

## Chapter 7.3

# Decision Criteria for Green Management Information Systems

**Tagelsir Mohamed Gasmelseid**  
*King Faisal University, Saudi Arabia*

### **ABSTRACT**

The emphasis on climate changes and their consequences is moving to the front line agenda of government agencies, business organizations, industry, and research institutions. While the existence of beneficiary and/or regulatory considerations tends to be the main motivator, the perceived growing impacts of climate change on objectives and strategies is emerging as a new attention driving force. However, the perceived impacts and “pressures” felt have resulted into different interventions, analytical approaches and operational pathways. This growing attention has also been accompanied with the establishment of specialized organizations such as the United Nations Framework Convention on Climate Change, specialized programs at other UN agencies and dedicated research programs at educational institutions. While Greening ICT continued to be one of the major themes, emphasis tends to be made on technological and technical methodologies. As a result, there have been many shortcomings

with regards to the understanding and appreciation of the impacts of climate changes at different landscapes. The basic aim of this chapter is to investigate and discuss the context of ICT greening from another dimension by looking at the impacts of “greening” procedures on the capacity of management Information Systems to facilitate the realization of corporate objectives. The chapter advocates an approach for viewing the impacts of greening procedures on MIS by focusing on its entire architecture, information processing capacity and knowledge management considerations.

### **INTRODUCTION**

The impacts of climate changes are significantly influencing the approaches of organizations and governments to use resources, develop appropriate environment-friendly strategic frameworks and adopt a holistic approach to understand their operating environment. These impacts can be seen in the search for energy effective solutions, outsourcing processes and engaging into

DOI: 10.4018/978-1-60960-472-1.ch703

partnerships and alliances. At the same time, governments have been stepping up policy and legislative initiatives, assessment frameworks, and engagement in international conventions to cut carbon emissions and promote sustainability. Governments and businesses have a wide range of initiatives dealing with the impacts of information and communication technologies (ICTs) on the environment and climate change. Initiatives concentrate on greening ICTs by directly reducing the emissions of computers and servers. However, ICT applications through their capabilities to record analyze and report, also have an important role to play in reducing global warming and environmental degradation. However, only about one-fifth of green initiatives in business have measurable targets and their frequency is also higher in government lead initiatives rather than business associations. Even fewer governments and business associations focus on measuring the quality and impact of their policies and programmes (OECD, 2009A).

In addition to the direct effects representing environmental issues directly related to ICTs, their applications can greatly enable energy savings through the use of “smart” ICTs and sensor-based networks and the Internet. As enablers, ICT applications can contribute to more sustainable use of global resources, for instance by tracking and monitoring water use, biodiversity, land use, pollution. Advances in ICTs and other technologies facilitate behavioral and organizational changes towards sustainability (OECD, 2009B).

With reference to climate change and the importance of ICT greening, there has been a wide agreement on some issues including:

- a. The performance of ICT has to improve because it constitutes a major part of the solution in tackling climate change and related environmental challenges; its performance has to improve. Smart applications in transport, buildings and urban environments, energy generation, distribution and production need to be increasingly, ICT-enabled (ITU, OECD and GeSI (2009).
- b. There needs to be a better fit between environmental policies and ICT policy pathways to improve the contribution of ICT to the mitigation of climate change activities. While such fit is essential to ensure the orchestration of functions it also determines the extent of innovation to be undertaken and the drivers of its initiation and diffusion. Different types of innovation usually require significant changes in the behavior of employees, task systems, new knowledge to be embodied in policy formulation processes, status quo, and information, values, and incentives, among other things (Nystrom, Ramamurthy & Wilson, 2002).
- c. Better information is crucial for greater efficiency, to reap the undoubted benefits of ICT applications across the economy. The lack of information and ignorance about environmental issues will engender concern to be translated into both personal and political behavior changes (Bartiaux, 2008).
- d. Green growth policies need to address issues of equity and the digital divide through use of ICTs. Harnessing the capabilities of ICTs to empower consumers is essential to measure and manage individuals’ environmental footprints. To serve this purpose, affordable and relevant ICT applications need to be diffused and used globally.

ICT is an obvious target with its relentless growth and high turnover of technology, but it is also a key tool for delivering green services and implementing a green policy across the organization. Because ICT is directly and inexorably related to sustainable development, the formulation of an organization-wide carbon reduction strategy is gaining paramount importance in improving organizational green profile and competitiveness. Such organization-wide strategies will invariably include the Management Information Systems

12 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/decision-criteria-green-management-information/51778](http://www.igi-global.com/chapter/decision-criteria-green-management-information/51778)

## Related Content

---

### Internet of Things for Green Building Management: A Survey

Muhammad Waqas Nadeem, Hock Guan Goh, Mudassar Hussain, Vasaki a/p Ponnusamy, Muzammil Hussain and Muhammad Adnan Khan (2021). *Role of IoT in Green Energy Systems* (pp. 156-170).

[www.irma-international.org/chapter/internet-of-things-for-green-building-management/272394](http://www.irma-international.org/chapter/internet-of-things-for-green-building-management/272394)

### The Influence of Rural Ecological Environment Development by China's Industrialization Process

Zhenpeng Xia (2024). *International Journal of Agricultural and Environmental Information Systems* (pp. 1-17).

[www.irma-international.org/article/the-influence-of-rural-ecological-environment-development-by-chinas-industrialization-process/352038](http://www.irma-international.org/article/the-influence-of-rural-ecological-environment-development-by-chinas-industrialization-process/352038)

### Coupling Evaluation of Mineral Res, Eco-Environment, and Sustainable Economy in Guizhou With PCA and CA

Yisheng Liu and Jie Ye (2026). *International Journal of Agricultural and Environmental Information Systems* (pp. 1-17).

[www.irma-international.org/article/coupling-evaluation-of-mineral-res-eco-environment-and-sustainable-economy-in-guizhou-with-pca-and-ca/397041](http://www.irma-international.org/article/coupling-evaluation-of-mineral-res-eco-environment-and-sustainable-economy-in-guizhou-with-pca-and-ca/397041)

### WSN-Based Information Dissemination for Optimizing Irrigation Through Prescriptive Farming

Balakrishna K. (2020). *International Journal of Agricultural and Environmental Information Systems* (pp. 41-54).

[www.irma-international.org/article/wsn-based-information-dissemination-for-optimizing-irrigation-through-prescriptive-farming/262597](http://www.irma-international.org/article/wsn-based-information-dissemination-for-optimizing-irrigation-through-prescriptive-farming/262597)

### The Link Between E-Waste and Linear Economy Through a Bootstrap Rolling Window Analysis

Mikail Pehlivan and ahin Akkaya (2025). *Integrated Approaches for Sustainable E-Waste Management* (pp. 365-412).

[www.irma-international.org/chapter/the-link-between-e-waste-and-linear-economy-through-a-bootstrap-rolling-window-analysis/380254](http://www.irma-international.org/chapter/the-link-between-e-waste-and-linear-economy-through-a-bootstrap-rolling-window-analysis/380254)