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Sustainable ICT

TACKLING CLIMATE CHANGE AND ENTERING INTO A LOW-CARBON ECONOMY REQUIRES A RANGE OF STRATEGIES. STEPHANIE CAMARENA GIVES AUSTRALIA'S BEST AN INSIGHT ON HOW TO BEST MANAGE THIS WITHIN YOUR BUSINESS.

While policy-makers have been focusing on the big polluters (transport, construction, electricity production, et cetera), information and communication technology (ICT) has been mainly looked at in terms of energy consumption and supply-chain management.

In the SMART 2020 report, the GeSI (Global e-Sustainability Initiative) indicates that ICT has a double role to play in a carbon-constrained economy. It needs to dramatically reduce its own footprint, and it needs to help organisations reduce their impact too. It finds that ICT's footprint will increase rapidly in the next 10 years, and this needs to be tackled aggressively. But it also highlights that there is potential for ICT to enable a reduction of five times its own footprint (see below). For this to happen, organisations will have to consider ICT as a key enabler of their reductions strategies.



ICT sustainability issues

The ICT footprint represents around 2 per cent of global emissions, which is similar to the aviation global footprint. This is expected to increase, and with it the environmental cost of producing, using and disposing of the equipment. At all three levels of manufacturing, using and disposing of ICT equipment, the environmental impact is considerable.

Social issues

The Dutch CSR (Corporate Social Responsibility) platform conducted research on social issues in the industry and found that working conditions in production facilities are often appalling. Research painted "a picture of predominantly women workers working up to 72 hours a week, with compulsory overtime, insecure employment contracts, unsafe factories, and workers not adequately protected when working with hazardous materials, wages below the subsistence level, suppression of union rights, and degrading treatments". Conditions are potentially worse than those in the garment industry a few years ago due to some highly toxic materials.

Request as much information as possible from your suppliers on their social commitments. Inquire about the sustainability and CSR reports they produce. Ask questions about their credentials.

Labour rights

Whether the country where products are manufactured signed the International Labour Organization conventions or not, manufacturers should practise the core labour standards:

- freedom of association
- right to collective bargaining
- no discrimination of any kind
- no forced or slave labour
- a minimum employment age.

And several other generally accepted labour standards:

- health and safety measures
- a maximum working week of 48 hours and voluntary overtime of 12 hours maximum
- a right to a living wage
- the establishment of an employment relationship.

When looking at the supply-chain responsibility of companies, focus on the core labour standards.

Health and safety issues

Electronic products are a mixture of several hundreds or thousands of components, many of which contain heavy metals or hazardous substances. Studies have been conducted which show that electronics workers' exposure to highly toxic materials is higher than in the chemical industry, and even higher than in the pesticide industry. Issues with health and safety in many of the manufacturing countries have been found not to be addressed either with appropriate training or protection.

Select manufacturers with OHSAS 18001 certification or equivalent at their production sites.

Human rights

Torture, murder, and rape by Burma SLORC military has been widespread. The International Trade Union Movement believes it has been impossible to conduct any trade or any economic activity in Burma without financially contributing directly or indirectly to the military junta. Some ICT producers still have operations in Burma.

Congo is one of the main African producers of coltan, which is essential to many electronic devices. Turned into tantalum, it becomes a key element of camera lenses, electronic circuits, mobile phones, game consoles, and many other devices. The United Nations Security Council warned that huge coltan profits are fuelling the war, abuses, and child slavery in Congo.

GeSI and the EICC (Electronic Industry Citizenship Coalition) have put together a Tool for Accountable Supply Chain e-TASK available to ICT manufacturers. More than 270 are participating. Check if your supplier is one of them.

e-tasc.achilles.com/Default.aspx

Environmental issues

Extraction of raw materials, manufacturing/assembly, use and disposal are the key life cycle areas of toxic materials in the ICT industry.

Extraction of non-renewable resources for the production of high-tech equipment can have extremely damaging consequences for the environment and local ecosystems. It can also cause considerable social and health issues.

Highly toxic materials and hazardous substances are used. Large water and energy consumption in the assembly process of circuit boards and silicon chips is another environmental concern. According to the Silicon Valley Toxics Coalition, a factory producing 30,000 8-inch wafers per month requires 2,000 to 2,500 tons of water a day.

Waste production is also an issue when toxic dumping causes air, water and soil contamination. In an article in the *Ethical Consumer* in 2004, Rayner and Bingham found that the manufacturing of a circuit board weighing four pounds produces 46 pounds of waste, of which 40 pounds is classified as hazardous. [A pound is approximately 0.45 kilograms.]

Enforce procurement policies which require a higher level of responsibility from your suppliers. Select PCs and screens that are labelled gold or silver in the EPEAT Scheme (Electronic Product Environmental Assessment Tool: epeat.net/).

E-waste is a result of the disposal of electronic equipment and has become a major environmental issue. In Australia alone, the TippingPoint report indicated that by 2020 (if we continue business as usual), 700 million electronic items will be in our landfill, with the risk of leaching toxic and hazardous substances.

The issue of electronic products waste is exacerbated by the short product life cycle and manufacturers' marketing strategies which disregard the subsequent environmental impacts it causes. Many reports have been produced that found a lot of our e-waste is being sent to Asia, with dire consequences for communities not equipped to process such material.

Support suppliers who are active participants in extended product stewardship and offer take-back programs. Extend the life of your equipment by lowering the replacement rate. Investigate schemes to treat e-waste responsibly (e.g. *Byteback program in Victoria*).

Reduce ICT impact during 'use' phase

Procurement, disposal and recycling policies and a range of actions aimed at suppliers will support a great reduction in the impact of ICT in your organisation. While you are using the equipment, you have control over the efficient running of ICT. This includes the overall ICT operations, running of data centres, management of energy, and staff behavioural changes.

Gartner estimated that businesses spent four to 10 per cent of their total ICT budget in 2007 on energy, and that they will likely spend four times that amount by 2011. With this in mind, increased efficiency might very well result in significant cost reductions.

In the office

Unless equipment in the office has a sleep mode or an environmental certification, it will consume half as much energy when idle as when in full use. Printers, PCs, scanners and communications equipment are energy hungry. It is not rare to find more than 1.5 to 2 times the number of devices per staff. Printers set on people's individual desks are also common. ►

The first rule of waste reduction is 'Avoid', and this should be applied to ICT. Print management services will support a reduction in the number of printers on the floor. Using draft mode and duplex printing by default will result in reduction in paper and toner consumption.

Laptops are more energy efficient and can be transported in different rooms or outside the office when required for meetings, for example. In some cases, using 'thin clients' is much more efficient. The workload is based in the data centre, updates are much easier to manage, and the equipment can last up to eight years (which is double the common usage of a regular PC). If using PCs, lengthening the replacement cycle can go a long way towards reducing the yearly footprint of an organisation.

Advanced power-management features and applications can allow the ICT support team to service the computers on demand while still managing automatic shutdown of the equipment.

Start with measuring the ICT impacts as a baseline. This will allow you to measure the benefits of the green initiatives you will implement. It will also give you a base for more accurate business cases.

In the data centre

Average individual servers are consuming increasing amounts of electricity over time. According to InfoQ, before the year 2000, servers on average drew 50 watts of electricity. By 2008, they were averaging up to 250 watts. Analysts forecast that if this trend remains, the cost of electricity to power the server will be equal to or greater than the cost of the server itself.

We must add to that the cost of cooling/heating and the infrastructure, which is commonly averaged at 2.5 times the amount of power required by the equipment itself (PUE: power usage efficiency of 2.5), and you have a better picture of what the total cost of ownership for a server might be.

One of the key barriers to more efficient data centres is the lack of information that chief information officers possess when it comes to the energy they consume. According to the latest Australian Computer Society study, more than 72 per cent of ICT managers have never seen or never thought of looking at their power bill. Often, there is no separate meter available

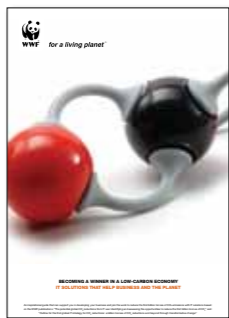
to measure the data centre footprint. On one hand, it means that it is difficult to obtain reliable metrics; on the other hand, it means that the impacts of purchasing decisions are not fully known and measured.

Look at consolidation, standardisation, virtualisation of servers. Review natural cooling and lighting options. Investigate cogeneration and trigeneration as part of the energy supply for greater efficiency.

ICT as an enabler

ICT is expected to "contribute vast changes in energy generation and distribution; building, lighting and heating; transport and industrial processes". In the SMART 2020 report, GeSI presents ICT as a solution that can singlehandedly save 7.8 Gt CO₂e in 2020, or 15 per cent of global emissions.

The World Wildlife Foundation established a list of the key areas where ICT can support organisations in their sustainable practices. It provides an overview of the areas where ICT can have an enabling effect such as dematerialisation, smart motor systems and industrial processes, smart logistics, smart buildings, and smart grids.



The SMART 2020 report lists a number of ways ICT can achieve emissions reductions. It can do so by:

- standardising energy and other environmental data across sectors
- monitoring information into the design and control for energy and raw material use
- accounting for energy and carbon, life cycle data
- rethinking current ways of operating, learning, living, working and travelling
- applying smart and integrated approaches to management of systems and processes.

In the manufacturing industry more specifically, manufacturing intelligence can significantly increase the efficiency of motors, fans, and engines by providing information to process and energy management and allowing refined adjustments in real time.

ICT can provide access to data on energy and supply chain processes. It manages and produces reports on metrics for carbon management, sustainability KPIs, and impact of action plans. It can reduce consumption of raw materials by using modelling and eco-design software. ICT can also enable innovative product service options.

ICT must be seen as a business technology rather than an information technology, and will possibly fulfil its goal of reducing the other 98 per cent of footprint it is not directly responsible for.

Suppliers and customers are also on a sustainability journey, and they are most probably in the process of determining what this means to them. Work in partnership with suppliers and with customers; they might offer solutions you haven't thought of. Set realistic targets that will help them adjust to your ICT sustainability policies.

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The Automotive Specialists

AUTODOM IS PROUD TO WORK CLOSELY WITH SUPPLIERS TO PROVIDE AN EXCEPTIONAL END PRODUCT TO CUSTOMERS.

Self-defined as 'the world of automotive manufacturing and selling', Autodom has become a supplier of choice to some of the biggest names in Australian motoring. While investment in other industry sectors is not precluded, the main focus for this company is growth within the automotive component industry – and Autodom is fast becoming a dominant force in this field.

Established as specialised automated alloy-welding business Kostech International in 1985, the business

expanded in 1987 with investment in engineering companies, gold exploration, and property and website development. Since that time, the company has continued to grow and diversify, becoming known as Autodom in 2007.

A significant part of the company's expansion was the development of aiAutomotive (Autodom's wholly owned subsidiary), which operates component manufacturing plants in both Victoria and South Australia. Due to a clever acquisition strategy whereby a number of smaller

manufacturers were purchased, aiAutomotive has become a leading manufacturer, employing over 400 staff members, with annual revenue in excess of \$125 million.

The Autodom business is further enhanced by its most recent acquisition of DAIR Industries, the full purchase being completed in August 2010. DAIR currently produces a range of complex, value-added metal assemblies for industry giants Toyota, Ford and Holden, with capabilities including metal stamping, value-added