

Chapter 4.10

Digital Green ICT: Enabling Eco-Efficiency and Eco-Innovation

Krunal Kamani

Anand Agricultural University, India

Dhaval Kathiriya

Gujarat Technological University, India

Paresh Virparia

Sardar Patel University, India

Pankaj Parsania

Anand Agricultural University, India

ABSTRACT

Information and Communication Technology (ICT) has become an irreplaceable component of practically every aspect of human activity with its impact buttressed by the omnipresent internet. While the developed world thrives on ICT capabilities, the developing economies are using it for leapfrogging into new levels of technological advancement. Modern ICT systems are made up of a complicated mix of people, networks, hardware and software. As their spread is increasing rapidly, issues such as energy, environment and related aspects have to be addressed ensure user satisfaction without damaging the ecosystem. This chapter focuses on green ICT aims to study

and practice use of computers and other ICT resources efficiently laying stress on factors like reduction of hazardous components, maximization of energy efficiency, enhancing re-cyclability and biodegradability.

INTRODUCTION: WHY ARE WE 'GREENING' ICT?

Information and Communication Technology systems (ICT) should be a core element of any organization's green strategy. Computers are an essential element in the delivery of various services; Hundreds of thousands of public servants and other people can use their desktop computers to work far more efficiently than we could have

DOI: 10.4018/978-1-60960-472-1.ch410

dreamed possible as recently as 20 years ago. However, they are often not explicitly recognized or incorporated into most sustainability plans. There is significant opportunity to capture value by designing and implementing a sensible green element within the ICT realm.

Information and Communication Technology (ICT) is a major user of energy and natural resources. The use and disposal of computers, servers and printers has to happen in a sustainable way. We have to do our best to ensure that the very systems that improve the lives of millions of people do not also have a negative impact on the environment.

The ICT strategy sets out the first steps we can take to reduce our carbon footprint. We have to set the world to look at our ICT in this way and we want to see changes taking place immediately. We want to see best green practice throughout - computers switched off overnight, printers defaulting to duplex, data centres efficiently cooled.

There are many simple steps that can be taken right now to improve the situation. We need to make sure these things happen and happen quickly. By turning off just one computer overnight we can save 235kg of CO₂ in a year. Over the whole estate the potential is enormous – turning off 500,000 computers at night would have the same effect as taking 40,000 cars off the road and these figures are increase every day.

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 Government should take initiative to achieve these goals.

GREEN ICT VISION

We all recognize the critical importance of Information and Communication Technology (ICT) both as a large consumer of energy and primary resources and as an enabler for environmental and cultural change.

The vision for ICT is:

- In line with the definition for Carbon Neutrality, the energy consumption of ICT on the office estate will be Carbon Neutral.
- ICT will be carbon neutral across its lifecycle.

ICT CONTRIBUTION

Energy consumption on the government estate is not falling as much as had been expected, one certain contributor is ICT. ICT is already pervasive in government buildings and across industry via outsourced government contracts. Office equipment is the fastest growing energy user in the business world. The Carbon Trust estimates that it consumes 15% of the total electricity used in offices, expected to rise to 30% by 2020, with around two-thirds of the energy consumed by office equipment being attributed to computers.

However the Green ICT agenda is not just about energy efficient ICT, ICT can also be used to generate environmental benefits elsewhere in other operations. It is a key enabler for most programmes and it should play a major part in reducing carbon emissions from other areas of all activity, for example through enabling tele conferencing and video conferencing, remote and home working.

Coupled with the cultural change and more energy efficient working practices, the use of ICT can reduce both building occupancy and travel. This has knock-on benefits as government and private sector's staffs takes these new behaviours and best practices home to their local communities. ICT can act as a powerful enabler for citizens and businesses to reduce their carbon emissions. But these changes are likely to require an increase in ICT investments, making it all the more important to ensure that the inherent carbon footprint of new ICT investments is significantly reduced.

6 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

www.igi-global.com/chapter/digital-green-ict/51729

Related Content

Correlating Mushroom Habitats and Geology in Grevena Prefecture (Greece) with the Use of Geographic Information Systems (GIS)

Stefanos Tsiaras and Christos Domakinis (2015). *International Journal of Agricultural and Environmental Information Systems* (pp. 1-14).

www.irma-international.org/article/correlating-mushroom-habitats-and-geology-in-grevena-prefecture-greece-with-the-use-of-geographic-information-systems-gis/123220

Estimating Spatially Consistent Interaction Flows Across Three Censuses

Zhiqiang Feng and Paul Boyle (2010). *Technologies for Migration and Commuting Analysis: Spatial Interaction Data Applications* (pp. 242-260).

www.irma-international.org/chapter/estimating-spatially-consistent-interaction-flows/42730

One-Dimensional Mathematical Models to Simulate Coniferous Tree Ignition

(2021). *Forest Fire Danger Prediction Using Deterministic-Probabilistic Approach* (pp. 1-12).

www.irma-international.org/chapter/one-dimensional-mathematical-models-to-simulate-coniferous-tree-ignition/278978

Improving a Growing Atlas

Tanya C. Haddad and Declan Dunne (2011). *Coastal Informatics: Web Atlas Design and Implementation* (pp. 267-274).

www.irma-international.org/chapter/improving-growing-atlas/45093

Social Networking Technology: A Frontier of Communication for Development in Developing Countries

Simeon Ozuomba, Gloria A. Chukwudebe, Felix K. Opara and Michael C. Ndinechi (2014). *Green Technology Applications for Enterprise and Academic Innovation* (pp. 102-117).

www.irma-international.org/chapter/social-networking-technology/109910