

# “H&M Conscious - the conscious choice?”

## *Critical review*

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## General advice

The choice of topic sufficiently motivated, yet the explanation could be a little longer. In particular, the associated impacts to the growth of cotton could be more broadly discussed. Moreover, even though the main motivation of the authors is patent, a clearer introduction to it would be an improvement: providing references to justify the uncertainty of choosing “green” products or at least examples of why this is uncertain and sometimes misleading (perhaps explain what *greenwashing* is and give examples).

Regarding language, some sentences lack clear language and are structured differently from each other; however, overall the texts are easy to follow. Personal pronouns such as “we”, “us” should be avoided in scientific research if possible. It's recommended to keep paragraph lengths to 6-12 lines and sentences to 1-3 lines using commas for structuring the text. The assumptions are easy to follow; to improve the over-detailed list, some of the assumptions could be moved to data tables instead. Figure 1, 2, 4 and 5 are not mentioned in the text.

In terms of layout, captions for figures should be placed below and captions for tables above; the caption texts could be formatted differently from the normal text to reduce the risk for confusion. The caption text could include more information, especially in the graphs. The reference list is bigger than it should due to the line spacing. The appendix is not structured well and not easy to follow; borders and numbering should be added to the tables. Since the information in the appendix is difficult to follow, a suggestion is to add the detailed flowcharts constructed in SimaPro, this would increase the report's transparency. There are some paragraphs or sentences that are misplaced along the document. For example, the authors discuss data choices and limitations within the System Boundaries subsection, instead of delegating this to the Data subsection, inside Life Cycle Inventory Analysis. With respect to the report structure, the goal and scope definition of the project should be, according to the given instructions, sections in their own. While this is debatable, the fact is that the Introduction and the Goal section are perhaps too short. If the authors could provide a more thorough explanation and introduction to the topic, these sections could be re-arranged properly.

## Transparency and completeness

With regards to the completeness of the analysis, the study does not investigate water consumption during the production phase of the cotton (it is part of the cut-off criteria). The authors justify this decision by stating that rainwater is used in the fields to water the cotton crops, which does not play any contribution to the final impacts. However, this is not a reflection of the true situation: cotton fields are usually heavily irrigated, provoking draughts and abusive water reclamation in many producing countries, as many authors report (Chapagain, Hoekstra et. al., 2006; EJF, 2012). Furthermore, the authors also state that the environmental impact from the retail phase of the T-shirt life cycle is negligible, without providing any reference or explanation. All these aspects should be discussed more carefully, by giving the appropriate bibliographic references or at least pointing them out as assumptions or limitations, rather than exposing them as facts.

The study excluded cotton seeds from the process with the motivation that the seeds are not used in the production of a t-shirt, however it is not stated if the data is adjusted to this cut-off. This can greatly impact the results of the study since making 100 kg of cotton fibre also produces 162 kg of

cotton seeds (National Cotton Council of America, 2016). The allocation between these two co-products can affect the outcome of the study.

## Methodology

Overall the implementation of the LCA methodology is complete, however we find some parts where improvements are needed. Measuring the customized process called “WASHING” in Table 7 with the unit “tkm” is not explained and thus ambiguous. Using Wikipedia as a scientific source is often unheard of, instead it is recommended to make use of the reference list provided in Wikipedia.

## Results and conclusions

If “irrigation is responsible for a big share of the environmental impact”, why was not *water depletion* considered in the beginning of the document as an impact category to be assessed from the start? The results this report is showing are supporting the choice to include *water depletion*.

Normalisation of the results is useful, to put impacts in context and perspective. However, no explanation is provided in the report of what normalisation is, or why is it useful for analysing the impact assessment. Given that the intended audience of the study is the general public, we suggest to include a more thorough discussion of the normalised results. Also, if there are some impact categories that were chosen at the beginning of the project, such as the ones to be focused on, the results section should focus mainly on those categories. This can be done by excluding several impact categories in the characterization and normalization figures, ensuring that the necessary information is conveying without ambiguity.

There are several statements that lack references, or a more solid explanation; e.g. the fact that *water depletion* is an underestimated category in the normalisation step because the consumption patterns of water for average European citizens are very high. We propose the authors to support this statement by including necessary references. Another example is the statement regarding the growth of “fatty acids” that are needed to fertilise the organic cotton fields: there is no reference to support this claim and the reader does not know how to further investigate this fact.

## Improvements

With regards to the simplicity for the reader to understand the total life cycle of the two t-shirt, detailed flowcharts should be presented together with an updated design of the current tables in the appendix. Regarding the statements in the study, the authors can be consequent with the usage of references to substantiate their sentences. To increase the transparency of the report, we recommend the authors to mainly focus on the chosen impact categories in the presented figures.

## References

- A.K. Chapagain, A.Y. Hoekstra, H.H.G. Savenije, R. Gautam (2006). *The water footprint of cotton consumption: An assessment of the impact of worldwide consumption of cotton products on the water resources in the cotton producing countries*. Ecological Economics, Volume 60, Issue 1, 1. Pages 186-203, ISSN 0921-8009, <http://dx.doi.org/10.1016/j.ecolecon.2005.11.027>.
- Environmental Justice Foundation (EJF) (2012). *The True Costs of Cotton: Cotton Production and Water Insecurity*. Environmental Justice Foundation, London. Available online at: <http://ejfoundation.org/reports> [accessed 2016-01-01]
- National Cotton Council of America (2016). *Cotton: From Field to Fabric*. National Cotton Council of America, USA. Available online at: <http://www.cotton.org/pubs/cottoncounts/fieldtofabric/cottonseed.cfm> [accessed 2016-01-10]