be involve a wide range of different and fresh perspectives to review and enhance the key decisions shaping the model design, construction and use
- Specifically we will want to test the assessments of the way in which key drivers will determine future waste levels in key areas of spending
- And ensure buy-in from the potential audience for model outputs within Defra including policy makers, but also external groups involved in waste initiatives and policy development
- We to further engage the audience in the relevance and importance of integrating a social perspective into the modelling process
- We are planning a half day workshop with a maximum of 20 attendees in Central London – Tuesday 11<sup>th</sup> October 2005

### **Proposed operation of the stakeholder workshop**

- The model design, scope and components will be presented including the rationale for developing this approach
  - An short exercise will be conducted in pairs asking people to identify the potential ways in which the outputs of the model can be used
- Presentation of the key drivers and lifestyle trends covering the futureproofing process and the main outputs from this state
  - Syndicate teams will work on a carefully designed exercise where they will be asked to determine the main implications of the drivers to the likely future waste outcomes in the key expenditure categories
- There will be a plenary feedback on the process followed by an open facilitated plenary discussion which will include initial thoughts on the relevance of the model to policy decisions
- Attendees will be asked to provide feedback both on the process of the workshop but also written comments on the model and its future usefulness

## **Stakeholder groups to be represented**

- Economists and social scientists
- Policy experts/Defra teams
- Representatives from other Government departments
- Waste technical experts
- Industry experts
- Packaging specialists and designers
- Commercial organisations

## **Preparation for the workshop**

- Much of the preparation for the workshop will arise out of the next phase of the project – ie. fleshing out the model construction and the futureproofing process
- The precise exercises that participants are asked to complete will depend on the outputs of the work although it is likely that we will assign syndicate groups to considering the ways in which the key drivers will impact on particular product and expenditure categories in the future



## **3.2 Second phase consultation and validation**

Designed to fine tune the ways in which the model can be used as a policy making tool to assist Defra and also as a tool to assist local authorities in determining if their current waste management infrastructure is appropriate to handle estimated future waste arisings.

### **2<sup>nd</sup> National Workshop**

To ensure the model encapsulates the possible policy options and their implications for enhancing or mitigating behaviour change.

### **Two Local Area Workshops**

To define the type and quality of information needed to use the model effectively. Historical waste data from two selected areas (one with good quality data the other with poor data) will be sourced and modelled.

## **Proposed operation of the second phase consultation**

The format for the workshops will be interactive, using tasked breakout groups. Firstly the model will be presented alongside the type and range of outputs it can achieve, the impact and limitations of poor quality data and the type of information that make the model most sensitive will be demonstrated.

Participants will be asked to contribute to assumptions that will then be tested to derive their impact on local and national socio and economic measures.

Participants will be asked to identify the variables that can be used to assess the model capabilities to determine measures for waste management planning and decision making. They will determine and understand the quality and type of data required by policy makers and Local Authorities to make the model as useful as possible, and identify the data and information sources required to run the model effectively.

The outputs will be summarised and presented at the end and opportunities for future model development will be taken forward.

## **Stakeholder groups to be represented**

### **2<sup>nd</sup> National Workshop**

A similar audience to the first consultation phase.

### **Two Local Area Workshops**

Local Authorities, waste, economic and social development  
Local area practitioners and community waste groups  
Regional Development Agencies  
Local Environment Agency

## **Preparation for the second phase consultation**

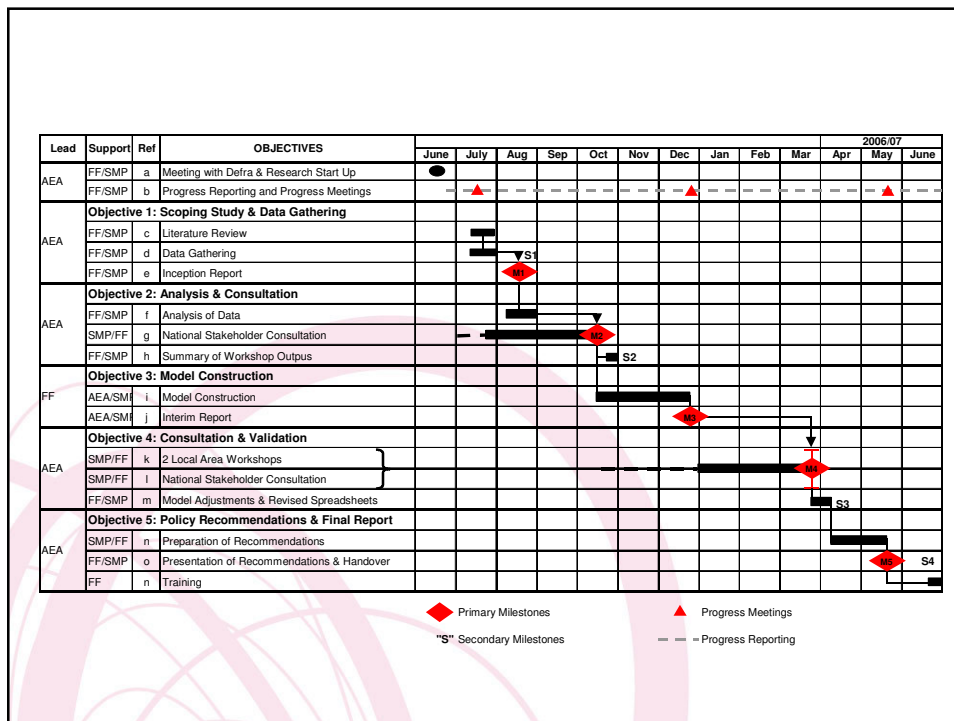
### **2<sup>nd</sup> National Workshop**

Prepare a summary of the possible policy options and demonstration on the impact of policy options on the model outputs.

### **Two Local Area Workshops**

Two suitable Local Authority areas will be identified and these will be sourced from areas with historical waste data – one with good quality data and the other with poor quality data. These areas will be profiled according to their demographic and socio-economic parameters. Where possible local area policy options will also be derived. An interim model will be prepared to illustrate the impact of the sourced data and policy options on the model outputs.

## 4. Project Timetable



## **Next Steps**

Objective 2: Analysis & Consultation (Aug-Oct 2005)

- Research into waste components of consumer spending categories (Aug 2005)
- Futureproofing exercise (to be conducted initially by the project team, Sept 2005, and then updated / validated at the first stakeholder workshop, 11<sup>th</sup> Oct 2005)
- Application of key trends to waste projections in all spending categories (Sept 2005)

Objective 3: Model construction (Oct-Dec 2005)