



KTH Architecture and
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Assessment of media and communication from a sustainability perspective

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Akademisk avhandling

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Abstract

This thesis aims to assess potential environmental impacts of media and communication and to contribute to the development of methods for sustainability assessment. Although the main focus is on printed and electronic media products and environmental impacts, a broader sector analysis is also included and social aspects are discussed. The thesis provides a review of different environmental assessment tools in order to better understand their relationships and the appropriateness of different tools in different situations. Life cycle assessment (LCA) is used to assess printed and electronic versions of newspapers, books and invoices. Results of the screening LCAs of newspapers and books indicate that when comparing printed and electronic versions there are benefits and drawbacks for both. For news and books read on e-reading devices with energy efficient e-ink screens, the main environmental impacts in the studies stemmed from the production of the device and partly from disposal, with the latter having the potential to reduce some environmental impacts through recycling of materials. However, there are data gaps regarding the production of the e-reading devices, most notably for the e-ink screen and the waste management of obsolete e-reading devices. Existing data on internet energy use are uncertain. The potential impacts from a hypothetical total change from paper invoices to electronic invoices in Sweden were assessed through a screening consequential LCA regarding greenhouse gas emissions and cumulative energy demand. The results indicate that emissions and energy demand could decrease as a result of a change. The screening LCAs performed indicate that users' practices could substantially influence the environmental impacts. Key factors which can influence results and comparisons of printed and electronic media products are total use of electronic devices, total use of printed media, amount and type of paper, energy use of electronic devices, potential printing of electronic media, electricity mix, and the system boundaries set for the assessments.

To get a wider perspective, a sector study of the ICT sector and media sector concerning global greenhouse gas emissions and operational electricity use was performed. It was estimated that the contribution to global greenhouse gas emissions in 2007 was roughly 1-2 % for each sector. To assess media and communication products from a sustainability perspective, social aspects should also be covered. The author participated in an international project group on social aspects and LCA, one outcome from which was guidelines for social LCA (S-LCA). In addition to providing guidance for S-LCA, another important role of the guidelines is to facilitate discussions, criticism and proposals for improvement and development of the methodology being developed.

The LCA and sector studies in this thesis are limited to direct and to some extent indirect environmental impacts. Further studies of the environmental impacts of more long-term changes in practices and potential structural changes, as well as potential social impacts, could provide important additional insights. This could increase the possibility of facilitating sustainable practices related to ICT and media.

Keywords: electronic media, e-reading device, print media, newspaper, book, invoice, information and communication technology (ICT), environmental assessment, life cycle assessment (LCA), social life cycle assessment (S-LCA), sector analysis.