



**HAL**  
open science

# Using a tool inspired by Balanced Scorecard to assess Green IT: An implementation within a regional hospital in France

Amélie Bohas

► **To cite this version:**

Amélie Bohas. Using a tool inspired by Balanced Scorecard to assess Green IT: An implementation within a regional hospital in France. 2nd International Conference on ICT for Sustainability (ICT4S), Aug 2014, Stockholm, Sweden. hal-01731171

**HAL Id: hal-01731171**

**<https://amu.hal.science/hal-01731171>**

Submitted on 13 Mar 2018

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

# Using a tool inspired by Balanced Scorecard to assess Green IT: An implementation within a regional hospital in France

Amélie BOHAS

amelie.bohas@univ-lyon3.fr, University Lyon 3, 6 Cours Albert Thomas – BP8242 69355 LYON CEDEX 08 FRANCE

1

## Introduction

### ICT regarding sustainability

#### ICT as part of the solution

- Substitution effects  
“An e-book reader can replace printed books”
- Optimization effects  
“Less energy is used for heating in a smart home”
- Dematerialized Economy  
“ICT has the potential to support sustainable patterns of production and consumption”  
(Hilty, 2008; Hilty & Aebischer, 2014 pp. 21-22)

#### ICT as part of the problem

- Directs effects  
“Accounts for approximately 2% of global CO<sub>2</sub> emissions, a figure equivalent to aviation” (Gartner, 2007)
- “13,5% of the French electric consumption” (Breuil et al., 2008 p. 2)
- “In 2005 from 20 to 50 million tons of WEEE<sup>1</sup> were produced in the world” (Berthoud et al., 2012 p. 161)
- But also induction, obsolescence and rebound effects



“Using ICT as a transformational technology” (ICT for sustainability)  
(Hilty & Aebischer, 2014 p. 17)

“Reducing the environmental impacts of ICT hardware and software” (Green IT/ICT)  
(Hilty & Aebischer, 2014 p. 17)

- ◆ More and more organizations tend to develop Green IT policies.
- ◆ **But how to assess the sustainability of ICT and the impact of these policies?**  
(Daly & Butler, 2009)

2

## Objectives

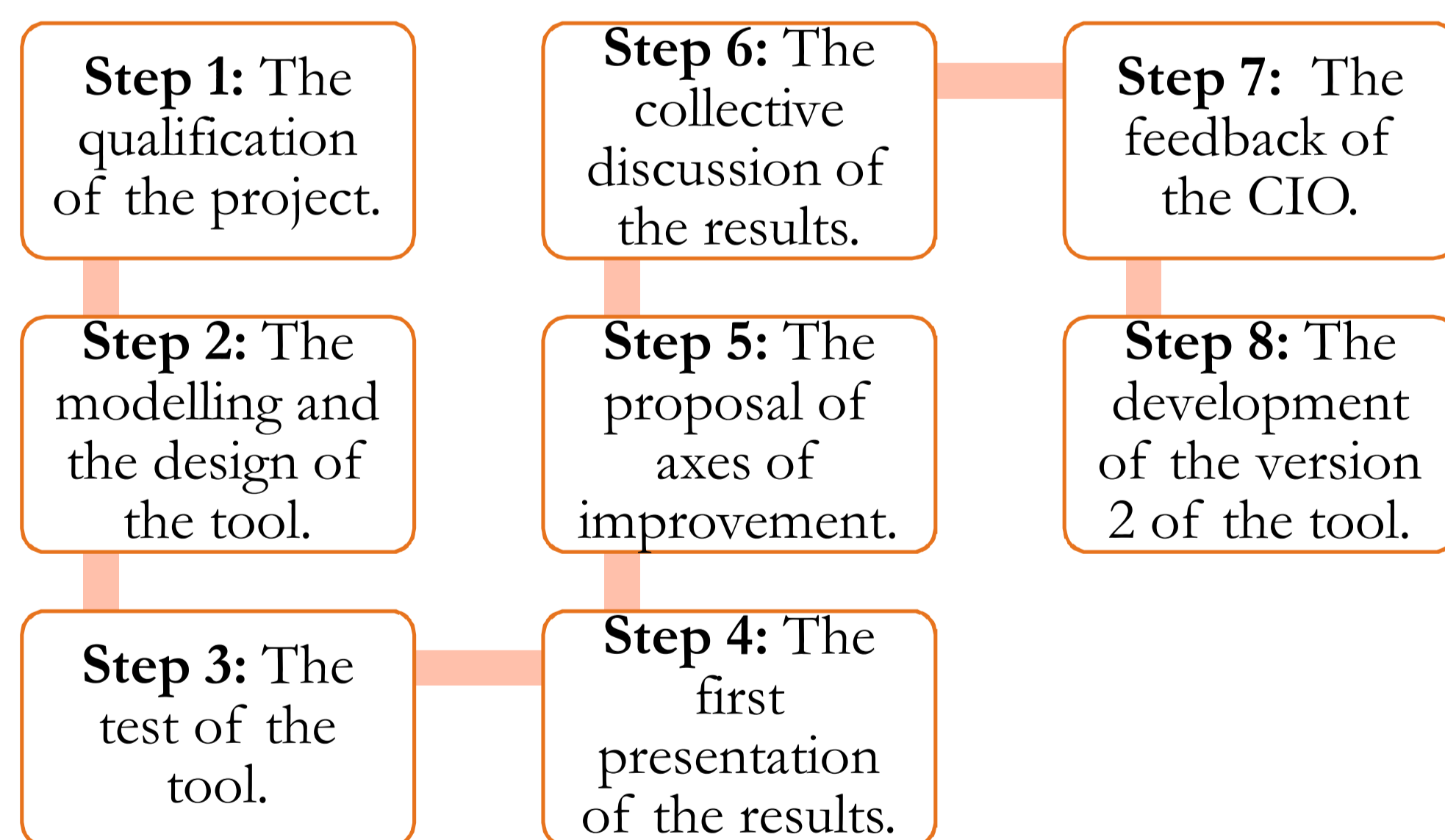
This research answers to these three main objectives:

- 1 • To devise a tool to assess the sustainability of ICT.
- 2 • To experiment the tool in various organizational contexts.
- 3 • To discuss about the relevance of this tool.

3

## Methods

- ◆ An **engineering research** (action research) in order to face the complexity of the problem and to design a tool useful for the collective action. It took place in 8 steps:



- ◆ The **choice of the organization** (a regional hospital in France) was made by the consulting firm, partner in the elaboration of this tool, during answers to calls for tender or operations of commercial conquest.

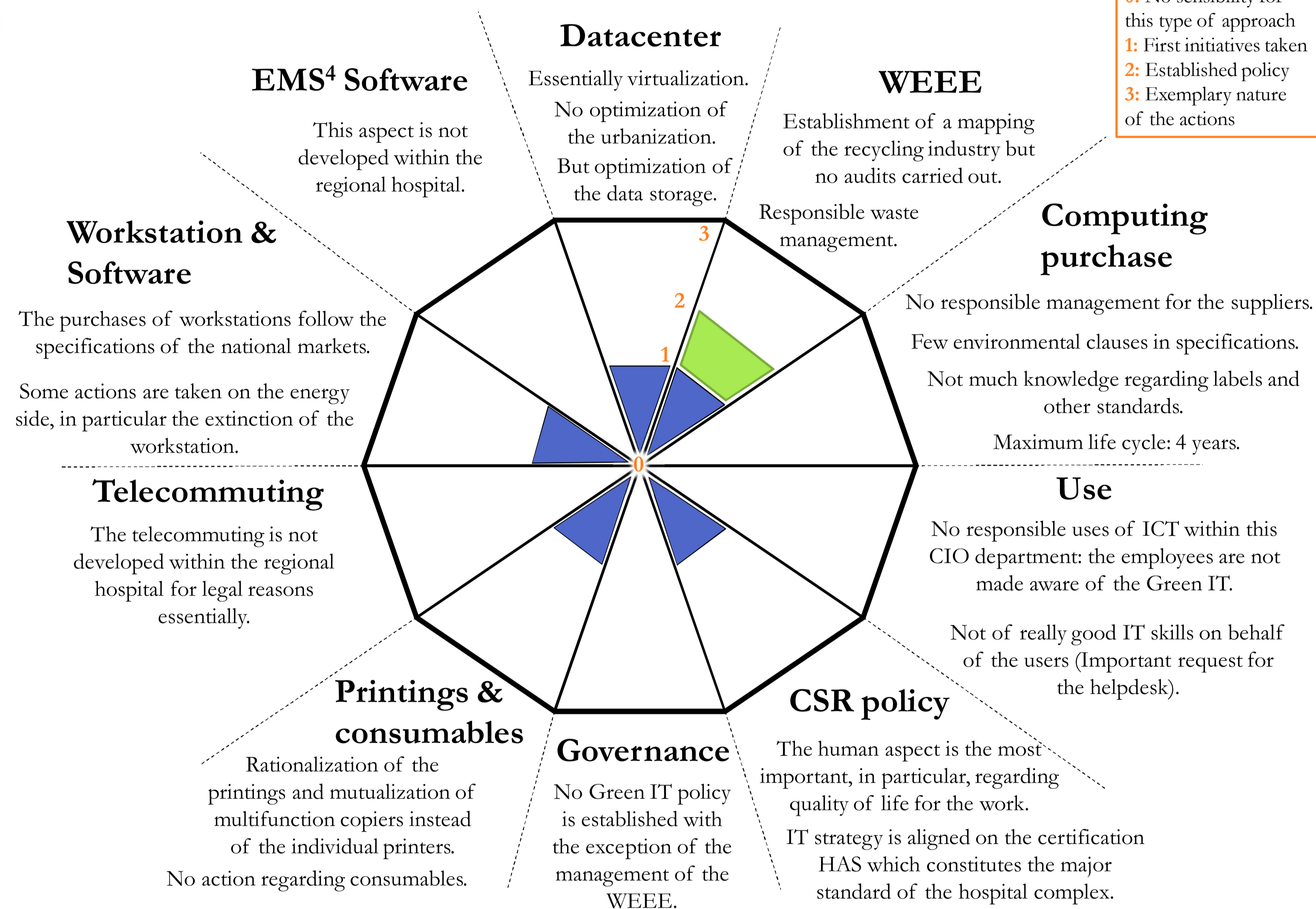
- ◆ **Characteristics of the case study made within a regional hospital in France:**

Sustainable Development policy	• Certification HAS <sup>2</sup> in progress with a part dedicated to SD. • Commitment HQE® <sup>3</sup> .
Organization of the CIO department	• 30 collaborators for 4871 employees. • 5 services (Hardware, Software, Customer, Projects & Coordination of medical secretaries).
Main stakes of the CIO department	• To draw up and implement the master plan. • To be certified as ISO 20000 compliant.
Green IT policy	• Not formalized.
Green IT initiatives	• Virtualization and mutualization of the servers. • Rationalization of printings and mutualization of printers.
Green IT projects	• Project of telemedicine.

4

## Results

- ◆ An assessment tool inspired by the **Balanced Scorecard (BSC)**. (Kaplan & Norton, 1992)
- ◆ **4 perspectives:** economic, environmental, human and system of management.
- ◆ Each is associated to **objectives, questions, indicators and ratios** allowing to estimate the **maturity on a scale from 0 to 3**. (Bohas & Bouzidi, 2012; Bohas, 2013; Bohas, Bouzidi & Chappoz, 2014)
- ◆ The tool includes **10 technical domains** which contain each of them several **sub-domains**.
- ◆ The data collected by the consulting firm within the hospital center allowed to measure the **maturity of ICT as regards sustainability** by technical sub-domain, by technical domain and by perspective.
- ◆ Here are the main results of the evaluation for the 10 technical domains:



5

## Conclusion

- ◆ To assess the sustainability of ICT we designed a **tool inspired by BSC**. (Erek, 2011)
- ◆ The experimentation of the tool within a regional hospital, associated to a previous one within a regional council, contribute towards validating the hypothesis of **relevance of the framework of the BSC** as a way of instrumentation of the Green IT to which it brings a **legitimacy** due to its strategic dimension and as it meets managers' approval.
- ◆ The results of the case study show that the **sustainability of ICT is little taken into account** except the statutory obligations (**conformity and not proactivity**).
- ◆ The major interest of this tool is not to provide an exact measure of the sustainability of ICT but to **make employees aware** of it and to lead them to reflect on this subject in order to **change their practices in a conscious way**.
- ◆ Perspectives:
  - To pursue the improvement and the test of the tool. The tests having been limited to cases stemming from the public management, it would be interesting to validate its relevance for the private sector.
  - To deepen the analysis of the performative capacity of this tool and to study in particular the “fabric of organizing visions”. (de Vaujany et al., 2013)

6

## References

- Berthoud, F., Balin, P., Bohas, A., Charbuillet, C., Drezet, E., Dubois, J.-D., Gossart, C. & Parry, M. (2012). Impacts écologiques des Technologies de l'Information et de la Communication. Les faces cachées de l'immatérialité. Groupe EcoInfo (p. 221). Paris: EDP Sciences.
- Bohas, A., & Bouzidi, L. (2012). “Towards a Sustainable governance of the information system (IS): Devising a maturity assessment tool of the eco-responsibility of IS inspired by Balanced Scorecard”, Conference HCC10, 27-28 September 2012, Amsterdam, IFIP Advances in Information and Communication Technology (AICT), ICT Infrastructures and Society, SPRINGER.
- Bohas, A. (2013). Vers une analyse de la relation systèmes d'information, développement durable et responsabilité sociale d'entreprise: l'adoption et l'évaluation du Green IT. Université Jean Moulin Lyon 3.
- Bohas, A., Bouzidi, L., & Chappoz, Y. (2014). Gouvernance des systèmes d'information et éco-responsabilité. Résultats d'une expérimentation menée auprès d'un conseil régional. In 3ème colloque de l'AIMAR, « Management public: et si les fins justifiaient les moyens... », 20 et 21 mai 2014, Aix-en-Provence, France (pp. 1-21). Aix-en-Provence.
- Breuil, H., Burette, D., Flüry-Hérard, B., Cueugnet, J., Vignolles, D., & Boisson, H. (2008). Rapport TIC et Développement durable (p. 96). Paris.
- Daly, M., & Butler, T. (2009). Environmental responsibility and Green IT: An Institutional Perspective. In 17th European Conference on Information Systems (ECIS) (pp. 1-12). Verona.
- De Vaujany, F.-X., Carton, S., Dominguez-Péry, C., & Vaast, E. (2015). Moving closer to the fabric of organizing visions: The case of a trade show. The Journal of Strategic Information Systems, 22(1), 1-25.
- Erek, K. (2011). From Green IT to Sustainable Information Systems Management: Managing and Measuring Sustainability in IT Organizations. In European, Mediterranean & Middle Eastern Conference on Information Systems 2011 (EMCIS 2011), May 30-31, Athens, Greece (Vol. 2011, pp. 766-781).
- GARTNER. (2007, April 26). Gartner Estimates ICT Industry Accounts for 2 Percent of Global CO<sub>2</sub> Emissions. gartner. Retrieved January 22, 2013, from http://www.gartner.com/newsroom/id/503867
- Hilty, L.M., Aebischer, B. (2014, in press). ICT for Sustainability: An Emerging Research Field. In: Hilty, L.M., Aebischer, B. (eds.) ICT Innovations for Sustainability. Advances in Intelligent Systems and Computing 310, Springer International Publishing.
- Hilty, L.M. (2008) Information Technology and Sustainability. Essays on the Relationship between ICT and Sustainable Development. Books on Demand, Norderstedt.
- Kaplan, R. S., & Norton, D. P. (1992). The Balanced Scorecard - Measures That Drive Performance. Harvard Business Review, 70(1), 71-9.

1. WEEE: Waste Electrical and Electronic Equipment.  
2. HAS: The Haute Autorité de Santé - or French National Authority for Health - is an independent public body which was set up by the French government in August 2004.  
3. HQE: High Quality Environmental standard is a standard for green buildings in France.  
4. EMS: Environmental Management System.