Report

An independent evaluation of the SUSTE-TECH project

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List of contents

List of abbreviations

BUFDG	British Universities Finance Directors' Group
EAUC	Environmental Association for Universities and Colleges
EUNIS	European University Information Systems [organisation]
FHE	Further and Higher Education
GrILH	Green ICT in London HEIs
HEFCE	Higher Education Funding Council for England
HEFCW	Higher Education Funding Council for Wales
JISC	Joint Information Systems Committee
PM	Project Manager
RSC	Regional Support Centre
SFC	Scottish Funding Council
SMART	Specific, Measurable, Achievable, Relevant, Timely
SPCE	Sustainable Procurement Centre of Excellence for Higher Education
UCCCS	Universities and Colleges Climate Commitment for Scotland
UCISA	Universities and Colleges Information Systems Association

1 Introduction

1.1 General

1.1.1 An independent evaluation of the SUSTE-TECH project has been carried out by Curtis+Cartwright Consulting Limited on behalf of the Environmental Association for Universities and Colleges (EAUC), under a contract dated 13 December 2011.

1.1.2 This version of the document (V1.0) is issued as a final version. This report is written for the EAUC, and it is assumed that readers are familiar with the SUSTE-TECH project. Further information on the project can be obtained from the SUSTE-TECH website at http://www.eauc.org.uk/sustetech/home.

1.2 Objectives

1.2.1 The objectives of the post-project evaluation are, in summary, to:

- assess whether the SUSTE-TECH objectives were achieved;
- synthesise and summarise the evidence of the SUSTE-TECH's impact to-date;
- identify lessons from developing and delivering SUSTE-TECH.

1.2.2 The full specification for this evaluation (including terms of reference, deliverables and fees and payment) were set out in a separate document.[1]

1.3 Method

1.3.1 The evaluation took place in January 2012 and was deliberately and usefully constrained by the effort being limited to five days. The method was to:

- collect evidence by:
  - reviewing project documentation;
  - conducting interviews with key stakeholders;
- use the available evidence, plus judgement, to assess the successes and failures of the SUSTE-TECH project;
- draft a report for review and discussion by the client;
- make revisions and issue a finalised report.

1.3.2 The evaluation reflects the position as at mid January 2012 when the project still had a few weeks remaining. It is anticipated that this will not materially affect the results of the evaluation.

1.3.3 The evaluation team were not asked to provide any recommendations.

[1] *Independent Evaluation of the JISC funded SUSTE-TECH project delivered by the EAUC*, received 12 December 2011.

1.4 Overview of this document

1.4.1 The rest of this report is set out as follows:

- Section 2 contains background information;
- Section 3 sets out an analysis of the success and lessons from the project;
- Section 4 summarises the findings and makes conclusions;
- Annex A lists the interviews conducted for this evaluation;
- Annex B provides accompanying tables for this evaluation.

2 Background

2.1 This section briefly sets out the context and background information for the SUSTE-TECH project.

2.1 JISC's Greening ICT programme

2.1.1 JISC's Greening ICT programme is a multi-phase, multi-strand programme that has funded a variety of projects undertaken by Further and Higher Education (FHE) institutions and similar organisations. It started in September 2009 and will end in December 2012. Its intended outcomes are:[2]

- reduction of sector carbon footprint and associated energy costs;
- increased capacity and expertise across the sector in sustainable ICT;
- improved reputation of sector and UK as leaders in this area;
- reduction in waste generated by ICT use.

2.1.2 Of particular note is the SusteIT project, which was the first JISC-funded Greening ICT project.[3] This provided a landscape report, and also an energy and carbon measurement tool that allows easy entry of data related to current ICT equipment and use and provides analysis of the energy consumed and carbon equivalent of ICT operations. This tool was the basis for the SUSTE-TECH project, and SUSTE-TECH's Scottish precursor.

2.2 Early EAUC involvement in Green ICT[4]

2.2.1 In July 2008 the Scottish Funding Council (SFC) provided the EAUC with £43k to deliver a Sustainable ICT Carbon Management Programme. This was the first time that the EAUC had significant involvement with Green ICT. The programme aimed to aid Scottish institutions in addressing sustainable ICT by:

- assisting individual institutions to better understand the scale and pattern of their own ICT impacts;
- identifying means of mitigating these impacts, and encourage their implementation in practice;
- developing networks to bring practitioners and others together to disseminate best practice and provide fora for discussing common experiences and issues;
- building links with other funding organisations to provide additional resources for sustainable ICT initiatives in Scottish universities and colleges.

2.2.2 Originally planned as a two-year programme, the initiative was extended to three years in January 2010 to align the deliverables with those of the SUSTE-TECH project.

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2 <http://www.jisc.ac.uk/whatwedo/programmes/greeningict.aspx> accessed 4 January 2012.

3 <http://www.goodcampus.org/susteit/index.php> accessed 16 January 2012.

4 Details taken from *Sustainable ICT Carbon Management (Benchmarking) Programme*, Final Report, Andrew Chamberlain, 31 August 2011.

2.3 SUSTE-TECH project

2.3.1 A proposal for the SUSTE-TECH project was developed in September 2009.[5] The overarching aim of the project was to measure and reduce the energy use of ICT used in universities and colleges. This project was envisaged as similar to the Scottish initiative, though by this point a number of lessons were identifiable from that experience and so the proposal was for a wider UK project that retained some characteristics of the Scottish initiative with several improvements. The detailed set of objectives is set out in Annex B. The proposal was for a pilot in two English regions, with two phases (one for each region) and four stages in each phase:

1) recruiting and networking of participant institutions;
2) calculating carbon and action planning;
3) implementing ICT energy and carbon action plans;
4) recalculating carbon and post project impact assessment.

2.3.2 The proposal concurrently called for promotion of the SusteIT tool, the SUSTE-TECH project, JISC's other Greening ICT projects, and related best practice, across all English regions and the wider UK.

2.3.3 The project was directly commissioned by JISC. It was the first JISC-funded project for EAUC. It had a budget of £173k and a two-year timeframe. A Project Manager (PM) was recruited early in 2010, and constituted the main dedicated resource on the project. A more detailed project chronology is set out in Annex B, though it is worth noting at this stage, that the project's remit was changed in late 2010, after it became apparent to the EAUC and JISC that the level of commitment and involvement from the recruited institutions was going to be insufficient to meet the original objectives within the required timescale. The revised remit is set out more fully in Annex B, and is focused on "*the creation of awareness of the greening of ICT in UK FHE institutions*".[6]

5 *Sustainable ICT Project Proposal*, Primary Contact: Andrew Chamberlain.
6 *SUSTE-TECH Monthly Report & Action Plan*, covering November 2010.

3 Analysis

3.1 Introduction

3.2 This section sets out the analysis leading to the evaluation's findings and covers four areas:

- Success in meeting SUSTE-TECH objectives (sub-section 3.1);
- Issues encountered in the SUSTE-TECH project (sub-section 3.2);
- SUSTE-TECH impact to-date (sub-section 3.3);
- Lessons identified (sub-section 3.4).

3.1 Success in meeting SUSTE-TECH objectives

3.1.1 As noted above there was an original set of objectives in the SUSTE-TECH proposal which were superseded by a new remit in late 2010. This sub-section assesses the project's success in meeting its objectives and remit. A 'RAG' indicator is used to summarise the progress made against each objective. Green represents that the objective has been achieved, Amber that some progress has been made; Red that no, or very little, progress was made towards the objective. The original objectives are assessed in the following table.

UID	Objective	Progress made	Objective met?
O1	Recruit participants to the programme	16 institutions were recruited, though significantly later than originally anticipated. Early on the PM was directed to only recruit institutions from the agreed regions. The LondonHigher GrILH project[7], and the problems in recruitment, meant that the institutions came from Yorkshire and Humber (as planned) and South Wales and the South West (rather than London). The continuing commitment of participants has been a concern throughout.	
O2	[Offer] networking and sharing best practice [during Stage 1]	The Yorkshire and Humber participants did successfully meet to network and share practice, though a few months into the project. Only a limited set of South Wales and South West participants met up in a similar way. The PM disseminated guidance and brokered contacts throughout. The participants themselves did not blog or tweet, and there appears to be have been limited communication amongst the participants (except through the PM). The JISC RSCs were involved, through their sustainability group. Exactly what constitutes is unclear in this emerging domain, but certainly there was pre-existing guidance (from the SusteIT project and others) that was disseminated.	

[7] JISC funded the Green ICT in London HEIs (GrILH) project to start in June 2010, and the target area (London) coincided with one of the original target regions for SUSTE-TECH. This led SUSTE-TECH to refocus on South Wales and the South West.

UID	Objective	Progress made	Objective met?
O3	Develop a more detailed understanding of ICT energy impacts	Some analysis was carried out, but the partial and late submissions of baseline data limited what was possible. What comparable data has been collected is due to be added to the SusteIT tool's broader dataset. Two surveys were run to gather data on institutional stakeholder perspectives on Green ICT. This data, whilst not part of the original project, does provide further, and contextual, understanding of ICT energy impacts.	
O4	[Enable] connectivity	Attempts to make contact with the IIP projects relevant to Green ICT were made, but met with limited success (one from five). The difficulty of finding useful and relevant material from these projects meant that little use of these could reasonably be made. With the revised remit there was much more of a focus on working with the other elements of the JISC Greening ICT Programme. SUSTE-TECH's liaison with the marketing and communication activities associated with the programme appear to have been limited to a query about the use of the JISC logo, but it is not clear if there were other activities where liaison would have been useful. The SUSTE-TECH PM did however contact two of JISC's experts regarding the use of social media to promote the SUSTE-TECH project, engage with other Green ICT projects and help create a community of practice. This resulted in the PM regularly blogging and tweeting on the progress of the SUSTE-TECH project. However, there was no initial introductory meeting at the start of the project between the SUSTE-TECH PM and any of JISC's communication staff.	
O5	Deliver measurable improvements in ICT-related energy consumption	This objective was intended to cover the participating institutions implementing the outputs of their ICT Energy & Carbon Action Plans. EAUC activity was to be concerned with providing 'targeted specialist support'. Some of the institutions appear to have achieved some improvements, or are in the midst of making improvements, but these have not yet been quantified by the institutions involved. It is understood that the problems were primarily due to institutions' lack of available funding for the purchase of newer, more energy efficient equipment and for other resources (such as support staff) that would have potentially helped institutions deliver measurable improvements in energy reduction.	
O6	[Offer] networking and sharing best practice [during Stage 3]	Apart from continued dissemination from the PM there does not appear to have been further networking and sharing of practice in this stage of the project between the participants.	

UID	Objective	Progress made	Objective met?
O7	Demonstrate measurable improvements in ICT-related energy consumption	At the time of this evaluation no revised energy/carbon data had been received from participants, therefore it has not been possible to demonstrate *measurable* improvements. Some of the institutions appear to have achieved some improvements, or are in the midst of making improvements, but these have not been quantified by the institutions involved.[8]	
O8	[Undertake a] post project impact assessment	This evaluation constitutes the post project impact assessment, and contains a set of lessons identified. It is for the EAUC and JISC to ensure that the lessons are learnt.	

[8] Note added in proof: It is understood that, recent submissions of Green ICT Action Plan updates from the participants indicate significant qualitative improvements in ICT-related energy consumption. As a result of this further information the original assessment of Red has been changed to Amber.

3.1.2 The SUSTE-TECH project's success in meeting the revised remit, instituted in late 2010, is assessed in the table below.

UID	Objective	Progress made	Objective met?
O9	Improving Communications and Relationship Management: Both Internally between JISC and the EAUC and Externally via increased level of marketing etc.	There appears to have been much more communication, both with JISC and (especially) externally. However, since 'communication' and 'marketing' are difficult to measure this improvement has not been quantified. Annex B sets out the events, workshops and publications from the project. The reporting chain to JISC suffered a break in the latter half of 2011, apparently due to miscommunication where reports were not forwarded on and/or were not checked up upon.	
O10	Creating an EAUC-led Green IT Community of Practice	While no clear community of practice is yet discernable, feedback from the EAUC's recent member survey has indicated the extent that the SUSTE-TECH project has engaged with institutions on this topic. The survey also identified significant interest in the formation of a green ICT community of practice and it is understood that the EAUC will continue its engagement with the SUSTE-TECH participants. In terms of a virtual community, Netskills was commissioned (separately and independently from SUSTE-TECH) to provide a collaborative social networking tool to support a virtual community. Taking this as a potential home for a virtual community, there has been only sporadic activity and so it does not appear as though a virtual community has been formed. Though the Netskills and SUSTE-TECH teams met early on to coordinate, it is not clear how responsibilities were split (if at all) within the Greening ICT programme between the two projects. The physical aspect to this community objective has been more successful with a series of well-attended, useful events. These provided opportunities to network, and some attendees did attend multiple events. The events while stopping short of creating a discernable 'community of practice' did generate awareness and interest – perhaps facilitating a future community. The project used RSCs to promote SUSTE-TECH events. The project did link in with other related organisations, including HEFCE, UCISA, BUFDG, EUNIS, HEFCW, SFC and UCCCS. HEFCE and UCISA were represented on the project committee and feel that their involvement was worthwhile. The impact that SUSTE-TECH has had with the other organisations is of course unknown, though a good relationship with BUFDG appears to have been created as BUFDG were involved with disseminating sustainable procurement surveys.	

UID	Objective	Progress made	Objective met?
O11	[Organising] events; the PM will organise events and workshops covering 5 areas of sustainable ICT (Printing, Data Centres, Thin Client, Virtualisation and PC Powerdown). The aim is to host one event each month in addition to hosting 7 joint events with at least one of the other JISC "Greening of ICT" projects.	Events were organised, covering the listed (or alternatively agreed) topics. In total, eight events were organised – which is assessed to be a good but perhaps not perfect match to the vaguely specified 'one every month' objective. The difficulties with organising the events appear to have arisen from factors outside the PM's control. The events themselves were very well attended and seem to have been very successful.[9] One out of the seven co-organised events was undertaken, with the LondonHigher GrILH project. SUSTE-TECH presentations were given at a wide variety of other events and conferences.	
O12	[Creating eight] comprehensive case studies	The PM is on track to deliver seven case studies. The figure of eight was actually specified by the JISC Programme Manager as a range of seven to nine. The case studies can contain baseline data, but not post-improvement data as this has not been submitted by the participating institutions. The case studies are likely to be as comprehensive as possible given the JISC-specified page limits and the available data/information from the participating institutions.	
O13	[Carrying out] research into ICT Networks, have engaged with at least 1/3 of the total UK FHE's and linked in with each of the other 15 JISC Greening of ICT projects	Research into ICT Networks was re-negotiated with the JISC Programme Manager as the PM does not have sufficient technical understanding for this specialist task. JANET(UK), if interested in the environmental dimension, may have been better tasked with this, perhaps with specialist environmental contractors in support. It is likely that communications were sent to at least one-third of the total UK FHE institutions: for example, in the initial recruitment process 103 FHE institutions were contacted, and by the end of the project 944 separate individuals were contacted (across FE, HE and the commercial sector, both UK and elsewhere). Whether this constitutes the intended 'engagement' is a different question: is engagement better defined as any communication or continuing two-way communication? It is apparent that the principle adopted was to 'engage with anyone who would listen', thereby maximising dissemination given the available effort, opportunity and potential audience. The PM met the other JISC Greening of ICT project teams at programme meetings, and has also been in contact with them where perceived as useful.	

[9] A sample of feedback forms were examined; the mean satisfaction scores for the four different events for which forms were received were all between 8 and 8.3 out of ten.

UID	Objective	Progress made	Objective met?
O14	[Ensuring that] 1/3 of all UK FHE institutions [engage] with the SUSTE-TECH project and with JISC and HEEPI	The first phase of these objectives duplicates part of O13 above, which concluded that this was likely to have been met. If the intent of the objective was that each institution must engage with all of SUSTE-TECH *and* JISC *and* HEEPI (now goodcampus.org), then this objective is unlikely to have been achieved. The eventual co-branding of SUSTE-TECH with JISC and HEEPI would have contributed to greater awareness	
O15	[Writing] a final report on the SUSTE-TECH project	This was re-negotiated with the JISC Programme Manager. Instead of delivering a final report, it was agreed that the case studies would form the final deliverables.	

3.2 Issues encountered in the SUSTE-TECH project

3.2.1 The previous sub-section sets out at face value the success of the SUSTE-TECH project at meeting its objectives. This assessment does not, however, consider whether the objectives themselves were viable or whether there were reasonable mitigating circumstances for non-achievement. This sub-section sets out the issues faced by the project.

Recruitment was slow and there was insufficient commitment and involvement

3.2.2 The original proposal called for 16 institutions to be 'recruited' as participants in SUSTE-TECH. In return for committing to an improvement plan and providing before and after data on energy and carbon usage regarding ICT they would receive support, including free specialist consultancy and networking opportunities with the other participants. The proposal envisaged that they would be recruited within the first six months, and the proposers believed that the PM would need to be selective on which institutions were allowed to participate.

3.2.3 In reality this as over-optimistic, the recruitment was difficult and took a lot longer. Eventually sixteen institutions were recruited, but this took twelve months instead of six. The baselining and submission of action plans also took longer, or did not then happen. To-date none of the participants have submitted revised data. Whilst some institutions were keen and committed, many were not. The whole project suffered from insufficient commitment and involvement from the participating institutions, which meant that the project focus had to change. A variety of reasons were identified by the PM, including:

- insufficient funds and staff time to commit fully to participation;
- staff churn meaning a lack of continuity in participation;
- internal silos (*eg* between estates and IT) restricting collaborative undertakings;
- practitioners unable to get senior approval for involvement or improvements;
- little willingness to share information amongst institutions;
- using the SusteIT tool required collection of the input data and this often took a long-time to complete, particularly where institutional IT asset management was poor and/or distributed;
- delays within the first six months of the project in arranging events for potential participating projects to meet up;

- other pressures, such as sector turmoil (*eg* the uncertainty and threat of austerity caused by the Browne Report) or other internal priorities;
- low levels of awareness of EAUC and JISC in many institutions.

3.2.4 These reasons have been validated by nearly all other stakeholders interviewed as part of this evaluation. However, it is also worth noting that:

- One stakeholder did suggest that capital investment (though not operational expenditure) was (and is) actually available in many institutions (possibly including the participating institutions) for improvements to data centre efficiency. Even here, a further reason was identified for difficulties in progressing Green ICT projects – namely the risk averse culture prevalent in IT departments in many institutions.
- Another stakeholder questioned the approach in communicating with prospective and recruited institutions, and whether it should have been more collaborative in nature – this could be another reason. The belief was that too much communication was one-way and directive, rather than two-way and collaborative.
- Another stakeholder commented on some confusion amongst institutions given the number of other Green ICT projects (JISC-funded and other). This made it harder for them to see coherence and relevance in participating with any project.
- The much delayed delivery of the EAUC microsite (due to delays from its web contractor) also did not help (and similarly hindered wider dissemination and outreach).

3.2.5 It is worth considering whether many of these reasons could have been foreseen as risks to the project. Some of them may well have been predictable, though no initial risk assessment has been seen by this evaluation. If they were not identified, then it is a sign of a lack of experience in programme management in designing the project and putting together the proposal.

3.2.6 Remedial actions were put in place in mid-2010, such as focusing on financial rather than environmental benefits, targeting IT and non-IT staff, opening up the offer to more regions and removing the need to use the SusteIT tool in order to participate in the project. This did help achieve the intended 16 participants – though still many of these were seemingly half-hearted in their commitment to the project (on the SUSTE-TECH timeframe at the very least).

3.2.7 It is worth considering if difficulties in getting participation are just limited to these projects. Within the scope of this limited evaluation, some research has been done on similar schemes. Four schemes were identified, though since they are not strictly comparable, and two appear to have struggled and two succeeded, there is no obvious conclusion. Further research may yield additional, valuable insight. The schemes were:

- the SFC-funded EAUC-delivered **Scottish Sustainable ICT Carbon Management Programme**, which struggled despite a promising start. The final report concluded that "*the response rate was very poor… we were unsuccessful in convincing four of six participants to deliver against their Action Plans*".[10] This is despite some positive conditions for collaboration, for example the pre-existing tight knit community of Scottish institutions.
- the JISC-funded London Higher-delivered **GrILH project**, which did eventually manage to get fourteen institutions to submit baseline data (the extent of its scope) after nineteen institutions expressed interest (from forty two in the area). However, the project manager likened the process to "*getting blood from a stone*" and recited many of the difficulties that the SUSTE-TECH PM identified. GrILH also had the advantage of the London Higher contact list of all Vice-Chancellors and equivalents in the London area.

[10] Details taken from *Sustainable ICT Carbon Management (Benchmarking) Programme*, Final Report, Andrew Chamberlain, 31 August 2011.

- the HEFCE-funded **EcoCampus** pilot which is now a self-funding programme being delivered by a collaboration of Nottingham Trent University and Loreus Limited. Currently 46 HEIs are EcoCampus members. The scope of EcoCampus is much broader than Green ICT. It is also noticeable that the scheme is longer-running – the pilot being launched in 2006.
- the HEFCE-funded EAUC-delivered **Learning in Future Environments** (LiFE) scheme, which again has a broader scope and is longer running (the pilot having started in 2008 as the 'Universities that Count' benchmarking programme). After launching in November 2011 it already has seen uptake by 13 FHE institutions.

3.2.8 Overall, there was a lack of commitment from participating institutions – some have made good progress, but none have delivered against original expectations. The key implications of this issue were that:

- the whole project was delayed, though eventually the same end date was enforced by JISC;
- participating institutions less likely to use free specialist consultancy on offer; indeed although 30% of the entire budget was allocated to specialist consultancy support and HEEPI advisory support, only 5% of that budget was used; if many, or most, institutions were never really engaged with SUSTE-TECH or did not commit the capital investment required to effect improvements, then there would be little uptake of the support on offer; there is no evidence to say one way or the other if participants did not see sufficient value in continued participation, or whether it was entirely internal reasons for non-commitment;
- a lack of clarity amongst institutions about what participation actually meant, as different institutions were participating in different ways; there was clarity at the start through the use of a written agreement;
- perhaps most importantly, this led to weakening of the project concept (*ie* data giving demonstrable reductions in energy use) which meant that the original objectives could not be met.

Lack of clarity in new remit

3.2.9 The change of remit entailed some specified objectives, but also closer working with the JISC Programme Manager. There was effectively a more flexible tasking arrangement with the JISC Programme Manager. The evaluation team see ambiguity in the arrangements:

- Overall it was unclear if SUSTE-TECH was effectively now undertaking a 'programme support' role for the Greening ICT programme, or whether it had more of an independent but coordinated role. Given the nature of the remit, it seems more likely to be the former that was intended, though the SUSTE-TECH project was not then formally linked into other programme mechanisms (*eg* the Netskills project, and the event and newsletter elements of the SusteIT project).
- At a more detailed level, the revised set of objectives for SUSTE-TECH is not a SMART set, and therefore the success of the project is difficult to judge on these alone. For example, terms such as 'engage', 'link in' and 'research' are too vague for specifying objectives that can then be usefully evaluated. It is not clear what the intended outcomes from each activity were. Indeed, it appears that differing approaches were presumed between JISC and EAUC: one to communicate as broadly as possible to raise awareness, and the other to communicate broadly with the strategic intent to connect people into a longer-term path of engagement with Green ICT. This issue was seemingly not identified,[11] indicative again of less-than-perfect communication.

[11] Note that the evaluation has not seen a full audit trail for the project, though email archives would contain much of this information.

- Finally, the balance of effort and overall levels of effort were unclear within the revised remit. The PM had a long list of objectives to meet (some of the original objectives, plus the revised remit) and the evaluation team do not see that either an assessment was made that everything was possible within the possible effort, or that a decision was made on priorities to give an overall balance of effort as a working guide.

3.3 SUSTE-TECH impact to-date

3.3.1 Given the lack of success in getting both baseline and subsequent data from participating institutions, it is impossible to measure the environmental benefit of SUSTE-TECH to-date. The case studies should provide a qualitative description of improvements and their impact of around half the participants.

3.3.2 Within its revised remit, SUSTE-TECH was successful in disseminating information and guidance. Gauging impact from the provision of information and guidance is notoriously difficult, especially when a project is not set up to measure this. The spread of ideas and good practice can take a while to have an impact, and then an assessment of attribution must be made regarding the extent the change arises from the earlier intervention or from other factors. For example, whilst the events were very well received at the time, there is no evidence on which to state firmly what their impact has been – other than from one participating institution which said that an early event did inspire them to take action, albeit one to two years later. So whilst awareness will have been increased, the eventual impact of SUSTE-TECH's dissemination and networking activities can only be speculated upon at present.

3.3.3 So what can be said about impact? Some evidence has been seen or collected by the evaluation team. This includes:

- **A potentially valuable legacy for EAUC**: though less intentional and planned than perhaps could have been the case; it now seems likely that the EAUC will establish a Green ICT Community of Practice (outside the SUSTE-TECH project and JISC funding) and use the corporate and other contacts that came from SUSTE-TECH. It is very likely that SUSTE-TECH also increased awareness of EAUC amongst FHE IT staff.
- **A working relationship with JISC**: there is likely to be a productive relationship with respect to the Sustainability Exchange project that EAUC is taking forward. There could also be opportunities for closer working if the Green ICT Community of Practice comes about.
- **Up to date knowledge for HEFCE, SPCE and UCISA**[12]: all have benefited from involvement in SUSTE-TECH and are now better equipped with up to date knowledge on Green ICT for progressing their agendas and supporting their constituencies. SPCE has also benefited from the contacts and networking opportunities afforded by SUSTE-TECH. While this knowledge was originally imbued in individuals, in two out of the three organisations it now appears to be better embedded.
- **Benefits to international HE** in disseminating widely, SUSTE-TECH presented at conferences in Australia and to a European-wide audience in Ireland.[13] This could offer environmental benefits over time, but also enhance the networks between the UK, Europe and Australia in this area.

12 UCISA has also been involved with SPCE, so a cross-fertilisation with being involved with both SUSTE-TECH and SPCE is likely. For example, UCISA have incorporated environmental and sustainable questions into their annual survey.

13 It could be questioned whether such international exposure was part of the scope of the project since the original proposal was clear about the UK focus.

- **Benefits to the rest of the UK public sector**: SUSTE-TECH's involvement in central and local government discussions and working groups in Green ICT should offer new and improved benefits over time. In particular, involvement with the Greening Government ICT initiative within the Cabinet Office was an unexpected success of the project.

3.4 Lessons identified

3.4.1 A series of lessons has been identified by SUSTE-TECH, by other stakeholders and by the evaluation team. In the spirit of learning these have been synthesised and are presented below. They are divided into lessons for projects similar to SUSTE-TECH (*ie* recruiting institutions to baseline and improve their green ICT), lessons for institutions looking to 'green' their ICT and lessons on general project management and delivery.

Lessons for projects similar to SUSTE-TECH

3.4.2 These lessons are summarised as:

- **Many institutions have poor ICT asset management**: the availability and currency of ICT asset management records (*eg* how many of what models of which equipment does an institution operate at what times?) dramatically affect how easy it is to complete the SusteIT tool accurately. Baselines may well be incomplete due to incomplete data.
- **Change projects can take longer than expected**:[14] To truly demonstrate change may take three to five years from initial recruitment. The baselining and research is likely to take six months, and will often need to be done by a member of institutional staff on top of their existing role. Having dedicated staff members is a good approach, if affordable. Change may need to be managed even after the improvement – to ensure that the change 'sticks' and the intended benefits are realised.
- **Institutions avoid documenting progress even where it is being achieved**: this is a symptomatic of a wider lack of investment appraisal and evaluation, especially ones with quantitative metrics.
- **IT departments are often risk averse**: IT staff have concerns about getting criticism with altering critical services, for example datacentres, and therefore tend to be risk averse. It is important to have technical credibility in talking through options and possibilities for making environmental improvements to IT operations.
- **Senior management need to be engaged**: whilst there are some quick wins in greening ICT, many improvements require behavioural change which can be difficult to achieve, especially with academics. Senior management engagement and leadership, to complement and support practitioner buy-in, is important. Sector bodies such as UUK, BUFDG and AUDE may have a role in providing this.
- **Avoid assumptions about uptake**: some institutions may well need the intensive/continuous support that the early Scottish experiences suggested was not necessary (as opposed to targeted, specialist support); 'hand-holding' though may be not be acceptable, and would require more effort to provide in any case.

[14] This is not intended to say that longer projects are necessarily better. A strong argument against longer projects is that longer projects also have the potential for less continuity in terms of management and personnel, and consequently institutional buy-in.

Lessons for institutions looking to 'green' their ICT

3.4.3 When undertaking green ICT improvement projects, institutions should:

- collect baseline data;
- be clear about the purpose of the project (*eg* making 'quick wins' versus complex, behavioural change projects);
- define SMART objectives;
- do sufficient research and investigation to understand the challenge and current good practice;
- assemble a robust economic and environmental case for change;
- elicit and exploit senior support;
- evaluate the outcomes.

3.4.4 Institutions should have a member of staff whose role is dedicated to sustainability (and perhaps green ICT). Such an 'environmental manager' would provide focus. Ideally that person should be driven and proactive, and able to get buy-in across silo'd structures within an institution. This is especially important, as IT managers do not currently have wider sustainability concerns on their agenda. Whoever it is, that person needs to have good understanding of IT and be credible and persuasive enough to initiative and manage change programmes. A senior champion may also be necessary to get the necessary buy-in across the institution.

Lessons on general project management and delivery

3.4.5 These lessons are summarised as:

- take time to understand the interests and ambitions of all stakeholders, including building a shared understanding of aims and approach between programme and project team;
- use SMART objectives that are unambiguous and can be measured;
- consider the change management aspects of any initiative;
- consider where and how senior management support is needed, and what needs to be done to ensure that this carries on;
- maintain key stakeholder relationships throughout the project; aim to communicate frequently and openly;
- understand the reporting requirements for the project;
- maintain a written project plan that is kept up-to-date with changing objectives as agreed with project funders, sponsors and/or governance.

4 Findings and conclusions

4.1.1 This section provides a summary of the successes and failures of the SUSTE-TECH project, and draws out conclusions about the project.

The SUSTE-TECH project did not provide the intended data and community

4.1.2 There was a lack of commitment and involvement from participating institutions. Some have made good progress, but none have delivered against original expectations. A range of reasons appear to be responsible for this. Furthermore, it is not clear if other approaches would have been more successful. Similar schemes (*eg* the GrILH project) have also struggled in getting uptake. At the very least, it is clear that uptake is hard to achieve and the window of opportunity small. It may be that many factors need to come together at the same time to get the intended uptake.

4.1.3 Without full commitment and involvement of the participating institutions, SUSTE-TECH has not been able to provide the intended energy and carbon data, and build a community around the participants. It is difficult to say whether given longer the project could deliver more: unless the participants' commitment were to increase, it is likely that more effort could be expended for little gain.

SUSTE-TECH did undertake many useful activities

4.1.4 Given the difficulties with completing the original remit, SUSTE-TECH was tasked with undertaking more dissemination activities. This effectively constituted a second project. These activities were completed more successfully. The series of workshops in particular is a particular achievement, given their scale, very good feedback and that there was no pre-existing event organisation capability within the SUSTE-TECH team. The SUSTE-TECH project also engaged widely across sector bodies, especially HEFCE, UCISA and SPCE, which should lead to further benefits.

SUSTE-TECH was more a change programme than a research project

4.1.5 The challenge faced by the SUSTE-TECH project was more akin to a mini-programme, in which there is an emphasis on enabling change as well as pure outputs. SUSTE-TECH contained a whole set of projects, some relating to the original objectives and participating institutions, and some to the revised remit and, for example, the series of events. It certainly was not a research project. This difference means that change management principles should have been seen as critically important.[15] For example, a core principle is that 'senior buy-in is important'; such buy-in, had it been achieved, may have helped with recruitment of participants. Considering ways to get buy-in are especially important, as the PM had few levers, and no authority, to force through change in institutions.

4.1.6 At the start of the SUSTE-TECH project it appears that EAUC as an organisation had little project management capability, let alone programme management capability. This was identified and better structures and processes were instituted for their increasing portfolio of projects. This led to an emerging, and still evolving, project and portfolio management capability.

[15] *Managing Successful Programmes*, published by the TSO, is the public sector standard in this area.

Governance could have been stronger

4.1.7 EAUC has an internal management structure and board, though the latter was not specific to SUSTE-TECH. Although a SUSTE-TECH committee was put in place from the start, this was essentially a high-level support group for the project, rather than a steering or management group: there were no terms of reference to define level of oversight, monitoring, authority, *etc*. 'Light touch' governance and operating on 'good faith' are not inappropriate for this size of project. The committee did provide useful advice to the PM, and SUSTE-TECH provided value back to the committee members in terms of involvement within the project. Had the committee been a more formalised steering group, it could be that the whole committee should have been involved in discussing and agreeing the change in remit in late 2010.[16]

4.1.8 This led to responsibility for monitoring and oversight defaulting to the JISC programme manager. However, JISC was somewhat vague about what would constitute success in the revised remit. This was exacerbated by apparent miscommunication between the EAUC and JISC.

4.1.9 Additional join-up with the wider Greening ICT programme could have made SUSTE-TECH activities, in particular the dissemination and networking, even more effective, but this was not explicitly specified at the time. Again stronger, and more consistent, governance could have identified this as an opportunity.

4.1.10 It must be remembered, however, that EAUC had proposed a particular project and had not entered into a written agreement to act as a programme support resource for JISC. The evaluation team has often observed tension between funder and funding recipient intentions in other projects.

SUSTE-TECH offers valuable lessons

4.1.11 Following the slow, weak start and subsequent agreed change of remit, SUSTE-TECH probably achieved as much as was possible given the circumstances, resourcing, time and capabilities. Any challenging initiative offers a chance for learning, and SUSTE-TECH offers valuable lessons for both institutions and for sector bodies interested in Green ICT. These lessons should be examined, discussed and then applied widely.

[16] It might also be fair to question, especially in hindsight, whether the option of closing down the project should have been considered when the remit was changed. The three basic options would have been to persevere with the project as originally proposed, change direction and close down the project. Some combination of the first two were selected, and the latter not formally considered even though it would have been clear that the original objectives would in all likelihood not be met. Stronger governance may have at least considered it.

A Interviews conducted

A.1 Given the limited effort and duration for this evaluation only a few selected stakeholders were interviewed, and these were also limited by availability. The interviewees were:

- Andrew Chamberlain (then EAUC, now ARMA);
- Anna Matthews (UCISA);
- Chris Dickson (Cardiff University);
- Iain Patton (EAUC);
- James Wilman (FutureTech);
- Jane Edwards (JISC RSC West Midlands);
- Janine Hamilton (SPCE);
- Joanna Simpson (HEFCE);
- Linda Headford (Sheffield Hallam University);
- Matt Owen (Bournemouth University);
- Nicola Hogan (EAUC);
- Paresh Shah (London Higher);
- Peter James (University of Bradford);
- Richard Gardner (Pembrokeshire College);
- Rob Bristow (JISC).

B Accompanying tables

B.1 Project objectives

Original

B.1.1 These are taken from the four stages within the original proposal.[17]

Stage	Objective	UID
1	Recruit participants to the programme	O1
1	[Offer] networking and sharing best practice	O2
2	Develop a more detailed understanding of ICT energy impacts	O3
2	[Enable] connectivity	O4
3	Deliver measurable improvements in ICT-related energy consumption	O5
3	[Offer] networking and sharing best practice	O6
4	Demonstrate measurable improvements in ICT-related energy consumption	O7
4	[Undertake a] post project impact assessment	O8

Revised

B.1.2 These are taken from the monthly report when the SUSTE-TECH remit changed towards focusing on "*the creation of awareness of the greening of ICT in UK FHE institutions*".[18]

Objective	UID
Improving Communications and Relationship Management: Both Internally between JISC and the EAUC and Externally via increased level of marketing etc.	O9
Creating an EAUC-led Green IT Community of Practice	O10
[Organising] events; the PM will organise events and workshops covering 5 areas of sustainable ICT (Printing, Data Centres, Thin Client, Virtualisation and PC Powerdown). The aim is to host one event each month in addition to hosting 7 joint events with at least one of the other JISC "Greening of ICT" projects.	O11
[Creating eight] comprehensive case studies	O12
[Carrying out] research into ICT Networks, have engaged with at least 1/3 of the total UK FHE's and linked in with each of the other 15 JISC Greening of ICT projects	O13
[Ensuring that] 1/3 of all UK FHE institutions [engage] with the SUSTE-TECH project and with JISC and HEEPI	O14
[Writing] a final report on the SUSTE-TECH project	O15

17 *Sustainable ICT Project Proposal*, Primary Contact: Andrew Chamberlain.

18 *SUSTE-TECH Monthly Report & Action Plan*, covering November 2010.

B.2 Project deliverables

Original

B.2.1 These are taken from the four stages within the original proposal.[19]

Deliverable	UID
Overall project management and administration	D1
Four regional recruitment events	D2
Bi-annual regional workshops in each region	D3
Annual national event	D4
Workshop at annual EAUC Conference	D5
Presentation/workshop at annual JISC Conference	D6
Provision of specialist consultancy support to 16 subject institutions	D7
Preparation and dissemination of bi-annual and final project reports	D8
Provision of post project impact assessment	D9

Revised

B.2.2 These are derived from the monthly report when the SUSTE-TECH remit changed towards focusing on "*the creation of awareness of the greening of ICT in UK FHE institutions*",[20] and are actually a subset of the revised objectives.

Deliverable	UID
Case studies	D10
Final report on the SUSTE-TECH project	D11

19 *Sustainable ICT Project Proposal*, Primary Contact: Andrew Chamberlain, dated 23 September 2009.

20 *SUSTE-TECH Monthly Report & Action Plan*, covering November 2010.

B.3 Participating institutions

B.3.1 The following table identifies participating institutions, their area(s) of focus, what material they submitted as part of their participation and whether they are the subject of one of the case study outputs. Submission and case studies are colour-coded: Green for 'yes', Red for 'no' and Yellow for 'partly'. The data is correct as at 5 January 2011 and taken from the project website[21] and from discussion with the PM.

UID	Institution	Region	Area(s) of focus	Action plan submitted?	Baseline data submitted?	Revised data submitted?	Subject of case study?
1	Leeds Metropolitan University	York and Humberside	Servers Non-server data centre issues Procurement Printing Videoconferencing	Sustainability policy only			
2	Sheffield Hallam University	York and Humberside	Procurement		Partially completed		
3	Northern School of Contemporary Dance (NSCD)	York and Humberside	Servers Non-server data centre issues Procurement Printing				
4	University of Bradford	York and Humberside	Servers Non-server data centre issues Procurement Printing Networks				
5	University of Lincoln	York and Humberside	Servers Printing				
6	University of Sheffield	York and Humberside	Servers Non-server data centre issues Printing				
7	Wigan & Leigh College	York and Humberside	Servers Non-server data centre issues Procurement Printing		Partially completed and very late		
8	Cardiff University	South Wales	Servers Non-server data centre issues Procurement Printing Videoconferencing	Link to sustainable ICT policy and work done to-date			
9	Pembrokeshire College	South Wales	Servers Printing VoIP				
10	University of Glamorgan	South Wales	Unknown				
11	Bicton College	South West	Servers				

[21] <http://www.eauc.org.uk/sustetech/results_of_participants_green_ict_action_plans> accessed 4 January 2011.

UID	Institution	Region	Area(s) of focus	Action plan submitted?	Baseline data submitted?	Revised data submitted?	Subject of case study?
12	Bournemouth University	South West	Non-server data centre issues				Outline not accepted
13	Exeter College	South West	VoIP				
14	Gloucestershire College	South West	Servers Printing Videoconferencing		In own data format		
15	Strode College	South West	Servers Procurement Printing Networks Videoconferencing				
16	University of Exeter	South West	Servers Procurement Printing				
17	Royal Forest of Dean College	South West	Unknown		Unfortunately the college started to close down after a promising start to participation		

B.4 Events organised by SUSTE-TECH

Event	Date
Utilisation of Space Across Campus through the Use of ICT Workshop	24 August 2011
Greening Your Institution's Network's' Systems	20 July 2011
Improved Sustainability Across Estates through the use of ICT	30 June 2011
Procuring for Sustainable ICT Equipment Workshop	24 May 2011
Maximising your Data Centre's Efficiency	31 March 2011
Minimising the Environmental Impacts of Printing	14 December 2010
Reducing the Environmental Impacts of Printing	27 May 2010
Improving Data Centre Efficiency	30 March 2010

B.5 Events co-organised by SUSTE-TECH

Event	Date
Joint EAUC and London Higher Green ICT Event	10 February 2011

B.6 Other publicity and communications

Presentations at workshops and conferences

Event	Date
EAUC Scotland Conference UCCCF event	1 November 2011
Cheltenham Government Low Carbon Partnership Green ICT event	26 October 2011
Anglia Ruskin PrD Class on Green ICT	15 October 2011
Green ICT workshop at the University of Sydney	4 October 2011
2011 ACTS Conference in Adelaide	27-29 September 2011
2011 COPE Annual Conference	6-9 September 2011
2011 EUNIS Annual Conference	14-17 June 2011
2011 EAUC Annual Conference	11-13 April 2011
2011 UCISA Annual Conference	23-25 March 2011
London Higher Green ICT Event	25 January 2011
LUEG Green ICT event	11 January 2011
2010 ACTS Conference in Melbourne	29-30 September 2010
JISC RSC South East Event	28 October 2010
JISC RSC Wales Event	29 April 2010
JISC RSC London Event	21 April 2010
2010 JISC Annual Conference	13 April 2010
2010 EAUC Annual Conference	22-24 March 2010
JISC RSC Green Event	14 February 2010

B.6.1 The PM also had a presence at many other conferences and workshops as an attendee.

Publications[22]

Publication	Number of published articles
SUSTE-TECH e-news articles	14
SUSTE-TECH blog posts	38
SUSTE-TECH tweets	288
EAUC Insight Guides	3
University Business	2
FE Today	1

[22] See also <http://www.eauc.org.uk/sustetech/articles> accessed 10 January 2012.

Publication	Number of published articles
Earth News	4
Sunday Telegraph	1

B.7 Project chronology

B.7.1 A selected chronology was assembled from project documentation and from interviews with key stakeholders.

Month	Activity
November 2009	Start date in proposal
January 2010	Start date of Project Manager (PM)
April 2010	Initial broadcast to Yorkshire and Humber institutions
June 2010	Initial concerns expressed to JISC by PM about engagement and participation Start of Green ICT in London HEIs (GrILH) project
July 2010	Deadline for Yorkshire and Humber baseline data First committee update (done by email)
September 2010	Expansion of target regions and abbreviated process
October 2010	Deadline for South Wales and South West baseline data
November 2010	Project's remit revised Second committee update (done face-to-face)
December 2010	Baseline data still being submitted
March 2011	Meeting of Yorkshire and Humber participating institutions
May 2011	Meeting of South Wales and South West participating institutions
August 2011	Third committee update (done by email)
November 2011	Fourth committee update (done by email)
December 2011	Independent evaluator appointed
January 2012	End of project