

LCA of two different hand drying systems

A Comparative Life Cycle Assessment of non-reusable paper and reusable cotton towels

Date: 18 April 2008
Version: **Short version V2**
Project number:

Commissioned by: **Vendor bv**
Robert de Jong

Executed by: **PRé Consultants B.V.**
Main author: An De Schryver
Marisa Vieira

Signature

PRé Consultants bv
Printerweg 18
3821 AD Amersfoort
The Netherlands
Phone +31 33 4555022
Fax +31 33 4555024
web site www.pre.nl
Chamber of Commerce:
320 99 599



Contents

1	GOAL AND SCOPE	1
1.1	FUNCTIONAL UNIT	1
1.2	SYSTEM DESCRIPTION AND SYSTEM BOUNDARIES	1
2	METHODOLOGY	2
3	RESULTS	2
4	CONCLUSIONS.....	3
	REFERENCES	4

1 Goal and scope

Vendor has commissioned PRé Consultants to do a study on hand drying systems. In this study an environmental analysis of two types of hand drying systems is carried out.

The study has three main objectives:

1. The first goal is to compare the environmental profile of two hand drying systems: non-reusable paper towels and reusable cotton towels. The non-reusable hand drying towels are manufactured by Vendor. The data for the system of reusable cotton towels derives from the Öko Institut.
2. The second goal of this study is to identify improvement areas in the production phase of Vendor.
3. The third goal of the study is to provide communication opportunities for Vendor's clients.

1.1 Functional unit

The functional unit can be defined as the amount of hand dryings. *The functional unit is 10.000 hand dryings.* The use of 1 pull per 1 hand drying is assumed as the default value for every towel system.

1.2 System description and system boundaries

A. Reusable cotton hand drying system

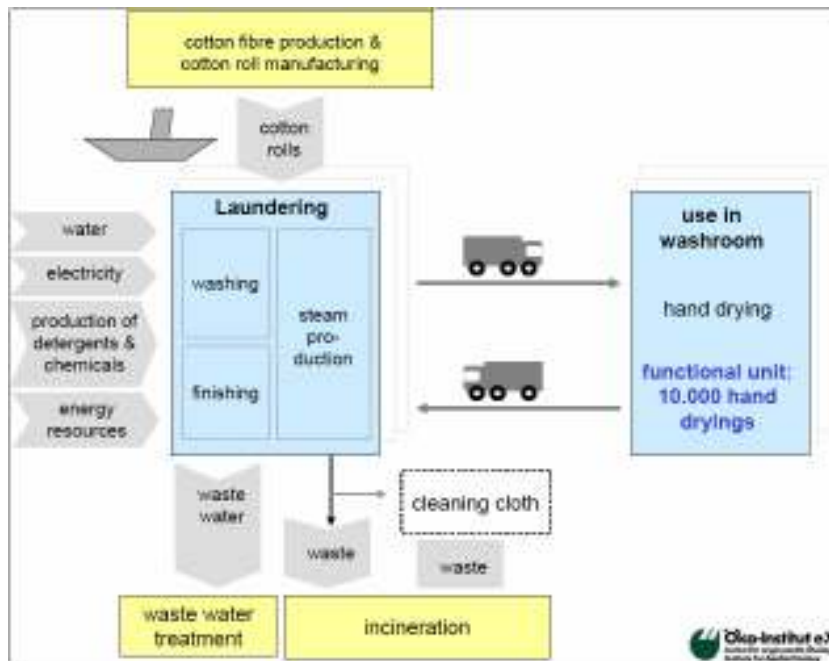


Figure 1 - System description of the reusable cotton towels hand drying system presented by Öko Institut [1]

B. Non-reusable paper hand drying system of Vendor

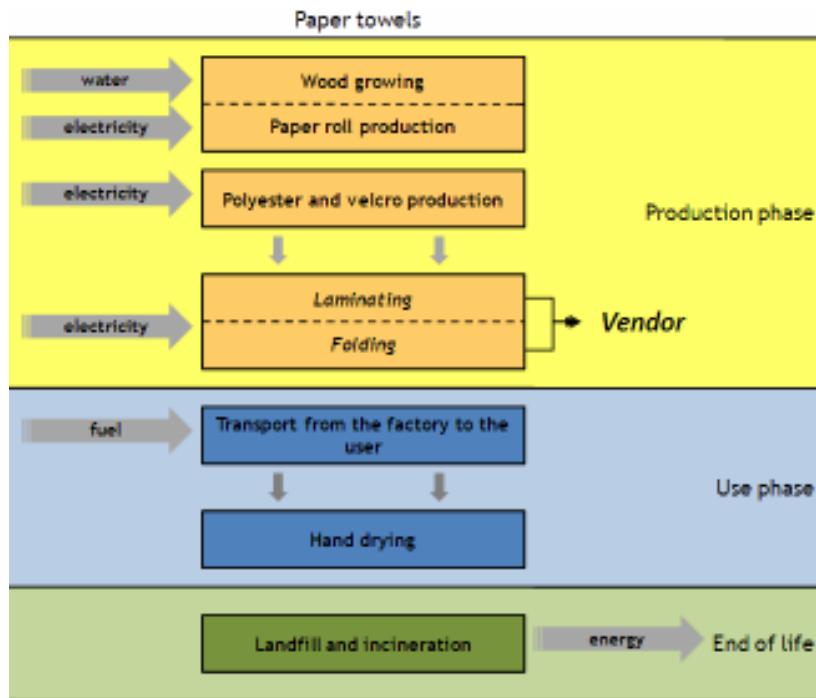


Figure 2 - System description of the non-reusable paper hand drying system manufactured by Vendor

The data for this study was provided by three different sources: Vendor; Öko Institut; and ecoinvent 2.0 database.

2 Methodology

In this analysis Eco-indicator 99 is used to calculate the environmental load of the systems under study. With this method, the environmental damage to human health, ecosystem quality and depletion of resources are all taken into account and can be expressed in one single score (Eco-indicator points).

3 Results

Comparison between the different hand drying systems using default scenarios

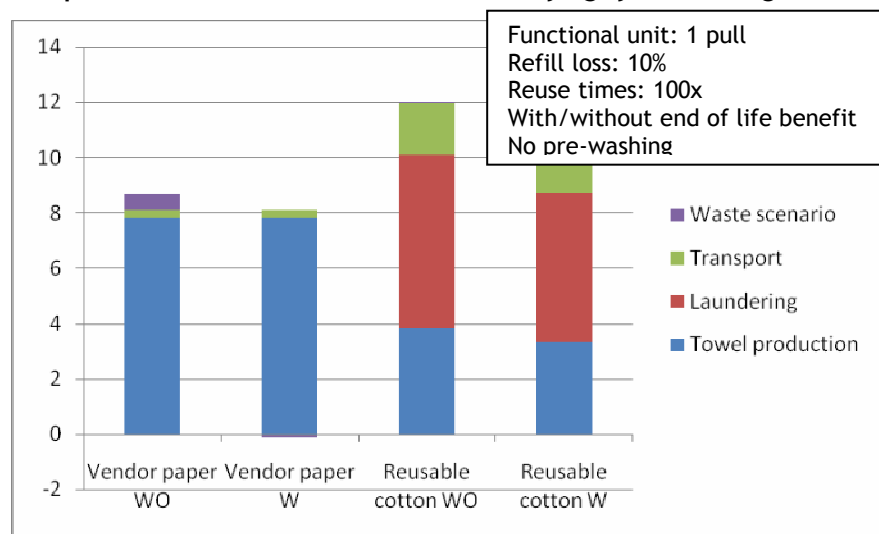


Figure 3 - Comparison between the environmental impacts of the different towel systems analysed per functional unit using default scenarios with Eco-indicator 99 H/A (in Points)

Detailed analysis on the environmental impact for which Vendor is responsible

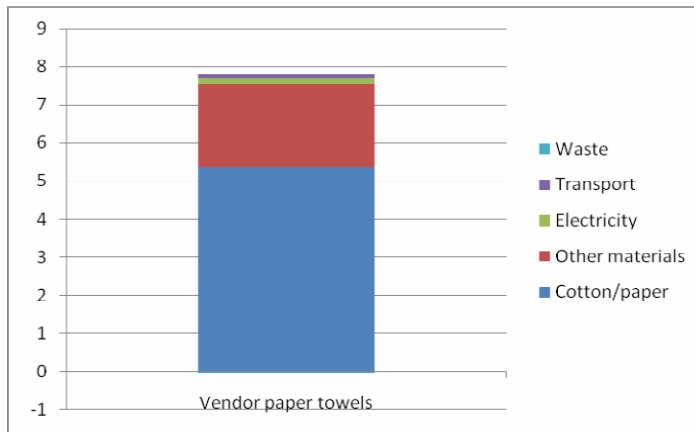


Figure 4 - Detailed environmental impact of the paper towels at production phase at Vendor per functional unit with Eco-indicator 99 H/A (in Points)

4 Conclusions

Results

If only one pull per hand drying is used the non-reusable paper towels have the lowest impact of the two hand drying systems analysed. Although this difference is only with 67% probability significant. The number of washing cycles doesn't influence the results. When a worst case scenario for reusable cotton towels is assessed, the results obtained are the same.

For the paper non-reusable towels the biggest burden is caused by the paper production. The reusable cotton towels hotspot is the laundering process (heating and soap).

In the paper towels' case, the pulp contribution is responsible for over 67% of the burden and the input of other materials for 27% of the impact. Around 40% of the production's environmental impact is fossil fuels and 33% is land use.

No further analysis is needed, unless Vendor decides to change the materials used for the towels production.

Areas of improvement

- Try to influence and reduce the towel consumption:
 - o add a comment at your paper towel device with the text - "Pull only once"
 - o Adapt the towel device, for example by enhancing the break when the towel is pulled.
- Explore the use of recycled materials:
 - o Use a certain percentage of recycled pulp, in order to make the difference with cotton towels larger and thus more significant.
 - o Add other recycled material such as polyester, if possible.

Items of communication

Only when consumers pull once, you assure that you are not worst than the reusable cotton towels.

References

- [1] Eberle, U., Möller, M. 2006. "Life Cycle Analysis of hand-drying systems: A comparison of cotton towels and paper towels". *Technical report*. Öko Intitut e.V. Freiburg, Germany.
- [2] SenterNovem 2005. "Nederlands afval in cijfers: gegevens 2000-2004. Uitvoering Afvalbeheer". 3UO0602, 185 p., Utrecht, The Netherlands - ISBN 90-5748-044-1.

