



GlobalActionPlan
creating the climate for change

The Path to Greener Government



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Executive Summary

Background

Government is Britain's largest purchaser of Information and Communication Technology (ICT) and when used this equipment is responsible for up to a fifth of the Government's carbon emissions – 460,000 tonnes a year¹. In total, Government estates spend over £13 billion on ICT annually². Computer systems are an essential element in the delivery of effective public services, but this delivery may sometimes come at a cost to the environment.

Government recognises the critical importance of ICT not only as a large consumer of energy and primary resources but also as an enabler for environmental and cultural change. Given this level of importance, Central Government has taken a leadership role producing an overarching Greening Government ICT Strategy, developed by the UK Government Green ICT Delivery Unit of the Chief Information Officer (CIO) Council. Introducing this strategy, Tom Watson, then Minister for Transformational Government stated:

'We want our technology to be efficient; we want it to be more sustainable and above all we want to be responsible in the way we use it'.

The Greening Government ICT Strategy contains a number of targets and initiatives including the following:

- Government has set itself the target of achieving carbon neutrality for all of its Central Government office estates by 2012 with the overarching commitment to reduce greenhouse gas emissions by at least 80% by 2050.
- A Green ICT Delivery group has been established by the CIO Council to increase best practice for informing green ICT.
- The CIO Council's Green ICT SOGE (Sustainable Operations on the Government Estate) Map now obliges every Chief Information Officer (CIO) and Chief Technology Officer (CTO) to complete a Green ICT Roadmap with 18 steps. On 17th April 2009, the CIO Council formally mandated action on 10 of these proposed 18 steps.

The environmental charity Global Action Plan was commissioned by Cisco to explore how effective the Government's leadership role has been in creating change across the whole of the public sector. The research consisted of two main elements; interviews undertaken by Global Action Plan with leaders in green ICT, from the public sector, its stakeholders, the private sector and ICT suppliers; and a questionnaire sent out by Computer Weekly specifically for this study which generated 173 responses.

Key Research Findings

Leadership

- The leadership role Government is playing in green ICT thinking is widely recognised and praised. The strategy is believed by respondents to be comprehensive and considered.
- Last year, Central Government recorded a 3% increase in carbon emissions from electricity use in its buildings, with ICT identified as one of the likely key drivers in this increase.
- If Central Government does not speed up the implementation of the strategy it could potentially be adversely hit by its own Carbon Reduction Commitment.

Awareness and response to the Government's Greening ICT strategy

- Overall 60% of respondents were not aware of the Government's Greening ICT Strategy. 41% of national government respondents were not aware of the strategy even though it specifically covers their area of activity.
- 67% of respondents that are aware of the Greening Government ICT Strategy are concerned or extremely concerned that targets contained within the report will be difficult to achieve.
- 70% of respondents feel green ICT is important despite the credit crunch.
- According to the survey findings, only 16% of respondents are currently sharing knowledge and learning with other public sector organisations in order to achieve their targets.

Implementation Strategies

- Only 20% of responding ICT departments pay for some or all of their organisations' energy bills for which their ICT is responsible. This does not help to incentivise the introduction of energy efficient technologies.
- Only 13% of respondents calculate the carbon footprint of their ICT activities. This should be baseline data for the development of a green ICT strategy.
- Only 22% of respondents have set internal green ICT targets. This suggests that distinct green ICT advances which are being implemented are not part of a wider coherent strategy or that internal communication mechanisms may not be effective.
- 39% of respondents are not aware of the percentage utilisation of their server estate which is important baseline data in the development of a green data centre strategy.

Implementation of specific initiatives

- Take-up of server optimisation, decommissioning idle server equipment and reusing equipment is high (between 59%-69% implementation across all respondents). There are lower implementation levels around server virtualisation, ambient room temperature initiatives and undertaking a data centre layout audit.
- 44% of respondents have changed replacement procedures in order to extend the lifecycle of equipment.

- A high level of respondents have implemented initiatives around shutdown of PCs when out of hours, reuse of PCs and not over-specifying equipment (between 59%-75%). Lower levels of implementation were reported for time switches on non-network equipment and reducing PC and laptop numbers.
- There is a consistently reasonable level of implementation around greener printing initiatives with take-up ranging from 53-64%.
- The majority of green ICT initiatives focus on reducing the impact of ICT directly e.g. switching off and reducing printing, rather than initiatives using ICT proactively to generate environmental savings in other organisational activities e.g. travel. For example, there was low implementation of initiatives to promote flexible working (TelePresence/video conferencing etc.) to reduce travel and to enable smarter use of energy in buildings.

Future support required

Respondents identified three areas where they need more support from Central Government:

1. Clearer evidence of the benefits of green ICT and how it can help public sector bodies.
2. A green ICT capital investment fund to enable public sector bodies to invest in green ICT technology solutions.
3. More internal leadership and direction.

Recommendations

Leadership

- Government is to be congratulated on the proactive leadership role it has undertaken with its Champions Chris Chant and Catalina McGregor as well as the wider CIO/CTO Council for developing a Green ICT Strategy.
- The implementation of this strategy needs to be accelerated if Government is to hit its carbon targets and to ensure that public sector services are not adversely hit by the Carbon Reduction Commitment.
- Government should consider how it can better use its procurement weight to drive change across the wider ICT sector, leading to more efficient technologies.
- Government should adopt the targets set in the Strategy for the wider public sector outside of the CIO Council structure, including Local Government.
- The CIO/CTO Council Green ICT Delivery Unit is a part time, voluntary body. Government should look to establish dedicated posts from within this experienced group to ensure implementation of the Strategy is accelerated and completed by the most informed minds in the sector.

Awareness

- Government and CIOs in particular should consider creating a stronger communications strategy to ensure that the Green ICT Strategy and its deliverables better reach Central Government Departments, Executive Agencies and wider public sector organisations.
- It remains unclear what exact CO₂ savings can be achieved by delivering the 18 steps in the Strategy and Government must look to provide more concrete figures, indicative metrics and methods for public sector bodies to measure their own ICT related carbon emissions.

Strategic support

- Government should encourage public sector organisations to place their green ICT initiatives within a coherent overall strategy, which links to each organisation's sustainability strategy.
- This strategy needs to ensure that internal targets are set and that essential baseline data is collected (such as a scorecard). Data should include carbon footprints and the energy costs of running and cooling ICT.
- Green ICT targets should be incorporated within Government's current SOGE target structure to ensure a coherent picture is provided to the public.

Implementation support

- Public sector organisations are concerned about hitting green ICT targets and need support. Government should consider how best it can demonstrate the positive impact green ICT initiatives may have by promoting transparency and case studies, increasing collaborative working possibly through knowledge transfer networks and establishing a green ICT stimulus package.
- Government should consider how it can better incentivise green ICT initiatives that can create environmental savings in other areas e.g. employee travel, as implementation of this type of initiative is currently low according to the survey results.

Research Context

This report is produced by Global Action Plan and commissioned by Cisco. Global Action Plan is a charity that has 15 years of experience helping organisations to reduce their environmental impact. Through practical involvement, the charity recognises that ICT has a significant and growing impact on carbon emissions and climate change.

Global Action Plan established and chairs the Environmental IT Leadership Team (EILT) a unique advisory group consisting of major ICT purchasers, users and influencers seeking to make the use of ICT more efficient and environmentally friendly (www.greenict.org.uk).

In December 2007, at the House of Commons, Global Action Plan launched a report called 'An Inefficient Truth'. The report highlighted the following:

- There are more than one billion computers on the planet³ and the worldwide ICT sector is responsible for around 2% of man-made CO₂ emissions each year – a similar figure to the global airline industry⁴.
- In the UK, there are an estimated 10 million office PCs⁵ and ICT equipment accounts for roughly 10% of the UK's total electricity consumption⁶.
- Manufacturing one PC requires 1.7 tonnes of raw materials and water, and consumes over 10 times its own weight in fossil fuels⁷.
- A medium-sized server has a similar carbon footprint to a SUV achieving 15 miles to the gallon⁸. Servers also require as much energy to cool them as they directly consume⁹.
- If 20% of European business travel was replaced by teleconferencing, around 25 million tonnes of CO₂ could be saved each year¹⁰.
- Each year 125 million computers are taken out of circulation worldwide¹¹ and most of these end up in landfill sites (a problem addressed by the introduction of the European WEEE directive in 2007).

In October 2008, Global Action Plan ran an event entitled 'Answer Time for Green IT' which created a dialogue between ICT suppliers and commercial scale users of ICT. This was an area that had been identified as being important in 'An Inefficient Truth'.

Based on this experience, Cisco commissioned Global Action Plan to undertake research assessing the level of take-up of green ICT initiatives within the public sector.

The backdrop to the research is the Greening Government ICT Strategy published in July 2008. This report recognised that as Britain's largest purchaser of ICT, it is the responsibility of the British Government to set an example on how ICT could be used sustainably.

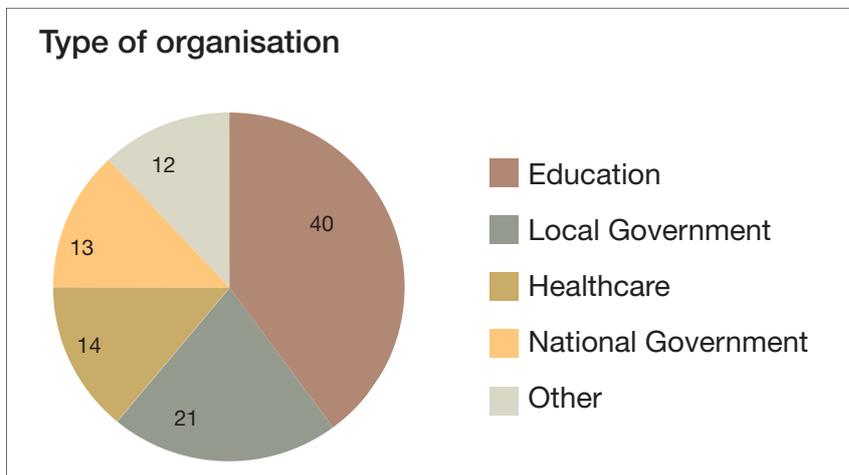
The research sought to discover how successful the Strategy has been at creating the desired change within the public sector. The research consisted of two elements, a questionnaire distributed by the Editor of Computer Weekly for this report and interviews with Green ICT Leaders conducted by Global Action Plan's CEO, Trewin Restorick.

Results of the Questionnaire Survey

Research Respondents

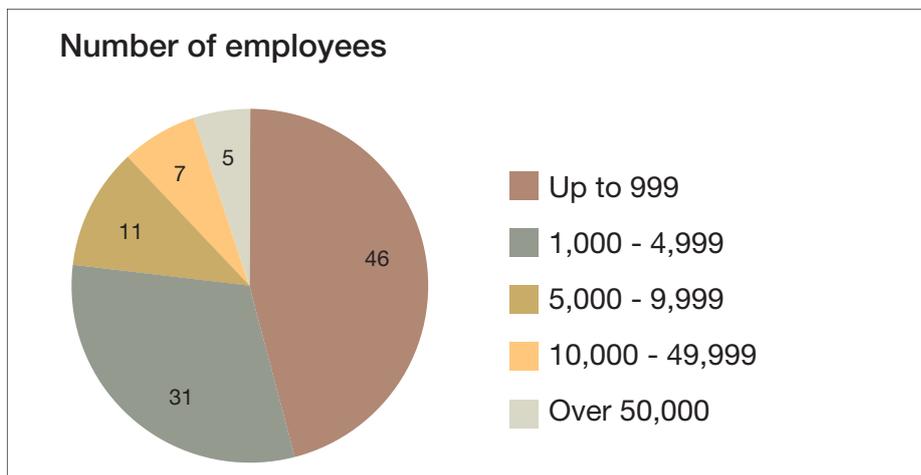
Public Sector ICT Managers were asked by the Editor of Computer Weekly to respond to a short, confidential questionnaire. The questions explored respondents' attitudes towards the Greening Government ICT Strategy and asked about green initiatives being implemented within their organisation. Research results were analysed by an independent research agency in accordance with the Market Research Code of Conduct.

A total of 173 completed questionnaires were received and analysed. The percentage breakdown of respondents is detailed in the graph below.



33% of the respondents were either overall Head of IT or IT Department Heads, 30% described themselves as IT Managers, 26% were Project Team Leaders, 4% had Board level responsibility for IT. Other respondents included analysts, a Finance Director, administrators and ICT support staff.

The following graph indicates the percentage breakdown by the number of people employed by the respondent organisations.



Awareness of and response to the Government's Greening ICT Strategy

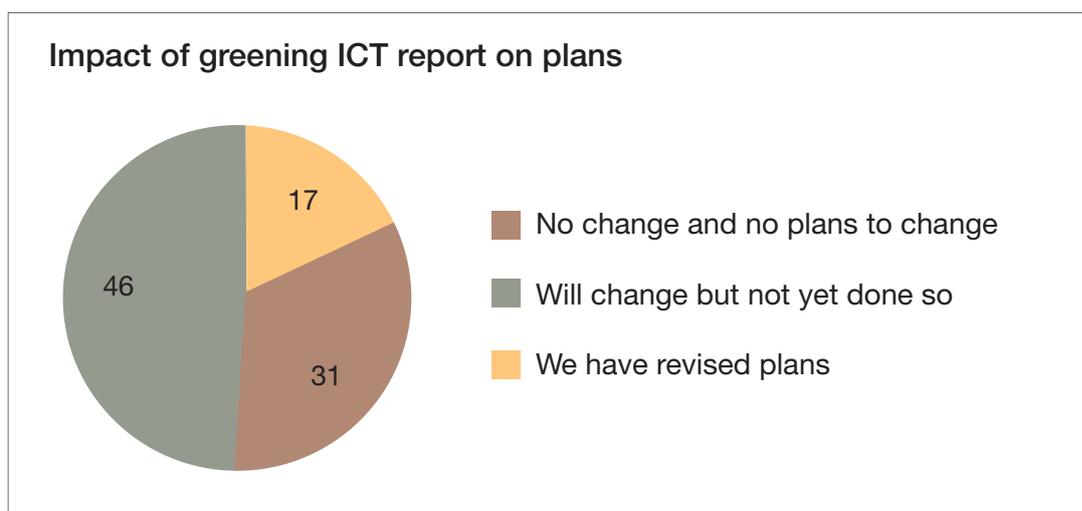
The Government's Greening ICT Strategy was published in July 2008. The report covers Central Government Departments and their Executive Agencies represented on the CIO and CTO Councils but its recommendations are relevant to all wider public sector organisations.

Respondents were asked if they were aware of this Strategy. Overall 60% of respondents were not aware of the report compared to 40% that were. The highest levels of awareness were amongst respondents from Central Government with 59% being aware of the report at the time of this survey, 10 months after its publication. The lowest areas of awareness were in education (68% unaware), Health Care (58% unaware) and Local Government (53% unaware). With regard to roles the highest levels of awareness were amongst Director/Head and Management level in the larger organisations. Even in these groups the awareness level was generally less than 50%.

The research demonstrates that considerably more work is required to disseminate the Greening ICT Strategy and its objectives. The report is targeted at Central Government and sets out targets, some of which were due to be implemented by January 2009. With 41% of respondents from this sector not even aware of the existence of the report, it is highly unlikely that these targets have been achieved.

Government also needs to consider how it is going to spread its strategic targets to public sector organisations outside of national government as awareness within these organisations is low.

Respondents who were aware of the Strategy were asked whether they had or were about to make changes to their ICT plans as a result of the report. 59 responses were received as illustrated in the graph below.



The research indicates that the urgency of the need for action contained within the report is not felt by IT Managers within the public sector with only 46% having changed their plans as a result of the report. As most Government contracts are long term this may be due to contractual issues including renewals and termination dates. 17% of the 59 respondents who were aware of the report currently have no intention of changing their plans as a result of the report. The Cabinet Office might wish to discover whether this is because these respondents feel they are already implementing the report's recommendations or if they feel it is irrelevant to their circumstances.

The Greening Government ICT Strategy contains clear targets. The questionnaire brought some of these to the attention of respondents. For example, some respondents were not previously aware of the following targets:

- Energy consumption of Central Government office estate ICT is to be carbon neutral by 2012.
- Departments are to source at least 15% of their electricity from combined heat and power by 2010.
- Office carbon emissions are to be reduced by 12.5% by 2011.
- Departments are to recycle 40% of their waste by 2010.

Respondents were asked how confident they were that targets could be achieved including whole lifecycle carbon neutrality by 2012. None of the respondents believe that the targets are easily achievable, 34% are confident that the targets could be hit, 54% are concerned about hitting the targets whilst 13% are extremely concerned and believe that the targets are not achievable.

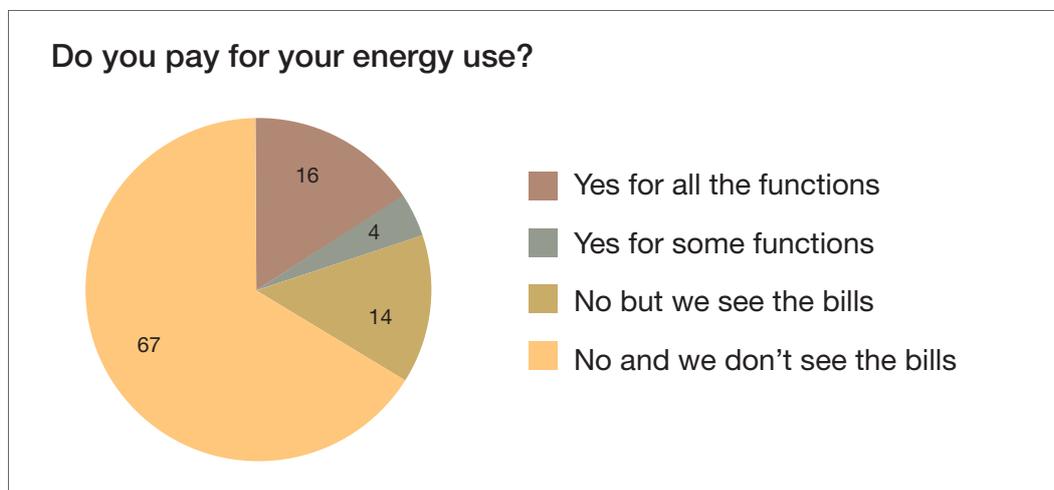
This high degree of concern or extreme concern suggests that IT Managers will require more full time support, guidance materials providing clarity on solutions and resources to achieve the ambitions contained within the Strategy.

Respondents were asked which statement described how they feel about green ICT initiatives and their place in light of the current economic crisis. 70% of respondents stated that they felt green ICT initiatives are still important and required. Only 12% felt that green ICT is not important in the downturn and as a result have put new initiatives on hold. Encouragingly, this demonstrates that green ICT remains high on the agenda for most respondents despite the impact of the economic downturn.

Strategic Response to Green ICT

Implementation of effective green ICT initiatives will improve organisational efficiency. This improvement should be reflected in lower energy costs, reduced carbon emissions and enhanced services. IT Managers should have systems in place to measure change against these three indicators. The research sought to determine whether basic measurement systems were in place around two of these, energy costs and carbon.

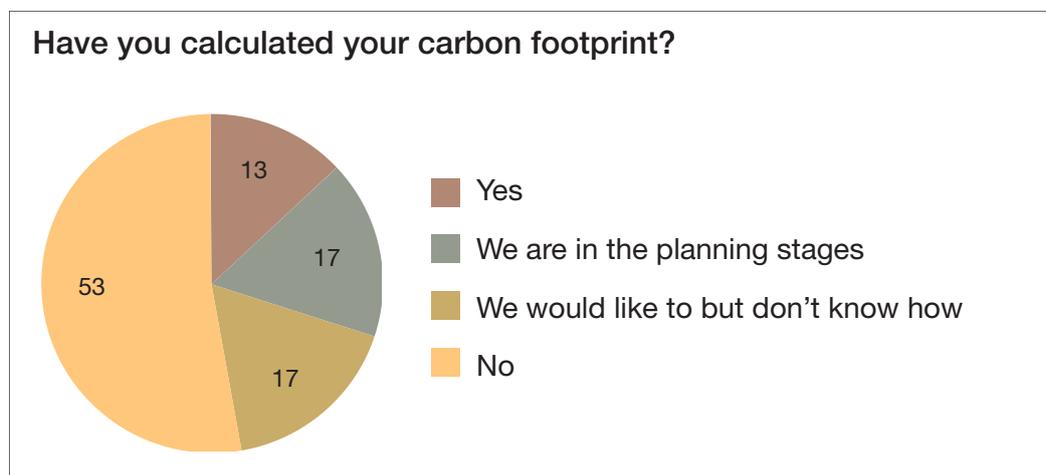
The questionnaire asked respondents whether their ICT department pays for the energy consumed by its equipment.



As the graph indicates, 67% of respondents do not see their energy bills. Not having this baseline information is a major hindrance as it removes a basic measurement tool for enhanced performance.

Without information on energy bills, or greater coordination with estates' representatives it is possible that IT Managers will continue making procurement decisions based solely on capital expenditure without taking into account the long-term costs of powering and cooling the equipment, its eco-design impacts or the overarching principles of "sweating the assets" that are prevalent in the Strategy. These are important weaknesses to highlight, especially with energy prices likely to remain volatile over the coming years.

Respondents were asked whether they have calculated the carbon footprint of their ICT activities. The following graph details their response.



Despite the existence of the Green ICT Scorecard made available to the CIO/CTO Councils, only 13% of respondents have calculated their carbon footprint. As with the energy prices, this would indicate that essential baseline data is not available to the majority of respondents enabling them to measure the impact and effectiveness of green ICT initiatives.

The failure to measure carbon emissions will make it difficult for Government to hit its own carbon targets. In 2008, Central Government recorded a 3% increase in carbon emissions from electricity use. One of the reasons for this has been identified as the proliferation of ICT equipment and associated impacts¹². The current Green ICT Scorecard which does provide a CO₂ footprint per staff member should be refreshed and awareness raised of the availability of these metrics.

The need to measure carbon will become increasingly important with the implementation of the Carbon Reduction Commitment. This Commitment will require almost all public sector organisations to measure their carbon emissions. The Commitment is revenue neutral as an initiative and has no additional cost to Central Government to operate it, but each individual company, Government department or charity included in the scheme is exposed to financial risk.

The Commitment will impose a cost of £12 per tonne of carbon on participating organisations, with a lesser, equal or greater amount rebated back to the participants each year depending on their relative performance at becoming more energy efficient. Performance will be judged by placing all organisations in one league table, with NHS bodies, retailers and financial institutions compared on a level playing field. Those at the top of the table will receive financial rewards whilst those at the bottom will receive financial penalties. If public sector organisations perform badly they may suffer financial penalty with these penalties being recycled as rewards to higher performing participants, who could be private sector companies.

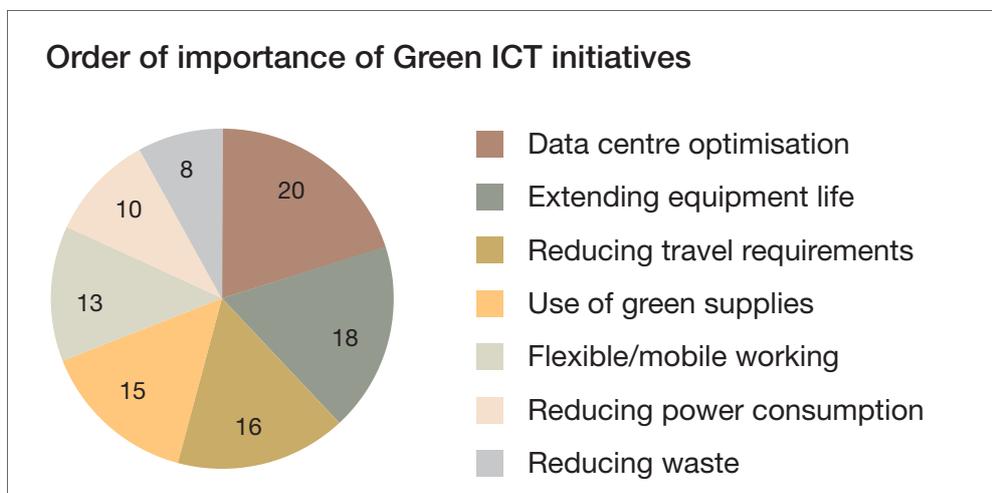
Respondents were asked whether they set internal green ICT targets to help them achieve the overall Government targets. Only 22% have set these targets and of these almost half are from national government. 78% have not set internal green ICT targets.

This lack of internal target setting suggests that green ICT initiatives are being implemented on a piecemeal basis outside of a wider strategy and benchmarking process.

Implementation of Green ICT Initiatives

Respondents were asked to provide details of the green ICT initiatives that they are implementing. Questions were based upon targets and ambitions set out in the Greening Government ICT report and sought to identify the level of take-up of different elements of the overall strategy.

As a back-drop to the questions around implementation respondents were asked which green ICT initiatives they felt were of most importance to their department.

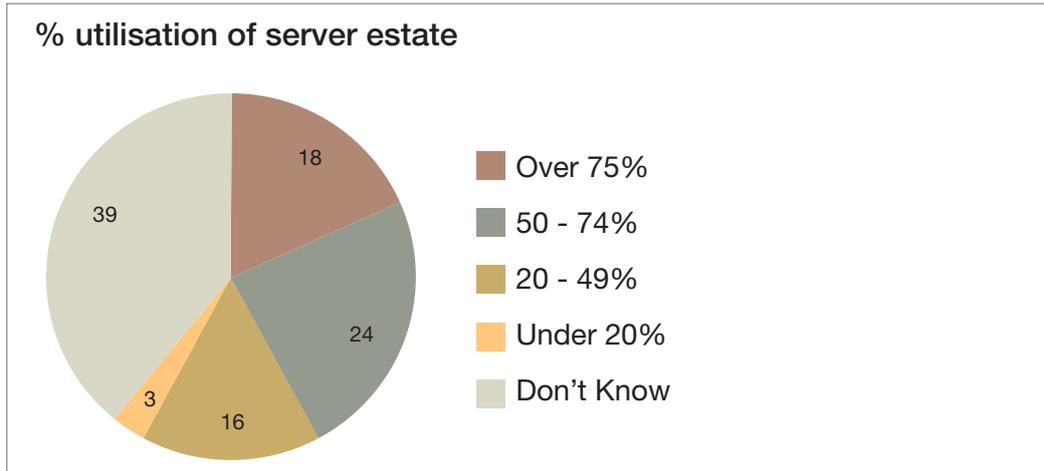


As the graph indicates no one area of activity was highlighted as being of significantly more importance than any of the others. Viewed with a favourable eye, this could be interpreted to suggest that respondents are aware of the need to act across a wide range of activities. Seen with a more pessimistic eye, this evidence could show a lack of understanding of the most important areas of green ICT that should be prioritised.

Organisations still see reducing the impact of ICT as a priority over utilising ICT as a positive tool to reduce other environmental impacts of organisations, such as travel. Only 29% of responses listed enabling flexible working or reducing travel as the most important green ICT initiative with the other 71% choosing initiatives that limit the negative impact of ICT.

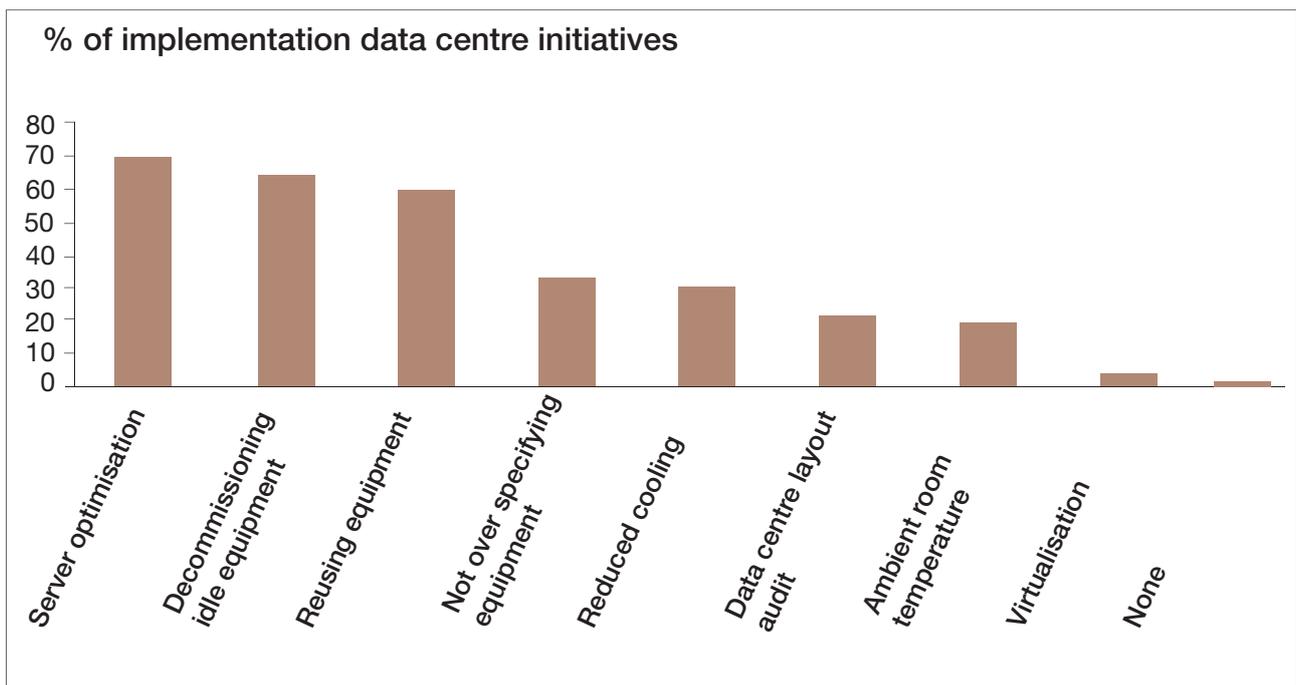
Data centres

Data centre initiatives were identified by respondents as marginally the most important area for activity. Respondents were asked to state the current approximate percentage utilisation of their server estate. The following graph details their response.



Effective optimisation and utilisation of servers is important because of the level of energy used to power and cool them. Increased utilisation can lead to server rationalisation saving energy and cutting carbon. Reviewing the data that should be kept as well as measuring the server utilisation are important steps. It is therefore disappointing that 39% of respondents are not aware of the level of server use. The worst performing sector on this indicator was Local Government.

Respondents were asked which data centre initiatives they have already implemented and the following graph details responses.



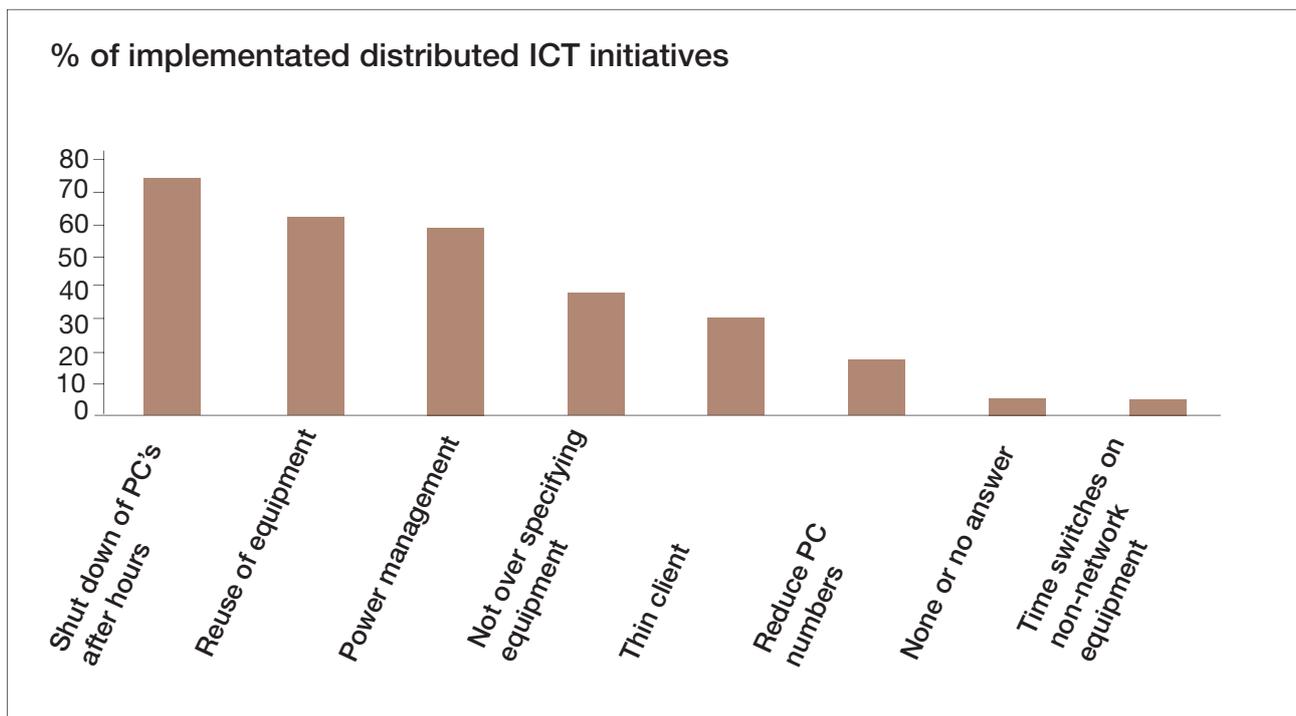
As the graph indicates there is already a high level of implementation around optimisation, decommissioning idle equipment and equipment reuse. The areas with lower take-up are virtualisation and creating ambient data centre room temperatures.

Replacement procedure

Respondents were asked whether they have made changes to replacement procedures in order to extend the lifecycle of ICT equipment. 44% of respondents have changed procedures, whilst 40% have not because they only replace equipment after failure or when there is a business requirement. 16% have not changed current procedures but are planning to do so.

Distributed ICT Initiatives

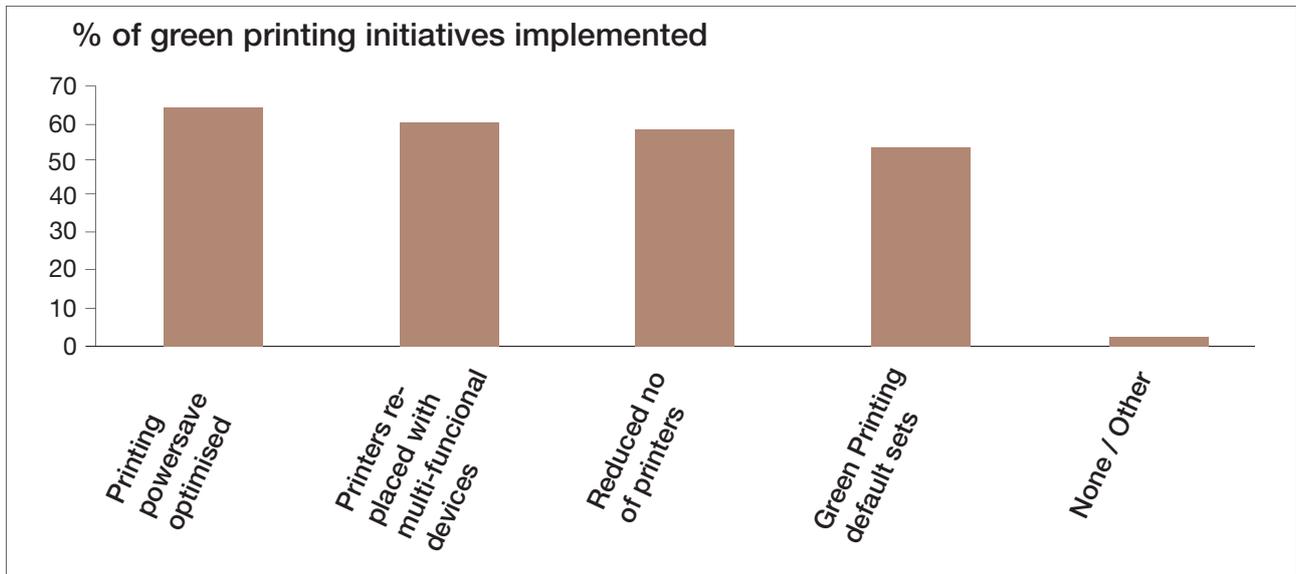
The following graph indicates what other distributed ICT equipment initiatives have already been implemented.



The graph indicates that there is a high level of implementation around shutdown of PCs after office hours, reuse of equipment elsewhere when no longer required and activating PC and monitor management settings. There is a lower level of implementation around time switches on non-networked equipment and in reducing the number of PCs and laptops in use.

Green printing initiatives

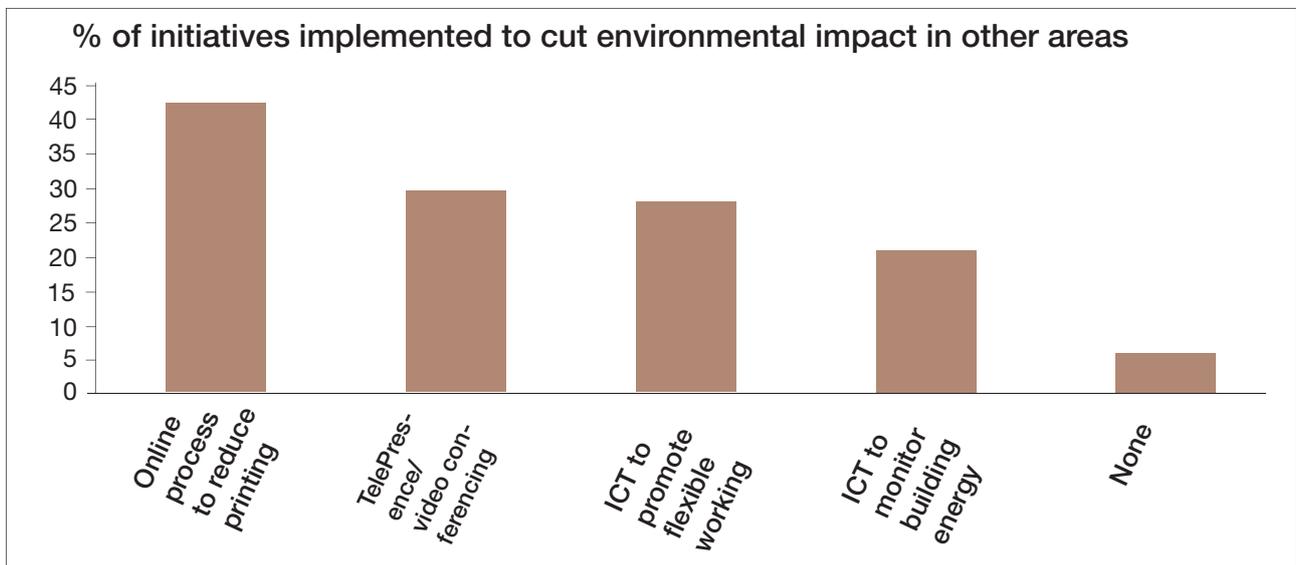
Respondents were asked what green printing initiatives they have implemented.



As the graph indicates, take up of green printing initiatives is relatively high across all elements. This perhaps reflects the relative ease of implementing these changes, and the tangibility of waste and savings – paper is a visible and touchable resource, unlike electricity.

Using ICT to reduce the environmental impact of other areas

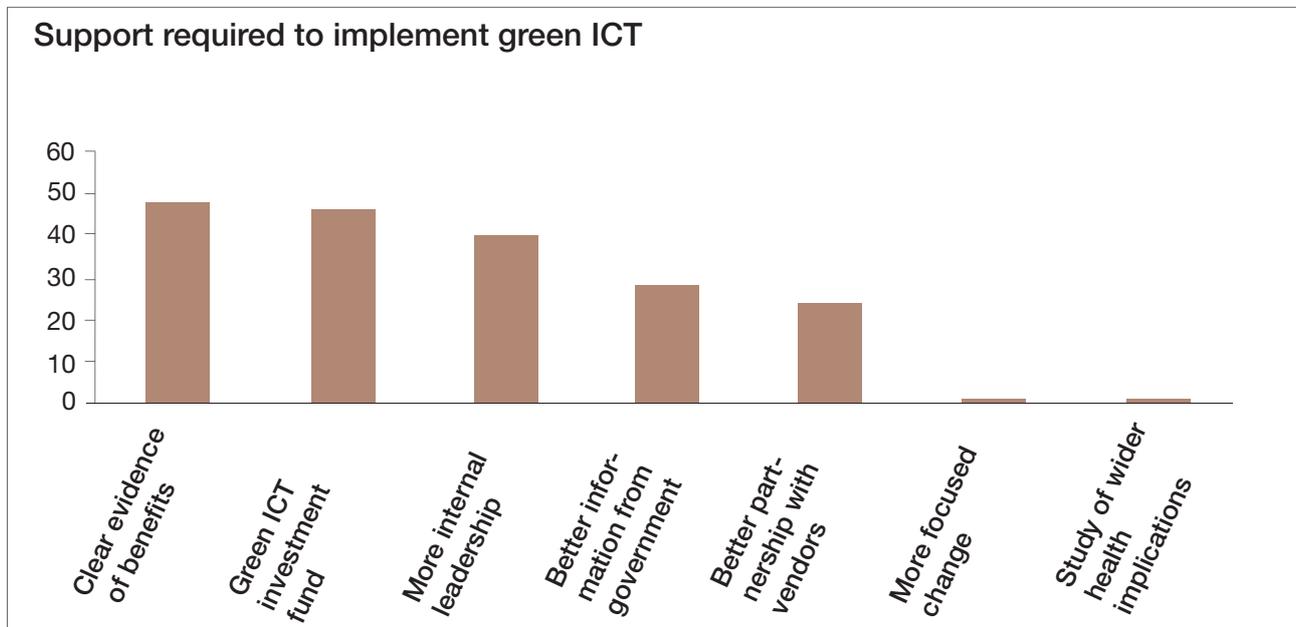
There is increasing recognition that green ICT initiatives have the potential to achieve environmental savings and enhance services in other areas. The Green ICT Handbook available on the EILT website www.greenict.org.uk describes how ICT is responsible for around 2% of the world's carbon emissions, but has the potential to dramatically reduce the other 98%. The following graph indicates what initiatives respondents have already implemented to reduce other area impacts.



As the graph shows, implementation is lower in this area compared with printing, data centre or energy reduction activities, which are restrictive activities. Potentially this is where green ICT initiatives, such as TelePresence and monitoring building energy use, could have the biggest impact and suggests that Government needs to provide more encouragement and support to ICT managers in this area. It is not surprising that these initiatives are less common as they do require internal departments to work together and cannot be activities solely run by IT departments, unlike, for example, a data centre review.

Need for support

Respondents were asked two questions seeking information on what would help them to implement green ICT initiatives. The following graph indicates what support respondents would like to receive when asked to list up to three preferred support activities.



Two options were identified as being the most important methods with which the public sector could be supported by Central Government to make green ICT advancements. Almost half of all respondents stated that they would benefit from a Central Government fund to cover capital costs of investing in green ICT solutions and also clearer evidence of business benefits. 2 out of 5 respondents highlighted more internal leadership and direction as an area where support was required. Significantly fewer people raised better information from Government as an issue, perhaps reflecting that information has already been made available by the Government's CIO/CTO Council.

Respondents were also asked whether they are working with other government departments or agencies to help them achieve their targets. This collaboration is important to help share best practice and maximise the use of resources yet only 16% of respondents are sharing knowledge and learning, whilst 10% are working together on joint initiatives and 17% are not yet collaborating but have plans to do so. 57% are not collaborating and have no plans to do so.

Encouragement and initiatives from Central Government is essential if this barrier is to be tackled.

Qualitative Research Results

Research Format

The questionnaire research was supported with a series of telephone interviews conducted by Global Action Plan's CEO, Trewin Restorick, with leaders in green ICT. The structured interviews lasted for 30 minutes and took place with:

- Rakesh Kumar – Vice President at Gartner Research
- Steve Palmer – President Elect at Socitm
- Catalina McGregor – Government Deputy Champion Green ICT at the Cabinet Office CIO/CTO Council
- Jeremy Green – Practice Leader at Ovum
- Farroq Ullah – Policy Analyst at Sustainable Development Commission

The aim of the research was to explore further the impacts of the Greening Government ICT Strategy and to explore some of the data generated by the questionnaires in greater depth. The following narrative pulls out key themes generated through the interview questions.

Central Government Leadership

The interviews highlighted the leadership role that Central Government has played in setting out an overall strategic direction for green ICT. The Cabinet Office's Greening Government ICT was widely praised and recognised as being a highly comprehensive and thoughtful overview. Rakesh Kumar stated:

'The report is far better than virtually anything in the private sector. I feel it deserves 8 out of 10.'

The interviews provided evidence that Central Government has plans in place to create mandated targets for CIOs to assure delivery of the ambitions contained in the Green Government ICT report. This evidence includes the creation of the Green ICT Delivery Unit consisting of CIOs and CTOs. Catalina McGregor stated that:

'The Green ICT Delivery Unit (GDU) was established in 2007 with 14 Departments and is responsible for writing the Greening Government ICT Strategy. We have now grown to 21 experienced and passionate Members from Central, Local and NDPBs. The expertise of the Members in this group and the intensive debate system we have in place provides an unprecedented fast stream test bed for green ICT discussions and test bed opportunities.'

Interviews highlighted that the UK has been praised by the OECD and the National Audit Office for its leadership not only locally but also internationally assisting other countries in developing strategies and targets. The United Kingdom will be the first country in the world to announce a set of 10 mandated targets in July raising the bar for other countries to follow.

Every CIO and CTO on the central Council has completed a Green ICT Roadmap with 18 steps. Catalina McGregor explains why this has been such a successful report:

'The established relationships and trust amongst the CIO/CTO Council Members is so strong that we have been able to deliver an unprecedented result without a big stick. CIOs and CTOs have run programmes from CO₂ measurement via the Green ICT Scorecard to reporting full CIO Green ICT Roadmaps against the 18 steps as well as detailed longer term action plans that take into account ICT contractual changes and industry partnerships.'

Implementing the Strategy

The interviewees shared a concern that the implementation of green ICT initiatives was patchy and tended to lack ambition. There was recognition that good things are happening but Steve Palmer believes that many of these initiatives are being led by:

'...a few brave souls with broad-backs who are taking the lead on demonstrating that green IT is not all talk but includes solid, substantive action'

The Sustainable Development Commission was particularly strong in highlighting the weakness of the current implementation of green ICT initiatives. Their SDIG 08 report revealed that last year Central Government recorded a 3% increase in carbon emissions from electricity use and they concluded that the Government is not leading by example or contributing to UK wide emission targets. That report also challenged the CIO Council to:

*'Address the root causes of the energy consumption rise and its increasing waste to encourage industry to improve ICT equipment life span, eco design and energy consumption... Whilst the existing Greening Government ICT Strategy (launched July 2008) represents an encouraging step towards making ICT usage more sustainable, Government must consider urgently raising the ambition level of the Strategy as industry awareness and action has gathered around this agenda. The Chief Information Officers and Chief Technology Officers have responded well to the first set of targets but they must now be increased. The Strategy itself acknowledges there is a need to work with departments and industry to explore and invest in radical green ICT solutions, but also consider issues relating to life cycle impact and disposal of old IT hardware.'*¹³

Farroq Ullah stated:

'One of the key drivers of the increase in emissions from electricity may be the proliferation of computers, printers, laptops, chargers, lobby televisions, mobile phones and other ICT equipment'

The Sustainable Development Commission also highlighted the potential impact of the failure to measure carbon footprints which leaves Government poorly prepared for the introduction of its own Carbon Reduction Commitment (CRC). They highlighted that the CRC will provide financial incentives to top-level carbon reduction performers but will financially penalise poor performers. Farroq Ullah believes:

'If Government performs badly there is a real risk that tax payers money will be paid in penalties and will end up in the pockets of high performing private sector businesses'.

The interviewees shared a view that Government could be doing far more to support all public sector organisations in the implementation of green ICT initiatives. Rakesh Kumar stated:

'Where Government is successfully implementing green ICT schemes it should be making the effectiveness of these transparent through case studies and wider promotional activities to demonstrate what is possible to other large-scale ICT users'.

Jeremy Green cited a local example where the IT Department has not introduced basic systems such as the monitoring of energy bills and as a result had no financial incentive to introduce green ICT initiatives. He stressed the need for:

'Good and increased collaboration which will avoid duplication and embed existing good practice across the whole sector'.

The Future

Steve Palmer believes that the credit crunch provides an enormous opportunity for maximising the potential that ICT has for delivering high quality, low carbon services. He stated:

'Most third and public sector bodies know that they cannot afford to continue as normal and will need to restructure the way that services are delivered. Green ICT initiatives can not just reduce travel, enable flexible working and reduce energy consumption, they can also improve the quality and delivery of frontline services.'

To achieve this overarching objective the interviewees identified a number of areas where change is required.

Farroq Ullah felt that the Government must set more ambitious carbon targets, be clearer about who is responsible for hitting these targets and the delivery mechanism for achieving them.

There was consensus amongst the interviewees that Government needs to show further leadership. A key area identified was the potential to use the procurement weight of Government to drive change across the whole sector. There was also consensus about the need to better promote existing good practice to embed efficiency changes across the whole of Government. Rakesh Kumar stated:

'Government needs to increase the level of transparency around the effectiveness of green ICT initiatives. This will help to build collaboration, reduce duplication and embed good practice.'

There was general support for the creation of a locally delivered stimulus package. It was felt that such a package would speed up investment in green ICT saving public sector money in the long-term whilst also cutting carbon emissions and delivering better quality public services.

Finally, all the interviewees agreed that green ICT must remain high on the agenda despite the downturn. Volatility of energy prices, increasing concerns around energy security and a need for public sector services at lower costs were all cited as being crucial long-term drivers for investment in this area.

Summary

Based on the research interviews the top five recommendations were:

1. Government should use its procurement weight to drive change across the ICT sector including both energy efficient equipment and eco-design eliminating hazardous goods in the disposals chain.
2. Government should consider increasing established knowledge transfer networks and promote greater collaboration within the public sector and also externally with industry.
3. Government should create a Green ICT Stimulus Package which can assist departments to hire expert advice to address and enable its key recommendations to ensure and accelerate delivery of Green ICT in Government.
4. Government should positively communicate examples of green ICT initiatives it has successfully implemented and clarify what CO₂ savings were achieved.
5. Government should support ICT Managers enabling them to create and better measure consistent green ICT strategies including measuring carbon and being responsible for energy bills.

Lessons from the Field

Global Action Plan is pleased to be commissioned by Cisco to produce this survey. The findings in this report reflect Global Action Plan's interpretation of the survey results and do not necessarily reflect those of Cisco. Cisco is an organisation that can provide solutions to change ICT from being a necessary cost or business tool to being a key carbon reducing technology. Examples of these are highlighted in the following section.

Green ICT in Action

The Cisco Green Story

Every organisation has a responsibility to help address climate change and to minimise the impact of its operations on the environment. Cisco is committed to a high level of environmental responsibility in its business operations, culture, products and customer solutions. The company looks to address this through four areas:

- Its operations and the impact it has as a business
- By creating efficiencies and innovations in its products
- Providing solutions to its customers to address global environmental issues
- Inspiring its employees to get involved and take action

By deploying innovative information technology solutions, such as Cisco's SmartGrid, Energywise, and TelePresence, and using the network as a platform for 21st-century environmental management, organisations can significantly alter their greenhouse gas (GHG) footprint and meet their sustainability goals. Using this approach, Cisco has set a goal of reducing its GHG emissions from its worldwide operations by 25% over the next few years, reaching its goal in absolute terms by 2012. It has created an 'Eco-board' to ensure the delivery of its green initiatives across its operations, with local 'green ambassadors' across the globe who coordinate execution.

Cisco believes anything connected to the Internet can be greener. Connectivity is the key for addressing climate change, with the network being the green backbone for environmental innovations.

Today, people no longer have to meet in person to get things done. Many Cisco employees now use the Internet and new Web 2.0 collaboration tools like Unified Communications, TelePresence and Webex to get jobs done anywhere, anytime and any place. These technologies are bringing together people from all over the world, rather than travelling to meet each other.

As people use technology to work in different ways, it puts greater demand on data centres. Such facilities account for a significant percentage of energy use (globally, data centres account for 2% of all electricity produced). Cisco is improving the management of the data centre in a number of ways, including taking detailed measurements of energy flows, utilising more efficient lab equipment, using the "virtual network" to store data, adding smart power-distribution units that automatically shut down machines not in use, and upgrading building mechanical and electrical systems. But although more technology means more energy consumption, this is more than offset by the potential gains from smarter working.

Everything connected to the network across an organisation can be greener if we monitor, measure and improve it. Cisco's EnergyWise technology measures, reports and reduces the energy consumption of Internet Protocol (IP) devices such as phones, laptops and access points, with the next step ultimately enabling the management of power consumption for entire building systems such as lights, elevators, air conditioning, and heating. Imagine having the power to automatically manage the power consumption of your organisation be it in the central administrative HQ, council building or records data centre.

End-to-end networking solutions have the ability to serve as the platform for utilities to improve energy efficiency, security and service innovation for electrical grids. Such a system will help utility companies, their public sector colleagues and regulators, and their customers manage power supplies and energy consumption more efficiently.

ICT has the power to have a much bigger green impact on the rest of the world's carbon footprint. As the green backbone, the network will be the platform to monitor, manage, and better use the globe's valuable natural resources in the future. With networks and communities at the heart of what the public sector does, it is ideally placed to show other sectors how ICT can be used to reduce everyone's carbon footprint.

Australian Federal Government Uses TelePresence

The Australian Federal Government is driving innovation by deploying a Cisco TelePresence™ system across more than 20 Government offices. The network of units, the largest Government deployment of Cisco TelePresence, will span thousands of kilometres and reach across all Australian states and territories. It will help the Federal Government reduce the cost of travel, improve productivity and lower the impact of carbon emissions.

Cisco TelePresence creates an “in-person” virtual experience over a converged network, delivering real-time face-to-face interactions between people and places, using advanced visual, audio, and collaboration technologies. Cisco TelePresence combines high definition audio quality, interactive technologies and a specially-designed environment to approximate the feeling of actually being in the same room as participants in separate locations.

Telstra, a Cisco TelePresence Authorised Technology Provider (ATP) partner, will work with the Federal department of Finance to deploy 20 Cisco TelePresence units, including 13 three-screen Cisco TelePresence System 3000s and seven single screen Cisco TelePresence System 1000s, linking seven Commonwealth Government offices, Prime Ministerial and Cabinet offices, Parliament House and the offices of Premiers and Chief Minister agencies in every state and territory. Four sites have been commissioned, with the balance to be deployed by the end of 2009.

This Cisco TelePresence solution will provide the Federal Government with highly secure, life-size high-definition video facilities connecting the Governments around Australia. The system will be used for inter-jurisdictional meetings, including Council of Australian Governments (COAG) and Ministerial Council meetings. The solution runs on the Telstra Next IP™ network and is supported by Telstra's Next Generation Services (NGS) division, providing complete management of the Cisco TelePresence solution from installation, network and services.



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www.globalactionplan.org.uk



www.greenict.org.uk

References

- 1 The Guardian Thursday 17th July – Environment: Whitehall to become carbon neutral with aid of smart PCs
- 2 Greening Government ICT Tom Watson launch speech, 17th July 2008 Science of Survival Exhibition, Science Museum
- 3 Richard Barrington, head of Public Policy for Sun UK and Ireland and UK Government advisor
- 4 Gartner, 2007 Press Release
- 5 The PC Energy Report – A Report by the National Energy Foundation and 1E
- 6 Richard Barrington, Head of Public Policy for Sun UK and Ireland and UK Government advisor
- 7 Professors Rudiger Kuerh and Eric Williams, United Nations University in Tokyo
- 8 www.carbonneutral.com
- 9 Rakesh Kumar, Gartner Analyst, September 2006
- 10 European Telecommunications Network Operators Association (ETNO) and the World Wildlife Fund
- 11 PC World Nov 2007
- 12 'Sustainable Development in Government 2008; Challenges for Government', Sustainable Development Commission, May 2009 (www.sd-commission.org.uk/publications/downloads/SDiG_REPORT_08.pdf)
- 13 Sustainable Development in Government 2008; Challenges for Government', Sustainable Development Commission, May 2009 (www.sd-commission.org.uk/publications/downloads/SDiG_REPORT_08.pdf)