

Green IT 101



Introduction

In February 2007, the United Nations *Intergovernmental Panel on Climate Change* (IPCC) released a summary of its Fourth Assessment Report. According to the summary, the report finds that – in the opinion of the IPCC - there is more than a 90% certainty that global warming is occurring and caused by man's burning of fossil fuels¹.

Global warming in this case is said to be demonstrated by an increase of 0.75 degrees Celsius in average global temperatures over the last 100 years. This is an increase upon their 2001 findings, in which they stated it was 'likely' that human activities lay behind the trends observed, 'likely' in IPCC terminology indicating between a 66% and 90% probability.

While there are strongly expressed and credible views that natural forces rather than mankind are responsible for this warming, it is now widely accepted that the activities carried out in pursuit of our daily lives are rapidly warming the climate to the detriment of habitation and the global climate². Recent press coverage of apparent weaknesses and inadequacies in the evidence and peer review process in relation to some of the statements contained in recent IPCC documents have failed to undermine the totality of the evidence around Climate Change that has already been presented.

Organisations around the world are under increasing pressure from governments, stakeholders and customers – to take steps that will help reverse the damaging effects we are having upon the environment.

Rising energy prices and the imminent introduction of government-imposed levies on carbon production are increasingly impacting on the cost of doing business. In these circumstances, many existing business practices will become economically unsustainable in the long run. Introducing greener initiatives has twin objectives:

1. Reverse global warming and/or improve the environment,
2. Improve the bottom line with low-cost alternatives or energy-saving measures.

One key area of the business where green alternatives can easily be implemented is the IT Department. The term, Green IT, has been coined for

¹ United Nations Intergovernmental Panel on Climate Change <http://www.ipcc.ch/>

² [Natural Forces Responsible for Climate Change](#)

businesses actively pursuing the most efficient use of computing resources, whilst taking into consideration the impact upon the environment when making organisational decisions in such areas.

The benefits of this approach to the organisation are:

- Lower energy bills
- Reduced IT infrastructure costs
- Avoidance of government imposed 'green taxes'
- Brand and corporate image 'green' kudos.

In addition, the evidence certainly supports the need for IT to do a great deal more to its green agenda:

- Recent studies by [Forrester Research](#) found that over 90% of IT organisations are looking to incorporate a level of Green IT; unfortunately the number actively implementing such measures is a fraction of this figure³.
- Analyst firm [Gartner](#) calculates that the IT and communications sector is responsible for approximately 2% of all global carbon dioxide emissions, the same amount as aviation, an industry vilified by environmentalists⁴.
- The [WWF \(World Wide Fund for Nature\)](#) published a report in May 2008 which shows how IT can contribute to one billion tons of CO₂ reductions⁵.

In this white paper we will explore the benefits of, and the factors involved in initiating a Green IT agenda. We will also look at what quick wins you can action today, and map out some medium and long-term goals. Lastly we'll look at how IT Governance Ltd can help you in achieving these goals.

Benefits of Green IT

Organisations, particularly in the IT departments, have for many years felt that they had more pressing priorities than responding to the green agenda.

There is a perpetuated myth that going green is the most expensive option when pursuing business interests. There is a belief that in helping the environment, you economically hurt the business, and that benefits of green IT initiatives are difficult to quantify. The development, over the last few years, of recognised and respectable approaches to assessing, quantifying and placing a monetary value on green activities has changed all that. Devices for measuring the efficiency of computing and electronic equipment, and business CO₂ calculators (both mentioned later in the paper) give

³ Forrester Research www.forrester.com

⁴ Gartner Research <http://www.gartner.com>

⁵ The WWF (World Wide Fund for Nature) Report: 'A Biomass Blueprint to Meet 15 % of OECD Electricity Demand by 2020'.

organisations a mechanism by which they can accurately assess their environmental position.

In reality, the vast majority of eco-friendly IT equipment, and software that improves efficiency, is far more likely to lower the total cost of operation. For example virtualisation techniques deployed across the server estate can radically improve server utilisation levels and significantly lower the operational cost, with some of the primary benefits coming from a significant reduction in power costs.

In recent times, there has been a rapid increase in demand for the greenest organisations from consumers, suppliers and stakeholders, creating a culture in which greening the corporate image has become competitively important.

Increasingly, a green image and the organisational actions taken towards the environmental probity are distinguishing factors in the requests to tender and contract negotiations with suppliers and distributors.

Customers – who themselves are increasingly environmentally aware - are also demanding that their purchases don't dramatically increase their **Carbon Footprint**, and have shown a willingness to move to those organisations that will meet their changing environmental needs⁶.

Initiating a Green IT agenda

The primary objective of all business is to make a profit or a return to their shareholders; and public sector and non-profit organisations are required to protect their own bottom lines. The single most important factor therefore, when pursuing environmentally greener options from a business perspective, are the profit motivators.

Bottom line benefits of Green IT

Identifying bottom line benefits in Green IT initiatives that have quantifiable environmental impacts is key to any proposal that seeks boardroom backing. If cost advantages can be clearly be identified, the likelihood of budgetary support and the board giving full backing for such a project are greatly increased.

The key Green IT areas that should be considered for potential cost savings are:

- **Power management in server centres:** According to virtualisation specialists VMware, a virtualised server with dynamic resource scheduling can reduce power consumption by as much as 70%⁷.

⁶ **Carbon Footprint:** A widely-used term in reference to environmental change is the Carbon Footprint, a measure of the impact human activities have on the environment in terms of the amount of greenhouse gases produced, measured in units of carbon dioxide. This means the more energy we use, the greater the impact we have on the environment.

⁷ <http://www.vmware.com/>

- **Green IT office practices;** The Cabinet Office (UK) hopes to save in excess of 117,500 tonnes of carbon from being emitted by switching off computer equipment at night, and making sure servers do not stand idle⁸.

Compliance requirements

Presently, green regulations are voluntary in the majority of countries. However, in the not too distant future, they are expected to become mandatory as all major economies look to use legislation to deliver on their international obligations in this area.

Ten states across the USA have already implemented legislation on recycling electronic waste, with another 14 planning to implement the same within the year. The European Commission has brought in two key directives, the [Waste Electrical and Electronic Equipment \(WEEE\)](#)⁹ Directive, aimed at bringing about the mandatory recycling of PC parts, and the [RoHS Directive](#)¹⁰, which stands for the restriction of the use of certain hazardous substances in electrical and electronic equipment.

Both directives have become (or are becoming) law in member states of the EU, and compliance with these laws is rapidly becoming a new regulatory driver on the business agendas of organisations across the EU.

Government and corporate purchasing departments are also increasingly requesting details on the green credentials of firms they intend to collaborate with. Adherence to such directives as WEEE are now mandatory, A distinguishing factor is therefore likely to be those firms that go the extra mile, anticipating forthcoming legislation and striving to implement their own environmental best practice ahead of regulatory pressure.

Those firms that fail to act now, will find compliance to the proposed legislations such as CO₂ capping, trading and licensing¹¹ (currently being debated by the European Union) enormously more difficult to achieve than it would if given the appropriate forethought.

When attempting to implement a successful Green IT strategy, the emphasis should be on people and processes as much as the technology.

Environmental change is also a people issue

Engaging employees from the very start of the development is crucial to any such venture, educating them on why such methods are to be implemented

⁸ [Whitehall bid to cut IT emissions](#) BBC article.

⁹ [Waste Electrical and Electronic Equipment \(WEEE\) Directive](#)

¹⁰ <http://www.rohs.gov.uk/> Restriction on Hazardous Substances Directive

¹¹ [Emission Trading Scheme \(EU ETS\)](#) proposal for Organisations to pay for licenses to emit various waste will requiring adherence by suppliers (both up and down the supply chain)

and the importance they hold for the success of any project. A green champion should also be selected to evangelise the benefits of pursuing this course of action and to instigate the process changes. This person should also be charged with gaining widespread employee interest and commitment, an area which can also benefit from the introduction of green-associated employee incentives.

An incremental, evolutionary approach should be followed with a simple set of 'rules' utilised during implementation, to give the user a sound platform from which to work.

Firstly, identify and prioritise the goals you wish to achieve in the process. In order to ensure that your project is a success, it is vital to assess your current situation and create a set of benchmarks against which future data can be measured.

Actions that can be taken by organisations on the road to becoming environmentally friendly while maintaining a profit focus:

- Identify and prioritise goals
- Assess your current situation
- Find and execute quick wins
- Set medium and long-term goals, such as revising processes and metrics, optimising existing assets, revamping architecture and infrastructure, positioning IT to support green business.

The low-hanging fruit

- **Measure your organisational carbon footprint using a recognised business CO₂ calculator**, allowing for further benchmarking, and success measurement of green initiatives undertaken¹².
- **Do not leave hardware on standby overnight**, particular hardware items such as monitor, printers, and even chargers, have high-energy consumption rates even when idle.
- **Computers should be turned to standby** (or 'sleep' mode), and monitors turned completely off when employees are away from their desks for a period of time. Screen savers should also be prohibited.
- **Printers should be set to default to double sided**, and employees encouraged in limiting their printing to only where it is necessary.
- **Recycling initiatives implemented where possible**, particularly for items which can easily be reused such as printer cartridges, etc.

¹² <http://www.climatecare.org/business/business-co2-calculator/> A good example of a business CO₂ calculator.

- Where possible, **the lifespan of hardware should be increased**, if your firm normally upgrades PCs every two years, try increasing this to four years. The energy consumed in producing a PC is the equivalent to several years' use.

Medium-term goals

- **Analyse organisation energy bills** in order to gauge success of measures implemented.
- From your own organisational benchmarks on energy consumption, **analysis of potential suppliers' environmental attitude**, or **the efficiency of prospective equipment purchases can be calculated**. Use standards like Energy Star ¹³, EPEAT ¹⁴, which indicate governmental and private sector accepted environmental assessments on electronic goods, specifically IT equipment.
- **Check the green credentials of all suppliers**, and consider moving to a more environmentally friendly supplier. A change of energy supplier to a more environmentally friendly provider can prove to be a highly successful strategy; an incumbent telecommunications organisation hit their 60% reduction target (one million tonnes) of CO₂ emitted within 10 years, by switching. This allowed them to hit their environmental targets far earlier than anticipated.
- **Revise procurement criteria** and study suppliers' sustainability practices, favouring those with the greenest products and services.
- **Favour products with smaller total carbon footprint** in the manufacturing, packaging and distribution. Study supplier evaluations from third parties such as Greenpeace ¹⁵.
- **Put incentives and performance goals in place** for teams and individuals within the organisation, to encourage them to conform to green practices and principles.
- **Assess potential for remote working**, and reduce staff travel by introducing video conferencing, more remote staff and home working. Staff travel is a major creator of carbon emissions, and its reduction can greatly improve your carbon footprint.
- **Build measuring and reporting tools** that, for example remotely turn off hardware if it has been left unused for a period of time.

¹³ <http://www.energystar.gov/>

¹⁴ <http://www.epeat.net/>

¹⁵ <http://www.greenpeace.org.uk/>

Long-term goals:

- **Consolidation of data centres** and upgrading to more energy efficient servers. Most current applications only run at peak workload a fraction of the time, and average utilisation of datacentre capacity is between 5 and 10%. Server consolidation is where huge reductions in running costs can be achieved.
- **Gain certification with ISO14001** the Environmental Management Standard. Conformity to this internationally recognised standard designates a rigorous environmental model is followed by the organisation, acting as a superb indicator of your green credentials to stakeholders and potential vendors.

Further steps

IT touches almost every facet of the organisation, so initiatives taken by the IT Department can have far reaching benefits felt throughout the company, but it doesn't just end with IT.

Initiatives may be replicated within other divisions, where the experience and expertise acquired by IT can be applied to other areas of the business, further reducing the carbon footprint.

How IT Governance can help

IT Governance Ltd offer our customers a comprehensive selection of aids to implement an organisational Green IT agenda, from [books and papers](#) detailing exactly what is required and how to encourage participation throughout the organisation, to kits specifically designed to achieve accreditation with the [Environmental Management System ISO14001](#).

Our [Green IT Information area](#) and Reports detail best practice methods, regulations, and current trends and impacts that can be seen in the Green IT sector, and its far reaching ramifications in the environmental and business world.

For a more personal guided approach to implementation in this area, our [Training Courses](#) offer interaction with seasoned experts who will give insightful implementation advice and expertise.

In conclusion

The starting point of any Green IT agenda should be to gain the backing of board members, as implementation is a non-starter without their support.

When pitching the proposal, the board emphasis should be on the profit savings that can be implemented, not just within the IT Department, but across the divisions, and ultimately on the bottom line.

Further benefits of implementation can also be highlighted, such as becoming a key differentiator in contractual negotiations and conforming to legislation.

The issue of legislation is increasingly important as governments and regulation bodies attempt to reverse the negative effect business has on the planet, with the great likelihood of severe penalties for nonconformity.

Corporate image, with its immeasurable cost when tarnished, demands that organisations are seen to be taking active steps toward environmental awareness. Stakeholders require pacification, whereas consumers will move to vendors with clear green initiatives.

At present, there is no standard measurement for benchmarking 'greenness'. Therefore a collective effort to generate this standard requires a collection of government, academia, public and private organisations collaborating to devise a measurable benchmark, However until such a point, it is still vital for you to make appropriate changes in order to stay competitive, legislation will be brought in swiftly and without taking measures now it will be impossible to adhere to in the timeframes being spoken about.

IT departments must be involved in shaping corporate eco-sustainability and compliance practices, building an environment in which business continuity can exist and continue to prosper.

Resources

[The Governance of Green IT](#) – by George Spafford

[Greening the Data Center: A Pocket Guide](#) – by George Spafford

[Green IT: Pack of 3 Pocket Guides](#) written by Alan Calder and includes:

1. [The Green Agenda: A Business Guide \(Softcover\)](#) - This business guide to Green IT was written to introduce, to a business audience, the opposing groups and the key climate change concepts, to provide an overview of a Green IT strategy and to set out a straightforward, bottom line-orientated Green IT action plan.
2. [The Green Office: A Business Guide \(Softcover\)](#) - This guide was written specifically to help cost-conscious, environmentally-minded organisations identify practical and straightforward ways of reducing both the corporate cost base and their carbon footprint.
3. [Compliance for Green IT: Pocket Guide \(Softcover\)](#) - Regulations that are relevant to the IT sector include carbon trading and carbon cap-

and-trade schemes, which are used in a voluntary or mandatory capacity to reduce CO₂ emissions and offset the impact of the environmental damage caused elsewhere. IT is a significant consumer of power and these schemes, while still very much in their infancy, are of growing importance and relevance for the IT organisation. This pocket guide provides a useful introduction to, and overview of, these schemes.