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A Multi-Stakeholder Perspective on Food Labelling for Environmental Sustainability: Attitudes, Perceived Barriers, and Solution Approaches towards the “Traffic Light Index”

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Abstract: The so-called “Traffic Light Index” (TLI) is a meta-sustainability label aimed at condensing the information provided by existing sustainability labels into an overarching message on food products’ environmental footprints. Such an overarching message is critical to reduce the confusion caused by existing labels and to foster more sustainable dietary habits among consumers. While research shows that the TLI is a viable and effective choice, its actual development and implementation are impeded by debates between relevant stakeholders in the European food system. This study examines those debates and adopts a multi-stakeholder perspective to address the following question: *How do different stakeholder groups involved in the discussion towards a meta-sustainability label inhibit the adoption of the TLI label?* Exploratory interviews with representatives from non-governmental organizations, social enterprises, academia, multi-national corporations, and governmental organizations show that each stakeholder group (1) adopts either optimistic or skeptical attitudes towards the TLI label, (2) perceives different types and magnitudes of barriers to its adoption (i.e., cognitive, methodological, and processual), and (3) proposes solutions to overcome those barriers that are either of an entrepreneurial or risk-averse nature. Findings further reveal that multi-stakeholder interactions influence attitudes and thereby inhibit or favor TLI adoption. Hence, entrepreneurial (vs. risk-averse) solutions proposed by optimistic (vs. skeptical) stakeholders may alter the attitudes of skeptical (vs. optimistic) stakeholders and the barriers they perceive to TLI adoption. By responding to calls for holistic approaches towards food labelling, our study shows how the diversity of stakeholders’ perceptions towards the TLI inhibits its adoption. We propose a theoretical framework and a set of propositions that can serve as springboards for policy ideas to propel progress in food labelling for environmental sustainability.

Keywords: sustainability; eco-labelling; food; traffic light index; multi-stakeholder perspective

1. Introduction

Globally, food and agriculture account for 20% of total direct carbon emissions (FAO, 2017. Livestock solutions for climate change. [Online] Available at: <http://www.fao.org/3/a-i8098e.pdf> [Accessed 7 January 2021]). Individually, approximately one-third of a person’s environmental footprint is caused by his or her diet [1]. With a growing population to feed, intensive food production causes harmful greenhouse gas (GHG) emissions [2] and leads to soil degradation, land-use change, biodiversity loss, and water scarcity [3]. Although people are increasingly conscious of sustainable food consumption [4], this rarely translates into corresponding purchasing behaviors [5,6]. An important reason for this is the prevailing consumer misconception on food products’ actual climate, water, and land footprints [7]. A staggering amount of sustainability labels for food products have been introduced to communicate accurate sustainability information to consumers

and to promote the adoption of sustainable diets [8,9]. However, research shows that many consumers are confused by the variety of existing sustainability labels [10,11].

Therefore, it is critical to develop and implement the so-called “Sustainability Meta Labelling” [12], which condenses the information provided by existing labels into an overarching message on the products’ environmental footprints. Yet, despite discussions and research exploring how such labelling should be designed and implemented [13–15], no meta label has been adopted so far. In this study, we focus on the “Traffic Light Index” (TLI), which has been heralded as a viable and effective meta label that is easy to understand by consumers [16,17]. The TLI reflects an aggregated visualization of relevant sustainability information in the form of a traffic light with green (sustainable), yellow (moderate), and red (unsustainable). Research suggests that this index outperforms other labelling systems, such as the nutrition table or the Guideline Daily Amount scheme, in influencing consumer choices [18,19]. However, the TLI has not been fully embraced by key stakeholders in many European countries.

We aim to explore the reasons for this non-adoption by taking a multi-stakeholder and holistic perspective. The existing literature mainly focuses on the consumer perspective to analyze how a sustainability label should be crafted and designed to efficiently contribute to behavior changes [5,20,21]. Yet, by focusing exclusively on consumers, current research neglects the perception of other involved stakeholders—those who affect and are affected by such food labels [22]. We still know little on the diversity of perceptions among key representatives of business, government, and civil society towards meta-sustainable labels and in particular towards the TLI label [12,23,24]. Since the labels must be accepted not only by consumers but also by other stakeholders such as companies that provide labelled products and non-governmental organizations (NGO) which are important watchdogs [25], adopting a multi-stakeholder perspective to understand divergences is critical. In order to develop proper initiatives and support sustainability, it is essential that stakeholders act collegially and can provide advice and solutions for common actions and measures [26]. Our research question therefore asks: *How do different stakeholder groups involved in the discussion towards a meta-sustainability label inhibit the adoption of the TLI label?*

We employed a qualitative-inductive methodology based on 16 exploratory interviews with representatives of different stakeholder groups ranging from multinational corporations (MNC), social enterprises (SE), NGOs, and academia (AC) to governmental organizations (GOV). Our research shows that there are two key attitudes of stakeholders towards TLI, namely *optimistic* (for NGO, SE, and AC) and *skeptical* (for MNC and GOV). Second, we find that stakeholders perceive various sets of barriers of different magnitudes to the TLI development and implementation; *cognitive*, *methodological*, and *processual barriers*. Third, to overcome those barriers, NGOs and SEs prefer more risky *entrepreneurial solutions*, while stakeholders representing AC, MNCs, and GOV favor *risk-averse solutions*. Finally, findings show that multi-stakeholder interactions influence attitudes towards TLI. A lead taken by optimistic stakeholder groups may foster entrepreneurial solutions, which can alter attitudes of skeptical stakeholders and their perceived barriers.

Our main contributions are two-fold. First, we expand the still limited understanding of how different stakeholder groups perceive TLI feasibility, the important barriers to implementation, and how they could be overcome. Based on our findings and building on the multi-stakeholder perspective, we propose a theoretical framework with propositions connecting stakeholder groups’ attitudes, perceived barriers, and their solution approaches to the likelihood of TLI adoption. This is important, since we thereby expand our understanding of impediments to the labels’ development and implementation [13,27,28]. In doing so, we respond to multiple calls for further research adopting a holistic approach to food labelling. Second, in a current context in which intensive food production causes GHG emissions [2] and leads to soil degradation, land-use change, biodiversity loss, and water scarcity [3], our study serves as a springboard for

policy ideas aimed at effectively promoting meta-sustainable labels. There is an urgent need for environmental labels that clearly convey environmental information on products [29] and foster a transformation towards sustainable consumption and production [30]. Our findings highlight stakeholders' perceptions towards TLI and hence the impediments but also the drivers for TLI adoption. Policy implications that can be derived from our research are three-fold: There is a need to prioritize trial-and-error and simplified approaches at first and to agree on trade-offs between stakeholders' expectations; some stakeholder groups (i.e., NGOs and SEs) tend to be more inclined than other groups to target such trade-offs and to take the lead in discussions towards actual TLI adoption; and policy should support those latter stakeholders in their initiatives with adequate incentives. NGOs and SEs are more likely to be considered as legitimate among consumers, and only consumers who are convinced of the importance of sustainable consumption demonstrate demand for eco-friendly products and create a "pull" for other retailers and producers [20].

2. Theoretical Background: Contestation around Eco-Labeling and the Traffic Light Index

Political consumerism has increasingly gained relevance for meeting environmental targets [31], as "dietary change can deliver environmental benefits on a scale not achievable by producers" (Poore and Nemecek, 2018, p. 991) [27]. For this reason, a plethora of sustainability labels have been introduced to act as a demand-oriented driver for change [31,32]. Existing labels often have a binary nature, however, classifying a product as either sustainable or not sustainable is based on one dimension. Due to this, researchers are concerned over the difficulty of providing adequate information that allows consumers to distinguish between products. The labels do not "communicate the complexity of underlying continuous variables" (Weinrich and Spiller, 2016, p. 1138) [33] and are limited with respect to the number of issues they cover [34]. On top of that, as pointed out by Bleda and Valente (2009, p. 519), "firms serving the market for environmental conscious consumers have no reason to increase the value of environmental quality beyond the threshold required to gain certification" [31]. This casts doubt on whether existing labels provide adequate incentives for companies to develop innovative and more sustainable products.

Moreover, both producers and consumers are confused by the overlapping issues targeted by labelling schemes, such as product ingredients, e.g., trans fats and sugar, fairly-traded or sustainably sourced raw materials, and emissions caused by production including the water or carbon footprint of a product [35]. This confusion is exacerbated by the multitude of independently co-existing labels that each target a single impact area [36], making it difficult to be familiar with the content of each [8]. Consequently, it is challenging to adequately illustrate the underlying complexity of sustainability without overstressing consumers' abilities to process the communicated information. Reaching such a challenge notably requires an understanding of how consumers consciously and unconsciously deliberate, analyze, and eventually act [37].

2.1. Meta-Sustainability Labelling to Encourage Sustainable Production and Consumption

In light of these complications, "Meta-Sustainability Labelling" has been proposed to harmonize the redundancy of existing labels into an overarching scheme [12,24]. First, such a universal scheme could correct "for asymmetries in information, because sellers have more information than buyers about product qualities" (de Boer, 2003, p. 260) [38]. Therefore, a meta-sustainability label could correct market failures caused by poor communication of the credence of product attributes, as it provides more accessible and reliable information [31,39]. (Credence claims on product characteristics cannot reasonably be assessed and evaluated by consumers, considering the information at hand or cheaply acquirable [31]). Second, if communicated in an easily interpretable way, a

meta-sustainability label could enable consumers to discriminate between products based on their overall environmental performance [40,41].

Poore and Nemecek (2018) emphasized the need for a holistic environmental sustainability label to fill the information gap [27]. Referring to the interrelated processes of all value chain actors, the purpose of their proposed mitigation framework was to trigger both sustainable consumption and production. As illustrated in Figure 1 below, consumers would be incentivized to consciously choose more environmentally friendly products at the point of sale. Additionally, producers and retailers could benefit both downstream by receiving information on their suppliers' environmental performance and upstream through gaining a competitive advantage caused by the demand for environmentally benign products [42]. Yet, as we will discuss next, the label's potential design and structure remain contested.

On the one hand, a label should advise on overall dietary guidelines or, more specifically, give recommendations on which products to choose. For instance, van Dooren et al. (2017) proposed an index based on product category levels that allows for differentiation between the environmental impacts of, for example, cheese, fish, and berries [13]. Communicating the average impact of a product category to consumers enables favorable changes on a dietary level by incentivizing the switch from animal-based to plant-based protein. Poore and Nemecek (2018, p. 987), however, showed a "high variation in impact among both products and producers" [27]. Hence, emphasizing the importance of differentiating not only between but also within product categories. Consequently, if more nuanced information on the producer impact is communicated, consumers could compare products in the same category. This implies that, rather than fully switching to plant-based alternatives, consumers are rather incentivized to avoid high-impact producers and reduce their environmental footprint through smaller behavioral changes. Other research found that, if provided with appropriate information on products' environmental footprints, both climate-conscious and mainstream consumers would purchase more sustainable products if these did not deviate too much from their primary choices [31]. As a consequence, once a labelling scheme was applied across the industry, competition would be triggered not only on prize and quality, but also on environmental performance.

On the other hand, how the vast amount of environmental impact data from complex food industry supply chains can be adequately monitored remains a subject of debate. Consequently, it remains unclear whether the label should be based on an overall score, combining all indicators emerging along the product's lifecycle [12,24], or whether a (few) single indicator(s), such as GHG emissions, should serve as a proxy to classify and communicate products' "greenness" to consumers [9,39]. As Golden et al. (2010, p. 5) concluded, a meta-sustainability label "should focus broadly on the issue of sustainability and not on single issues such as carbon content, as products can be engineered for carbon neutrality while having significant unintended consequences for numerous other ecological services" [24]. Furthermore, as the concept of sustainability itself evolves overtime, the meta-sustainable label must account for those evolutions and be adjusted [40]. Figure 1 shows that a holistic environmental sustainability label is needed to trigger both sustainable consumption and production among all value chain actors (Poore and Nemecek, 2018).

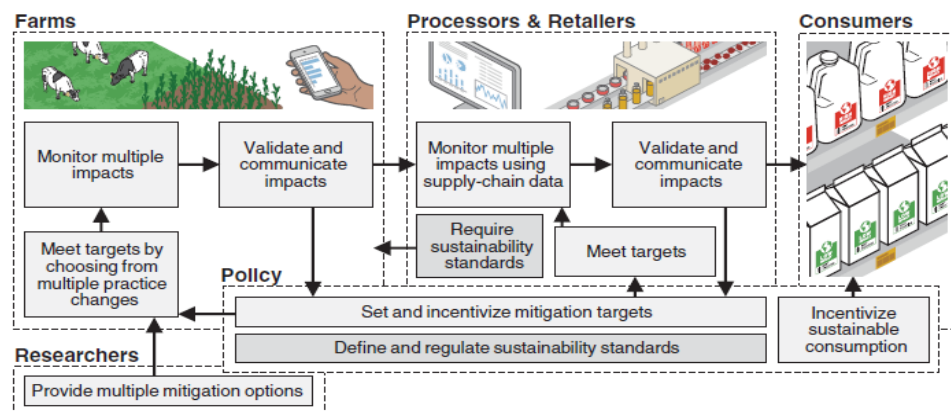


Figure 1. Graphical representation of mitigation framework (Poore and Nemecek, 2018).

2.2. Traffic Light Index Labelling as a Consumer-Friendly Approach to Meta-Sustainability Labelling

An important feature of an effective label is its visualization, which must find a balance between the need for experienced environmentalists to assess detailed information with the need for the mass market to simplify information [29]. Therefore, the degree of information aggregation is another challenging factor to consider. Whereas, a high degree of aggregation makes a label more comprehensible for mainstream consumers, it remains contested whether the complexity of sustainability indicators can be combined into a meaningful and concise message [5,12]. Hence, rather than visualizing the information in a highly simplified label, such as the A-E performance scale, a graded evaluative scheme, similar to the UK Traffic Light for nutrition labelling could address the aforementioned contestations (British Nutrition Foundation, 2019. Front of pack labelling: Looking at nutrition labels is available online at: <https://www.nutrition.org.uk/attachments/article/324/Looking%20at%20nutrition%20labels%202020.pdf> (Accessed 7 January 2021)).

Leach et al. (2016) proposed a “stoplight” labelling approach as outlined in Figure 2, indicating the sustainability rating as of a small footprint in green, intermediate in yellow, and high in red [41]. They found that color-coded environmental impact labels positively support consumers in comparing across and within food product categories and lead to more sustainable purchase decisions. Similar studies by Thøgersen and Nielsen (2016) and Sharp and Wheeler (2013) confirmed consumers’ preferences for a TLI, as it supports them with easy-to-interpret choice cues [16,17]. Therefore, using traffic light colors allows consumers to use simple heuristics to identify products with the lowest or highest environmental impacts (i.e., choose green, avoid red), while at the same time transmitting detailed enough information to those interested in making within-category comparisons [6].

As illustrated in Figure 3, a comparable TLI is already in use in the UK, demonstrating the food product’s nutritional values (British Nutrition Foundation, 2019). Nutrition labelling research confirms that the TLI as an interpretive labelling system has a positive effect on the choices people make [43,44]. Furthermore, it outperforms other recognized labelling systems, such as the nutrition table or the Guideline Daily Amount scheme [18,19]. In summary, an evaluative TLI appears to be a particularly suitable tool to communicate complex sustainability information to consumers in a comprehensible manner. Figures 2 and 3 represent “stoplight” labelling approaches.

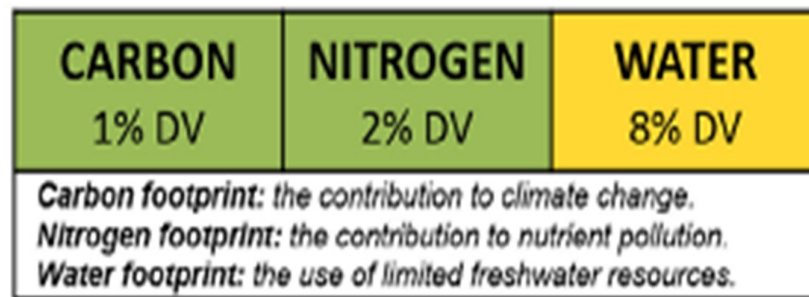


Figure 2. Stoplight label (Leach et al., 2016).

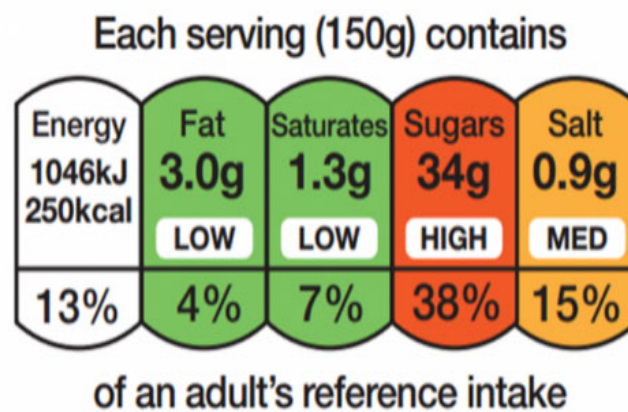


Figure 3. UK traffic light index (TLI) (British Nutrition Foundation, 2019).

2.3. Contestation among Stakeholders of the TLI Complicates Development and Implementation on the Market

While various scholars have emphasized the need to develop such a meta-sustainability label and favor the TLI as a viable visualization tool, many aspects of its development and implementation remain contested by all or some stakeholder groups. The current literature suggests various potential methodologies and communication strategies but the mere existence of these schemes and initiatives does not necessarily lead to their adoption in the marketplace. As outlined by Golden et al. (2010), when moving from the current single-attribute approach of eco-labelling towards a holistic sustainable product indexing, it is essential to not only consider multiple methodological dimensions but also to understand how multiple stakeholders evaluate the effectiveness of such labels [24]. This is important as, for instance, MNCs may be reluctant to support the proliferation of a TLI that could pose a threat to their existing product portfolio, whereas some start-up social enterprises might create their unique selling proposition on exactly those features. NGOs, in contrast, may find business-driven solutions not strict enough to encourage substantively more sustainable products and production processes.

Despite these diverging views, prior research has so far only paid limited attention to the different perceptions among stakeholders involved in TLI-related discussions. However, these are critical to identify where exactly the impediments to TLI adoption lie. Additionally, a widespread use of TLI is only likely to occur if there is broad buy-in from the involved stakeholders [23]. As Dendler (2014, p. 81) argued, there is a strong need for “the mobilization of key legitimacy actors who have the necessary social resources to facilitate the institutionalization of product labelling schemes across the production and consumption system” [12]. Hence, it is essential to involve a variety of stakeholders, as

this allows for mutual learning and joint problem solving by business, government, science, and society. The diverse perspectives on sustainability labelling help improve the understanding of the issue and accelerate the subsequent development and implementation of the label [45].

Nonetheless, a participatory multi-stakeholder approach adds complexity to the ongoing debate which is already, as previously outlined, characterized by a multitude of interpretations and definitions. This further complicates the actual adoption of a meta-sustainability label. Various and potentially contradicting opinions and interests need to be acknowledged and accounted for to ultimately reach the needed consensus among stakeholders and eventually propel progress in food labelling for greater environmental sustainability [46].

In summary, the literature suggests that the TLI is a promising tool to trigger more sustainable consumption and production in the food industry. However, developing and implementing such a meta-sustainability label remains a challenge and widespread adoption by the concerned stakeholders is not yet in sight. There is a need to explore and understand stakeholders' perceptions regarding the effectiveness of a meta-sustainability label and, in particular, of the TLI label.

3. Methods

Due to the limited research of stakeholder perceptions of meta-sustainability labels, this study adopts an inductive, qualitative research design. Following a purposeful sampling approach that allows the examination of an empirical context with rich insights [47], we selected Europe, with a focus on the Netherlands, Germany, and Belgium, as the research sites. This context already shows some initiatives around sustainable development and the food system transition, and the topic of the TLI is already discussed widely among important stakeholders. For example, the European Commission (2016) has conducted pilot studies assessing a "Product Environmental Footprint" with stakeholders across the European Union. Furthermore, both the European private sector and public sector have set determined goals to reduce their negative impact (European Commission, 2016). The environment is available online at: http://ec.europa.eu/environment/eussd/smgp/communication/product_information.htm (accessed 7 January 2021). However, at the time of the research, contestation on the TLI and its precise content and scope remains and a universal TLI has not yet been implemented. Therefore, representatives of stakeholder groups in the European food system offer an adequate empirical context that can be the starting point for further generalization based on our initial findings.

3.1. Sampling Strategy and Data Collection

The data collection was conducted in 2019 through 16 exploratory interviews, either face-to-face or by phone, depending on the preference of the interviewees (following the same interview guidelines). All the interviews were conducted by the first author. Relevant potential interviewees were identified through purposeful sampling [47]. Respondents were eligible for an interview if they (a) represented a stakeholder group from a business (MNCs or SEs) in the European food industry, government (GOV), or civil society (NGOs and AC), and (b) demonstrated expertise and knowledge of the food system transition, sustainability, or food labelling. We applied a snowball sampling method through which additional interviewees were identified based on the recommendations given by both experts and academics in the field, as well as by interviewees themselves [47]. This was useful, since it allowed for the identification of relevant experts in the field who could provide us with rich insights on the subject matter.

Through this approach, we compiled a list of approximately 40 potential candidates who met the sampling criteria. We then personally contacted the candidates via e-mail and invited them for an interview. This led to a response rate of 40% and a total of 16 in-depth interviews, with two representatives from NGOs, three representatives from social

enterprises (SEs), two representatives from academia (AC), six representatives from MNCs and, two representatives from the government, as well as one additional representative from a comparable multi-stakeholder initiative (MSI). The interviews lasted between 40 and 75 min and were tape-recorded and fully transcribed. All interviewees were guaranteed anonymity in the data analysis to build trust and increase the probability of uncovering sensitive opinions. These interviews allowed for theoretical saturation by gathering sufficient data to develop the inductive reasoning process presented in the following section.

Due to the exploratory nature of the interviews, no outcome or theory was developed *a priori*. Rather, we were interested in revealing why a TLI labelling system has not yet been widely adopted. Our main ambition was to gather different stakeholder perceptions to receive a genuine overview of the perceived potential and challenges of a TLI. Therefore, semi-structured interview guidelines with open-ended questions were applied. We asked questions such as “How do you evaluate the implementation of a TLI?”, “how can a TLI be set up in a way that is accepted in the market?”, and “which stakeholders should be involved and how do you imagine the process to be?”. Complete interview guidelines can be found in Appendix A. Furthermore, we engaged in informal conversations before and after the interviews to gain further insights on the interviewees’ values and attitudes. In all the cases, we took notes directly after the interview to take additional impressions and remarks into account.

3.2. Data Analysis

In order to capture the various perceptions of the interviewed stakeholder groups, we closely followed the methodology described by Gioia, Corley, and Hamilton (2013) to inductively analyze and interpret the empirical data [48]. This research design was guided by an interpretive approach and allowed for a vivid description and rich contextualization that adequately accounted for the subjective opinions of our informants [49].

After fully transcribing all the interviews, we started the analysis process by repeatedly reviewing the transcripts using the software Atlas.ti 8 to open the code and identify patterns in the data. In the first phase, we coded one interview of each stakeholder group to get an initial overview. Thereby, mostly in-vivo codes were generated to demonstrate the different stakeholder perceptions. In the second phase, the remaining interviews were coded in the same way until no further codes came up. From that, we created first-order concepts, summarizing various codes into emerging patterns that illustrated interesting insights on the perceptions of a TLI. Based on this, we created second-order themes in a further level of abstraction. Next, by going back and forth between data and literature, we derived five aggregate dimensions as a final step of abstraction. These include the perceived barriers to implementation of a TLI and, the various attitudes and solution approaches of the interviewed stakeholder groups. The inductive reasoning procedure is visualized in our data structure (Figure 4) and supported by additional quotes per theme. Quotes used both in text and tables are coded with their anonymized interview number and the categorization of the stakeholder group (for example, interview partner 3, stakeholder group social enterprise = 03-SE).

After completing the data analysis, we addressed data validity through a member check to profoundly reflect upon and remove bias from our interpretations [50]. We personally presented and discussed the findings with four involved interviewees and their respective organizations. Although this does not allow us to claim that our findings are all-encompassing and exhaustive, it gave an indication of whether our interpretations adequately reflected the interviewees’ opinions. Afterwards, the authors discussed the feedback from the participants and fine-tuned our findings. In general, our initial interpretations were considered to be plausible. Figure 4 represents our inductive approach based on the framework of Gioia et al. (2013).

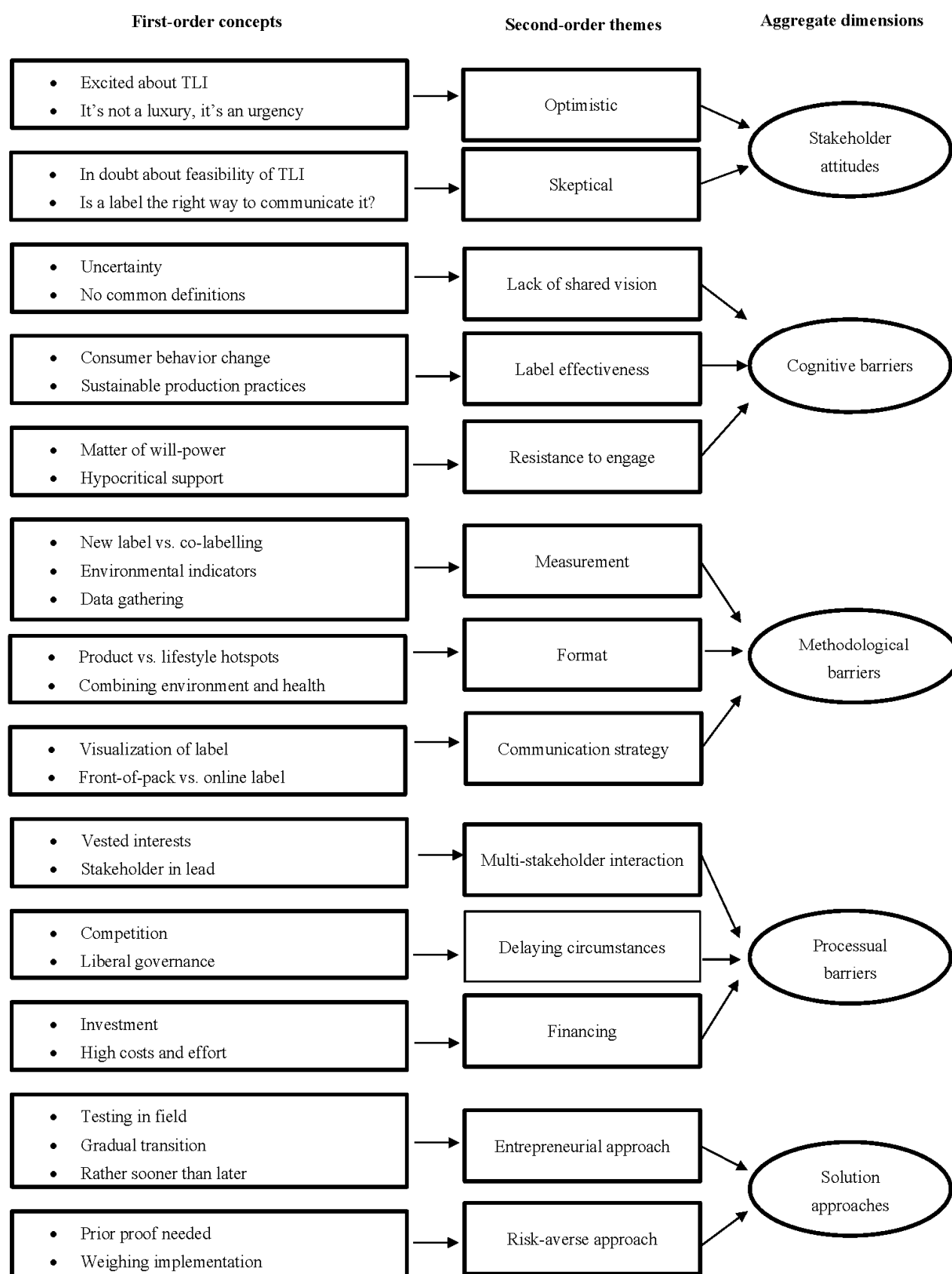


Figure 4. Data structure.

4. Findings: Stakeholder Attitudes, Perceived Barriers, and Solution Approaches

Our findings offer new insights on the impediments to a meta-sustainability label by accounting for stakeholder groups. First, the results suggested that stakeholder groups had different attitudes concerning the TLI endeavor, ranging from decidedly optimistic (NGOs, SEs) to highly skeptical (MNCs, GOV). In between, representatives from AC tended to be rather optimistic. These stakeholder attitudes are described in the first section of our findings, addressing the question of the stakeholders' perceptions concerning the TLI development and implementation. Second, we found that despite varying attitudes, stakeholders commonly strived for a food system transformation. Yet, especially considering short-term feasibility, different types of barriers were perceived by stakeholders when it came to assessing the challenges to TLI adoption. In the second section, these multi-dimensional barriers are examined and gathered into "cognitive, methodological, and processual barriers", hence, addressing the question of which concrete obstacles exist. Third, we found two distinct solution approaches that stakeholders preferred to adopt for overcoming these barriers. Whereas, NGOs and SEs seemed determined to immediately engage in efforts based on an entrepreneurial mindset, we found a risk-averse approach among AC, MNCs, and GOVs. Finally, findings revealed that multi-stakeholder interactions influence attitudes and thereby inhibit or favor TLI adoption. In particular, entrepreneurial (vs. risk-averse) solutions proposed by optimistic (vs. skeptical) stakeholders may alter the attitudes of skeptical (vs. optimistic) stakeholders and the barriers to TLI adoption. Taken together, our observations allow us to derive a comprehensive framework for TLI stakeholder perceptions of the TLI, marking an important step towards a more holistic portrayal of meta-sustainability labelling.

4.1. Stakeholder Attitudes

We first described the stakeholder attitudes to illustrate the positioning of the different groups (see Table 1). NGOs and SEs generally supported the realization of a meta-sustainability label and responded positively when asked about a TLI and its feasibility. They considered it as an important solution with potentially "revolutionary magnitude" (04-SE):

"That's why I still like it: don't learn 30 labels, but learn one: the TLI. That label will help you" (01-NGO).

This enthusiasm was mainly driven by a sense of urgency to enhance sustainability as soon as possible. Similarly, representatives of academia also believed in the potential of a TLI. However, they reflected more critically on the bureaucratic and political hurdles that could impede the implementation:

"That is a big job! I mean, that will take years! But I think that will be the way I see as most promising" (06-AC).

In general, we found that the attitudes of the abovementioned stakeholders towards the TLI were rather optimistic. The attitudes of governments and businesses, however, were significantly different.

In fact, MNCs and government representatives were hesitant and repetitively mentioned that the implementation seemed too complex and difficult to achieve. Moreover, they expressed reservation with regards to the label's ultimate ability to solve environmental issues. One stakeholder stated:

"I have my doubts. I don't think that something like a TLI would ever happen. ... I am not sure whether a traffic light system will work" (15-GOV).

Nonetheless, even the skeptical stakeholders emphasized the importance of addressing these difficulties. Therefore, it seems that all groups were willing to explore a meta-sustainability label, as one stakeholder noted:

"I kind of painted a picture that the TLI is super difficult but that doesn't mean that we don't need to work on it" (08-MNC).

While it might not be a surprise that different stakeholders evaluated the TLI differently and showed either generally optimistic or skeptical attitudes towards it, we identified important barriers that shed light on how those different attitudes translate into three impeding factors. Table 1 includes quotes referring to stakeholder attitudes.

Table 1. Stakeholder attitudes.

Sample Interview Excerpts	First-Order Concepts	Second-Order Themes	Aggregate Dimension
<i>That [TLI] would be really, really exciting! (01-NGO). Excited about TLI</i>			
<i>When I think about the learnings from this process for a sustainability label, then it is obvious that it is a very urgent need to take action (16-MSI).</i>	It is not a luxury, it is an urgency	Optimistic	Stakeholder attitudes
<i>We have to realize that we cannot fix the methodology. It is just too complex (14-GOV).</i>	In doubt about feasibility of TLI		
<i>I am also not sure how useful a sustainability label would be, to be honest (13-MCN).</i>	a label the right way to communicate it?	Skeptical	

4.2. Cognitive Barriers

As illustrated in Table 2, various cognitive barriers were discovered that appear to deter stakeholders from engaging in meta-sustainability labelling. First, the lack of a shared vision emerged due to the topics' novelty. Stakeholders seemed highly uncertain and desired a clear "understanding of the system in the first place" (03-SE). Therefore, informants decried the lack of common definitions and had a multitude of opinions on the methodology, visualization, and stakeholder constellation of the labelling. Consequently, stakeholders desired further inquiry to:

"...have a good debate on what it means from a technological point of view" (08-MNC),
and "agree on what is exactly measured, how it is measured, how it is calculated" (06-AC).

Second, label effectiveness was commonly questioned. Various informants queried whether a TLI would effectively influence consumer's decision-making, since especially for food, it is believed to be difficult to change behavior. Therefore, some were cautious to agree with the approach of labelling:

"This comes from the assumption that people care about the label which I am really questioning. I am questioning how much impact you would really achieve with a label" (13-MNC).

Third, to be considered successful, stakeholders expected the label to stimulate product innovation. As the transparency would create new ground for competition, interviewees predicted that companies were likely to adjust their internal strategies towards reformulation and improved sustainability performances. However, establishing these competitive dynamics was considered challenging since companies would only adhere to new labelling conventions if the label was either voluntarily adopted by the majority of the market or officially regulated. As a government representative explained:

"The moment it is obligatory, it would lead to more sustainable production because nobody wants to be labelled as a red, bad product" (15-GOV).

Fourth, informants expressed a great deal of resistance to engagement. While all stakeholders formally supported sustainability efforts, informants indicated a subtle frustration of inertia and hypocrisy, particularly in the food industry:

“Basically, if everybody agrees tomorrow on having a label because that would really change the world, then we would find a way to make that label. The problem is that there is very little interest for it” (13-MNC).

Stakeholders assumed a TLI would result in lobbying and considerable headwind from producers due to threats of financial or reputational damage to their core businesses. Therefore, implementing a universal label is constrained by a lack of will-power of influential players in the market. Table 2 includes quotes referring to cognitive barriers.

Table 2. Cognitive barriers.

Sample Interview Excerpts	First-Order Concepts	Second-Order Themes	Aggregate Dimension
<i>Of course, we all have this goal but who does what and what should we actually do? (03-SE).</i>	Uncertainty	Lack of shared vision	Cognitive barriers
<i>I can imagine that the definitions are not the same across all the different companies. Then you have to make sure that you are talking about the same topic, the same KPIs, the same measures (10-MNC).</i>	No common definitions		
<i>There would be a group of consumers that would answer yes to the question “Would you like to be better informed?”. So, there is a need for information. But if you do research whether this information effects their behavior, the research will show you no (02-NGO).</i>	Consumer behavior change	Label effectiveness	
<i>There’s always a kind of novelty issue (...) [but] if there is no more effect after a month, you’ll see that the companies are not going to care (13-MNC).</i>	Sustainable production practices		
<i>There is technical feasibility and there is the human side—whether there is willingness. (...) The technical feasibility is a no-brainer: of course, they can implement it! It is more of a matter of will power (03-SE).</i>	Matter of will power	Resistance to engage	
<i>I am a bit skeptical because these players are often more from the greenwashing than from the green doing (14-GOV).</i>	Hypocritical support		

4.3. Methodological Barriers

As shown in Table 3, concerns over methodology were also present due to the TLI’s complexity. They can be categorized as measurement problems, formatting problems, and the problem of unclear communication strategy. First, with respect to measurement, we found diverging interests with respect to the underlying methodology when discussing whether an entirely new scheme should be developed or existing labels categorized through “co-labelling” (01-NGO). Interviewees raised the concern that a TLI could replace existing labels. At the same time, introducing a complementary label appears to miss the initial objective of reducing consumer confusion. As one stakeholder questioned:

“What if you have a product which has the organic logo and a yellow traffic light and next to it, you have a product which has a green traffic light but doesn’t have the organic logo. Then, as consumer, which one do you choose?” (15-GOV).

Another barrier mentioned was the decision of environmental indicators and their respective weighting. MNCs specifically expressed difficulty of gathering multi-dimensional data and agreeing on a common measurement:

“People don’t even agree on targets for GHG emissions, so how are they going to agree on six environmental parameters plus, potentially, six more health parameters: that’s just crazy!” (13-MNC).

Third, we found substantial concern over the formatting of the TLI. For instance, this relates to the degree of information the label would convey. First, the index could differentiate between products on a dietary level, which appears easier to develop but

would most likely face resistance from high-impact industries, such as meat and dairy. Second, the index could compare products within one category, which is more complex to measure but incentivizes “a race to the top” (02-NGO) and facilitates consumer behavior change. Most stakeholders preferred a combined label of environmental and health indicators. Nonetheless, one interviewee concluded:

“The possibility of matching together the diet consideration with the environmental impact would be great to have but that is very extreme—Even more difficult than only for the environment” (15-GOV).

In sum, the label was seen to ideally combine environmental and nutritional values as well as provide information on both the category and product level. However, this complexity would suggest further complicating the TLI development and requires more research.

Fourth, there were concerns over the communication strategy of the label. Stakeholders debated between a simple three-color tier, schemes similar to the UK TLI or Nutriscore, or positive labels. The degree of information portrayed has been especially debated since a simple TLI has the downside of losing information. Therefore, some stakeholders insisted that a TLI should add quantified information:

“The label should be a combination of both absolute, and relative, information so that it’s both easy to identify but also not too simple to leave out important information. It should have one holistic “sustainability” indicator” (04-SE).

However, MNCs felt that this was too demanding due to complex and fast-changing supply chains, varying languages across markets, and limited space on packaging. Rather, further information should be provided online or via campaigns. Yet, this has the disadvantage of potentially remaining unnoticed by consumers. Overall, various visualization options exist, for which stakeholders need to come to an agreement. Table 3 includes quotes referring to methodological barriers.

Table 3. Methodological barriers.

Sample Interview Excerpts	First-Order Concepts	Second-Order Themes	Aggregate Dimension
<i>You need to find a methodology. (02-NGO) vs. Co-labelling is all about putting the existing labels into a new type of categorization (01-NGO).</i>	New label vs. co-labelling		
<i>For the method, there are 16 indicators: global warming, land use, water use, acidification, and so on. If you are making a specification for your final product (...), then you have to select the most relevant indicators. What is most relevant? (05-SE).</i>	Environmental indicators	Measurement	
<i>To measure environmental data reliability for products is pretty difficult (08-MNC).</i>	Data availability		
<i>If I go to the supermarket and want to be as environmentally friendly as possible, then it’s great for me to know which is the most environmentally-friendly juice there is? That’s the “Product Hot Spot” approach. (...) If I take a “Lifestyle Hot Spot” view, the question is: What is the most environmentally friendly drink that also provides me with vitamins? (01-NGO).</i>	Product vs. lifestyle hotspots		Methodological barriers
<i>It’s interesting to discuss the pros and cons of combining a label for sustainability and health (16-MSI).</i>	Combining environment and health	Format	
<i>Every label has its advantages and disadvantages, there is no ideal label (11-MNC).</i>	Visualization of label		
<i>It’s best to place it on pack close to the point of decision (07-AC) vs. We are moving towards online shopping. That’s actually where you can more easily place the label and change it (11-MNC).</i>	Front-of-pack vs. online label	Communication strategy	

4.4. Processual Barriers

Table 4 illustrates another set of important processual barriers, relating to tensions between stakeholders, as well as economic and political influences.

Multi-stakeholder interaction. The process leading to the implementation of the TLI is imagined to involve multiple stakeholders, uniting politics, economics, and civil society. This creates challenges, as vested interests make it troublesome to find a compromise for contested aspects of the labelling, such as methodology or visualization. Furthermore, interviewees debated which stakeholder should take the lead. Due to expected resistance from certain industry actors, stakeholders expressed that only an obligatory scheme implemented by the government could ensure industry-wide adoption. However, they doubted that governments would take on that role, while MNCs discharged their responsibility due to credibility concerns. This left stakeholders pointing fingers at each other on who was responsible to initiate the discussion. One interviewee concluded:

“The only way to do this is when there is pressure from society to do it: from NGOs, from media, from the European Commission or other international bodies” (07-AC).

Delaying circumstances. Market dynamics and political duties were seen as further obstacles to implementation. Precisely:

“...it [TLI] is also an issue of branding from the retailers because they prefer to have an affiliation of consumers related to their own brands rather than to a common way of communicating” (15-GOV).

This curbs efforts on a unified labelling scheme, as commercial actors might rather treat it as an opportunity to gain a competitive advantage. Rather, some stakeholders perceived governments to be the most promising route to push a labelling scheme forward. However, others believed that governments are too liberal to establish prescriptive regulations since they fear limiting economic growth and consumers' freedom of choice. As a government representative confirmed:

“The government doesn't want to reign behind their front door. They don't want to tell consumers what to eat. That is not their business” (14-GOV).

Financing. Interviewees also perceived the necessary monetary and time investments to be potential hurdles. Due to the complexity of supply chains with dozens of differently sourced products, collecting environmental data is considered demanding. Moreover, learning from a similar MSI on health labelling, another

“...barrier is the cost of adapting the design of the packaging to include the new label. These costs are going to be in the millions” (16-MSI).

Therefore, the question of which stakeholder groups should primarily bear these costly efforts is noted as a further disagreement. Thereby, most actors regarded industry and governments as responsible for taking over the initial investment to increase data availability and develop the label. Accordingly, these stakeholder groups demanded prior proof of the label's effectiveness to reduce the risk of wasting valuable resources. Despite the disagreement around the TLI expressed by the involved stakeholders, we also found two distinct “solution approaches” among stakeholders, described in the following section. Table 4 includes quotes referring to processual barriers.

Table 4. Processual barriers.

Sample Interview Excerpts	First-Order Concepts	Second-Order Themes	Aggregate Dimension
<i>Then, of course, there is vested interest. The different, opposing interests (13-MNC).</i>	Vested interests	Multi-stakeholder interaction	Processual barriers
<i>There has to be one stakeholder that is pulling the strings together and initiates the discussion. Who that is? I don't know (10-MNC).</i>	Stakeholder in the lead		
<i>Retailers see value in differentiating themselves from their competitors which makes a harmonized communication difficult (15-NGO).</i>	Competition	Delaying circumstances	
<i>I don't think that policy-makers can or should tell you what to eat (15-NGO).</i>	Liberal governance		
<i>It would take a big investment, both for the ones who have to develop it and for all the companies who are going to be affected by it (02-NGO).</i>	Investment	Financing	
<i>It is a very time-consuming and a very costly process (09-MNC).</i>	High costs and effort		

4.5. Solution Approaches

While NGOs and SEs seemed motivated to translate their enthusiasm into tangible action as soon as possible, this applied to a lesser extent to companies and governments (see Table 5). SEs as well as NGOs appeared to be particularly entrepreneurial in finding ways to establish a TLI in the market, while the approach of businesses was rather risk-averse.

Entrepreneurial approach. Although representatives of NGOs and SEs were aware of the challenges ahead, they conveyed determination to be “in it for the long run” (03-SE) and voiced ambitions to do a large-scale consumer trial in the field. Therefore, their preferred approach was seemingly to realize a simplified version in the market, as soon as possible, to obtain truly representative findings. Subsequently, the label’s methodology and visualization could be gradually improved based on insights derived from field experiences and stakeholder feedback. An NGO representative remarked:

“It has a lot to do with trial and error. Frankly, I’m a little tired of companies always telling you what’s not possible. I think you just have to try a lot of things in practice” (01-NGO).

Risk-averse approach. On the contrary, companies, governments, and researchers first demanded proof that clearly confirmed the label’s effectiveness, a feasible methodology and appropriate visualization strategy:

“The first step is to have a good science-based description of how such a system should be set up. So, what are the criteria. Then, consumer testing: can a consumer understand this? Do consumers accept this? Then, an economic impact assessment: How does such a labelling system change the market? Does it take time to introduce it, money? If you have that, then you have the main arguments for introducing such a system” (07-AC).

Hence, stakeholders apparently required supportive arguments and credibility before implementing a labelling scheme in order to reduce risks and evaluate potential consequences. Therefore, it is necessary that a good scientific base is developed and the label’s effects on society and the economy are weighted, which is expected to take years. The results serve as a promising basis for future work suggesting a framework, as subsequently outlined, that helps to explain the dynamics of the multi-stakeholder collaboration.

Altogether, these findings showed that disagreement remains around the feasibility and efficacy of the TLI as an important case in point for a meta-sustainability label. The different evaluations of involved stakeholders on the TLI shed important light on the

question why the TLI is not yet broadly accepted by all involved stakeholders. Table 5 includes quotes referring to solution approaches.

Table 5. Processual barriers.

Sample Interview Excerpts	First-Order Concepts	Second-Order Themes	Aggregate Dimension
<i>The next step to take is that it would be interesting that a product group really starts putting a label on the product itself (05-SE).</i>	Testing in the field		
<i>Of course, you need to be workable: so, you need moments in which you give input and moments in which you just leave it as a version and then you can further refine and proceed (03-SE).</i>	Gradual transition	Entrepreneurial approach	
<i>It'd be important to implement it as soon as possible with a minimal viable version and work from there to drive visibility of the label and consumer awareness for the issue (04-SE).</i>	Sooner rather than later		Solution approaches
<i>Ideally, before introduction, there should be a lot of research on whether it is actually helpful. It is now often said it is helping the consumer and you're thinking: "Really? Is it? Where is the research?" (08-MNC).</i>	Prior proof needed	Risk-averse approach	
<i>So, it's not like we don't work on such a thing but in the next coming years, measuring it and then developing a profile of what we believe is better or worse, that will take a lot of time (08-MNC).</i>	Weighing implementation		

5. Theory Development: How Stakeholder Attitudes, Perceived Barriers, and Solution Approaches Impede TLI Adoption

Our framework consists of seven propositions and provides a new and more holistic perspective of the TLI adoption based on a multi-stakeholder approach (see Figure 5). The proposed conceptual model builds on stakeholder attitudes towards the TLI and uncovers a relationship between the attitudes, perceived barriers, and solution approaches in multi-stakeholder dialogues. In the current section, we explain these linkages theoretically and build corresponding propositions that serve as starting points for further empirical inquiry. Such understanding is essential to move the discussions forward in search for consensus [12] and initiate the right steps and appropriate efforts [11]. Figure 5 corresponds to our theoretical framework.

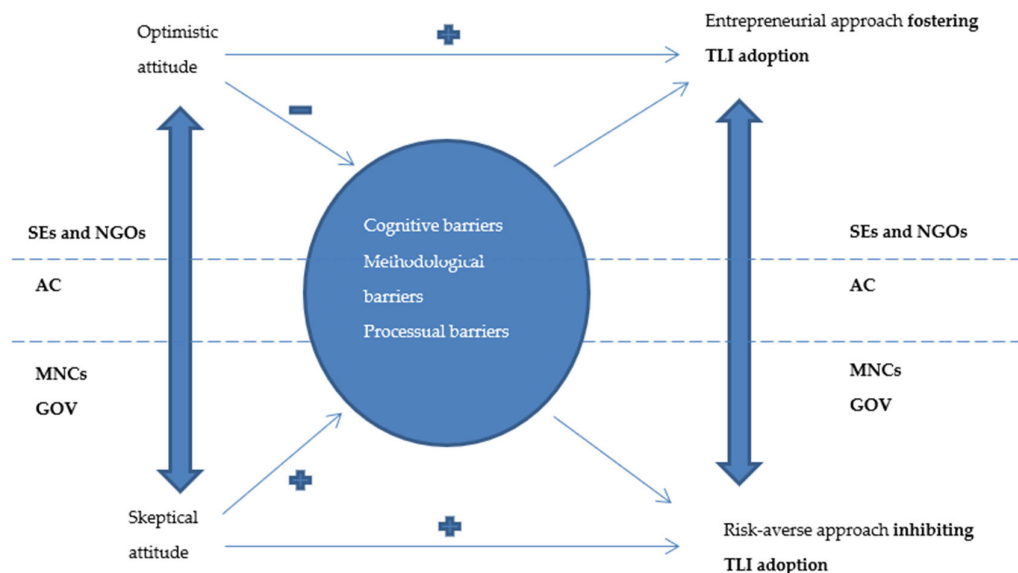


Figure 5. Stakeholder attitudes, perceived barriers, and solution approaches.

5.1. Influence of Stakeholder Attitudes on the Perceptions of Barriers

In this study, various stakeholders including government, business, and civil society were interviewed on their perceptions of the TLI label. Although all interviewees acknowledged various challenges to the development and implementation of the TLI, the extent to which they considered these challenges as actual “barriers” varied. We found that the more optimistic the interviewees were on the TLI adoption, the higher their determination was to effectively engage in its implementation. For instance, a lack of interest in the TLI and resistance to engaging in its implementation could be explained by the absence of a shared vision and understanding towards this new label (i.e., cognitive barriers). Measurement problems and formatting problems (i.e., methodological barriers) also limited stakeholders’ interest and willingness to implement the TLI. In addition to the absence of clear conceptualization and measurement challenges, the difficulties associated with reaching a compromise among stakeholders prevented them from taking the responsibility to initiate discussions. Optimistic interviewees certainly showed awareness and acknowledged several cognitive, methodological, and processual barriers. However, they tended to downplay those barriers, as they strongly believed in feasible methods and technologies to overcome them. On the contrary, skeptical interviewees pointed out important barriers (also of cognitive, methodological, or processual natures), which they considered insurmountable at some points.

These findings relate to those of Porter and Donthu (2006), who outlined the relation between attitude and perception for internet usage and adoption of innovative technologies [51]. Although applied to a different context, this paper confirms that optimistic attitudes are associated with rather positive perceptions and hence, the willingness to engage [51]. Furthermore, in line with Windsor (2010), we noticed that stakeholder attitudes, and thus perceptions of barriers can change as a result of multi-stakeholder interactions [52]. While stakeholders might seem initially skeptical, multi-stakeholder interactions can alter their attitude and then influence the way barriers are perceived. Therefore, it seems important to be aware of the attitudes of the stakeholders, the barriers that they perceive to be involved in TLI labelling, and of their propensity to change. Overall, a high level of optimism among key stakeholders seems to be an important prerequisite for their engagement in effective TLI implementation and development. Therefore, we propose:

Proposition 1a. *The more optimistic the stakeholder group’s attitude towards the TLI adoption, the lower the perception by that group of (cognitive, methodological, and processual) barriers for effective TLI development and implementation.*

Proposition 1b. *The more skeptical the stakeholder group’s attitude towards the TLI adoption, the higher the perception by that group of (cognitive, methodological, and processual) barriers for effective TLI development and implementation.*

5.2. Relationship between Stakeholder Attitudes and Solution Approaches

While the previous set of propositions links the attitudes with the perceived magnitude of barriers, the data also revealed a relationship between the attitudes of stakeholders and the nature of solutions they proposed. Optimistic attitudes tended to translate into proactive, entrepreneurial approaches. Accordingly, NGOs and SEs, the stakeholders found to be most optimistic, opted for the realization of a simplified prototype, as soon as possible, and aimed to gradually elaborate and improve the label based on stakeholder feedback and observations made in the field. This willingness to take risks is explained by Palich and Bagby (1995), who concluded that entrepreneurs’ positive mind-sets increases their tendency to see opportunities rather than threats [53]. Moreover, Puri and Robinson (2007) emphasized that this inclination increases once individuals feel a sense of responsibility and urgency to act [54]. Therefore, we propose:

Proposition 2a. *The more optimistic a stakeholder group is towards TLI adoption, the more likely it is that the group employs an entrepreneurial approach to take the lead and initiate efforts that promote the TLI.*

Skeptical attitudes of stakeholders correspond to a risk-averse approach. Opposed to the trial-and-error mentality of NGOs and SEs, the skeptical stakeholders—GOV and MNCs—first demanded research to prove the label’s value and shed light on its implications for economic and societal welfare to avoid unintended consequences. Additionally, in GOV and MNCs, bureaucratic, competitive, and political aspects tended to refrain from prompt engagement. Altogether, businesses and governments estimated that the preparatory efforts would last at least another 5–15 years until it was feasible to implement and enforce the label. This tendency is also found in organizational change literature, which outlines that large corporations and governments struggle to initiate complex changes due to structural inertia, reputational expectations, and stakeholder duties [55]. Furthermore, Rubik et al. (2007) have shown that labels introduced by producers and retailers are perceived to be less credible and trusted by consumers, which supports the industry’s hesitancy towards leading the development and implementation of a meta-sustainability label [25]. Therefore, we propose:

Proposition 2b. *The more skeptical a stakeholder group is towards TLI adoption, the more likely it is that the group employs a risk-averse approach and refrains from taking the lead and initiating efforts that promote the TLI.*

5.3. Influence of Multi-Stakeholder Interactions on the Attitudes and Likelihood of TLI Adoption

Interviewees acknowledged the need to develop a meta-sustainability label and strive for a good food system transformation. The impediments to its adoption find their roots in skeptical attitudes. However, findings revealed that multi-stakeholder interactions can influence the stakeholders’ attitudes. Along this line, entrepreneurial solution approaches adopted by NGOs and SEs can create spillover effects and slightly alter the skeptical attitudes of other stakeholder groups. We learned, for instance, that entrepreneurial solutions aimed at simplifying the implementation process can reduce the processual barriers that the skeptical—often bureaucratic, political, and large—stakeholders perceive. Optimistic stakeholders can also reduce cognitive barriers by facilitating and fostering discussions aimed at agreeing on definitions, measurement, visualization, and conceptualization. On the other hand, skeptical stakeholders such as GOV and MNCs and their risk-averse approaches tend to erect perceived barriers and polarize initiatives and efforts overall, and thereby slow down a possible TLI adoption. Interviewees signaled that stakeholders whose level of legitimacy among consumers was high, that is, NGOs and SEs, should take the lead. They also mentioned that, eventually, political institutions (GOV) must step in to “enforce” the TLI adoption by actors throughout the value chain, even for the most skeptical stakeholder groups such as the MNCs. GOV and MNCs are well-positioned to provide key support to finance the TLI endeavor and collect large amounts of data. Understanding consumers’ analyses, deliberations, and eventually actions requires innovative techniques and significant amounts of data aimed at grasping both conscious and unconscious elements [37].

Golden et al. (2010) contended that a holistic sustainable product indexing requires an understanding of and accounting for how multiple stakeholders evaluate the effectiveness of such labels [24]. The TLI adoption eventually requires a wide engagement from the multiple stakeholder groups involved in the food supply chain [23]. Our findings support the argument of Dendler (2014, p. 81), according to which there is a strong need for “the mobilization of key legitimacy actors who have the necessary social resources to facilitate the institutionalization of product labelling schemes across the production and consumption system” [12]. Once the TLI label development and implementation are efficiently promoted by legitimate stakeholder groups, a mutual learning and joint

problem solving can take place between the diverse stakeholder groups [45]. Therefore, we propose:

Proposition 3a. *The entrepreneurial approach adopted by optimistic stakeholder groups can influence the attitudes of skeptical stakeholder groups, and their perceptions of barriers and eventually foster joint efforts that promote TLI adoption.*

Proposition 3b. *The risk-averse approach adopted by skeptical stakeholder groups can influence the attitudes of optimistic stakeholder groups, and their perceptions of barriers, eventually inhibit joint efforts that promote TLI adoption.*

Proposition 3c. *TLI adoption is more likely to be promoted if optimistic stakeholder groups whose legitimacy is recognized by consumers take the lead in discussions and efforts towards TLI development and implementation.*

6. Discussion and Policy Implications

This study contributes to the discussion on a meta-sustainability label for food products. Aiming to understand the perceptions of different stakeholders in the European food system, we combined the eco-labelling and multi-stakeholder literature by taking a multi-stakeholder approach to introduce an overarching sustainability labelling scheme. Our findings indicate that stakeholders perceive cognitive, methodological, and processual barriers to implementation. Yet, there are differences among stakeholders' attitudes and solution approaches that have implications on the distribution of roles and responsibilities in the multi-stakeholder dialogue. In fact, although a multi-stakeholder approach is seen as necessary to guarantee broad acceptance of the TLI, it is not free of challenges.

Our first contribution lies in adopting a holistic approach to food labelling [13,27,28]. We uncover, in particular, the nature of barriers to TLI development and implementation as perceived by the different stakeholder groups in the European food system. Our findings show that stakeholders perceive the magnitude of barriers differently and adopt their respective preferred approaches to overcome these. Essentially, the findings imply that there is a gap between stakeholders' demands for what the label should ideally comply with and what is feasible to realize in the near future. Our study reveals that considering consumers' perceptions alone is restrictive and does not enable an understanding of the difficulties impeding consensus for a meta-sustainability label on food.

Second, we can draw policy implications from our results, as they offer insights on how to mitigate and overcome the perceived barriers to implementation. In particular, our results suggest at first that it is necessary to account for the gap between stakeholders' perceptions and willingness to engage in TLI implementation and to realize that trade-offs have to be agreed upon if practical efforts are to be made soon. In that regard, NGOs and SEs appear to have already understood this gap, believing that at this point in time the provision of a simplified version of labelling is not ideal, but is a worthwhile starting point. This finding corresponds to Bleda and Valente (2009), who concluded that, although the integration of all environmental factors is theoretically necessary, consumers also consider the meta-sustainability label if it is based on approximations or somewhat gross information, which is modified from time to time [31]. Moreover, the results indicate that NGOs and SEs are more likely to initiate the discussion around a TLI soon and take the lead in a multi-stakeholder dialogue. We assume that one reason for this could be that MNCs and GOV are genuinely cautious of leading such a complex, uncertain initiative, e.g., the implementation of a meta-sustainability label, since risks are presumably high for public actors [56]. Despite their general support, the expected difficulties in fully evaluating all potential threats and weaknesses of a TLI and subsequent societal and economic consequences limit the scope of action of these actors and impede them from

taking on full responsibility [12]. Furthermore, finally taking this approach might be valuable as credibility is a crucial factor to the label's success, and NGOs and consumer organizations are preferred by consumers as a trusted and independent source of environmental information [25]. This is relevant since, as Thøgersen (2002) concluded, consumers only pay attention to eco-labels during decision-making if they trust the scheme [42].

7. Conclusions, Limitations, and Future Research

Our findings further the understanding of the impediments to a meta-sustainability label by considering the stakeholder groups' perspectives. In particular, we first find that there are two key attitudes of stakeholders towards the TLI endeavor, namely *optimistic* (decidedly for NGOs and SEs, and relatively for AC) and *skeptical* (for MNCs and GOV). Second, we find that stakeholders perceive various sets of barriers of different magnitudes to the TLI development and implementation: *Cognitive, methodological, and processual barriers*. Third, to overcome those barriers, stakeholder groups offer two types of solutions. NGOs and SEs prefer more risky *entrepreneurial solutions*, while stakeholders representing AC, MNCs, and GOV favor *risk-averse solutions*. Finally, findings reveal that multi-stakeholder interactions influence attitudes towards TLI and thereby, either inhibit or favor TLI adoption. In particular, entrepreneurial (vs. risk-averse) solutions proposed by optimistic (vs. skeptical) stakeholders may alter the attitudes of skeptical (vs. optimistic) stakeholders and the barriers they perceive to TLI adoption. Such understanding of the impediments to the TLI is essential to initiate appropriate efforts and engage in the search for consensus.

Based on these findings, this paper offers the following takeaways. It is essential to adopt a multi-stakeholder and holistic perspective—rather than an exclusively consumer perspective—to understand the obstacles to the development and implementation of a meta-sustainability label and to craft potential solutions to overcome these. While stakeholders in the European food system appear to consider that using a meta-sustainability label with an overarching message on food products' environmental footprints is critical to avoid the current confusion among consumers, foster more sustainable dietary habits, and encourage sustainable production, the stakeholder groups diverge in their perceptions of barriers and their proposed solutions. Policy implications can be derived from our research, as our findings highlight impediments but also suggest ways to overcome them. It appears from our research that NGOs and the SEs should take the lead, as both groups of “optimistic” stakeholders prioritize trial-and-error and simplified approaches and agree on trade-offs between the stakeholder groups' interests. NGOs and SEs are motivated to quickly translate their enthusiasm into tangible action. Additionally, these two groups are considered to be legitimate by consumers, and only convinced consumers generate a “pull” for the other actors in the food value chain (e.g., retailers and producers). In addition to NGOs and SEs, it is essential that a buy-in of other key stakeholder groups eventually takes place. MNCs and GOV are critical in providing funding and the necessary access to data. Regulations by the governments can then help overcome resistance and enforce engagement, notably among the MNCs. Being socially responsible is more than an option for MNCs, it is a moral and business requirement [26]. By not engaging in sustainable practices, MNCs affect other stakeholders and the environment in which they operate [26].

This study has limitations common to the qualitative research [47]. While exploratory interviews offered detailed insights, they limited the study's generalizability. Accordingly, further research may be required, which could provide more nuanced stakeholder perceptions than those we have outlined and examine whether these perceptions are similar in multi-stakeholder collaborations in different geographical or sociocultural backgrounds. The set of propositions that our study offers provides a starting point for such inquiries. In addition to empirically testing our propositions, future longitudinal studies could dive deeper into the dynamics of multi-stakeholder

partnerships and compare these changes over time or depending on the social issue covered. It would also be interesting to explore the respective stakeholder groups' lines of reasoning to better understand the relationship between the attitudes and solution approaches and figure out how these can be better managed and aligned to improve collaboration. Future research could also take a more holistic approach by including a larger variety of stakeholder groups, such as farmers or grassroots organizations that were not incorporated into this study. As Poore and Nemecek (2018) outlined, these stakeholders might actually be the most valuable ones for initiating and facilitating the entire process of TLI adoption [27]. To conclude, we are confident that our study can provide valuable starting points for both empirical research, as well as practical efforts to implement a meta-sustainability label in the food sector. Understanding the different attitudes and solution approaches of various stakeholders and the barriers that they perceive is important, as it may ultimately facilitate the multi-stakeholder collaboration to create a positive social impact.

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Appendix A. Interview Guidelines

Set up as an explorative study, we are interested in the organizational perspective on the feasibility of a "Traffic Light Index" (TLI) for sustainable diets. Our main ambition is to gather an overview of the industry's attitude towards the potential and challenges of a universal sustainability label. To obtain this, we are interviewing representatives of different stakeholder groups (multi-national corporations, social enterprises, NGOs, academia, governmental organizations) on their opinions. All the interviews will be tape recorded, fully transcribed, and anonymized.

Introduction

How would you describe the current state of sustainability in our food system?

What is right or wrong with it? Are we where we want to be?

What do you think of a TLI (a universal, color-coded front-of-pack label) for sustainability indicators? Why do we need a TLI?

What are you expecting from the introduction of a TLI?

Opportunities and challenges of a TLI

Do you have experience with the development and/or implementation of a TLI or similar indicator?

How do you perceive the development and/or implementation of a TLI? Is it easy or difficult? How does it work?

What is facilitating or hindering the implementation of a TLI?

How can a TLI be set up in a way which is accepted in the market? How do you imagine the process to be?

Who is responsible for this? Which stakeholders would be involved in the development and implementation process of a TLI? What is your role in the process?

How could a TLI be designed?

Closing

Who else do you recommend to talk to in this regard?

Is there anything you would like to add? If there is one wish that you could make with respect to TLI, what would it be?

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