What does sustainability mean in the minds of consumers?   
A multi-country panel study

# Introduction

Sustainability is being increasingly proposed as an overarching goal for transforming the way we live, work, and consume (Clark & Wu, 2016). Media, politics, and organisations often use the words ‘sustainability’ and ‘sustainable’ in a generic and holistic way. For example, consumer surveys include questions like: *‘I’m sure I can easily find sustainable brands’* (Alexa et al., 2021). Company statements include ambitions like *‘…improving sustainability performance in our own value chain and demonstrating the resilience of sustainable business’* (corporate website H&M Group, 2022).

However, using the term more specifically – with consumer-relevant, tangible operationalisations of the sustainability concept – can increase consumers’ attention, interest, and desire to act in a sustainable way (Lavidge & Steiner, 1961). But to generate such relevant, tangible messaging, firms and policy-makers need a good understanding of the operational associations with sustainability that consumers have in their minds. Hanss & Böhm (2012, p. 678) acknowledge this by pointing out that *‘An important step in promoting sustainable consumption is to find out how consumers understand the concept of sustainability.’*

Academics indicate that, despite the frequent use of the concept, it’s unclear what consumers actually consider to be tangible, operational elements of sustainability (Chabowski et al., 2011). Therefore, researchers are calling for investigation into what consumers understand by the concept of sustainability (Chabowski et al., 2011; Simpson & Radford, 2014). We respond to this call by addressing 4 research questions: RQ1: What operational elements of sustainability are distinguished in academia and business? RQ2: To what extent do consumers associate these elements with the concept of sustainability? RQ3: How are these elements grouped in an overarching structure (dimensions) in consumer minds? RQ4: How does this structure (and the consumer-relevance of the underlying elements) generalise across the 7 countries studied?

To find answers, we have used an online consumer survey administered in Belgium, the Netherlands, France, Germany, Australia, Sweden and the UK (consisting of 2 waves: a calibration wave and a validation wave; N = 5620 consumers in total).

This study aims to contribute theoretically by: (a) identifying definitional elements that can potentially be associated with the umbrella concept ‘sustainability’, (b) offering insights into the extent to which *consumers* associate these elements with sustainability, (c) uncovering a 3-dimensional factor structure in consumer perceptions of sustainability, (d) validating this factor structure across 7 countries, and (e) bundling disjointed literature in an integrative review. At a practical level, we offer advice on how to communicate about sustainability in a more nuanced, consumer-relevant way.

# Conceptual background

Elkington (1999) defines sustainability as ‘*the interdependence between social justice, environmental quality, and economic prosperity*’. This is also referred to as the ‘triple bottom line’. Starting from this definition, sustainability can be described as having 3 dimensions: care for people (social concerns), planet (environmental concerns), and profit (economic concerns). However, most academic consumer-focused research assumes that profitability is a managerial rather than a consumer concern (Bangsa & Schlegelmilch, 2020). Therefore, such research focuses on the social and environmental dimensions of sustainability (Griggs et al., 2013). For instance, Luchs et al. (2010) define sustainable products as *‘products with positive social and/or environmental attributes’* (p. 18). We aim to update the conceptualisation of these sustainability dimensions, starting from a consumer perspective (Yadav, 2010).

Policymakers, companies, and the media often regard sustainability as a uni-dimensional concept. This has the advantage of providing a holistic goal that can guide policy and management (Chabowski et al., 2011). However, researchers argue that sustainability is a complex concept that can mean different things to different people (Simpson & Radford, 2014). Leveraging those meanings can further motivate consumers to act sustainably. Yet, it's unclear which specific, operational elements (e.g., reduction of CO2 emissions, fair wages, etc.) consumers consider to be defining aspects of sustainability and how these are interrelated in their minds. Our research addresses this gap.

# Method

**Review of academic literature & corporate sustainability policy statements**

In our study, we first identified specific elements that consumers can potentially associate with sustainability (RQ1). To do so, we applied a qualitative (conceptual) content analysis (Harwoord & Garry, 2003). We used the *Social Science Citation Index* to compile scientifically relevant sources. As our objective was to gain business-communication-relevant insights into consumer understanding of ‘sustainability’, we focused on the categories of ‘management’ and ‘business’. Specifically, we used ‘sustainability/sustainable’ as a search term and targeted the last two decades. A *Web of Science* search yielded 6432 results in the ‘management’ category and 5282 results in the ‘business’ category. Starting from the bibliography of selected articles, we added additional articles and journal sources (i.e., a ‘snowballing’ approach). We ended the process when saturation was reached (i.e., no new elements turned up). Next, we extracted a longlist of relevant literature phrases from these academic sources, which were classified/bundled under a shortlist of labels. In this way, we identified distinct sustainability ‘elements’ and listed the wordings academic research uses to describe each.

We then consulted company sustainability policy statements to check the occurrence of these sustainability elements in business practice and to find out how they are articulated in a managerial setting. We compiled the list of sustainability policy statements and related sources via Google searches, using the specific elements previously identified as search terms (as well as the generic search term: ‘sustainability/sustainable’). An extensive 45-page online appendix with all details (128 quotes taken from 94 academic sources, and 78 sustainability-relevant mentions taken from the sustainability policies of 46 companies) is available via this link: <https://osf.io/m38gy/?view_only=1458e24ea70d45c6ae3558f8a1b21e3d>. We used the final 19 sustainability elements identified to formulate items for a follow-up quantitative survey research phase.

**Cross-national consumer survey**

In the third research phase, a survey assessed the relevance of these elements in the eyes of consumers (RQ2). We also examined which elements are perceived to ‘fit’ together (RQ3, RQ4). A global market research and consulting company collected survey data among members of online panels in 7 countries and over 2 cross-sectional waves (wave 1: N = 2814; wave 2: N = 2806; see Figure 1). The company selected the countries based on commercial relevance. Quota were used for age and gender (nested within age groups) to make sure that the samples were matched across countries and waves. 52.5% of the sample collected are female. Ages range from 15 to 70 years (M = 40.44, SD = 16.69).

[Insert Figure 1]

The survey took about 15 minutes to complete. The current study is based on two survey questions. An open-ended question probed the consumers’ unaided understanding of sustainability: *‘When you hear the word ‘sustainability’, what do you think it means? Please explain in detail what your idea of sustainability is.’* Respondents who checked the *'no idea'* option, instead of filling out the open question text box, were excluded from analyses based on the next question. In this next question, respondents selected their corresponding answers from a closed set of options: *‘From the list below, please tick the elements that were part of your ‘sustainability’ definition. Please limit yourself to the elements that are part of your definition, and do not tick any other elements.’* This list contained the sustainability elements that are detailed below.

# Results

**Elements identified from the literature & perceived fit in the eyes of consumers**

We identified the following 19 sustainability elements (in arbitrary order): *fair wages*; *good labour conditions*; *safeguarding racial diversity*; *LGBT+ rights support*; *gender equality*; *reduction of CO2 emissions*; *reduction of packaging & non-biodegradable/single-use plastics; recycling programmes (i.e., taking used products back and re-organizing their purpose);circular economy initiatives (i.e., the waste of one company is used by other companies nearby);* *restoration/replenishment of natural resources; preservation of biospheres* *(i.e., animal populations & nature eco-systems);* *no production of genetically manipulated products*; *no pesticides for vegetables*; *no antibiotics/hormones for meat products*; *no manufacturing of meat products (i.e., shift to vegetarian or vegan)*; *no chemicals in production*; *close-to-home support* *(e.g., support of local suppliers, giving back to local communities, etc.)*, *lowering the need/extent of transport; creation of self-sustaining communities, villages & cities.* The appendix offers examples of literature supporting these elements. A detailed appendix, with all literature and business phrasings retrieved, is accessible via: <https://osf.io/m38gy/?view_only=1458e24ea70d45c6ae3558f8a1b21e3d>. The set of 19 items is not necessarily exhaustive, but it is reasonable to assume that it captures the operational associations most commonly identified in *academia* and *business*.

Table 1 lists the extent to which *consumers* perceive these specific elements to be associated with the ‘sustainability’ concept (RQ2). The information is broken down by country and wave. On average, ‘reduction of CO2 emissions’ is most often associated with the ‘sustainability’ concept. Substantially fewer consumers (across countries) consider social elements (e.g., LGBT+ rights) to be part of ‘sustainability’. In the Discussion section we address more detailed observations.

[Insert Table 1]

**Factor analytical calibration on wave 1**

To better understand the structure of the underlying associations with sustainability (RQ4), we applied a factor analytical approach, in which we conceptualised sustainability, as perceived by consumers, as a multidimensional concept (Bagozzi, 2022). Since the dimensions of sustainability in the survey have not been validated as an instrument previously, we applied a 2-stage approach. We used the wave 1 data as a calibration dataset on which we ran an exploratory factor analysis (EFA); we then used wave 2 as a validation dataset on which we replicated the factor structure using confirmatory factor analysis (CFA), and tested for measurement invariance across countries. This allowed us to assess whether the structure of associations is equivalent across countries and demographic sub-populations.

Using the wave 1 data pooled across countries (N = 2170, excluding respondents who claimed to have no idea about how to define sustainability), we ran an EFA with the WLSMV estimator and probit link for categorical items in Mplus 8.4 (Asparouhov & Muthén, 2016; Muthén & Muthén, 2019). The Kaiser criterion (i.e., retain as many factors as there are eigenvalues greater than one) and alternative fit index criteria (e.g., RMSEA < .05, TLI > .95, SRMR < .05) suggest that a 3-factor solution provides acceptable fit to the data (see Table 2).

[Insert Table 2]

Table 1 contains standardised factor loadings based on an oblique GEOMIN rotation (since we expected the presence of multiple correlated factors) (Hattori et al., 2017). The first factor is labelled ‘social’ as it contains elements that relate to the need to ‘care for people’. The highest loading items of this factor are *gender equality* (element 5), *fair wages* (element 1), and *good labour conditions* (element 2). The other 2 factors capture related yet distinct ‘environmental’ dimensions (i.e., that relate to the need to ‘care for the natural environment’). Factor 2 is labelled ‘circularity’ as it contains elements (items) that relate to avoiding exhausting natural resources and re-using materials (e.g., *circular economy initiatives* (element 9), *recycling programs* (element 8), *restoration/replenishment of natural resources* (element 10)). Factor 3, which we label ‘naturalness’, refers to the use of non-artificial production methods and resulting products – this factor includes elements such as: *no chemicals* *in production* (element 16), *no pesticides for vegetables* (element 13), *no production of GMOs* (element 12). We elaborate on the different factors and their meanings in the Discussion section.

Table 1 shows that the model does not comply with a strict simple structure, as some cross-loadings occur. However, excluding cross-loading items from further analysis is not desirable, because the practice of letting internal consistency considerations overrule content validity considerations is increasingly criticized (Clifton, 2020). Moreover, the goal of the current analysis is not to construct a scale with clear-cut internally consistent dimensions. Instead, we want to identify and understand the structure that underlies commonly perceived defining aspects of sustainability. Therefore, we retained all items and propose a model that includes all factor loadings exceeding the common cut-off value of .32 (Tabachnick & Fidell, 2007). Thus, all dominant loadings were included, as well as the cross-loadings for 2 items that are substantively hybrid in meaning and interpretation: *close-to-home support* (element 17) and *creation of self-sustaining communities* (element 19). These are allowed to load on both the ‘social’ and ‘circularity’ factors. We revisit these items in the Discussion.

**Factor analytical validation on wave 2**

Next, we validated the proposed factor structure in a multi-group CFA, using country as the grouping variable in the wave 2 dataset. The multi-group approach allows us to formally test whether the factor structure (initially identified in wave 1; RQ3) generalises across countries and whether measurement invariance can be established (RQ4). This finding would support the assumption that the items and their wordings act equivalently in different countries and corresponding languages (Steenkamp & Baumgartner, 1998; Vandenberg & Lance, 2000; Weijters et al., 2017). We ran these analyses in Mplus 8.4, using the WLSMV estimator with probit link and theta parameterization for the categorical indicators. The highest loading items per factor (elements 5, 9 and 16) acted as anchor indicators, with loadings set to 1 and thresholds set to 0.

Table 2 reports fit indices for a model with configural invariance, metric invariance, and (partial) scalar invariance. As recommended, rather than using strict null hypothesis significance testing, we evaluated (changes in) the alternative fit indices RMSEA, CFI, TLI and SRMR. We also considered modification indices of individual parameters when sequentially imposing cross-country equality constraints on the factor loadings (i.e., metric invariance) and indicator thresholds (i.e., scalar invariance) (Steenkamp & Baumgartner, 1998).

When imposing equality of factor loadings across countries, (changes in) fit indices indicated adequate fit. Thus we accepted metric invariance (Steenkamp & Baumgartner, 1998). When imposing equality of the indicator thresholds, a notable fit deterioration occurred. Closer inspection identified 9 threshold parameters with modification indices greater than 10: *Reduction of CO2 emissions* (element 6) in Australia and the UK, *no manufacturing of meat products* (element 15) in France and the Netherlands, *lowering the need/extent of transport* (element 18) in Sweden, and *creation of self-sustaining communities* (element 19) in Belgium, Germany, Australia, and the UK. To test partial scalar invariance, we freely estimated these indicator thresholds in these countries (where they showed high modification indices). Partial scalar invariance seemed acceptable based on the alternative fit indices (see Table 2). Therefore, we used this model for further (structural) analysis.

**Multi-group structural equation model (wave 2)**

Finally, we focus on the 3 identified sustainability dimensions – ‘social’, ‘circularity’, ‘naturalness’ – to examine differences across countries (RQ4). We estimated a (partial scalar invariance) multi-group structural equation model. We took country as the grouping variable and included age (centred around 40 and divided by 10 to obtain readable estimates) and gender (-1 = male, +1 = female) as control variables. The resulting model fits the data well (²(1448) = 2065.651, RMSEA = .035, CFI = .962, TLI = .961, SRMR = .089). In this model, the factor intercepts indicate how frequently the participants in each country endorse a set of elements (corresponding to one of the factors) as defining aspects of sustainability, controlling for age and gender. A Wald test shows that the factor intercepts are significantly different across countries (²(18) = 126.520, *p* < .001). Figure 2 (panel A) displays the factor intercept estimates, with 95% confidence intervals (based on 100 bootstrap samples, controlling for age and gender). When evaluating the overlap between the country-specific factor intercepts’ confidence intervals with the cross-country average factor intercept’s confidence interval, no large differences emerged for the ‘social’ factor. Still, consumers in Belgium are more likely to endorse ‘circularity’. The opposite is true for consumers in Australia and the UK. Finally, Belgian and French consumers endorse ‘naturalness’ more, whereas consumers in Australia and the UK endorse it less.

[Insert Figure 2]

We also ran Wald model tests to assess whether gender and age effects are invariant across countries. We observed the following results for gender (χ²(18) = 23.111, *p* = .186) and age (χ²(18) = 35.165, *p* = .009). Gender differences are equivalent across countries, but age differences are country specific. In line with these results, we fixed the effects of gender to equality across countries, while estimating country specific effects for age. The resulting model shows acceptable fit: χ²(1466) = 2086.159, RMSEA = .035, CFI = .961, TLI = .962, SRMR = .091). Results show that women score higher on ‘circularity’ (B = .111, 95% CI = [.070,.160]) and ‘naturalness’ (B = .181, 95% = [.118,.245]). In contrast, the gender difference in the ‘social’ factor is not statistically significant (B = .010, 95% CI = [-.098,.068]). In sum, these results indicate that women generally endorse more elements of sustainability, especially elements related to ‘circularity’ and ‘naturalness’. Finally, Figure 2 (panel B) displays the regression coefficients of the factors on age (in steps of 10 years) by country. We observe a general, but not consistently significant, tendency for older consumers to focus more on environmental aspects (‘circularity’ and ‘naturalness’) compared to the ‘social’ dimension.

# Discussion

**Main findings & theoretical contributions**

Starting from the academic literature and company statements, we identified 19 definitional elements of sustainability (see appendix; RQ1). Next, in a consumer survey, we assessed the extent to which consumers indeed associate these elements with sustainability (RQ2). We observed that consumers associate ‘sustainability’ with 3 main dimensions: ‘social’, ‘circularity’, and ‘naturalness’ (RQ3). We chose these labels to describe the factors that bundle indicators that correlate in consumers’ perceptions (as observed in EFA and CFA analyses). Conceptually, identifying the latter 2 dimensions is interesting, as they offer a new perspective on the previously identified ‘environmental’ dimension of sustainability, taking a consumer perspective into account. Thus, we aim to contribute to the field by identifying, integrating, and revising the (sub)dimensions of sustainability (MacInnis, 2011).

In addition, the identified ‘naturalness’ dimension may point to a new route to stimulate pro-environmental behaviour. Research on how consumers interpret sustainability has typically treated sustainability as having 2 main dimensions: a *social* and an *environmental* dimension (Griggs et al., 2013; Luchs et al., 2010). Consumers tend to associate the social dimension of sustainability more with affective, short-term, and local concerns. In contrast, the environmental dimension correlates more with cognitive, long-term, and global concerns (Catlin et al., 2017; Chabowski et al., 2011). This latter dimension has received the most attention in marketing research on sustainability (Lunde, 2018) – and it is also argued that it is the most salient dimension for consumers (Simpson & Radford, 2014). Our study offers data to substantiate this claim: environmental aspects of sustainability are observed to be more top-of-mind among consumers than social aspects (see Figure 2 & Table 1).

But interestingly, we have discovered that the meaning of the environmental dimension of sustainability in consumers’ minds can be divided into 2 sub-dimensions: associations of ‘circularity’ (e.g., recycling), and associations of ‘naturalness’ (vs. artificial methods of production). This last sub-dimension has not often been discerned in previous research. As an exception, Berry et al. (2017) point out that many products claim ‘naturalness’ and consumers seem to make positive inferences based on such claims. They suggest that consumers assume that products claiming to be ‘natural’ (e.g., ‘all natural ingredients’) are minimally processed, are organic, and contain no GMOs or artificial ingredients. This description fits the additional factor we uncovered. We define it as *‘the use of non-artificial production methods (no chemicals, no pesticides, no GMOs, …) and resulting products.’*

This observed ‘naturalness’ sub-dimension (as well as observed associations focusing on local economies and communities) could possibly evoke direct, affective responses from consumers, like those observed related to the ‘social’ dimension of sustainability (Catlin et al., 2017). In support of this idea, Griskevicius et al. (2012) propose that ‘close’, tangible issues are more aligned with the evolutionary dispositions of humans and can therefore evoke stronger visceral or deep-rooted reactions. They also state that humans are naturally predisposed towards biophilia, which is the appreciation and ‘love’ for the natural world. The hypothesis that ‘naturalness’ concerns could evoke affective responses is of interest, as research has suggested that such responses could facilitate pro-sustainability behaviour (Antonetti & Maklan, 2014). We identify this as a fruitful area for future research.

**Observed cross-country differences**

The 3-factor structure – ‘social’, ‘circularity’, ‘naturalness’ – was identified in a large, international sample. Next, we cross-validated this structure (RQ4) in another equally large international sample of consumers. Given that partial scalar invariance was established, we were able to compare the factor means across countries (while controlling for age and gender). This revealed cross-national differences in the way that consumers define sustainability (see Table 1 and Figure 2). To illustrate: Belgium, France, and Germany score higher on the ‘social’ factor – whereas Dutch consumers endorse the ‘social’ factor less. Furthermore, Belgian consumers are substantially more likely to endorse ‘circularity’. This finding may possibly be related to the high uptake of (household packaging) recycling programs in Belgium – which are supported by the packaging industry (Marques et al., 2014). Also, both French and Belgian consumers are more likely to endorse ‘naturalness’. Consumers in Australia and the UK, the 2 English-speaking countries in our sample, are notably less likely to check elements relating to ‘circularity’ and ‘naturalness’. This finding comes on top of the observation that these 2 countries already score significantly lower on the *Reduction of CO2 emissions* element. A possible explanation for this might be the way the English language media portray and frame topics like ‘climate change’ (the influence of this might well be considered in future research).

The data also suggest that the observed factor structure generalises across the cultures that we studied. Therefore, it can be considered a marketing universal among the countries in our sample (Dawar & Parker 1994). This is a valuable finding as international marketing is often hampered by cross-national differences in the way consumers respond to marketing efforts (Dawar & Parker 1994). Uncovering country differences in what sustainability means in the minds of consumers is valuable, but it is at least as important to find out to what extent definitions of sustainability are universal or invariant across cultures.

**Critical observations & reflections**

Even though the 3 factors – ‘circularity’, ‘naturalness’, and ‘social’ – are clearly discerned in the data, there is some overlap. *Close-to-home support* (element 17) and *creation of self-sustaining communities* (element 19) loaded on both the ‘social’ factor and the ‘circularity’ factor. A plausible interpretation may be that, on the one hand, opting for local suppliers (vs. globalised supply chains run by multinationals) is seen as being in line with the principles of a ‘circular economy’ (e.g., by reducing transport emissions). On the other hand, choosing local suppliers may also be perceived as being socially sustainable as it means supporting smaller suppliers (Schnell, 2013).

As one reviewer of our study pointed out, our study does not explicitly identify ‘consuming less’ as an operational aspect of sustainability. This is an important omission that may have occurred due to a focus in the papers reviewed on ‘sustainable consumption’ as opposed to ‘sustainability through consuming less’. The interested reader may note that the imperative to ‘consume less’ has been discussed in marketing literature on over-consumption – for example, in the context of ethical marketing (e.g., Ardley & May, 2020), value beliefs (Mas, Has, Goldsmith, 2022), and consumer goal-setting and managing conflicting information (Bareket‐Bojmel, Grinstein, Steinhart, 2020).

Another reflection is that consumers' understanding and perceptions of sustainability can be different from (and even conflict with) those of the scientific community (McPhetres et al., 2019). For example, in contrast to popular consumer perceptions, some scientists argue that using GMOs, certain pesticides, antibiotics, hormones or chemicals (cf. elements 12, 13, 14, 16) is better for the planet – leading to bigger crop/livestock yields that are less likely to fail because of disease. Consumers are an obvious stakeholder in the sustainability challenge, but there is also a need to move beyond consumer perceptions and adopt a systemic and institutional approach to the topic. Future consumer-focused research could explore similarities and differences between actual and perceived ‘sustainability-positive’ elements.

**Managerial implications**

As pointed out by Hanss & Böhm (2012, p. 678), an *“important step in promoting sustainable consumption is to find out how consumers understand the concept of sustainability.”* By shedding light on consumer perceptions of the concept of ‘sustainability’, we are helping companies generate more impactful and consumer-relevant sustainability communication and actions. Our main finding is that consumers consistently associate the following 3 factors with sustainability: ‘social’, ‘circularity’ and ‘naturalness’.

‘Circularity’ and ‘naturalness’ can be thought of as 2 key sub-components of the environmental aspect of sustainability (Yadav, 2010). Thus, they are related, yet distinct in important ways. ‘Circularity’ is probably closer to the conception of sustainability that has been shown to be too abstract to personally matter to consumers (Griskevicius et al., 2012) and/or too rationally focused to trigger consumer motivation (Catlin et al. 2017). In contrast, ‘naturalness’ has been found to evoke positive consumer associations, and it is often used in marketing communications, but without always being properly embedded in actual sustainable practices (Berry et al. 2017). Our research suggests that companies should do so.

An illustrative business case that shows that ‘circularity’ and ‘naturalness’ can effectively go together is Ecover, a Belgian detergent producer. The company markets its products not only as being produced in an environmentally sustainable way (linking to ‘circularity’), but also as being natural, safe and healthy-to-use (linking to ‘naturalness’) (Asveld & Stemerding, 2017; Larson et al., 2008).

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