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A critical appraisal of the funding for, and benefits from, a UK county resource efficiency programme

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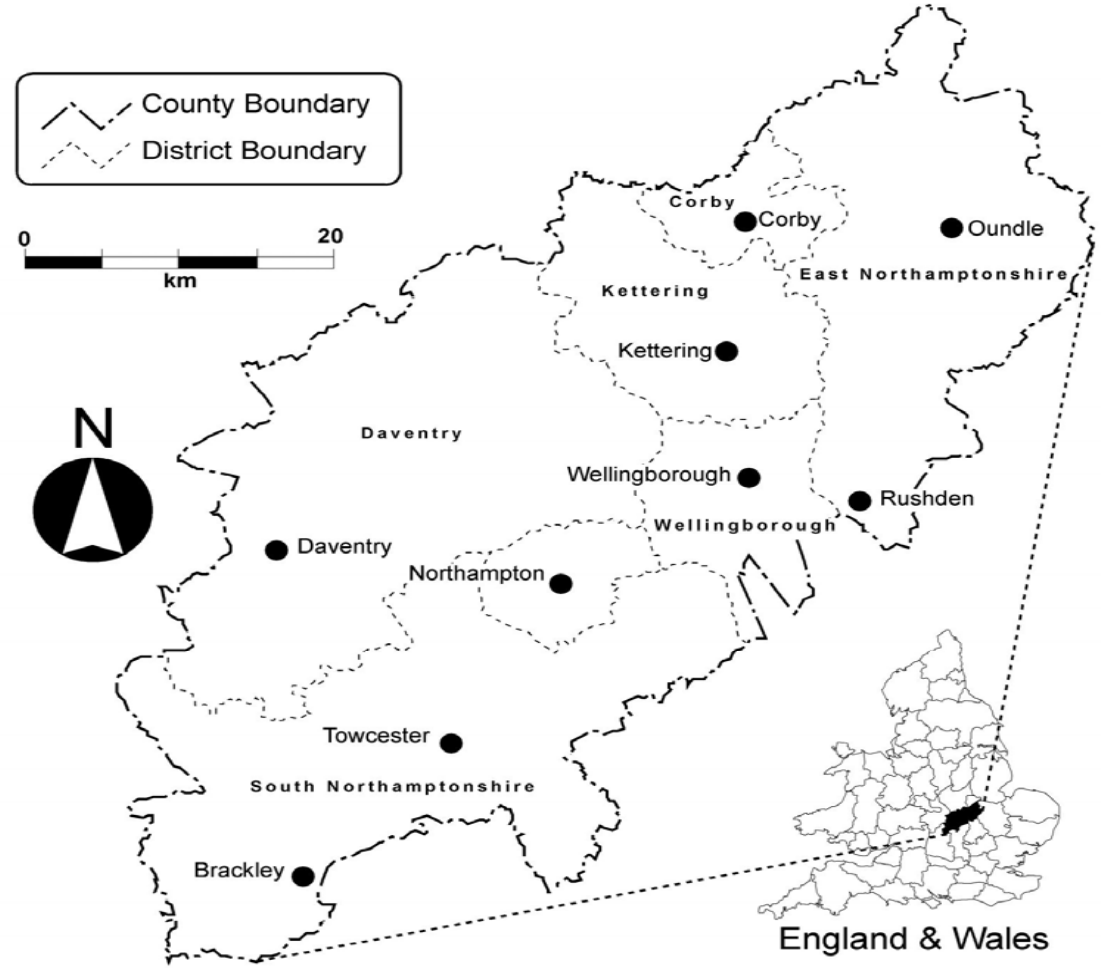
Northamptonshire



Northamptonshire

Northamptonshire lies in the heart of England.

It is part of the East Midlands region but in some ways relates as much to its more prosperous neighbours in the south east.

It has a population of 646,700 and covers an area of 236,900 hectares.

Population Change

Between 1991 and 2001 the population grew by eight per cent and is projected to grow by a further 27 per cent by 2021.

The county is a key part of the Milton Keynes and South Midlands growth area and it is planned that this will result in building 99,500 new homes and a target of 81,000 new jobs

Economy

Unemployment below the national average at 1.8 per cent.

Average weekly earnings are below the national average as are qualification levels in the workforce.

Quite big difference in average income across County- in Corby it is £402 per week and Daventry it is £698 per week.

At a county level deprivation is relatively low, but this masks large differences between districts.

Nationally out of 354 districts Corby is the 74th most deprived and South Northamptonshire one of the most affluent with a ranking of 344th least deprived.

Distribution of Business Types

Sector	% of employment
Agriculture	0.2
Mining, energy and water	0.2
Manufacturing	15.8
Construction	4.5
Wholesale and retail	18.5
Hotels and restaurants	5
Transport and communications	9.4
Financial	2.7
Business services	17.8
Administration	4.7
Education	6.7
Health	10.1
Other	4.4

Skills found difficult to obtain: % of cases

Skills	% of cases in County	% of cases England
Technical	39	51
Customer handling	25	39
Problem solving	28	34
Written communications	12	31
Team working	17	33
Numeracy	16	24
Literacy	13	28
Management	18	25

Route to zero waste

Inter Company

- Development for regional Industrial Ecology site
- Company development via Industrial Symbiosis

Intra company

- New, clean technology adopted after economic analysis
- Wide array of tools used such as ecodesign and teams trained for Continuing Professional Development. Company Certificated to show progress
- Teams addressing issues and under-going training
- Waste prevention plan developed/ workforce engaged
- Waste quantified and linked with legislation
- Waste seen as disposal issue only
- No perception of waste problem

Some UK Delivery Organisations to get to Zero Waste (2007)

Action Sustainability	Sustainable procurement
Business Resource Efficiency and Waste (BREW)	In 3 years it had £200 m
The Carbon Trust	Low carbon technologies
Environment Agency	Regulator
Market Transformation Programme	Develops policy strategies for resource efficiency
National Industrial Symbiosis Programme (NISP)	Links companies to work together on resources
Envirowise	Best Practice programme that offer free advice on waste prevention and clean technology
Regional Development Agencies	Address market failure
Waste and Resource Action Programme (WRAP)	Creates markets for recyclates >£50 m per annum

What is in a name?

Waste Minimisation Clubs used in period 1992-2000. It was based upon an early assumption that a short slogan was needed for marketing that was easily understandable and would attract business men to join.

Resource Efficiency Club used after 2000 once it was grasped that they were much more than waste reduction.

It was with this a “factor four” resource efficiency gain in mind that the European Environment Agency defined resource management in 2006 as follows:

“*Resource Management is taken to mean activities aimed at or effecting the efficient use of material resources throughout the economic system including resource extraction, product design, production systems, distribution, consumption, re-use, waste prevention, recycling and disposal*”

Case Study

A County Waste Minimisation Programme in Northamptonshire, UK.

Types of Clubs

Demonstration (£0.5m) with 10 companies over 2 years

Regional – works in given Government Area – e.g. BEP Scotland (£0.2m)

Sector – works in a given industry sector (£0.1 – £0.2 m)

Ultra high recruiting (>200) for Micro and Small companies (£0.2 m)

Facilitated Self Help with 20 companies over 1-2 years (£0.04m)

Green Business Club with 5-10 companies over 0.5 year (£0.005m)

Table 1
Northamptonshire waste minimisation / resource efficiency projects 1997-2004 (2005 value)

Projects	Date(s)	Funding	Major funding source	No. of companies
Corby Waste Not	1999-2001	£153 180	LTCS	30
Cut Waste Improve Competitiveness (CWIC)	2001-2004	£114 000	LTCS	174
Daventry Environmental Management Systems	2001-2002	£56 000	European	43
Daventry Participation Research	2002-2003	£76 160	UK Government	-
European Social Fund: Learning for Competitiveness	1999-2000	£41 300	European	39
Kettering (KARE)	2000-2001	£9 200	LTCS	18
Northampton	2000-2001	£4 400	Business Link	8
Northamptonshire Business Environment Forum (NBEF)	2000-2002	£110 400	Higher Education Funding Council	40
Northamptonshire Resource Efficiency Project (NREP)	1998-2000	£162 000	Regional Government	22
Wellingborough	2000-2001	£9 200	LTCS	22
Others (10)	1997-2004	£376 060	LTCS	178
Total	1997-2004	£1 111 900		574

Table 2

Cost to savings ratio of some key national and Northamptonshire Clubs (1997-2003)

Rank	Club	No. of companies	Savings per unit cost
1	Resource Efficiency Action Programme: Scotland (REAP)	25	51.2
2	Dee Catchment	13	22.8
3	Northampton	8	20.0
4	Hereford & Worcester	37	14.2
5	NREP	22	14.1
6	Cut Waste Improve Competitiveness	174	13.4
7	Wellingborough	22	13.0
8	Kettering	18	10.2
9	Tayside Foods	5	9.7
10	Aire & Calder	11	8.4
11	Corby Waste Not	25	7.1
12	LWMI	10	6.5
13	Humber Forum	11	5.5
14	North Wales Waste Network	177	5.2
15	Don Rother Dearne	24	2.7
16	Catalyst	14	2.3
17	Betre	308	0.8

Table 3
UK WMC / REC Partners 2000-2004 (n=121)

Organisation type	No. of clubs	% of partnerings
SEPA	30	29
Environment Agency	22	21
Consultants	13	13
Companies	11	11
Local Authority	10	10
Government Bodies	6	6
Learning Councils	4	4
Other	7	7
Average partners per club 2.7		

Table 4
UK WMC / REC Directors 1993-2004 (n=121)

Directors parent organisation	% of clubs
Service Providers	41
Local Authorises	19
Learning Councils	12
Universities	7
Chamber of Commerce etc	7
Government Bodies	3
Companies	2
Scottish Environmental Protection Agency (SEPA)	4
Others	3

Table 5
Performance Indicators by UK Sustainable Development Objective for Northamptonshire Programme

Number	Indicator
	UK Objective: Social progress which recognises the needs of everyone
1	Education and training in waste minimisation methodology at NVQ level 3 Outcomes(s): > 50 employees trained per annum
2	Resource acquisition: Obtaining external funds to from local clubs and encourage employee participation Outcome(s): Sufficient resource to develop at least one new club per annum
3	Forming local and regional partnerships: Outcome(s): Networking through clubs with all key local and regional organisations
4	Geographical distribution of clubs: Outcome(s): Clubs in each District and Borough, especially those with high Deprivation
5	Long term vision Outcome(s): Exit strategies from projects in place so as to continue with new club development
6	Environmental reporting Outcome(s): Success of club activities included in local and regional media as well as journals
	UK Objective: Prudent use of natural resources
7	Companies adopting waste minimisation Outcome(s): 20% per annum increase in number of trained companies
8	Resource efficiency Outcome(s): Reduction in resource use per unit of production; increase in recycling , re-use
	UK Objective: Effective protection of the environment
9	Reduction in effluent and special waste Outcome(s): 10-20% reduction in effluent and special waste produced
	UK Objective: Maintenance of high and stable levels of economic growth and employment
10	Increased company competitiveness Outcome(s): Companies saving around 1% of turnover
11	Cost effective waste minimisation clubs Outcome(s): cost to savings ratio of clubs > 10
12	Job creation

Table 6
UK WMC / REC key data 1993-2004 (n=121)

Data	Value
Savings	≈ £56 000 000
Percentage of clubs reporting savings	45%
Savings per club	£848 000
Savings per member company	£26 300
Average member companies per club	36
Average member companies per club reporting savings	31
Average savings to external funding ratio	6.2
Average environmental data points per reporting club	2.8
Total number of environmental data points reported	70

Table 7
WMC / Rocs in England, major contributors to sources of funding 1993-2004 (n=97)

Sources of funding	No. of clubs
Environment Agency	45
Local Authority	42
Landfill Tax Credit Scheme	37
Member companies	26
European	25
Regeneration	13
Utilities	12
Business Link	12
Regional Government	11
Charities	10
Others	24

Table 8
NREP savings by category (2005 value)

Category	Potential savings (£)	Actual as % of potential
Business rationalisation	212 520	81
Effluent	405 652	10
Electricity	611 256	65
Gas	75 322	61
Oil	14 880	15
Packaging	242 352	88
Process efficiency	643 410	93
Raw materials	639 742	52
Solid waste	509 990	68
Special waste	166 980	2
water	240 425	49
Total	3 762 529	60

Figure 1
Number of WMCs in operation in England (1992-2004) assuming 18 months lifetime

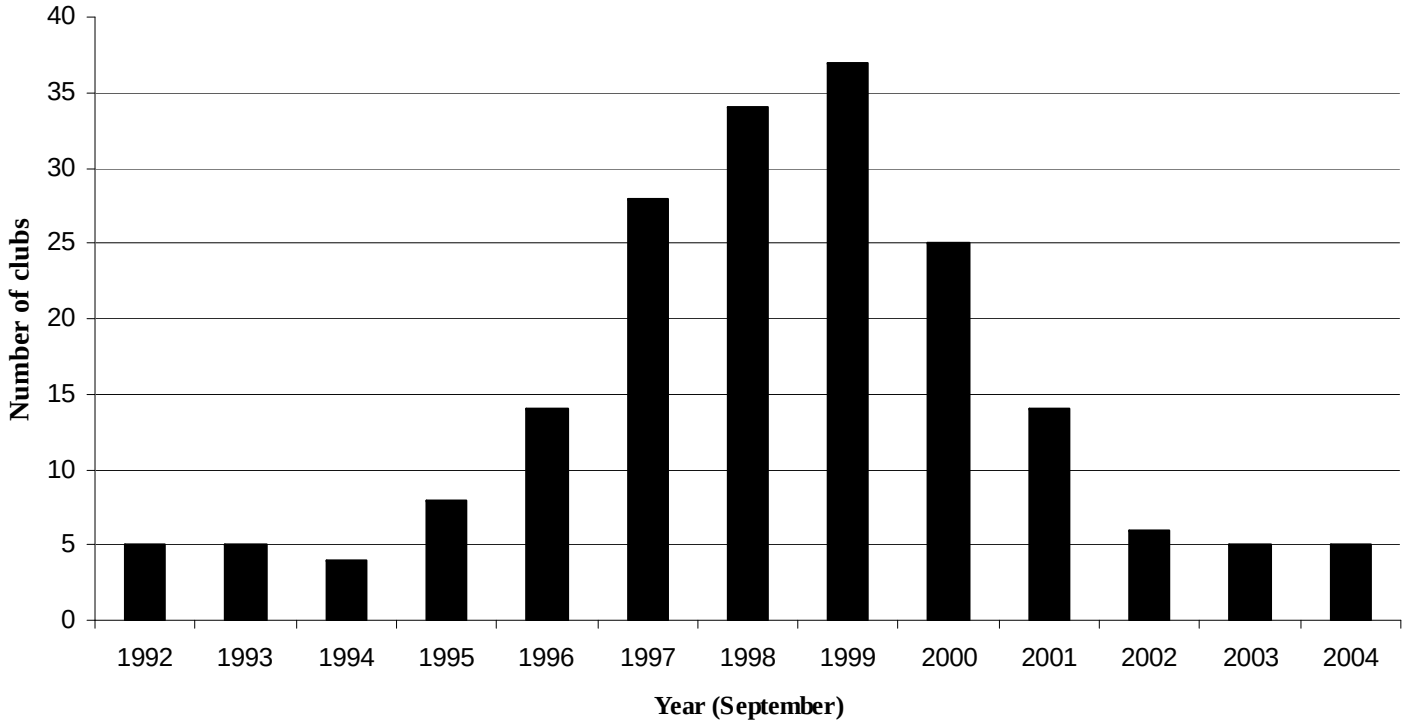


Figure 2
Funding (2005 value) for key waste mininsation clubs (WMCs) compared to total waste minimisation funding per annum in Northamptonshire programme 1997-2004

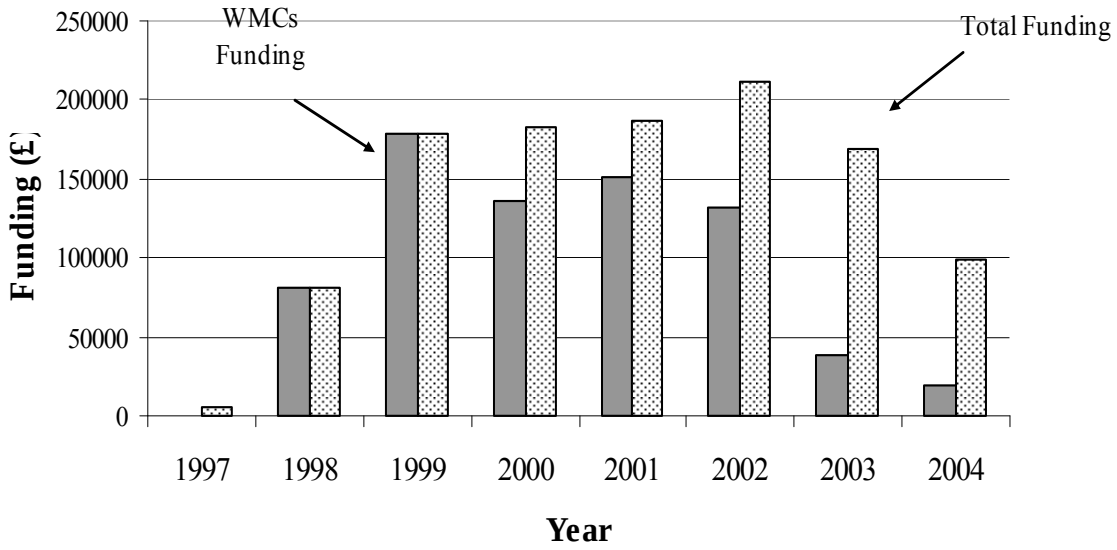


Table 9
Top 10 UK RECs, by savings to cost ratio, funded by Envirowise for 2005 - 2007

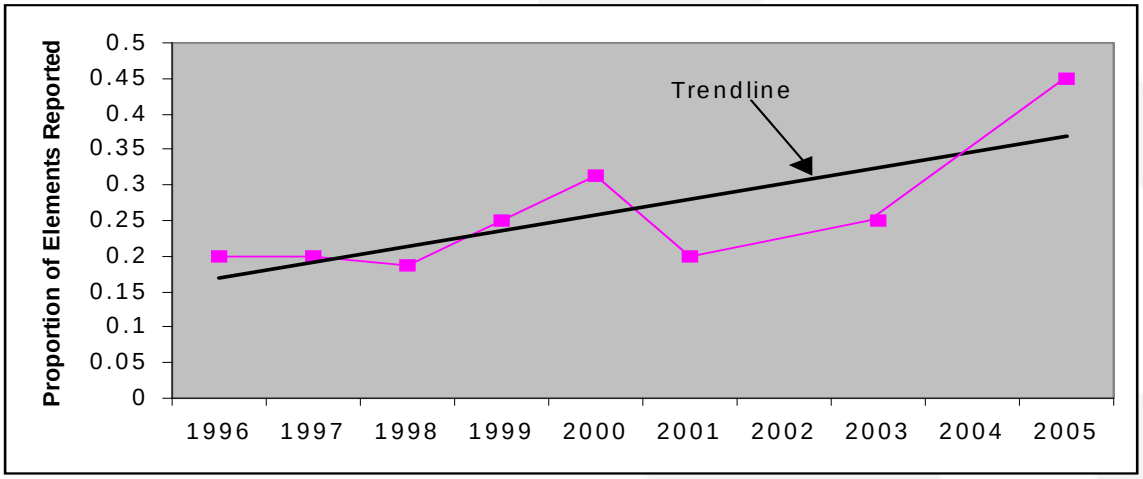
Name	Number of companies	Potential savings (£)	Cost (£)	Savings to cost ratio	% conversion after 1 year
West Midlands Food	17	695,689	46,514	22.5	7.5
Plymouth	13	527,795	49,850	20.8	10.2
BFM	10	593,450	49,500	18.7	6.7
Oxfordshire	26	403,215	39,462	18.2	8.0
Hertfordshire	30	841,770	49,965	17.8	0.9
CWIC **(Northants)**	120	808,877	48,700	16.6	11.0
Bradford	14	148,058	49,991	13.0	10.0
Cornwall	5	422,526	50,000	12.8	4.4
ENWORKS	136	1,779,842	200,000	11.3	2.4
GBN	28	354,900	43,000	10.8	2.6

(Source: Envirowise 2007)

Table 10
Success Factors

1.An extensive partnership that contains the key stakeholders (environmental regulator, Industry, Local Councils, Higher Education, Trade Unions, Banks and Insurance Companies, Occupational Health and Safety Executive
2. Local Partnerships that build upon already existing Local Networks to aid club formation
3. Local Partnerships which contain a member who is experienced at utilising the large range of possible external funds to finance projects.
4. Clear commitment of senior management
5. The presence of an experienced waste minimisation Champion that can lead and direct the project team
6. Aims that include significant training of company teams.
7. Extensive use of Best Practice Programmes rather than external consultants
8. Projects that are run over at least 2 years
9. A project that utilises all the opportunity techniques in waste reduction
10. Projects that significantly support and train the company Champion
11. A club model that is based upon Facilitated Self-Help.
12. Projects that make frequent, short duration visits to the company site
13. Projects that deliver short duration training sessions at breakfast or similar sessions and avoid long duration, all day sessions.
(Source: Phillips, et al., 2002) 14. Utilisation of Local Universities / Colleges as centres of expertise as well as suitably trained students to carry out a wide range of activities.

Figure 3: Proportion of Elements Reported over time

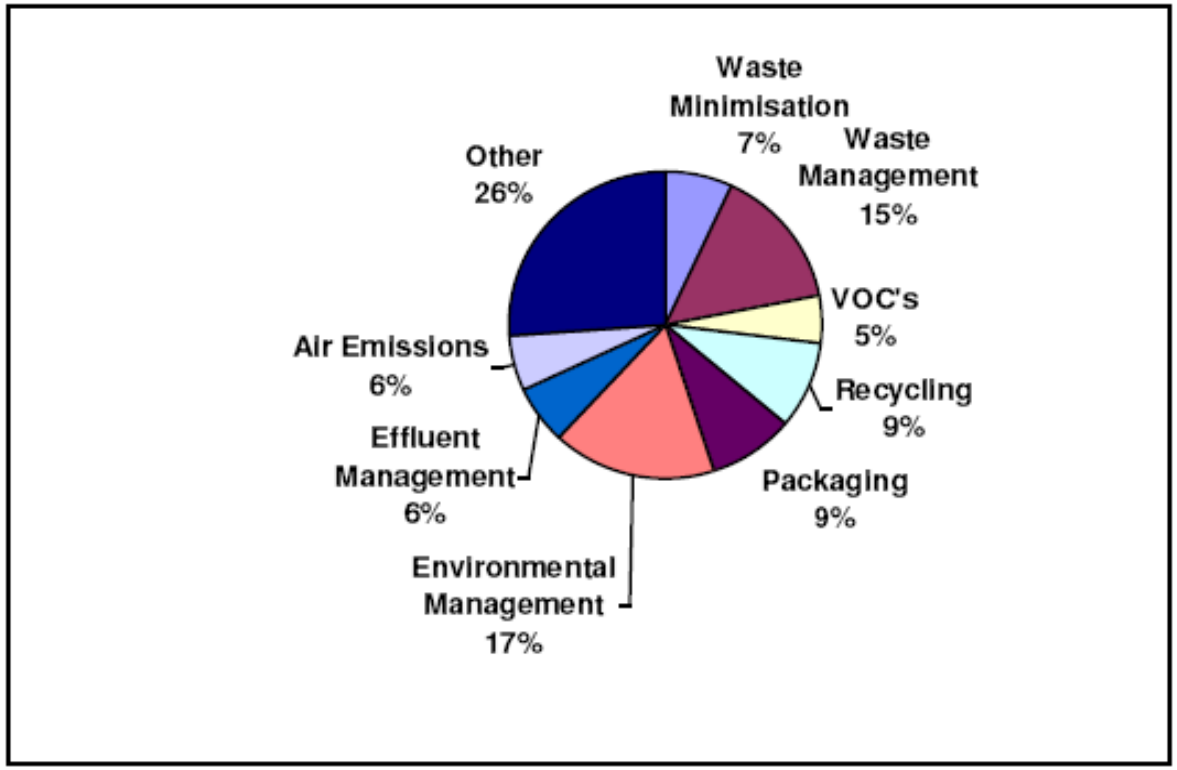


Route to zero waste

	No. of companies in Northamptonshre 1998/ 2007 (out of total number ≈ 24 000) involved in:
Inter Company	
• Development for regional Industrial Ecology site	10?
• Company development via Industrial Symbiosis	50
Intra company	
• New, clean technology adopted after economic analysis	220
• Wide array of tools used such as eco-design and teams trained for Continuing Professional Development	280
• Company Certificated to show progress	550
• Teams addressing issues and under-going training	750
• Waste prevention plan developed/ workforce engaged	800
• Waste quantified and linked with legislation	850
• Waste seen as disposal issue only	1 500
• No deep perception of waste problem	≈ 21 000

The first two years of BREW funded, new generation RECs in England: 2005-2007

Figure 2.4: Reasons companies call Envirowise[1]



Overall club activity

71 clubs funded by the REC programme

- 50 clubs currently active
  - 11 finished after 1 year
  - 7 terminated
  - 4 clubs merged to 2

- 25 clubs awarded 2nd year funding

Club Progress

Reporting

- 12 month reports – 32 received to date
- 6 month reports – 45 received to date

982 businesses engaged

Club Savings

Target savings

- 5 x investment made
- £27.5 million goal

How are we doing?

- £4.7m of actual savings
- £17.5m of additional potential savings
- Total = £22.2m

Reference	Name	Number of club members	Actual savings	Total potential savings	Total savings	Cost	Savings to investment ratio	% conversion of savings by end of year 1
REC/AP/001	Redditch	10	0	46,110	46,110	30,000	1.5	0.0
REC/AP/002	Malvern	8	0	40,798	40,798	30,000	1.4	0.0
REC/AP/003	GBN	28	110,876	354,900	465,776	43,000	10.8	2.6
REC/AP/004	PECT	12	1,000	119,718	120,718	44,000	2.7	0.0
REC/AP/005	ENWORKS	136	471,022	1,779,842	2,250,864	200,000	11.3	2.4
REC/AP/006	CW-IC	120	533,877	275,000	808,877	48,700	16.6	11.0
REC/AP/008	BREC	70	98,312	135,660	233,972	40,800	5.7	2.4
REC/AP/009	Hertfordshire	30	46,421	841,770	888,191	49,965	17.8	0.9
REC/AP/010	Trend	38	19,233	208,550	227,783	39,675	5.7	0.5
REC/AP/011	West Midlands REC	21	28,154	205,790	233,944	29,000	8.1	1.0
REC/AP/012	East Mids Construction	10		211,643	211,643	48,800	4.3	0.0
REC/AP/013	Cornwall NHS	5	219,929	422,526	642,455	50,000	12.8	4.4
REC/AP/014	SIEnA	8	41,000	172,500	213,500	38,410	5.6	1.1
REC/AP/015	The ENVIBE Challenge	10	247,098	141,748	388,846	48,900	8.0	5.1
REC/AP/017	Oxfordshire REC	26	315,372	403,215	718,587	39,462	18.2	8.0
REC/AP/018	BESST REC	54	181,536	51,577	233,113	32,450	7.2	5.6
REC/AP/020	Stoke on Trent REC	15	0	0	0	39,875	0.0	0.0
REC/AP/021	BFM	10	332,495	593,450	925,945	49,500	18.7	6.7
REC/AP/24	Bakers Waste Club	10	77,817	118,811	196,628	39,154	5.0	2.0
REC/AP/025	Resource Navigator Club	13	0	138,151	138,151	42,312	3.3	0.0
REC/AP/028	Hazardous Waste REC	17	0	31,558	31,558	41,074	0.8	0.0
REC/AP/029	Slough Business Environment Club	21	122,164	135,583	257,747	44,750	5.8	2.7
REC/AP/036	Plymouth REC	13	507,936	527,795	1,035,731	49,850	20.8	10.2
REC/AP/042	Bradford REC	14	500,066	148,058	648,124	49,991	13.0	10.0
REC/AP/047	West Midlands Food Processors REC	17	350,811	695,689	1,046,500	46,514	22.5	7.5
		716	**4,205,119**	**7,800,442**	**12,005,561**	**1,216,182**	**9.9**	**3.5**

Successes

Bradford REC

- 14 members
- £500,066 actual savings
- £148,058 remaining in potential savings

Example resource efficiency improvements:

- Sending MDF waste for composting rather than landfill
- Insulation of heating tank walls and fit insulated lids on phosphate tanks
- Improved capture of plastic waste; now collecting 3 tonnes per month; changed supplier and now receiving income
- Improved energy management through awareness, monitoring and technical measures such as better control of refrigeration systems, new compressors and new lighting systems

What about resource efficiency across whole of UK?

Defra report

"Quantification of the business benefits of resource efficiency."

October 2007

Table A1: Summary of the estimated resource efficiency savings opportunity across the UK economy

Resource	Estimated Savings Opportunity (£M)	% of total estimated savings
Energy	3,349	52
Waste	2,659	41
Water	441	7
Total	**£6,449M**	**100%**

This study estimated the total value of low-cost / no-cost resource efficiency savings to range between £5.6 billion to £7.4 billion (mean £6.4 billion[1] annual savings opportunity) (Table A1), which equates to 0.6% of UK gross valued added[2] and 1.9% of UK gross operating surplus (profit)[3] . Energy (52%) and waste (41%) are the two areas where the most opportunity was identified.

- 1 This represents the current short term (annual) resource efficiency savings opportunity and would remain (all else remaining equal) year on year if no intervention was undertaken.
- 2 UK total GVA in 2006 = £1,154,959 million. Source: ONS UK economic accounts.
- 3 UK total gross operating surplus in 2006 = £340,715 million. Source: ONS UK economic accounts.

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Table A3 Summary table showing waste, energy and water savings by region

Region	Waste (£M)	Energy (£M)	Water (£M)	Total (£M)
South East	336	488	47	871
North West	299	373	41	713
London	272	318	40	630
East	247	334	34	615
South West	248	298	36	582
Scotland	245	273	43	561
West Midlands	213	315	33	561
Yorkshire & the Humber	234	285	34	553
East Midlands	191	267	32	490
Wales	132	163	23	318
Northern Ireland	104	114	15	233
North East	92	120	15	227

Table 1.1: Estimated waste savings opportunity in the manufacturing sector in 2003.

Sector	Total savings		Savings as % of GVA	Investment required (£M)
	(£M)	% of total savings		
Food, drink and tobacco	407.7	17.0	7.6	379.9
Textiles, leather and clothing	232.5	9.7	19.2	101.4
Coke, petrol and nuclear fuels	5.6	0.2	0.1	3.5
Chemicals and man-made fibres	966.1	40.3	24.0	574.6
Basic metal and metal products	139.2	5.8	2.3	128.8
Engineering and allied industries	262.6	11.0	2.2	145.5
Other manufacturing	381.0	15.9	4.3	177.8
Total	**£2,394.7m**	**100%**	**6.7%**	**£1,511.5m**

Figure 2.2: An example of the projection method for estimating waste savings opportunity

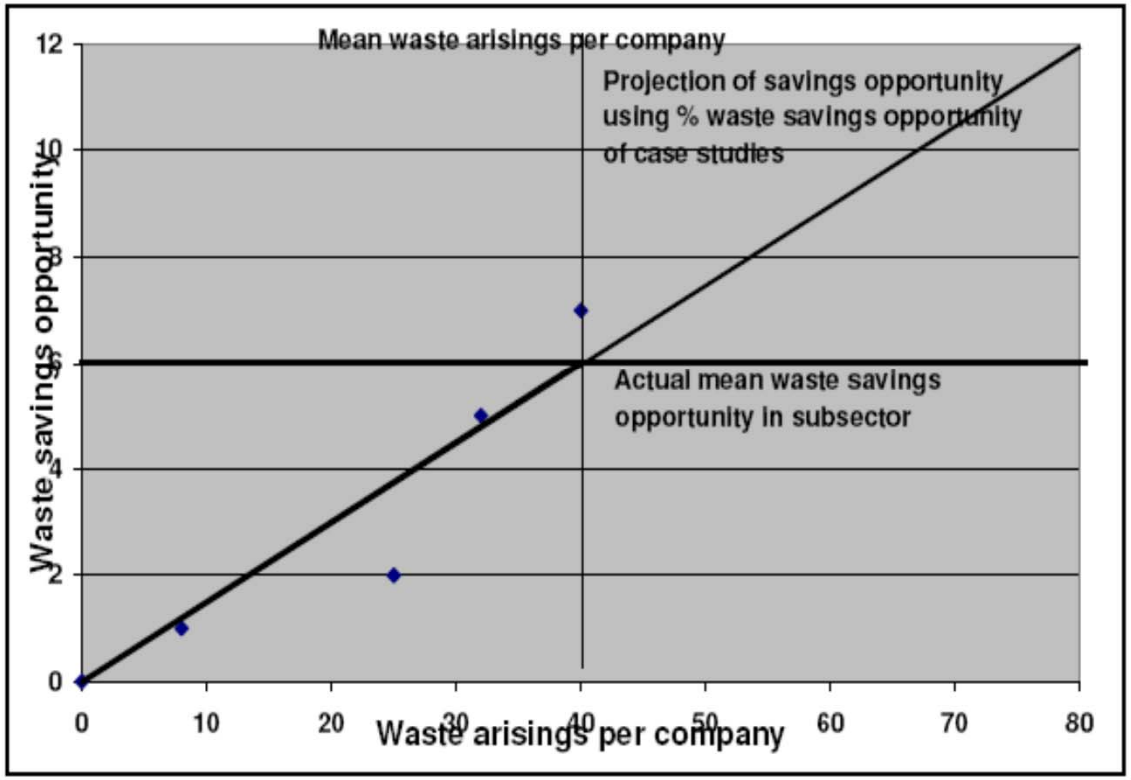

Table 2.3: Estimated waste savings opportunity in the manufacturing sector in 2003

Sector	Visible cost savings		Hidden cost savings		Waste multiplier (hidden cost / visible cost)
	£M	% of total savings	£M	% of total savings	
Food, drink and tobacco	30.5	7.5	380	92.5	12.4
Textiles, leather and clothing	5.7	2.5	225	97.5	39.8
Coke, petrol and nuclear fuels	0.3	5.4	5.3	94.6	17.7
Chemicals and man-made fibres	156.5	16.2	810	83.8	5.2
Basic metal and metal products	13.0	9.3	126	90.7	9.7
Engineering and allied industries	15.2	5.8	250	94.2	16.5
Other manufacturing	28.7	7.5	352	92.5	12.3
Total	**249.9**	**10.4**	**2,148.3**	**89.6**	**8.6**

East Midlands

Waste

Table 17.10: Top ten waste savings opportunity sectors (£M)

Sector	Total savings (£M)
Food products; beverages & tobacco	60
Retail	35
Chemicals, chemical products & man-made fibres; rubber & plastic products	22
Construction	18
Manufacture of machinery & equipment et al	15
Travel agents et al	13
Other (other non-metallic minerals; wood & wood products; textiles & leather; manufacture of machinery nec; agriculture)	7
Hotels & catering	4
Education	4
Mining & quarrying	3

Table 7.3: A summary of the significant waste savings opportunities by subsector

Activity	Estimated Savings Opportunity (£M)	% of overall waste savings
Food & Drink	858	32.3
Retail	489	18.3
Construction	239	9.0
Chemicals, rubber and plastics	235	8.8
Travel agents	233	8.8
Machinery, electrical & transport equipment	195	7.3
Hotels & Catering	70	2.6
Total	**£2319**	**87.1**

Care: UK Capacity to Exploit Innovation in Resource / Waste Issues?


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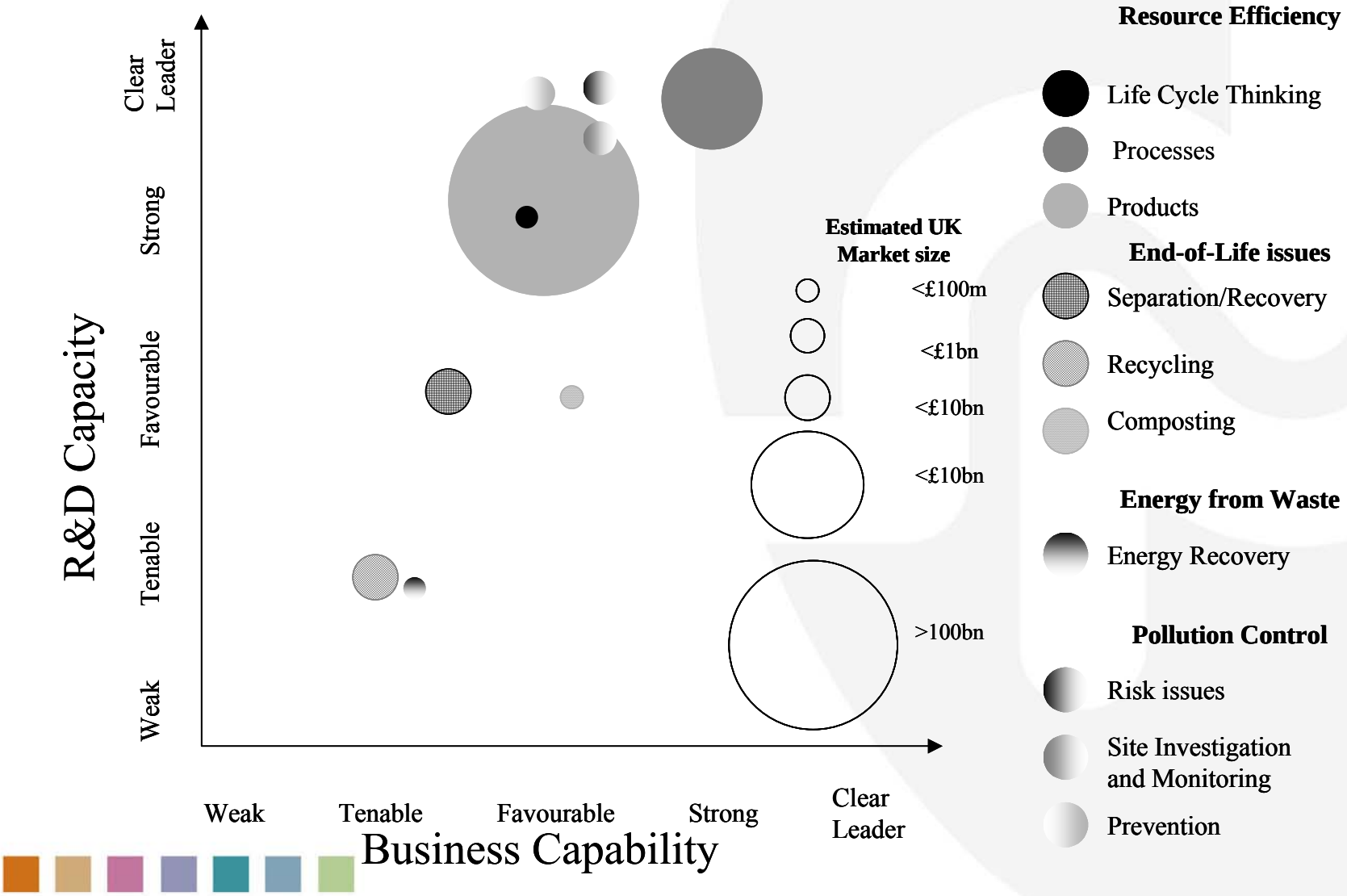
R&D Capacity
Clear Leader
Strong
Favourable
Tenable
Weak
Weak
Tenable
Favourable
Strong
Clear Leader
Business Capability
Estimated UK Market size
<£100m
<£1bn
<£10bn
<£10bn
>100bn
Resource Efficiency
Life Cycle Thinking
Processes
Products
End-of-Life issues
Separation/Recovery
Recycling
Composting
Energy from Waste
Energy Recovery
Pollution Control
Risk issues
Site Investigation and Monitoring
Prevention

CONCLUSIONS?

Let us list some now