

The Carbon Costs of Recycling: An Island Perspective on Waste and Resource Management.



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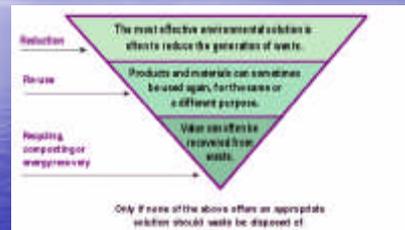
Outline

- Changing times – sustainability and climate change
- The Guernsey situation and the study
- Summary and discussion points

The rise of sustainability and climate change

- The sustainability agenda has taken a long time to influence waste policy
- Reliance on cheap landfill in the UK / EU
- Climate change now the focus of “performance” - GWP
- Climate change and health – January conference

The waste hierarchy



Recycling

- “matter of social conscience or scientific reason?” (Collins, 1996)
- Recycling has at least five impacts on climate change (Ackerman, 2000)
- Paper waste – 1.4 t CO₂ saved by diversion from landfill (DEFRA, 2007)

Counting carbon

- Climate change and energy security are shaping the environmental agenda
- Move towards measuring environmental performance in terms of carbon accounting
- The waste sector changing from waste being seen as something to be disposed of, now a resource that has a carbon value

Guernsey situation

- Landfill disposal
- Household recycling rate 31 %
- Bring banks
- Kerbside collection trial
- Politics
- Maintaining landfill capacity is the main driver

The need to recycle?

- The drivers for recycling in Guernsey are not the same as the UK
- The island factors include, quantity and quality of waste, the market, value and distance travelled to be reprocessed

The trigger for the study

- In 2006 for the first time more than 50% of post-consumer paper waste in the UK was exported for processing, mostly to the Far East
- 400 000 t in 1998 to 4.7 mil t last year
- Main destination China, but also India
- Would shipping waste to China create more CO₂ than the 1.4 t if it were landfilled?

Source: CPI

Can you question the waste hierarchy?

- Foundation of waste policy and strategy
- Dogmatic versus Pragmatic approach
- Island issues about transport to recycling markets and economies of scale.
- Managing the public expectation

Controversy in Denmark

- In 2007 a Danish study, (Schmidt et al) looking at paper waste challenged the waste hierarchy as a way of determining whether recycling should be undertaken. It favoured Life-cycle assessment (LCA) as a tool for decision making.
- Huge controversy

Danish review of LCA's of paper waste recycling

- If you ship post-consumer paper waste > 4400 km the environmental benefit of recycling is lost due to increased CO₂ (Villanueva and Wenzel, 2007)
- UK to China shipping route is around 16 000 km

The questions raised

- Is Guernsey's paper recycling market in the UK? What happens to Guernsey's paper waste?
- Which has the lower transport impact, bring bank / kerbside? Which route should we choose to reach out 50% target?
- What are the overall emissions and impacts?

The basis of carbon counting in the study

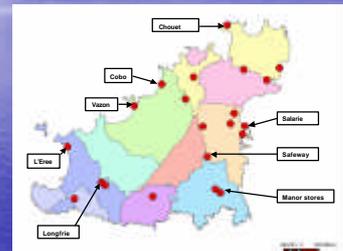
Vehicle emissions = distance travelled X emissions per km

But life is never that simple!

Bring Bank study



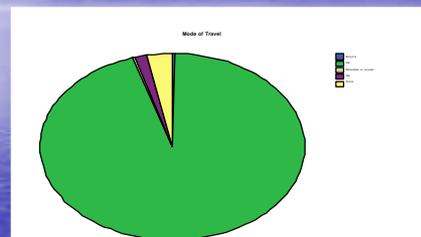
Location of "super" sites



Questionnaire

- Distance travelled - from postcode
- Vehicle and engine type
- What recyclables' are dropped off
- Frequency of visit to the site
- Whether they made the trip just to recycle or combine with another journey
- Whether they used any other sites and how often

The Results



Conclusions

- Guernsey's recycling level is high even without kerbside collection but quantities are small < 3000 t / year
- The kerbside trial indicates that the collection system is inefficient
- On island transport as suggested by previous work are small enough to be ignored

Con/t

- Paper recycling does take place in the UK so largest impact can be dismissed. This may not always be the case in the future.

Discussion points

- Carbon counting can be a rapid method of determining simpler impacts
- Cheaper and less complicated than LCA

Discussion

- Know where your waste goes. 80% of UK LA's don't (ENDS Report 402)
- Keep the quality of recyclables high
- Increasing recycling has to be balanced against costs and impacts
- Ling & Widowson, 2008. There is a need for value judgements where there are conflicting arguments. Are the decision makers well enough informed?

Thank you

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