

South East Capacity Review
Stage 5: Market Analysis & Interventions

**Scoping Review
of Recycling & Reprocessing
Infrastructure in
South East England**

Prepared for



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Beyond Waste

www.beyond-waste.com

South East Capacity Review

Stage 5: Market Analysis & Interventions

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Disclaimer

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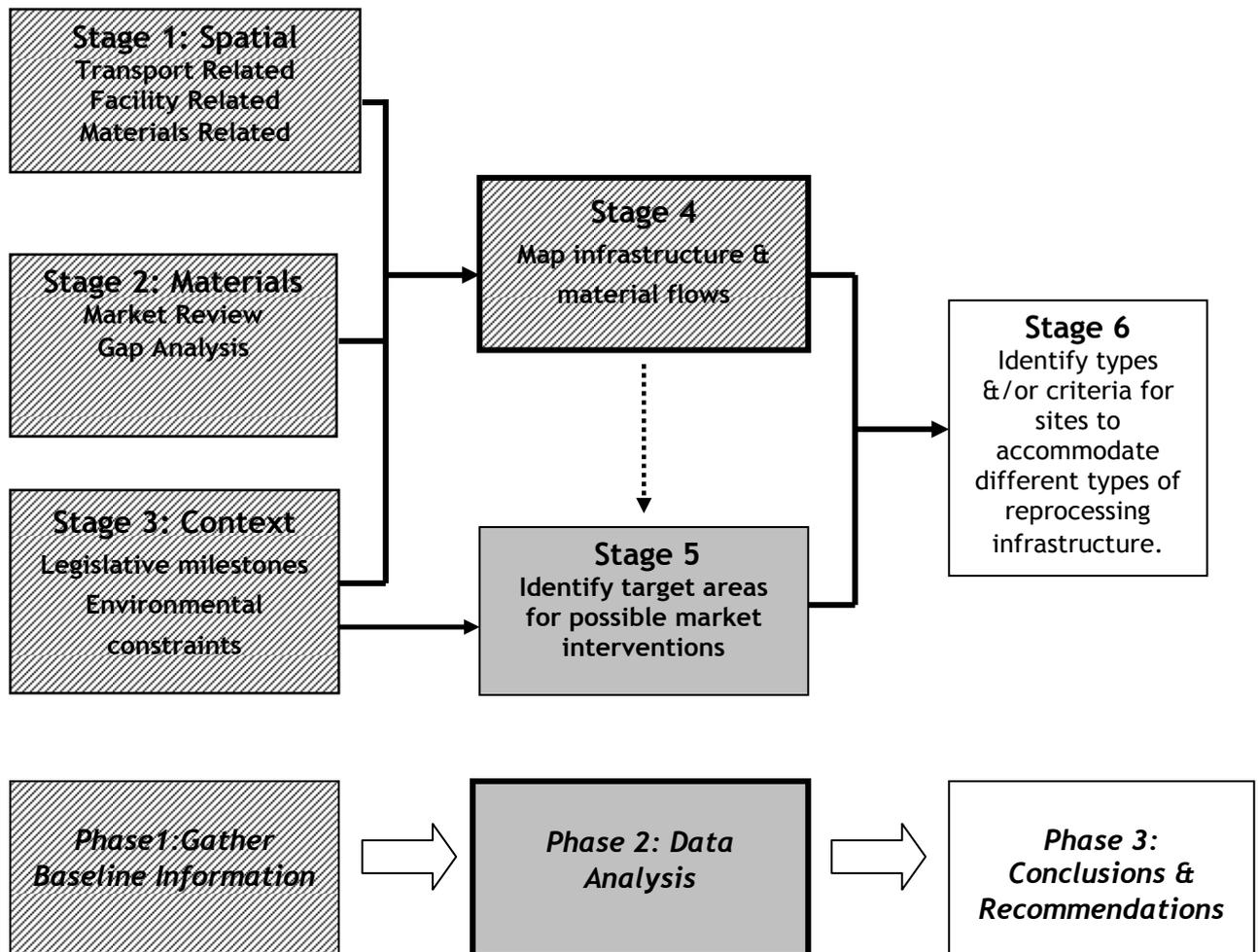
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Introduction

The South East England Regional Development Agency (SEEDA) commissioned Beyond Waste to undertake a scoping review of recycling and reprocessing capacity and associated infrastructure within the region.

Project Structure



This report summarises the findings of our work on Stage 5 of the project focussed on market development. This draws on the work undertaken in preceding Stages of the project. It also draws on the letsrecycle.com web for coverage of emerging news items.

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Methodology

A consultative approach was taken to the development of this output on the following basis:

1. The initial findings of Stage 2 were ground truthed at the SEEDA Vision event.
2. The outputs of the Vision event were used to identify potential interventions within each material sector profile.
3. These profiles were then subject to peer review by representatives of key players in the sector. A record of the peer review comments has been retained by the consultant.
4. These outputs were then input into a sub group of the SEEDA Waste Market Development Group. The group met on two occasions to develop the Matrix presented as Figure 4 of this Report.

Current Status of Capacity

The output of Stage 2 and 4 give a picture of the shape of recycling chain capacity serving the region. This is summarised in Table 1.

	Indigenous	Export	Alternatives
Paper	Mature/Potential	Buoyant	Limited
Card	Mature/Declining	Buoyant	Limited
Glass	Mature/Declining	Stable	Emergent
Plastic	Emergent	Buoyant	Emergent
Wood	Emergent	Limited	Emergent
WEEE	Emergent	Limited	Limited
ELV	Mature/Stable	Stable	Limited
Tyres	Emergent	Limited	Emergent

Table 1: Status of Regional Secondary Material Capacity

The survey was very much a snapshot at a single point in time. Even during the course of this study significant changes occurred. For example:

1. Paper: Reporting of Defra's investigation into packaging waste recovery notes (PRNs) and their export equivalent (PERNs). The issuing of PERNS was cited as a key factor in undermining indigenous processing capacity.¹

¹ Paper Packaging Waste Fact Finding Mission Report August 2006 DEFRA/DTI
<http://www.defra.gov.uk/environment/waste/topics/packaging/pdf/paperwaste-factfind-aug06.pdf>

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2. Card: St Regis announced the closure of the Taplow card mill and sold the 45 acre site to make way for housing. This will result in the loss of 90,000 tonnes of reprocessing capacity. It is not clear how the market will respond to the loss of this capacity. In particular whether the material that currently flows to the mill will end up in Kemsley, going out of region to other plants or being exported. The closure will also require the relocation of the Severnside Depot. The period has also seen further consolidation in the sector with the creation of the Smurfit Kappa Group from the merger between Jefferson Smurfit Group (JSG) and Kappa Packaging (Kappa).
3. Glass: Beatson Clark owners of Lewis & Towers announced the closure of the Edenbridge furnace in December 2005. This was attributed to the high price of natural gas and the lack of customer commitment to contracts to finance the rebuild of the furnace. The lack of long term contracts was due to intensity of competition in the specialist glass container market.² The site was located on a small industrial estate and has now been disposed of.
4. Plastic: The export of plastics came under the microscope with a TV documentary.³ WRAP initiated an investigation into exports following on from an investigation by the Advisory Committee on Packaging.⁴ The Environment Agency also undertook an investigation into exports of mixed plastics for potential breaches of the Transfrontier of Shipment Waste Regulations due to contamination levels. It is now prosecuting Grosvenor Waste Management which runs one of the largest materials recycling facilities in the UK at Crayford in Kent. The plant sorts over 150,000 tonnes of recyclable material each year, collected mainly from London and the South East of England.⁵ The Agency also suspended Grosvenor's registration for issuing Packaging Export Recovery Notes.
5. Wood: The biggest board mill in the UK North Wales-based Kronospan called for higher PRN prices for wood to promote expansion of existing capacity to take cleaner secondary wood chip. Kronospan uses 350,000 tonnes of recycled wood a year, which represents 60% recycled content. However, the company fell below this target in Spring, due to a lack of industry-standard material. They claim they could take 80% recycled content. The company reports that it spends three million pounds a year de-contaminating recycled wood, at its special plant at Chirk.⁶

² The operation had been under threat since 2002 but closure was avoided by closure of a competing plant in Dublin. Competition had reportedly intensified with the introduction of the additional furnace capacity built by Quinn Glass with support from the North West RDA.

³ Grosvenor Waste Management complains of "trial by media" (06.12.05) letsrecycle.com
<http://www.letsrecycle.com/materials/plastics/news.jsp?story=5135>

⁴ WRAP investigates waste plastic exports (02.02.06) letsrecycle.com
<http://www.letsrecycle.com/materials/plastics/news.jsp?story=5287>

⁵ Grosvenor to appear in court over waste shipment charges (06.09.06) letsrecycle.com
<http://www.letsrecycle.com/materials/plastics/news.jsp?story=6009>

⁶ Boardmaker claims "massive potential" for recycled wood (28.07.06) letsrecycle.com
<http://www.letsrecycle.com/materials/wood/news.jsp?story=5892>

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6. WEEE: Postponement of implementation of WEEE take back scheme pending outcome of further consultation on compliance and apportionment arrangements by DTI.
7. ELV: Failure to meet the first target to recover 85% of ELVs by 1 January 2006 with no apparent penalty.⁷ The Commission review of ELV Directive Targets for 2015 came out strongly against extending recycling and reuse targets beyond the 2006 80% recycling/85% recovery target and now presents the prospect of the 2015 85% recycling target being reduced.⁸
8. Tyres: The DEFRA decision to allow the continued use of shredded tyres to landfill following the July 2006 ban on tyres to landfill providing it is used for engineering purposes. WRAP launched a fund to trial alternative outlets for tyres and an operator of a cement kiln burning tyres receiving a warning from the Environment Agency for breaching emission limits.⁹

The above examples demonstrate the dynamic and uncertain nature of the secondary materials markets and illustrates how problematic it can be to predict future market conditions that will promote investment.

⁷ UK misses end-of-life vehicle recovery target The ENDS Report June 2006/ Issue 377

⁸ Stakeholder Consultation On The Review Of The 2015-Targets On Reuse, Recovery And Recycling Of End of Life Vehicles Final Report Version Of 4 November 2005

⁹ Lafarge Cement served warning over tyre-burning emissions (24.02.06) letsrecycle.com <http://www.letsrecycle.com/legislation/news.jsp?story=5362>

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Predicted Arisings

Figure 1 shows projected arisings requiring recovery for four of the seven target materials as calculated by the STRAW project¹⁰. This is based on applying the regional recycling and recovery targets to arisings projections. Further details on the derivation of the data is included in Appendix 1.

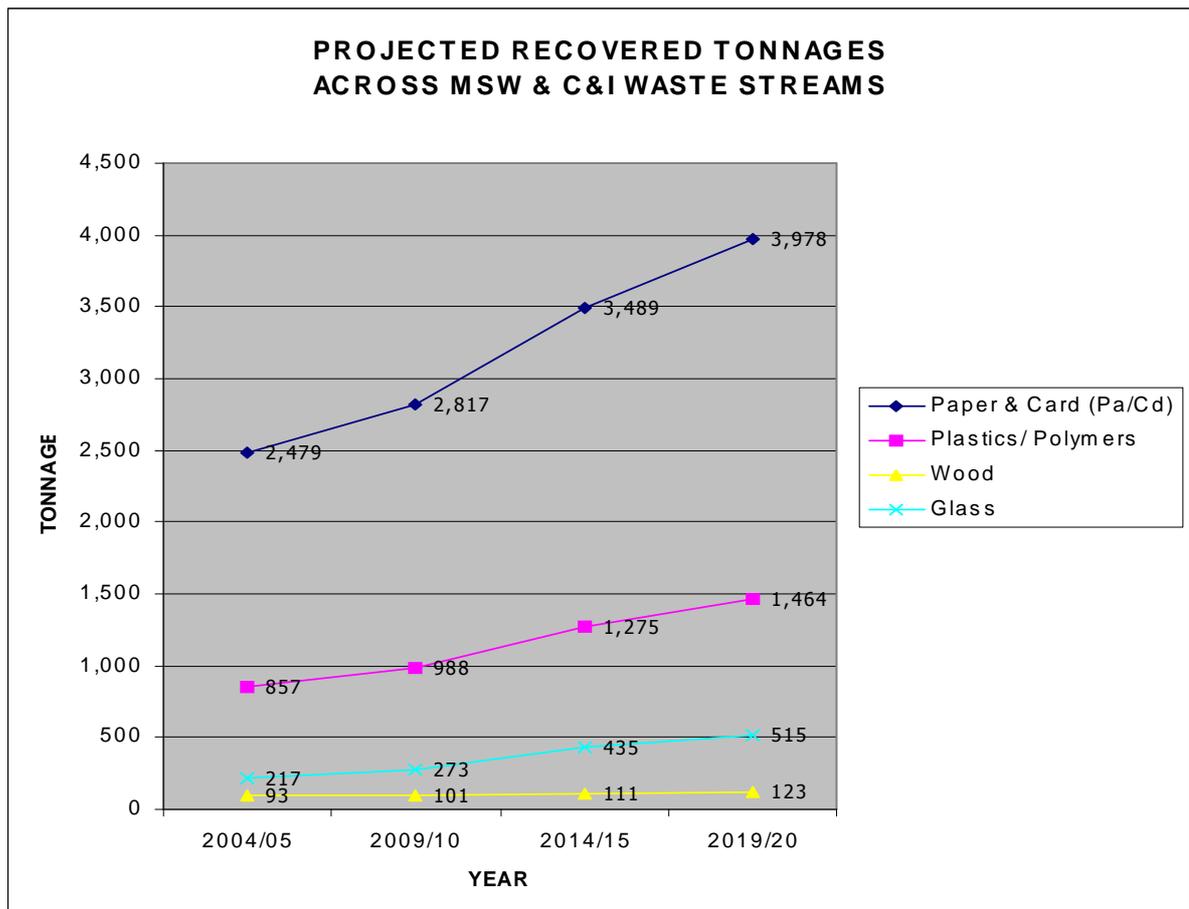


Figure 1: Projected Tonnages of Four Target Materials

The next section:

- characterises the material sector supply chain as it operates in the region; and
- conveys messages from survey respondents and participants in the SEEDA Vision Event on a material by material basis that gives indications of where support might be best targeted.

¹⁰ The Sustainable Transport Resources and Waste project is intended to demonstrate the environmental and economic benefits to England and Wales of a multi-modal mass balance approach to the transport of waste and recyclable material. It is funded by Biffaward through the Landfill Tax Credits Scheme, with match funding from Department of the Environment, Food and Rural Affairs, British Waterways, LaFarge, Highways Agency, Institution of Civil Engineers.

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Material Specific Messages

Paper/Card Supply Sector

Market Characteristics

- Paper and card has an advanced recycling infrastructure already in place and collection could be expanded relatively easily.
- While paper and card may be dealt with as a single material they are in fact quite distinct both in terms of their primary sources and reprocessing outlets.

Collection/Pre-processing

- The vast majority of recovered cardboard comes from the commercial sources. Collection from commercial outlets is mainly carried out by waste-paper merchants who collect, sort and bale the waste paper and board.
- Collection of municipal paper is seen as almost saturated.

Transport

- Currently road transport is solely used for domestic movements with some movement for export by rail. Significant use of rail would require major investment and need to offset: costs of double handling and delays in transit experienced by use of rail.

Reprocessing - Card

- Most card is recycled into corrugated case material for box manufacturer.
- In addition, a tonnage is recovered through waste to energy.
- Reprocessing of card is highly concentrated. Three major groups: Smurfit/Kappa, St Regis (D S Smith) and SCA,¹¹ account for about 60% of capacity. All of these companies have significant operating bases within the South East region which serve the region and beyond including London.
- Estimated card reprocessing capacity in the South East just over 1 million tonnes per annum. This serves South East, East of England and other regions.
- In the case of card whilst there may be room for expansion (both physically and capacity demand) in the region and UK generally, this is currently restricted by the existing over-capacity in Europe. Further contraction of UK capacity is occurring.¹²

¹¹ British Plasterboard has now withdrawn from the market closing operations in Kent and Aberdeen and selling off depots to Severnside.

¹² DSS Smith proposes closure of Monmouthshire mill letsrecycle.com (20.02.06)

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Reprocessing - Paper

- Newsprint reprocessing capacity in the South East is 500,000 tonnes per annum. This serves the South East, East of England and London.
- All UK newsprint mills produce product with virtually 100% recycled content¹³.
- Aylesford Newsprint has a positive desire to expand capacity at the Aylesford site and was an unsuccessful bidder for the WRAP support. They are now waiting for capacity pressure to build in the market to create sufficient demand for further capacity.
- Rejection rates are low at reprocessors, but there is rising concern about quality of material coming from co-mingled collection MRFs.
- MReal operates an office paper production facility in Kent producing Evolve paper. Evolve paper is manufactured from recycled office paper collected from London and the South East. This paper is supplied back to the sources of second-life paper.

Exports

- Significant collection for export is already taking place. Over-capacity elsewhere in Europe creates substantial demand for export. An estimated 50% of containers bringing goods from abroad into the South East return empty. The overall cost to deliver to market (including transport and value of product) from North West England to South East England is greater than the reported cost to ship from the North West to the Far East due to low cost of back haul offered by shipping.
- Significant quantities of mixed paper are exported abroad while paper and newsprint is imported. Exports of mixed paper from South East ports are expected to grow to at least 300,000 tonnes per annum by 2010. Any indigenous capacity growth would be marginal given that current capacity (with exports) meets supply.

Identified Needs & Suggested Interventions

1. Intervention in the future should focus on collection. The global market is seen as serving the demand at least up to 2020.
2. Collection and bulking infrastructure should be sited near population centres rather than export points.
3. The infrastructure for collection for non-MSW sourced paper is not at optimum and this could be a focus for improvement.
4. Need for well-organised and run Civic Amenity sites to reduce contamination of News & PAMS.

¹³ 'Fibre fatigue' is countered by using magazines to provide high quality fibre. It is not clear how the recent voluntary agreement to introduce a minimum recycled content to magazines will impact this arrangement.

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Glass Supply Sector

Market Characteristics

- Mixed glass has a value of up to £20/tonne with green glass up to £25/tonne.
- The focus is shifting to the carbon footprint of different recycling routes. A British Glass commissioned LCA indicates that export of glass for container manufacture elsewhere in Europe is superior to use of glass for aggregate substitution¹⁴. The benefits of glass filtration media is also brought into doubt. These findings are supported by a recent review of LCAs undertaken for WRAP.¹⁵
- Current pre-processing capacity operates on a sub regional basis with catchments extending into adjacent regions and London.

Collection/Pre-process

- Provision of additional pre processing capacity (colour sorting) is dependant on long term contracts that will guarantee a minimum supply.
- Initiatives aimed at reducing glass waste production such as bulk importation of wine present the opportunity to reduce substantially green glass imports while rectifying the colour imbalance as well as significant energy savings in long distance transport. Currently bulk containers are received at Tilbury and Felixstowe and then transported by road to Corby and beyond. Industry reports that the UK bottling initiative now being driven by WRAP is reportedly supporting an increase in UK green glass production at Quinn's works in North West.

Reprocessing

- Our survey indicates that glass reprocessing capacity has contracted within the region with a decline in aggregate outlets and the only container manufacturer now closed. Reported current reprocessing capacity within the region is around 47,000 tonnes per annum.
- With the region's only furnace now closed and the UK market under saturation conditions it is unlikely that a new glass container manufacturing plant would be established anywhere else.
- Demand for glass as aggregates was reported as being depressed and less favoured by most of the glass pre processors. Opportunities to promote this application through public procurement practices could be explored.

¹⁴ They refer to use of glass for aggregates production as 'road fill' or 'down cycling'.

¹⁵ Environmental Benefits Of Recycling: An international review of life cycle comparisons for key materials in the UK recycling sector WRAP 2006.

http://www.wrap.org.uk/downloads/LCA_Full_Report_May_2006_-_Final.591e43f8.pdf

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Exports

- Alternative outlets for mixed glass such as export for remelt to Spain and Portugal are reported as being quite stable so that aggregates no longer preferred option. Where pricing is similar, road transport costs is key factor. Minimal export occurs from Southampton but export facility in Bristol and Liverpool is reported to provide better value than aggregate applications.

Markets

- Use of glass as aggregates was less favoured by most of the glass pre processors surveyed. This was attributed to the relative stability of export outlets for green glass production. The perception of aggregate applications as only being suited to low grade material such as pre processing rejects is not solely held by the bottle production sector. From this a hierarchy of options is emerging with UK remelt preferred and aggregate production as least preferred. It is not clear if this is just a reflection of market price or demonstrates a wider view being taken.
- Niche markets for products such as decorative glass have stalled.

Identified Needs & Suggested Interventions

1. Intermediary facilities for bulking (densification) and sorting (pre-processing) most likely to be needed in the region rather than final fabrication. Minimum input required 20,000 tpa. SEEDA could facilitate development of these by promoting collection schemes that achieve a critical mass of supply.
2. To attract and develop end use markets for crushed green/mixed glass a centralised glass crushing plant may be introduced or alternatively a mobile crushing facility may be used to service the various population centres. However the quality of output from mobile crushers has been reported to be poor which means product may only be suited to low grade applications.
3. SEEDA could aid in facilitating multi-material road to rail depot.
4. A shortfall in sorting capacity was identified in the Vision event. However the Recresco facility in Southampton could more than double the sorting capacity available if it were to operate on 24-hour shift.
5. A significant step to improve the value recovered from currently collected recyclate to be used for container manufacture would be to move away from co-mingled collection to reduce cross contamination across colours... However collection costs are significantly lower with co mingled collection and optical sorting to yield a high value material adds cost. Also colour separation consumes time and reduces overall processing capacity of pre-processing sites.

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6. The risks associated with investment in the market place on high value products is still considered too great. More demand stimulation or greater risk sharing on equipment investment is needed.
7. There is a divergence of views on the future direction of development of outlets between the UK glass container manufacturers, (views promoted by British Glass), and operators of alternative glass capacity. Bottle producers favour collection and pre processing prior to out of region reprocessing into containers while other operators favour development of alternative markets within the region such as use as sand/ foam glass. This leads to contrasting views on co-mingled collection & colour sorting.
8. With the region's only furnace now closed, and bearing in mind the problem of colour imbalance, future action might best evolve around:
 - focussing on capturing amber and flint glass for out of region reprocessing; and
 - developing and introducing other operations in region that offer higher value markets for crushed or powdered green or mixed glass.
9. Opportunities to promote higher value applications through public procurement practices should be explored subject to cost effectiveness and demonstrated environmental performance.
10. There may be merit in establishing bottling capacity to serve South East England to respond to the trend towards bulk importation. As a first step an LCA of this option could establish if this would yield significant carbon benefits.
11. Collection capacity needs to be expanded significantly. On a national basis British Glass has estimated that bring bank capacity needs to be doubled, commercial collection increased five fold and kerbside collection increased two and half times for the Packaging Directive targets to be met.

Plastics Supply Sector

Market Characteristics

- Diversity of plastics types, sources and applications means the sector is fragmented.
- Recycling routes have evolved for some plastics through the opening up of in-house reprocessing capacity where initially they were provided to create closed loop recycling.
- There is a general focus on expansion of collection & pre processing capacity within the region.
- Pre processors are keen to identify further outlets for granulate.

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- In some cases supply of plastic granulate is associated with sale of process engineering knowledge. In these cases suppliers (pre processors) see themselves supplying raw materials for new product and expertise on how to use it. In addition these pre-processors often work with producers to segregate suitable plastics.
- This is a 'convergence material' as it occurs within the WEEE and ELV stream as well and will need to be targeted to achieve recycling and recovery targets. A number of paper and glass collectors have indicated an intent to collect plastics from the MSW stream.

Collection

- At the end of 2003, plastic bottle collection levels in the UK had risen to an estimated rate of 24,300 tonnes per annum.¹⁶ Our Survey suggests around 15,000 tonnes of mixed plastics were collected across the region in 2004/5. The principal collector and pre-processor of MSW sourced plastic in the South East is Bayliss Recycling which supplies Centriforce - a Liverpool reprocessor.
- A number of plastic specific producer responsibility initiatives have been established to collect second-life plastic to supply back into production processes where conditions support.

Reprocessing

- Although there is a lot of plastic being generated in the South East very little of it is going back into production in the South East. Most plastic that is collected is exported rather than processed within the UK, and that which is reprocessed in the UK travels north of Birmingham.
- UK plastic reprocessors may not have sufficient capacity to handle all mixed plastic waste currently produced. WRAP report estimated UK based PET and HDPE bottle reprocessing capacity, 29-33,000 tonnes/year in 2001.¹⁷

Export

- Far East demand for plastics, particularly packaging, is very high. This is undermining UK capacity because:
 - Value added at point of manufacture, and manufacturing base in UK low (some pockets in the region e.g. Kent).
 - Labour is cheap. In UK the value added to recyclates can be lost in labour costs.
 - Transportation is very competitive due to back loading - ships would have to take on ballast otherwise.

¹⁶ WRAP has been working with RECOUP to promote benefits of collection to LA - message in a bottle campaign to deliver an additional 20,000 tonnes of domestic plastic bottle recycling capacity.

¹⁷ Scott Wilson/SWAP report 2001 WRAP

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- Exports tend to be sent unsorted or segregated only by material. Tougher specifications are placing pressure to clean up which reduces cost advantage.
- Merchants are seeking diversity of outlets so development of wider range of applications not necessarily seen as an alternative to export.

Market

- Product user awareness of existing value of second-life plastic is low and so opportunities to recycle plastic are being missed from non-MSW sources.

Identified Needs & Suggested Interventions

1. A number of companies active within the South East are looking to expand their pre-processing operations.
2. Densification/collection infrastructure is priority. Possible SEEDA intervention to support the purchase of sorting equipment; encouragement of source segregation schemes on industrial sites.
3. Solutions to upgrade low grade mixed plastics. This might be achieved either by support for mechanical sorting operation or polymer cracking (plastic to oil) technologies. SEEDA could provide support for local pilot scheme e.g. new technology grants/sites.
4. Development of fabricator capability offers potential for local skilled and higher value element that could link with local government procurement. For example, manufacture of recycled plastic can crusher, home composter, and street furniture.
5. As the rising export trend looks set to continue, a better understanding of the costs and benefits of export to the region in the context of global market dynamics is needed.
6. Public Sector (local government) procurement policy to promote the use of street furniture made from plastics recycled by their own citizens to raise awareness and create a local market for materials.

Wood Supply Sector

Market Characteristics

The WRAP study identified a number of constraints limiting the current development of the wood recycling sector in South East England:

- the market perception of products (e.g. for equestrian use, mulch);
- cost of transportation to panel board mills primarily located in northern and central England;
- difficulties in obtaining planning permits for business expansion (of existing sites); and
- the rising cost of land in areas close to sources of waste wood (presumably to locate new sites).

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Collection

- According to WRAP, collection infrastructure is in place. This is in the form of existing waste collection & transfer facilities that already handle waste wood that is currently landfilled. These could be modified to segregate & prepare wood for other end markets.
- Community based schemes such as the Brighton and Hove Wood Recycling Project collect wood from local construction sites at equivalent cost as landfill. It then sorts and sells higher value timber for reuse back to the construction sector and for household DIY. Unsuitable timber is sent for chipping for composting or use as fuel. This scheme is now being replicated in a number of other urban areas across UK. The diversion achieved is relatively small (~1000tpa) due to the large quantity of material that is unsuitable for resale but significant value is obtained.
- Within the wider study area the 7 largest wood recyclers (1 in London all others Midlands and North) handle 60Kta+ each and are believed to represent ~50% of the market.

Transport

- Wood is a low-density material. It is therefore not generally economic for unprocessed waste wood to be transported long distances. Wood is chipped before being sent to Chipboard manufacturers due to cost of transporting unprocessed loads.

Pre-process

- Pallets sorted on site of production or at pallet distribution depot and sent for chipping or refurbishing depending on condition. With the focus of demand on untreated timber there is some competition between reconditioning pallets and chipping for fuel
- Pre-sorting on C&D sites where segregation systems are in place offers benefits but nationally this is considered to be marginal. Good practice on segregation is spreading via a number of initiatives and helped by landfill tax.
- There is a general focus on expansion of chipping capacity on existing sites

Reprocess

- WRAP study identified a need for a wood refining centre in the South East and a possible site in Kent but no one responded positively to invitation for Capital Support (part funded by SEEDA) to develop it. The call was national with an emphasis on the South East; size was not a specific requirement. One tender was received but was outside South East and not progressed.

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Fabricate

Chipboard - untreated timber

- Approx 1.22 million tonnes of wood was reprocessed in the UK in 2004 and 75% of this was consumed for the manufacturing of chipboard. There are no chipboard manufacturers in the South East. Chipboard manufacturers consuming recycled wood are in Mid Wales, Merseyside, Northumberland, Scotland and North Devon. Chipboard and finished chipboard products are also imported from manufacturers throughout the world.
- South East recyclers are supplying out of region factories as a backload after delivery of finished product (to B&Q stores.) This means that chipboard suppliers catchment for raw materials closely corresponds to their customer base.
- Chipboard manufacturers are applying tougher quality standards to input e.g. will not accept coated or laminated wood. This is driven by a combination of CEN product standards, Climate Change Levy and IPPC emission limits. Further work is needed to understand how these drivers influence the supply chain.
- UK market for chipboard is dependent on the health of the economy. Development of new housing stimulates demand as does home improvement. Current demand is not believed to warrant a new chipboard manufacturer in the South-East¹⁸. However chipboard manufacturers have expressed interest in exploiting the regional material supply base further. Some chipboard manufacturers offer exclusive supply contracts on a medium term basis if commercially viable. This gives security for investment and supply.
- Gate price for chips is around £10- £15 per tonne depending on transport arrangements.

Horse-bedding - untreated timber

- This has a more demanding feedstock specification and much more demanding end product specification.
- In some cases there is a demand for materials that are of high value e.g. equine market for wood material in Saudi Arabia - £1000/tonne. This has supported RDA investment in capacity elsewhere in UK.

Pet-litter- untreated timber

- Some manufacture of pet litter is taking place in the South East

Pallets

- New pallets are made from old damaged pallets. Our survey suggests that a lot more reconditioning could be happening.

¹⁸ Chipboard factory believed to cost around £10 million and might occupy a 50-acre site.

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Pellets

- Chips may also be used to produce logs for burning in household grates and pellets suitable for industrial boilers. Pellets are currently being imported from abroad to supply this market.

Export

- Export market is minimal. Netherlands has a large wood chipping plant taking 100-150,000 tpa from across Netherlands, 90% of which is exported to Belgium and Germany for chipboard and power station use. The transport impacts associated may be less than transport to out of region chipboard manufacturers although these movements tend to be on a return load basis.

Identified Needs & Suggested Interventions

1. Remanufacture. Some specially designed office furniture can be disassembled and re-manufactured. DTI New Technology Programme has funded a pilot collaborative R&D project on the subject that started in 2005. This hasn't been developed on a large scale but may be suited to SME sector.
2. Facilities to sort high value wood for reuse from lower value untreated wood for chipping. This could be done through a network of community wood recycling projects in the South East with a number of sub regional chipping plants. However the economics is dependant on developing high value uses for the bulk of output and significant rise in landfill prices.
3. Pallet reconditioning network. One operator expressed a desire to set up a dedicated site in the South East region.
4. There are clear linkages with the climate change and renewable energy agenda for recovering value from this material stream.
 - a. SEEDA could stimulate the development and promotion of small-scale boilers fuelled by wood chips capable of heating schools, industrial estates. This fits with the recent report of the UK Biomass taskforce which suggested promoting small-scale heat and power generation and co-firing and dedicated biomass plants.
 - b. District Heating Systems could be developed in new housing development in the South East.
 - c. There is potential to expand Slough CHP capacity given incentive - possible link with Local Authorities on use of heat in schools.
5. There may be scope to develop a tiered approach where locally based community schemes collect for reuse/ refurbishment and then aggregate up to larger chippers based on regionally significant sites supplying manufacturers or energy producers. This would overcome the potential conflict between refurbishment and chipping of pallets for fuel.

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WEEE Supply Sector

Market Characteristics

- The region is seeing a rapid expansion in processing capacity.
- There is a shortfall in CRT glass and mixed plastic outlets. The main outlet is export but these markets may become saturated as whole EU moves towards compliance.
- Potential investors are concerned that small WEEE will not materialise given the current arrangements.
- Local authorities are concerned about use of CA sites as Dedicated Collection Points (DCP).

Need to differentiate between categories of WEEE as follows:

- White Goods: Potential for dismantling prior to shredding but this is very time consuming. Need for an end market for the materials removed. If shredding is acceptable then sufficient capacity exists through fragmentisers but improvement on reclamation from residue may be required. The issue of whether shredding counts as treatment prior to landfill requires clarification.
- White goods and fridges are also collected via bulky waste collections and may be taken back to transport depot. These sites might be covered by WEEE storage exemption from waste management licensing subject to throughput. This could free up space at CA sites for small WEEE.
- Small WEEE: Small WEEE currently delivered to CA sites may either be taken for reuse by totters operating CA sites or placed in scrap bin. Where a site is a DCP, all WEEE delivered would need to be made available to the producers. There are doubts about ability of CA sites to cope with segregation of WEEE. Some authorities already experience problems in accommodating fridge separation at some sites. Interim storage capacity may be needed while treatment capacity becomes available. Collection, storage and treatment capacity for small WEEE seen as limiting factor.
- Hazardous WEEE - CRT & Tubes: Export restrictions due to the material being classed as hazardous waste. CRT Glass outlets needed - WRAP identified use in bricks as possibility but would it be acceptable to use a 'hazardous waste' in manufacturing process? What regulatory burdens and what risks associated e.g. dust release when drilling into wall?
- Fridges: Capacity only used by two authorities within the region. Phase out of CFC based fridges may mean demand declines over time.
- B2B WEEE: Waste management companies are handling commercial and industrial waste streams. It was not clear how they would need

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to respond to the WEEE Directive. Much B2B WEEE is already being handled by the 'asset management network' that operates as the interface between the business user and recycler. The composition of WEEE means that outlets for materials link into the material specific reprocessing routes. Each material has different properties and markets and each needs to be addressed individually to get true picture.

- There is a tension between reuse and recycling outlets. Reuse offers significant benefits in terms of skilled jobs and local economic development, while recycling offers a more direct route to compliance with targets by bulk reclamation of materials.

Identified Needs & Suggested Interventions

Short Term

1. CRT Glass outlets. A WRAP study has identified use in brick manufacture as a possible outlet that also offers energy savings. There are 14 brick kilns in SE but use may be problematic from regulatory and public perception as classed as hazardous waste¹⁹. Other possible outlets include foam glass that Day Aggregates may be developing in the region. Switch from CRT to flat screen TV will have implications accelerated by onset of digital in 2008.²⁰
2. Small WEEE collection and treatment capacity. There is competition for limited CA site capacity and lack of clarity on how much will emerge from mixed waste stream as the obligation is on separated WEEE only. The potential for utilising a wider network of depots for storage and sorting of kerbside collected WEEE could be explored. Some WCAs (e.g. Lewes District) within the region are already offering this service. However this does raise issues around resourcing responsibility.
3. Provision for B2B WEEE management particularly for SMEs requires further exploration.

Medium Term

1. Pyrolysis plant for mixed plastic but would it count as recycling? If not then use as a fuel would be the preferred option.
2. Disposal option for wood casing materials if landfill not permitted. This may be 'contaminated' with coatings such as lacquers. Quantity will reduce over time as wood is substituted by plastic.

¹⁹ This raises the issue of at which point the waste ceases to be waste.

²⁰ The Market Transformation Programme is modelling the implications of this on arisings.

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ELV Sector

Market Characteristics

- The sector is largely self sufficient being based around an established collection and treatment infrastructure.
- Manual dismantling is not considered to be economic. Therefore the focus is on improving the recycling rate through technological solutions which may require further R&D.
- Industry operating regions extend beyond RDA region boundaries. Pan regional picture needs to be taken for reprocessing facility provision.
- The future composition of vehicles and increased use of composite plastic emphasises the need to find a solution for automotive plastics.
- Local authorities within the region dealt with over 15,000 abandoned ELV units in 2004/5.²¹ Abandoned vehicles can cost local authorities between £40-100 per vehicle to remove and dispose of. The introduction of continuous registration by DVLA and better crosscheck of records improves traceability and is expected to result in fewer abandoned vehicles with no accountable person.
- European recycling targets set under the ELV Directive means that by 2006 the UK has to recycle, re-use or recover energy from 85% of end of life vehicles, recycling at least 80%. By 2015, this target rises to 95%, with at least 85% recycling. Figure 2 illustrates the options available to meet the targets.

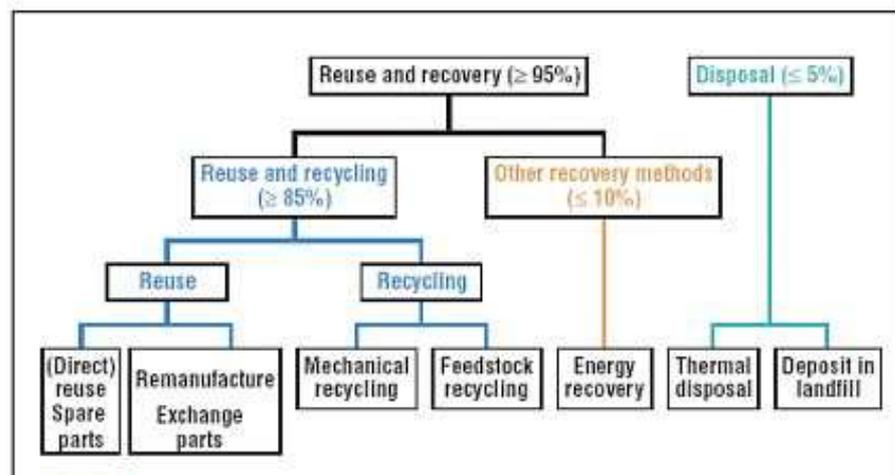


Figure 2: Waste Management Options for ELVs (2015 targets in brackets)
 Source: Association of European Automobile Manufacturers (ACEA)

²¹ Based on Beyond Waste survey of all WDAs re: abandoned vehicle numbers. However this was a year when the steel price was high so may not be representative.

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- Around 75% of ELV is being recycled at present plus 1% assumed to be fuel within vehicles that is recycled or re-used²². Recycling target requires a further 4% and overall recovery target requires a further 5%. So the most immediate question is ***'How to divert an additional 9% of ELV weight from landfill in the next year?'***
- The European Commission has opened a stakeholder dialogue to re-examine the 2015 targets taking into account, amongst others, the development of the material composition of vehicles. This may lead to a revision downwards of the recycling targets.

Recovery options

- Energy recovery could theoretically contribute 5 percentage points towards meeting the targets.
- The cement industry sees problems with taking shredder fluff as a fuel - quality issues particularly around chlorine content of PVC. The cement industry would look for easiest and most consistent fuels.
- Operators of in-region incineration capacity have so far shown no desire to accept shredder fluff.
- SEEDA Vision Event workshop concluded that thermal treatment could not be relied upon so the full 9% would need to be met by recycling.

Recycling options

- An initial 5% by recycling may be achieved through mechanical processing. Most likely through refinement of density separation of heavy fraction of shredder residue ('frag non-ferrous'). Currently this is targeted at non-ferrous extraction accounted for within the 75% metal content protocol. This process also yields an aggregate by-product composed of glass and stone that can be utilised as secondary aggregate (circa 2% maximum). Residue from the region's fragmentisers goes to EMR's plant in Newmarket or Sims plant at Stratford-upon-Avon for further processing. There may be scope to develop capacity in region. The mixed plastic stream may be exported for sorting in the Far East.
- The additional 4% could be achieved through basic stripping/manual dismantling of non metallic specific items such as components e.g. bumpers at ATFs. Local outlets for these materials would be needed. PPR Wipag in Dover would provide an ideal recycling outlet to generate high value material for recycling back into vehicles. Alternatively further refinement of the shredder residue (fluff) fraction might be deployed. Such technology is under development elsewhere in Europe²³ however the limited outlets in UK for separated materials may mean these are not viable in UK conditions.

²² Latest DTI estimate.

²³ Plastic & rubber granule used as reducing agent in steel blast furnace; fibre rich material used as a dewatering agent for sewage sludge; plastic derived fuel used in EfW; sand used as foundry sand.

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Identified Needs & Suggested Interventions

1. In order to meet the 2015 target it would be necessary to have a step change technology. Some operators are looking at pyrolysis. Research is needed to develop this. There may be scope for such plants to also accept residue from other processing facilities such as WEEE.²⁴ However it is not clear whether pyrolysis would be classed as a recycling or recovery activity. If it were classed as recovery and the target focus shifts to recovery then its viability is questionable as direct burning in conventional EfW/cement kiln would be cheaper.
2. Density Separation of Shredder residue produces a rubber rich stream and a plastic rich stream. Some separation takes place but bulk is exported as mixed. Companies are investing in R&D into improving separation and are seeking support in this risk. This would be an area that SEEDA could provide support in.
3. Improvement of density separation plant technology. Likelihood that other operators will look to improve separation at existing shredders. Scope to partner with industry compliance schemes.
4. Reprocessing of bumpers removed at ATFs locally. Possible linkage between PPR Wipag Dover and fragmentiser operators and ATFs could be developed. Whilst technically achievable, transport costs and time are a barrier. A baling plant to achieve densification for transport may help here.
5. Possible R&D support for pyrolysis.

Tyre Sector

Market Characteristics

- The sector is largely self sufficient being based around an established collection network.
- No major processors were identified within the region but an established collection network exists where tyres are sorted according to their suitability for reuse and recycling. These then feed a number of out of region processing facilities.
- Three principal collectors are active within the region supplying different markets following processing. Markets range from use as a fuel in cement kilns, through to surfacing applications and remanufacture as underlay.
- While there are a number of processors that produce crumb sufficiently clean for a wide range of surfacing applications, guaranteeing the quality

²⁴ In 2000 there was one commercially operated pyrolysis plant in the UK. The operation is transportable so it can be taken to where there is a large stockpile. It is able to process up to 90,000 tyres per year. Coalite (manufacturers of smokeless coal) has adapted its plant in Bolsover, Derbyshire to provide a tyre pyrolysis chamber. It is forecast that the plant could process 15,000 tonnes of tyres annually.

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of crumb was seen as a barrier for car tyre outlets. The material recycling outlets tend to be fed by truck tyres with car tyres going to landfill engineering and equestrian use. This suggests the need to address these tyre types as separate material streams.

- Crumb quality can be enhanced by the use of cryogenic process although this is an expensive process and is only currently commercially viable for large earth moving tyres.
- The landfill ban in July 2006 is not expected to have a substantial impact now that the Government has confirmed that the use of shredded tyres in engineering applications in landfill would not be banned. This is expected to become a significant outlet, but may require improved crumbing technology to achieve aggregate replacement specifications.
- The introduction of the ELV Directive is giving rise to more tyres requiring dedicated handling - it is not clear whether shredding for landfill engineering will count towards recycling or recovery targets. The status of tyre shred in fragmentiser waste is still to be determined.

Identified Needs & Suggested Interventions

- There is a major deficit in processing capacity in the region. However a number of operators in proximity to the region have significant spare capacity available.
- The cost and environmental burden of tyre logistics is significant and it may justify a larger number of small local processing facilities supplying local markets over a small number of large centralised processing plants.
- Cryogenic plant for tyres circa 30,000tpa sited adjacent to nitrogen production plant adjacent to petrochemicals facility (Fawley?).

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Considerations for Intervention

This section identifies specific issues and raises questions that need to be addressed in determining prioritisation for action.

Regional self sufficiency

Materials are moving freely within and between regions. This movement can be regarded as an aspect of the operation of a healthy commodity market. These markets transcend regional boundaries. A critical variable to the non-local/regional solutions is the price of fuel. Currently the price of fuel is not a deterrent to hauling materials by road in excess of 200 miles particularly where back loading occurs. The movement of materials by road has become a highly efficient logistical operation. A move to non-road transport would encourage use of out of region solutions. For example the Recresco site at Southampton ships out glass to out of region furnaces.

Q: Is the concept of net regional self-sufficiency relevant when it comes to dealing with recyclates? How can policy be put into practice to promote the use of non road based forms of transport?

Exports

Export markets make a significant contribution to the achievement of national recycling targets, notably for packaging - plastic, (paper/card) and glass to a limited extent. It also provides an important outlet for mixed plastic from WEEE processing. There is an expectation that Far East markets might over time become saturated by locally sourced recycle as infrastructure develops. Should aspirational targets for % recycle reprocessed nationally be promoted with support at a regional level by material capture infrastructure?

Q: Given the dynamic nature of world markets, what should the balance be between domestic capacity and overseas markets?

It appears to make sense to return raw materials back on the ships delivering the goods/products being purchased particularly if ships would go back empty. There is lots of export out of South East ports. That being the case should the region focus on maximising the value of export activity.

Q: Do we understand the economic, social and environmental implications of export activity for the South East?

Q: Should the aim be to export high grade material only? If so how this would be enforced?

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The Waste Hierarchy & Downcycling

Areas where this is an issue.

1. Use of pallets as fuel vs. reconditioning for reuse. Slough Combined Heat & Power Plant offers a ready outlet for a range of waste derived fuels. It does however suck in clean timber and pallets are the most readily available form of clean timber.
2. Use of glass for aggregate vs. new containers - British Glass LCA indicates that the carbon difference is significant to the extent that exporting for glass container manufacture is better than indigenous aggregate use. NB: Lewis & Towers the only in region furnace has now closed.
3. WEEE remanufacture vs. recycling. Community based opportunities with remanufacture vs. larger mass processing units that require subsequent separation of processed materials.
4. Tyre use as fuel vs. crumbing to reuse in surfacing applications or even retread/remould.

Q: Should we intervene if the market is finding a solution even if it is lower down the hierarchy?

Developing Infrastructure

Different materials may need different combinations of capacity. For example for plastics, densification regional centres exporting to national reprocessors that supply locally based fabricators supplying end product to the market.

The South East might look to be a lead region on particular materials on national basis e.g. paper reprocessing capacity and then have a reciprocal relationship with other regions with other types of capacity. Each approach presents different spatial requirements in terms of sites as Table 2 outlines.

Q: What is the desirable pattern for each material?

How can the South East develop capacity that complements capacity available in other regions and vice versa?

	Site Demands	Source Characteristics
Local	District depots and lots of small fabricators based on industrial estates	Dispersed sources
Regional	A few strategic sites with local depots for collection	Concentrated sources e.g. urban areas
National	Lots of depots with good road, rail or water connection. ²⁵	Concentrated sources that are well connected.
International	Lots of wharves and ports that are road, rail or water connected.	Concentrated sources that are well connected or in proximity to ports.

Table 2: Spatial Characteristics of Material Supply Models

²⁵ The WRAP Wood report recognises that long distance transport of low value product e.g. wood chips by road from Eastern part of region (Kent) isn't happening. This suggests certain materials should be addressed at sub regional level depending on location of outlets. But not as far down as county level.

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Value Added

A key consideration is the loss of economic opportunity that may result from movement out of region. To appreciate this a proper understanding of the value chain for each material is needed and an understanding of substitution opportunities. For example are there any carpet underlay manufacturers in the region? And if so might they take crumbed tyres? Like exports use as a fuel undercuts more material specific markets. Should using plastics as a fuel be any less desirable than production of diesel from plastic? A focus on maximising the value chain may result in sub optimal outcomes.

Q: To what point in the chain should we aim to process material?

Is following each step in the material supply chain preferable?

Figure 2 shows some of the different configurations of the supply chain that have emerged through the course of the study.

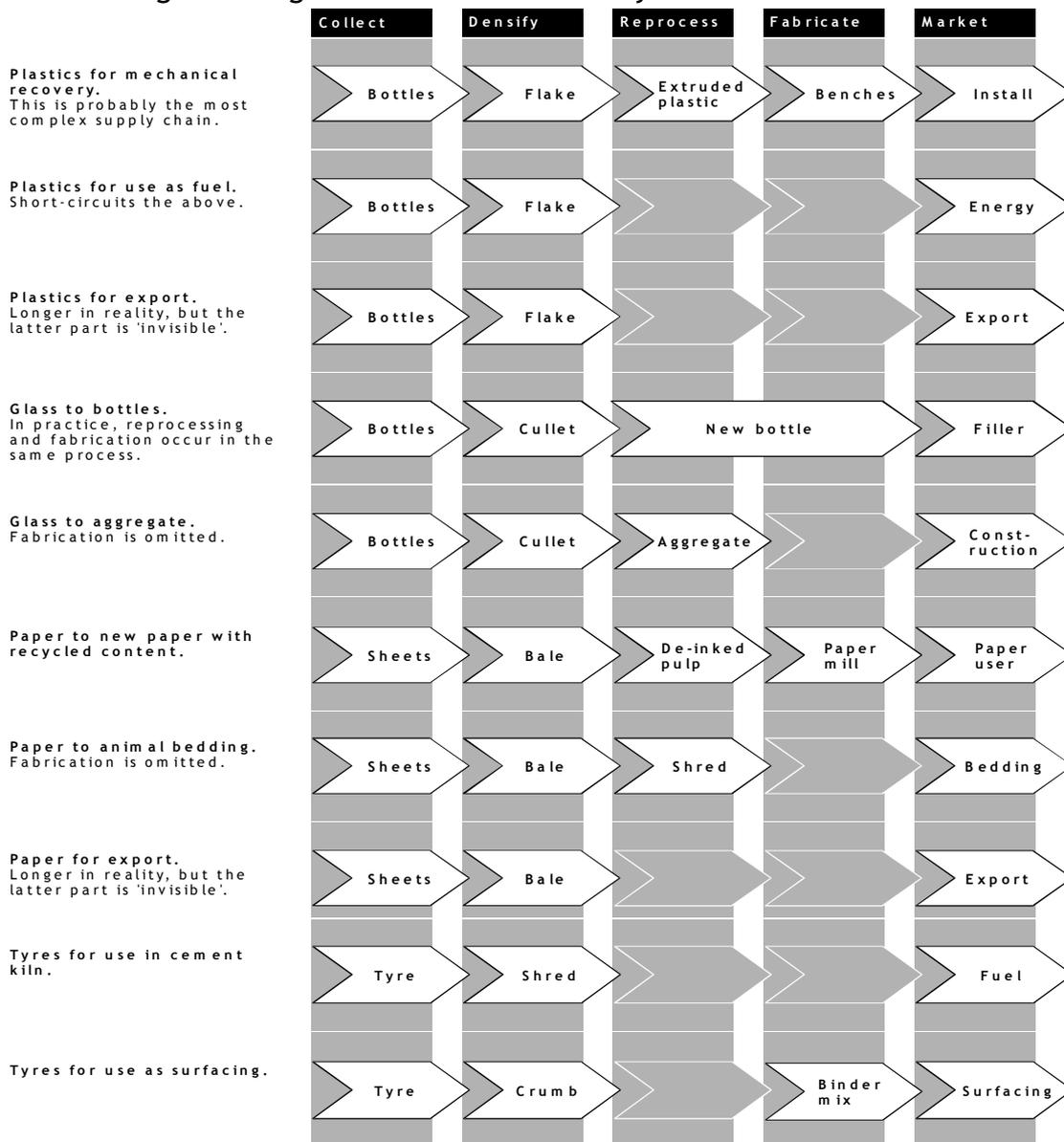


Figure 3: Configurations of Material Supply Chains

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Characteristics of the Current Market

The next section gives our assessment of the markets and identifies the opportunities for intervention.

	Collection	Preprocessing	Densification	Reprocessing
Paper	Yes	Yes if comingled	Baling	Potential if mkt conditions
Card	Yes	Not required	Baling	Potential if mkt conditions
Glass	Yes	Yes if comingled	Yes to supply	Yes for alternatives
Plastic	Yes	Depends on source	Granulation/ Baling	Limited
Wood	Yes	Reuse/treated timber	Expanding chipping	Pellet manufacture
ELV	Limited	Separation of plastic components	Baling of bumpers	Plastic composite processing
Tyres	Limited	Established	Chipping	Diversify
WEEE	Yes	Yes - DCFs and B2B	Mechanical & manual	Outlets for materials

Table 3: Potential for Expansion of Material Supply Chains

Question: How could the gaps be filled? What does the market need? What support structure already exists? How does this align with regional strengths and economic priorities? What ability have we got to influence outcomes? Who can give support? Local Authorities, WRAP, SEEDA, SEERA?

Bearing in mind that the material management sector is operated by the private sector the question might be...

How Might SEEDA Stimulate The Appetite of Potential Players? This needs to recognise the segmentation of the overall market and variation in maturity and willingness to innovate for each material.

The above table was used to generate an action matrix that identified gaps and actions based around the recycling chain steps. This is presented in Figure 4.

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MATERIAL	LINK IN ACTIVITY CHAIN					
	SOURCE	COLLECT	PREPROCESS	REPROCESS	FABRICATE	MARKET DEVELOPMENT
Office Paper	C&I SME	Trade Waste	Bulking Sites	Catered for by market		Public sector Recycled Paper
Card	MSW CA Sites ²⁶			Catered for by market		
Glass bottles	Pubs & Clubs		Colour Sort for MSW subject to economics	Grinding & foam glass are niche markets. Remelt capacity is catered for elsewhere Review economics in light of WRAP report		Shot blasting Water filtration Aggregate (tarmac)
Flat Glass	C&D	Potential to link up with Recovinyl Scheme for PVC		Grinding & foam glass are niche markets.		
Plastics						
HDPE/PET Bottles	MSW & Pubs /Clubs	Reverse vending systems	Flaked in region	Centriforce, Delleve and others outside region.		
Film	Retail back of store C&I SME Gap,Agric	Possibility of linking into agric. scheme	Baling in region	Solway BPI Integrated Polymer to make street furniture		Public procurement Timing issue – link with VALPAK
Rigid	C&I	CA Site Retailers	Mobile granulator (WRAP trial)			
Mixed	WEEE		Granulate (Axion project on BFR)	Speed Bump Manufacture – viable? Road Surfaces?		Holding Position
WEEE ²⁷	MSW	CA Sites	CRT Splitting Fridge Granulation	Brick Kilns Foam Glass		
	B2B	SME		Refurbishment		Demanufacture activity.
Rigid Plastics		Express Recycling have plans to build four new facilities in the South East.				
Wood	Untreated	Pallets Furniture manu	Chipped	Compost, fuel pellets (Slough CHP) Role of biomass and RDF? Wood remanufacturing – refurbishment and resale of office furniture ²⁸		Promote high value use like equestrian
	Treated	CA Sites Transfer stations	DEFRA WIP team to work with industry to develop markets for waste-derived biomass, and identify companies with existing expertise in the fuel chain.			

Figure 4: Gap Matrix & Target Areas

²⁶ Some MSW collection schemes take card for composting rather than reprocessing.

²⁷ Year 2 due to delay in implementation.

²⁸ DTI programme has supported project. Greenworks in London lead on this; Furniture resource efficiency club in Ashford Kent; scope for demonstration project in SE.

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Intervention Types

1. Provision of Information

Market response relies on an informed and healthy sector that is able to identify market opportunities and is willing to take risks. Raising awareness of the market to opportunities may encourage it to respond. The wide distribution of the final scoping study report (perhaps supported by a launch event) may encourage some operators to come forward and identify opportunities. We would particularly recommend building on the industry contact groups established on a material sector basis to promote ongoing engagement.

2. Reducing Policy Uncertainty

Certainty in regulation is a critical influence on the appetite to invest. Whilst the private sector may be willing to take on commercial and technical risk it requires some predictability in the policy environment. The recent track record on WEEE and Animal By-products Order does not inspire investor confidence and this needs to be urgently addressed by Government. SEEDA has limited ability to make a substantive difference to this in the short term although as lead RDA on this issue it may have some leverage. One suggestion would be to produce a dossier on the impacts of policy uncertainty on investment decisions in this sector which actually demonstrates the costs to business of policy uncertainty. However the certainty provided by the landfill escalator and other longer-term measures (such as Packaging Regulations) is still considered to provide the basis upon which a business case can be built for some initiatives.

3. Reducing Technical Risk

SEEDA can aid by supporting research and development or funding trials of specific technical solutions for example. This was a specific call from fragmentiser operators on the development of separation technology for post fragmentiser non metal fractions. DTI Technology Programme funding may also be an important catalyst.

4. Reducing Commercial Risk

SEEDA can aid by providing initial capital support. WRAP can help by loan guarantees and investment advice. However provision of support must be exercised with caution as to its possible knock on effects in the market. For example Quinn Glass received support to set up a glass works in the North West from the Regional Development Agency. This has created ripples through the market place to the extent that it is attributed to have contributed towards closure of the small specialist glass making furnace within the region. Consideration of unintended

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consequences through advance engagement with the target sector is essential. State aid rules may also be a constraint where direct support is on offer.

In general markets with higher value end uses offer the greatest economic return but tend to deal with smaller volumes. This will need to be balanced against the regional needs to deal with materials diverted from traditional management routes. Information on the value chain for each material application might also encourage business to invest. However WRAP's experience with the call for expressions of interests for capital support to develop wood refining capacity in the South East suggests that merely putting information into the market is not enough. In this case a very thorough report was produced including detailed analysis of the value chain. SEEDA supported agencies can provide active support to assist businesses in developing bid proposals, securing suitable sites and supply contracts may be needed. In additional financial institutions that might provide investment need to be engaged to appreciate the opportunities arising within the sector.

Influencing practices of local businesses and local authorities so that security of material supply can be assured (via improved collection arrangements etc) and security of outlets for products via procurement policies that specify minimum recycled content and/or locally sourced materials. SEEDA should look to promote more integration between the municipal and commercial sectors. Lack of integration between collections results in reduced efficiencies and loss of economies of scale with lost opportunities to collect larger tonnages. For example multiple collections by different contractors from SMEs on same street/site. While SEEDA is focussed on non MSW streams the role that long term MSW contracts can have in initiating market development should not be ignored

5. Site Availability

In many cases the key constraint on expansion identified by respondents was the availability of suitable sites. Our infrastructure review revealed a large number of brown field sites that wouldn't be used for housing. Lack of sites does not appear to be the problem but awareness and gaining access may be. The limiting factors seem to be more about cost, planning and infrastructure integration.

The GIS based site search work reported in the Stage 6 Report of this project will assist in identifying potential areas of search for sites. The identification of a suitable site is the first step. There are a great many hurdles to get over from identifying a potential site to getting a site established. Apart from the planning consent barrier, reaching

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agreement with landlords about locating waste uses can be a major challenge. This can be for a variety of reasons not least that these developments are perceived as bad neighbour development that may blight the development potential of a site even if it is not identified as being suitable for housing. Also landlords may be reluctant to subdivide larger sites as they may be looking for a complete redevelopment package. Hence the need to provide support in the deal-making process. This is an area where SEEDA working with SEERA could assist - with SEEDA perhaps providing support in acquisition and SEERA providing the planning policies that will promote the establishment of new facilities.

Linking organisations up may yield some useful synergies. For example the utility companies have networks of depots of varying sizes that might be suited to intermediate storage uses. Similarly waste management companies operate a network of depots that might be expanded or adapted. Scope to release space on such sites might be dependant on changes in utilisation patterns e.g. logistics of collection. There is a role for an honest broker to bring parties together.

Supporting Growth of Second-life Material Markets

Having identified market needs we need to consider how the needs might be met and by whom.

How to Respond

Filling the gaps may be done proactively i.e. by initiating capital support programmes for specific projects; or reactively i.e. by providing support to entrepreneurial (regional) players with an appetite to establish capacity within the region. Experience suggests that the latter route may well be the most sustainable - the test of viability will to a large extent depend on the ability to sustain the initiative once funding support has been withdrawn. Great care needs to be taken to avoid distorting the market by intervention.

The message from industry is the need for mechanisms to manage the risks of investment. This relates to:

1. Supply of materials via collection arrangements
2. Site availability and reduced capital costs
3. Direct risk sharing through joint ventures
4. Outlets for materials via procurement practices

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Supply Push

This might lead to funding expansion of existing activities where markets already exist. For example Aylesford Newsprint has indicated its desire to establish a further 100% recycled newsprint production line²⁹ (circa £350,000tpa capacity) to serve the UK newspaper industry. It applied for the support from WRAP that Shotton received. It is now waiting for the pressure for new capacity to build up. In this case supply push is key as the technical obstacles to meeting end product quality standards have been overcome and market acceptance for the newsprint has been achieved. It is possible that effectively targeted intervention such as improving collection (hence securing supply) might accelerate the decision and yield significant results.

Demand Pull

This may lead to new applications being developed by identifying material substitution opportunities and gaining acceptance of the product. For example Day Aggregates are considering building a foam glass plant in Berkshire. This would be a wholly new venture reliant on achieving market penetration for foam glass and ensuring that technical issues can be overcome. The driver for this initiative is the added value the end product offers and the relative price of foam glass against the material it will be substituting.

The types of activity to which funding can be routed are:

1. Direct Project Funding of specific projects that have an expectation of generating a new market for products.
2. Facilitation: Providing business support via networks and development initiatives; feasibility studies and background research.

As Figure 5 shows the different types of activity are complimentary and a combination of forms of support is likely to be needed.

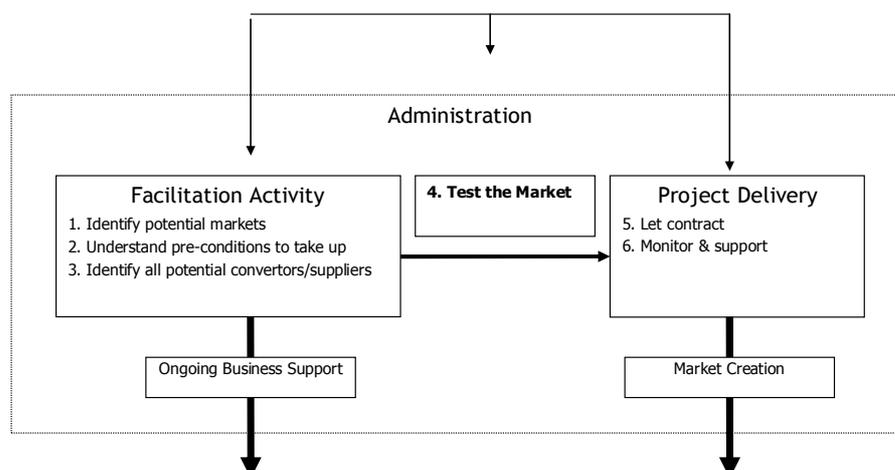


Figure 5: Interrelationship between Different Support Routes

²⁹ The feed for Renaissance newsprint consists of post consumer recycled paper plus magazines made from virgin fibre. The magazines displace the need for virgin pulp.

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Table 4 outlines the key differences between funding of route 1 and 2.

	Facilitation	Project Initiation
Risk	Low: Success criteria relatively easy to achieve	Medium to High: Success criteria relatively hard to achieve Overlap/ tension with other statutory service providers e.g. LAs and EfW.
Criteria for Success	Activity based e.g. number of businesses 'supported' See list above	Output based e.g. tonnes diverted/recycled; Jobs created; economic activity. See list above
Results Timescale	Short/Medium term	Medium/Long term
State Aid	Unlikely to be a barrier	Perceived barrier to direct support
Profile	Relatively large number of businesses and projects supported across the region	Relatively small number of businesses and projects supported on a sub-regional basis.

Table 4: Characteristics of Market Development Support Routes

By whom?

Table 5 identifies the activities that need to be undertaken to deliver a successful project. It also gives a suggested apportionment of activities between the players in the region.

Objective	Activity	Possible Lead	Preparatory Work	Example Output
1. Identify potential markets	Itemise and quantify materials usage for target sectors	WRAP/SEEDA	Review outputs of national projects for applicability to SE	Materials flow of a County Council and NHS Trust
2. Understand pre conditions to take up	Interviews with buyers and users of materials to be substituted	WRAP	Develop equivalent quality specifications; fund R&D to ensure products achieve spec	Listing of criteria used by Procurement Officers.
3. Identify all potential converters/suppliers	Telephone survey of current suppliers, other known converters/reprocessors, entrepreneurs, in-house providers.	SEEDA	Develop communications strategy; Build up sector contact groups	Clear understanding of supplier community.
4. Assess appetite to invest	Call for project proposals, define rules, manage application process	SEEDA/ Envirobusiness South East	Secure supply of suitable material; Define criteria for success	Positive response to call
5. Let Contract	Due diligence,	SEEDA/WRAP/ Envirobusiness South East	State Aid clearance	Contract
6. Monitoring & support	Performance monitoring and feedback checks on progress and results	SEEDA/ Envirobusiness South East	Establish monitoring indicators	Progress Report

Table 5: Project Elements & Potential Players

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Some Key Messages

While our survey inquiries were generally received with considerable interest there was a scepticism of the effectiveness of initiatives to stimulate the market. Examples of market distortions created by past interventions were cited as were market failures following withdrawal of support. Other respondents had little interest in seeking external support preferring to rely on their own resources to pursue opportunities. To some extent this was due to commercial sensitivities but also a degree of fatigue around grant application processes.

It is clear that the state of development of markets for different materials is very different. More often than not it is also necessary to distinguish between material types within a stream as quite different conditions apply. For example office paper vs. newsprint. Or car tyres vs. truck tyres. While these sub-material distinctions have been picked up by this scoping exercise this project has not explored these needs in depth.

Building Delivery Capacity

The Business Resource Efficiency and Waste (BREW) South East programme was established during 2005, and facilitates support to businesses to reduce energy usage and waste generation through the regional network of Sustainable Business Partnerships. SEEDA has successfully lobbied for increased BREW funding and the challenge is to target these funds effectively. SEEDA's ability to influence developments will depend on its capacity to effectively harness the existing channels through which the market operates.

Deepening the support base

With time limited funding streams market support initiatives are expected to yield results in a relatively short time period to demonstrate value of money. However in focussing on short term results, interventions may ignore the need to yield sustained change in the market. The need to identify mechanisms that ensure the outcomes of intervention are sustained is crucial.

Support needs to be based on knowledge of how markets are working and an ongoing relationships with initiators active in the field at a local level ³⁰. We recommend that capacity development needs be assessed at a sub regional level recognising the interregional nature of flows. This aspect was recognised by SEEDA when it established Area Teams to focus spatial

³⁰ This has specific focus through the Waste Market Development Group which enjoys top level support.

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knowledge and prioritisation in the region, connect local partners and key influencers together. The teams and the Business Link structure provide a vantage point at a sub regional level. In addition existing Inter regional working initiatives including the creation of a 'Greater South East' provides a vehicle for taking the interregional dimension forward.

There is also a need to develop metrics for value delivered that engage the agendas of all players so there is a shared understanding. Currently there appears to be a proliferation of initiatives and considerable competition between local, regional and national delivery agencies all seeking to achieve diversion from landfill. Whilst competition may lead to efficiency of delivery it may prove to be inefficient if it doesn't build on the existing knowledge base and network of contacts. We recommend that a mapping exercise of the interests and activities of all delivery agencies active in the region in relation to natural resource use be undertaken aimed at clarification and alignment of objectives. This needs to be presented as an opportunity to all rather than a threat and may require independent facilitation if all organisations are to be engaged effectively.

Building capacity to ensure delivery of projects is crucial. Project outputs will only be as good as the delivery agency knowledge base and capability. As SEEDA's own performance review reports:

“At this time of great economic change the Area Teams and functional teams within SEEDA need to work more closely together, internal processes need to become more streamlined and project managers need further skills in contract management to ensure that RES priorities are effectively delivered.”

Synergies between external organisations active within the region and internal activities need to be harnessed to support project incubation and delivery. We recommend that an extended version of the Waste Market Development subgroup formed to assist this project representing the key delivery agencies be maintained to provide ongoing operational support. Recognising the need to embed the resource efficiency message we also recommend that Business Link and the Manufacturing Advisory Service be engaged in this process.

Targeting support effectively depends on up to date market intelligence. As our review shows the markets for many materials are extremely dynamic. To ensure that market intelligence is up to date this group also needs to engage with the industry players on an ongoing basis. We recommend that the industry contact groups created through this project and the material profile information be built on if the benefits of this project are to be fully

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realised. We also recommend that ongoing monitoring of market conditions be established as a support activity perhaps through the South East England Intelligence Network (SEE-iN).

Extending the support base

Our flows mapping work clearly demonstrates that the South East is not an island and that there are significant interactions between it and adjacent regions and London of course - 'The Greater South East'. We recommend that regionally based interventions have some degree of coordination. This suggests that different regions might take the lead for development of markets on specific materials. A starting point may be for a consultation mechanism to be created whereby proposals for initiatives can be referred to RDA's (perhaps with support from WRAP). SEEDA's role as lead RDA on waste and resource issues gives it an important leadership role to play here.

The need to consider potential ripple effects of interventions has been a recurrent theme. An example cited a number of times is the support by the North West Development Agency to Quinn Glass. We recommend that consideration be given to the production of a supporting wider impact appraisal framework that specifically looks towards understanding ripple effects in the market. This might build on work at national level developing a better understanding of the unintended consequences of environmental regulation.

Broadening the support base

The linkage between the other activities undertaken by SEEDA in promoting regional economic development needs to explicitly recognise the role that second-life material and energy supply can play in improving competitiveness. This picks up on some of the messages about integrating recycling and material efficiency into the manufacturing base, and the crippling effect that rising energy prices are having across industry. This emphasises that waste market development should not be seen as a separate activity to business/industry support at a strategic level. Nor should the energy potential of materials be ignored in preference to material recycling if the need is greatest or most urgent.

Pursuing a waste/recyclate focussed agenda may ignore the wider benefits that material substitution activities can bring such as:

- jobs created or upskilling within the region;
- contribution to economic activity;
- support of the environmental sector.

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We note the work that the DTI led Environmental Innovations Advisory Group has undertaken and the similarities between the barriers identified in its first market assessment report³¹ and the findings of our survey. The Group's identified priorities for action are:

Strengthening market drivers

- Demonstrate the Forward Commitment model of how public procurement can be used to drive markets for environmental innovations.
- Work with policy makers and regulators to make environmental regulations more innovation friendly, especially in the waste area.

Tackling barriers

- Unblock the testing and certification process for environmental innovations.
- Investigate the perceived gap in finance provision.
- Work to reform European Commission Guidelines on State Aids for environmental protection.
- Establish a better common understanding of the strengths and weaknesses of innovation in the water sector.

Investing in the future

- Identify and increase investment in the technology priorities of the UK environmental industries.
- Ensure that the skills needs of the environmental industries are addressed by the appropriate Sector Skills Councils.

Linkages between these priorities with the work of SEEDA's Waste Market Development Group could be exploited to draw implementation of this aspect through at a regional level. It would appear that the creation of Envirobusiness South East provides the ideal delivery vehicle to take this forward.

Beyond Waste

15.12.06

³¹ Bridging The Gap Between Environmental Necessity And Economic Opportunity: First Report Of The Environmental Innovations Advisory Group November 2006

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Appendix 1

The following data has been obtained from the STRAW project. Quantities of target materials have been estimated and quantities requiring recovery calculated up till 2020 based on 1998/99 data applying regional targets.

	04/05	Recovered	Landfill	09/10	Recovered	Landfill	14/15	Recovered	Landfill	20/21	Recovered	Landfill
	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes	Tonnes
Paper & Card	3,960	2,479	1,481	4,412	2,817	1,595	4,919	3,489	1,429	5,610	3,978	1,632
Food	795	424	372	873	463	410	958	507	451	1,072	565	507
Plastics/ Polymers	1,176	857	320	1,313	988	325	1,466	1,275	191	1,676	1,464	212
Wood	133	93	41	145	101	44	159	111	48	176	123	53
Glass	457	217	240	526	273	253	606	435	171	718	515	203
Metals	1,231	817	414	1,364	902	462	1,513	1,045	468	1,716	1,167	549
Textile	177	71	107	205	92	113	238	159	79	284	190	95
Misc Combustible	472	47	425	547	61	486	635	106	529	758	126	631
Misc Non Combustible	236	47	189	274	61	212	317	106	211	379	126	252
Mineral Wastes & Residues	726	482	243	782	520	262	842	560	283	921	612	309
Chemical and Other	675	615	59	729	664	65	787	717	70	864	786	77
General Industrial	977	533	443	1,067	578	489	1,166	627	540	1,298	690	607
Other General & Biodegradable/ Putrescible	3,370	1,818	1,552	3,843	2,226	1,617	4,386	3,386	1,000	5,146	3,971	1,174
Contaminated General	1,289	453	836	1,395	492	904	1,510	533	977	1,660	588	1,072
Fines	177	47	130	205	61	144	238	106	132	284	126	158
TOTAL	15,852	8,999	6,853	17,681	10,299	7,382	19,741	13,161	6,579	22,561	15,029	7,533

Table 6: South East Projected Waste Arisings, Recovery and Diversion to Landfill ('000s Tonnes)
Source: STRAW Project

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Arisings for each stream were calculated and then projected forward using growth factors. In order to establish the projections for long-term recovery and disposal needs required to meet the targets set out in the Waste Strategy 2000, a detailed analysis of each waste stream composition was assessed in terms of materials. This data, coupled with the recovery rates for each waste stream permitted an estimate of recoverable material quantities and enabled the estimation of disposal and diversion projections. The arisings within the main streams were apportioned using the following compositional percentages by weight.

Material	Municipal Waste	Commercial Waste	Industrial Waste
Paper & Card (Pa/Cd)	19	43.9	15.5
Plastics	7	9.5	6.1
Misc Combustible (MC)	8		
Misc Non-Combustible (MNC)	4		
Textiles (Tx)	3		
Glass (Gl)	7	1.5	0
Ferrous Metals (Fe)	5	3.2	12.4
Non- Ferrous Metals (nFe)	2		
Putrescible (Put)	42		
Fines< 10mm	3		
Food		13.3	3.5
Wood		1.5	1.2
Mineral Wastes & Residues		0.1	13.3
Chemical and Other		1.6	11.1
General Industrial		12.4	7.6
Other General & Biodegradable		7.9	9.8
Contaminated General		5.1	19.5
Total	100	100	100

Table 7: Material Composition of Target Waste Streams

Source: STRAW Project