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Assessing environmental impacts of manufacturing: technologies for informing design - paper

While the clothing sector is responsible for only 1.2% of the Australia's energy use, the amount required indirectly is 96.6% of this. This includes mining and harvesting of raw materials, refining and manufacturing, prefabrication and assembly and importantly transportation at all phases. Similarly, the clothing sector is only responsible for 3.3% of Australia's water consumption, the indirect requirements represent 87.7% of this. This also includes water used in mining, harvesting, refining, manufacturing, etc.

Therefore, while the environmental impacts of the clothing sector may be small in absolute terms, the relative impact of upstream supply chain is paramount. Consequently, it is important to be able to assess the indirect environmental impacts occurring 'upstream' through the supply chain. However, due to the complexity of the supply chain in terms of process and geography (sourcing, design, manufacture, distribution and disposal), the total environmental impact is difficult calculate. A framework to enable this complexity to be managed is therefore required.

The aim of this paper is to present a method for managing the complexity of the manufacturing supply chain to effectively inform the design process. Potentially a designer can know at sketching stage the environmental impact of an innovatively cut wool jacket. This could in turn inform and potentially reform the clothing manufacturing supply chain.

Rather than start from the beginning there are exempla in other fields of design and construction, which can be adapted and applied. Utilising methods developed for environmental assessment of the built environment, this paper will present a model of the environmental impacts of clothing manufacture in Australia. The model will focus on energy use, greenhouse gas emissions and water consumption. Its application to the manufacture of individual items will be demonstrated relating to the design process.

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Sue Thomas (presenter) is postgraduate coordinator in fashion at RMIT University. She has taught at universities in Britain and New Zealand. She is a regular broadcaster on fashion and popular culture on National Radio Australia. Her on going Ph.D. topic is ethics in the fashion industry, and recent publications have addressed ethics and responsible fashion design process and industry.
