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Material consumption in the healthcare sector: Strategies to reduce its impact on climate change—The case of Region Scania in South Sweden

Mårten Karlsson*, Dolores Pigretti Öhman

The International Institute for Industrial Environmental Economics (IIIEE), Lund University, P.O. Box 196, S-221 00 Lund, Sweden

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Abstract

The healthcare sector constitutes a major part of the economy of developed nations and consumes significant quantities of consumables. The Region Scania commissioned IIIEE, Lund University, to develop a management tool for strategic decision-making in order to reduce the climate impact indirectly derived from material consumption. The tool was streamlined to fit operational conditions at Region Scania and used to study four consumables to obtain a figure on their emissions of CO_2 from a life cycle perspective. Strategies to reduce the impact on climate derived from consumption were studied and recommended to Region Scania. It was concluded that considerable reductions of the impact on climate change could be achieved by implementing good housekeeping in working routines and by addressing green purchasing to prevent inefficient consumption patterns.

Keywords: Healthcare sector; Climate change; Environmental product policy; Life cycle thinking; Management tools for strategic decision-making

1. Introduction

1.1. Healthcare sector and the environment

Healthcare services are water and energy intensive, consume a great deal of hazardous and non-hazardous materials and are responsible for producing polluting emissions. For example, the Malmö University Hospital affiliated with Region Scania provides services to 150,000 patients a year, of which 50,000 stay at the hospital for at least one day and more than 24,000 undergo surgery. During the same period of time, the hospital consumes 242,000 m^3 of water, 37 GWh of energy and produces 1330 tons of biodegradable waste, 127 tons of industrial waste, 123 tons of hazardous waste, 164 tons of paper waste and 14 tons of glass waste [1].[1]

The development of the healthcare sector has been prominently guided by values such as patient and personnel safety and service quality. These values are so important to the sector that efforts to minimize environmental impacts derived from its activities are sometimes not prioritized or postponed.

The growth of environmental awareness and the development of stronger environmental regulations coupled with current needs to cut costs on public

* Corresponding author. Tel.: +46 46 222 83 11; fax: +46 46 222 95 17.
E-mail address: morten.karlsson@iiiee.lu.se (M. Karlsson).

[1] The Canadian National Office of Pollution Prevention estimates that the care and treatment of a patient in an average hospital in the developed world can produce about 5.5 kg of waste per day. On a yearly basis, it translates to over 400 tons of waste for a hospital with 200 beds. Canadian National Office of Pollution Prevention. Pollution prevention in the health sector, http://www.ec.gc.ca/nopp/docs/fact/en/health.cfm, 2004 Sept 15.

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expenditure have brought the health sector's environmental issues to the fore.

1.2. Healthcare in Sweden and Scania

Sweden has a decentralized healthcare system. The Central Government establishes basic principles for healthcare services while 18 County Councils, 2 Regions and the municipality of Gotland are responsible for financing and providing healthcare services to the population. To that end, they have the constitutional right to levy income taxes on residents (average 10.2%). In 1997, health expenditure in Sweden was 7.6% of GNP. There are 89 hospitals and 900 health centers in Sweden [2].

Region Scania employs 28,000 people to provide health, medical and dental care to its 1,152,000 inhabitants. The service is provided by 10 hospitals and some 100 health centers. The Region also subsidizes private doctors working on official care contracts or through the Act of Medical Compensation [3].

The provision of healthcare is a central responsibility of Region Scania. The Region is also responsible for regional development, working with environment and planning, research, trade and industry, public transport and culture.

1.3. Scania's environmental work to reduce climate impacts in the health sector

According to the national environmental quality objectives, Sweden will reduce its green house gas emissions by 4% by 2010 (average emissions during the period 2008–2012) and halve them by 2050 (compared with levels of 1990).[2] Region Scania wants to contribute to these objectives through its environmental work.

Region Scania actively carries out environmental work to reduce the impact derived from its activities and improve the environment. It has developed a detailed and modern environmental policy that takes into account current trends and approaches to environmental management such as environmental management systems, integrated approaches to environmental issues, life cycle thinking, setting of environment standards and the use of indicators. The policy contains specific targets as well as concrete working routines.[3]

In 2002, the Region commissioned IVL (The Swedish Environmental Research Institute) to prepare a report regarding the impact of its activities on climate change. The objective was to identify the most relevant activities contributing to the climate change and to prioritize areas and measures for environmental counteraction.

The report presented unexpected results, especially regarding the climate impact derived from material consumption in the health sector. In order to calculate the total impact of the Region's activities on climate change, the report identified four relevant areas: energy use (electricity and heating), transport of personnel and goods, public transportation and material consumption (mainly focusing on consumption in the healthcare sector of paper and plastic products, textiles used in operations and N_2O gas). Green house gas emissions allocated to material consumption were counted from a life cycle thinking approach, which included indirect emissions allocated to the production and transportation of consumed products. The report estimates that 6% of the total impact on climate change is due to transport, 20% to energy use, 33% to public transportation and 41% to material consumption [4]. Thus, material consumption in the health sector is, according to the report, the activity of the Region that contributes the most to climate change.

1.4. Background to the case study

In response to these results, Region Scania commissioned the International Institute for Industrial Environmental Economics to develop a management tool for strategic decision-making regarding material consumption in the health sector with the ultimate objective of reducing the Region's impact on climate change as well as its expenditures. The Region also required the Institute to indicate possible strategies towards the reduction of materials and products consumption and waste generation.

The commissioned assignment is unique because environmental issues in the healthcare sector were addressed much later than in most industrial sectors and references in literature on the subject is scarce. However, the reader may refer to another tool, in this case designed to evaluate toxicity of materials used in the healthcare sector. Rossi et al. presents a method for evaluating the environmental performance of materials used in hospital buildings and patient care [5]. The materials are evaluated across their life cycle based on their toxicity and end of life concerns. The method builds on four principles: life cycle thinking, pollution prevention, continuous environmental improvement and the precautionary principle.

Regarding life cycle assessment (LCA) and life cycle thinking as a tool to improve information available for decision-making in the purchasing of medical devices, Ison and Miller notes correctly that the healthcare sector prioritizes risk and price [6]. The authors point out that criteria for the selection and purchase of medical devices tend to be restricted to concerns about risks to patients

[2] The reader may note that the Kyoto agreement within EU allows Sweden to increase its CO_2 emissions by 4% by 2010.

[3] The policy can be accessed via internet: Region Skåne (Scania Region). Miljölänk Skåne (Environmental link Scania), http://www.miljo.skane.se, 2004 Sept 15.