



This work has been submitted to **NECTAR**, the **Northampton Electronic Collection of Theses and Research**.

### Conference Proceedings

**Title:** An evaluation of the largest resource efficiency club programme in England (2005-2008) to underpin future design and delivery of a cost effective policy instrument.

**Creators:** Mattsson, L. T., Read, A. D., Phillips, P. S. and Fairweather, R.

**Example citation:** Mattsson, L. T., Read, A. D., Phillips, P. S. and Fairweather, R. (2011) An evaluation of the largest resource efficiency club programme in England (2005-2008) to underpin future design and delivery of a cost effective policy instrument. In: *Proceedings of 26th Annual Conference on Solid Waste Technology and Management, Philadelphia, PA USA, March 27-30, 2011*. Pennsylvania: Widener University, School of Engineering. pp. 1469-1481.

It is advisable to refer to the publisher's version if you intend to cite from this work.

**Version:** Accepted version

**Official URL:** <http://solid-waste.org/past-conferences-and-proceedings/proceedings/2011-2/>

<http://nectar.northampton.ac.uk/6556/>



# **An evaluation of the largest Resource Efficiency Club Programme in England (2005-2008) to underpin future design and delivery of a cost effective policy instrument.**

**Lisa T. Mattsson, Adam D. Read, Paul S. Phillips<sup>b</sup>, Roy Fairweather<sup>b</sup>**

*<sup>a</sup>AEA Technology, Gemini Building, Harwell International Business Centre, Didcot, Oxfordshire, OX11 0QR, UK*

*<sup>b</sup>School of Applied Sciences, University of Northampton, Northampton NN2 7AL, UK*

---

## **Abstract**

In England, the Department of Environment, Food and Rural Affairs (Defra) allocated £5 million over three years from 2005 to 2008 to support the establishment of a wide range of innovative Resource Efficiency Clubs (RECs). During the funding period (2005 – 2008) the programme funded 70 RECs with 45 remaining active at the end of the three years (2008). Some 1,330 businesses were active in the 70 RECs with 1,014 providing data including potential and actual savings. In excess of £50 million of potential savings were identified and by the end of 2008 some £25 million were achieved. The total savings to total grant ratio for all RECs was, by 2008, some 5.8; this was in excess of the original ratio set by Defra. The Programme made clear to key decision makers that well designed RECs are a key policy instrument. The research showed that the future for RECs in England is uncertain and strategists should consider innovative ways to fund their continued contribution to national, regional and local practice.

**Keywords:** Resource Efficiency Clubs, Envirowise Programme, Savings, Future Funding,

---

\*Corresponding author: Lisa T. Mattsson, 07968 707 394, lisa.mattsson@eat.co.uk

## **Introduction**

In 2000 the Waste Strategy for England and Wales (Detr, 2000) was published. For the first time, sustainable development was placed at the centre of waste management policy. The Waste Strategy drew heavily upon the then recently developed UK Sustainable Development Strategy (Detr, 1999). Waste management strategy and practice was seen in need of a complete transformation if it was to move towards meeting EU originated targets and adopting sustainable practice. Underlying this new emphasis had been a significant amount of research indicating the large financial savings that could be made by commerce and industry via waste prevention (e.g. CEST, 1996; Phillips et al., 1999; Project Catalyst, 1994). Research led to the formation of an early Best Practice programme (1994), to support industry that was called the Environmental Technology Best Practice Programme (ETBPP) (Phillips et al., 1999). In 2000, it became Envirowise – a major Best Practice programme in the UK for clean technology, waste minimisation / resource efficiency.

In 2002, a key, highly critical, Government Strategy Unit report for England, 'Waste Not Want Not' (Strategy Unit, 2002) was published. Emphasis was placed on the strategic importance of Best Practice delivery bodies, such as Envirowise for Commercial & Industrial (C&I) waste minimisation and the Waste and Resources Action Programme (WRAP) for municipal solid waste (MSW) in an attempt to embed sustainable practice. Recommendation 19 was key, it pointed out that:

“The role of Envirowise should be expanded so its coverage is extended to 20% of UK companies over the next 2 years.”

The Government response (Defra, 2003) was a reflective comment on the Strategy Unit approach. The role of Envirowise (Best Practice delivery bodies) and Resource Efficiency Clubs (RECs), to drive C&I resource efficiency and reduce waste was again brought to the fore (Phillips et al., 2004). RECs were seen as a key early feature in the delivery of cost effective training to groups of companies for C&I waste in a given location (Phillips et al., 2000a, 2004, 2006). It stated (Defra, 2003):

“The Government recognises the value of Resource Efficiency (waste minimisation) Clubs and will consider ways in which they, and their role, can be increased. This recommendation will be considered further once a decision is made on the expansion of Envirowise.”

In 2007, Defra introduced an updated Waste Strategy for England – Waste Strategy 2007 (WS 2007) (Defra, 2007a). Waste Strategy 2007 points out that since the publication of Waste Strategy in 2000, England has made significant progress. By 2008/2009 (Defra, 2009a) it was reported that household waste has decreased by 26% since 2001. The target to reduce the amount of household waste not re-used, recycled or composted to 15.8 million tonnes by 2010 was met two years early with only 15.51 million tonnes not re-used, recycled or composted.

To provide technical guidance for detailed work for C&I waste, central Government funded a considerable number and range of delivery bodies including Envirowise, National Industrial Symbiosis Programme (NISP), Business Resource Efficiency and Waste (BREW), Carbon Trust, Action Sustainability, Centre for Remanufacture and Reuse, Regional Development Agencies, Business Links and Local Authorities (Defra, 2009b). The sums spent on each delivery body have been very significant. BREW, alone, was allocated £83.75 million in 2006/2007. In the same period Envirowise received £12.6 million for its core work in resource efficiency / waste prevention and this resulted in identified savings of £122 million (Defra, 2009b).

The “delivery landscape” of Best Practice bodies (e.g. Envirowise) has evolved over 15 years (Defra, 2009b). During Defra’s 2008 budgetary planning, the Management Board agreed that then was an appropriate point to review this landscape of delivery programmes for providing support and to assess whether it was still fit for purpose and had the potential for improvements to delivery policy

instruments such as RECs. There will be a substantial reduction in funding (Envirowise had a 50% reduction in 2008/2009) to work with companies on resource efficiency; rectifying the initial excess spending from 2002 onwards, as Government seeks to reduce spending. The final outcomes of the review are still under consideration but the role of Envirowise will undergo rapid change that may mean the loss of several of its main functions.

So pressing has been the need for a new approach to C&I waste that Defra has recently published a statement of Aims and Actions for C&I waste in England (Defra, 2009c). This new statement is an attempt to drive C&I waste reduction through a raft of new partnerships and approaches. The role of delivery bodies is central to this agenda and in Action 4 (Defra, 2009c) the Government will instruct WRAP to give further advice and support to businesses on resource efficiency.

There are vital questions to be answered about the future viability of policy instruments such as RECs. Have they proved that their cost effectiveness is sufficient so that they can survive in the near future (Coskeran and Phillips, 2005; Coskeran et al., 2007)? Do they bring additional benefits rather than just cost savings (Phillips et al., 2001, 2002, 2006)? How do they fit with other central and regional Government Strategies as well as waste (Defra, 2005; Phillips et al., 2000a, 2000b, 2002)? Can they develop larger partnerships that can move towards Industrial Symbiosis/Ecology (Harris and Pritchard, 2004; Phillips et al., 2006)?

## **Resource Efficiency Clubs (RECs)**

The mid-1990s saw the development of RECs – then known as Waste Minimisation Clubs (Phillips et al., 1999). These have often been based around a small number of companies (<20) in a given geographical area, such as a city, large town or county. The companies in the club are encouraged to initiate programmes through rigorous training in resource efficiency methodology, mostly by an external expert. Most of the clubs have a lifetime of between one to two years (Coskeran and Phillips, 2005). Resource Efficiency clubs have been a means of encouraging a range of organisations in a region to support local communities, as well as industry and commerce, as they strive to adopt sustainable management techniques to tackle their waste problems (Phillips et al., 2002, 2006).

Due to direct approaches to central Government (Phillips et al., 2004), Envirowise were funded to run additional RECs from 2005/06 to 2007/8. This funding enabled the formation of 70 new RECs. Using Envirowise data, as well as primary surveys, the number of RECs operating in England alone was 75 in 2008; the highest number at any one time in the UK and surpassing the previous highest number of 37 active in 1999 (Phillips et al., 2006). At present (2010), the number of RECs has declined, to around 30. How many RECs are required to adequately cover England? In 2000 it was pointed out (Detr, 2000) that at least 100 were required to cover the country effectively and cater for interested businesses.

## Results

### REC Programme

The exact sum spent on the RECs was less than £5 million (£4,367,575) as Value Added Tax had to be paid (Table 1). The funds were channelled through the Envirowise programme which acted as the administrator.

The programme made provision for two forms of funding to support both feasibility studies and access payments. Feasibility study payments allowed for potential club leaders to complete a study to assess the viability of establishing a club in a specific location or targeting a specific sector. If the study successfully identified potential for a club or the organiser had sufficient information without the need for a feasibility study, the organiser was invited to apply for an access payment. The access payment committed the club organiser to agree to undertake a minimum level of activity including the collection of resource data from club members, identification of potential savings made in the club and support to assist club members realise the savings. The programme funded 70 (Table 1) RECs with 45 remaining active at the end of the three years (2008).

Each of the 70 RECs involved in the programme consisted of a group of member companies. Each company in a club would receive resource efficiency advice via club meetings, events, networking opportunities and on a one-to-one basis with the club leader and/or technical advisor.

The total number of companies involved in the REC programme was 1,330. Of those companies, 1,014 provided useful data. This represents a response rate of over 75%. As can be seen from Table 1, a significant level of potential savings were identified. The level of actual savings realised is impressive, giving a return of £5.80 for every £1 of grant budget allocated. This is in excess of the target return, £5 for every £1 of grant budget allocated.

### Savings

Fig. 1 shows the regional comparison between potential and actual savings for the nine regions of England.

Fig.1 reveals a general trend where large potential savings were identified, large actual savings were eventually realised. Similarly, where smaller potential savings were identified, smaller actual savings were realised. This indicates that, on the whole, all clubs were able to correctly identify potential resource efficiency measures. These figures also indicate that there is still significant scope for the companies involved in the programme to realise further additional savings in the coming years. But does a large potential saving also offer out a disincentive? The demonstration of large sums yet to be

achieved could be seen as a means of companies requiring further subsidy to reach them. However, there is little evidence to fully support this view in REC literature.

Table 2, shows the performance of the 53 clubs that provided complete data, measured in actual savings achieved compared to investment made per club. The actual savings to grant ratio, generally gives a fair reflection on the performance of individual clubs. There are, however, exceptions. There have been instances where club member companies have realised savings but, for varying reasons, have been unable to quantify these savings. Clearly, this will impact on the club's actual savings to grant ratio. Several clubs have performed below expectations. As can be seen in Table 2, 13 clubs returned a ratio of less than 1. If the 17 clubs that returned no data are also included, that gives a total of 30 clubs that received grants and reported actual savings below the value of their grants.

Fig. 2 shows the top ten performing RECs, ranked according to their actual savings to grant ratio. While there were many under-performing RECs, there were also many clubs that excelled above and beyond expectations. The total actual savings to grant ratio in Table 2 shows that, despite the under performing clubs, the programme as a whole was successful.

Fig. 3 illustrates the distribution of actual savings by category across all members contributing data. As expected almost 50 percent of the savings were classified as energy savings and ranged from activities such as improvements to compressed air systems to implementation of staff switch-off campaigns. The pattern of distribution from potential to actual savings is almost identical with only a small shift in the contribution of raw materials savings over water savings.

## **Barriers and success factors**

Over 20 different, reoccurring barriers were identified by the RECs. The most common barriers identified by clubs are highlighted in Fig. 4, where it shows that over 45% of clubs reported having been set back by data collection issues throughout the Programme. Further pressing issues experienced by clubs include the difficulty in encouraging member businesses to attend workshops and events and the pressing time-scales set by the programme management. Roughly 27% of clubs found four issues equally concerning during the programme and these appear to be with the commitment of the member businesses. Common success factors identified by clubs are highlighted in Fig. 5. It was agreed by almost 35% of clubs that the key success factor of a REC is to work on building relationships between the club leader and the company contact. Clubs have found that regular communication is essential for the success of the club, not only between the club leader and the company contact in terms of 'hand-holding' through the difficult bits, but also between member companies in terms of encouraging networking and facilitating the sharing of best practices and ideas.

The future funding of RECs is a major concern to a wide spectrum of organisation involved in resource efficiency in England. One REC leader summed up the responses across the Programme:

“We are deeply disappointed that the government decided to stop funding the REC programme (after 2008) which has demonstrated over the last 2 years a very effective use of public money. The government should also understand that such initiatives go beyond resource efficiency and environmental concerns. These RECs give the opportunity to local businesses to trade, share knowledge about over business issues, access various sources of information, and improve their operations. A local business club also gives a sense of community to local companies.”

## **Discussion**

The Envirowise Programme 2005 – 2008 was by far the largest, centrally funded Resource Efficiency Programme in England since RECs were first formed in the early 1990s (Phillips et al., 2006). The funding corresponded to around £45,000 per REC at 2008 costs (from access payments). This would place these RECs in the category of Facilitated Self Help.

The number of RECs formed was 70 (Table 1) and this was approximately the maximum number that could have been driven with the resource available. The mean number of companies per REC was 19 (Table 1) – in line with reports from previous REC studies (Coskeran et al., 2007; Phillips et al., 2006). A rigorous quality control system involving feasibility study funding as well as access payments to form RECs underpinned the management (Table 1). Each REC that obtained funding had made a clear and strong case that they had the skills and knowledge to deliver on time and to budget.

Despite the rigorous pre-screening, (Table 1), the number of RECs that withdrew during operation was 12 (17%). The number of RECs that provided useful data was 53 (75%) and this is perhaps the metric by which to measure success in terms of satisfactory performance. Literature has pointed out that previous REC activity under Landfill Tax funding (Phillips et al., 2004, 2006) resulted in failure rates such that less than 50% produced a final report.

Recent suggestions as to the way ahead for resource efficiency funding in a changed landscape for delivery (Defra, 2009b) do raise cause for concern from a number of perspectives. RECs have been a means of galvanising groups of companies that often go on to form a range of networks in a given place. They emphasise partnership in a given locality with a large, mixed group of leaders from many backgrounds that make significant ‘in kind’ contributions. The ‘one to one’ service provider model being delivered by many RDAs (Defra, 2009b) does not seek to form long term networks and has no sense of place.

The data on total potential and actual savings is found in Fig. 1. How long does it take a REC to turn potential into actual savings? It has been suggested that it takes at least 3 years to turn over 90% of potential into actual (Coskeran and Phillips, 2005; Coskeran et al., 2007). The RECs here in this Programme had a lifetime of less than 3 years, yet a number of them (Fig. 1) had a very high actual to potential savings ratio (> 85%), e.g. West Midlands, whilst others had a much lower ratio (<30%), e.g. North East. These results suggest that best practice for delivery of actual savings had developed in a number of RECs (Fig. 2), this is an area that requires further exploration followed by extensive dissemination. A number of the RECs in Fig. 2 are from areas that have a clear track record e.g. CWIC in Northamptonshire (Phillips et al., 2006). In the case of Northamptonshire, the savings to grant ratio of the county programme has varied, over 12 years, from 2.6 to 20.0. CWIC as one REC in a county programme has varied, over 6 years and 3 phases from 2.6 to 16.8. There needs to be an in-depth analysis of historical performance to determine the key success factors over a sustainable timeframe of at least 10 years (Phillips et al., 2006).

Table 2, shows the performance of the 53 clubs that provided data, measured in actual savings achieved compared to investment made per club. The actual savings to grant ratio, generally gives a fair reflection on the performance of individual clubs. Several clubs have performed below expectations. As can be seen in Table 2, 13 clubs returned a ratio of less than 1. If the 17 clubs that returned no data are also included, that gives a total of 30 clubs that received grants and returned actual savings below the value of their grants. This is in line with past studies of waste minimisation clubs' performance (Coskeran and Phillips, 2005; Coskeran et al., 2007; Phillips et al., 2004). Despite this, the level of actual savings realised is impressive; giving a return of £5.80 for every £1 of grant budget allocated (Table 1). This is in excess of the target return, £5 for every £1 of grant budget allocated.

Past RECs have recruited by attempting to determine key areas of concern to possible future members (Phillips et al., 2006). Resource efficiency therefore covers a very wide array of topics that are of concern to a range of sectors. Energy and Waste were by far the main saving areas across the RECs (Fig. 3).

Barriers to REC success have been examined in some depth (Coskeran et al., 2007; Phillips et al., 2006). The significance of this data set is that it comes from the largest Programme in England and has the input of 70 RECs rather than a single club. `Data collection` (45%) (Fig. 4) is seen to be the major barrier to success. Many companies are keen to save funds in operations but have no standard mechanism to record and report on these savings. It is often assumed that the `annual bottom line` will just reflect the savings (Coskeran and Phillips, 2005). Therefore, savings of RECs are likely to be higher than reported ones.

Success factors (Fig. 5) are again in line with past studies (Coskeran and Phillips, 2005; Phillips et al., 2004). The key appears to be `good relationships with members by the REC leadership team` (35%) followed by `one to one support` (32%). These results enable a common approach to be designed into



future RECs (Coskeran et al., 2007). But there is a need here for caution, in that what may well work for a general sector REC may not suit one that is for say a specific sector spread over a large (regional) area. The danger is that central funding bodies seek to impose a centralised `top down approach` to future club design. This is to be avoided as such an approach will often increase the problems of a REC under stress. If a large amount of data is required to satisfy funding bodies then it may cause collapse of a REC during its lifetime. Better to have a `bottom up approach` where REC leaders can design future activity around a pool of issue that need to be reported on (Phillips et al., 2006). A REC is as much about providing good news message for holistic, local campaigns for MSW prevention as providing accurate extensive data for regional/national Government (Phillips et al., 2002).

Have RECs proved their cost effectiveness (Table 2; Fig. 2)? Well managed RECs have delivered savings in excess of the requirement (Pratt and Phillips, 2000b). The key point is that funding for possible future RECs needs to flow to partnerships that have a proven track record. Do the RECs bring additional benefits? Literature shows that they bring a range of benefits for sustainable practice above and beyond resource efficiency (Phillips et al., 2006). Can cost effective RECs exist in the future? The costs of RECs can be funded through local partnerships accessing a wide range of funds not just ones for resource efficiency. This way, answers may be provided on some of the very pressing issues arising from the Waste Framework Directive (Article 29) with its obligatory waste prevention programmes that have to be in place by December 2013 (Official Journal of the European Union, 2008).

## **Conclusion**

The Envirowise Programme 2005 – 2008 was the largest, centrally funded Resource Efficiency Programme in England since RECs were first formed in the early 1990s. The Department of Environment, Food and Rural Affairs (Defra) allocated £5 million over three years from 2005 to 2008 to support the establishment of a wide range of innovative Resource Efficiency Clubs (RECs). The funding corresponded to around £45,000 per REC at 2008 costs. This placed these RECs in the category of Facilitated Self Help. During the funding period (2005 – 2008) the programme funded 70 RECs with 45 remaining active at the end of the three years (2008). Some 1,330 businesses were active with 1,014 providing data including potential and actual savings. In excess of £50 million of potential savings were identified and by the end of 2008 some £25 million were achieved. The total savings to total grant ratio for all RECs was, by 2008, some 5.8; this was in excess of the original ratio set by Defra. The total savings to total grant ratio for the RECs varied quite considerably, with 13 clubs having a ratio less than 1 but there were 9 over 10. This shows the importance of REC management teams having a wide skill set to drive forward to overcome barriers to make the required savings. The mean number of companies per REC was 19 – in line with reports from previous REC studies. The percentage of RECs that withdrew during operation was 17%; higher than expected. However, the number that provided useful, validated data was 75%.

## References

Centre for Exploitation of Science and Technology (CEST) (1996) *The Aire and Calder Experience: Case Studies*, CEST, London, UK.

Coskeran, T. and Phillips, P.S. (2005) economic appraisal and evaluation of UK waste minimisation clubs: proposals to inform the design of sustainable clubs, *Resources, Conservation and Recycling*, 43, 361-374.

Coskeran, T., Smith, S. and Phillips, P.S. (2007) An economic modelling approach to the design and delivery of sustainable waste minimisation clubs: Prospects in new policy framework, *Resources, Conservation and Recycling*, 50, 398-414.

Department for Environment, Food and Rural Affairs (Defra) (2003) *Government response to Strategy Unit report 'Waste Not Want Not'*, London, UK

Department for Environment, Food and Rural Affairs (Defra) (2005) *Securing the Future – UK Government Sustainable Development Strategy*, London, UK.

Department for Environment, Food and Rural Affairs (Defra) (2007a) *Waste Strategy for England 2007*, London, UK.

Department for Environment, Food and Rural Affairs (Defra) (2009a) *Waste Strategy Annual Progress Report*, London, UK.

Department for Environment, Food and Rural Affairs (Defra) (2009b) *Resource Efficiency Delivery Landscape Review*, London, UK.

Department for Environment, Food and Rural Affairs (Defra) (2009c) *Commercial and Industrial Waste in England: Statement of Aims and Action 2009*, London, UK.

Department of the Environment, Transport and the Regions (Detr) (1999) *A better quality of life: a strategy for sustainable development in the UK*, London, UK.

Department of the Environment, Transport and the Regions (Detr) (2000) *Waste Strategy 2000 for England and Wales*, London, UK..

Harris, S. and Pritchard, C (2004) Industrial Ecology as a learning process in business strategy, *Progress in Industrial Ecology*, 1, 89-111.

Official Journal of the European Union (2008) Directive 2008/98/EC of the European Parliament and of the Council: on Waste and repealing certain Directives.

Phillips, P.S., Read, A.D., Green, A.E. and Bates, M.P. (1999) UK waste minimisation clubs: A contribution to sustainable waste management, *Resources, Conservation and Recycling*, 27, 217-247.

Phillips, P.S., Pike, K., Bates, M.P. and Read, A.D. (2000a) Developing effective waste minimisation clubs: a case study from the East Midlands of England, *Journal of Solid Waste Technology and Management*, 26, 3 & 4, 97 – 113.

Phillips, P.S., Adams, K.T., Read, A.D. and Green, A. (2000b) The UK draft waste policy and waste minimisation: Regional trends in waste minimisation strategies, *Regional Studies*, 34, 3, 216-222.

Phillips, P.S., Pratt, R.M. and Pike, K. (2001) An analysis of waste minimisation clubs for future cost effective developments, *Waste Management*, 21, 389-404.

Phillips, P.S., Holley, K., Bates, M.P. and Freestone, N.P. (2002) Corby Waste Not: an appraisal of the UKs largest holistic waste minimisation project, *Resources, Conservation and Recycling*, 36, 1-31.

Phillips, P.S. Dempsey, M., Freestone, N. and Read, A.D. (2004) A radical new proposal for delivering and financing waste minimisation clubs in England due to the loss of Landfill tax Credit Scheme Funding, Resources, Conservation and Recycling, 43, 35-50.

Phillips, P.S., Barnes, R., Bates, M.P. and Coskeran, T. (2006) A critical appraisal of an UK county waste minimisation programme: The requirement for regional facilitated development of industrial symbiosis / ecology, Resources, Conservation and Recycling, 46, 242-264.

Project Catalyst. (1994) Report to the Project Completion Event, Manchester, UK.

Strategy Unit (2002) Waste Not Want Not: A strategy for tackling the waste problem in England, Cabinet Office, London, UK.

## TABLES and FIGURES

Table 1  
Detail on REC programme funded via Envirowise 2005 - 2008

---

### Applications

104 applications for feasibility studies received

57 feasibility studies completed

97 applications for access payments received

66 applications approved

### RECs

70 clubs funded by the REC programme

23 clubs awarded 2<sup>nd</sup> year funding

20 clubs awarded continuation funds (>12 months)

12 clubs terminated after six months of activity

45 clubs active at the end of February 2008

53 clubs provided useful data recorded in the REC savings database

### Businesses

1330 businesses are registered in the database

1014 provided data including potential and actual savings

### Savings

£50m of potential savings identified

£25m of actual savings realised to date

Total savings to total grant ratio = 5.8

---

Table 2.  
Actual savings to grant ratio for 53 RECs.

---

Of the 53 (from 70) clubs that provided data, the number of clubs with a ratio, R, of actual savings to total grant of:	Number of clubs
---	-----------------

R<1	13
R between 1 and 2	8
R between 2 and 5	8
R between 5 and 10	15
R >10	9

---

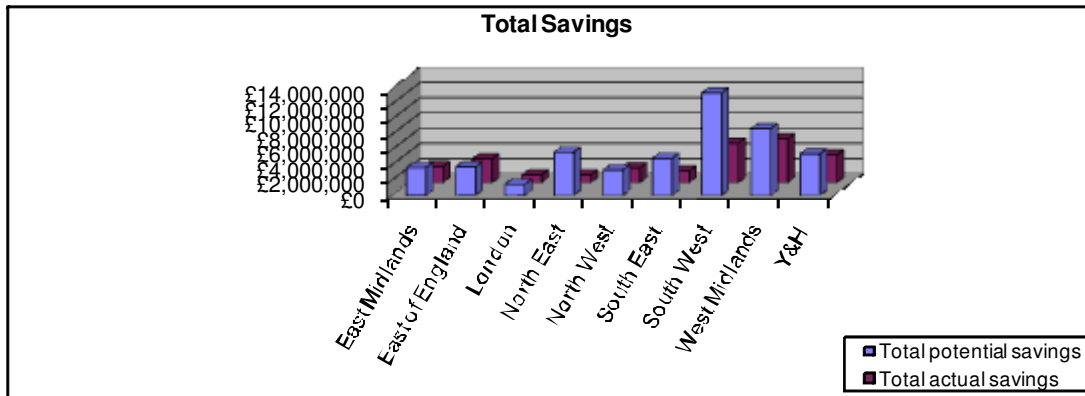


Fig. 1. Total savings for RECs per region.

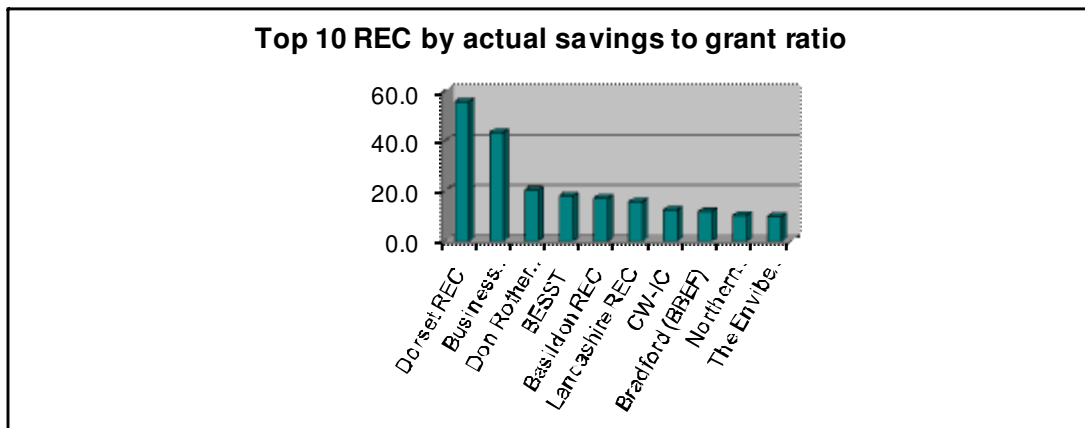


Fig. 2. Top 10 performing RECs with regards to actual savings.

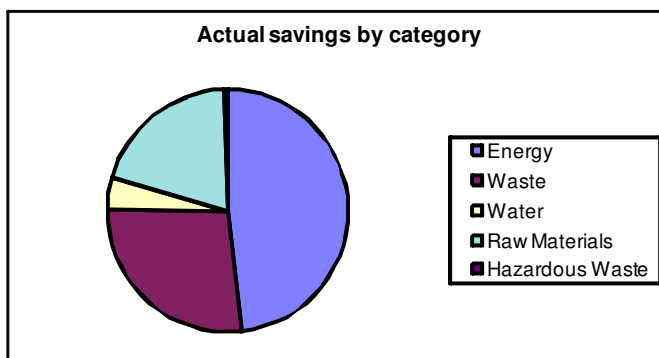


Fig. 3. Actual REC savings by category

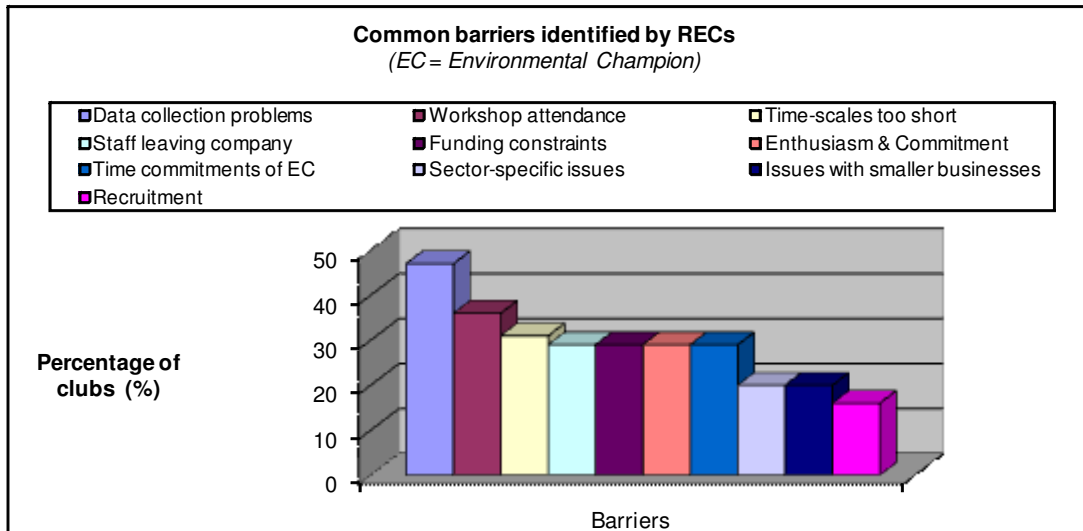


Fig. 4. Top 10 Barriers for RECs

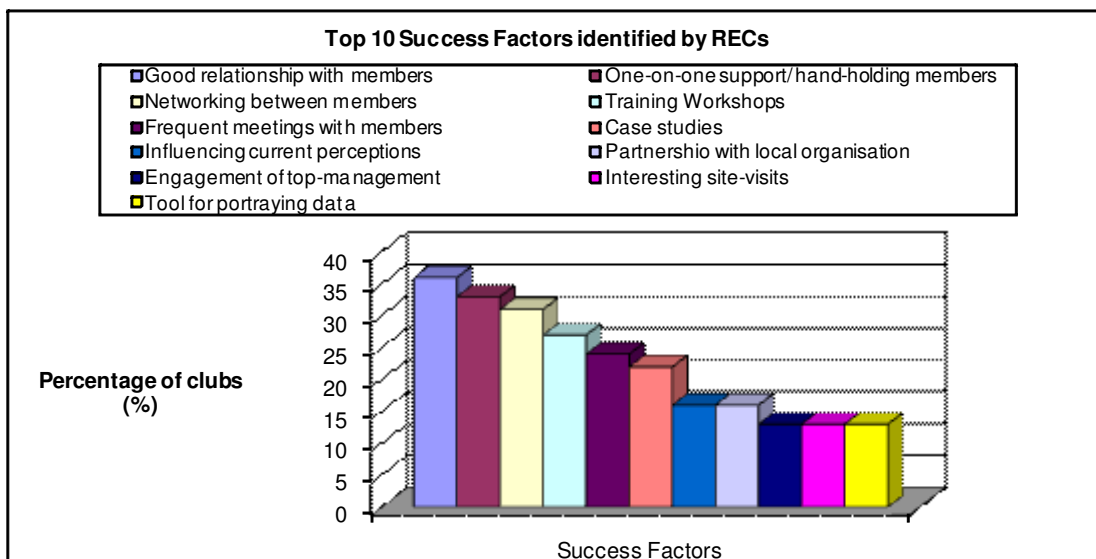


Fig. 5. Top 10 Success Factors for RECs.