False Promise or Promise with a Fault?

Deciphering the Effectiveness of Eco-Label Governance in the German Textile Market

Markus Zwick

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Submitted May 16, 2016

Supervisor: Dr. Barry Ness, LUCSUS, Lund University

Abstract

An understanding of the inherent effectiveness-potential of environmental product-labels is important because of the growing presence of these labels as governance regimes, especially in the textile market. The proper governance of eco-labels has the potential to assist with the transformation to more environmentally friendly consumption, but not enough is known about the inherent qualities that make a label effective or ineffective in communicating scientific environmental information. In this thesis, I study eco-labels and their potential effectiveness as a governance mechanism towards more sustainable consumption. Specifically the study encompasses six labels present in the German textile market with the aim to evaluate their inherent effectiveness-potential in conveying environmental information to consumers.

Empirical material was constructed by rating each of the four indicators: credibility, salience, legitimacy and awareness, on a *Likert* scale for each eco-label. The data to inform this rating resulted from a review of the available scientific and organizational literature. The results have been visualized using data tables and radar diagrams.

The results of this study accumulate to show that the eco-labels considered here simply tell an ineffective story to the consumer! They have a low overall effectiveness-potential in conveying information regarding the sustainability of textiles. No label considered in this study attained more than 67% of its total potential effectiveness showing that there is a large gap between the prospects of this governance scheme and the way it is currently functioning. The lowest overall performer is the Fairtrade® textile label. The Non-State-Market-Driven (NSMD) governance system has a series of shortcoming that are partly responsible for this poor performance. A revised, theoretical governance approach combining decentralization theory with incorporated transgovernmentalism is proposed with the intent to maximize the positive and minimize the negative qualities of the NSMD model. Furthermore, this study shows that the current approach to eco-labeling falls short in the knowledge creation process for the consumer. This is due to the lacking cohesion of the message they portray.

This study is important because it addresses a knowledge gap that exists within the field of product labeling. Simultaneously this study identifies key shortcomings that eco-labeling organizations can take advantage of to enhance their effectiveness and increase sustainability in the textile market.

Keywords: Eco-Label, Effectiveness, Blue Angel, Bluesign, GOTS, EU Ecolabel, Fairtrade, Textiles, Germany, Product Certification, Governance, Decision making

Word count (thesis): 13,228

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Thank you to my family and friends for your continuous encouragement. You have creating an inspiring atmosphere while presenting a fantastic and necessary distraction from my work.

I am sincerely grateful to the faculty at the LUMES program for the highly stimulating educational experience that cumulated in this thesis. You enable us to think for ourselves while encouraging us to work hard and do our best.

A big “Thank You” also goes to Lund University. The facilities and infrastructure provided by the institution are fantastic and very conducive to the work created here.

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1 Introduction

"Honestly, we don't know how to best tell our sustainability story to our customers" (C. Törnberg, personal communication, March 10, 2016).

The question of how to effectively communicate environmental information with a lasting impact on consumers is not new. Zane, Irwin, & Reczek (2013) have shown that denouncing consumers for their unsustainable behaviors often backfires. Furthermore, there is extensive evidence that information presented to consumers does not automatically lead to corresponding action (Haines, Kuruvilla, & Borchert, 2004). Yet, companies continue to invest in information campaigns regarding environmental and health related topics especially via eco-product-labels (Galarraga Gallastegui, 2002). This study focuses on the effectiveness of this governance mechanism in regards to the consumer.

Labeling programs generally aim to encourage more environmentally friendly production of goods while communicating information to the consumer to stimulate different purchasing behavior. After the Rio Earth Summit, Agenda 21 identified eco-labels as one of the key pillars for an international shift towards more sustainable consumption (Clancy, Fröling, & Peters, 2015). However, as Hustvedt & Dickson (2009) argue, there is little knowledge about the effects of eco-labels on the behavior of consumers to encourage the purchasing of more eco-friendly products. Rahbar & Wahid (2011) illustrate a positive correlation between knowledge of environmental issues and the influence of environmental marketing tools such as eco-labels. Another study has shown that indeed it is the political relevance of the sustainability topic that directly impacts the behavior of consumers (Hall, Löfgren, & Peters, 2015). Yet other research proposes that eco-labels are ineffective given their lacking benefit to the environment (Erskine & Collins, 1997).

These are just a few examples of a common theme among studies regarding eco-labels. They explore different externalities to understand whether eco-labels are impactful in delivering information to the consumer or not. While these assessments of the complex relationships between eco-labels and a virtually unlimited number of externalities are critically important, they often leave the inherent qualities of eco-labels unexplored. This study aims to fill this gap by assessing the value of eco-labels through a concerted focus on their inherent qualities. A clearer understanding of the innate characteristics that make an eco-label effective or ineffective in informing the consumer is of critical importance to advance our understanding of the overall potential of this governance mechanism to promote sustainable consumption. Furthermore, this knowledge will be crucial to future studies intending to explore the increasingly complex relationships between eco-labels and the context they

are situated in. With a focus on the inherent qualities, this research seeks to answer three key questions relating to the communicative capacities of eco-labels:

1. **How effective are eco-labels in terms of their capacity to convey information to the consumer?**
2. **What governance characteristics of eco-labels can be changed or augmented so they can reach their greatest potential as a tool to promote sustainable consumption?**
3. **Are eco-labels effective in the knowledge creation process for the consumer?**

1.1 Research Aim

The aim of this study is to evaluate eco-labels' inherent effectiveness-potential, in conveying environmental information to consumers in the German textile market. The outcome from this research will help inform the scientific community as well as governments and eco-labeling organizations about the intrinsic qualities of eco-labels and their capacity to create an impactful environmental narrative about textiles to the consumer. The purpose of this study is to create a better understanding of these innate qualities to enhance this governance scheme and encourage more environmentally responsible consumption.

1.2 Problem Statement

Anthropocentric changes have driven many planetary support systems to the edge or beyond their capacities (Rockstrom et al., 2009). A key driver of this pressure on global systems is the rise of more intensive and extensive resource consumption (Kosoy et al., 2012). Depending on the type of resource, the domino effects from exploiting it can be more or less severe. Textiles, especially clothing, are a basic human need and the effects of increasing consumption of this often unsustainably produced commodity can have significant, deleterious consequences on environmental and social support systems. There are numerous challenges related to textiles spanning every facet of its life-cycle (Clancy et al., 2015). Starting with debates regarding the high replacement rate of "fast-fashion" (Pookulangara & Shephard, 2013) down to the water and insecticide use in the production processes of textiles (Eryuruk, 2012) & (Ozturk, Yetis, Dilek, & Demirer, 2009), the industry is as polluting as it is necessary for human well-being.

A non-governmental response to this dichotomy has been the increased emergence of governance via private certification schemes towards more responsible resource management (Auld, Balboa, Bernstein, & Cashore, 2009). Although product certification as a means to govern sustainability has

had an ambivalent record, their numbers continue to increase (Thøgersen, 2000). There are a variety of classifications for eco-label governance systems and it has been argued that the efficacy of this governance model cannot yet be determined (Delmas & Young, 2009). Germany was the first country to adopt a nationwide labeling scheme with the "Blauer Engel®" in 1977 (hereafter referred to as the "Blue Angel") (Erskine & Collins, 1997) and due to this longstanding history the country constitutes a suitable case study to better understand the effectiveness of this governance system for the consumer.

1.3 Study Basis

Environmental concern has been increasing since the 1960s. A variety of governance mechanisms to move to more environmentally friendly consumption and production systems, including green taxes and substance prohibitions, have been created. In recent decades eco-labels have gained importance as a key strategy in this transition (Galarraga Gallastegui, 2002). Product certification schemes were first devised by a small group of food growers and merchants to satisfy increasing demand for environmentally and socially responsible products (González & Nigh, 2005). In their early stages, certification schemes were a means of self-regulation by merchants, farmers and activists to avoid fraud and use their advantage in a growing market niche (Renard, 2005). The early rise of eco-certification in Germany sparked the rise of a number of schemes in the marketplace over the years (Thøgersen, 2000). Today, in the textile industry alone, there are over 100 eco-labels (Henninger, 2015). This has led to increasing confusion on the consumer side due to the sheer number of eco-labels on the market (Horne, 2009), triggering a growing distrust in eco-labels in general (Rahbar & Wahid, 2011).

There are two fundamental classifications of eco-labels. There are mandatory and voluntary schemes. Mandatory environmental labeling schemes are mostly established for performance specific matters such as water or energy consuming devices (Horne, 2009). Voluntary schemes, on the other hand, make up a larger share of the environmental labels. These have been classified by the International Standards Organization (ISO) in 3 types (Horne, 2009) & (Galarraga Gallastegui, 2002):

1. Type 1: Third party labeling programs with multiple environmental criteria regarding the lifecycle of a product (e.g., Nordic Swan)
2. Type 2: Self declared, producer directed labeling scheme with one or more environmental criteria (e.g., "CFC Free" denomination)

3. Type 3: Provide quantitative lifecycle data in extensive ISO 14025:2006 report intended for business-to-business communication about products.

1.4 Research Boundaries

1.4.1 Limits

For the purposes of this study I limit the scope of the labels that are being considered to Type-1 labels. There are widespread trust issues with Type 2 labels (Erskine & Collins, 1997), and data regarding Type 3 schemes in the environmental sector are lacking (Galarraga Gallastegui, 2002).

The multitude of sustainability challenges in the ever-expanding textile sector is a trend that is considered to be representative of other manufacturing operations of vital goods. Consequently, this study will focus on the eco-labels that specifically address textiles. The case study is further refined through a geographic focus. Germany, being the first country with this governance scheme and having a number of operational Type-1 labels has been selected as a study area. While eco-labels address production as well as consumption patterns, this study focuses on the consumption aspects only by evaluating the effectiveness-potential of eco-labels on the consumer.

1.4.2 Definitions

I adhere to Clancy et al.'s (2015) definition of the word “eco-label” as a way to refer to third-party environmental product labels that completely or partly cover the lifecycle stages of a product. This definition encompasses environmental eco-labels only and does not consider labels designed for social concerns as that would result in a case study beyond the scope of this paper. The use of the term “knowledge creation” refers to the provisioning of new information only and excludes any tangential aspects of the concept. The term “sustainable consumption” is used throughout this study as a means to refer to consumption patterns that involve environmentally conscious behavior. While I acknowledge that the most sustainable item is the one never consumed, for sake of simplicity the concept is applied as defined here. The terms “effective”, “effectiveness” and “effectiveness-potential” are used pervasively in this study as a means to refer to the likelihood that the information on an eco-label will affect consumer decision making due to its inherent qualities. This assumes that consumers are aware of the comparative qualities of eco-labels as a means to help them make decisions. The words “narrative” and “story” are used interchangeably and refer to the theme of sustainability that the information on eco-labels aims to convey to the consumer.

1.5 Thesis Structure

The thesis is structured as follows. The research design section outlines the case study, the analysis framework as well as the methods, to illustrate how the research was organized and executed in a reproducible manner. In the subsequent section I provide the results of my analysis. This section shows visual representations of the analysis through the use of radar diagrams for each scheme and the average score for each. It helps illustrate the strengths and weaknesses of each eco-label on an individual and comparative level. The discussion section expands on the results to cover the three focus areas underlying the overall research aim. The three themes that are covered in this section are:

1. A comparative analysis of the results, assessing their respective innate strengths and weaknesses to answer how effective eco-labels are in their current form in the German textile market.
2. An evaluation of the governance characteristics of eco-labels to answer what in fact is a suitable strategy that might help reach their highest potential effectiveness.
3. An assessment of the knowledge creation features of eco-labels answering whether they are effective in this process for the consumer.

Prior to the conclusion I reflect on the mechanisms used in this research as well as the potential for future investigations to help advance the knowledge created here.

2 Research Design

2.1 Case Study

Germany has a number of ISO-Type-1 eco-labels operating in its borders. In order to conduct a more relevant evaluation of the potential effectiveness of eco-labels, the historical data in combination with the number of Type-1 labels present in the country uniquely positions it for this assessment of the governance model.

The scientific literature regarding textiles is rife with cases illustrating the unsustainability of the sector in every stage of its life-cycle (Clancy et al., 2015). It starts with the innovation/design phase where faster production and lower quality, often referred to as "fast-fashion", is dominating the creation process (Pookulangara & Shephard, 2013). The resource acquisition/farming phase of fibers is especially polluting with one fourth of the world's insecticides being used for cotton alone (Eryuruk, 2012). The fabric production phase, depending on sophistication, can use up to 400 liters of water/kg of textile and the weight of chemicals used may exceed 100% of the total weight of the resulting textiles (Ozturk et al., 2009). For an extended list of lifecycle related issues in the textile sector, see Appendix A.

While being resource intensive, the demand for textiles is also increasing at a tremendous rate. Globally from 2000 until 2014 the export/import market for textiles has more than doubled from $318B to over $649B (see Figure 1) (World Trade Organization, 2016).

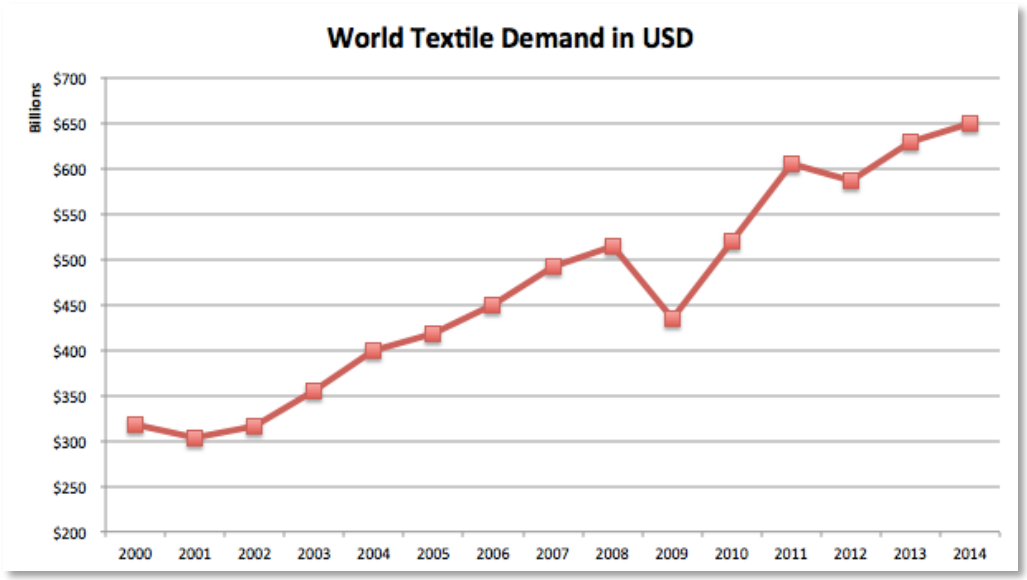

Figure 1: Shows global import/export demand of textiles in Billions of USD from 2000-2014 (World Trade Organization, 2016).

Similarly in Germany the textile market has grown by 30% in just 14 years from $20B in 2000 to nearly $30B in 2014 (See Figure 2) (World Trade Organization, 2016). This sharp growth in the textile industry in combination with its highly polluting characteristics makes the commodity a necessary element for sustainability research.

Figure 2: Shows import/export demand of textiles in Germany in Billions of USD from 2000-2014 (World Trade Organization, 2016).

2.2 Framework

2.2.1 Indicator Set

Given that the concept of "effectiveness" is itself difficult to apply as an indicator, Eckley (2001) proposed to employs (1) credibility, (2) salience and (3) legitimacy as proxy indicators to gauge the potential of scientific information in effectively triggering a desired action. Further, Cash et al. (2003) have shown that knowledge more effectively leads to action if the information presented is deemed to fulfill these three criteria by the observing party. Thus, in order to evaluate the effectiveness-potential of eco-labels in steering consumers towards more sustainable decision making, the indicators proposed by Cash et al. (2003) were used and augmented to create a yet more pertinent analysis framework specific to effectiveness-potential of eco-labels.

A key drawback to the eco-labels in the EU as Erskine & Collins (1997) have stressed is that knowledge of them is 'low amongst consumers'. This lacking awareness results in lacking recognition

of a label by the consumer, no matter how credible, salient or legitimate the information they present may be. Thus, the fourth indicator aims to help us understand a label's distribution in the market and is referred to as "awareness" in this study. Despite the relevance of the indicators suggested by Cash et al. (2003) (credibility + salience + legitimacy = effectiveness), they are, nevertheless, too limited when applied to gauging the effectiveness-potential of eco-labels as they fail to account for their distribution in the market. Therefore, the added component hereafter referred to as "awareness" helps to create a more robust analysis framework.

The amended framework employed in this paper consists of four proxy indicators to gauge overall effectiveness-potential of the eco-product-labels under review such that: **effectiveness-potential = credibility + salience + legitimacy + awareness.**

2.2.2 Analysis Framework

To gauge the potential effectiveness of eco-labeling schemes while ensuring objectivity, each indicator is defined and given specific, empirical evaluation criteria (See Table 1).

Table 1. Shows definitions and empirical evaluation criteria for each indicator that is applied to the eco-labels in this study.

Indicator	Definition	Evaluation Criteria
Credibility	The 'scientific and technical believability' of the presented information (Eckley, 2001).	The average credibility score as awarded by the web service www.Siegelklarheit.de
Salience	Reflects the level of relevance of the label to the consumer (Eckley, 2001)	The # of lifecycle stages covered by the label.
Legitimacy	Includes and respects the different views and beliefs to avoid bias (Eckley, 2001)	The # of stakeholders involved in governing the standard.
Awareness	The level of distribution a label attains in the market.	The # of companies licensed by a label in the market.

These definitions and assessment criteria were applied to the academic and organizational literature for a subset of eco-labels in the German market with the aim to evaluate the effectiveness-potential of each eco-label. To do so, a *Likert* scale, a tool often used in the social sciences (Weijters, Geuens, & Baumgartner, 2013), was employed to rate the strength of each indicator for each label on a 5-point scale. A 5-point system was used because it has been shown that the reliability of responses on *Likert* scales beyond 5-points does not increase and response validity gains become smaller as more points are added (Krosnick & Presser, 2010). The scale used ranged from "Strongly Disagree (1)" to "Strongly Agree (5)" (Figure 3).

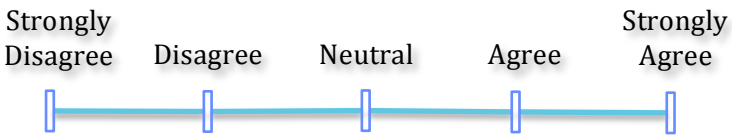

Figure 3: Likert scale used to measure effectiveness-potential of each indicator within each eco-label.

To minimize my own bias in the attribution of any given agreement level on the *Likert* scale, the evaluation criteria set forth in Table 1 is numerically bound as defined in Table 2 below. The actual scale ranking is based on data retrieved from the available scientific and organizational literature.

Table 2. Thresholds between agreement levels for each indicator.

	Strongly Disagree	**Disagree**	**Neutral**	**Agree**	**Strongly Agree**
Credibility – rating as awarded by web service	0-19	20-39	40-59	60-79	80-100
Salience - # of lifecycle stages covered	1	2	3	4	5-7
Legitimacy - # of stakeholders involved	3-4	5-6	7-8	9-10	11-13
Awareness - # of companies licensed	0-99	100-199	200-299	300-399	400+

The thresholds between the various agreement levels for each indicator are selected as follows. The credibility ranking for each label happened on an absolute scale of 0-100, which was divided into 5 sectors to match the *Likert* scale. The online database "www.siegelklarheit.de" ranks each eco-label on their site on a 0-100 credibility scale according to individual rankings of label stringency, transparency, accessibility, honesty and improvement (See Appendix B). The average of these values for each label determined its value between 0-100 (See Appendix C), which in turn established where on the *Likert* credibility scale the label would rank (See Appendix D).

The salience rankings are tied to lifecycle stages. Since any single eco-label addresses at most four of the seven lifecycle stages of a textile (Clancy et al., 2015), this scale was weighted to group lifecycle stages 5-7 in the "Highly Agree" category.

The legitimacy and awareness thresholds are defined relative to the findings where the label with the lowest finding represents a "Strongly Disagree" and the label with the highest finding represents a "Strongly Agree". The thresholds in between are then arithmetically adjusted. As there is currently no standard around the number of stakeholder that constitute more or less legitimacy and the number of licensed companies that constitute high or low awareness, this process is implemented to further minimize the bias that may affect the *Likert* ranking system.

The resulting effectiveness-potential evaluation framework that was applied to each eco-label can be seen in Figure 4.

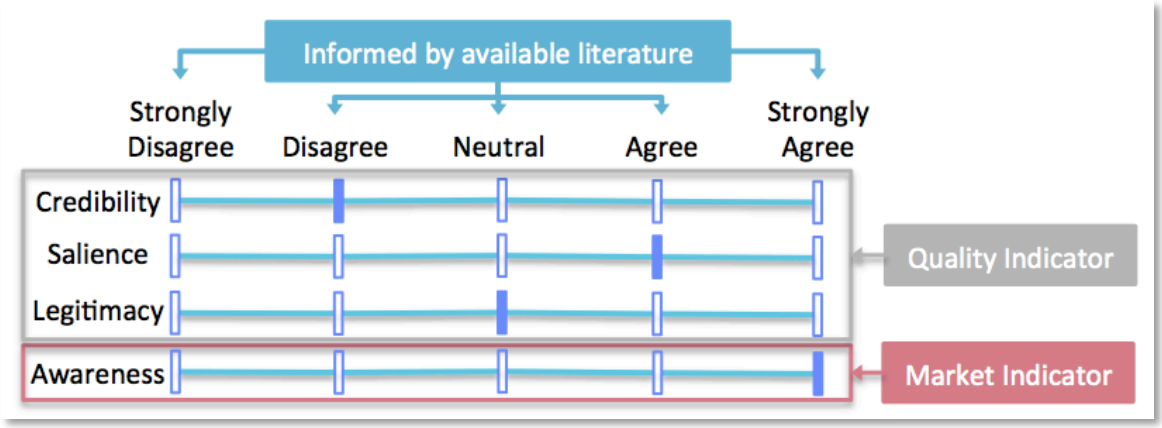

Figure 4. Likert scale used to measure each of the four indicators for each eco-label based on the indicator score criteria, which was informed by the available academic and organizational literature.

The 3 indicators initially proposed by Cash et al. (2003) help us understand the quality of the eco-labels examined in this study and are referred to as "Quality Indicator" in Figure 4, while the added awareness indicator is a measure of the distribution of the label in the market, therefore referred to as "Market Indicator" in Figure 4. This distinction is important as it enables us to scrutinize the relevant eco-labels from different angles.

2.3 Methods

2.3.1 Label Discovery

The eco-labels considered in this study were selected from the database, www.siegelklarheit.de. The German Federal Ministry of Economic Cooperation and Development (BMZ) founded the database in collaboration with the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB), the Federal Ministry of Labor and Social Affairs (BMAS) and the Federal Ministry of Justice and Consumer Protection (BMJV). The site's independence from companies and

the multi stakeholder approach to building the database eliminates a higher degree of bias than comparable sites. The site intends to provide clarity to consumers who want to purchase products made in a more sustainable manner (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015). Thus, due to the wide ranged backing by the multitude of German institutions and the sustainability centric viewpoint, this website was considered trustworthy and especially valuable for this case study.

The database groups eco-labels in the German market by four product types (textiles, foods, paper or wood) and assesses their impact in three categories, namely: credibility, environmental impact and social impact. While there are other German eco-label ranking sites, I chose to consult this particular database for three important reasons. First, the site considers only labels that appear on the German market making each of the findings there directly relevant for this study. Second, the ability to filter for labels directly involved in the textile sector was of great importance as it allowed for the immediate exclusion of non-relevant labels. Lastly, this site offers very useful assessment categories. It is unique in presenting a detailed analysis of each label's credibility score, which was utilized to rate the "credibility indicator" used in this research study. Moreover, given the focus of this paper on environmental- and not social- impact information, I was able to use the overarching rating categories on the site to exclude labels that are not directly affecting the environment, resulting in highly relevant findings from the onset.

The result from this query was a collection of 7 labels on the German textile market that include environmental impacts and have a credibility rating that could be used for the analysis. The resulting product labels considered in this thesis are as follows:

1) Fairtrade® Certified Cotton
2) Blue Angel – Textile
3) EU Ecolabel®
4) Global Organic Textile Standard (GOTS®)
5) Bluesign®
6) OEKO-TEX®
7) Naturtextil IVN certified BEST

2.3.2 Literature Review

To conduct a review of the available literature, LUBsearch, a Lund University resource that indexes a number of databases, was used as a search tool. A query string is developed to find relevant scholarly work as follows:

("ecolabel" OR "eco-label" OR "environmental label" OR "environmental certification" OR "environmental standard" OR "fairtrade" OR "fair-trade" OR "fair trade" OR "blue angel" OR "blauer engel" OR "EU ecolabel" OR "EU flower" OR "global organic textile standard" OR "GOTS" OR "bluesign" OR "OEKO-TEX" OR "OEKO TEX" OR "naturtextil" OR "naturtextil certified" OR "naturtextil IVN certified") AND ("textile" OR "garment" OR "clothing").

The information retrieved in this process is used to inform various sections of this thesis and is being referenced throughout the study (Silverman, 2013). In addition to the academic literature, organizational literature was consulted to fill gaps of information and to increase objectivity and robustness of the empirical data derived from that literature. Where data were insufficient, the labeling organizations were contacted directly via email for additional information.

2.3.3 Analysis

The data that constitute the basis of this project are the indicator rankings attributed to each eco-label! This ranking is heavily based on academic literature. However, organizational archives such as the "OEKO-TEX® Retailer Database" and eco-label literature such as the "Fairtrade® Textile Standards Report" were used to supplement scholarly work with detailed information regarding the stakeholder groups that are involved in the decision making processes for a label (legitimacy), as well as the number of companies that are licensed to carry it (awareness).

An analysis was performed on each eco-label to identify the *Likert* scale rating for each of the 4 indicators according to Table 1 & 2. This was achieved by reviewing scientific literature, the retailer databases provided by the label organizations, product manuals provided by the label organizations as well direct discussions via email with some of the label organizations. The Eco-labels that did not provide the necessary information for this study to be able to rank them for each indicator were excluded from any further consideration. After each eco-label was classified on the *Likert* scale from "Strongly Disagree" to "Strongly Agree" the scale was converted to match a point system where "Strongly Disagree" = 1, "Disagree" = 2, "Neutral" = 3, "Agree" = 4 and "Strongly Agree" = 5.

The results are illustrated below in the form of six radar diagrams (Figures 5-10). This diagram type was selected as it visualizes the data in an easy-to-understand, transparent format while also

facilitating the comparison between eco-labels. The 4 variables in the diagrams are spread at 90-degree angles such that the north axis indicates the credibility score, the east axis shows salience, the south axis shows legitimacy and the west axis show the awareness score. Each label is presented in a separate diagram. As the blue top layer covers more of the diagram plane, the potential effectiveness of the label can be understood to be higher also. Conversely if the blue top layer covers less of the total diagram plane, then the eco-label can be said to have a lower overall effectiveness-potential.

Due to insufficient information about the "Naturtextil IVN zertifiziert BEST" label, this study excluded it from any further analysis and discussion. The data for the individual eco-labels can be seen in Figures 5-10. The data used in these figures is summarized in Table 3, which also includes the overall average for each label. The detailed ranking for each label can be found in Appendix C.

3 Results

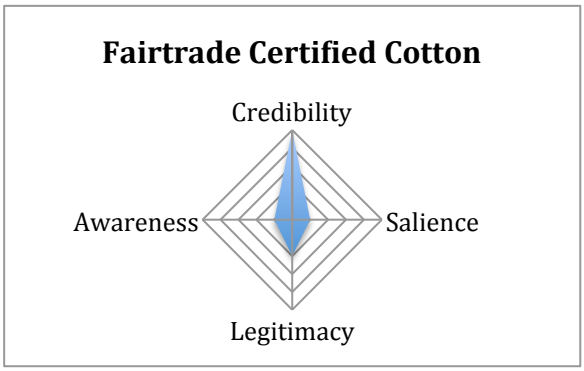

Figure 5. Shows the effectiveness-potential of Fairtrade® Cotton in each indicator category.

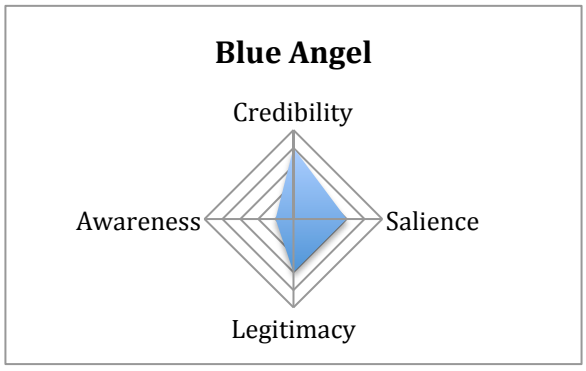

Figure 6. Shows the effectiveness-potential of Blue Angel Textile in each indicator category.

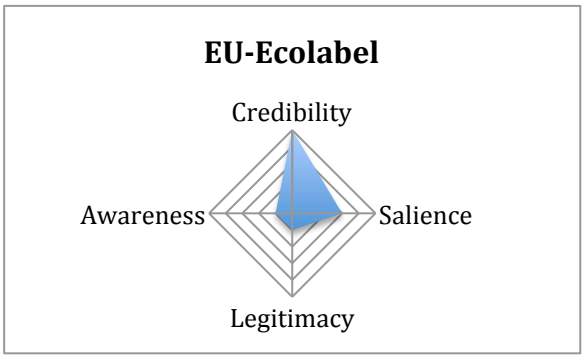

Figure 7. Shows the effectiveness-potential of the EU Eco-label in each indicator category.

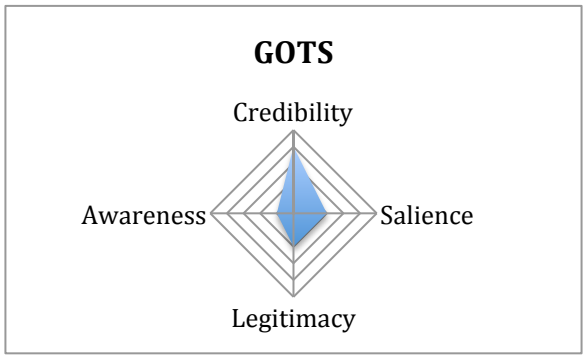

Figure 8. Shows the effectiveness-potential of GOTS® in each indicator category.

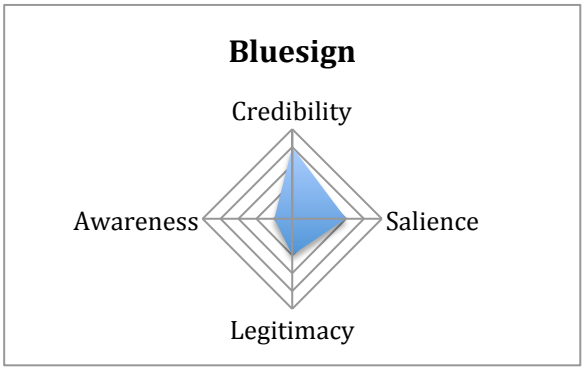

Figure 9. Shows the effectiveness-potential of Bluesign® in each indicator category.

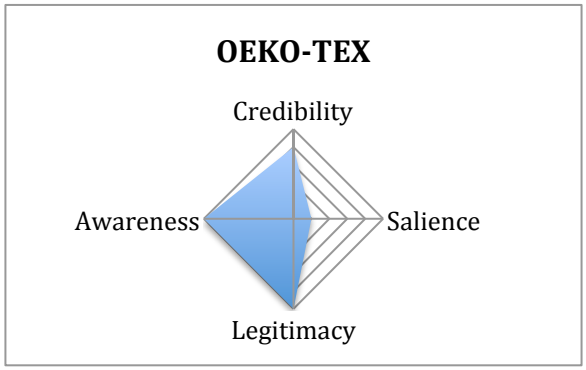

Figure 10. Shows the effectiveness-potential of OEKO-TEX® in each indicator category.

Table 3. Indicator ranking for each eco-label as well as overall average based on their match with the indicator definitions.

	Fairtrade® Cotton	Blue Angel	EU Ecolabel®	GOTS®	Bluesign®	OEKO-TEX®
Credibility	5	4	5	4	4	4
Salience	1	3	3	2	3	1
Legitimacy	2	3	1	2	2	5
Awareness	1	1	1	1	1	5
Average Score	**2.25**	**2.75**	**2.5**	**2.25**	**2.5**	**3.75**

4 Discussion

4.1 Discerning between the "effective" and the "ineffective"

How effective are eco-labels in terms of their capacity to convey information to the consumer?

In their current form eco-labels are marginally effective with the best of them, the OEKO-TEX® and the Blue Angel label, attaining 67% of their absolute effectiveness-potential, showing that the narrative they have built can be vastly improved. Lessons learned from the most- and least-effective labels in this study show that a regional or industry specific focus can help avoid the pitfalls of the "Label Integrity Dilemma".

This section examines the results of this study by acknowledging the benefits and drawbacks of eco-labels thereby answering what distinguishes a potentially "effective" eco-label from one that has low effectiveness-potential. The objective of this section is to show that in their current design eco-labels have a lot to improve, making them rather unsuccessful in delivering important information that could help steer consumers towards more eco-friendly purchasing decisions.

The results show that each eco-product-label in the German market has a unique combination of strengths and weaknesses. Two topics of discussion are of particular importance to evaluating the inherent effectiveness-potential of eco-labels on the consumer. 1) We can explore, comparatively, in which areas specifically these eco-labels succeed and fail. And 2) we can understand which eco-labels rank highest and lowest in their overall performance in terms of their effectiveness-potential. Such a comparison is significant because it will shed light on the fact that the type of narrative eco-labels are trying to create is currently incomplete due to the gap between their total potential effectiveness and their actual potential effectiveness.

4.1.1 Comparing Eco-label Performance

Looking at the comparative strengths and weakness of each label one can deduce that in terms of the technical and scientific believability of a standard, the credibility indicator, the Fairtrade® as well as the EU-Ecolabel are the two frontrunners. Both received a five based on their average scores of 83 and 82.6 respectively (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015). All other labels have similarly stringent standards and they receive a four in this category (See Table 3). Though there is no identifiable trend as to what all the labels performing worse in this

category have in common, it is important to note that this category has only a small difference between the worst and best performers, which is unlike the other effectiveness indicators. This is relevant as it shows a clear trend in the industry to counteract the "consumer trust" issues in relation to eco-labels, that Erskine & Collins (1997) and Thøgersen (2000) have identified.

Regarding the relevance of these labels to the consumer, here referred to as "salience", the Blue Angel, the EU-Ecolabel as well as the Bluesign® label were designated a three, with no label receiving a four or a five in this category. They were considered the best performers as they covered three out of the seven lifecycle stages of textiles, while the GOTS® label covered two lifecycle stages and Fairtrade® and OEKO-TEX® each cover a single lifecycle stage (Clancy et al., 2015; Renard, 2005). These results show that this area presents a clear chance for improvement. The fact that the best performing labels score only a three out of a possible five shows a clear lack in the schemes depth and constitutes a massive opportunity to generate higher effectiveness-potential. A more comprehensive scheme such as a cradle-to-cradle design of textiles would generate a high salience score but for eco-labels to adopt such a strategy would require immense resources and may be well outside their expertise (Kumar & Putnam, 2008). Nonetheless a more comprehensive approach to generate higher salience of a label to the consumer and improve the overall effectiveness-potential of this governance model is clearly needed to improve its impacts.

The highest level of legitimacy (5) was awarded to the OEKO-TEX® label, while all other labels attained a ranking between one and three. OEKO-TEX® is the most inclusive label in terms of the number of stakeholders it confers with. The standard is derived from a collaboration between 13 institutes (Sewekow, 1996), which outnumbers its competitors in this study to a considerable degree. All other labels considered in this study have between three and eight different stakeholders involved in their standards leaving them with a ranking of one (EU-Ecolabel), two (Fairtrade®, GOTS®, Bluesign®) and three (Blue Angel) and no label attained a ranking of four showing a clear gap between the single most legitimate label and all the others considered here. This result shows a gap between the seemingly few labels that do in fact include a large number of stakeholders and those that keep their standards more isolated from participation. On the one hand this finding echoes what Sønderskov & Daugbjerg (2011) refer to as an "elitist" governance scheme by being less accessible to people with certain demographic characteristics. On the other hand it expands on this knowledge by showing empirically that eco-labels can- and should- be more inclusive of multiple stakeholder groups to increase their legitimacy and thereby their overall effectiveness-potential. This result shows yet again that the story eco-labels are trying to create for the consumer is incomprehensive in its current arrangement.

The OEKO-TEX® label received a 5 for its awareness in the German textile market. Based on an in depth analysis of the retailer databases of each organization, (OEKO-TEX Association, 2016), (Bluesign Technologies AG, 2013), (Global Organic Textile Standard International Working Group, 2013), (Communications Department of the European Commission, 2015), (Federal Environment Agency & Reichsausschuss für Lieferbedingungen GmbH, 2016) and (Fairtrade Foundation, 2016), the number of retailers carrying these labels ranged from 2 – 216 with OEKO-TEX® being the clear frontrunner in terms of its distribution across the German market. While other labels, like the German Blue Angel and the Fairtrade® symbol may be better known in the German market, people aware of labels in the textile industry are likely more conscious of OEKO-TEX® than comparable ones based on the number of retailers distributing textiles with this product-marker. What is quite fascinating again is the deviation between the OEKO-TEX® awareness score and that of all the other labels which each scored a one on the *Likert* scale. While the OEKO-TEX® label is distributed by 413 retailers in Germany, the next closest performer, the Fairtrade® textile label, has only 61 licensed retailers in the German market. This result is important because it speaks to the fact that eco-labeling organizations have a lot of room for improvement in this category to increase their effectiveness-potential and close this awareness gap. The staggering difference between the highest and lowest performers for this indicator further emphasizes the considerable lack in awareness building by labeling organizations.

Clearly different eco-labels dominate varying aspects of the value chain when compared across the four indicators. While some are more credible others are more salient, legitimate or generate more awareness from the consumer in the market. From the perspective of this analysis the effectiveness-potential of eco-labels in the German textile market can be understood as a rather disjointed mosaic with no single labeling organization advancing a clear, concerted and comprehensive narrative that may better resonate with consumers. This new way of understanding eco-labels, according to their inherent potential, provides labeling organizations with an opportunity to revise their strategy and increase their efficacy as governance models while improving the sustainability of the industry as a whole.

4.1.2 Evaluating Overall Eco-label Performance

The previous section, for sake of clarity, highlighted specific indicator categories in isolation from each other. This is useful to derive a better understanding of specific pitfalls afflicting eco-labels as we have seen, but eco-labels affect consumers as a single object and understanding the overall performance of the various certification schemes is of quintessential importance to elucidate the

shortcomings in their narrative to the consumer. So, which eco-labels are at the extremes of the study? Which have the highest and lowest overall effectiveness-potential?

The Highest Potential

To answer this question one may consider the average score of each eco-label derived from the 4 indicators (See last row in Table 3). According to this the OEKO-TEX® label (average of 3.75) has the highest intrinsic potential to influence the consumer. This metric lends equal weighting to each of the indicators and can be understood as a way to gauge the overall effectiveness-potential of these labels at this very point in time. As described earlier the indicators used in this study can be classified in two overall sets, the ones assessing the effectiveness-potential of the label based on its quality (credibility + salience + legitimacy) and the one evaluating the effectiveness-potential of the labels via its distribution in the market place (awareness). The awareness measurement is highly volatile as it is directly dependent on market activity and this analysis can only provide a present-day perspective into this category. Therefore, we must also evaluate the labels irrespective of this time-dependent variable to understand their effectiveness-potential based solely on their essential qualities.

If we were to strip this comparison of the awareness indicator thereby removing market forces, then the effectiveness-potential of each label solely based on credibility, legitimacy and salience looks slightly different. In such a scenario, the German Blue Angel and OEKO-TEX® would be considered the potentially most impactful (See average score in Table 4).

Table 4. Indicator ranking for each eco-label and average based on their match with 3 of the 4 indicator definitions lacking the impact of label awareness in the market.

	Fairtrade® Cotton	Blue Angel	EU Ecolabel®	GOTS®	Bluesign®	OEKO-TEX®
Credibility	5	4	5	4	4	4
Salience	1	3	3	2	3	1
Legitimacy	2	3	1	2	2	5
Average Score	**2.67**	**3.33**	**3.00**	**2.67**	**3.00**	**3.33**

The difference between the eco-label ranking highest in all four indicator categories compared to the two labels ranking highest in just the three categories is important because it offers a different understanding of their inherent qualities. First and foremost it shows that OEKO-TEX® has a qualitatively high standard that is also well distributed in the German market. Given that it is a leader

in both rankings shows that it has the most market recognition and has the highest standard along with the Blue Angel. The OEKO-TEX® label is the one with the highest overall effectiveness-potential considered in this study. But these results are noteworthy for another reason. Looking at the percentage of total possible effectiveness-potential irrespective of the market indicator shows that even the best textile label only scores a 67% towards what would constitute a highly effective label at 100% (See Table 5).

Table 5. Indicator ranking for each eco-label and their average expressed in percentage of total potential based on their match with 3 of the 4 indicator definitions lacking the impact of label awareness in the market.

	Fairtrade® Cotton	Blue Angel	EU Ecolabel®	GOTS®	Bluesign®	OEKO-TEX®
Credibility	100%	80%	100%	80%	80%	80%
Salience	20%	60%	60%	40%	60%	20%
Legitimacy	40%	60%	20%	40%	40%	100%
Total Potential	**53%**	**67%**	**60%**	**53%**	**60%**	**67%**

The fact that the most effective eco-label, in a nation with the longest standing history of eco-labeling, scores only a 67% of total potential effectiveness indicates that the quality of labels to elicit more ecofriendly textile consumption is a vast area of possible improvement for labeling organizations. It illustrates that there is a disconnect between what organizations are doing and the types of activities that may in fact help them improve the usefulness of their labels to the consumer. This gap between the highest potential effectiveness of 100% and the scores of all the labels considered in this study 53%-67% translates into a large sustainability void that eco-labeling organizations could fill. This approach to examining eco-labels, according to their inherent effectiveness-potential, allows us to draw precise conclusions and make actionable recommendations to specific stakeholders. The EU-Ecolabel for example would fare better in the German market if it were to involve more stakeholder types to increase its legitimacy, which is currently at 20% of its total potential. Similarly, the Fairtrade® label could increase its salience by enhancing its standard to include more lifecycle stages of textiles. While a more detailed study is needed to identify the exact mechanisms by which eco-labels can improve, it is clear that there exists a uniform gap between the effect eco-labels currently have and the total potential of this governance scheme.

This discussion shows that across all four indicator sets the OEKO-TEX® label performed best. These results shift slightly if the time-dependent variable, the awareness indicator, is removed from the analysis showing that the Blue Angel and the OEKO-TEX® label are equally effective in regards to their

quality. When considering their overall score in absolute terms it is evident that all labeling organizations considered here have profound inadequacies that, if resolved, could considerably elevate their effectiveness-potential and build a comprehensive narrative for the consumer. Further, it can be concluded from this discussion that this method of analysis pertaining to the inherent potential ability of eco-labels is quite useful. It can be employed to identify specific weak points and make actionable recommendations to labeling organizations. In a growing atmosphere of distrust between consumers and producers (Erskine & Collins, 1997) such an approach could be utilized to increase sustainability and enhance these types of governance systems.

The Lowest Potential

It is also valuable to analyze the lowest overall performer of this study. Why does the Fairtrade® Cotton label have the worst average when looking at the inherent label quality characteristics in Table 4? To examine this question and potentially understand the larger trends in the field of eco-labeling, one has to examine the development of the label over time. The Fairtrade® concept emerged out of an initial cooperation between a Mexican coffee growers association and a Dutch organization with the aim to sell coffee in the northern markets while maintaining equitable conditions throughout the supply chain (Renard, 2005). As the initiative gained in popularity and decided to fully enter global markets, some growers were denied further access as they were unable to fulfill their sales contracts (Renard, 2005). The volatility in the market now directly affected the benefits of this cooperative such that price guarantees, long-term contracts and low interest credits were equally unpredictable (Taylor, Murray, & Raynolds, 2005). The standard continued to become more industrialized leading to complaints from Fairtrade® growers regarding the organization's opaque decision-making processes, lacking clarity in the structure of the organization and deteriorating influence of the growers on the organization (Murray, Raynolds, & Taylor, 2003). Recently this issue has intensified and growers have started to question the Fairtade organization's motivations. Instead of ensuring adequate prices to safeguard its growers' well-being the organization seems to have created a niche-market for itself and recently proposed to decrease the minimum price guaranteed to its growers in exchange for higher sales (Renard, 2005). While the primary humanitarian objectives of the initiative used to supersede the political ones, it becomes evident that market pressure on a growing eco-label can have deleterious consequences on the standard, even to the extent of neglecting their original purpose.

The low performance of the Fairtrade® label in this study can be understood as a direct consequence of the growth of the initiative to the multi-national level, such that the organization is starting to adhere more to the market forces than to its original mantra of ensuring well-being for its growers.

The Fairtrade® certification is mostly guided by ideological principles rather than measurable technical and scientifically sound data (Renard, 2005). The label was awarded merely a "1" for salience due to its singular focus on the fiber production phase of a garment lifecycle and the social and environmental fairness within that stage (Renard, 2005), which is likely relevant to fewer consumers than if the label were more holistic in its approach to the lifecycle of textiles. The label was created by nongovernmental organizations, activists, farmer cooperatives, local promoters and public agencies. Such a multi-stakeholder approach, per our indicator threshold (Table 2), is considered to be a "2" on the legitimacy scale. The key for the low performance of the label then lies with the label's narrow approach to the textile lifecycle as well as its stakeholder involvement strategy.

According to the findings the imprecisions of the standard can be attributed to the need to preserve flexibility in a volatile international market. This finding stands in stark contrast to literature assessing the internationality of eco-labels to be beneficial (e.g. Hale, 1996; Manzini, Noci, Ostinelli, & Pizzurno, 2006) even indicating that such international standards are generally rigid (Horne, 2009). However, as the label's history shows, its growing popularity in the market over the years has forced it to start making concessions regarding its promises to its growers. This form of internationalization and simultaneous lacking adjustment in the label's governance structure to match such an effort can be seen as a key weakness to the product-label and directly impacts its potential effectiveness on the consumer. This presents an interesting trade-off because large global labels may become tarnished in their original intentions as they expand to an international, more diverse market. They sacrifice the strength of their narrative to the consumer in an effort to be more widely available.

This clash of interests is not merely a symptom of the Fairtrade® label either. The fact that concession-making and internationalization are directly correlated is further evidenced by the EU-Ecolabel. Horne (2009) describes the EU Flower as having some key issues with bureaucracy, complexity and delays in setting criteria. Erskine & Collins (1997) further assess that political argumentation often prevails over scientific facts when assessing products for the European union. These accounts underpin the argument that cross-national labeling schemes are indeed conflicted when it comes to expanding with integrity on a competitive market. Further, these reports show that eco-labels in their current governance structure present an incomplete story to the consumer, one that does not use the entirety of their effectiveness-potential and runs the risk of decreasing with internationalization.

So, should an organization make a few concessions, thereby lowering its effectiveness-potential in order to spread their message more widely or should it preserve its integrity at the risk of being

eradicated or supplemented with a potentially worse certification scheme? This trade-off is what I call the **"Label Integrity Dilemma"** and it presents a rather challenging predicament. To complicate things further, having an increasing number of regionally adept labels would be even more confusing for the consumer as a recent influx of eco-labels on the market has already shown (Jordan, Wurzel, & Zito, 2003). Nonetheless, when choosing between a large but imperfect eco-label or none at all, the answer is clear.

It is important to note that the findings regarding the drawbacks of the Fairtrade® label stand in stark contrast to the two best performers of the quality indicators in this study, the Blue Angel and the OEKO-TEX® labels. The Blue Angel certifies a variety of products but is currently a German, national scheme only (Micheletti, Follesdal, & Stolle, 2006). The OEKO-TEX® label on the other hand is regionally diverse but is exclusively focused on certification within the textile industry (Golden et al., 2010). Neither of these are qualities that the Fairtrade® label has as it is an international scheme with a big assortment of products under its purview (Golden et al., 2010). Although there are many externalities that this study did not control for, due to the focus on effectiveness-potential in isolation of externalities, these results are still indicative of an important dimension in the realm of product-labeling. On the one hand they show that an effort to maneuver a single, uniform product-standard through a globalizing landscape may clash with different regions' expectations and standards, leading to a series of compromises with each stakeholder group. Faced with the label integrity dilemma, this may result in a label adopting the lowest common standard to match a multitude of inputs in exchange for being available globally. On the other hand this analysis illustrates that the best performers in this study seem to be immune to this dilemma through their concerted focus on either regional or industry specific goods. In other words, the less targeted a labeling scheme becomes the more difficult it becomes to remain in line with its principles as we have seen in the development of the Fairtrade® brand contrasted with the Blue Angel and OEKO-TEX® schemes. Therefore, an eco-label can either minimize these concessions by remaining a local or industry specific entity, or implement a different governance regime to avoid a "race to the bottom" within the standard.

This discussion has shown that an approach to certify multiple product categories on a multi-national level with a uniform standard results in the deterioration of its quality because regions with different resources will inevitably ask for more flexibility in the standard. The "Label Integrity Dilemma" specifically afflicts global players such as the Fairtrade® organization. It can be concluded that the most important driver that distinguishes a label that tells an effective sustainability narrative to the

consumer from a label that does this ineffectively, is the organizations ability to navigate the "Label Integrity Dilemma". But what type of governance structure would most effectively do this?

4.2 Eco-Label Governance: Finding an Effective Strategy

What governance characteristics of eco-labels can be changed or augmented so it can reach its greatest potential as a tool to promote sustainable consumption?

The Non-state Market Driven (NSMD) governance approach limits the effectiveness-potential of the narrative eco-labels are able to create. A revised governance approach drawing from the decentralization theorem as well as "Incorporated Transgovernmentalism" is a valid theoretical response to the issues of an NSMD and could help create a more stimulating sustainability narrative for the consumer.

This section will discuss the classification of current governance approaches of international eco-labels to better understand the benefits and drawbacks of this model. This discussion will answer the question: **"**What governance characteristics of eco-labels can be changed or augmented so it can reach its greatest potential as a tool to promote sustainable consumption?". The aim of this section is to show, based on the pitfalls of current governance techniques, how an augmented theoretical governance model may be better suited to create a highly effective eco-label. This in turn would lead to more impactful communication with the consumer regarding eco-friendly products.

The proper governance of eco-labels is a tricky subject. In an increasingly globalized world, more labels are likely to face the same "label integrity dilemma" as the Fairtrade® organization. But while eco-label governance has been praised as an effective means to improve the environment (Erskine & Collins, 1997), the question of 'how eco-labels can better govern themselves' to aid in sustainable development efforts remains. To analyze this question we have to first understand the taxonomy of international eco-standards. This will help us recognize the underlying assumptions and issues. From there we may be able to propose an enhanced theoretical governance structure, which may be better suited for the international market and may have the potential to become a blueprint for other governance schemes.

4.2.1 Taxonomy of International Labels

As this paper has shown there is a systemic issue with international eco-labels in respect to the degradation of their standards in the face of expansion. In his effort to propose a framework to better understand the shifting power relations vis-à-vis international eco-labels, Cashore (2002)

coined the term “Non-State-Market-Driven” (NSMD) governance. The Fairtrade® textile label was later classified as one such NSMD governance scheme by Bernstein & Cashore (2007). As the name suggests, NSMD governance is defined as a private governance regime that gains authority through its activity in the market (Cashore, 2002). For international eco-labeling organization this means that their power comes from their ability to publically accredit a product or service in the market.

There are a series of inadequacies but also a key advantage in the principles of the NSMD governance system, which can help us understand where such a model is failing to manage the “label integrity dilemma”. While there are a variety of benefits to this environmental governance model, this analysis will focus on the three criteria of NSMD that illustrate its low capacity to navigate the “label integrity dilemma”, showcasing exactly why this governance type is failing to create an impactful narrative.

Market Focus

By definition, NSMD is a market focused governance instrument (Cashore, 2002). This fundamental principle of the system is the most important drawback, especially in regards to environmental regulation. As market economists Herman Daly (2008) and Tim Jackson (2009) have argued, the way the market economy currently works stands in direct opposition to environmental protection due to its reliance on resource throughput. Therefore, an environmental regulation scheme that is market focused is constantly presented with this paradox of either satisfying increased economic throughput or preserving the legitimacy of its environmental standard. As we have seen in the case of Fairtrade® the NSMD governance model has resulted in the deterioration of the standard over time, not a tightening of its environmental protection efforts and this effect can be attributed to its focus on the market.

Sovereign Power

Another drawback of the NSMD governance scheme comes as a byproduct of any privatized system. It lacks the same authority as sovereign governments to correct unwanted behavior. In other words, NSMD systems do not have the power to impose fines or otherwise legally react to non-compliance with their standard (Auld et al., 2009). This leaves private organizations, which are classified as NSMDs with very little leverage to impose a label that may be qualitatively high but also difficult for a company to adopt. Thus labeling organizations may have to resort to lowering their standards as a means to hinder non-compliance and increase adoption. It is the lesser of two evils and one of the few options available to non-state actors. This issue is further compounded by the fact that the entire NSMD framework is market focused (Cashore, 2002). A governance model without legislative

authority and a tendency to focus on the market can be assumed to be more likely to lower its standard to gain market share while ensuring compliance. This is a key challenge facing this type of governance!

Non-State Centric

One may conclude from these drawbacks that a state-centric governance perspective would be an appropriate remedy. It would isolate a label from market forces and contribute its judiciary for purposes of enforcement in case of non-compliance. However, shifting towards a state-centric regime is not a suitable option for environmental protection, as we quickly run into the "tragedy of the commons" and "collective action" dilemmas, which have given rise to private labels in the first place (Auld et al., 2009). Such a paradigm shift would merely result in the exchange of sovereignty and market isolation for the potential deterioration of the environment due to conflicting interests of the group, as highlighted by these dilemma theories. A key advantage of the NSMD approach, then, is that it is a non-state centric governance regime and any revised approach should maintain this perspective when considering a resolution.

4.2.2 Revising Transnational Governance

So, what is a better governance structure for eco-certification schemes to navigate the label integrity dilemma and maintain their reliability? The NSMD-type approach where a single, uniform standard is being implemented in line with market forces and deteriorating in the process is evidently not the answer. To avoid the NSDM pitfalls and benefit from its values, an ideal governance arrangement for internationalizing eco-labels would be (1) non-state-centric, (2) with a means to enforce their regulations through some type of sovereign power while (3) minimizing the direct influence of the market. The underlying assumption of adhering to these concepts is that this will result in the preservation of environmentally stringent standards for textiles whilst avoiding the trade-offs that international labels are currently afflicted by. To revise this governance approach the following sections will delve into each of these 3 qualities in more detail.

Perspective of Statehood

As we have seen, a state-centric perspective in regards to cross-boundary issues would be plagued with a series of dilemmas while an entirely non-state perspective in the eco-labeling industry has had its detrimental effects as well. Therefore, for the purposes of this paper I define a "non-state centric" perspective as an interdependent governance model of state and non-state institutions with a focus

on the non-sate ones. This interaction of powers may help avert the detrimental effects of both these views in isolation. This more inclusive definition of the non-state centric perspective is based on the idea of the "decentralization theorem", which argues that regional preferences can be better met at smaller regional scales than central control (Oates, 1999). Though this is generally a fiscal policy instrument we can use the underlying idea to structure a private-public governance model that is regionally focused. In the case of the United Nations, this type of segmented governance is also referred to as a "Nested Arrangement", where an umbrella organization consists of independent regional subsidiaries (Koenig-Archibugi, 2010).

These ideas are valuable as they would help a textile labeling organization better understand what kind of regulations are reasonable and effective at the local levels. It would allow for the inevitable concession making of certain elements of a standard on smaller scales without those arrangements becoming a permanent part of the standard as a whole, which would help avoid the broader deterioration of a certification. This is where the interdependent relationship of a nested labeling governance arrangement is important. While the motivation to provide environmentally sound textiles rests with the private eco-label organization, the regional decisions around which parts of a standard can be fulfilled rests with established, local entities including state actors. While the overall coordination of efforts is non-state focused the regional management is a mixed effort between state and non-state actors working to uphold the highest standard possible given the realities within their borders.

The Question of Sovereignty and Market Impact

Along with a decentralized, "non-state centric" approach, a realistic organizational structure serving as the base of this revised model can be taken from the example of the European Union (EU) and is called: *Incorporated Transgovernmental Networks* (Eberlein & Newman, 2008). These networks can be defined as having the means to coordinate an initiative on the supranational level while informing national policy and enforcement (Eberlein & Newman, 2008). In the case of the EU, members have given some authority to the institutions at the European level while maintaining the power for detailed rule-making and enforcement (Eberlein & Newman, 2008). For the governance of cross-national eco-labels, this concept has very valuable implications. In an incorporated transgovernmental network, textile-labeling institutions would serve as the umbrella organizations allowing for a uniform label to be distributed internationally. Simultaneously this structure would allow its subsidiaries in each region to work with the local regulatory agencies on creating a textile standard fit for that particular region as a means to decouple the standard from the international market.

This governance approach is very much in line with both the decentralization theorem as well as nested arrangements discussed earlier. But its value lies in the fact that it offers a more specific governance structure. On the one hand it aims at establishing sovereignty with a non-state actor through cooperation with local entities thereby ensuring an adequate level of administration over an environmental standard and avoiding the collective action problem (Eberlein & Newman, 2008). On the other hand it minimizes the influence of the market on the standard as its focus lies with legislative development and enforcement (Eberlein & Newman, 2008). This complex interaction between actors at different scales is described in Figure 11.

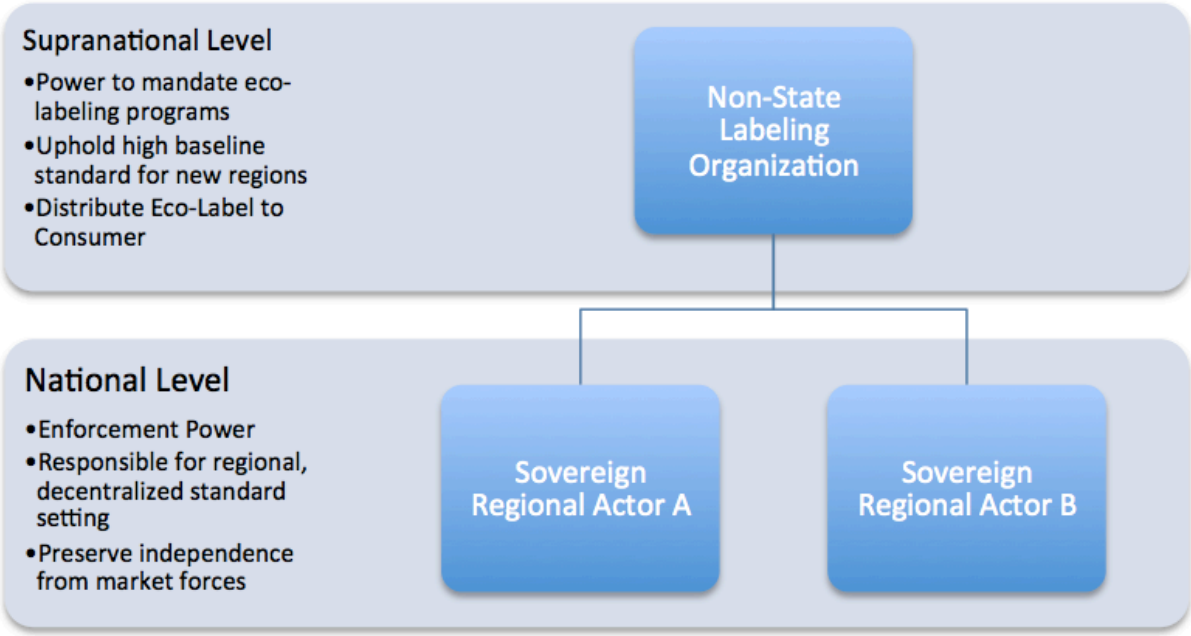

Figure 11. Shows the interaction between decentralized standard setting with Incorporated Transgovernmentalism as a means to preserve sovereign enforcement power and market independence.

Theoretical Approach

As noted before, the described combination of governance mechanisms is a highly theoretical idea as it makes a multitude of assumptions. It ignores simple realities such as the fact that a EU/UN-type governance scheme is a massive undertaking with cost- and resource requirements, which are likely beyond most labeling organizations' capacities. Decentralization runs the risk of ignoring externalities on higher governance levels therefore lacking a comprehensive approach (Sato, 2002). And incorporated transgovernmentalism assumes that we can always strike the perfect balance between domestic authority and authority delegated to the supranational entity. While these are valid limitations to this proposal, I maintain that the basic combination of structures as outlined here is a valuable response to the current shortcomings of international schemes such as the Fairtrade® label.

An analysis of this type with a strong focus on the inherent abilities of eco-labels, while narrow in its concentration, is quite useful. It allows us to focus on the aspects that eco-labeling organizations have direct control over to increase their inherent effectiveness-potential and thereby increase the bearing of their narrative on the consumer. As this discussion has shown there are clear drawbacks to the NSDM governance model such as that of the Fairtrade® organization, which may be indicative of the problems other labels may be facing as they mature. The combination of governance models explored here help achieve the highest potential of a label by avoiding its pitfalls. This recommendation while purely theoretical at this stage is a key ingredient to potentially achieving more sustainable consumption in the future.

4.3 Eco-Labels and Knowledge Creation

Are eco-labels effective in the knowledge creation process for the consumer?

Yes and no! In their current structure, eco-labels serve as product markers for those who already know what they stand for; therefore, they do impact consumer purchasing decisions. However, they are *ineffective* in conveying environmental information to less knowledgeable consumers. This trend could be reversed if eco-labels created a more cohesive narrative, referred to as "the stickiness factor".

The discussion thus far has explored the potential effectiveness of eco-labels according to their quality indicators (credibility, salience and legitimacy). This is important because it helps us identify the limitations of the governance scheme and allows us to make precise recommendations to improve the narrative they are building. However, the market indicator (awareness) must also be addressed, as this is another effectiveness measure that labeling organizations have direct control over in their communications with the consumer. While the obvious answer is to simply expand marketing practices and be more available through more retailers to increase awareness, which is certainly one feasible recommendation, it is also useful to discuss this topic from the knowledge creation angle. If an eco-label is successful in creating new knowledge when coming in contact with a consumer then it also generates more awareness than a label that does not. Without considering this actual potential impact on the consumer, we would be unable to understand their actual effectiveness-potential. The objective of this section is to expand on the results to show that eco-labels have presently done quite little to create a cohesive narrative and construct knowledge that may help consumers make more sustainable purchasing decisions.

It should be noted that this type of knowledge delivery is incredibly complex; for the sake of not departing from this study significantly, this discussion will only focus on the specific impacts of eco-

labels on the consumer. While not a lot of information has been published on the behavior of consumers in connection with eco-labels (Hustvedt & Dickson, 2009), some relevant information can be teased out from the literature to create a more holistic picture.

4.3.1 Eco-Labels as road signs

Eco-labels are becoming more prevalent (Galarraga Gallastegui, 2002); according to the results presented here, some do a better job at being an effective communication tool than others. Yet, as Hustvedt & Dickson (2009) discovered in their study on U.S. health food consumers, only 38% were likely to change their purchasing decision due to environmental information on garments. This percentage is very likely an overestimated as health food consumers are not necessarily a representative sample of eco-consciousness in a typical society (Hustvedt & Dickson, 2009). Thus it is fair to assume that general behavior has changed only marginally due to environmental information.

But why does information that can help achieve developmental, environmental and personal goals not result in a tantamount response by consumers in the form of a shift in purchasing behavior? One of the possible answers is rather simple and one has to go to the individual level to understand it. Research has shown that eco-labels do in fact lead to consumer behavior change if those labels are in line with the personal goals of the consumer (Rahbar & Wahid, 2011). In other words, eco-labels are merely one way to point out products to those people who already care about a certain cause and deem the purchasing of that product to help fulfill it. Thus, eco-labels in themselves are not actually effective in conveying new information to the unaware consumer, as much as they are 'road signs' for people that are already aware of them (U.K. Parliamentary Office of Science and Technology, 2004). Eco-labels simply enable consumers to identify products they were already looking for. The question whether 'eco-labels actually lead to consumer behavior change based on the information they portray' has to be answered with both a "*yes*" and a "*no*". "*Yes*" because they do help consumers make better choices if they are looking to make them and "*no*" because labels fail to inspire action from the uninformed consumer. So, what can we do to make eco-labels more effective for everyone instead of serving the few that seek them out?

4.3.2 Eco-Labels Serve the Few

To answer this question, one has to look at the buyer and understand why some people use eco-labels as the proverbial road sign to identify more sustainable products and others don't. As the results have demonstrated, the critical difference between the two consumer types is their level of existing understanding of the message the eco-label represents. Since it is fair to say that most

everyone cares either about their health, the health of others or the fair treatment of the environment or society, the problem is not that some consumers are lacking the capacity for a certain level of consciousness or altruism while others have it. The issue is that eco-sensitive buyers have sought out the information eco-labels represent while the majority of buyers lack that knowledge. This leaves them unable to follow the road signs pointing to the appropriate products; instead they are confused about the wide array of claims made by them (Erskine & Collins, 1997). Eco-labels currently only serve the few that seek to understand them and do not successfully create knowledge for others.

There are many additional factors that influence the purchasing behavior of consumers, e.g., price, product quality, performance differences between an eco-product and a 'conventional' one (Olson, 2013), the receptivity of the consumer to new environmental information (Im, Bayus, & Mason, 2003), the inclination of the individual to trust environmental statements made on a product (Rahbar & Wahid, 2011), group psychology phenomena such as "conditional cooperation" (Fischbacher, Gachter, & Fehr, 2001) or "social norms" (Schultz, Nolan, Cialdini, Goldstein, & Griskevicius, 2007). These are all critical concepts to building a holistic behavioral study, but for the purposes of this paper they are peripheral considerations and fall outside the scope. Instead the aim is to focus on the aspects eco-labeling organizations can directly control with their certification schemes.

As demonstrated here, eco-labels tell a bad story that the majority of consumers either do not understand or may not find effective. Labels do not in fact aid in the necessary knowledge creation to inform consumers why these labels might be helpful. This form of knowledge construction via communication schemes is directly related to the cohesion of a message (Aviv, Erlich, & Ravid, 2003). More informally this is often referred to as the "stickiness factor" (Aviv et al., 2003), which is a determinant of the impact of a message on the consumer; the 'stickier' the message, the higher the consumer's ability to use and adjust their conduct according to that information.

For eco-labels this concept has exciting implications. It means that one of the key shortcomings, that eco-labels actually have control over, is that they have failed to make an impactful statement to change consumers' minds. They fail to tell a story that sticks and creates knowledge for the buyer about the labels' benefits to their individual goals. In other words the narrative that eco-labels are currently creating is a singular one of being a road sign, not a holistic one of matching products with the individual lifestyle choices of consumers. While the basic criteria of credibility, salience, legitimacy and awareness have shown that some eco-labels have a higher effectiveness-potential than others; we now understand that this potential may only apply to a subset of already informed consumers that seek out eco-labels. Meanwhile uninformed consumers remain oblivious, as eco-

labels have done little to create a cohesive narrative and construct knowledge that is conducive to their causes.

This exploration of increasing label awareness through enhancing the stickiness of their message is relevant, as it points to yet another area for eco-labels to improve their overall effectiveness-potential. Specifically, they could achieve higher levels of market awareness if they were to increase their capacity to create new knowledge that meshes the interests of consumers, which in turn would make labels more cohesive. This understanding is critically important to the sustainability field as it creates a holistic picture for eco-labeling organization inherent capacities and means to improve them. This study maintains that eco-labeling is indeed a useful tool to guide sustainability but the potential of this scheme is much higher than currently explored.

4.4 So What?

Based on the results, the key recommendations to further develop the effectiveness-potential of eco-labeling governance can be explicated as follows. Eco-labeling organizations can increase the strength of their narrative by engaging in a participatory approach, including a diverse group of actors in their decision making processes and covering more lifecycle stages through their certifications. This would serve to increase both legitimacy and salience of the respective scheme. Although this may slow down the benchmark setting processes, involving a more diverse group of actors including members of the general public would help to circumvent consumer trust issues, which were commonly cited, and directly impact the credibility of the model in general. Besides increasing the inherent effectiveness-potential, this extended stakeholder group should be tasked with deciding what products should and should-not be awarded an eco-label as this is often an area where arguments supersede the consumers' best interests (Erskine & Collins, 1997; Horne, 2009).

The NSMD governance approach has left expanding eco-labels with a trade off between standard stringency and label expansion. Labeling organizations should decentralize their standards to allow for more precise criteria setting at the regional levels. Such an initiative would avoid the deterioration of a standard as a whole while ensuring the best possible conditions for the regional operations and increase its credibility to the consumer. Integrated transgovernmentalism is a means for eco-labels to acquire regional enforcement authority to further strengthen their label and narrative to the consumer. Thus organization should aim to implement this governance strategy to better fulfill their potential.

The story eco-labels tell about products is attractive mainly to those interested in them. In order to broaden this narrow target group, the stickiness of the information on the label must be enhanced. Labels can do so by matching the products they certify with the specific lifestyle goals of consumers. Whether those goals are to reduce in home chemicals, minimize ones CO2 footprint or lessen the water usage of the products they buy, organizations can do a lot to increase how sticky their message is to the consumer by illustrating this type of information on their labels.

Despite the benefits of eco-labels, they must not be regarded as a sustainability governance panacea as they do not explicitly focus on issues of over-consumption. Rather, they are merely a means to promote products whose production processes are less harmful. The current neo-liberal economic paradigm forbids prosperity without economic growth (Jackson, 2011) and demands for the qualitative development of the economy while reducing consumption could partially be answered by eco-labels. A new generation of product labels could start to create a consumer narrative around the benefits of high quality products and conceivably the benefits of non-consumption to human well-being. However, to truly disrupt the systemic, cultural and economic dependence on "stuff" and achieve more sustainable consumer decision-making, we need more than just information campaigns via eco-labels.

In connection to effective product-narratives, it is imperative to spark a cultural shift within the political realm and civil society. This shift would aim to raise public consciousness about the values of reducing and reusing products; to put humanity and our interdependence with the environment in the foreground of our development of human well-being (Jackson, 2011). Marking products accordingly, while maintaining an effective story that resonates with the consumer is a rather small fragment of this larger movement.

A substantial logistical hurdle to allow for more sustainable decision making is the increased availability of sustainably produced goods. Moving beyond a mere life-cycle focus of products, for example, the cradle-to-cradle (C2C) design concept provides a more feasible approach to ensuring that manufacturing systems are able to deliver the necessary goods to meet human needs while recycling and remanufacturing resources that are already in circulation (Kumar & Putnam, 2008). This addresses an important step to the no-growth economy as the C2C design principle would lay the foundation for consumers to be able to make the necessary sustainable purchasing decisions beyond those offered by eco-labels in the current market economy.

4.5 Reflection on the Research Process

4.5.1 Limitations of the Study

I am reminded by classical Greek philosopher Socrates who would likely say something along the lines of 'I know that I know nothing… especially about eco-labels'. The topic of product labeling is extremely complex particularly in connection with decision science and the research here looks at a narrow piece of it with imperfect information.

The use of organizational literature to inform the scientific ranking of eco-labels is a clear limitation. Some of this publically available data is not scientifically peer reviewed; therefore, it is possibly inflated or otherwise inaccurate due to the nature of company sales and market collateral. While the data points retrieved from this information were applied equally across eco-labels to help maintain an impartial baseline throughout the study, some numbers may be more inflated than others leading to potentially skewed results. A study should be conducted to scientifically verify the claims made by labeling organizations.

A drawback of the awareness metric as it is employed here (as a function of the number of licensed retailers) is that it does not consider the overall market share of those retailers, the number of products that are labeled within their stores or any other characteristics that may have legitimate influence on the market awareness of a product eco-label. For example: A large, popular textile outlet counting as a single retailer in the awareness metric may generate more market awareness by distributing eco-labeled textiles than a number of small, individual storefronts. A more thorough analysis of the market landscape to gauge an approximate number of customers reached per annum would be a better awareness metric than the one used in this paper. Alternatively, a consumer survey could establish the awareness level of different demographic groups in much greater detail. Although, such an endeavor requires time and resources outside the scope of this study, it should be considered in any further analyses done on this topic.

The estimation of legitimacy levels by using the number of stakeholders is insufficient, as the social and political clout of the individual stakeholders should also be estimated. Although labeling organizations have different means of involving stakeholder groups, this study ignored these relationships for sake of simplicity. The German Blue Angel for example includes industry in its Eco-Label Jury to help with its decision making (Micheletti et al., 2006), while the Fairtrade® Cotton label entirely excludes industry from its decision processes (Renard, 2005). There are important trade offs

to be considered between the various approaches but such an undertaking should be the focus of another study.

The *Likert* scale employed here was a 5-point scale chosen for its simplicity without compromising on reliability and validity of the scores. However, *Likert* scale rankings for the surveyed eco-labels were often the same or very similar despite potentially meaningful differences in their quality. The results as currently illustrated suggest that eco-labels are all functioning within a similar margin of effectiveness. However, that may not be an entirely correct conclusion. Therefore a *Likert* scale with at least 7 points should have been selected. This would adhere to the seven lifecycle stages of textiles, which would facilitate the salience rating of each label while increasing the currently marginal differences between the labels.

External influences on behavior such as culture, social status, weather, gender and age, go unmentioned in this paper as they would far exceed the scope of this thesis and obstruct a meaningful discussion of the topic. Moreover this research assumes that knowledge about a product will automatically lead to the appropriate, corresponding action, which is not necessarily the case (Horne, 2009). This assessment would have to be tested and verified in the field directly. Nonetheless, I maintain that the insights drawn from the research in this paper are valuable to advance our understanding in this field and that labeling organizations can use this research to better understand how to improve their effectiveness-potential and aid in the development of more sustainable consumption patterns.

4.5.2 Further Considerations

The research presented here is an alternative means to assess eco-labels according to their inherent qualities, which in a way is a late precursor to many studies that have explored the effects of eco-labels without an understanding of the labels themselves. The results showcasing the inherent effectiveness-potential of eco-labels should be explored in much greater detail. A revised version of the method used in this paper could be applied to a more mature eco-labeling market such as that for foods. In this market a series of consumer surveys could put the assumptions made in this paper to the test. It would help to identify if the indicator set used here, is in fact indicative of effectiveness in the real market and whether knowledge creation via eco-labeling is a feasible strategy to creating a more comprehensive narrative. Such a study would have to be conducted in a single country where consumer sentiments towards ecological foods have been scientifically evaluated. The field-testing of effectiveness-potential of eco-labels would yield incredibly useful knowledge as this strategy is becoming more entrenched as a means to foster more environmentally friendly consumption.

This paper focuses on the consumer and the effectiveness-potential of eco-labels in promoting different buying behavior. However this is a key point of divergence for eco-labels. While they serve as a communication tool to consumers they also serve as an important means to regulate the production of goods. This study considered a single aspect of this duality and additional studies should determine the inherent effectiveness-potential of eco-labels in their regulatory abilities. Such a study would help further define the overall effectiveness-potential of eco-labels to understand whether this governance strategy is useful on both sides of the market.

Further research is certainly needed on a variety of other topics, including the actual environmental impacts of eco-labels, the complex cognitive relationships of different consumers to products, the social interactions between consumers that do and do not buy environmentally conscious products; however, these themes have yet to be evaluated definitively.

5 Conclusion

With the underlying aim to evaluate the eco-labels' inherent effectiveness-potential in conveying environmental information to consumers in the German textile market, this study has provided insights to three questions: How effective are eco-labels in terms of their capacity to convey information to the consumer? What governance characteristics of eco-labels can be changed or augmented so it can reach its greatest potential as a tool to promote sustainable consumption? Are eco-labels effective in the knowledge creation process for the consumer? It has focused on the German textile sector as a case study. A comparative analysis of six eco-labels present in the German market was performed. This analysis employed an amended framework, which included four proxy indicators: credibility, legitimacy, salience, and awareness, to inform a ranking of the effectiveness-potential of six eco-labels in delivering sustainability information about textiles to consumers, ranking each on a *Likert* scale according to the framework indicators. This ranking was based on a literature review of the scientific and organizational information currently available.

In general, the results cumulate to show that in their current form, eco-labels have created an ineffective narrative for the consumer. There is a considerable gap between the total potential effectiveness of the labels considered in this study and their actual effectiveness with the best label reaching only 67% of its total potential. The "Label Integrity Dilemma" presents a considerable issue to expanding eco-labels, which is reflected in their NSMD governance approach and directly impacts the effectiveness score of eco-labels in creating a convincing sustainability story. The various shortcomings of the NSMD governance model can be minimized through the combination of the decentralization theory with the concept of transgovernmental networks, which would help evade the specific drawbacks of the NSMD model and bolster its strengths. This study further assessed the awareness indicator as a function of the knowledge creation ability of eco-labels, which showed that presently, eco-labels merely direct the already informed consumers to the products they know they are looking for. Eco-labels do not impact the unaware consumer, which can be remedied through an increase in the labels' cohesion or "stickiness factor".

These findings are important to the field of sustainability science because they are an innovative attempt at deciphering the inherent potential of eco-labels in isolation of externalities, which is an essential prologue to studies aiming to understand their effects in connection with anything else. Additional studies should further concentrate on the innate characteristics of these systems to help increase sustainability before they draw correlations between them and more complex externalities.

While the research presented here certainly helps to initiate that understanding, the goal remains to stimulate discussion around this emerging trend, not to conclude it.

6 References

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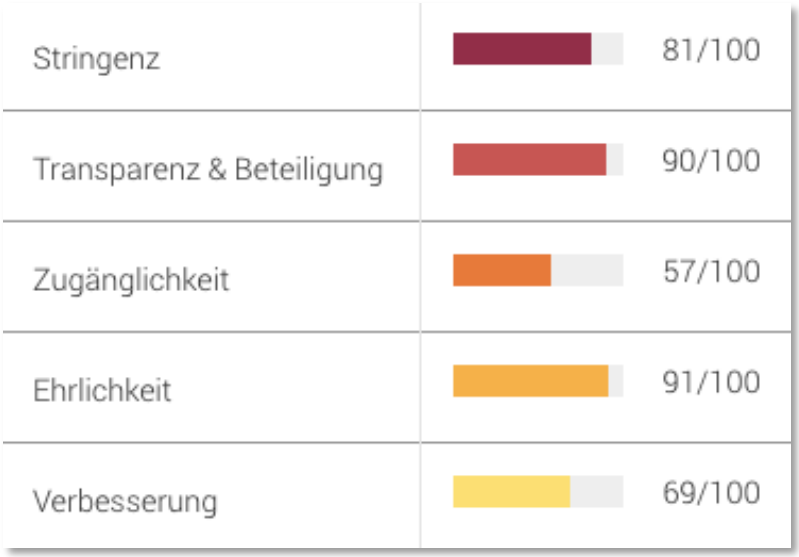
7 Appendix

Appendix A. Sustainability Issues in the Lifecycle of Textiles

Table illustrating the problems in the textile industry reproduced from (Clancy et al., 2015).

Life Cycle Stage	Examples of sustainability issues in clothing industry
Concept/design/ innovation	Incentives from, e.g. mission statement, business model, strategy and organisation, influence the extent to which workers prioritise sustainability issues along the entire lifecycle (Charter and Clark, 2008; Clancy et al., 2013; Niinima€ki and Hassi, 2011; Nystro€m and Williander, 2013)
Resource acquisition/farming	Choice of material and supplier may influence the impact on bioproductivity and human health caused by the use of e.g. petroleum resources, chemicals and water (Eryuruk, 2012; Pfister et al., 2009; Sandin et al., 2013)
Production yarn/fabric	Choice of material construction and supplier that limit the impact on bioproductivity and human health from use of e.g. petroleum resources, chemicals and water (Alkaya and Demirer, 2014; Dawson, 2012; Fransson and Molander, 2013; Muthu, 2014; Ren, 2000)
Garment manufacturing	Choice of supplier may influence the social impacts like unfair working hours and wages (Turker and Altuntas, 2014; Barrientos et al., 2011)
Packaging/ distribution	Choice of packaging may limit environmental impacts e.g. demands on transport modes and fuel requirements, choice of warehouse location to facilitate coordination of transports (Legnani, 2011; Dekker et al., 2012)
Use/wash/ repair/reuse	Choice of material, quality and design of garment to facility a relevant life span and influence users' behaviour (Achabou and Dekhili, 2013; Bianchi and Birtwistle, 2010; Laitala and Boks, 2012; Niinim€aki, 2010)
Waste management/ recycling	Choice of material composition and chemicals of garments to facilitate material recycling or incineration (Zamani et al., 2014; Wang, 2010)

Appendix B. Example of Credibility Ranking in Database



Appendix B. Screenshot retrieved from online database www.Siegelklarheit.de of credibility ranking of the German Blue Angel label according to stringency, transparency, accessibility, honesty and improvement (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015).

Appendix C. Detailed Credibility Ranking in Database

Credibility Indicator	Blue Angel	Bluesign®	EU Ecolabel®	GOTS®	OEKO-TEX®	Fairtrade®
Stringency	81	80	84	82	81	89
Transparency	90	59	91	70	66	86
Accessibility	57	75	63	68	50	67
Honesty	91	82	100	83	85	84
Improvement	69	88	75	66	81	89
Average score	**77.6**	**76.8**	**82.6**	**73.8**	**72.6**	**83**

Appendix C. Shows details regarding the individual credibility ratings for each eco-label as determined by the database www.siegelklarheit.de (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015)

Appendix D. Likert Scale Ranking for each Eco-label

Fairtrade®	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Credibility – avg. rating as awarded by web service					83 (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015)
Salience - # of lifecycle stages covered	1 (Renard, 2005)				
Legitimacy - # of stakeholders involved		5 (Renard, 2005)			
Awareness - # of companies licensed	61 (Fairtrade Foundation, 2016)				

Blue Angel	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Credibility – avg. rating as awarded by web service				77.6 (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015)	
Salience - # of lifecycle stages covered			3 (Clancy et al., 2015)		
Legitimacy - # of stakeholders involved			7 (Micheletti et al., 2006)		
Awareness - # of companies licensed	2 (Federal Environment Agency & Reichsausschuss für Lieferbedingungen GmbH, 2016)				

EU Ecolabel®	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Credibility – avg. rating as awarded by web service					82.6 (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015)
Salience - # of lifecycle stages covered			3 (Clancy et al., 2015)		
Legitimacy - # of stakeholders involved	4 (Erskine & Collins, 1997)				
Awareness - # of companies licensed	6(Communications Department of the European Commission, 2015)				

GOTS®	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Credibility – avg. rating as awarded by web service				73.8 (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015)	
Salience - # of lifecycle stages covered		2 (Clancy et al., 2015)			
Legitimacy - # of stakeholders involved		5 (Hustvedt & Dickson, 2009)			
Awareness - # of companies licensed	11 (Global Organic Textile Standard International Working Group, 2013)				

Bluesign®	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Credibility – avg. rating as awarded by web service				76.8	
Salience - # of lifecycle stages covered			3 (Clancy et al., 2015)		
Legitimacy - # of stakeholders involved		5 (Söderberg, 2012)			
Awareness - # of companies licensed	42 (Bluesign Technologies AG, 2013)				

OEKO-TEX®	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Credibility – avg. rating as awarded by web service				72.6 (Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung, 2015)	
Salience - # of lifecycle stages covered	1 (Clancy et al., 2015)				
Legitimacy - # of stakeholders involved					13 (Sewekow, 1996)
Awareness - # of companies licensed					413 (OEKO-TEX Association, 2016)