

## Review Paper:

# Sustainability Labels in Food Industry

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## Abstract

*For over a decade, the food processing industry has prioritised on food safety and product quality. Alongside, the concept of eco-friendly and sustainable consumption among consumers has recently gained momentum. Sustainable product consumption is being actively promoted by food manufacturers and preferred by consumers over conventional food products. Food labels are considered to be most effective tool of communication in marketing. Mandatory and voluntary food labels adhere to a set of standards and regulations for manufacturing processes. One set of labels that exists for this purpose is called "sustainability labels," and its sole purpose is to identify sustainable food options.*

*In this study, an overview of the current state of research on sustainability labels is provided, along with a systematic analysis of previous work in the field to shed light on its potential future evolution. The authors reviewed a decade of empirical and theoretical research from Scopus journal database. The 89 articles found through a systematic manner were content analysed. The findings reveal that Indian food processing industry has a dearth of literature studies on sustainability labels. Brief insights about challenges and implications were mentioned for further study in the area of sustainable labelling.*

**Keywords:** Sustainability labels, Systematic literature review, Sustainable consumption, Consumer awareness.

## Introduction

Indian food processing sector is potentially growing with an average annual growth rate of 11.18% during the last five years ending 2019-20<sup>28</sup>. The food processing industry is expanding at a rapid rate and this has consequences for the public's health and the environment in addition to its effects on the country's economic growth. UN Environment Programme<sup>46</sup> identified the promotion of environmentally, economically and socially beneficial food consumption patterns as a top priority and efforts have been made to achieve this important sustainable development goal with board approval. Public and private organisations over the past two decades have introduced standards for various environmental and social labelling schemes for food products such as EU label, Eco-label, sustainable forestry, fair trade, carbon footprint and so on. The European Union

has been at the forefront of promoting and implementing sustainable manufacturing practises for quite some time<sup>32</sup>.

With increased consumer awareness comes strict regulations for producing environmentally and ethically responsible food products<sup>6</sup>. In order to encourage producers, governments and businesses to improve environmental standards, Galarraga Gallastegui<sup>14</sup> proposed the use of eco-labels to give consumers more information. In an effort to alter people's food consumption habits and foster a more sustainable world, both public and private organisations are actively developing cutting-edge methods of disseminating sustainability information to the general public. Business organisations are also making efforts to alter their methods of operation in an effort to contribute to a more sustainable economic system<sup>55</sup>.

Consumers rely heavily on food labels as their primary source of information about the product. Not only does a food label inform the buyer what is inside the package, but it may also contain important instructions. Consumers rely heavily on food labels as their primary source of information about the product. As reported by Tait et al<sup>40</sup>, the market for sustainable food labels is relatively limited in developing nations due to inability to put intentions into action because of barriers like lack of access, lack of understanding and labelling complexity.<sup>5,12,18,38</sup> The opposite is true in the West, where food labels are increasingly in demand. Over 400 companies in the UK are licenced to use the Fairtrade mark and UK Fairtrade reported a 5% increase in volume of cocoa sales in 2015, yielding an estimated £4.8m in Fairtrade premium for farmers and workers<sup>26</sup>.

According to The Nielsen Company's<sup>29</sup> global survey of consumer shopping behaviour, *New Wealth, New World: How and Why We Shop Around the Globe*, 71% of Indian consumers choose more environmentally friendly products despite the higher price. Industry stakeholders have recognised the growing importance of sustainability labels on food products as a means of informing consumers about the company's commitment to environmental responsibility.<sup>30,31</sup> Therefore, the aim of this study is to provide general introduction to sustainability label and present literature survey on the topic of sustainability labels in food processing industry. This process of gathering credible data was made possible by a systematic literature review

## Background and History

**Sustainability Label:** The Blue Angel was the original environmental label introduced in 1978 by the German

government. Many new voluntary labels appeared in the years that followed. Eco Mark was introduced in India in 1991. Consumers have shown to recognise and use pioneering labels like the EU label and the Nordic Swan to steer their consumption decisions in a more sustainable direction.<sup>44</sup> Sustainability labels can be described a separate group of Third-Party labels which has similar assessment method to that of eco-labels<sup>37</sup>. Most sustainability labels focus on a single area such as the environment or social responsibility.

Consumers can rely on each of the sustainability label certification agencies' distinct approaches in evaluating a product's performance with regard to a single or few issues based on their established standards and practises.<sup>47-51</sup> The goal of independent sustainability labels is to simplify the decision-making process for both commercial buyers and individual consumers, thereby facilitating the product's sale. Increased sales and improved brand image are just two of the many benefits that sustainability label brings to businesses and their products.<sup>3,22,52</sup>

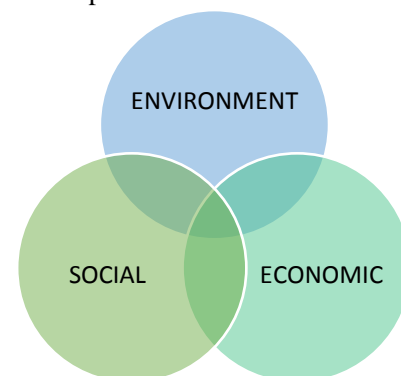
According to Janßen and Langen<sup>19</sup>, the sustainability labels provide firm's environmental and social profile and a product's sustainable status. The Front-of-pack sustainability label means that it has been rated on environmental and social criteria. Sustainable labelling to improve consumer information on nutritional factors was the central subject at the "2022 Clean Label Conference Program". The onus is on the manufacturer to guarantee that the information provided on the food label is true and not deceptive and that it complies with all relevant laws and standards. The criteria for labelling in the United States are well described; the measures by which to evaluate truthfulness are not subjective and, in fact, food labeling is quite simple as long as one knows the rules.

#### Popular Third-party environmental certification programs

- **Forest Stewardship Council:** It is an international independent third-party environmental labelling organisation established in 1993 to promote sustainable forestry through responsible management of the world's forests. It has set standards on forest-based products, carry out audit and certify products. FSC label signifies that the product came from responsible sources which are environmentally appropriate, socially beneficial and economically viable. In food industry FSC certified pulp material is being widely used as packaging material. Till 2016, FSC has awarded 351 chains of custody certificates (CoC) in India<sup>27</sup>.
- **Fairtrade:** It is independent third-party labelling program assuring consumer confidence in ethical trade. Fairtrade ensures farmers and workers, who are at the front line of the any food chain, to get fair share of benefits of the trade. Thus, providing farmers and workers with better deal and improved terms of trade.

- **Carbon Footprint:** This one was the world's first Carbon footprint label, launched in 2007 by carbon trust. It is a third-party environmental certification program for verified claims of product carbon emission measurement, management and reduction. One of the popular carbon footprint labels shows customer, employer and stakeholder about the step taken forward in reducing the carbon resource footprint of product and demonstrating commitment towards environmental sustainability.

Greenhouse gas (GHG) emissions, water use, land use, forest use, energy use and other similar indicators are utilized to assess environmental sustainability. Economic sustainability (such as long-term economic growth without compromising the environment or communities) and social sustainability (such as social equity, human rights, decent working conditions and community resilience) are also important indicators of sustainability, but they are largely overlooked in comparison to environmental sustainability<sup>20</sup>.



**Fig. 1: Three pillars of sustainability**

Sustainable consumption emphasises the importance of consumers acting in a socially and environmentally conscious manner. Individuals often fail to consider how their consumption habits affect others and the environment, despite the fact that such habits have been linked to "natural, social and economic degradation." The context of eco-labelled, eco-friendly and organic food has been used to examine consumers' knowledge of sustainability in the food industry.<sup>1,13,35</sup>

Past studies have mainly focussed on sustainable consumption decisions.<sup>31,36,54</sup> However, the attitudes and actions of shoppers in response to sustainability labels made on processed and packaged food products have not been systematically examined. In light of the importance of sustainability labels, this review also provides a description of sustainable consumption patterns.

#### Review of Literature

A sustainability label for foods is necessary to raise consumer awareness<sup>43</sup>. To increase business in the food industry and to raise awareness about environmental issues, the sustainability labels certification from credible Third-party agencies are found to be crucial.

**Table 1**  
**Summary of selected research articles**

| Authors                             | Key findings   | Keywords  |
|-------------------------------------|--|---|
| Verain et al <sup>51</sup>          | The implementation of the food sustainable labelling process is useful to enhance knowledge in the food supply chain. The labelling process is enabled to predict the food behaviour or the nutritional factors in the food industry.  | Eco-label; food label; sustainable consumption                                |
| O'Rourke and Ringer <sup>33</sup>   | Concern for the environment and public health are reflected throughout the entire labelling procedure. Sustainable information can now cater to shoppers' preferences. Global food industry expansion is dependent on consumers making more informed purchasing decisions, which can be facilitated by a more transparent and consistent sustainable labelling process.  | Sustainable labelling; Consumer's purchasing decisions; label information.    |
| Apostolidis and McLeay <sup>2</sup> | The eco label process is significantly important to provide detailed information to the consumers. The systematic regulation on the sustainable labelling process is needed to make huge changes on the consumer's behaviour. Moreover, the current research has detected that it is beneficial for increasing trustworthiness among the consumers and improving sustainability values.  | Organisational sustainability; Sustainability report; eco-label               |
| Watts and Giddens <sup>53</sup>     | Sustainable consumption has the potential to make businesses answerable for the harm they cause to the environment and the community, but consumers are often sceptical that the products and businesses marketed as sustainable actually are. Using a controlled laboratory experiment and the theoretical framework of dual processes, this study examines how novices evaluate the reliability of reports on sustainability ratings found online.   | Sustainable consumption; sustainability report                                |
| Grunert et al <sup>16</sup>         | The sustainability label process is not enough to make a positive impact on the organisation's performance. Consumers need to focus on communicating sustainability for enhancement of the business in the global market. It has been detected that reading sustainability label and development of the proper understanding is required to make differences on the consumer's food choice. Sometimes it makes a negative impact on the organisation's economic sustainability.  | Sustainability label; consumer awareness; consumer motivation.                |
| Tait et al <sup>40</sup>            | A frequent change in the retailer's and consumers' demand is responsible for making sustainable changes in the organisation's performances. The sustainable labelling process is responsible to enhance the market pressure for increasing the rate of productivity in the food industry. The sustainability attributes are required to identify the consumer's purchasing decisions. The green labelling process is essential to develop the <i>cross country comparison</i> , to enhance business in the global market. Many market researchers use this strategy to attract many foreign consumers. The labelling format is needed for eradication of the biotechnological risk factors in the food industry. | Consumer's demand; sustainability labelling; sustainability labelling process |
| Van Bussel et al <sup>48</sup>      | Consumers do support some group efforts to lessen their impact on the environment. Reducing waste through means such as recycling, reusing food packaging, composting and sorting trash is important to consumers. In addition, consumer initiatives like reducing plastic packaging and sorting trash demonstrate that consumers can shift toward more sustainable behaviours and these initiatives could be reinforced to contribute to the advancement of a sustainable food system.  | Consumer behaviour; sustainable consumption; sustainability label             |

|                                   |  |  |
|-----------------------------------|--|--|
| <p>Van Loo et al<sup>50</sup></p> | <p>Sustainability labels on packages where additional information cues are also displayed to measure consumers' visual attention to sustainability labels in a decision-making context where more information is available (e.g. more attributes). As information density is a bottom-up factor that could affect focus, this is likely to have an impact.</p>   | <p>Fair Trade;<br/>Sustainability label;<br/>willingness-to-pay</p>      |
| <p>Cho and Baskin<sup>8</sup></p> | <p>According to the results of this study, it may be useful to inform consumers about sustainability efforts through labels that include both a product's sustainability score and the relevant environmental dimensions for that category of product. It appears critical to provide scores that are consistent with consumer perceptions of the product, as shown by this study's findings on the impact of perceived label fit on purchasing decisions. .</p> | <p>Packaged foods;<br/>sustainability labels;<br/>Purchase intension</p> |

(Source: Learner)

Recent studies have found that mandatory food labels are necessary for informing consumers about processed foods while voluntary sustainability labels do the same for environmental impact. Market studies show that a sizable percentage of consumers have the intention of sustainability labelled food items.

As mentioned earlier, environmental awareness is in great demand nowadays and following a specific strategy towards it is even more essential.<sup>11,41-43</sup> As a global process, it will be indispensable towards each and every region and that will also ensure an ecological balance and the conservation of nature.

Identification of the consumer's interest is important for market segmentations. According to Janßen and Langen<sup>19</sup>, the sustainable labelling process is beneficial to create market segmentation. The periodic market segmentation is useful to create huge changes in the food manufacturing process. It has been found that the regulatory body can downgrade the product, affecting the brand's image, if the food manufacturing industry fails to meet the compliance for sustainability label certification. There is a negative effect on business results and productivity due to the mislabelled food product<sup>55</sup>. As an added bonus, the Government receives a substantial amount of economic penalties from the food manufacturing industry.<sup>4,15</sup>

The pressure to use such products will increase for the other companies in the amaretto segment as a whole as consumer awareness and environmental sensitivity rise<sup>39</sup>. Further, it will boost the standing of the companies in the relevant market, which will ultimately raise the bar for the entire sector. There will be less of an impact on the natural world because of the decreased use of energy sources. According to the current report, India requires nearly 7 to 10 years to develop a plastic-free India. Nowadays, the food manufacturing industry has made significant changes to the food packaging system.

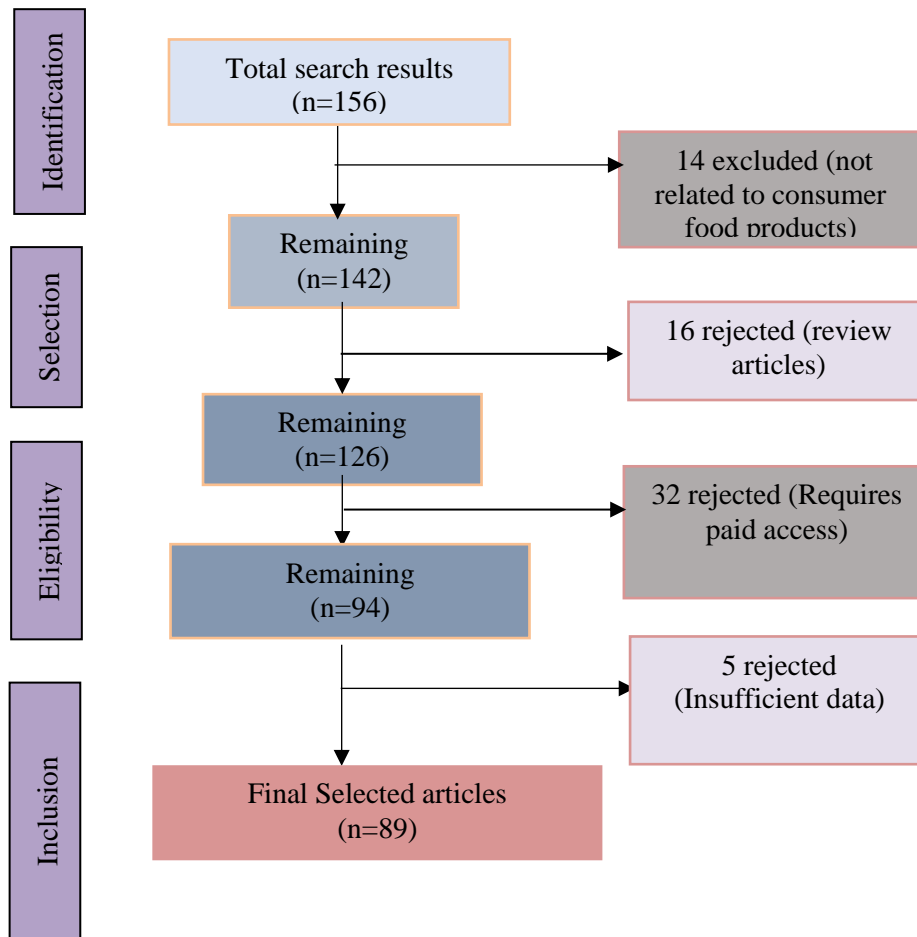
A use of biodegradable products in the food packaging process helps to eradicate the harmful effects of the food products. Not only India, However, the entire world is also

focusing on eco-friendly sustainable food products<sup>7</sup>. The entire world has started to recycle the plastics packaging process; about 9% of the food manufacturing industry is using plastic recycling processes. Using packing material sourced from certified forests is an alternate and more economical way to manage environmental impacts<sup>17</sup>.

Present review has focused on India and global information on the sustainability labelled food products. For identifying relevant articles, a general set of keyword search was conducted in Scopus database. Keywords included sustainability label, eco-label, food label, sustainable consumption, consumer's purchasing decision, label information, organisational sustainability, sustainability report, consumer awareness, consumer motivation, consumer demand, sustainability labelling process, consumer behaviour, fair trade, willingness-to-pay, consumer packaged foods and purchase intension.

Focusing on these key areas helped to gather appropriate information on the researched topic. Moreover, the quality assessment process has been implemented to modify the selection quality of the researched papers. The review process from 2010-2022 was chosen with the on-going United Nations agenda of Sustainable Development Goals in mind. It was during this decade that "sustainable production and consumption" came to the fore, giving serious consideration to social and environmental issues.

According to Borelli et al, focusing on the inclusion and exclusion factors is important to choose authentic research articles on the research topic. After a certain point of saturation was reached, Randolph's proposed method of exhaustively searching the retrieved articles' cited references was implemented. After that, only articles dealing with processed food products were included, as they seemed most relevant to the paper's theme. Among 156 total research articles, 14 papers were not related to food products. Further 16 review articles were excluded. Among 126 articles, 32 papers did not have open access. Five were rejected due to insufficient data. This resulted in 89 articles that were full text screened. A flow chart summarizing the study selection process is depicted in fig. 2.



**Figure 2: Methodology framework**  
(Source: Learner)

**Table 2**  
**Inclusion and exclusion factors**

| Inclusion factors  | Exclusion factors  |
|--|--|
| Research articles, reviews, Scopus indexed publications, 12 years of researched articles, English language, governance framework, peer-reviewed, Consumer research | Political bias, language complexities, paid accessibility, non-peer-reviewed journals, irrelevant area of research |

Apart from these, selection processes of the inclusion and exclusion factors involved were required to select appropriate research papers for completing the systematic review process.

**Discussion**

Online cataloguer ecolabelindex.com is currently tracking 463 labels in 199 countries and 25 industry sectors. There are 148 type of environmental and ethical labels present in the category of food (ecolabelindex). Among these, the more prominent and globally recognised environmental certification labelling programmes in food industry are Forest stewardship council, Marine stewardship council, Carbon footprint and Fair trade<sup>16</sup> and their certification is carried out by independent third-party agencies around the world. Only 25% of third-party certification agencies were

aware of studies that assessed the market share of products carrying their label. Only 44% of single-standard sustainability labels have conducted an impact study to assess the effect of their certification efforts on the environment. This is surprising, given that one criterion for a successful label is the extent to which the organization can demonstrate positive on-the-ground impacts resulting from its labelling program.

Mandatory and voluntary food label influences the consumers purchasing decisions worldwide. Majority of the findings revealed that consumers prefer eco-friendly products over conventional products. Nearly 74% of the consumers are intended to pay more for the eco-labelled product. Increasing customer’s awareness is driven by environmental awareness. Present study sheds light on how

to motivate consumers' purchase intention is motivated by personal behaviour, social and information perspectives through labels<sup>24</sup>. According to Taufique et al<sup>41</sup>, some influential factors like intension, motivations, environmental awareness, social values, responsibilities influence people to focus on the sustainable food products. Development of the pro-environmental consciousness model helped to focus on the consumer's behaviours for enhancement of the sustainable labelling process in the food industry.<sup>21,42</sup>

**Insights:** Two main challenges have been identified to lay out foundations for future studies. First, there exist complexity among labels. Complexity about labels creates confusion among consumer in their decision-making process. Having multiple labels on a product not only increases design complexity, but also raises questions about the credibility of the information provided which can lead to further uncertainty at purchase decision. To improve upon pre-existing sustainability labels, Torma and Thøgersen<sup>45</sup> proposed a meta-label.

The lack of consumer understanding of sustainability labels is a further problem. Not many researchers have examined whether or not consumers are aware of sustainability-related labels on processed food products. Research shows that consumers are willing to pay a premium for products with sustainability labels<sup>23,25</sup>, but they are confused by the conflicting information on those labels. This urges for more study into the topic so that consumers can gain a deeper understanding for the value of a given labelling system.

## Conclusion and Implications

This study reviews sustainability label related studies in food industry in the period of 2010–2022 systematically. Based on inclusion and exclusion criterion, 89 journal articles were selected to have a holistic view on the research progress regarding sustainability labels. There has been increase in trend in publications from 2015 due to adoption of sustainable development goals. One of the sustainable development goals can be met through sustainable production and consumption and this promising market can be propelled by public and private sector encouragement, promotion and awareness of sustainability labels.

Some considerations on the study's implications are presented. First, sustainability labels are potentially useful tools for sustainability transformation. Sustainability labels in consumables can develop a brand opportunity to positively impact the consumer's purchasing behaviour. Increasing knowledge on environmental issues and health-related problems is responsible for increasing the demand for the sustainable labelling process in the global market.

One suggestion is to promote the use of sustainability labels more broadly so that more individuals and businesses can reap their benefits. In addition, this will increase the pressure to adopt green labelling practises to guarantee the continued health of the environment. As an added bonus, it helps make

sure that the next generation inherits a safer and more sustainable planet.

The second implication considers the consumer's awareness as well as their motivation. It is necessary to develop strategies to encourage consumers to purchase sustainability-labelled food products and to increase their understanding of the various labelling schemes. The goal is to define green education programmes that include both consumers and business owners, as well as eco-advertising which uses social media platforms to persuade consumers to buy green goods and services. The third implication concerns recommended to develop innovative business models to improve the sustainable management process worldwide.

Environmentally responsible businesses can set themselves apart from their less eco-friendly rivals by displaying sustainability labels that have been awarded by independent certification bodies. Sustainable business practises such as those promoted by labelling schemes have been linked to lower operating expenses, greater corporate social responsibility, attracting to new markets and profit making.

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