

# Environmental and ethical perceptions related to clothing labels among Norwegian consumers

Kirsi Laitala<sup>1,2,\*</sup> and Ingun Grimstad Klepp<sup>3</sup>

<sup>1</sup> National Institute for Consumer Research, Oslo, Kirsi.Laitala@sifo.no

<sup>2</sup> Department of Product Design, Norwegian University of Science and Technology, Trondheim

<sup>3</sup> National Institute for Consumer Research, Oslo, Ingun.G.Klepp@sifo.no

## ABSTRACT

Norwegian consumers know little about eco-labeled garments as almost none are available on the market. Therefore, consumers who want to make environmentally sound choices have to act based on other information. This article discusses the environmental and ethical perceptions of Norwegian consumers that are related to fiber content, maintenance, size, and country of origin labels. The analysis draws conclusions from a research project where in-depth interviews were used to collect qualitative data on consumer attitudes, knowledge, and habits. The results show that several different types of labels on textiles can be connected with environmental impact, both directly and indirectly. Sometimes wrong assumptions are made, such as when all natural fibers are considered to be always more sustainable than synthetics. The country of origin label is even used to evaluate the production conditions or quality. The care label affects selection of laundry method and has great environmental consequences, yet it is not usually perceived to include environmental information. Ill-fitting clothing is an important disposal reason, and many respondents wish for consequent size labeling and more information on the clothing fit.

**Keywords:** Clothing labels, Sustainability, Consumer Behavior, Environment, Size, Ethical perceptions

## 1. Introduction

Almost all clothing sold today has some attached information in the form of labels or hang tags. These are one of the important ways for consumers to receive information with regards to textiles and clothing. The legislation on this matter varies by country, but it is common for the mandatory information to include fiber content and maintenance instructions (Thiry, 2008). Additional often voluntary information that is commonly found may include the price, size, country of origin, environmental or ethical labels, information on the manufacturer or brand, health and safety warnings, technical performance, statement labels by producers, decorations, etc.

Labeling is a form of communication between two parties. It requires knowledge from both sides to be used and correctly understood, and has to be comprehensible, recognizable and believable (Li

et al., 2005). In some cases, the information is checked and approved by an independent party.

Environmental and ethical labels include various symbols, schemes, institutional and legal arrangements (Niinimäki, 2006). Rubik and Frankl (2005) distinguished between different schemes in the following way:

- mandatory labels (for example, the EU energy label relevant for household appliances),
- ISO-type I eco labels, classical second-party labels (for example, the EU-flower, German Blue Angel and Nordic Swan),
- ISO-type II eco labels, self-classification by industry or retailers,
- ISO-type III eco labels, quantitative environmental product declarations (EPD), and
- other relevant labels, including social and fair trade labels.

In general, only these direct environmental statements are connected to ethical or

\* Corresponding author. Tel.: (47) 22 04 35 77; Fax: (47) 22 04 35 04  
E-mail address: Kirsi.Laitala@sifo.no

environmental information given on textiles. However, almost no textiles with official eco-labels, such as the Nordic Swan, EU flower or GOTS, are available on the market in Norway. In addition, knowledge about eco labels on textiles is minimal. The exception is the human-ecological label Øko-tex standard 100, and some organic products. Therefore, in this article, we will discuss the environmental and ethical perceptions of consumers that are related to different types of non-environmental labels. Our material is based on a literature review and qualitative interviews of Norwegian consumers.

The article outline is as follows: we start by presenting the research method and continue with a combined section on the results and discussion, where we analyze each of the studied label types separately, starting from fiber content and going through maintenance, size and country of origin labels. At the end, we conclude and give recommendations for further research.

## 2. Method

The analysis is based on the clothing research project: “*From textile waste to material resources in a grave to cradle perspective*,” which was conducted for collecting information on experiences and opinions of consumers that concerned clothing use, maintenance routines (washing, drying and ironing,) disposal habits, and environmental attitudes (Laitala & Klepp, 2010). During the research, we saw that there was an interesting tendency of our respondents to describe environmental and ethical aspects of clothing based on labels that were not directly related to the environment, and this article is therefore a further analysis of the in-depth interviews for obtaining more information on this topic. These results are discussed in light of the literature on how labeled information affects the environmental contribution of textiles, and thereby whether the informants are using the information in a rational way.

We have chosen to use qualitative data in order to obtain deeper knowledge on consumer perceptions on the matter. Multiple choice options could have too much influence on the rationale behind informant responses on the relationship between labels and environmental matters, as they have often not thought about such in detail before the interviews and some of their selections may be made on a subconscious level. We were also

more interested in the reasons behind the different ways of considering the environment, and not solely on how a large percentage of Norwegian consumers thought that way. However, we will relate the qualitative material to the findings of the quantitative material in the project to some extent.

### 2.1 Sample selection

A strategic sample of 16 households was selected for the qualitative study. Respondents were selected from volunteers who had agreed to be contacted after the quantitative survey was conducted earlier in the project. The sampling criterion was to find individuals with different life situations, age, gender, civil status, and family size. The respondents also had varied economic situations and varying levels of interest in clothes, fashion and environmental issues. The background variables of the main respondents are listed in Table 1. In addition to the main respondents of each household, three of the cohabitants were interviewed, two female and one male, which resulted in 19 interviews.

Table 1. Background variables of main informants

Property	Variables	No. of informants
Sex	Female	13
	Male	3
Age	20-34	8
	35-49	6
	50+	2
Family	No children	7
	Small children	7
	Adult children	2
Relationship status	Single/living alone	6
	Living with partner	10
Area of living	West Oslo	5
	East Oslo	3
	Other cities	8
Nationality	All Norwegian	12
	Foreign house-hold member(s)	4
Education	Vocational	1
	Bachelor level	6
	Graduate level	9
Employment situation	Working <sup>1</sup>	12
	Student <sup>2</sup>	3
	Retired	1

<sup>1</sup> Three of them only work part time

<sup>2</sup> All three students had part time jobs

## 2.2 Interviews and analysis

A semi-structured interview guide was used, where the topics were fixed, but not the exact order or wording of the questions. The questions were formulated in a manner that made the informants describe and reflect on their experiences in the form of a conversation. The interviews took place at the homes of the informants and lasted on average between 1 and 2 hours. The interviews were recorded, transcribed, coded and analyzed with ATLAS.ti software. All quotations from the interviews are given with age and a fictional name of the respondent.

## 2.3 Limitations

The distribution of respondents is by no means representative of the population, but a strategically selected sample (Eneroth, 1984). There is evident overrepresentation of females, respondents below the age of 35 and respondents with higher education than the average Norwegian population. During the recruitment phase, several men and the elderly were contacted, and some were willing to participate, but left the study before the interviews either due to illness or other reasons. We still believe that this wide selection criterion gives examples of different consumers who are suitable to discuss the project research questions.

## 3. Results and discussion

### 3.1 Fiber content

The labeling of fiber content is mandatory in many countries, such as the USA, Mexico, Canada, as well as the EU area. In Norway, the labeling has been mandatory for decades. This legislation only applies for the fibrous part of the garment and should therefore not be confused with content labeling, which is used, for example, for labeling food ingredients. For instance, a garment can be laminated and include over 50% of non-fibrous content, and this is not covered by fiber labeling requirements. This was not completely understood by some of our informants. When the interviewer asked Pia (59 years) on whether she missed information about the chemical contents of textiles, she answered: *“No. And it could also be that we... We should get more education on what kinds of chemicals are used in synthetic fabrics, in clothing”*. She was not the only one who was confusing fiber labeling

with content labeling, and assumed questions related to use of chemicals in textiles to refer to synthetic materials.

Studies show that different fibers tend to have their own specific areas where they have the largest environmental effect: the growth of conventional cotton requires high water, pesticide and fertilizer consumption (Grose, 2009); merino wool production requires large land areas (Russell, 2009); and polyester requires non-renewable resources and high energy consumption during fiber productions which contributes to increased CO<sub>2</sub> emissions (Madsen et al., 2007). Some fibers have a smaller environmental impact in the production phase, such as recycled or organic versions of cotton and wool, or Tencel lyocell compared to regular viscose (Made-By, 2011). This means that consumers can make environmental decisions based on fiber labeling, although only at a limited level as it is difficult to compare different environmental impacts, such as use of water and harmful chemicals, and there are even great variations in production conditions between similar fiber types depending on the methods used. Different fibers are also maintained differently, which causes variation in energy consumption during use. For example, wool is washed at lower temperature and less frequently than cotton (Laitala et al., 2012). The later stages of the life cycle are often not included in the comparison platforms for environmental impacts from the same fiber (Kviseth, 2011). This together with the large geographical variations makes a general comparison between the environmental impacts of the fiber types unreliable.

The majority of our informants checked the fiber content label in a purchase situation if they were uncertain of the garment content. If it felt like regular cotton, the respondents would usually not look for the label. The fiber label was most commonly checked when there was uncertainty if something was made of wool, a wool mixture or not wool at all, as then the fiber content was perceived as important information. It was also obvious that many respondents felt that they did not feel that they knew enough of different fiber types to use the information. As described by Pia from earlier: *“Clothes that are marked synthetic, such as acrylic, cordel, and a lot more different names, we have no idea what they really are”* and 48-year-old Nina: *“I do not know what polyester is. Plastic? And I do not really know what lycra is. And I think I know that viscose is a kind of cotton”*

that has been processed, but I do not know". In these cases, the label would not help to provide any additional knowledge as the words that were used would not have any meaning besides maybe a rough classification of natural fibers, such as cotton and wool to a diffuse group of "synthetics".

There was variation in level of knowledge in terms of sustainable clothing purchase habits. This was especially evident in the matter of fiber selection: "Well, I know that cotton, for example, pure cotton, is more environmentally friendly than blend products or 100% synthetic [...] Environmentally friendly clothing consumption ... Hmm ... it must be that it is made mostly of wool and cotton" (Pia, 59 years). She considered all natural fibers to be automatically better for the environment than synthetics. Some respondents had heard that conventional cotton production has detrimental consequences for the environment. "So the only thing you have heard of, it's organic cotton, and that cotton production can be very harmful and so on. But on the other hand, there is cotton in almost all the things that I own. [...] So the consequence is that in practice I do not really care so much about it either, because I feel that I do not have a real choice anyway. And I have also considered buying a few things that have been organic cotton, but then I had some bad experiences, that they became somehow completely formless very fast, and it really was not so practical" (Camilla, 29 years). Camilla knew that traditional cotton production was bad for the environment, but had some negative experiences with using organic cotton. As she still wanted to use cotton, she chose to not act on this knowledge. The dominance of cotton in the clothing market was also obvious, as several of the informants stated that they mainly only used cotton clothing such as t-shirts, shirts and jeans, and none of the interviewed respondents refused to buy regular cotton, even if they knew about the sustainability issues related to cotton production.

### 3.2 Care labeling

Even though the production phase has great environmental impacts, many life cycle assessment studies on clothing show that the use phase is the most energy-demanding (Dahllöf, 2004; Madsen et al., 2007). Global clothing production is estimated to cause around 330 Mt of CO<sub>2</sub> emissions per year, whereas the use phase adds another 530 Mt of CO<sub>2</sub>, which cause a total effect of 850 Mt of CO<sub>2</sub> per year. This equals to

about 3% of the global CO<sub>2</sub> emissions (Carbon Trust, 2011). Therefore, consumers can affect the environmental impact of clothing through the maintenance methods that they select. Care labels tell the user how to take care of the garment so that it can be cleaned without losing its properties. The selection of care methods can be used to reduce energy consumption during use, for example, by recommending low washing temperature or avoiding tumble drying (Figure 1). Correct maintenance can also potentially increase the lifetime of clothing (Laitala et al., 2011a). Care symbols are standardized by the International Organization for Standardization (ISO 3758, 2005) and GINETEX (Ginetex, 2011).

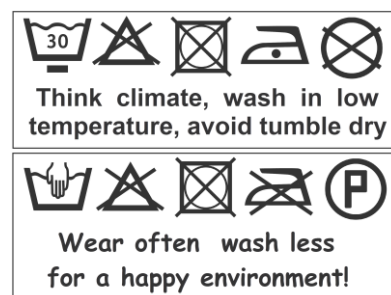


Figure 1. Examples of care labels with environmental messages

Selection of textile maintenance methods has great environmental consequences, but none of the informants directly related care labeling to environmental aspects, and they had not thought about lowering the temperature or washing less frequently for reducing energy consumption.

Not all informants read the care labels, and many of them trusted their own earlier experiences based on similar garments on how to maintain the clothing instead. If the label was checked before purchase, it was for garments that they had some doubts about that may have to be washed by hand or dry cleaned. Many informants did not blindly trust the labeling, and had often experienced that garments tolerated washing in the machine even if they were labeled with hand wash or dry cleaning, or could be washed at warmer temperatures than the label indicated. This was described, for example, by 39-year old Jenny, mother of three small children: "Children's clothing that needs to be cleaned a little rough, that is when I check if they tolerate it. And even if it says 40, they must often tolerate 60 here anyway" (laughs a little). These results are similar to a German study made by Henkel, which revealed that 58% of the respondents trust their personal experiences in

clothing maintenance. They also showed that the laundering and ironing symbols are rather well recognized, but symbols related to bleaching and dry-cleaning are less understood (Schiller, 2011).

Most respondents had not thought about lowering the washing temperature in order to save electricity, although some washed at lower temperatures, but then mainly in order to save the clothing from wear and tear. Many assumed high washing temperature was required for appropriate hygiene on some products: *“I wash at 90 degrees when I wash things like cleaning rags, towels, and bed linen, I do that. It may not be as environmentally friendly but I think it's nice to think that bacteria get boiled away. It may be too much, I don't really know”* (Diana, 27 years). For most respondents, the temperature selection is mainly based on habit.

Another way that care labeling can influence the environmental impact of laundering is whether the garment can be washed together with similar items or needs to be separately washed. In a textile waste project survey, 64% of the respondents said that they washed garments labeled with “wash separately” together with similar colors, whereas 22% washed these items alone (Laitala et al., 2012). Modern washing machines used in Europe have fuzzy logic control, which means they reduce the amount of water and hence energy consumption when the machine is less than completely filled. Even though automatic water reduction takes place, it has been shown that it is more resource demanding to wash with an unfilled machine. When only one garment (about 0.5 kg) was washed, the machine could still use 69% of the energy and 50% of the water of a full machine (Laitala et al., 2011a). Therefore, the common warning text on care labels can have great consequences for energy use during clothing maintenance.

Dry cleaning is an alternative to washing, but also has environmental impacts due to the harmful chemicals that are used in traditional processes, as well as energy required for the transport of clothing (Udasin, 2011). However, clothing that requires dry cleaning are usually cleaned less frequently than clothing that can go through the regular laundering process. On average, Norwegian households use less money on dry cleaning yearly than it costs to clean a dress, which means that many households do not deliver anything for dry cleaning every year (Brockfield,

2009; Statistics Norway, 2010). Ian, 40, checked the care label when he has doubts on whether the garment can be washed: *“It should not be difficult to wash them. It makes the clothes less practical for me, and it is one of the reasons why I do not use suits. It costs money to use the suit, you must send it to dry cleaning. And dry cleaning is not good, because they use awful lot of chemicals. So I try to be a little... well not directly environmentally conscious about it, it's probably mostly a question of the costs”*. He would like his clothes to tolerate at least a 40°C washing, and uses that as a selection criterion in purchasing situations. Resistance to dry cleaning is widespread in Norway and the environment is used here as an argument (Klepp, 2003), although other reasons may be just as important.

### 3.3 Size labeling and fit

The size label is one of the most important pieces of information that consumers check at the point of purchase, but it is not mandatory in most countries. Many different systems are used side by side (Figure 2), and variations within clothing sizes that are labeled to be the same size have been documented by several studies (Chun-Yoon & Jasper, 1993; Faust et al., 2006; Kinley, 2003; Laitala et al., 2009; Sieben & Chen-Yu, 1992).

The development of an international sizing standard for clothing started in 1969 and the first international standard for clothing size designations including definitions and body measurement procedures was finally published in 1977 (ISO 3635, 1977). The European committee for standardization has adopted a modified version of this standard into their work (EN 13402-1, 2001), and is now working further to develop a common European coding system (prEN 13402-4).

Unreliable size labels and clothing with poor fit can lead to mistakes in purchases, which in turn can increase the environmental impact of clothing that has to be disposed when it is not suitable for use. Several studies have shown that consumers often experience problems with clothing size and/or fit, and it is a common reason for clothing disposal in addition to other reasons such as changes in clothing appearance, and taste-related issues (Domina & Koch, 1999; Klepp, 2010; Koch & Domina, 1999; Laitala & Klepp, 2011). Size and fit are more problematic for women's clothing, which could be seen in a study of

clothing disposal reasons where poor fit was related to 22% of women’s disposed garments, as opposed to 9% of men’s garments. In the same study, about 18% of all collected garments to be disposed had never been used or only used once or twice, often due to poor fit (Laitala & Klepp, 2010).

<b>USA M</b>	<b>D 40</b>	EUR 42
<b>CDN M/M</b>	<b>F 42</b>	D 40
<b>GB 14</b>	<b>I 46</b>	USA 10
<b>E 40</b>	<b>J OT</b>	MEX 9
US XL	<b>M</b> <b>40/42</b>	<b>M+</b>
CAN TG		<hr style="width: 50%; margin: 0 auto;"/>
D 42		<b>46/48</b>
I/E 46		
F 44		
UK 16		
<b>E-F 42</b>	<b>D 40</b>	<b>IT 46</b>
<b>USA 10</b>	<b>MEX 9</b>	<b>UK 14</b>

Figure 2. Examples of sizing systems that are used side by side on women’s clothing purchased in Norway

A recent Nordic study on clothing size showed that there are great variations in size labeling and consumers have problems in trusting the size codes (Laitala et al., 2011b). Only one percent of respondents could always use the same size, and trouser measurements indicated that a pair of trousers labeled as large could be smaller than another pair labeled as small. There were the most variations in women’s large sizes, which indicate that the grading process may be one of the reasons for causing the differences. Consumers were most dissatisfied with labeling systems that were foreign, as they were not familiar with them, as well as children’s systems that were based on age. Some informants, mainly women, wished for more information on fit in addition to basic size. One of the most missed fit characteristics was different trouser lengths and their labeling (Laitala et al., 2011c). Another study has shown that consumers prefer informative size labels that indicate body measurements compared to the ones that do not (Chun-Yoon & Jasper, 1995). This could also be seen in our study, where 25-year old Barbara used to buy clothes online, but had stopped due to problems with size and fit: “It is often really wrong size and fit and ... And the clothes are so different when you try them on, so ... I have made some mistake purchases on the internet”. However, when problems related to

sizing are discussed, the main arguments are usually economic, not sustainability related.

### 3.4 Country of origin

The country of origin labeling is mandatory in the USA, but currently not in the EU (Federal Trade Commission, 2005). However, the labeling is under evaluation for clothing imported to the EU (IMCO, 2011, OTEXA, 2011). In some countries, it is obligatory to label the garments with the manufacturer, importer or distributor name. In addition, the using of brands is common in the marketing of textiles.

On textiles, labeling the country of origin is also sometimes problematic due to the long chain of production, including several stages such as fiber production, spinning, weaving, dyeing, finishing, sewing, marketing and design. Therefore, the label easily becomes inaccurate and unreliable.

Very few of the informants read the country of origin label, even if it was available. When it was read, the information was usually connected to the possible ethical problems in production, or varying levels of clothing quality. They did not connect it to local production with environmental advantages due to shorter transport distances, which has gained popularity in Norway and other European countries within the food sector (Vittersø & Jervell, 2011). A 30-year-old student, Emma, described her attitude to the country of origin label: “No, I do not really check it. Although I think it is good to buy, for example, Nordic clothes, if I could afford them (small laugh). But otherwise, it's very much China and Bangladesh. I think, if I had heard news that worker rights in one country in particular were extremely negative, I would try to avoid that country”. When 32-year old Heidi was asked whether she checks the country of origin label, she answered, “No, it's not interesting. I know that I get such a bad conscience then, that I have to go home. [...] I would have liked to have the financial ability to purchase my clothes somewhere else. [...] I would rather have had my clothes tailor made. I would like that, because then I would know where they came from, and have some assurance that both the fabric and handicrafts were of good quality. I imagine that then I could have them a little longer as well, with the possibility to adjust/mend and that they would have a fit that I like. But that's far out of reach financially”. Forty-six year old Karl said that he

does not check the country of origin label either, but that: *“I just think of those poor workers who cannot possibly earn much from this”*. This and similar responses indicate that consumers were more interested in how clothes are produced than solely where they are produced.

#### **4. Conclusion**

We have found the same lack of knowledge as Connell (2011). Consumers assume that natural fibers are environmentally preferable to man-made materials. Some respondents also assume that fiber content would indicate the complete chemical content of the garment, which means that labels in one area are interpreted to mean something else.

Not all respondents read the fiber content and care labels, and many of them trust their own earlier experiences based on similar garments on how to maintain the clothing instead. In contrast to fiber labeling, the care label is not directly related to environmental questions.

Size and fit issues are among the most important clothing disposal reasons. Size labeling could be improved through standardization of measures, as well as increasing the information on fit. This could contribute to fewer mistake purchases and thereby reduce the total environmental impact.

Two essential themes for reducing the environmental impact of textile consumption are lower energy consumption during use and longer lifespan of clothing. There is no labeling that directly addresses these questions. The care label provides some relevant information. However, the important issue on how easily the garment gets dirty and thus required washing frequency is not included. Another essential matter that is not labeled is technical durability. There exists a quality label for upholstery fabrics in Norway, but no similar label for clothing. Some consumers are using other types of labeling as indications of quality, such as fiber labeling and country of origin, even though these provide no direct information about this issue. This was also seen in a study by Cooper et al. (2010), where British consumers assessed clothing quality based on price and brand, and assumed it to reflect durability.

An essential work ahead will be to see how the clothes can be labeled to improve consumer

ability to make informed choices and how to inform consumers so that they will be able to convert their environmentally friendly attitudes into actions.

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