Case Study 8

Energy Trophy programme

EU-wide



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Work package 2 Development of the conceptual model: Analysis of success factors, underlying models and methods in target group interaction

Case Study 8:

Energy Trophy programme, EU-Wide

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Summary of the case

Energy Trophy (ET) is an EU-wide programme sponsored by the European Commission's Intelligent Energy Europe (IEE) Programme, the German Federal Environmental Agency and Ecoperl. The programme takes the form of a competition for energy savings, specifically in office buildings, by the change of employee behaviour. The goal of the programme is to reduce energy consumption specifically through behavioural change within organisations which does not require investments into energy saving devices; however, low cost investments such as compact fluorescent light bulbs and timers are permitted. ET also has a focus on cost savings to increase participation and CO_2 reduction.

Participants can include any organisation, public, private or NGO so long as they have premises for the use of office purposes in one of the following countries: Austria, Beligium, Bulgaria, Denmark, Estonia, France, Germany, Hungary, Italy, Latvia, Lithuania, the Netherlands, Poland, Romania, Slovenia, Spain, Sweden or the United Kingdom. Further requirements limit participants to organisations who currently meter energy consumption and have three years of historical data regarding energy consumption available. Participants will submit energy data every month for 12 months during the programmes active period; after which prizes will be awarded for best EU-wide, national and in-house employee motivation campaign.

The first round of ET was launched in 2004/2005 with 38 participating companies and institutions from six countries. The results from the first round were promising with an average energy savings of 7% and the winning company recording a 30% savings. Overall, the programme achieved a total reduction of 3700 MWh or 1885 tonnes of CO_2 corresponding to a cost savings of CO_2 00.

Due to the success of the first round of the ET a second round was launched in July of 2007 and will concluded in June of 2008. As such results are currently pending; however, with more than 150 participants the results are expected to be significant.

Overall the ET programme is considered to be a success as planning for future rounds of the competition are already in the works, in fact an established framework is being developed to formalise the competition in future rounds to ensure it runs smoothly. Furthermore, the programme offers significant benefits such as public recognition through the award of prizes and publicity, corporate identification and motivation for the staff of participating organisations and reduced operating costs as energy consumption is reduced though minimal investments.

If there are any shortcoming to the competition the success and realised emission reductions are only as dramatic as the commitment of the participant. There are no mandatory targets which must be reached by the participating parties and there is therefore a wide ranging of results between partners.

Step 1: Context of the programme

National context

As there are several participant countries in the program it is difficult to characterise the national context of the overall program. There are a variety of cultural, social, and geographic differences between the participating countries which influence attitudes and habits towards energy consumption; however, there are some general statements which can be made to shed light on the overall situation.

Currently the EU imports half of its energy needs and it is estimated that by 2030 increasing energy demands could potentially result in 70% foreign energy reliance (Energy Corridors 2007). This is largely attributed to increased energy demand and transport needs which are presently under increased strain due to rising oil prices. The EU has recognised that energy dependence could have a variety of effects from to economic downturns to threats of national security and is actively seeking a solution. Specifically, the EU is looking to external and internal action to address this problem. Internally, through emergent energy technology supported by the Research Framework Programme, the Technology Platforms and the Strategic Energy Technology Plan, emphasis is placed on developing new clean energy technologies which will replace obsolete processes and technology. Externally, the EU is aiming to improve the energy corridors between neighbouring countries as it has been acknowledged that stable and reliable connection, particularly for oil, gas and electricity, is a key component of any comprehensive energy plan. In addition, the EU is looking to the Nordic, Eastern and Southern neighbouring countries as their role in the EU future energy supply is significant. These considerations together contribute to a sustainable energy future for the EU and must be integrated into any plan (Energy Corridors 2007).

Specific context

The specific context of the Energy Trophy programme relates to way in which participating businesses and organisations adapt and change their behaviour in regards to energy consumption in the office place during the duration of the competition. Energy trophy offers participants the opportunity to reduce their energy consumption and receive the benefits of cost savings with minimal investments. Furthermore, participating organisations can receive public commendation for their conservation efforts which is essentially an added benefit for their efforts.

Beyond the financial incentives Energy Trophy aims to capitalise on the growing environmental concern which has been observed by corporations in recent years by encouraging participation through healthy competition. It could be argued that the present trend within organisations is that of 'greening businesses' which are striving to improve their environmental record and image. The programme has also contributed to organisations seeking full-time environmental professionals which is currently are a rarity in the office place.

Step 2: The focus of the programme

General issues, initiator and problem definition

Commencing in 2003/2004 the Energy Trophy programme began with just 38 participants and a total budget of €399,786. Overall, the competition was a considered to be a success with 3700 MWh saved and 1855 tonnes of CO₂ prevented from emission. For the participating organisations this corresponded to approximately €200,000 in cost savings. Despite several organisations noting an increase in energy consumption during the programmes' duration the average savings were approximately 6.9% and provides a strong incentive for other organisations to become involved.

Due to this success, the second round of the programme began on July 2007 and is well underway with an end date of June 30th 2008. The current round of ET includes over 150 participants from 17 countries (Energy Trophy Newsletter 1st) and falls within the increased budget for the programme for the period 12/2006 - 2/2009 of €1,926,118. Future rounds have been planned with a projected participant base of 350 - 450 organisations

Considering the prize monies the budget does not typically cover these funds; however, when donors cannot be found the project budget compensates for a lack of contributions (as was the case for four countries in the first round of the programme).

The initiative for the programme originates from Intelligent Energy Europe as it is one of the energy efficient projects within the energy efficiency buildings category. It emphasises the need to build the necessary bridges to tap into the unexploited energy efficiency and renewable energy techniques which are possible in Europe. More importantly it acknowledges the value of DSM in the commercial and industrial sectors which have been shown to be the areas where significant energy reduction could be realised. Further, there are a variety of goals and objectives beyond reducing consumption, limiting CO₂ emissions, and cost savings including knowledge/experience sharing and improving corporate image though increased social responsibility.

The problem that the programme aimed to address was the issue of energy consumption in office buildings and intended to reduce consumption through behavioural changes and low cost measures. In addition the program addressed the fact that the majority of energy management systems do not have regulated performance requirements or regulated reporting systems and this has left a large gap in organisational management systems. Furthermore, the programme also highlights the fact that there are few, if any, dedicated specialised environmental staff which are trained to manage and lead efficiency programmes of any kind. While the Energy Trophy does not require such highly specialised staff, many organisations have come to realise the value of this formal training.

Goals, objectives, targeted behaviours and target groups

The goals and objectives of the programme are to reduce energy consumption in participating office buildings, which will translate to reduced CO₂ emissions and cost savings for participants. This primary focus has been clearly communicated by programme organisers but there are a variety of 'spin-off' goals and objectives

- Improved public image for participants though media coverage of the programme and achievements. By enhancing an organisations corporate social responsibility (CSR) they are likely to be regarded in a positive light by the general public with regards to their efforts
- Exchange of experience and best practices between partners.

- Promoting open communication between industries. Typically, techniques which provide an organisation with a competitive advantage in the marketplace are kept as closely guarded secrets; however, considering energy efficiency this mind-set should be changed for the overall betterment of society.
- Test the estimated energy reduction targets which can be influenced through behavioural changes which are estimated to be between 10 15% (Director General for Energy and Transport)
- Developing a network for support and advice to reduce overall consumption
- Represent a gateway to other more financial/time intensive changes. By showing organisations that simple low-cost conservation efforts are not as complicated or cost-intensive as initially conceived organisations may be inspired to make further changes. This is especially true once the financial benefits are realised which in the case of previous Energy Trophy participants has been as high as 30%.

From evaluating the successes of the initial rounds of the Energy Trophy program the overall goals and objectives outlined above are attainable assuming the program continues to develop a stronger participant base. Looking back, the success of many environmental programmes has been limited by low numbers of participants and weak industrial/organisational adoption. This resulted in industry regarding these programmes as weak or insignificant. In this regard, the Energy Trophy programme has attempted to sidestep this problem by emphasising environmental performance with costs savings providing a dual incentive for industry to participate in the program: significant financial benefits and an improved public image.

When speaking to the changes targeted by the program, Energy Trophy aims to influence the employees and management in office buildings to save energy though behavioural changes and low-cost energy efficiency measures. As previously mentioned, by encouraging participants to incorporate energy saving behaviours, which are low-cost and financially beneficial, the participating organisations are likely to realise the value behind these measures and be inspired to move beyond the 'low-hanging fruit' encouraged by the programme and invest in more intensive (in respect to both time and money) techniques to reduce overall energy consumption.

Some of the most significant gains from DSM strategies come from the commercial and industrial sectors when compared to residential sectors. It is therefore one of Energy Trophy's strong suits that they focused specifically on office buildings including public sector buildings. From a list of current participants there are a variety of private organisations and public administrations which demonstrate that the financial savings which can be achieved though Energy Trophy are real savings and the programme is beneficial beyond improving an organisations image.

Step 3: Design of programme

What ideas informed the design of the programme (what lies at the foundation of the programme)?

The design of the ET programme is not specific in the sense that there are no defined steps and procedures for the participants to adhere to; instead the programme is designed to be performance based with any behavioural or low-cost measure permitted. The only stipulation is that if a participant chooses to perform high specification renovations or thermomodernisation during the competition, this will be factored out of the overall results to ensure that the integrity of the data collected is specific to the successes of energy conservation through behavioural changes and low-cost measures alone.

Therefore, due to the performance based nature of the programme the overall success of the competition is solely based on the commitment of the participants. Through linking energy consumption with the issues of environmental concerns and cost savings, participants could essentially choose their motivation, from improving their corporate social image to simply saving money, and join the competition and contribute to overall energy conservation. The programme was designed in this way as to maximise the participant base to reduce consumption as much as possible.

The design of the project has also included an added incentive for organisations in addition to the costs savings and improved public image; which is the awarding of prize monies during a Gala held at the end of the competition. While the prizes are admittedly small they still represent the potential to recruit other potential participants who are not motivated by the other benefits of the programme. There are three categories of prizes: EU Wide, National and best in-house publicity campaign. The funds for these prizes are obtained from the sponsors of the programme.

Prize	Amount
EU wide - awarded to highest % reduction (3 prizes)	Gold €10,000
	Silver €5,000
	Bronze €2,500
National - awarded to highest % of energy saved per	€5,000
country	
Best In-house publicity campaign	€5,000

Finally, the programme was intentionally designed to be a fun task. By encouraging employees to compete for a specific goal it created an enjoyable atmosphere within the office and thus came across more as a game rather than an additional task. In addition by providing no specific techniques, for example with the in-house campaign, employees were encouraged to brainstorm and thus became 'owners' of their efforts creating a certain degree of passion for the competition.

Overall the programme appears to be quite robust, attempting to motivate participants from a variety of angles and it seems as if this approach has worked with the programme expanded in both geographic scope and number of participants with plans to ensure that this programme becomes a yearly competition.

Research conducted on the target group

In recent years there has been significant research completed on the commercial sector in regards to energy consumption and CO₂ emissions. The efforts of the IPCC's Fourth Assess-

ment Report, for which the organisation won the Nobel Peace Prize in 2007, contained a chapter dedicated to residential and commercial buildings.

The chapter within the Mitigation of Climate Change section of the Report showed that direct energy related CO₂ emissions of the building sector was equal to 3 Gt a year. Further the report stated that by utilising practical and available technologies energy consumption could be substantially reduced providing net benefits, rather than costs, for the commercial sector (IPCC 2007).

The Energy Trophy programme falls into one of the three main categories of greenhouse gas reduction measures as identified by the IPCC and in fact, improving energy efficiency in buildings encompasses the most diverse, largest and most cost-effective mitigation opportunities (IPCC 2007). With this in mind it is clear that the Energy Trophy represents a great opportunity to address one area where real gains can be made through energy efficiency.

What barriers, motives and capacities did the programme aim to target?

The ET programme aimed to overcome the inertia many office building have towards energy efficiency by designing a programme which would be easily communicable, easily adopted, cost efficient, non-invasive and fun to undertake. Essentially these are the key barriers that have prevented organisations from attempting to address energy efficiency in the past. Today, with growing environmental awareness and an increased focus to reduce energy consumption, there is an opportunity to finally discuss the energy efficiency measures which can be adopted by the commercial sector.

The ET has taken the path of least resistance by appealing to a variety of motives: an organisations financial success/reason, an organisations corporate image or social responsibility and an organisations intrinsic value (specifically towards the environment). By identifying these motives the ET programme then had three methods of changing behaviour: motivating, enablement and reinforcing.

Motivation targeted an organisations intrinsic values, those values which managers and employees already had in regards to the environment and also extrinsic values, those associated with cost savings and corporate image. This was accomplished by providing specific information to participants regarding their energy consumption from month to month and also information on the cost savings and emission reductions they had already attained.

Enablement primarily took the form of education, technical assistance and cooperation. The programme aimed to show participants how to reduce their energy consumption and also attempted to make their requirements within the programme, for example monitoring and reporting, an easy or passive task. To that end, the programme incorporated automatic monitoring and reporting for many partners or the weekly submission of energy data on the protected component of the Energy Trophy website.

Reinforcing took the form of building on the commitment of participants by providing tips and techniques on approaches which could be adopted to increase reductions and also though providing feedback. It is well established that regular feedback is a critical component of sustaining behavioural changes and through regular feedback, for example through monthly newsletters or partner specific information, continuous encouragement was provided to the participants.

What instruments and activities were used?

There are several instruments which are used to accomplish the goals of the programme including: low cost investment and real cost saving, publicity and public acknowledgement, passive technology and feedback.

Several of these instruments have been discussed and the remaining will be covered in the discussion shortly, but a brief description will be provided of each.

Low-cost investments and real cost savings - a typical concern of any business is that activities outside the scope of their primary business function will be costly and result in their inability to compete efficiently in the marketplace; after all the 'business of business is business.' However, the ET programme offered a low-cost alternative to participants and paid significant dividends for their small efforts.

Publicity and public acknowledgement - built into the programme is the aspect of media coverage, through media or public events and also the year end gala, significant publicity coverage is provided which surely helps the organisations public image.

Passive technology - the monitoring and reporting devices used to record information are not time nor labour intensive. Further highly trained staff are not required to participate in the programme making it accessible for any organisation.

Feedback - as mentioned feedback is a critical consideration when developing a DSM programme and the ET has attempted to integrate this into several aspects of the programme for participants.

Participation and commitment

Participation in the ET programme is voluntary as participants are targeted for recruitment or apply to the competition but do not have to commit to specified targets. Instead, participation, or more accurately the 'intensity' of organisations participation, is directly related to the level of commitment within organisation. From the first round of the ET it is clear that there is a wide range of commitment as some organisations achieved reduction levels equivalent to approximately 30% of while other organisations noted an *increase* in energy consumption (between 1 - 14%). It should be noted, that those organisations which showed an increase in energy consumption were in transition and for example, had expanded their business operations by hiring more employees; however, some organisations could not explain the increases.

Overall, the programme is designed to be relatively unobtrusive with participants sending in data passively or weekly. Thus, participation beyond the measures taken, reporting and monitoring and the in-house campaigns are quite limited. Again within the ET programme participation and commitment are directly linked and vary dramatically from organisation to organisation. The motivation to join the programme can come from a variety of sources including internal pressure, external pressure, cost savings or environmental awareness.

Communication and benefits offered to the target group

One of the stronger suits of the ET programme is the level and range of communication activities which are taking place through the programme. For ease of evaluation, communication activities can be considered as being internal and external.

Internal communication between participants and programme administrators/ competition bureau is well developed with a monthly newsletter sent to all participants. Each issue of the newsletter focuses on a specific partner or partner country, highlighting some of the techniques which are currently being employed to reduce energy consumption within the competition. This of course further encourages partners to consider other options and methods to reduce energy consumption as to remain competitive; both within the ET competition and the marketplace as a whole. Furthermore the programme has developed an 'ET Portal' which is accessible to all partners to gauge their relative success in comparison to other participants and provides such information as a daily spectral analysis which shows specific points in the day when energy consumption is at the highest and the lowest (figure 1-1), savings in percent and absolute savings and their energy/cost savings compared to previous months. This tool has been especially effective at delivering feedback to partners, which is a critical element to maintaining motivation and ensuring continued participation and is thus a key component of any successful DSM programme.

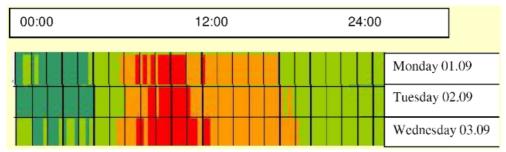


Figure 1: Spectral analysis of the energy consumption per day (red >47kW, orange <47kW). Please note that the spectral analysis is only available for those participants using the WEB'log reader or another automatic reading system

Source: Energy Trophy

External communication is also well developed within the programme and utilises the media to raise publicity/increase awareness about the programme and the successes of the participants. Specifically, there have been several media campaigns which have highlighted the participating organisations, the project partners and the project sponsors who have contributed to the programme. In addition the contribution of the internet cannot be overlooked; however facts and figures pertaining to website activity such as website visits, downloads etc are not available at this time.

In addition, there is the annual Prize Gala which acknowledges the efforts of all participants but specifically recognises the organisation who achieved, "the highest percentage of energy saved EU wide and nationally and the best in-house employee motivation campaign" (Energy Trophy 2007). The prize gala accomplishes both internal and external communication and is an excellent tool to encourage further participation in the programme.

Learning, evaluation and monitoring

The ET programme is relatively young and subsequent rounds are altered as lessons are learned and new information comes to light. Specifically, the refinement of a framework to launch subsequent rounds is currently in progress and is projected to be completed in October of this year when the final programme meeting takes place. This will ensure the programme

runs smoothly and consistently from year to year. Yet, even after one complete year of the programme there have been several specific lessons which have been identified:

- Competition can be utilised as a powerful instrument to influence behavioural changes. Easily communicable and fun tasks overcome a great deal of resistance and result in higher levels of participation from both management and employees.
- Simple energy reduction measures which are not cost intensive can have a significant influence on energy use.
- The prizes from the first round were awarded to the organisations which recorded the highest reductions; however, this does not necessarily represent those organisations which were the most dedicated or those which instituted the most influential energy saving measures. Instead, organisations which were the most inefficient were favoured as they had the most room for improvement. Subsequent rounds of the competition will likely adopt a more representative calculation such as kWh per employee or m².
- It was noted that by requiring office spaces to have historical energy data available (at least 3 years), new or recently moved organisations could not participate. There is still no clear solution for this problem; however, it has been acknowledged as a problem and steps are being made to overcome this issue.
- Obtaining financial support from sponsors was harder than previous assumed as budgets
 for environmental causes still lags behind sports and culture. Similarly to the historical
 data requirements issue, this problem does not have a clear solution; however, organisers
 are attempting to find a solution for those partner countries who cannot secure the required
 funds. In the first round this was overcome through contributions from the programme
 budget.

Beyond the above lessons learned it should be stated that energy efficiency is currently receiving significant attention as new technology and techniques are constantly emerging and will surely influence the approaches of the coming rounds.

As the ET programme is based on energy reduction, it incorporates a well developed monitoring and reporting procedure for all participants. For many this is accomplished through the installation of a WEB'log remote device which automatically records and transmits information for the purposes of the competition. As previously mentioned, other partners provide their energy data online every week through a secure part of the project website. Once this information is collected, partners receive a monthly report from the German project expert company Meteocontrol mbh regarding their specific energy savings. This information is then used by the participating organisations to communicate the results to employees and can act as a powerful motivational tool.

Step 4 and 5: Outcomes and results

Overall, the ET programme can be considered to be a success as the 2nd round of the competition is currently underway (to be completed in June 2008) with over 150 participating organisation. This is a dramatic increase from the 38 participating organisations in the first round. Unfortunately, the data from the second round is not yet available but an analysis of the first round results is quite promising. Of the 38 organisations 22 recorded reductions in energy consumption through the behavioural and low-cost measures employed. 16 organisations recorded an increased but, for the most part, this has been attributed to changes in the work place such as increases in the number of staff. However, including those organisations which noted increases, the average energy reduction was still approximately 7%. This corresponded to a reduction of energy consumption equivalent to 3700 MWh or a cost savings of approximately €200,000.

Going forward the programme is planned to again expand in scope aiming for 350 - 450 participants in the third round. Furthermore, it appears that organisations are recognising the potential the ET, and in general DSM measures, can contribute to energy efficiency and their corporate image. This is especially true in light of the increased costs associated with energy and growing environmental awareness.

To focus directly on the successes of the programme it can be said that the ET was effective in several aspects and also contributed significantly to the social learning of the participating organisations and employees.

Aspects of effectiveness:

- Goal achievement: Excellent/Good results
- Impact on overall energy use: Good results
- Future commitment: Good results

Aspects of social learning:

- Learning of the target group: Excellent results
- Learning/education of employees: Good results

Effectiveness

With the aspects noted above the programme has recorded promising results in all categories. With a 7% average reduction the estimated energy reduction target for behavioural changes of 10 - 15% was not reached; however, this includes data from all participants, even those who recorded an increase during the competition. The overall impact on energy consumption is thus mixed; however, the majority of organisations were successful at reducing their consumption. Finally, the competition organisers were able to confirm that most participants were intending to continue their adopted energy saving behaviours in the future and planning to expand these measures to other office buildings which were under their management. It is estimated that if the 38 organisations were to accomplish this the results would be as follows (assuming an 80% implementation level):

Table 1: Adapted from Director General of Transport and Energy

38 Participants:	Energy savings	CO ₂ reductions	Cost savings	
Current levels	3.7 GWh	1,885 tonnes	€205,000	
After 5 years	14.8 GWh	7,540 tonnes	€988,000	
After 10 years	29.6 GWh	15, 080 tonnes	€1,640,000	

From the above table it is clear that the estimated reductions are significant for just 38 organisations. With the number of participants over 150 the results of the second round should be quite dramatic and provide a great incentive for other organisations to become involved in the competition.

Social Learning

Through participating in the programme, organisations have learned several lessons and techniques; however, the most important is than energy efficiency can be an easy and low-cost method to reduce consumption, prevent pollution and save money. Furthermore, the programme has successfully linked energy consumption with the wider issues of the environment and has highlighted the strong relationship they share with cost. Essentially, employees are able to recognise that unused energy equals waste and also that the real cost of waste can be substantial.

Step 6: Analysis and conclusion

Considering the fact that the ET competition is a young initiative it is clear that the programme is off to an excellent start. With the second round coming to a close in a few weeks the results should be available shortly, but based on the first round success there is a great deal of potential to reduce energy consumption within office buildings EU-wide. From the first round results, 38 participants were able to record a net reduction in energy consumption of 3700 MWh, enough energy to supply hundreds of homes throughout the year. With the participants increasing to over 150 in the second round and a projected 350 - 450 in the coming rounds, the opportunity to make significant gains in energy conservation are clear.

Contributing to the success of the programme are the following factors:

- 1. Clear communication of goals and objectives: The programme explicitly emphasised that the key goal of the competition was to reduce energy consumption, reduce CO₂ emission and help participating organisations realise cost savings through their involvement in the programme.
- 2. Linking the objectives with the environment and multiple benefits: By connecting the main objectives together energy consumption was linked to broader environmental problems and also benefits for the participating organisations.
- 3. Real gains for participants, both financial and social.

Finally the programme has the full support of the EC and other sponsors and it is quite likely that there will be several future rounds of the programme. This has given the ET a long term perspective and its success will likely expand as the programme does.