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IIFT International Business and Management Review tends to highlight the significance of emerging issues on national and international front, addressing challenges and reflecting opportunities relating to business and management. The interdependence among businesses in a liberalized world increase the intricacies of business practices and make way for a wide range of business research problems. This journal will cater to all those research questions that are arising in the new challenging business world intersected with the cross-border issues. The Covid-19 pandemic has completely changed the dynamics of international markets and how they function. This brings a turnaround in theories, models and phenomena which are obsolete and not applicable to the world hit by a pandemic. Therefore, it makes more sense now to introduce the International Business and Management Review journal as it will be addressing all the contemporary issues in International Business. It is an open access journal under a Creative Commons License (CC-BY-NC).

Aims and Scope

The journal aims at bringing together managerial issues, practices and innovations which are useful to scholars, educators, managers, consumers, other societal stakeholders and policy makers around the world. It aims to play a significant role in shaping the content and boundaries of the management discipline while simultaneously covering the international scope of businesses. With the aim of impacting the management education and industry practices, *IIFT International Business and Management Review* (IBMR) publishes innovative empirical and conceptual articles with advance knowledge of management and international business, and provides the readers with broad-spectrum of high-quality papers on evolving trends, insights and philosophies in management. All articles appearing in the journal will be peer reviewed to ensure academic rigor and practical relevance and will publish studies from all geographical regions. Discussion of newer forms of cross-border business activity, such as strategic alliances and global sourcing, is also encouraged. IBMR also aims to advance the exploration of issues that include the implications of customer orientation in multinational business, cross-cultural market segmentation and market research.

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Editorial

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In the rapidly evolving world of business, traditional management practices are often not enough to keep up with changing customer needs, technological advancements, and market dynamics. Design thinking, a human-centered approach to problem-solving, has emerged as a vital complement to conventional business management. It brings creativity and empathy to the forefront, helping companies innovate and stay competitive.

At its core, design thinking focuses on understanding the user's needs and experiences. This empathetic approach contrasts sharply with traditional management strategies, which often prioritize efficiency, profit margins, and process optimization. By emphasizing empathy, ideation, and iterative testing, design thinking encourages businesses to think outside the box, leading to solutions that are not only innovative but also deeply aligned with customer expectations.

Integrating design thinking into business management can lead to a more agile and resilient organization. It enables managers to navigate uncertainty by fostering a culture of experimentation and rapid prototyping. Instead of making decisions based purely on data and past performance, managers can use design thinking to gain insights from real-world user feedback and adjust their strategies accordingly. This iterative process minimizes risks and helps businesses quickly adapt to changing market conditions.

Moreover, design thinking encourages collaboration across different departments, breaking down silos that often hinder innovation. By bringing together diverse perspectives, businesses can generate holistic solutions that address complex challenges more effectively. This collaborative approach not only leads to better products and services but also creates a more inclusive and motivating workplace environment.

In conclusion, blending business management with design thinking is no longer optional—it's essential. As companies strive to thrive in a complex, fast-paced world, those that embrace the principles of design thinking will be better positioned to innovate, adapt, and succeed.

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Article

Design Thinking: A Tool for Creative Package Design

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Abstract

The primary function of packaging is protection; however, the conscience of consumers has increased with time and it now encompasses many important aspects like marketing and sustainability. Package design has thus become an extremely complicated topic. Traditional package designing methods involve mainly theoretical aspects and then hands-on practice methodology. However, design thinking has become a recent trend and today, from design students to package designers, all are using it as a tool for successful and innovative package design. Design thinking has a human-centred approach, follows a gradual and interactive prototyping process, and delivers solutions to many complex problems by collaborative and multidisciplinary approach.

Keywords

Design thinking, package design, brand image, prototype, creative design, creativity and innovation, package design

Introduction

In today's market, almost all products are available in packaged form. Primarily, the function of any package is to protect the product it contains till it is consumed. However, the packaging also helps to market the product. Today, the functions of any package may be as simple as protecting the product to complexities like its recyclability and sustainability. The success of any product in the market depends mainly on the package design and its functionality to satisfy the consumers. With the innovations in technology and heavy competition in the market, now many companies have recognised the importance of package design as a tool for value addition, branding and marketing. For any package design to be effective, it should attract the attention of the customer and highlight the product (Elkhattat & Medhat, 2022; Kotler et al., 2008).

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A good package design provides functions like protection, preservation, attractiveness, easy transportation and identity of the product that results in convincing the consumers. The efforts of a package designer are extremely important while designing any package.

Innovation in Packaging

Innovation means visualisation and using non-existing ideas while implementing the process of realising new concepts. The new innovation might be used in its first form as an invention or to modify and improve it in another form. Therefore, as competition intensifies, new innovative changes in product packaging design and marketing become essential for gaining recognition and facing competitors (Jimenez et al., 2008).

A new innovative packaging solution appears and is called 'hybrid packages' that combine printed graphics and electronic elements to work together on the package. Creative packaging plays a main role when products are bought. It is the first thing that the consumer sees before making the final decision to buy. The importance of package design increases with the arrival and popularisation of self-service systems. The package design that attracts consumers at the point of sale assists them in making decisions quickly in the store. The eye-catching package has more opportunities to be noticed and chosen against the competitors and be purchased. The package with a strong decent identity with respect to the environment and human relations, with a unique appearance and a sufficiently different image assists the consumers' decision-making and drives purchasing. High-quality packaging attracts consumers as compared to low-quality packaging. Innovative packaging may actually add value to the product if it meets a consumer need such as recyclability, tamper-proofing, child-proofing, easy to open, easy to store, easy to carry and product durability. Today's manufacturers strive to have packaging that maintains the key equities of the brand, has standout appeal on the retailer's shelf, and is sustainable but with lower production costs. The customer can adopt a product on the basis of its innovative packaging, which shows the relation between buying behaviour and innovation of packaging (Elkhattat & Medhat, 2022; Garg, 2017).

Package Design

The creative packaging design has evolved as a communication tool as well as a business marketing strategy. Creative packaging design plays an important role in attracting the attention, describing the product information to consumers, and finally making the sale. Packaging has been the most important point of purchase tool as it is used to communicate the brand's message and values. The design of the package enables consumers to identify the nine symbolic signs to easily identify the product from competitors. Packaging design is one of the key elements in the marketing tool for a product and it will promote, be recognised and sought

from the consumer. Creative packaging design will ultimately be monitored to their brand conveys a message and personality (Ambrose & Harris, 2011; Capsule, 2008; Kotler et al., 2008; Meyers & Gerstman 2005; Nickels & Jolson, 1976).

Packaging design changes the appearance of goods and endows the same products with different tastes. A new trend in packaging design has been increasingly emphasised and has gradually become an important means to convey information and build brands, playing an important role in brand competition. Modern trends in food and beverage packaging include personalised packaging, communication with environmentalists, packaging for urban people, digital design and simplified living, as mentioned in a related report on the food and beverage industry. It can be seen from the five points that consumer needs are taken seriously in packaging design. Consumers of different ages, social statuses and lifestyles have distinct demands on product packaging design.

In creative packaging design, redefine nature-based design according to graphical, colouring and textual elements on packaging applications. There are many factors to consider in designing a product package, such as consumers increasing attention to the environment, and consumers are also getting shrewder to choose eco-friendly packaging (Milana et al., 2021).

The interactive concept of packaging design is mainly for interaction between consumers and commodity packaging. An excellent product packaging design can correctly convey the information of the goods. In this process, consumers can better understand the thoughts and feelings of the products. So, designers can constantly update and improve the commodity packaging according to the consumers' reaction and the description of their own consumption demand and enhance the individuation of commodity packaging. Designers should give their own motivation and consistently supplement their own knowledge to design innovative interactive packaging design.

Packaging design has three forms of interaction concept. The first is sensory packaging, which uses the consumer's sensory feeling to directly transmit the design concept to the consumer, creating a real feeling with the help of bright colour appearance and design with the sensory experience, to strengthen the information exchange between the customers and the packaging and increase emotional interaction. The original intention of the design can be reflected by the interaction of 'picking', which makes the packaging interesting and integrates interactivity into it.

According to Yang (2016), practical necessities of interactive concept in packaging design. The interactive concept in packaging design is indeed influenced by practical requirements determined by economic development and consumer demand. In the current market situation, packaging serves as just a container; it is a means of communication between brands and consumers. Moreover, in a competitive, packaging design plays a vital role in determining consumer observations and influencing purchasing decisions. The initial impression of commodities is largely influenced by packaging design only. Package design has gradually become a main conveyor of commodity information and improved the economic efficiency of enterprises. Package designing not only

attracts attention but also conveys the needful information about the product, features brand identity and benefits. This not only enhances customer satisfaction but also contributes to economic efficiency.

The consumers' consumption concept has been changed because of communication and interaction between packaging designs and customers, which just supplies to the changing concepts of consumers. Analysis of the necessity of interaction concept in packaging design with the continuous progress in the economy, and more enterprise attaches importance to the packaging design of merchandise. However, few enterprises lack innovation and practicality. They usually implement the form of plagiarism and imitation in packaging design, which leads to similar packaging design of the same type of product in the market at present, which cannot duplicate the characteristics of enterprises and changes and benefits between commodities. Therefore, many enterprises cannot attract the attention of consumers to the product. The flexible application of interactive concepts in packaging design is to renovate the structure of product packaging design, add humanistic needs and spiritual evolution to the traditional design, and fully combine the packaging design concept with the actual requirements of consumers and humans. Thus, in the process of packaging design, we should pay attention to the form and structure, as well as to the humanistic spirit, to truly reach the goal of interface.

An Effective Packaging Design: A Need for Attracting the Consumers

A unique packaging design is bound to go deep into the hearts of the people to achieve visual impact and aesthetic feeling. With the continuous accumulation of material wealth, people are increasingly seeking spiritual satisfaction. Unique and creative packaging design contains a certain cultural content, allowing cultural products with the packaging design to show a unique emotional appeal and values of the product. The idea of creative packaging design of cultural and creative products should meet the needs of consumers by playing the role of urging consumers to consume rationally and by symbolising a vivid visual effect. The packaging designer of cultural and creative products should design the packaging design needed by consumers from the perspective of consumers. The creativity of packaging design is in line with the demand of cultural and creative products.

For cultural and hand-crafted products, the packaging design should also be unique in addition to its functionality to fulfil consumer needs. The uniqueness of any packaging design should also complete the aesthetic desires of the consumers. In addition, it should also meet the demand of consumers for such products. The package design of such products should also balance the consistency of image and develop creativity in the new generation (Dong, 2020).

The consumer market grows rapidly every year and competition increases day by day among different types of products and increases steadily. Day by day, increasing competition in industrial area among different types of products to stand out against competitors makes companies try to innovate something new

and get new products and designs to the end customers. It is one of the marketing tools that has become popular and important in packaging. Today there are different package designs in supermarkets. Customer preference and buying behaviour of the consumer are the important points that should be considered when designing any new package. Almost all product purchase decisions of goods are made by the consumers at the point of purchase (Polyakova, 2013).

Today, product packaging has become more and more complex and also plays a vital role in branding. The role of packaging mainly depends on the three functions with regards to the product which are often highlighted in various publications with respect to marketing, protection, identification and communication (Capsule, 2008).

New technology and technology development in laminates and coatings have been contributing to the entry of newer materials. This is one of the important considerations in the development process of creative packaging design (Jane, 2021; Yang, 2016).

Packaging design includes texture, colour, graphics, size, materials, shape, etc., and has importance in marketing various products, for grocery items and cosmetics. While designing any package, the package should be considered as a part of the product (George, 2005). The creative package and effective design will definitely have an impact on the final package.

Creative Packaging—A Marketing Tool

Creativity is a vital component of success. Packaging has the potential to make or break the future of any product, that is, how it stores and protects the product and how eye-catching it is on store shelves. Creative thinking packaging attracts consumers by doing free advertisement by enhancing the brand image.

Creative packaging includes the product design as well as the brand development. A package tells about the product's characteristics and communicates many things to the consumers. While purchasing the product, creative packaging helps the consumer to make quick decisions by changing their perception about the product and making them buy the product quickly. The creative packaging adds value to the product quality with improved packaging. Different design elements like texts, colours, graphics, font type and size play an important role on the shelf. The primary role of creative packaging is to catch the consumers' attention and to stand out among the competition in the store or at the supermarket. Hence, creative packaging is a major instrument in modern marketing activities for packaging of any consumer good.

People often spend longer time in the supermarket and grocery stores while buying the products. It makes a big difference when a product has uniqueness and attractiveness by its careful design in order to catch the customer's attention. How consumers experience packaging in everyday commodities and describe the role of packaging in perception of quality is very important. Creative packaging works as a strategic tool for companies to increase brand awareness, strengthen brand image and build up customer loyalty (Lu et al., 2007). Creative packaging is the

need of the hour for marketing consumer goods. In the recent scenario, the creative packaging should contain the preferences of consumers. Packaging should provide an attractive method to convey messages and information about the product attributes to its customers.

Design Thinking and Creative Packaging

Design thinking and creative packaging are being used by companies to showcase their products in the market differently from their competitors (Garg, 2017). Design thinking and creative packaging are secure and safe but have altogether different approach.

Packaging design should have visual impact. The product design should also involve a solution to brand visuals, structural needs and convenience in its functionality. Packaging designing course should include creativity and professionalism. Design thinking concept has taken momentum throughout the world to improve the product quality and demand of the product. Packaging design training should make students think and introduce creativity in their design. The issues of synchronisation among products and services and linking them with consumers' perceptions should be given importance while designing. Innovative designs can be developed using one's experience and available market resources. The three dimensions of creativity should be used to create an effective package design.

Packaging design embraces the requirements of protection required by the product and includes effective usage of branding needs. From a commercial perspective, for addressing comprehensive issues, the packaging design requires detailed planning.

The two types of packaging design, that is, consumer packaging and industrial packaging, different aspects like protection, storage, transportation, distribution, safety and convenience, should be fulfilled differently to fulfil respective needs. The model for cultivating packaging design talent cultivation model and the current era also entails its unique model for fostering design talent. Creative thinking packaging and design gain the knowledge of packaging and understanding of packaging concept on the basis of their knowledge. The creative packaging improves the design expressions and ability of communication from the perspective of the industry.

Package design is vital for big brands to sell their products in the trade market, and thus should be considered as advertising of the products. It should also ascertain its role to create and convey the product attributes to its customers (Elkhattat & Medhat, 2022).

Creativity and innovation are interdependent. The role of creativity is to generate new ideas which do not exist at that point of time, and innovation gives us the scope for implementation of the newly created ideas. Thus, with the growing competitive market, it is necessary to have creative changes in the package design of any product to achieve market acceptance and face the competition. In the recent world of creativity, the innovative packaging solutions for the so-called 'hybrid packages' include some electronic elements in addition to the printed graphics. There are many aspects of innovative packaging, for example, unique

shapes, different die-cuts, 3D printing including special features like sensory and smart indicators.

Design Thinking Process

Based on how the consumers behave, think or feel, design thinking brings new solutions to our life. It is an interactive process and focuses on the association between consumer and designer. As described in Figure 1, it normally consists of five stages, viz. understanding, defining, conceptualising, prototyping and testing.

The complete process focuses on user-specific research, wherein the designer visualises the consumer to gain a deeper understanding and experience about his perceptions. This allows the design thinkers to overlook their own assumptions about the product and packaging and try to gain insight into consumer needs.

Further, the design thinker defines the problem and conceptualises the probable solution to the problem. Further, they prototype the solution with proper care using their experience, and then the prototype is finalised after refining through different predefined test protocols.

Package design is always influenced by the business environment and further influences the innovative technology market and environment issues in marketing (Czinkota & Ronkainen, 2007). The package design and packaging development process originates from different sources, business environment and various market aspects, which, in turn, originates from changes in consumer minds and their perceptions about convenience, functionality, environmental issues and safety (Packaging Federation, 2004).

Functions of Creative Packaging

Creative packaging should provide protection, convenience, labelling, identification, promotion, tamper evidence and economy to the product. Figure 2 highlights the functions of creative packaging.

1. Protection: Packaging keeps the product fresh, clean and moisture-proof. Creative packaging protects the product from leakage, spoilage, breakage, evaporation, insect contamination, dust, adulteration, etc.

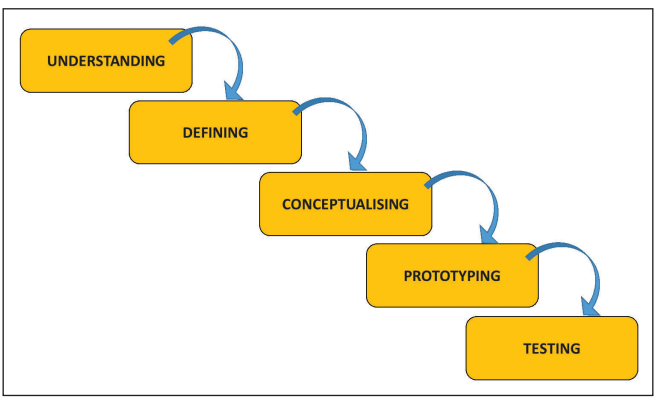

Figure 1. The Process of Design Thinking.

Source: Packaging Federation (2004).

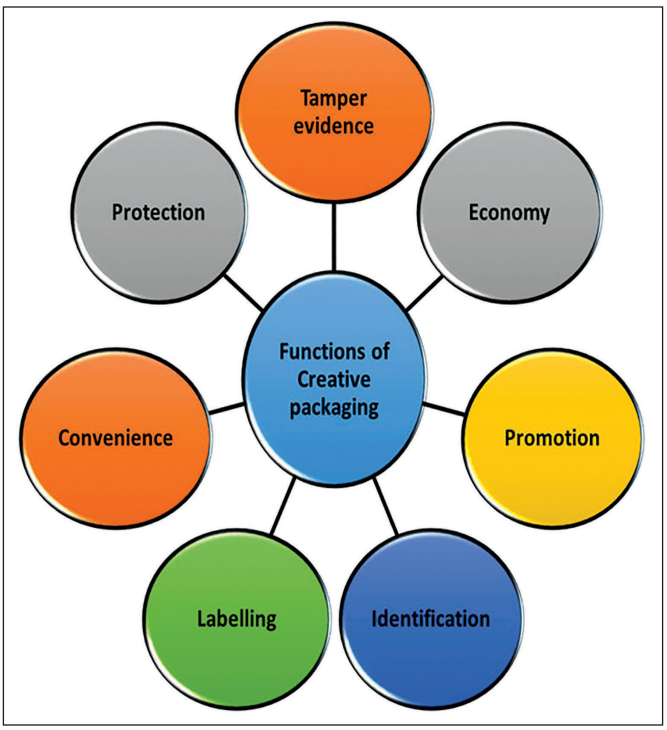

Figure 2. Functions of Creative Packaging.
Source: Robertson (2006).

2. Convenience in handling: The packaging facilitates handling, displaying storage, transportation, loading, unloading, etc. The packaging provides convenience to manufacturers, wholesalers, retailers and consumers in handling the product.
3. Labelling: Labelling is just not possible without packaging. Label is an informative tag/sticker attached to the package of the product. Label gives information about the product like its contents, price, brand name, manufacturing date, expiry date, methods of using the product, etc.
4. Identification: Product and commodity stored in storage area need to be identified as to their type, make and also need to be clearly distinguished brand. Product of one manufacturer can be easily identified from competitor's product with the help of creative packaging.
5. Promotion: Creative packaging is a silent salesman. Attractive packaging attracts retailers and consumers. At the initial stage, it is the package that attracts the consumers. The attractive colourful package, design, picture, printed informative matter, colour combination, etc., all these aspects of packaging help to attract customers and thereby promote sales.
6. Tamper evidence: There is a minimum possibility of adulteration of goods if these are properly sealed so the consumers get the original product.

7. Economy: The package should be economically feasible. The economical creative packaging increases the economic life of the product and sales of the product (Robertson, 2006).

Creative Packaging Elements

The elements of creative packaging design fall into two categories: visuals and informative. The visuals include graphics, size or shape of the package, and the informative aspect consists of information about the product or technology used.

The visual element in creative design provides detailed information about the product. Visual component includes colour combination, image layout typography, product photography graphics, etc. Selection of process colour and colour combination is an important point to create a new or attractive design package. Colour and colour combination are the main elements of design in packaging design because it is very easy to remember and has a visual appearance (Interaction Design Foundation, 2016).

Packaging size and shape are important factors in package designing. The packaging size varies depending on the product level involvement. The product price has smaller level involvement, which is determined by cost estimation and cost saving created by reduced packaging and promotional expenses. The effect of package size has a strong influence on the buyer when the quality of the product is difficult to determine. Therefore, the consumer decides the quality of the product from the product volume and its cost (Ahmed et al., 2014).

Information: Product information and communication are fundamental roles of any package. This helps customer to make the right decision when purchasing a product. The technology creates the packages according to new trends and customer qualities. So, the technology fulfils the consumers' needs and requirements.

The communication element in the new technology should be presented visually and hence it will be more attentive and convenient for the customers. Interaction with packaging can stimulate attention and engage in information processing (Zhao et al., 2021).

Conclusion

The present review article concludes that creative packaging design is necessary according to consumer needs. Packaging is a protection and easy to handle the product. Packaging is a vital tool in marketing. The creative package design grabs the attention of consumers and provides detailed information about the product, thus it works like a silent salesman. Creative packaging protects products from external threats, extends quality and extends their shelf life while providing protection during transportation and storage. Creative package design plays an important role in conveying detailed information to consumer about the product attributes. It promotes and reinforces the purchase decision not only at the point of purchase but every time the product is used. Thus today the process of design thinking has become an important trend for design students and professional

package designers and they are using it as an effective tool for successful and innovative package design.

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References

Ahmed, R. R., Parmar, V., & Amin, M. A. (2014). Impact of product packaging on consumer's buying behavior. *European Journal of Scientific Research*, *120*(2), 145–157.

Ambrose, G., & Harris, P. (2011). *Packaging the brand: Exploring the relationship between packaging design and brand identity*. AVA Publishing.

Ambrose, G., & Harris, P. (2011). *Packaging the brand: Exploring the relationship between packaging design and brand identity*. AVA Publishing.

Capsule. (2008). *Design matters: Packaging 01: An essential primer for today's competitive market*. Rockport Publishers.

Czinkota, M. R., & Ronkainen, I. A. (2007). *International marketing*. Thomson.

Dong, J. (2020). Theoretical research on packaging design of cultural and creative products. *Advances in Social Science, Education and Humanities Research*, *412*, 113–115.

Elkhattat, D., & Medhat, M. (2022). Creativity in packaging design as a competitive promotional tool. *Information Sciences* Letters, *11*(1), 135–148.

Garg, D. (2017). *Creative packaging as a marketing tool*.

George, J. (2005, April). *On paper, a world of opportunity* (p. 36). Packaging World Magazine.

Interaction Design Foundation—IxDF. (2016, June 2). *What is graphic design?* Interaction Design Foundation—IxDF. https://www.interaction-design.org/literature/topics/graphic-design

Jane. (2021, September 6). *Creating competitive advantage with product packaging*. https://www.deprintedbox.com/blog/creating-competitive-advantage-with-product-packaging

Jimenez, J., Valle, R. S., & Espallardo, M. H. (2008). Fostering innovation. The role of market orientation and organizational learning. *European Journal of Innovation Management*, *11*(3), 389–412.

Kotler, P., Armstrong, G., Wong, V., & Saunders, J. (2008). *Principles of marketing* (5th European ed.). Pearsons Education Limited.

Lu, L., Gargallo, S., & Munar, M. (2007). *Packaging as a strategic tool* (Final Dissertation jas (diva-portal.org)).

Meyers, H., & Gerstman, R. (2005). *The visionary package: Using packaging to build effective brands*. Palgrave Macmillan.

Milana, D., Manavis, A., & Kyratsis, P. (2021). Innovation of packaging. *International Journal of Manufacturing Economics and Management*, *1*(1).

Nickels, W. G., & Jolson, M. A. (1976). Packaging—the fifth 'p' in the marketing mix? *Advanced Management Journal*, *41*(1), 14.

Packaging Federation. (2004). *Packaging's place in society. Resource efficiency of packaging in the supply chain for fast moving consumer goods*. The Packaging Federation.

Polyakova, K. (2013). *Packaging design as a marketing tool and desire to purchase*. https://www.theseus.fi/handle/10024/55293

Robertson, G. L. (2006). *Food packaging: Principles and practice*. Taylor & Francis/CRC Press.

Yang, M. (2016). *Study on the interactive packaging design based on emotional experience*. International Conference on Arts, Design and Contemporary Education (ICADCE 2016). https://doi.org/10.2991/icadce-16.2016.136

Zhao, H., Yao, X., Liu, Z., & Yang, Q. (2021). Impact of pricing and product information on consumer buying behavior with customer satisfaction in a mediating role. *Frontiers in Psychology*, *12*, 720151. https://doi.org/10.3389/fpsyg.2021.720151

Article

Developing a System Which Supports the Commuters' Experience in Heavy Urban Traffic: Case Study of Delhi, India

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Soumik Halder[1] and Akash Kumar[1]

Abstract

The research is performed keeping in view the traffic congestion in urban areas, especially metro cities in India. Getting stuck in jams for hours is a habitual matter. The peak hours are a peril. In just four metro cities in India (New Delhi, Mumbai, Kolkata and Bengaluru), traffic congestion is so high that the fuel that is burnt due to idling of vehicles at traffic jams costs around ₹1.5 lakh crore annually ($18.75 billion). The situation is worst in the nation's capital, New Delhi, with over $8.5 billion. Overall growth in population and economic upliftment, especially in the middle-class section, shaped an upsurge in demand for private transportation. Uber research estimates that the transport demand has increased by more than eight times since 1980 in urban India (Financial Express, 2018). According to findings by the Central Road Research Institute (CRRI) in the nation's capital, New Delhi, every day 39,806 kg of fuel is burnt due to idling of vehicles at traffic jams (Adak, 2014). The article highlights problems faced by commuters, taking into account New Delhi as a case study. It is also largely because Delhi is affected by one of the highest vehicle densities among all the cities in the world (Adak, 2014). The assessment includes continuous observation and interview process of commuters belonging to different socio-economic classes in different areas of the city on (a) mode of transport used by them/preferred by them, (b) decision making towards the preferred mode of transport in the face of uncertainty, that is, traffic and (c) problems faced due to lack of consistent information regarding traffic. The article also discusses redefining the user interface and thereby their experience and forming an efficient and planned social system.

Keywords

Road traffic, traffic congestion, user interface, application system

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Introduction

The location of New Delhi is between the latitudes of 28°-24′-17″ and 28°-53′-00″ North and longitudes of 76°–50′–24″ and 77°–20′-37″ East. The city has a common border with the adjacent states of Uttar Pradesh and Haryana. With 11 districts, it has a total area of 1,483 km^2. The city measures 51.90 km in the utmost length and 48.48 km in the utmost breadth. Urbanisation has almost engulfed the rural area of the region. In the year 1901, the rural population in the region was nearly 50%. It reduced to less than 7% in 2001 census. It is a result of villages being faded away, providing space to skyrisers and commercial spaces. The villages, which were 314 in 1921, reduced to 165 in 2001.

The present population of Delhi is circa 32,941,308 (approximately 32.9 million) (World Population Review, 2023). Rich infrastructure, trade and commerce and better job opportunities attract migrants from other states of India. It has the second-highest population of inter-state migrants in the country, only after the state of Maharashtra (Government of NCT, 2023; Khawoosa, 2019).

There are over 13.4 million vehicles occupying space on the roads of Delhi, creating traffic congestion as a common problem (Goswami, 2022). However, it is impacted by various other factors as well, which are as follows:

- Seasons: Winters offer challenges such as cold waves, fog, smog and extremely low visibility. Summer brings severe heatwaves. Monsoon offers water logging.
- Festivals: The city showcases extensive diversity of religions, languages, customs and cultures coeval in harmony. The diverse socio-cultural groups, with their religious, cultural and social gatherings, have transfigured Delhi into a city of socio-cultural celebrations and festivals. People flood out to either celebrate or shop for their festive essentials (Delhi Disaster Management Authority, 2014).
- Political rallies: Being the political capital of the country, rallies of different nature are frequent in Delhi. Roads are often blocked for the same.

The city has various modes of public transportation system. They are as follows:

- Public bus: The city has nearly 7,500 public transportation buses plying regularly (PTI, 2023). On an average, the daily ridership on public buses is approximately 2.5 million (Mathur, 2022).
- Delhi Metro Rail: In the National Capital Region (NCR), the metro has a total network length of 391 km. There are 12 different routes laid as labyrinth, with 286 stations (Delhi Metro, 2023). The average daily ridership on Delhi Metro is approximately 5 million (Agarwal, 2022).
- Auto-rickshaws: There are over 95,000 auto-rickshaws plying on the roads of Delhi (Goswami, 2021). Approximately 2.5 million people take to auto-rickshaws on a daily basis (ANI, 2020; Goswami, 2021; Mani, 2023).
- Cabs/taxis: There are 112,000 cabs/taxis plying on the roads of Delhi (Mani, 2023). Average daily ridership is approximately 14,000 (Delhi Development Authority, 2020).

- Cycle rickshaws: There are more than 500,000 cycle rickshaws operating on the roads of Delhi, making approximately 1.5 million trips per day (Goswami, 2021; Mani, 2023; Saini, 2015; Saiyad et al., 2019).
- Ring rail: The railway service connects Delhi with strategic urban and suburban areas of adjoining states, that is, Haryana and Uttar Pradesh, using primarily Electric Multiple Unit (EMU) and Diesel Electric Multiple Unit (DEMU) rakes. Average daily ridership is approximately 7,000 (Delhi Development Authority, 2020).

Selecting the right means of transportation in Delhi depend on various factors including the distance, time constraints, cost, convenience and personal preferences. Here are some considerations that help one to choose rightly and could be selective according to what mode of transportation in Delhi is more suitable to them:

- Distance: For shorter distances, options like walking, cycling, auto-rickshaws, or cycle-rickshaws may be more convenient and cost-effective. Auto-rickshaws and even buses suit mediocre distance. For longer distances, the Delhi Metro, Ring rail as well as buses are a better choice, as they offer faster travel times. Private vehicles and taxis/cabs are good options for all the above-mentioned distances.
- Time constraints: If there are time constraints and one needs to reach the destination quickly, then Delhi Metro is the dependable option.
- Cost: Public transport system such as the Delhi Metro and buses tend to be more affordable and budget-friendly compared to private vehicles or ride-hailing services. Auto-rickshaws and cycle-rickshaws are also relatively inexpensive for shorter distances.
- Convenience, safety and comfort: It is subjective. However, factors such as availability, frequency, accessibility, time of travel, safety assurance, comfort, kind of people travelling together and weather play a major role towards considering the mode of transport.

Ultimately, the choice of transportation in Delhi depends contextually as per the specific circumstances. It is helpful to stay updated on the latest information about routes, fares and any ongoing changes or disruptions in the transportation system. The hourly updates are available on radio, but they are not consistent and dependable. At the same time, one has to wait for the updates.

The focus is to have collective information about the circumstances and thereby establish the problems a common person in Delhi goes through during their daily travel. The goal is to provide a desirable, user-friendly system to beat the traffic for users of all age groups, social and cultural backgrounds at any time of the day (without any wait). The intention is to make the movement of the daily commuters through the city relatively effortless.

Methodology

The interview was conducted as group participatory approach in 15 rounds with 637 women and girls across 11 districts in Delhi.

Identification of the stakeholders was done keeping in view the following:

- A minimum of 40 people/daily commuters from each of the 11 districts of Delhi belong to different age, gender, profession and socio-cultural backgrounds.
- Commuters from all the 12 different routes of Delhi Metro.
- A minimum approximate commuting distance of 6 km was set as a criterion.
- Stakeholders were identified in groups in specific places.

It was the requirement of the research study that the researchers spent a substantial time in the field. The study took over 15 months with intensive observation. Kurt Lewin, in his interpretation, mentioned that there is a limitation of studying complex real social events in a laboratory environment. There is always the complexity of splitting the elements of an integrated system, retaining its genuineness in natural condition (Sofer, 1972).

In holistic view of scientific understanding of living systems, all living organisms have a distinctive commitment to contribute to the harmonious functioning of their ecosystem. This understanding of living systems and subsequently human society is grounded in the perception of relations with numerous paradigms of everyday life, largely falling under intellectual aspects, societal dimensions and environmental aspects. Some of the paradigms of everyday life in human society are welfare and entrepreneurial arrangements, education or awareness, culture and lifestyle and motivation, among many others, which together form integrative tendencies. The progressive system of biosphere and subsequently the functioning of human society as a system may be described as holistic view or systemic understanding (Capra & Luisi, 2014).

In a common question, that is, 'mention three major pain points while commuting', to all the respondents, the answers/reactions were as follows:

- Excessive road traffic thwarts to reach the destination on time.
- Lack of freedom of measures, choices, or decisions under given circumstances.
- Many a times, there are multiple mode of transport used by commuters. Connecting modes of transport are not readily available or rather time-consuming.
- Lack of controllability towards the availability of seats in the bus/metro/ ring rail, especially for aged, women and children.
- Not sure about the parking availability of personal vehicles till they reach the space/ metro station.
- Sometimes users' bookings with regards to cabs/taxis/auto-rickshaws tend to fail due to different situations.
- During peak hours, overcrowding is evident in different means of transport.
- Unfriendly seasons: Summers (extreme heat), monsoon (water logging) and winters (low visibility due to fog) collectively comprise approximately 7 months in a year.
- Lack of standardised commuting prices in case of cabs/taxis, auto-rickshaws and rickshaws, especially during odd hours and different weather conditions.

- Infrastructure becomes insufficient to handle the overcrowding. Thereby, the time taken to commute is very high.
- Pollution is unbearable.

The relationship, pattern and connectedness of these various aspects lead to systemic phenomenon. Capra and Luisi, in their study of systems view of life, observed that recognition of networks of social communication led to systemic understanding of social systems (Capra & Luisi, 2014). The 11 paradigms of undesirable problems or drawbacks mentioned above associated with commuting in Delhi are interconnected and classified as follows in Figure 1.

A comprehensive and multi-faceted approach was taken towards developing a framework that addresses the undesirable problems or drawbacks without any skirmish in the present system. Focus group discussion and brainstorming process were conducted to produce ideas. A number of ideas were obtained in two rounds from a number of people divided in two groups of 11 people. The members in the focus group discussion and brainstorming process included daily commuters through bus, daily commuters through metro rail, daily commuters through personal vehicles, daily commuters through multiple modes of public transport, product service and systems design professionals, academicians in the areas of user interface and user experience and information technologists.

The sole agenda for focus group discussion and brainstorming process was to invite number of ideas, perceptions and opinions so that later they may be evaluated and improved upon (Jones, 1970).

Result

Ideas obtained through focus group discussion and brainstorming process are as follows:

- Proper tracking system for smooth transportation.
- Online ticket system for metros and buses.
- Connectivity options, especially in case of multiple modes of transport, should be transparent and readily available.
- There should be some assist system providing options to commuters, contributing towards freedom of measures or choices and thereby controllability under given circumstances.
- Methods should be available to identify overcrowded metros.
- Live weather conditions and traffic conditions, on the spot and consistent updates.
- Online payment facilities.
- Identification of user's daily schedule and auto-save it in an application to provide daily updates accordingly.
- Price should be justified with respect to the distance covered.
- There should be online complaint registering system mentioning the vehicle registration number in case of misbehaviour, last-minute cancellation, unwarranted fare hike under circumstances, et cetera.

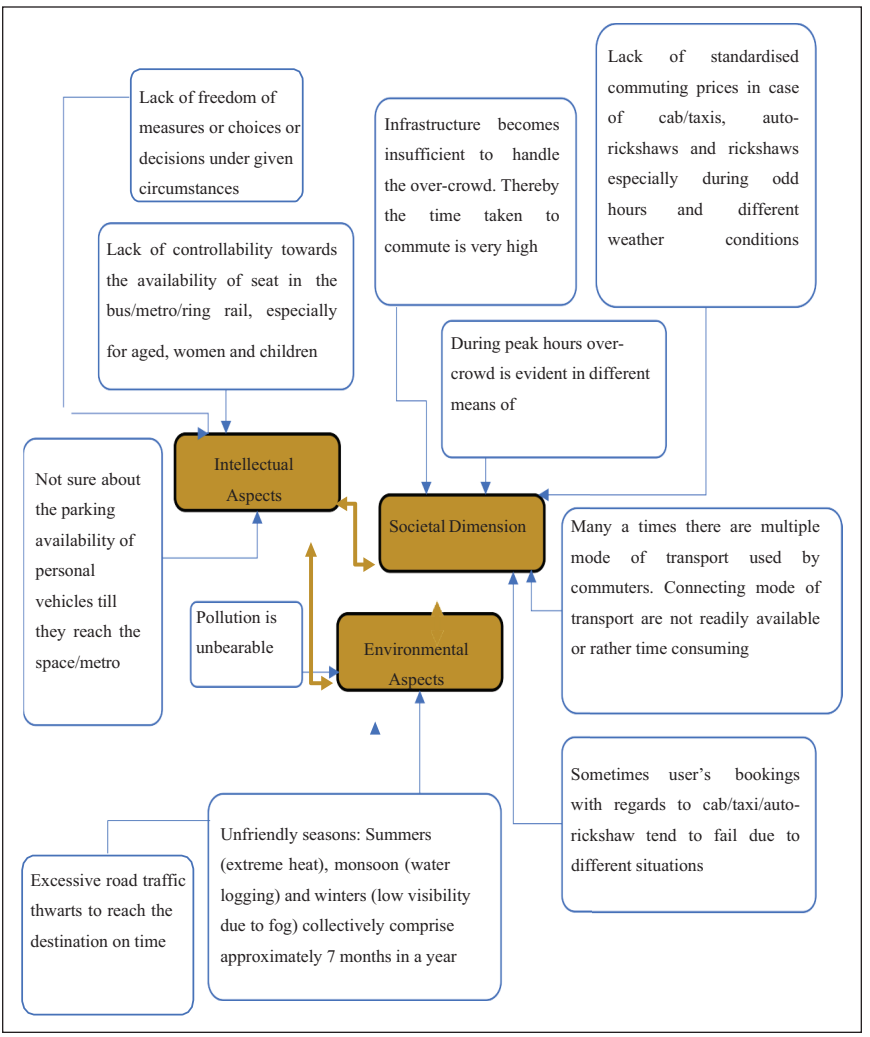

Figure 1. Paradigm of Undesirable Problems or Drawbacks Associated with Intellectual Aspects, Societal Dimension and Environmental Aspects and their Connection with Each Other.

- A system which is consistent and comes with affordance for majority of commuters belonging to different age groups, genders, et cetera.

During the process of substantiation of the above ideas with the members, a number of ideas were emphasised upon. They need to be re-assessed and consolidated. It is done keeping in view forming the ideas into systems with various arrangements of multiple elements. Re-assessment of the ideas was done with the application of transformation techniques or removal of mental blocks. Transformation technique can be applied to corroborate ideas or search (Jones, 1970). The transformation technique that is used is as follows:

- Placing each of the ideas and linking it as a solution to the problems with the help of attribute listing (Crawford, 1954).
- Relating the ideas with each (viewing their dependence on each other) other and the problems that are to be addressed with the help of attribute listing (Crawford, 1954).
- Rearranging, combining and juxtaposing the 14 brainstormed ideas (mentioned previously in sub-chapter 3.3, Conceptualising ideas) into four (Jones, 1970; Osborn, 1963).

The conceptualised idea that can be established into interrelated systems is an application operational on any smart phone. It is based on a fact, that is, the number of smartphone users in India will be 1 billion by 2026 as predicted by Deloitte's 2022 Global Technology, Media and Entertainment, Telecom (TMT) (Press Trust of India, 2023). The top five cities in India raised over 55% of smartphone sales, with Delhi generating the maximum demand (*The Hindu*, 2018). Against a population of approximately 3.2 crore (32 million) in Delhi, there are over 4.5 crore (45 million) mobile phone connections, and it is increasing fast (PTI, 2012). Figure 2 depicts the conceptualised idea as a system with various system elements.

The application tends to address all the paradigms of undesirable problems or drawbacks associated with intellectual aspects, societal dimension and environmental aspects. The objective was to come up with a holistic solution to all the commuting problems in Delhi.

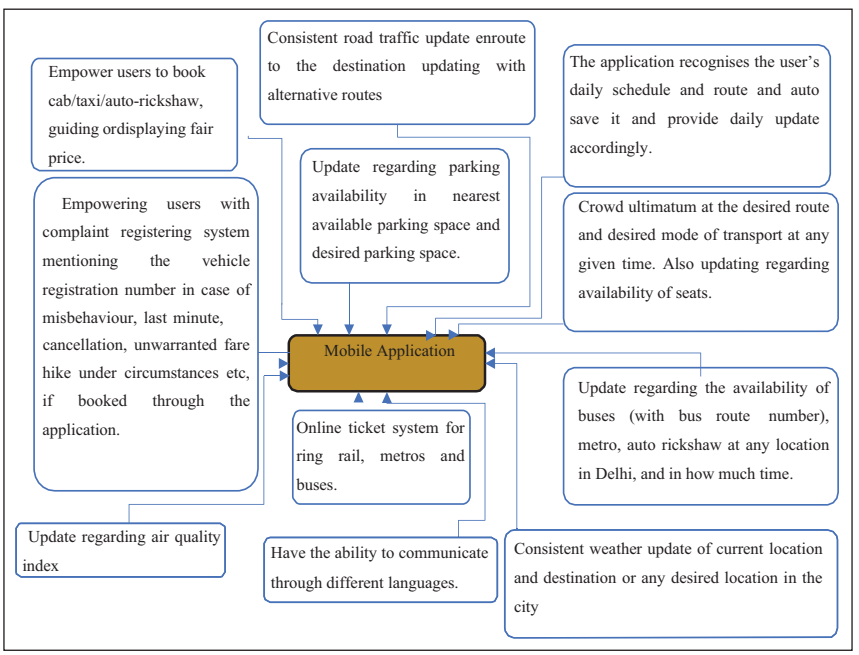

Figure 2. The Conceptualised Idea as a System with Various System Elements.

Figure 3. Splash Screen.

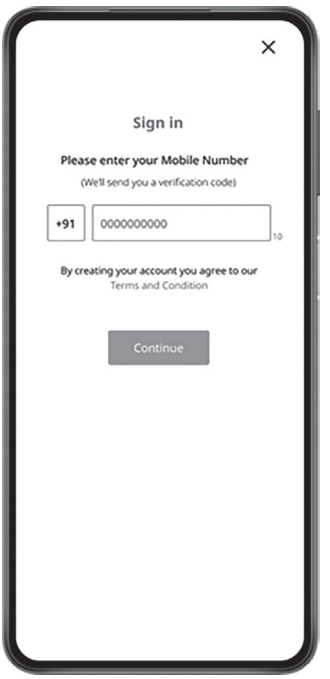

Figure 4. Signing In, Splash Screen.

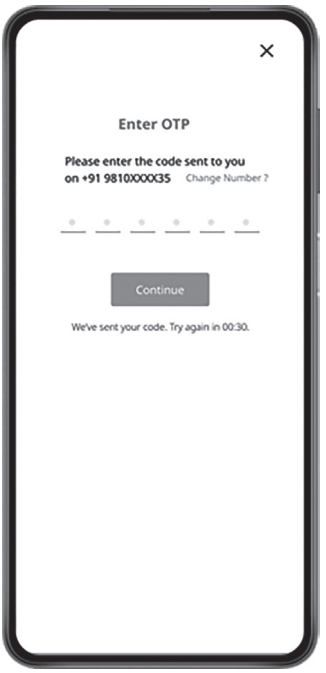

Figure 5. One-Time Password (OTP) Splash Screen.

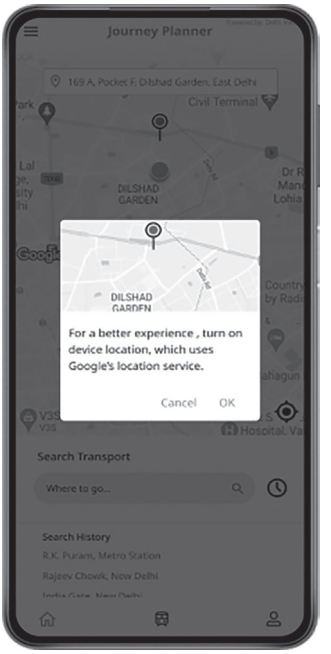

Figure 6. Location Permission Screen.

Figure 7. Language Screen.

Figure 8. Journey Planner, Home Screen with Traffic Updates.

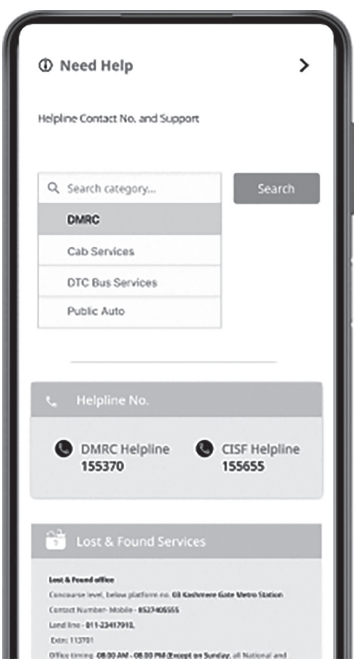

Figure 9. Complaint Registering Screen.

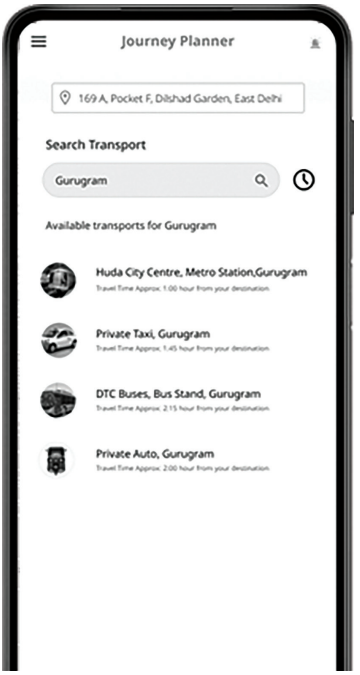

Figure 10. Journey.

Figure 11. Cab.

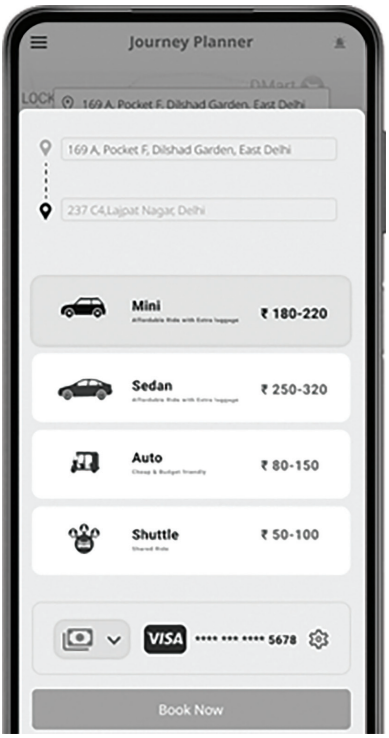

Figure 12. Cab.

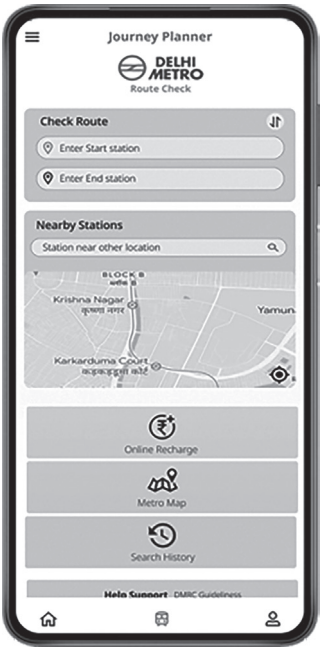

Figure 13. Metro.

Figure 14. Metro.

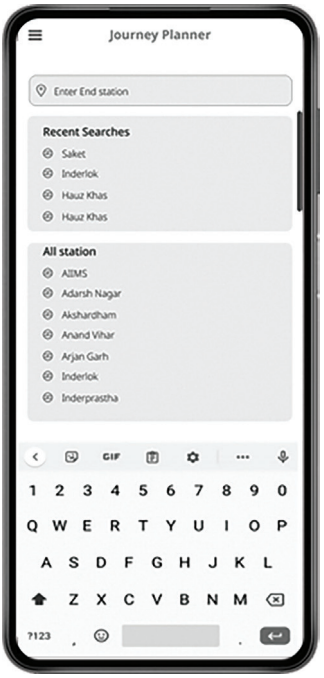

Figure 15. Metro.

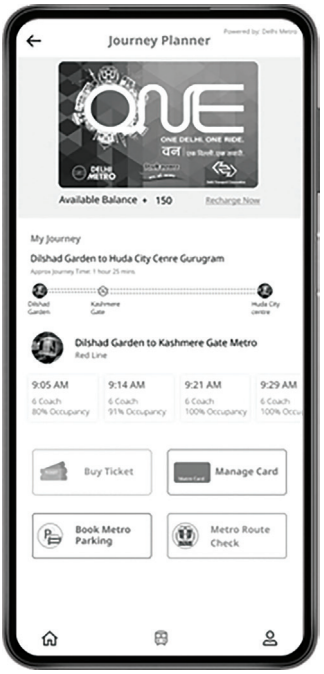

Figure 16. Metro.

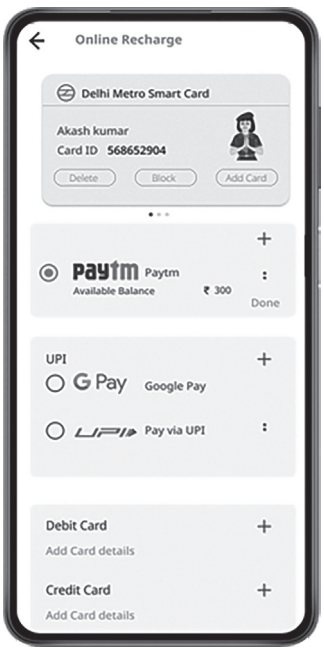

Figure 17. Metro.

Figure 18. Metro.

Figure 19. Weather Guide.

Some high-fidelity screen images of the application are mentioned below, depicting the interface and the user experience it offers.

Figures 3–10 describe the application's signing-in process, language options and the journey planner. The application may offer more than 30 language options. Figures 11 and 12 describe the cab booking process.

Figures 13–18 describe the guide for metro train travel within the city, including the rush monitor in selected stations and online ticketing system. Same guide will be available for other mode of public transport as well, for example, ring rail and bus.

Figure 19 is a complete guide to weather updates and air quality index in specific locations in the city.

Conclusion

The entire study was to analyse the problem faced by the population of Delhi while travelling in traffic congestion. The challenges they face while managing their travel because there is uncertainty while commuting. Commuting is not very friendly and rich in experience.

The proposed system offers security, controllability and ease to over 32 million population in Delhi. It is going to be an absolute city commuting guide in all

circumstances. It is a replicable model which can be initiated in other cities as well. The interface incredibly enhances the daily commuter's experience. It may also be noted that the tourists and first timers in the city will be benefitted immensely through the application. With certain infrastructural inclusion in the existing system, for example, close circuit television cameras (CCTV) in buses, parking spaces, metro rails, ring rails and strategic points over the roads, and also being consistently connected with the meteorological department, the proposed system may be launched. These are required to gather minute-to-minute data and further updates.

The proposed system is organised with the potential to save time of the commuters and reduce the amount of fuel burnt [inclusive of diesel, petrol and compressed natural gas (CNG) vehicles] due to idling of vehicles at traffic jams, thereby the annual financial loss incurred due to traffic congestion, which is over $8.5 billion (Financial Express, 2018). The government may initiate it or offer private parties to pitch in, even under schemes like start-up India or make in India.

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The authors declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

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References

Adak, B. (2014, December 29). *Delhi wastes 40 000 litres of fuel per day in traffic jams*. India Today. https://www.indiatoday.in/india/story/delhi-traffic-jams-fuel-wastage-pollution-crri-report-233195-2014-12-28

Agarwal, P. (2022, October 19). Delhi Metro ridership hits 87% of pre-pandemic levels. *The Times of India*. https://timesofindia.indiatimes.com/city/delhi/metro-ridership-hits-87-of-pre-pandemic-levels/articleshow/94951303.cms#

ANI. (2020, May 19). *Only 10% auto-rickshaw ply on roads as Delhi enters lockdown 4.0*. Economic Times Auto. https://auto.economictimes.indiatimes.com/news/commercial-vehicle/lcv/only-10-auto-rickshaw-ply-on-roads-as-delhi-enters-lockdown-4-0/75817205

Capra, F., Luisi, P. L. (2014). *The systems view of life a unifying vision*. Cambridge University Press.

Crawford, R. P. (1954). *The techniques of creative thinking*. Hawthorn Books.

Delhi Development Authority. (2020). *Baseline report transport*. Delhi Development Authority and National Institute of Urban Affairs Collaboration. https://dda.gov.in/

Delhi Disaster Management Authority. (2014). *Delhi disaster management plan*. https://ddma.delhi.gov.in/

Delhi Metro. (2023). *Interactive metro map*. https://www.delhimetrorail.com

Financial Express. (2018, April 26). Traffic jam in 4 metros costs more than entire Rail budget; this city has worst peak-hour congestion. https://www.financialexpress.com/policy/economy-traffic-jam-in-4-metros-costs-more-than-entire-rail-budget-this-city-has-worst-peak-hour-congestion-1146356/#

Goswami, S. (2021, September 22). Delhi govt to induct only e-autos from now, one-third permits reserved for women. *Hindustan Times*. https://www.hindustantimes.com/cities/delhi-news/delhi-govt-to-induct-only-e-autos-from-now-one-third-permits-reserved-for-women-101632249134810.html

Goswami, S. (2022). Delhi has 13.4 million registered vehicles, but 42% of them "invalid". *Hindustan Times*. https://www.hindustantimes.com/cities/delhi-news/delhi-has-13-4-million-registered-vehicles-but-42-of-them-invalid-101643672914562.html

Government of, NCT. (2023). *About district*. https://dmsouth.delhi.gov.in/about-district/

Jones, C. J. (1970). *Design methods*. John Wiley & Sons, Inc.

Khawoosa, V. M. (2019 July 28). Delhi has highest share of inter-state migrants. *Hindustan Times*. https://www.hindustantimes.com/delhi-news/delhi-has-highest-share-of-inter-state-migrants/story-QCYXSWlnSYAJbNb25ljcPL.html

Mani, G. (2023, February 22). How much are bike taxis used in Delhi? More than you'd think. *The Indian Express*. https://indianexpress.com/article/cities/delhi/how-much-are-bike-taxis-used-in-delhi-more-than-youd-think-8459198/#

Mathur, A. (2022, December 30). Sharp rise in Delhi Transport Corporation's ridership, but losses mount due to gap in operating costs and ticket revenues. *The Times of India*. https://timesofindia.indiatimes.com/city/delhi/sharp-rise-in-delhi-transport-corporations-ridership-but-losses-mount-due-to-gap-in-operating-costs-ticket-revenues/articleshow/96605178.cms#

Osborn, A. F. (1963). *Applied imagination*. Scribner's Sons.

Press Trust of India. (2023, July 11). *India to have 1 billion smartphone users by 2026: Deloitte report*. Business Standard. https://www.business-standard.com/article/current-affairs/india-to-have-1-billion-smartphone-users-by-2026-deloitte-report-122022200996_1.html

PTI. (2012, November 22). Cell phone use in Delhi increasing at an incredible rate. *The Economic Times*. https://economictimes.indiatimes.com/cell-phone-use-in-delhi-increasing-at-an-incredible-rate/articleshow/17323423.cms?from=mdr

PTI. (2023, January 2). Eighty per cent of Delhi's bus fleet will run on electric by 2025: CM Arvind Kejriwal. *The Economic Times*. https://economictimes.indiatimes.com/industry/renewables/eighty-per-cent-of-delhis-bus-fleet-will-run-on-electric-by-2025-cm-arvind-kejriwal/articleshow/96677908.cms?from=mdr

Saini, A. (2015). Case study of cycle rickshaw on ergonomic basis. *International Journal of Advanced Research in Engineering and Applied Sciences*, *4*(9), 55–66.

Saiyad, G., Minal Kumar, R., Dipak Rathwa, D. (2019). Trips generated by rickshaw pullers and trip rate for cycle rickshaws: A case study of Delhi. *Transportation Research Procedia*, *48*, 2296–2312.

Sofer, C. (1972). *Organizations in theory and practice*. Heinemann.

The Hindu. (2018, January 20). Top 30 cities make up 51% of smartphone market; Delhi tops tally. Business Line. https://www.thehindubusinessline.com/info-tech/top-30-cities-make-up-51-of-smartphone-market-delhi-tops-tally/article64339099.ece#

World Population Review. (2023). *World population by country*. https://worldpopulationreview.com/

Article

Global Green Finance: Roadmap for India

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Abstract

Climate change, and especially, 'climate deterioration' is an alarming situation for the global scenario, and thus, the need for developing financial services and products that aim to reduce the effects of these changes is the need of the hour. This long-felt need has given birth to a new form of investing, known as green finance or broadly, sustainable finance. So, it can be said that green finance is a subset under the larger umbrella of the concept of sustainable finance. This article tries to bring to the knowledge of the readers the basic understanding of the concept of green finance, its various instruments available globally and its developments at the global and Indian level, highlighting the three stages of green finance's evolution and its major theories. Further, it reveals the global presence of major green finance instruments like green bonds and its types, green mutual funds (MFs) and green stock exchanges. The article also deals with the concepts of emissions trading system and European Union's Carbon Border Tax. The discussion becomes more specific in the subsequent sections, drawing the present picture of green finance concerning the Indian scenario—its green bank, green bonds, green MF and green stock exchange. Reserve Bank of India's recent guidelines regarding green finance and India's presidency at the last held G20 summit are also discussed, finally concluding with mapping the road ahead for India.

Keywords

Green finance, green bond, sustainable finance, renewable energy, carbon tax, Paris agreement

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Introduction

The United Nations Environment Programme (UNEP) states that the meaning of green finance 'is to increase the level of financial flows (from banking, microcredit, insurance and investment) from the public, private and not-for-profit sectors to sustainable development priorities'. Thus, the term 'green finance' points to the whole gamut of products, services, instruments, etc. that help to counter the harmful effects of the dangerous industrial practices which lead to climate change and its depletion. The UN's Intergovernmental Panel on Climate Change (Wire, 2021) had suggested in its report that it published in 2018 that such a transition to a zero-carbon or a low-carbon economy requires funding of around US$2.4 trillion by the year 2030 (Diaz-Rainey et al., 2023).

The conversation around the topic began as early as 1991 but at that time, it could not find its place neither in the academic nor in the industrial world. The concept underwent many drastic changes from 1991 till date, which will be discussed further in the paper. The evolution of green finance can be tracked back to 1992 when UNEP Finance Initiative (UNEP FI) was thought of with an aim to encourage sustainable practices globally.

The whole journey of green finance can be understood with the help of three main stages (Yu et al., 2021):

- Budding/Embryonic Stage: 1991–2011: This stage involved little research being done on green finance. The prominent search keywords just included 'renewable energy', 'environment', and the like. Thus, the whole period involved trying to establish a foundational system of green finance. To promote sustainable investment and funds by the private sector in the developing nations, a Ministry of Environment was established by the International Finance Corporation in 1989. Subsequently, in 2003, the 'Equator Principles' (Sunlegal, 2022) were adopted by 10 major banks. These principles provide a primary framework regarding the management of environmental risk in the domain of project financing. Thus, in this stage, a major idea of green finance had been set up and prominent banks had made the socialisation of the concept of green finance.
- Stable Development Stage: 2012–2017: The concept of green finance surpassed the environmental and ecological barriers to become the subject of national and social development and importance. Policymakers wished to formulate and create opportunities for green finance and its inclusion in the national policy agenda. Another prominent feature of this stage was the presence of factors that restricted the growth of green finance due to the research around risks involved in green finance, its structure, its standards and its information communication. Thus, in this stage, the concept of green finance was not limited just to environmental and ecological protection but started to play a major role in national social development.
- Booming Stage: 2018–Present: In this stage, the keywords changed to terms like 'green bond', 'energy consumption', 'debt' and the like, thus moving to a more specific green finance development. Focusing on national strategies,

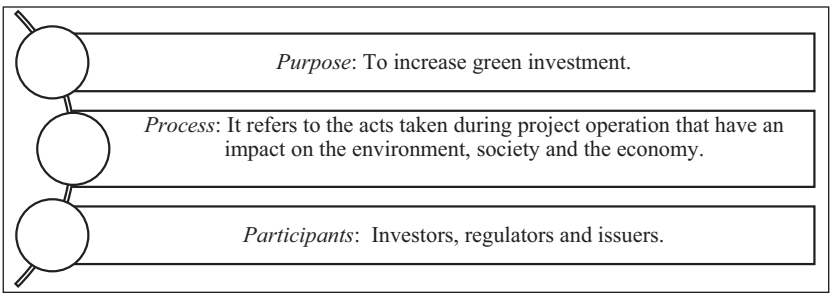

Figure 1. Three Ps of Green Finance.

cross-research was done on 'green innovation', 'green Internet of things', 'green supply chain' and the like. Rigorous data collection methods and scientific modelling had begun to be used during this period. They can analyse the in-depth market effect of green finance. The basic nature of this period is that the growth of green finance had been immensely refined. It is no more restricted to hidden definitions and meanings or their loose translations but has emerged to be as a helpful tool for social and economic development.

Further, the concept of green finance can be explained with the aid of its three Ps as shown in figure 1 (Yu et al., 2021):

The article has six sections, including the present one. The next section presents the theories of sustainable finance in brief. Following that, the article deals with the evolution of global green finance. Subsequently, sections examine major global green finance instruments globally and at the Indian level, respectively. Finally, the last section concludes with an outline of India's future path in this direction.

Theories of Sustainable Finance: Brief Overview

Ozili (2023) has identified six major theories of sustainable finance, which also encompasses green finance. So, it can be said that these theories apply to green finance too. The paper discusses those theories in brief.

Priority Theory

This theory states that the priority that the economic agents give to sustainable finance is represented by the rate at which they try to meet the sustainable development goals (SDGs) or broadly, sustainable finance goals in a particular country or a region. This prioritisation can lead to loss of focus and resources for other goals of the economic agents—leading to a trade-off among different goals.

Peer Emulation Theory

This theory argues that in the absence of any set guidelines or standards for achieving sustainability, the economic agents tend to follow the footsteps of their

peer economic agents whom they admire—these agents will undertake some of the activities since their peers are doing/have done so.

Life Span Theory

This theory is derived from Vernon's product life cycle theory. This theory states that economic agents understand the products, services, policies and other instruments of sustainable finance have a definite product life cycle like that of other products encompassing introduction, growth, maturity and decline. This knowledge that is possessed by these economic agents enables them to better implement various sustainable finance products, services and instruments—regarding the decision as to whether to make a short-term, medium-term or long-term commitment to those products.

System Disruption Theory

This theory argues that the pursue of sustainable finance goals by the economic agents may hamper with the mainstream or traditional financial system of an economy and thus, may lead to the disruption of the businesses dependent on the traditional financing system.

Positive Signalling Theory

This theory postulates that the economic agents have an inducement to reveal positive information regarding their commitment and determination to pursue single or multiple sustainable financial goals, to those external agencies or entities who could support them in achieving their goals, either by making a public announcement or by publishing such information in their published annual reports.

Resource Theory

This theory proposes that the reasons for the difference in the advancement of different countries in the achievement of their sustainable finance goals depends on the differences in their human-made resources who are competent enough to support the attainment of such goals.

Evolution of Global Green Finance

The foundation of the UNEP FI and the draft of 'Convention on Biological Diversity' at the Earth Summit (took place at Rio de Janeiro) were laid around about the same time—in the year 1992. As the UNEP FI gained momentum and engaged more participants, it laid the foundation of Global Reporting Initiative (GRI) in 1997 and Principles for Responsible Investment (PRI) in 2005.

The GRI is an international-level institution that is headquartered at Amsterdam, the Netherlands, which encourages various organisations, businesses and governments, etc. to report the impacts generated by them on the climate, human rights,

etc. On the contrary, PRI includes six principles that are abided by more than 5,000 signatories (as of 2022). These principles relate to incorporating environmental, social and governance (ESG) into their decision-making process and making appropriate ESG disclosures, while working in harmony with each other to facilitate the implementation of the principles. Additionally, in 2012, the Principles for Sustainable Insurance were laid down by the UN in collaboration with the insurance industry.

Sustainable Development Goals (SDGs)

The SDGs are 17 global goals that were adopted by the UN in the year 2015. These 17 SDGs focus on 169 targets and are accompanied by 304 indicators. They are proposed to be achieved by the year 2030 and have stated their aim as 'Transforming the world'. Abundant Earth Foundation, an organization supporting grassroot projects aimed at betterment of the climate, society, and the world at large, has divided the seventeen sustainable development goals into six groups which can be seen from figure 2:

Paris Agreement on Climate Change

Paris Agreement on climate change, that was entered into by 196 parties at 21st Conference of the Parties (COP21) in 2015, forms the most important and prominent reference point whenever green finance or any action for climate change is discussed, acting as a landmark treaty.

It is a legally enforcing international-level agreement that targets to maintain the increase in the average temperature at the global well less than 2°C as

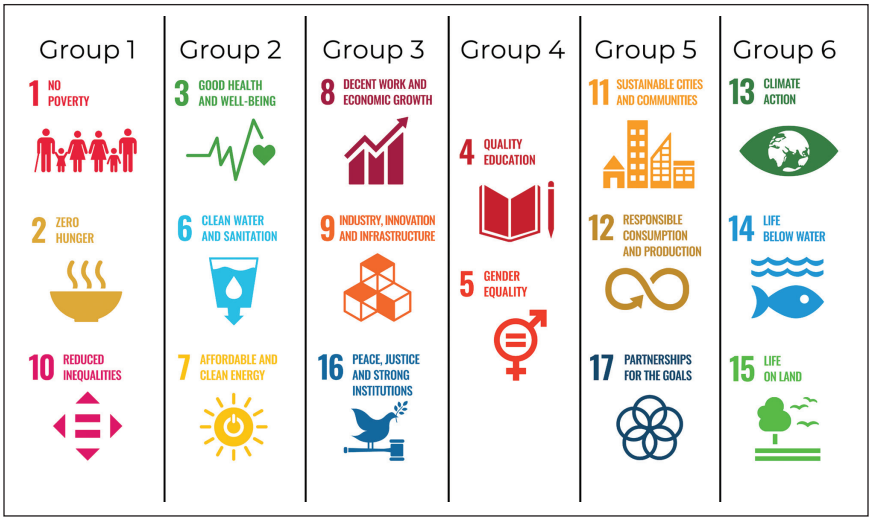

Figure 2. Groups of SDGs.

Source: Abundant Earth Foundation.

compared to the pre-industrial levels, preferably less than 1.5°. Nationally Determined Contributions (NDCs) form a very important aspect of the Paris Agreement. NDCs refer to the communications made by the individual countries as to their commitments and the actions that they would be taking up to meet the goals enlisted in the Paris Agreement and to become resilient enough to adapt to the impacts of climate change. The agreement has listed that every nation shall provide its updated NDCs every five years.

Green Finance Instruments: Global Presence

The major instruments for mobilising green finance are green bonds, green loans, green mutual funds (MFs) and other green investment funds, sustainability-linked loans, green stock exchanges, etc.

Green Bonds

These are the bonds, whose proceeds are directed to finance or refinance green projects that is, those projects which are involved in green activities like renewable energy generation, carbon emission and the like. The first ever green bond was rolled out in the year 2007 by the European Investment Bank (EIB) (Bhutta et al., 2022). It was called 'Climate Awareness Bond (CAB)' with a focus on renewable energy activities, or specifically, energy efficiency. The proceeds of this bond are still used to help support activities that focus on climate change mitigation. The CABs were extended to lending activities that went beyond its major focus for the first time in the year 2020 (EIB) (Cortellini & Panetta, 2021). Since then, various green bonds at sovereign, municipal and firm level have been issued with the first sovereign green bond (SGrBs) issued by Poland in 2016.

*Types of Green Bonds.*Table 1 attempts to explain the various types of green bonds that can be issued by an entity (CBI):

Labelled vs. Unlabelled Green Bonds (Hyun et al., 2021). Green bonds may be categorised as labelled or unlabelled—labelled green bonds being the ones that have received a third-party certification, rendering them to be more authenticate and credible. Labelled green bonds can be said as the ones complying with the Green Bond Principles (GBP). Thus, GBP can be considered as a gold standard for the certification of green bonds. Many studies have shown that a green label does have a substantial impact on the investors as they consider green labelled bonds to be less risky for the environment and, also such a label or an assessment is considered to lower the information costs for them, as they are supposed to have undergone due diligence. It has been found that the issuers of green bonds enjoy a comparative convenience as compared to the issuers of traditional bonds (Gianfrate & Peri, 2019).

Major Green Bond Issuances Globally. The global market for green finance showed remarkable growth since the year 2014. Going by the data published by the Climate Bonds Initiative in its report of November 2022, the total green bond issuances crossed US$2 trillion, as on 30 September 2022. European countries

Table 1. Kinds of Green Bonds.

Type	Proceeds Used for	Resort for Action	Example
'Use of Proceeds' Bonds	Green projects	To the issuer; the credit rating is the same as that of some other bonds by the issuer	EIB'S Climate Awareness Bonds
'Use of Proceeds' Revenue Bonds/ABS	Green projects or refinancing green projects	Revenue flows directly from the issuers	Hawaii State (They are supported by the fee on the electricity bills of the state utilities)
Project Bond	For specific green project(s)	To the projects' assets and its corresponding balance sheet	Invenergy Wind Farm
Securitisation (ABS) Bond	For green projects or refinancing portfolios of green bonds	To a class of projects grouped together (Like solar leases)	Tesla Energy
Covered Bond	For eligible projects—those that fall in the covered pool	To the issuer; in case of his inability to pay, to the covered pool	Berlin Hyp green Pfandbrief

have proved to be the top issuers of SGrBs with 5 years as well as 10-year time periods emerging as the most preferred ones (Manglunia, 2023). Globally, the total green bond issuances have reached US$2.5 trillion, as of January 2023, according to a report published by the World Bank in April 2023.

Recently, in September 2023, an initiative led by Inter-American-Development Bank (IDB), in collaboration with various bilateral and multi-national institutions, has been made to make this platform global. The aim of this initiative was to enhance the quality of data and increase transparency in the green bond market.

Green MFs

Green MFs or impact-investing funds are those MFs that strive to contribute to the society by investing in companies considered as socially or environmentally responsible. It can include such funds that are always looking out for those corporates which work towards energy consumption reduction, valuing and building relationship with various stakeholders, etc. According to Stevens (2020), the quantity of both, such ESG-focused funds and the total asset amount invested in these types of funds, have nearly doubled in the previous three years.

Do Such Funds Perform Well? Many studies have attempted to find out whether such funds fulfil their promise of working towards a carbon-neutral economy. A study performed by Ji et al. (2021) in the context of BRICS nations has showed that green funds have outperformed their counterparts. The study has also proved Chinese green funds performing the best among all the others.

Green Stock Exchanges

Green stock exchanges are basically those stock exchanges which deal only with green securities. The Luxembourg Green Exchange (LuxSE), established in 2016, has emerged as the world's first stock exchange platform focusing only on sustainable securities (United Nations Climate Change, 2023). The main objective of it is to inject sustainable capital into the world economy and to redirect money towards sustainable projects.

The LuxSE has partnered with prominent institutions in the countries of Africa, South America and Asia to help promote the agenda of sustainable finance and, to strengthen international collaborations for sustainable development. Another similar platform is the 'Green Bond Transparency Platform'. It is an innovative platform that was brought into existence by the IDB. Its aim was to increase clarity regarding the green bond markets situated in Latin America and in the Caribbean. It is a free and public platform to harmonise and standardise the reporting of the green bond market.

Emissions Trading System (ETS) (Peng et al., 2018)

An ETS, or an emission trading system, is one of the mechanisms of implementing carbon pricing. Such a system puts a cap either on the total amount of emissions, or on the emission intensity, which is measured as emissions for each unit of a country's GDP. It may include emissions from all or some of the greenhouse gases, like CO_2. Governments of the countries then provide the companies with allowances, mostly in the primary market[1], of an amount equal to the amount of cap. Firms then trade these allowances in the secondary market[2]. Thus, in this way, the emission reduction is achieved at a very low cost.

Many leading economies and institutions have set up their emission trading systems. The EU ETS, which is world's first such system, was set up in the year 2005. It is currently in its fourth phase (2021–2030). The system has pledged to adopt many legislative proposals, chalking out its plan to attain climate neutrality by the year 2050, with an intermediate target to achieve a minimum 55% net reduction in the emission of greenhouse gases by 2030. Over these years, it has emerged successful in establishing a carbon price, free trading of emissions across the EU and ultimately including more gases under its ambit. Currently, the allowances are set at around US$95 (€90) per ton. Other prominent ETSs across the globe include the ones in China, California, Switzerland and the Regional Greenhouse Gas Initiative.

EU's Carbon Border Tax (CBAM)

The CBAM or the Carbon Border Adjustment Mechanism is a carbon leakage instrument, or simply, a carbon tax. Its preliminary deal was entered into on 13th December 2022, and it was decided to be implemented on imported goods of seven main carbon-intensive categories—iron, steel, cement, aluminium, fertiliser,

hydrogen and electricity. It was decided to implement its initial phase w.e.f. 1st October 2023, and will be phased in full w.e.f. 1st January 2026 (Cheema, 2023).

During this transitional period, traders will be required to give reporting of the emissions contained in the goods imported by them, without having to make any compensatory payment. This mechanism will pave way to adjust by 2026. Ultimately, on 1st January 2026, those EU businesses that import goods covered by CBAM will have to purchase certificates. This CBAM mechanism will thus make sure that the carbon price of the imports becomes equivalent to the carbon price of the locally produced goods on the assumption that the primary aim of the EU, which is related to climate is not compromised by payment of some fee to compensate for the embedded carbon emissions produced by the overseas producers, generated during the production of some specific goods imported by EU countries. Ultimately, the carbon leakage between non-EU and EU goods is avoided (European Commission, 2023).

The CBAM takes into coverage only around 3% (Gros, 2023) of the imports of the entire EU, totalling around €50–60 billion annually. In this way, CBAM will remain only a minor irritant for most countries. It was estimated that CBAM will cover around 80 million tons of direct emission of CO_2, implying a revenue of around €7.2 billion (at €90/ton ETS price). This revenue would be directly routed to (Gros, 2023) the budget of EU.

Current Landscape of Green Finance in India

India took the first-ever global step in the direction of green finance by ratifying the International Solar Alliance (ISA) agreement with France on 1st December 2015 with an aim to provide a dedicated and specialised platform for cooperation of countries rich in solar-resource. ISA attempts to develop economic energy solutions brought into action by solar energy so that low-carbon growth can be achieved. Before that, the Ministry of New and Renewable Energy was setup in the year 2006 to enhance research and development, protect intellectual property and ultimately promote sources of renewable energy. Also, in 2008, the National Action Plan on Climate Change was launched. It consists of eight national-level missions with an aim to bring a reduction in the emission intensity, increase the forest cover, improve energy efficiency and ultimately inculcate sustainable habits.

India submitted its first NDCs to the United Nations Framework Convention on Climate Change (UNFCCC) on 2nd October 2015. As of August 2022, India has submitted its updated NDCs to UNFCCC to exhibit its contribution and steps to mitigate climate change with three major updates, for the period up to the year 2030 (Bansal, 2022):

(1) Introducing a massive movement aimed at lifestyle for environment (LiFE) with an aim to combat climate change by promoting a healthy, fit and sustainable way of living.
(2) To lessen emission intensity by 45% below the levels of 2005, by 2030.

(3) To accomplish 50% of total installed electric power capacity derived from non-fossil fuel-based energy sources by the year 2030.
(4) Creation of a carbon sink having a capacity of 2.5 to 3 billion tonnes of CO_2, with the assistance of additional forest and tree cover by 2030.
(5) Increase the non-fossil fuel or renewable energy-based energy capacity to 500 GW.

Green Bank

India converted Indian Renewable Energy Development Agency (IREDA), which is a non-banking financial institution, to a green bank in the year 2016. Green Bank points to any organisation financing pro-environment activities and aiming to effectively lessen carbon emissions taking the help of banking activities. IREDA's primary aim was thus to boost green energy and to help mobilise funds from private sector for the same. Post that, many banks like SBI, Union Bank, ICICI Bank, etc., have been providing necessary and adequate financing for undertaking green projects.

Green Bonds

The first ever green bonds were launched in India in 2015 by YES Bank. Post that, in 2017, IREDA launched its 5 year green bonds which were called 'Green Masala Bonds', which became the first ones to get listed in the International Securities Market. India had issued approximately US$6.11 billion worth of green bonds within 11 months of the year 2021. India trails behind the US and China only with regards to its green bond issuances.

Ms Nirmala Sitharaman, who is the union minister for corporate affairs and finance, had announced on 1st February 2022 about the government's plan to issue SGrBs (Manglunia, 2023). The funds of the same would be utilised in public sectors contributing towards reduction of carbon intensity. Finally, the first tranche of the bonds was issued on 25th January 2023. The issue was worth ₹ 80 billion, or $980 million worth of 5-year and 10-year green bonds. Subsequently, the government announced on 9th February 2023 to issue subsequent tranche of SGrBs worth ₹ 80 billion (Hussain & Dill, 2023). A Green Finance Working Committee was constituted by the Ministry of Finance. It is supposed to meet twice a year to help and guide the ministry in the selection of appropriate green projects.

Figure 3 clearly shows that the utilities sector issues approximately half of the cumulative green bond proceeds issued. The other half consists of sectors like corporates, financial sector, sovereign and government agencies.

India's largest green bond issuer is Greenko Group. It is engaged in financing wind, solar and hydropower projects in numerous states of India taking help of green bond proceeds. Apart from private and sovereign level, Ghaziabad Nagar Nigam became the first Indian body in 2021 to issue municipal green bonds, equivalent to US$20 million. This action was then followed by Indore Municipal Corporation in 2023 which issued green bonds equal to US$87 million (Hussain & Dill, 2023).

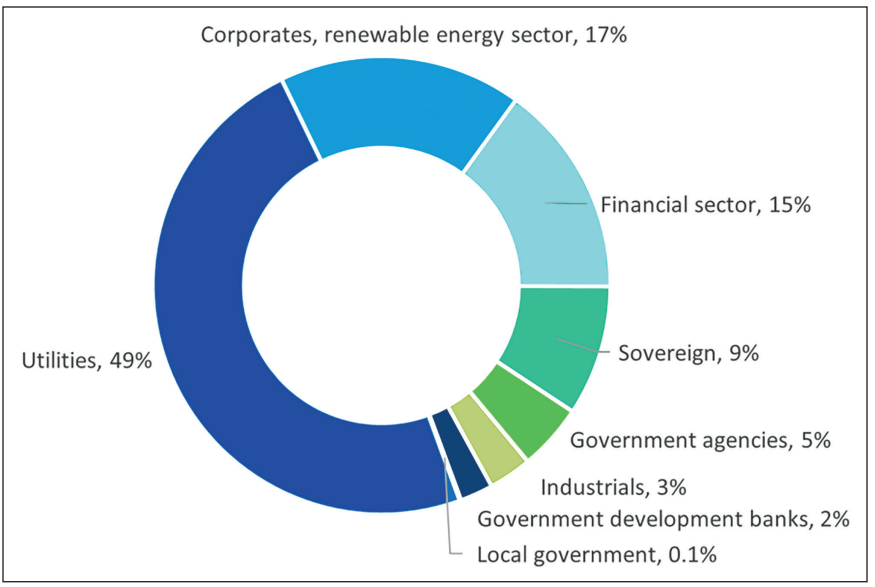

Figure 3. Amount of Green Bond Issued in India by Various Issuers.

Source: World Bank with data extracted from Bloomberg.

Green Mutual Funds (MFs)

In the Indian context, ESG MFs are categorised as thematic equity funds. These funds are focusing on meeting the environmental, social and corporate governance standards, and gaining profit by adopting ethical means of practice. SBI MF, ICICI MF, Axis MF and Kotak MF are some of the MF companies which have launched these thematic MFs in the recent years (ZeeBiz Webteam, 2023).

Apart ESG funds, India has also witnessed launch of green energy funds. These are those funds that sought to invest in companies which operate in green energy and similar resources sectors, aiming at those corporates engaged in generating energy from wind, hydro and solar sectors. Two major green energy MFs in India are those of DSP MF and Tata MF (Devi, 2023). These MFs are engaged in those equity and related companies which are involved in discovering, developing, producing and distributing natural resources. They give emphasis to renewable energy, energy storage and moreover, to enabling energy technologies.

Recently, in March 2023, HDFC MF becomes the first asset management company which filed for the country's first SGrBs MF (Live Mint, 2023). The MF is seeking to combine SGrBs with Target Maturity Funds (TMFs), an innovative debt instrument. TMFs are open-ended and passive instruments that aim to duplicate the composition of some predetermined fixed-income index fund. They have a fixed maturity date. The HDFC MFs' are planned to be called HDFC Nifty India SGrBs January 2033 Index Fund and HDFC Nifty India SGrBs January 2028 Index Fund.

Green Stock Exchange

Many Indian green companies are now being traded on Indian stock exchanges—the Bombay Stock Exchange, plus, the National Stock Exchange (NSE). They include well-reputed companies such as Adani Green, Suzlon Energy, ION Exchange and Praj industries, among others. In February 2023, NSE finally got the consent of Securities and Exchange Board of India to establish a Social Stock Exchange (SSE) (*The Economic Times*, 2023a). SSE is a type of fund-raising platform which is specially created for social businesses to help them access various types of donations. The listing of SSE works like a traditional initial public offer. But, instead of the shares, the allotment of Zero Coupon Zero Principal instruments is done to the participants. Also, no returns are yielded on such instruments.

Reserve Bank of India's (RBI) Directions Aimed at Green Finance

In February 2023, RBI governor Shaktikanta Das announced some regulatory initiatives to promote sustainable finance in the country. The guidelines have been draughted for Regulated Entities, which include some banks, some primary cooperative banks, few non-banking financial companies, credit information companies and some institutions like NaBFID, the Exim Bank, NABARD, the National Housing Bank and the Small Industries Development Bank of India.

The guidelines consist of (Perumal, 2023; *The Economic Times*, 2023b):

(1) A broad framework to accept green deposits.
(2) Complete guidance on Stress Testing and Climate Scenario Analysis.
(3) Disclosure framework on the Climate-related Financial Risks.

Banks must fulfil some conditions to enable them to accept green deposits from investors:

(1) Banks ought to have a by-law that need to be abided by at the time of investing green deposits duly approved by their respective Boards.
(2) Such rules should be publicly available on bank's website and banks should disclose regular information about the receipt of green deposits, their allocation and the impact of such investments.
(3) A third party is required to verify the banks' claims regarding the projects in which the banks have made such green investments.

These green deposits are meant to be used to promote renewable energy, climate change adaptation, clean transportation, sustainable waste management and promoting sustainable management of natural resources. On the contrary, it will exclude those projects which are engaged in extracting, distributing and producing fossil fuels, including their improvements or upgrades, or in those projects in which the main energy source is nuclear power generation, tobacco, weapons or renewable energy projects that generate biomass energy using feedstock which

originates from preserved areas, landfill projects or those hydropower plants that are bigger than 25 MW (Singh, 2023).

The RBI further announced in February 2023 to launch a dedicated page on its own website for consolidated all directions, speeches, press releases and publications made by RBI related to climate risk and sustainable finance.

India's G20 Presidency

India recently got the first-ever chance to hold the 18th G20 summit held during 9–10th September 2023. The summit was held in New Delhi, the capital city of the country and was themed 'Vasudhaiva Kutumbakam' (One Earth—One Family—One Future). The aim of the summit was to attain unanimity in addressing global challenges effectively (Sharma, 2023).

The summit was successful in achieving a unanimous approval, a 100% consensus in signing G20 New Delhi Leaders' Declaration. This declaration highlighted the Ukraine conflict and its following economic implications, a concrete path to regulate cryptocurrencies, strengthening and boosting multi-lateral development banks and the placement of a digital and public infrastructure for bettering financial inclusion.

Apart from this, the declaration emphasised the need to mobilise approximately US$5.8–5.9 trillion for developing countries in the period before 2030, and moreover, US$4 trillion each year aimed at clean energy technologies by the year 2030. All this needs to be performed to achieve net-zero emissions by the year 2050. Moreover, the African Union, that represents 55 nations in the African content was granted full membership of the G20. Additionally, a Memorandum of Understanding was ratified among the leaderships of various nations including India, Saudi Arabia, the US, Germany, France, the UAE, Italy and the European Union for the setting up of the India–Middle East–Europe economic corridor. This envisioned corridor is set to be a transportation route consisting of sea lanes and railways, to promote relations and trade between Asia, Europe and the Arabian Gulf.

Lastly, the newly signed New Delhi Leaders' Declaration witnessed commitments to focus on LiFE, reaffirming the steps to attain SDGs and, to witness the launch of the Global Biofuel Alliance, an organisation focused on promoting adoption and development of sustainable biofuels, blended with the establishment of relevant certifications and standards.

What Lies Ahead for India?

Green finance is clearly gaining momentum in India. There have been major improvements in the financing options available to the public, and in public awareness at the same time. But many challenges still exist to implement green finance in a developing economy like India. The main challenges include that of greenwashing, lack of proper and sufficient knowledge (Soundarrajan & Vivek, 2016; Wasan et al., 2024) plurality of definitions of green finance, information asymmetry (Ghosh et al., 2021) and high borrowing costs.

Although the nation has taken considerable steps around green finance and is only third in the issuances of green bonds, India still has a long path to walk on. We strongly believe that a successful integration and coordination between better and more financial products, competitive tax regime and increased public awareness and understanding is required for making green investment reach its desired destination to meet the net-zero emissions and other targets set by the competent authorities globally.

Achieving green finance in a comprehensive fashion is not something that is difficult for an emerging economy like India. It is quite easily achievable with an adhesive cooperation among various policymakers, private and public enterprises and the investment community at large.

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Notes

1. Primary market refers to the allocation and distribution of allowances by the government for free based on the assessment of the firm, or auctioning, or by a mixed approach.
2. Secondary market acts as an ETS's trading market allowing the participating firms to purchase and offer their allowances for sale to the other participating firms.

References

Bansal, A. (2022). *Green financing in India—Need, significance, urgency, and way forward*. Business Insider. https://www.businessinsider.in/sustainability/article/opinion-green-financing-in-india-need-significance-urgency-and-way-forward/articleshow/92948265.cms

Bhutta, U. S., Tariq, A., Farrukh, M., Raza, A., & Iqbal, M. K. (2022). Green bonds for sustainable development: Review of literature on development and impact of green bonds. *Technological Forecasting and Social Change*, *175*, 121378. https://doi.org/10.1016/j.techfore.2021.121378

Cheema, J. (2023). EU's CBAM: Taxing trade for transition amid global climate concerns. *Business Standard*. https://www.business-standard.com/economy/news/eu-s-cbam-taxing-trade-for-transition-amid-global-climate-concerns-123101101200_1.html

Cortellini, G., & Panetta, I. C. (2021). Green bond: A systematic literature review for future research agendas. *Journal of Risk and Financial Management*, *14*(12), 589. https://doi.org/10.3390/jrfm14120589

Devi, N. (2023). *2 Green energy mutual funds in 2023*. Ticker Tape. https://www.tickertape.in/blog/green-energy-mutual-funds/#:~:text=The%20investment%20objective%20of%20DSP,distribution%20of%20natural%20resources%20etc.

Diaz-Rainey, I., Corfee-Morlot, J., Volz, U., & Caldecott, B. (2023). Green finance in Asia: Challenges, policies and avenues for research. *Climate Policy*, *23*(1), 1–10. https://doi.org/10.1080/14693062.2023.2168359

European Commission. (2023). *Carbon border adjustment mechanism*. European Commission. https://taxation-customs.ec.europa.eu/green-taxation-0_en

Ghosh, S., Nath, S., & Ranjan, A. (2021). *Green finance in India : Progress and challenges*. https://www.researchgate.net/publication/352030007_Green_Finance_in_India_Scope_and_Challenges

Gianfrate, G., & Peri, M. (2019). The green advantage: Exploring the convenience of issuing green bonds. *Journal of Cleaner Production*, *219*, 127–135. https://doi.org/10.1016/j.jclepro.2019.02.022

Gros, D. (2023). EU carbon border tax makes economic sense. *The Asset*. https://www.theasset.com/article-esg/50185/eu-carbon-border-tax-makes-economic-sense

Hussain, I. F., & Dill, H. (2023). *India incorporates green bonds into its climate finance strategy*. World Bank Blogs. https://blogs.worldbank.org/en/climatechange/india-incorporates-green-bonds-its-climate-finance-strategy

Hyun, S., Park, D., & Tian, S. (2021). Pricing of green labeling: A comparison of labeled and unlabeled green bonds. *Finance Research Letters*, *41*, 101816. https://doi.org/10.1016/j.frl.2020.101816

Ji, X., Zhang, Y., Mirza, N., Umar, M., & Rizvi, S. K. A. (2021). The impact of carbon neutrality on the investment performance: Evidence from the equity mutual funds in BRICS. *Journal of Environmental Management*, *297*, 113228. https://doi.org/10.1016/j.jenvman.2021.113228

Live Mint. (2023). HDFC mutual fund files for India's first sovereign green bond MF. *Live Mint*. https://www.livemint.com/mutual-fund/mf-news/hdfc-mutual-fund-files-for-india-s-first-sovereign-green-bond-mf-11679644665363.html

Manglunia, A. (2023). Unlocking full potential of green bonds in India. *The Economic Times*. https://economictimes.indiatimes.com/markets/bonds/unlocking-full-potential-of-green-bonds-in-india/articleshow/101541808.cms?from=mdr

Ozili, P. K. (2023). Theories of sustainable finance. *Managing Global Transitions*, *21*(1), 5–22. https://doi.org/10.26493/1854-6935.21.5-22

Peng, H., Feng, T., & Zhou, C. (2018). International experiences in the development of green finance. *American Journal of Industrial and Business Management*, *8*(2), 385–392. https://doi.org/10.4236/ajibm.2018.82024

Perumal, J. P. (2023). What are RBI regulations on green deposits? *The Hindu*. https://www.thehindu.com/opinion/op-ed/explained-what-are-rbi-regulations-on-green-deposits/article66866265.ece

Sharma, H. (2023). Key outcomes of the 2023 G20 Summit held in India. *India Briefing*. https://www.india-briefing.com/news/key-outcomes-of-the-2023-g20-summit-held-in-india-29483.html/

Singh, V. (2023). *Driving sustainability: RBI paves the way for green finance with new framework for acceptance of green deposits*. ESG BROADCAST. https://esgbroadcast.com/rbi/driving-sustainability-rbi-paves-the-way-for-green-finance-with-new-framework-for-acceptance-of-green-deposits/

Soundarrajan, P., & Vivek, N. (2016). Green finance for sustainable green economic growth in India. *Agricultural Economics (Czech Republic)*, *62*(1), 35–44. https://doi.org/10.17221/174/2014-AGRICECON

Stevens, P. (2020). *ESG index funds hit $250 billion as pandemic accelerates impact investing boom*. CNBC. https://www.cnbc.com/2020/09/02/esg-index-funds-hit-250-billion-as-us-investor-role-in-boom-grows.html

Sunlegal, P. K. (2022). *India: Green finance: Exploring the Indian financial system*. https://events.development.asia/system/files/materials/2019/11/201911-accelerating-sdg-implementation-

The Economic Times. (2023a). *NSE gets nod to launch social stock exchanges*. https://economictimes.indiatimes.com/markets/stocks/news/nse-gets-final-nod-from-sebi-to-launch-social-stock-exchange/articleshow/98174411.cms?from=mdr

The Economic Times. (2023b). *RBI announces regulatory guidelines on climate risk and sustainable finance*. https://economictimes.indiatimes.com/news/economy/policy/rbi-announces-regulatory-guidelines-on-climate-risk-and-sustainable-finance-for-res/

United Nations Climate Change. (2023). *Luxembourg green exchange*. https://unfccc.int/climate-action/momentum-for-change/financing-for-climate-friendly-investment/luxembourg-green-exchange

Wasan, P., Kumar, A., & Luthra, S. (2024). Green finance barriers and solution strategies for emerging economies: The case of India. *IEEE Transactions on Engineering Management*, *71*, 414–425. https://doi.org/10.1109/TEM.2021.3123185

Wire, S. (2021). *What is green finance?* Lloyds Banking Group. https://www.lloydsbankinggroup.com/insights/green-finance.html

Yu, X., Mao, Y., Huang, D., Sun, Z., & Li, T. (2021). Mapping global research on green finance from 1989 to 2020: A bibliometric study. *Advances in Civil Engineering*. https://doi.org/10.1155/2021/9934004

ZeeBiz Webteam. (2023). *World Environment Day 2023 a look at top ESG funds in India*. ZeeBusiness. https://www.zeebiz.com/personal-finance/mutual-fund/news-world-environment-day-2023-a-look-at-top-esg-funds-in-india-stst-238496

Article

Kota Doriya: Current Trials and Challenges

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Abstract

Kota Doriya is a fabled woven fabric originating from India. It has a unique weave structure and is woven using a technique which makes it different from the rest. This research aims to document the journey of the magical Kota Doria which is disguised in mystery and folktales. The woven Kota Doriya has been awarded the Geographical Indication tag by UNESCO in July 2005. This article elucidates on the techniques adopted by the weavers, which makes the Kota fabric a unique fabric and a testimony to the superior weaving traditions of India. The 'Ansari' Muslim community of the Hadauti region largely practices this weaving apart from other regions like the Bundi and Baran districts of Rajasthan. With the large-scale advent of the mechanised loom and synthetic yarns, cheaper imitations of Kota have posed a serious threat to the survival of this craft. Through this research, the timeless Kota fabric will be studied and the current trials and challenges will be assessed. This study is conducted through a combination of secondary, as well as, primary research methods including a case study on the master craftsman of Kota Doriya weaving.

Keywords

Kota Doriya, yarns, traditional weaving, checks, sustainability, geographical indication (GI)

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Introduction

District Kota is located in the south of Rajasthan and on the banks of the Chambal River. This area is occupied with clusters of skilful weaving communities. The whole day long the weavers are occupied in creating one of the finest handloom fabrics known as Kota Doriya. Within Kota, there is a small village called Kaithoon which is recognised for producing the most beautiful Kota Doria fabrics. Geographically, Kota is made of rich black soil in the middle of a desert. The Chambal River converts the dry desert air into a cool moistened breeze which helps in the agriculture of long-fibred cotton plants. This fine cotton is the raw material needed to create the beautiful and delicate Kota Doria. In the olden times, Kota was made of pure cotton yarns. The term 'Doria' means 'thread' as this exquisite fabric is created by mixing different counts of threads. The distinguishing factor of the Kota Doriya is the exquisite chequered-weave structure which can be traced back to the former kingdom of Mysore. Its main usage was for tying royal turbans for the nobles before it began to be made as opulent sarees mostly in the pastel shades of white and beige. Currently, Kota fabric has faced challenges from machine-made replicas.

Literature Review

Kota Doriya is one of the finely woven open-weave traditional textiles of India (Rana, 2020). An open-weave textile is a fabric which has been woven in such a way that there are inbuilt perforations in its structure (vintagefashionguild, 2012). In other words, the weave creates spaces in-between the warp and the weft yarns (Tariq, 2022). These types of fabrics are used in both home and apparel products because of their qualities of translucency, striking texture, light filtering effects, and water and air permeability (Robertson, 1950). The open-weave structure of Kota Doria is unique because of the distinct square check pattern (Luniya & Agarwal, 2012). It is an airy and lightweight fabric which is suitable to endure the harsh Indian summers. Added to this Kota Doriya requires less maintenance making it a choice for Indians, especially women. The weave originated from Mysore and therefore the fabric was also called Kota Masuria (Hada & Kumar, 2014. Kota fabric was traditionally used as Pagri (headgear) and Sari . Currently, silk is added to cotton to bring down the cost and maintenance of the fabrics (Rana, 2020). Adding silk also adds to the strength and lustre of the fabric. Kota is traditionally created using real gold and silver threads (zari) in diverse geometric and floral patterns. Design interventions in the form of weave and colour effect, double-cloth, coloured extra warp and weft insertions (meenakari) and ikat techniques are used to create new looks in the Kota Doria fabric .

Kota is also found to have a major participation of skilled women weavers (Hada & Kumar, 2014; Sanadhya & Rehman, 2016).

Research Objectives

This research aims for the following objectives:

1. To understand the legacy of Kota Doriya.
2. To provide an overview of the challenges faced by Kota Doriya in the present times.

Hypothesis

This research progresses on the following hypothesis:

1. Kota Doria is a unique woven fabric of India (Kota has been available since medieval times and it is a part of the traditional textiles of India. Through this research, the unique qualities of Kota can be highlighted and it may therefore be concluded that Kota is a unique fabric originating from the Indian sub-continent).
2. Kota Doriya is facing challenges for survival.

Research Methodology

This research follows the mixed research technique of primary and secondary research methods. Table 1 shows the number of participant weavers in this study, their area of work and the sampling technique used for data collection. The following flow chart depicts the research methods followed in this study (refer to Figure 1)

Table 1. Names of Participant Weavers in this Study.

S.N.	Name	Area of Weaving Workshop	Sampling Technique
1.	Mr Nasiruddin Ansari	Kaithoon	Interview technique
2.	Smt. Hasina Begum	Kaithoon	Interview technique
3.	Smt. Badrunisha	Kaithoon	Interview technique

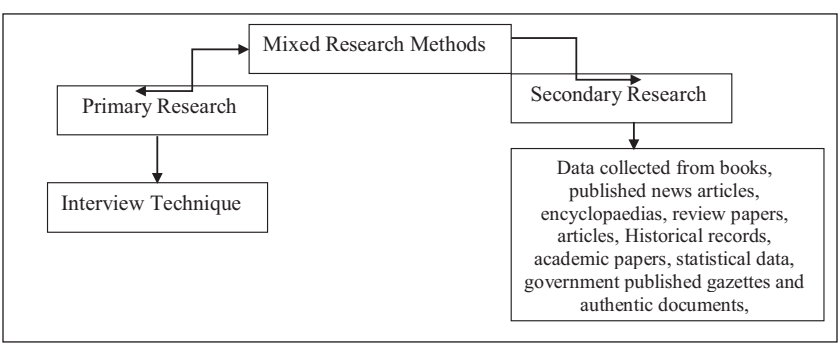

Figure 1. A Flow Chart Depicting the Research Methods Followed for this Study.

Research Findings and Discussion

The researcher met the National Award-winning Kota weaver Mr Nasiruddin Ansari who spoke about the folktale of Kota. According to him, Kota Doriya is a traditional woven fabric from Rajasthan. Mr Ansari recounted the tale of Kota which started in the 16th century AD. The king of Kota, Raja Rao Kishor Singhji visited the King of Mysore. In those days, there was a tradition of gifting between the kings of different places.

The Mysore king gifted weavers to Raja Kishor Singhji who settled them in a small village Kaithoon near the Chandloi River which was 15 km away from Kota. The weavers set up looms there and started making thick fabrics initially. Rao Kishor Singhji gave the weavers all facilities like land, water etc. The weavers later got inspired from Dhakai Muslin and started weaving fine fabric which they gifted to Raja Kishor Singhji. Soon fine fabrics began to be worn by the general public. More people joined the weavers and learned the art of weaving. This generated employment among the people. There was a *haat* (bazaar) in Kaithoon town which sold fine fabrics and people came from all regions to buy fabrics from there. Apart from Kaithoon where Kota Doria fabrics are mostly woven other Kota Doria weaving clusters can also be found in the smaller towns of Bundi and Baran although Kaithoon remains the main centre of Kota production.

In the 19th century, Rao Kishor Singji's grandson Maharao Bhim Singhji received a gift of silk yarns from the King of Mysore. The Kota fabrics are distinguished by small square textures made throughout the fabric. Each square is known as '*Khat*' which is made up of a series consisting of four cotton, two silk, two cotton, two silk, two cotton, two silk (i.e., a total of 14 warp threads in one *Khat*). The total width of the sari is 48 inches with a sum of 300 *Khats* in the whole width of the fabric (excluding the borders). The cotton threads are 120 CC and the silk is procured from China. Twelve threads of silk and 16 threads of cotton yarn are placed in the warp repeat. Kota's signature square grid texture gives it a distinguished look and makes Kota different from other fabrics. Every Kota design goes through a rigorous process of conversion onto graphs before it can be finally woven.

Cowdung, bark of the Arjan tree, local plants, etc. are used to colour the Kota fabrics. Division of labour in the Kota weaving saved time and made the work not only superior but also easier. The Kota fabric was woven from the back side meaning the back side of the fabric faced the weaver while weaving. The designs were checked by the weaver by using a mirror (Figure 2). The Kota weavers were called Masuria in olden times and thus Kota Doriya saris are also called Kota Masuria saris. Traditionally Kota fabrics were used to make *safa* or turbans for the royalties, but later they began to be used as saris.

The weaving process of Kota has remained the same for 400 years. Zari was introduced and bought from Surat around 90 years back which began to be incorporated in Kota fabrics. Fake Kotas from regions of Banaras and other cities began to surface around 50 years back during the 1970s. Five Kota saris were given labour charges of ₹ 40 whereas Banaras weavers were given labour charges

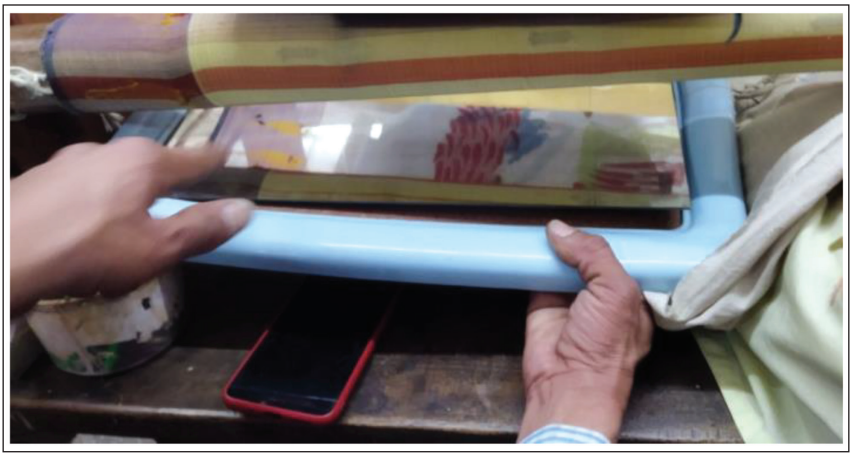

Figure 2. The Kota Fabric is Woven Upside Down and the Front Design can be Seen Here with the Help of a Mirror.

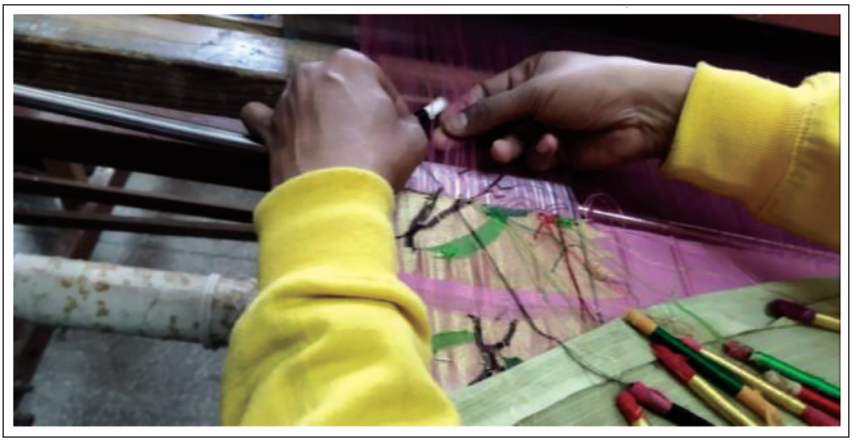

Figure 3. Insertion of Extra Real Zari Weft and Colourful Yarns to Form Beautiful Patterns in the Kota Sari Made from the Reverse Side.

of ₹ 15 for five saris as they were woven faster with power looms and with the usage of synthetic zari.

Kota weavers believed it is their *dharma* to use real zari for its distinct look which preserved the delicate beauty of the Kota Fabric (Figure 3 shows the weaving of Kota using real zari). The Kota weavers did not adapt to the cheaper substitutes. The weaving of the original Kota Doria is very time-consuming and demands expertise, proficiency, patience and concentration. As a result, it became very expensive in comparison to a cheaper similar-looking product. People stopped buying Kota saris and weavers reduced their production.

However, the Government of India took many initiatives to revive the Kota handloom. Mr Ashwini Saxena, Chief Executive Officer at JSW Foundation,

Figure 4. The Original Kota Doriya Mark Made on Handloom.

started the act of reviving Kota and proposed GI recognition for Kota Doriya during Atal Bihari Vajpayee's Government (1999–2004). When the erstwhile chief minister of Rajasthan Ms Vasundhara Raje Sindhia came to power she called the weavers to Jaipur and asked about their difficulties in manufacturing and marketing Kota Doriya. Later, she widely promoted Kota Doria saris nationally and internationally which greatly benefitted the Kota weavers. These efforts helped the Kota handloom fabric to become a brand the world over. The unique structure of Kota Doriya encouraged the Kota Doria Development Hadauti Foundation (KDHF) to file for the GI mark with the help of the United Nations Industrial Development Organisation (UNIDO) Kota Doriya was granted the GI mark on 5 July 2005 under the Geographical Registration Act 1999.

A woven Kota Doriya mark was woven into the pallu of the sari along with the name of the weaver as a trademark of the original Kota Doria (refer to Figure 4). This mark distinguished the fake Kota saris from the original ones. It was very important to let the consumers know the difference between the handloom and powerloom products.

The powerloom cannot bring back the shuttle to seal the fine motifs; instead, the shuttle goes full length to make the motif and leaves long floats in-between motifs which is visible from the back side of the fabric. These long floats are later cut off with the help of machines which makes the motif prone to fraying. Fabric glue is used to stick the loose yarns together from the backside. This causes not

only a lot of inconvenience to the wearer but also the yarns used in the motifs come off easily.

Therefore original Kota fabrics can be easily differentiated from the 'fake' Kota fabrics which are made from polyester yarns and on the powerloom. A simple technique to identify is to check the back side of the fabrics. The powerloom-made Kota has long floats at the back or they have lots of cut threads at the back. Apart from these two simple techniques to check an original Kota, the drape and beauty of an original Kota fabric cannot be matched by a synthetic or powerloom-made Kota fabric. If awareness of Kota is created then any common consumer will be able to identify the original Kota fabric very easily.

A handloom woven motif in contrast is neatly tucked from both the front and the back side of the fabric. Table 2 shows the list of some of the local terminologies used in Kota Doriya weaving.

Table 2. List of Some of the Local Weaving Terminologies Used in Kota Doriya Weaving.

S.N.	English Terminology	Local Terminology
1.	Loom	Khadda/Kaam
2.	Bag with stones to balance the loom threads	Thaili latkana
3.	Weight	Wazan
4.	Lease rod	Kamri
5.	Frame for the shaft	Rach
6.	Heald	Baey
7.	Design drafting on jala	Phool saar dori
8.	Reed	Kangi
9.	Reed cap	Hathli/Phanni
10.	Extra weft shuttle	Tilli/Resham tille/Zari tilli
11.	Saddle	Pagdama
12.	Fabric roller	Tur
13.	Wooden stick to maintain the fabric width	Kanpati
14.	Shaft lifter:	Chadi
15.	Shuttle	Dotha
16.	Wire inside the shuttle to hold the spool of thread	Naka
17.	Empty reel	Riti
18.	Reel with spool of thread	Nalli
19.	Heald hook made with a bamboo stick	Tagi
20.	Warp beam	Laptan
21.	Design graph (kota graph cannot be made on the computer, it is handmade)	Thakri
22.	Starch for warp	Maad

Figure 5. Smt. Hasina Begum Explaining the Kota Weaving on the Jala Loom During the Interview with Mr Nasiruddin Ansari.

The Kota Doria is one of the finest handloom woven fabrics found in India. In the hot climate of the region, this fabric provides a cool and airy feel to the wearer. The mixture of cotton and silk makes Kota fabric both strong, soft and lustrous. The base Kota fabric is often ornamented with colourful floral patterns and butis. Currently, Kota fabrics are also used as garments, handbags, home furnishings, window coverings and delicate lampshades. Kota saris are woven on the pit looms using the throw shuttle technique with Jala designs. Jala is a technique to create intricate extra weft designs on fabrics without the jacquard attachments.

Figure 6. (left). Smt. Badrunisha Showing the Original Kota Woven Sari with Architectural Motifs on Display in the Design Studio.

As an innovation in Kota fabric, designers developed new motifs taking inspiration from Rajasthani palace and fort architectures. Thus architectural motifs can often be seen on Kota fabrics.

This inspiration for architectural motifs can be traced back to the Baluchari saris of Vishnupur, West Bengal which is famous for making architectural patterns on pure silk brocade Baluchari saris. Baluchari saris from Vishnupur are also a GI product.

Baluchari saris have motifs inspired by the temple architecture. Kota saris took inspiration from Baluchari saris and have developed new motifs from Rajasthani palace and fort architecture. Figure 5 shows Smt. Hasina Begum explaining the Kota weaving on the Jala Loom during the interview with Mr Nasiruddin Ansari.

Figure 7. Close-up of the Architectural Motif Woven on the Sari Pallu.

Figure 6 shows Smt. Badrunisha shows the original Kota woven sari with architectural motifs (Figure 7) on display in the Weavers Service Design Studio, Jaipur.

Data Analysis and Interpretation

From the above results, it is clear that Kota still has a lot of market desirability.

Conclusion

Through this study, it was learnt that Kota Doriya has a magnificent history of woven structures. Traditional weavers have propagated that the exquisite checkered-weave of Kota has its roots in the former kingdom of Mysore. It is a common folklore that a Mughal Army General, Rao Ram Singh, helped in the migration of the Kota weavers in the 17th century. Kota is also known as Kota Masuriya due to its resemblance to the locally grown masoor lentil.

This research elucidates the structure of Kota which is made of tiny squares. Each tiny square, known as Khat, on the Kota fabric contains a total of 14 yarns. Out of these 14 yarns, eight yarns are made of cotton, and six yarns are made of silk. This specific combination of yarns imparts an unmatched sheen, softness and strength to the Kota fabric. Silk yarns lend it sheen and strength whereas the softness is got from the cotton yarns. The Kota fabric is often used along with pure gold or silver zari to add gorgeous shimmer to the fabric. Other methods of value-adding on a Kota are through traditional methods of block printing or tie and dye techniques. Due to the structure and composition of the Kota fabric, it is ideal for the Indian summers.

Currently, many designers are working on enhancing the charm of this traditional handloom fabric with modern design techniques and aesthetic sense to combine the old and the new.

However, it is the timely intervention from the government of Rajasthan that has ultimately helped in reviving the falling craft to a great extent. As mentioned in the study, Mr Ashwini Saxena, Chief Executive Officer at JSW Foundation, started the act of reviving Kota and proposed GI recognition for Kota Doriya during Atal Bihari Vajpayee's Government (1999–2004). When the erstwhile chief minister of Rajasthan Ms Vasundhara Raje Sindhia came to power she widely promoted Kota Doria saris nationally and internationally which had greatly benefitted the Kota weavers. These efforts helped the Kota handloom fabric to become a brand the world over. The unique structure of Kota Doriya encouraged the Kota Doria Development Hadauti Foundation (KDHF) to file for the GI mark with the help of the United Nations Industrial Development Organisation (UNIDO) Kota Doriya was granted the GI mark on 5th July 2005 under the Geographical Registration Act 1999.

Further efforts are required by the consumers to buy original Kota fabrics which can be easily differentiated from the 'fake' Kota fabrics which are made from polyester yarns and on the powerloom. A simple technique to identify is to check the back side of the fabrics. The powerloom-made Kota has long floats at the back and they have cut threads at the back. Apart from these two simple techniques to check an original Kota, the drape and beauty of an original Kota fabric cannot be matched by a synthetic or powerloom-made Kota fabric. If awareness of Kota is created then any common consumer will be able to identify the original Kota fabric very easily to revive the craft and bring back the lost glory of these fabled fabrics.

Declaration of Conflicting Interests

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References

Chaudhary, K. (2016, April). Value addition of the Kota Doria through designing techniques. *International Journal of Textile and Fashion Technology*, *6*(2), 2250–2378. https://www.researchgate.net/publication/329091395_VALUE_ADDITION_OF_THE_KOTA_DORIA_THROUGH_DESIGNING_TECHNIQUES

Hada, J. S., & Kumar, I. (2014). Hand crafted elegance Kota Doria. *Fiber2Fashion*.

Luniya, V., & Agarwal, S. (2012). Traditional Kota Doria saris—An innovative allure. *Asian Journal of Home Science*, *7*(1), 10–13. https://researchjournal.co.in/upload/assignments/7_10-13.pdf

Rana, A. H. (2020). Fusing traditional techniques: Sustaining and reinventing traditional textiles. *AICTE sponsored international E-conference*. Enhanced Research Publication, India.

Robertson, A. F. (1950). Air porosity of open-weave fabrics* part I: Metallic meshes. *SAGE Journals*, *20*(12). https://doi.org/10.1177/004051755002001203

Sanadhya, G., & Rehman, N. (2016). Income generation methods and saving pattern adopted by Women entrepreneurs of Kota district. *The Journal of Rural and Agricultural Research*, *16*(1), 21–24. https://jraragra.in/Journals/2016Vol1/vol6.pdf

Tariq, S. (2022, December). *Fabric weaves*. https://sewguide.com/fabric-weaving-types/:https://sewguide.com/fabric-weaving-types/

vintagefashionguild. (2012, July 8). *Lightest open weave or sheer fabrics*. vintagefashionguild. org:https://vintagefashionguild.org/lightest-open-weave-or-sheer-fabrics/

Article

Adopting Zero-waste Pattern-making Techniques for Apparel Product Development

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Abstract

Every year, the fashion industry churns out millions of clothing items with fresh styles, resulting in significant fabric waste during production. This fabric waste contributes to environmental pollution. Embracing zero-waste pattern-making techniques for clothing production offers a viable solution to curbing this issue. By utilising the entire fabric yardage, these techniques aim to minimise or eliminate fabric waste after garment production. Zero-waste design is a holistic approach that integrates designing, production and sourcing processes. This article aims to propose solutions for controlling fabric waste through innovative zero-waste pattern-design techniques, thereby fostering a sustainable future. Traditionally, the apparel production process utilises 85% of fabrics, leaving behind 15% as wastage. The challenge lies in reducing this 15% wastage to zero (Abernathy et al., 1999). However, it is acknowledged that not everyone can readily adopt zero-waste pattern techniques. It requires creativity to develop optimal design solutions for apparel production. Collaboration among designers, pattern makers, academics and production professionals is essential for researching and identifying the best creative practices and solutions for integrating zero-waste pattern-making techniques into the apparel production process. Developing approaches for zero-waste pattern-making involves researching basic pattern design principles, understanding associated challenges and analysing outcomes. This research and development process in zero-waste pattern-making can pave the way for better sustainable practices, ultimately contributing to the reduction of fabric waste pollution and fostering a more sustainable future.

Keywords

Zero waste, sustainable fashion, pattern cutting, design, techniques

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Introduction

Zero-waste pattern-making plays a significant role in reducing waste and pollution in the fashion industry. Traditionally, garment production generates a significant amount of waste during the cutting process, where excess fabric is discarded as scraps. This results in a tremendous environmental impact due to the high consumption of resources, energy and water required to produce textiles.

The term zero-waste was introduced in the fashion sector by Fletcher for the circular economy approach.

Zero-waste pattern-making approaches aim to eliminate or minimise this waste by utilising fabric in a more efficient manner. Instead of relying on the conventional practice of creating patterns that leave unusable scraps, zero-waste patterns are designed to utilise every inch of fabric, leaving little to no waste.

Objectives

This article aims to provide solutions and develop techniques and methods to control textile material waste (Abernathy et al., 1999).

By adopting zero-waste pattern-making techniques, the fashion industry can achieve various benefits:

Waste reduction: Zero-waste patterns significantly reduce the amount of fabric waste generated during production. In addition to conserving resources, this approach also mitigates the necessity for disposal, thereby diminishing environmental pollution.

Resource conservation: As zero-waste patterns maximise fabric utilisation, less fabric needs to be produced for each garment. This reduces the overall demand for raw materials and conserves water, energy and other resources required for textile production.

***Reduced carbon footprint*:** With less fabric waste, the carbon footprint associated with the disposal of textile waste is significantly decreased. Additionally, by reducing the need for new fabric production, the carbon emissions caused by manufacturing processes are also reduced.

***Design innovation*:** Zero-waste pattern-making encourages designers to think creatively and develop innovative cutting techniques and garment constructions. This fosters unique and stylish designs that challenge the conventional approach to fashion.

***Consumer perception*:** As environmental concerns become increasingly important to consumers, adopting zero-waste practices can enhance a brand's reputation as socially and environmentally responsible. It can attract conscious consumers who prioritise sustainable choices and contribute to building a positive brand image.

Literature Review

Clothing and textiles industry is the second most polluted among industries around the world. It produces almost 20% wastewater and 85% landfill with textiles end

wastage, this wastage can be reused to preserve our natural resources and environment. In this regard, zero-waste pattern-making can be one good approach. Most of apparel brands give more focus on design aesthetics, cost and production processes neglecting the impact of waste textile material on environment; however, consumers are becoming more concerned for eco-friendly products is a challenge. By considering the zero-waste pattern-making process, challenges can be resolved to a major extent by utilising the fabric fully or utilising the waste material to create new pattern designs for the development of new products. This zero-waste technique includes garment style, fabric, fabric width, silhouette, construction details, pattern-cutting layout, pattern piece adjustment and finishing details. Utilising the excess/waste fabric out of one pattern for another pattern or product development is another approach of zero-waste pattern-making as it complies to zero waste (Carrico & Kim, 2014).

To effectively implement zero-waste pattern-making, collaboration is crucial among designers, manufacturers and suppliers. It requires a shift in production practices, training and research to refine techniques and develop new solutions that align with sustainable fashion goals.

By embracing zero-waste pattern-making, the fashion industry takes a vital step towards reducing waste and pollution, promoting more sustainable practices and contributing to a greener future (Saeidi et al., 2018).

The Environmental Footprint of Fast Fashion

Every second, the fashion industry discards or incinerates the equivalent of one garbage truck's worth of clothing.

- Roughly 60% of all materials utilised by the fashion sector consist of plastic.
- Annually, washing clothes releases 500,000 t of microfibres into the ocean, equating to 50 billion plastic bottles (Ellen MacArthur Foundation, 2017).
- Accounting for 8–10% of global carbon emissions, the fashion industry surpasses the combined emissions of international flights and maritime shipping. If current trends persist, the fashion sector's carbon footprint could escalate to 26% by 2050 (Ellen MacArthur Foundation, 2017).
- The fashion industry consumes 93 billion cubic metres of water annually, exacerbating water scarcity in certain regions.
- Approximately 20% of industrial wastewater pollution worldwide originates from the fashion industry.

Waste Control Methods

Various strategies exist for managing textile waste in the fashion industry:

- Waste prevention
- Waste reduction
- Waste reutilisation
- Waste reprocessing
- Extracting energy from waste materials
- Waste disposal and incineration

Zero-waste Pattern-development Techniques

There are some techniques to zero-waste pattern-design development (Carrico & Kim, 2014). mentioned below.

- Subtraction method (Roberts, 2008)
- Draping method
- Embedded jigsaw
- Jigsaw method
- Creative pattern-making
- Creative cuts
- Origami and paper folding

This article is result of research about the zero-waste pattern-making and adopting zero-waste pattern-making practices to control waste of textile materials. Information is gathered from the literature study and data collected from books, the internet and research practitioners. The practice-based research methods are also used to obtain the knowledge about practices used to control waste. Data collection from literature study and practice-based research about zero-waste practices, it is observed that most of practitioners are utilising one fabric into one garment. Some are efficiently planning layout plans for different pattern components to minimise the waste (Townsend & Mills, 2013).

Some of manufacturing units have initiated zero-waste pattern-making techniques to create garment and scrap fabric is also used for another pattern development (Figures 1 to 6).

Figure 1. Zero-waste Cutting by Holly McQuillan.

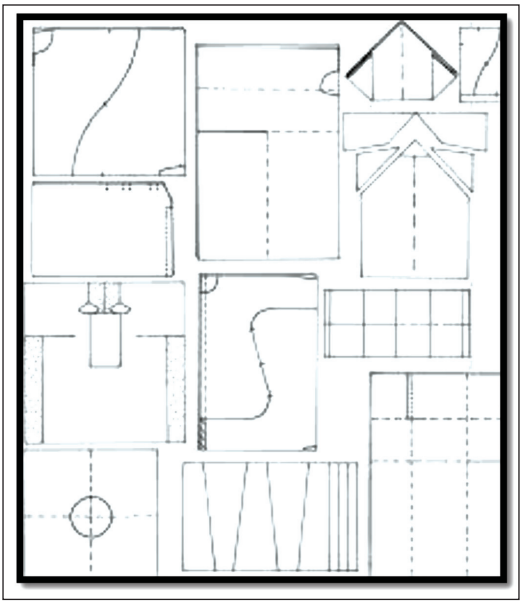


Figure 2. Pattern Construction Plan.

Source: Carrico and Kim (2014).

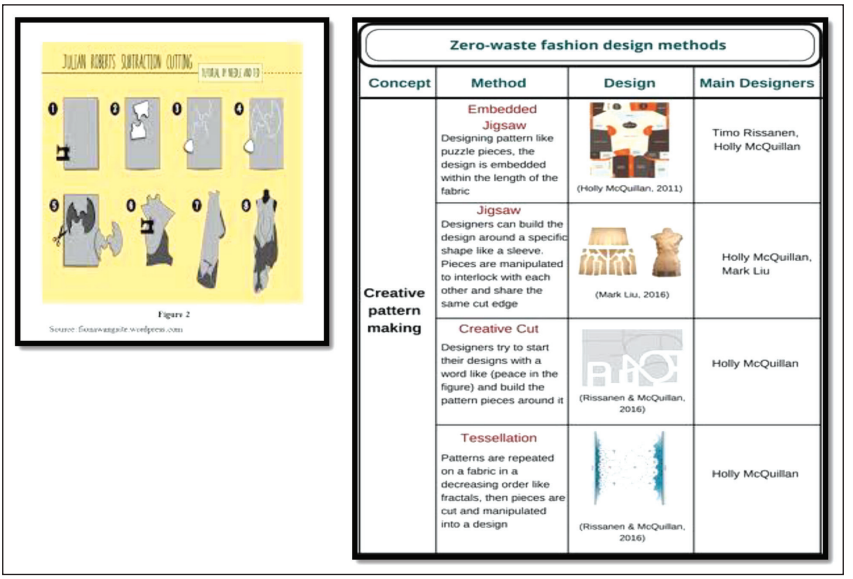
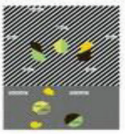


Figure 3. Jigsaw Method.

Source: El Shishtawy et al. (2021).

Draping	Subtraction Cut Design is based on the use of negative space (holes) in fabric to create a shape	 (Holly McQuillan, 2011)	Julian Roberts
	Minimum Cut Design is based on draping and allowing for minimum cuts in the fabric	 (Carrico & Kim, 2014)	Holly McQuillan, Melanie Carrico & Victoria Kim
Folding	Transformation reconstruction Design starts with style line drawn on a basic block, then turned into a flat pattern where space is manipulated by folding and draping	 (Shingo Sato, 2015)	Shingo Sato
	Origami Patterns are created through the folding technique of origami and then turned to a flat pattern to be cut and sewed	 (Choi, 2016)	Kyung-Hee Choi

Garment made with waste materials

Figure 4. Boro and Others Japanese Recycled Wonder.

Figure 5. Apparel Made from Waste Textile Material.

Source: Development by Purvi Mittal (2023) FD Alumni FDDI, Rae Bareli.

Figure 6. Raw Waste Textile Material.

Source: Development by Purvi Mittal (2023) FD Alumni FDDI, Rae Bareli.

Conclusion

Society is becoming more aware about environmental issue. As the sustainable fashion issue is prime agenda for sustainable development, zero-waste pattern-making can solve the issue of textile waste dumping landfills. Collaboration among academicians, designer, researchers, manufacturers and technologists can solve the challenge of waste control management and preserving the environment. At the present scenario, the study of zero-waste pattern-making technique is still in a nascent stage. Adopting zero-waste pattern-making needs precise planning in methods and techniques to work out the best solution considering design, aesthetics and waste control. The practices adopted during research have observed that it can solve the problem of textile waste control. Zero-waste pattern-making approach can provide a solution for economic and ecological challenges of waste dumping. The adoption of zero-waste pattern-making holds promise for enhancing sustainable practices and managing textile waste pollution more effectively in the future (Niinimäki, 2011).

Declaration of Conflicting Interests

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References

Abernathy, F. H., Dunlop, J. T., Hammon, J. H., & Weil, D. (1999). *A stitch in time: Lean retailing and the transformation of manufacturing—Lessons from the apparel and textile industries*. Oxford University Press.

Carrico, M., & Kim, V. (2014). Expanding zero-waste design practices: A discussion paper. *International Journal of Fashion Design, Technology and Education*, *7*(1), 58–64. https://doi.org/10.1080/17543266.2013.837967

El Shishtawy, N., Sinha, P., & Bennell, J. A. (2021). A comparative review of zero-waste fashion design thinking and operational research on cutting and packing optimisation. *International Journal of Fashion Design, Technology and Education*, *15*(2), 187–199. https://doi.org/10.1080/17543266.2021.1990416

Ellen MacArthur Foundation. (2017). *A new textiles economy: Redesigning fashion's future*. Retrieved, 20 March 2020, from https://www.ellenmacarthurfoundation.org/publications

McQuillan, H. (2011). Zero-waste design practice: Strategies and risk taking for garment design. In A. Gwilt & T. Rissanen (Eds.), *Shaping sustainable fashion: Changing the way we make and use clothes* (pp. 83–97). Earthscan.

Niinimäki, K. (2011). *From disposable to sustainable: The complex interplay between design and consumption of textiles and clothing* [PhD dissertation, Aalto University].

Roberts, J. (2008). *Subtraction cutting school*. Center for Pattern Design.

Saeidi, E., & Wimberley, V. S. (2018). Precious cut: Exploring creative pattern cutting and draping for zero-waste design. *International Journal of Fashion Design, Technology and Education*, *11*(2), 243–253. https://doi.org/10.1080/17543266.2017.1389997

Townsend, K., & Mills, F. (2013). Mastering zero: How the pursuit of less waste leads to more creative pattern cutting. *International Journal of Fashion Design, Technology and Education*, *6*(2), 104–111. https://doi.org/10.1080/17543266.2013.793746

Web References

https://fairtradefinder.com/blog/clothes-made-from-recycled-materials/

https://www.google.com/imgres?imgurl=https%3A%2F%2Fnews.climate.columbia.edu%2Fwp-content%2Fuploads%2F2023%2F02%2Fpenmai-profile-2.jpg&tbnid=eaTay-mPfBk3-M&vet=12ahUKEwjzx56a6oSEAxWRe2wGHeGFCGEQMyglegUIARCvAQ..i&imgrefurl=https%3A%2F%2Fnews.climate.columbia.edu%2F2023%2F02%2F14%2Flet-them-wear-dirt-penmai-chongtoua-turns-soil-into-textiles%2F&docid=jRXl-lxRQPd1SM&w=2000&h=1500&q=clothes%20made%20from%20waste&ved=2ahUKEwjzx56a6oSEAxWRe2wGHeGFCGEQMyglegUIARCvAQ#imgrc=9iWkHWuCJasdEM&imgdii=guMP8hZyC9yRvM

https://www.cooperhewitt.org(/2016/10/25)boro-and-other-japanese-recycled-wonders.

https://dr.lib.iastate.edu/server/api/core/bitstreams/6c9cec2e-af45-4458-ab94-315bc5c7aafe/content

https://www.ijser.org/researchpaper/An-experiment-to-create-Zero-Wastage-Clothing-by-stitching-and-slashing-technique.pdf

https://eprints.whiterose.ac.uk/179239/13/A%20comparative%20review%20of%20zero%20waste%20fashion%20design%20thinking%20and%20operational%20research%20on%20cutting%20and%20packing%20optimisation.pdf

https://www.scribd.com/document/561514410/Fashion-Creativity-in-Zero-Waste-Pattern-Making

https://fairtradefinder.com/blog/clothes-made-from-recycled-materials/

https://www.genevaenvironmentnetwork.org/resources/updates/sustainable-fashion/

https://isitleather.com/blog/the-sustainability-of-leather-fashion-over-fast-fashion-trends/

Article

Integrating Sustainable Design Principles into Business Strategies: A Framework for Enhancing Corporate Social Responsibility in the Indian Leather Product Industry

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Abstract

This expository research study outlines a path for the Indian leather products industry to a greener, sustainable, and more socially responsible future. In a world where environmental and social concerns are becoming increasingly important, our research focuses on how firms may connect their strategy with sustainable design principles, benefiting not just themselves but also the earth and society. The incorporation of sustainable design concepts into business strategies to improve corporate social responsibility in the leather product industry is the subject of this explanatory research article. This offers a thorough framework that describes the essential elements and tactics for integrating sustainable design principles into the operations of companies that produce leather goods. This study intends to provide insights and direction for leather companies looking to adopt more environmentally and socially responsible practices by analysing the industry's present level of sustainability and highlighting opportunities and difficulties. The methodology employed is to study the secondary data and relate it with Indian companies and draft a framework. This research presents a framework for organisations to incorporate sustainable design ideas into their plans. It is not just about producing leather products, it is also about producing them responsibly, reducing waste, and addressing the well-being of all stakeholders who are involved.

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Keywords

Sustainable design practices, leather bags, corporate social responsibility, Indian leather products industry

Introduction

Overview of the Indian Leather Product Industry and its Significance in Global Trade

The leather industry in India plays a role in the country's progress and offers significant opportunities for job creation, expansion and international trade. Its growth strategy focuses on utilising resources to boost exports in fashion-related products like footwear. The global demand for leather is driven by sectors such as furniture, interior design and automotive industries. India stands out as one of the exporters of leather goods generating substantial revenue and providing employment to 2.5 million individuals. The Indian leather sector contributes about 13% to the production of hides and skins producing around 3 billion feet of leather annually. The industry is known for its consistency in high export earnings, and it is among the top ten foreign exchange earners for the country.

India is the second-largest exporter of leather garments, the third-largest exporter of saddlery and harnesses and the fourth-largest exporter of leather goods in the world. The garment sector accounted for 7.03% of the country's total leather exports in 2021–2022. Globally, demand for leather and leather products is growing faster than supply. The demand for non-leather products is also growing at a healthy rate due to advancement of non-leather materials and the technological advancement of this sector. Further to this, manufacturing bases had shifted to Asian countries from Western countries. Prices for all categories of leather, including raw, wet blue, crusted and finished leather, have increased since 2009, and they reached new highs in 2013 and 2014.

Importance of Sustainability and CSR in Today's Business Landscape

The Indian leather industry is world-renowned for its craftsmanship and diversity. In recent years, however, this has faced scrutiny for its environmental impact and socially responsible practices. In response to growing concerns about business sustainability and ethical performance, it has become imperative for companies in the Indian leather industry to prioritise sustainability initiatives and practice corporate social responsibility (CSR) included in their business plans. This article examines the importance of sustainability for Indian leather products and the importance of CSR in today's dynamic business environment.

Environment

The leather industry is known for its high consumption of resources, including significant water, chemical use, and waste production. However, adopting sustainable practices like water recycling, eco-friendly tanning methods, and

effective waste management can significantly reduce the industry's environmental impact. Additionally, using sustainable raw materials helps preserve biodiversity and minimizes deforestation.

Mitigating Climate Change

The carbon footprint of the leather industry can be substantial, mainly due to energy-intensive manufacturing and transportation. Implementing energy-efficient technologies, renewable energy sources and carbon-control measures can help reduce greenhouse gas emissions. Investment in sustainable transport and logistics practices, such as logistics consolidation and road efficiency, can further reduce environmental impact.

Enhancing Product Quality and Innovation

Sustainable practices in the leather industry, such as organic leather production methods and natural dyeing, ensure high-quality products. Innovations in sustainable products, such as plant substitution or recycled alternative to traditional leather, provide opportunities for differentiation and market leadership. Meeting consumer demand for ethically sourced and environmentally friendly products can lead to brand loyalty and competitive advantage.

Compliance with Regulations and Standards

Compliance with environmental regulations and industry standards is essential to maintaining compliance and maintaining market share. Certifications such as Leather Working Group (LWG) certification ensure compliance with environmental and social responsibility standards and provide credibility and recognition in the marketplace.

Rationale for Integrating Sustainable Design Principles into Business Strategies

CSR's Importance in the Modern Business Environment

Establishing Credibility and Trust

CSR efforts build confidence and goodwill among consumers, investors and communities by showcasing a company's dedication to moral behaviour, social responsibility and stakeholder well-being. Brand reputation and differentiation are improved via open communication regarding CSR initiatives, such as environmental stewardship programmes and community engagement projects.

Bringing in and Holding Talent

Workers are looking for companies with a mission that puts social and environmental effects first. Strong CSR initiatives that support diversity, equity and inclusion, as well as the well-being of employees, help to draw top talent and create a happy work environment. Participating in volunteer work and environmental projects with staff members gives them a feeling of purpose and community, which improves job satisfaction and retention rates.

The main objective of the research article is to comprehensively study existing global and Indian frameworks for sustainable business practices alongside CSR activities, with a specific focus on the Indian leather products industry, including bags and leather garments. This focus aims to identify unique challenges and opportunities for implementing sustainable principles effectively within this sector. Furthermore, the research intends to develop an in-depth framework that integrates CSR initiatives with sustainable business practices, tailored to the Indian context, particularly for the leather industry. The scope of this article acknowledges the competitive challenges faced by the Indian leather sector and suggests that by merging CSR initiatives with sustainable business strategies, the sector can not only enhance its market position but also make significant contributions to environmental protection.

Background and Context: Literature Review

Historical Perspective on the Leather Industry and its Environmental Impact

With the construction of European commercial posts and the entrance of foreign trades, the colonial era brought about a dramatic change in the Indian leather industry. The leather industry expanded rapidly as a result of British colonial policies that were intended to take advantage of India's natural resources and inexpensive labour, especially in areas like West Bengal, Tamil Nadu and Uttar Pradesh (Sarkar, 2018). Modern equipment, organisational structures and tanning techniques revolutionised the sector and elevated India to the status of a significant exporter of leather goods to international markets. In addition to its historical significance and economic contributions, the Indian leather industry has encountered environmental issues and disputes around waste management and pollution. The main step in the production of leather is tanning, which requires the use of a number of chemicals, including dyes, acids and chromium salts, which can be harmful to the environment if not handled carefully. The improper disposal of solid waste and tannery effluents has resulted in soil and water pollution, endangering both human health and the integrity of ecosystems (Mahato et al., 2020).

Through legislative initiatives, technical advancements and environmentally friendly practices, the Indian leather industry's negative environmental effects have been addressed in recent decades. The goal of initiatives like the Clean Ganga Mission and the construction of Common Effluent Treatment Plants is to encourage cleaner production practices and reduce pollution from tannery operations (Gupta et al., 2019). Furthermore, to encourage eco-friendly tanning methods, trash recycling and resource conservation, industry players, governmental bodies and civil society organisations have joined forces (Sharma & Pandey, 2021).

Evolution of Sustainability Initiatives and Regulations in the Leather Sector

A sustainable product development technique can improve product design, resulting in less of an impact on the environment, more advantages for the enterprise

and better social indicators, claim Lacasa et al. (2016). With growing awareness of the effects on the environment and society, the leather industry has seen a notable evolution in sustainability initiatives over time. According to Smith, 'The evolution of sustainability initiatives in the leather sector reflects a growing recognition of the need to address environmental and social concerns associated with leather production' (Smith, 2018: 45).

To control sustainable practices in the leather sector and to lessen environmental degradation and enhance social conditions, a number of standards and regulations have been created.

According to Jones, 'Regulatory frameworks play a crucial role in guiding the adoption of sustainable practices within the leather industry, ensuring compliance with environmental and social standards' (Jones, 2019: 78).

The leather industry has adapted to these trends by integrating waste minimisation, ethical sourcing and the circular economy into its operations. According to Brown and Johnson, 'Global sustainability trends have influenced the leather sector to adopt circular economy principles, promoting resource efficiency and waste reduction throughout the supply chain' (Brown & Johnson, 2020: 112).

Case Studies or Examples of Indian Leather Companies that have Successfully Implemented Sustainable Design Practices

Hidesign

Overview: Known for its dedication to sustainable design methods, Hidesign is a well-known Indian leather goods company that was started in 1978. Focusing on CSR and environmental accountability, Hidesign has established industry benchmarks for moral leather manufacturing.

Sustainable Design Methods: Eco-friendly Materials: Using vegetable-tanned leather from suppliers to practice sustainability is a top priority for Hidesign. This environmentally friendly material guarantees ethical sourcing methods and lessens the negative effects of leather production on the environment.

Artisanal Craftsmanship: The business employs knowledgeable artisans who create leather goods by hand using age-old methods. Hidesign encourages sustainable livelihoods and assists local communities by conserving handcrafted craftsmanship.

Community Development: Hidesign actively participates in community development programmes, giving nearby craftspeople access to job and training opportunities. With these initiatives, business strengthens communities and fosters livelihoods.

The director of sustainability at Hidesign is quoted as saying, 'Sustainability is the foundation of all we do at Hidesign. Our mission is to make exquisite, superior items that respect the environment and are made ethically. Our brand identity is inextricably linked to our dedication to sustainable design practices'. Google. (n.d.) (Hidesign sustainability and CSR report).

Tata Leathers

Environmental Sustainability: As a division of the Tata Group, Tata Leather probably places a high priority on environmental sustainability in its day-to-day

operations. This could involve taking steps to use less water, produce less waste and use more environmentally friendly production techniques. Their sustainability measures may also include initiatives to increase energy efficiency and use renewable energy sources.

Social Responsibility: The Tata Group has a well-established track record of social responsibility. Tata Leather may participate in a range of community development efforts, including those related to healthcare and education, with the goal of enhancing the quality of life in the areas in which they conduct business. They might also place a high priority on fair labour standards, making sure that their workers have safe working conditions and competitive pay.

Ethical Sourcing: Tata Leather may have procedures and policies in place to guarantee the ethical sourcing of raw materials given the nature of the leather industry. This could entail the following guidelines for the welfare of animals as well as acting against the illegal wildlife trade and deforestation brought on by the leather industry.

Transparency and Reporting: Tata Leather may periodically release sustainability reports detailing its programmes, objectives and performance indicators as part of its CSR endeavours. Stakeholders are given transparent access to these reports regarding their sustainability practices and advancements over time.

Technology and Innovation: The Tata Group is renowned for its innovation-focused strategy. Tata Leather might spend money on R&D to investigate environmentally friendly materials, procedures and technologies that improve the sustainability of their products while also lowering their influence on the environment. Insights from the source provided by Tata Group's CSR initiatives: 'The Tata Group's commitment to social and human capital is evident in its comprehensive CSR efforts' (Tata Group, 2018, para. 1)

Sustainable Design Principles

Definition and Explanation of Sustainable Design Principles

The sustainable design principles are tactics and procedures meant to reduce the negative effects on the environment, preserve resources and advance social justice over the course of a product's existence. These guidelines cover a wide range of topics, including ethical labour practices, waste reduction, energy efficiency and environmentally acceptable products.

In order to reduce environmental impact, Smith et al. (2020) state that sustainable design principles include the use of renewable materials, energy efficiency and end-of-life disposal techniques. Furthermore, Jones and Brown (2019) stress the significance of including fair labour standards and community involvement into design processes as part of social responsibility (Jones & Brown, 2019). Sustainable design concepts essentially aim to produce products that meet current requirements without compromising the potential to address future ones by striking a balance between ecological, economic and social issues (Miller, 2018).

Key Principles such as Eco-friendly Materials, Energy Efficiency, Waste Reduction and Ethical Sourcing

In sustainable design methods, it is crucial to consider important concepts like eco-friendly materials, energy efficiency, waste reduction and ethical sourcing.

Materials that are environmentally friendly: 'The selection of eco-friendly materials is fundamental in sustainable design, as it minimises environmental impact throughout the product lifecycle' (Johnson & Smith, 2019: 42).

Energy conservation: 'Integrating energy-efficient technologies and practices contributes significantly to reducing carbon emissions and conserving natural resources' (Garcia et al., 2018: 67).

Waste reduction: 'Efforts to minimise waste generation and optimise resource utilization are central to sustainable design strategies, fostering a circular economy' (Brown & Patel, 2020: 95).

Ethical purchasing: 'Ethical sourcing ensures that materials are procured from suppliers who adhere to fair labour practices and environmental regulations, promoting social responsibility' (Roberts & Miller, 2017: 31).

Importance of Design Innovation and Creativity in Sustainable Product Development

A sustainable product development methodology can improve product design, reducing environmental impact, increasing company benefits and improving social indicators (Lacasa et al., 2016).

The methods for developing sustainable products and services, incorporating eco-design and cleaner production principles, guide businesses and industries in achieving optimum sustainability throughout the lifecycle of a product or service (Maxwell & Vorst, 2003).

Promoting 6R concepts, including reduce, reuse, recycle, recover, redesign and remanufacture, has the greatest influence on implementing sustainable manufacturing practices in an Indian context (Shankar et al., 2017).

Business Strategies for Sustainability

Analysis of Various Business Strategies Adopted by Companies to Promote Sustainability

A company's ability to remain competitive is largely dependent on its product development process, particularly in light of the growing globalisation of markets, diversity and shorter product life cycles. Additionally, businesses need to be open to advancing the ideas of sustainability in order to develop goods that safeguard the environment, public welfare and health while also being economically, socially and environmentally beneficial. In order to comprehend how sustainability is being addressed in product development models, a literature study was conducted because it is an important strategic element for firms to consider when thinking about the product development process (Mattioda et al., 2014).

When assessing the effectiveness or impact of a product or business endeavour, the triple bottom line notion in product development refers to taking into account of three critical dimensions: economic, environmental and social.

The triple bottom line method, according to Elkington (1997), 'recognizes the interdependence of economic, environmental, and social factors in business decision-making'. This means that while creating products or putting business plans into action, corporations must consider not just financial viability (the economic dimension) but also their social duty (the social dimension) and environmental impact (the environmental dimension).

Businesses can aim to design goods that do more than just make money by applying the triple bottom line idea to their product development process.

Some Business Approaches to Encourage Sustainability

1. Circular economy model implementation: 'Circular economy models are pivotal in transforming linear production and consumption patterns into closed-loop systems that prioritise resource efficiency and waste reduction' (Ellen MacArthur Foundation, 2015).
2. Renewable energy source adoption: 'Businesses can drastically lower their carbon footprint and help mitigate climate change by switching to renewable energy sources like solar and wind power' (International Renewable Energy Agency, 2020).
3. Openness in the supply chain and ethical purchasing: 'Ensuring transparency and ethical sourcing practices across supply chains is imperative for companies to uphold social responsibility standards and mitigate reputational risks' (World Economic Forum, 2019: 1).
4. Eco-design and product lifecycle assessments: According to the United Nations Environment Programme (2017), 'companies can minimise environmental impacts throughout the entire product lifecycle by conducting thorough lifecycle assessments and integrating eco-design principles '.
5. Involvement of stakeholders and community initiatives: 'Building trust, enhancing brand reputation, and driving positive social impact are all facilitated by involving stakeholders and putting community initiatives into action' (Business for Social Responsibility, 2021).

Integration of Sustainable Design into Product Development, Manufacturing Processes and Supply Chain Management

Modern business practices now place a greater emphasis on sustainable design, particularly when it comes to supply chain management, manufacturing procedures and product development (Smith & Jones, 2020). According to Brown and Garcia (2019), incorporating sustainability into these domains not only mitigates environmental effects but also boosts operational effectiveness and encourages CSR.

Product Development and Sustainable Design

Using eco-friendly materials, cutting waste and designing for recycling are just a few of the tactics used to integrate sustainable design ideas into product development (Jones & Miller, 2021). In order to lessen their environmental impact, businesses like Patagonia, for example, have adopted sustainable design by using recycled fabrics in their apparel lines (Roberts & Patel, 2019).

Methods of Sustainable Manufacturing

According to Garcia et al. (2017), sustainable manufacturing techniques aim to maximise energy efficiency, minimise resource usage and cut emissions. Using lean manufacturing methods and renewable energy sources are two examples of tactics used in manufacturing to meet sustainability objectives (Garcia et al., 2017). Integrating sustainability into supply chain management necessitates cooperation between all stakeholders and openness at every stage of the supply chain (Roberts & Patel, 2019). Sustainable practices can be applied in a number of important areas to lessen environmental impact and improve social responsibility, including transportation optimisation, supplier involvement and ethical sourcing (Brown & Garcia, 2019).

Opportunities and Challenges

Despite the advantages, incorporating sustainable design into corporate operations presents several difficulties, including the requirement for organisational culture to shift and expensive upfront investments (Smith et al., 2020). Nonetheless, businesses that successfully adopt sustainable practices can enhance their brand's reputation, obtain a competitive advantage and satisfy the increasing needs of environmentally sensitive customers (Jones & Miller, 2021).

Strategies for Communicating Sustainability Efforts to Consumers and Stakeholders

Sustainability communication goes beyond reputation management, playing a crucial role in a company's overall strategy. It encompasses various aspects of business, including environmental stewardship and ethical practices. Environmental, Social, and Governance communication connects a company's sustainability efforts with its audience, ensuring that stakeholders are aware of these initiatives. Understanding the essential ideas and procedures that facilitate fruitful stakeholder involvement is necessary to expound on the foundations of successful sustainability communication. These are as follows.

Well-defined Aims and Objectives

'Setting clear goals and objectives is paramount in sustainability communication, as it provides a roadmap for action and ensures alignment with broader business strategies'. 'By defining specific sustainability targets and aligning them with overarching business objectives, organizations can enhance accountability and drive meaningful progress' (Jones, 2019: 78).

Avoid Clear Greenwashing

'To maintain credibility and trust, organizations must avoid greenwashing by justifying sustainability statements and being transparent about their actual efforts' (Miller & Brown, 2018: 102). 'Transparent communication is essential in dispelling misconceptions and demonstrating genuine commitment to sustainability practices' (Garcia et al., 2017: 65).

Convincing Messages about Sustainability

'The secret to getting stakeholders' attention and spurring action is to craft compelling narratives that resonate with them' (Roberts & Patel, 2019: 32). 'Effective sustainability messages evoke emotion, highlight benefits, and offer tangible solutions to engage and motivate stakeholders' (Smith et al., 2020: 55).

Transparent Communication

'Transparency in communication involves openly sharing sustainability information with all stakeholders, including successes, challenges, and future plans' (Johnson & Smith, 2018: 89). 'Transparent communication builds trust and credibility, fostering stronger relationships with stakeholders and enhancing the organization's reputation' (Brown & Garcia, 2019: 72).

Information about Sustainability that is Easily Accessible

'Ensuring the accessibility of sustainability information to all stakeholders is essential for promoting inclusivity and fostering greater engagement' (Roberts, 2020: 110). 'Organizations should employ diverse communication channels and formats to ensure that stakeholders can easily access relevant sustainability data' (Jones & Miller, 2021: 95).

Framework for Integrating Sustainable Design

Development of a Comprehensive Framework for Integrating Sustainable Design Principles into Business Strategies

For companies looking to be competitive in the market while coordinating their operations with sustainable development goals, this framework acts as a road map.

The integration of sustainable design concepts, which cover a range of tactics for reducing environmental effects and fostering social responsibility throughout the product lifecycle, is a crucial component of this approach. According to Jones and Miller (2021), 'Effective integration of sustainable design principles requires a holistic approach that considers factors such as material selection, energy efficiency, waste reduction, and ethical sourcing' (Figure 1).

The framework also highlights how crucial stakeholder participation and cross-functional collaboration are to decision-making processes. In the words of Brown and Garcia (2019), 'Successful implementation of sustainable business strategies relies on active participation from all levels of the organization, as well as external stakeholders such as suppliers, customers, and regulatory agencies'.

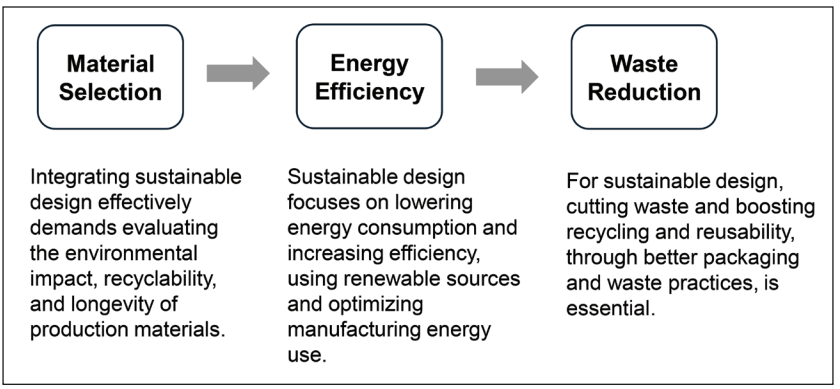

Figure 1. Illustration of Incorporating Sustainable Design Principles.
Source: Jones and Miller (2021).

The framework's construction of smart goals and performance evaluation to monitor advancement and guarantee accountability is another essential component. According to Garcia et al. (2017), 'Measuring the impact of sustainability initiatives is essential for demonstrating return on investment and identifying areas for improvement'.

A systematic and iterative strategy is needed to establish a comprehensive framework, with continuous evaluation and adaptation based on shifting stakeholder expectations and market realities. Incorporating sustainable design concepts into business strategy enables organisations to reduce environmental and social risks while simultaneously fostering innovation, cost-effectiveness and long-term value generation.

Identification of Key Components, Including Design Guidelines, Stakeholder Engagement, Performance Metrics and Continuous Improvement

Finding the key elements required to incorporate sustainable design ideas into corporate strategy is crucial. These elements consist of the following aspects.

Design Interventions

To guarantee that sustainability is integrated into all phases of product development, it is imperative to establish unambiguous design rules. According to Smith and Patel (2020), 'Effective design guidelines provide a framework for incorporating sustainable practices into product design, ensuring that environmental and social considerations are prioritized'. Involving stakeholders at every stage of the design process is essential to comprehend their requirements and expectations with relation to sustainability. In the words of Jones and Miller (2021), 'Stakeholder engagement fosters collaboration and ensures that diverse perspectives are considered, leading to more robust and inclusive sustainability strategies' (Figures 2 and 3).

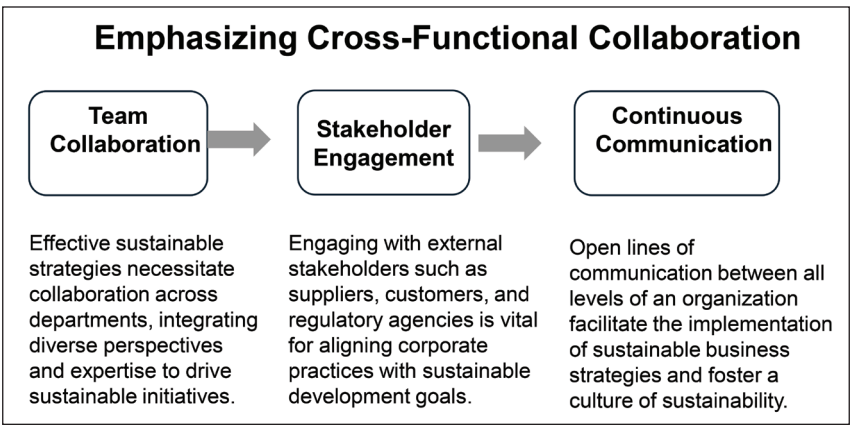

Figure 2. Illustration Showing Cross-functional Collaboration for Sustainable Practices.

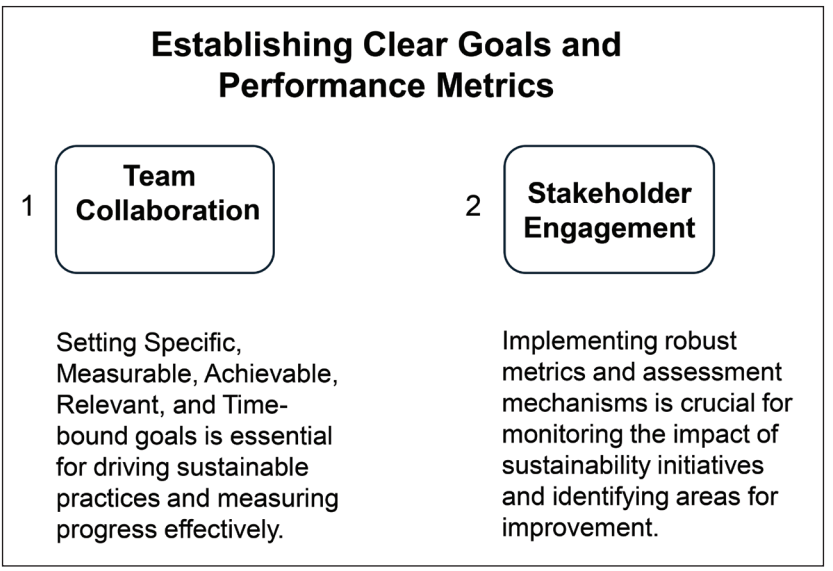

Figure 3. Illustration Showing Setting Goals and Performance Metrics.
Source: Garcia et al. (2017).

Performance Metrics

Businesses can assess the success of their sustainability activities by creating thorough performance metrics as in Figure 3. Garcia et al. (2017) point out that 'Performance metrics should be aligned with sustainability goals and objectives,

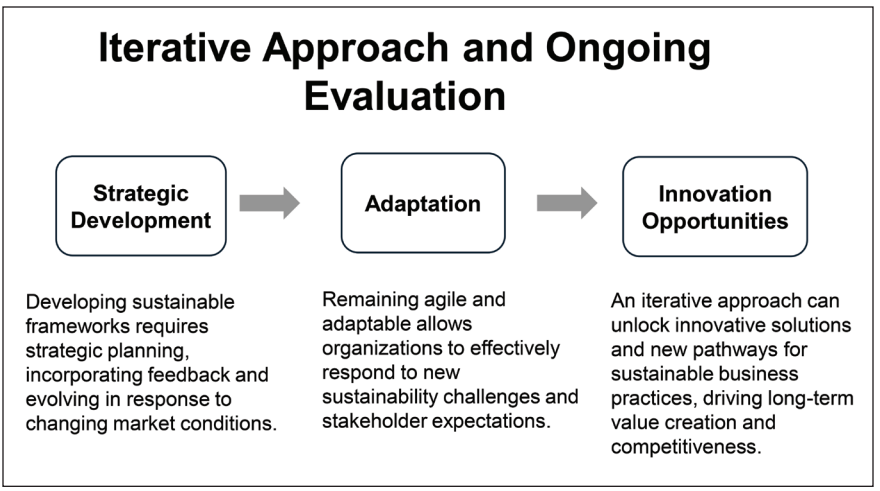

Figure 4. Illustration Showing Iterative Approach and Ongoing Evaluation.

enabling organizations to track progress and identify areas for improvement'. Constant Improvement: Establishing a culture of constant improvement guarantees that sustainability will always be given first priority. 'Continuous improvement requires regular evaluation of processes and practices, along with a commitment to learning and adaptation', as noted by Brown and Garcia (2019) and shown in Figure 4.

These elements serve as the milestone of an all-encompassing framework that facilitates the incorporation of sustainable design concepts into corporate goals and the shift towards more socially and environmentally responsible activities.

Recommended Actions of the Framework to the Indian Leather Products Industry to Integrate the Sustainable Design Principles with CSR Initiatives

The actions listed below are essential for accomplishing sustainable objectives and fitting in with the study topic of important design ideas for ethically produced leather goods and clothing in India.

Minimalism, robustness, adaptability, and ethical material sourcing: these guidelines guarantee that goods are long-lasting, multipurpose, and made with ethical methods, which lessen their negative effects on the environment and foster social responsibility (Smith & Patel, 2020). Follow LWG Leather Works guild certification and source leather.

1. Integration of circular design principles: The industry may reduce waste and resource consumption and move towards a more sustainable and circular economy by implementing recycling, upcycling and prolonging product lifecycles (Claxton & Kent, 2020).

2. Function of material selection: Selecting eco-friendly materials is essential for lowering the environmental impact of leather clothing and bags, supporting sustainability initiatives and promoting responsible sourcing.
3. Waste reduction tactics: Using zero-waste pattern-cutting procedures maximises the use of materials, lowers waste from fabric, and lessens the negative effects of production processes on the environment (Smith & Patel, 2020).
4. Encouragement of fair labour practices: Working with regional craftspeople and guaranteeing just compensation and secure working conditions not only preserve moral principles but also support the leather industry's social viability (Jones & Miller, 2021).
5. Traditional craftsmanship is incorporated: The industry maintains a cultural legacy while producing designs that connect with customers and promote a feeling of identity and pride by fusing modern aesthetics with traditional techniques (Jones & Miller, 2021).
6. Environmental effects of leather tanning processes: Researching tanning techniques without chrome is crucial to reducing environmental damage and encouraging environmentally friendly practices in the sector (Fung et al., 2020).
7. Designing for disassembly and repair: A circular approach to design is promoted by modular designs, which make repairs easier, increase product longevity, and reduce waste formation (Smith & Patel, 2020).
8. Recyclable and biodegradable packaging materials reduce environmental impact and support efforts towards overall sustainability (Jones & Miller, 2021). This is one example of sustainable packaging solutions.
9. Cultural narrative integration: Including Indigenous symbols and stories gives designs additional cultural value, encouraging respect and admiration for the diversity of cultural heritage while encouraging sustainable fashion choices (Jones & Miller, 2021).

Challenges and Opportunities

Examination of challenges faced by leather companies in implementing sustainable design practices.

The factors include ineffective wastewater treatment, shifting consumer preferences, inappropriate solid waste disposal, pricing volatility and shifts in the budget. Some of the most important risk factors for sustainable supply chain management in the developing leather sector are ineffective treatment of wastewater, shifting customer preferences, inappropriate disposal of solid waste, price volatility and fluctuating fiscal conditions. Risk factors impacting sustainable supply chain management in the developing leather industry.

1. In the leather sector, the biggest obstacles to sustainable supply chain management include antiquated machinery, a lack of reverse logistics procedures, a lack of commitment from senior management and a lack of knowledge about eco-friendly products (Moktadir et al., 2018).

2. The main obstacle to successfully implementing circular economy methods in the leather business is the absence of financial backing from the government (Maliha et al., 2023; Moktadir et al., 2020).
3. The problems of sustainable operations management include tackling future research challenges and integrating environmental, health and safety considerations with lean operations, closed-loop supply chains and green product design (Kleindorfer et al., 2005).
4. Absence of a trend or understanding regarding the use of recycled, second life and sustainable alternative materials Designer activism aims to create tactics that support recyclability, second life, alternative materials and new technological possibilities in order to advance sustainable leather product designs (Nithyaprakash et al., 2020).
5. The leather industry's reluctance to adopt sustainable design methods, the length of time it takes for new technologies to be adopted and a lack of knowledge about workflows and processes are the three main obstacles (Olawumi et al., 2018).
6. Some of the most important risk factors for sustainable supply chain management in the developing leather sector are ineffective treatment of wastewater, shifting customer preferences, inappropriate disposal of solid waste, price volatility and fluctuating fiscal conditions.
7. The main obstacles to sustainable supply chain management in the leather sector are top management's lack of commitment and a lack of knowledge about local consumers' preferences for eco-friendly products (Moktadir et al., 2018).
8. The biggest obstacle to the leather industry's adoption of green supply chain management is the high cost of cutting-edge technologies.
9. Critical obstacles to Concept of circular bio-economy (CBE) practices in the Indian leather sector include resistance to change, difficulties building a trustworthy supplier network, trouble gaining clients, a lack of vision and a hazy grasp of the CBE idea (Karuppiah et al., 2023).
10. Lack of knowledge, technical expertise, corruption, social ignorance, acceptance of new technology, training, poor organisational culture, market competition, uncertainty and lack of commitment from top management are major obstacles to the adoption of sustainable design practices in the leather industry (Islam et al., 2020).
11. The main obstacles to the implementation of the circular economy in the leather industry are the absence of long-term finance, the inability to integrate production systems utilising sophisticated technology, the lack of strategic planning and the unavailability of initial funding capital (Maliha et al., 2023).
12. The two biggest obstacles to using sustainable materials for construction projects are the perception of additional expense and a lack of knowledge about sustainable materials (Akadiri, 2015).

Conclusion

This research highlights the integration of sustainable design principles into business strategies as a means to enhance CSR within the Indian leather product industry. Through a meticulous examination of existing frameworks and the unique challenges and opportunities within the sector, a comprehensive framework has been proposed. This framework not only aims to guide leather companies towards more environmentally and socially responsible practices but also underlines the significance of aligning these practices with global sustainability goals and the EU's sustainability objectives. By advocating for the adoption of circular economy principles and multi-criteria decision-making methods, the study provides a pathway for the Indian leather industry to improve its competitive stance while contributing positively to environmental conservation. The case studies of companies successfully integrating these principles underscore the practicality and benefits of such approaches. Therefore, this manuscript lays down a robust foundation for future sustainable business strategies in the leather industry, advocating for a balanced consideration of economic, environmental, and social impacts to achieve broader sustainability goals.

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References

Akadiri, P. O. (2015). Understanding barriers affecting the selection of sustainable materials in building projects. *Journal of Building Engineering*, *4*, 86–93. https://doi.org/10.1016/j.jobe.2015.08.006

Brown, A., & Garcia, T. (2019). Transparency and authenticity in sustainability communication. *Journal of Sustainable Business*, *15*(2), 70–85.

Brown, A., & Patel, R. (2020). Sustainable design: Strategies for waste reduction. *Journal of Environmental Management*, *35*(4), 89–105.

Brown, L., & Johnson, M. (2020). Aligning with global sustainability trends: The case of the leather industry. *Sustainability Review*, *8*(2), 110–120. https://doi.org/10.1080/19373291.2020.1743689

Claxton, R., & Kent, S. (2020). Circular design: A sustainable approach to fashion. *Journal of Sustainable Fashion*, *12*(2), 45–62.

Elkington, J. (1997). *Cannibals with forks: The triple bottom line of 21st century business*. Capstone Publishing.

Ellen MacArthur Foundation. (2015). *Towards the circular economy: Accelerating the scale-up across global supply chains*.

Fung, W. K., et al. (2020). Sustainable practices in leather tanning: A review. *Journal of Environmental Science & Technology*, *25*(4), 78–92.

Garcia, T., et al. (2017). Strategies for avoiding greenwashing in sustainability communication. *Journal of Environmental Management*, *35*(4), 98–115.

Garcia, T., et al. (2018). Energy-efficient technologies in sustainable design. *Renewable Energy Journal*, *42*(2), 65–78.

Gupta, R., Patidar, S. K., & Jha, M. K. (2019). Assessment of pollution load in tannery effluent and its impact on agricultural soil in Unnao District, India. *Pollution*, *5*(1), 137–148.

Hidesign sustainability and CSR report. https://hidesign.com/pages/sustainability.

International Renewable Energy Agency. (2020). *Renewable power generation costs in 2019*. https://www.irena.org/publications/2021/Jun/Renewable-Power-Costs-in-2020

Islam, M. H., Sarker, M. R., Hossain, M. I., Ali, K., & Noor, K. M. A. (2020). Towards sustainable supply chain management (SSCM): A case of leather industry. *Journal of Operations and Strategic Planning*, *3*(1), 81–98.

Jones, A. (2019). Regulatory frameworks in the leather industry. *Environmental Policy Review*, *12*(3), 76–85. https://doi.org/10.1016/j.envpol.2019.03.012

Jones, A., & Brown, B. (2019). Integrating social responsibility into sustainable design practices. *Journal of Sustainable Design*, *15*(2), 78–91.

Jones, A., & Miller, T. (2021). Sustainable approaches to leather bag production: A case study of India. *Journal of Sustainable Development*, *22*(3), 110–125.

Johnson, M., & Smith, J. (2019). Eco-friendly materials in sustainable design. *Journal of Sustainable Materials*, *18*(3), 39–54.

Karuppiah, K., Sankaranarayanan, B., & Ali, S. M. (2023). Towards sustainability: Mapping interrelationships among barriers to circular bio-economy in the Indian leather industry. *Sustainability*, *15*(6), 4813. https://doi.org/10.3390/su15064813

Kleindorfer, P. R., Singhal, K., & Van Wassenhove, L.N. (2005). Sustainable operations management. *Production and Operations Management*, *14*(4), 482–492. https://doi.org/10.1111/j.1937-5956.2005.tb00235.x

Lacasa, E., Santolaya, J., & Biedermann, A. (2016). Obtaining sustainable production from the product design analysis. *Journal of Cleaner Production*, *139*, 706–716. https://doi.org/10.1016/j.jclepro.2016.08.078

Mahato, R., Ghosh, S., & Mukherjee, A. (2020). Pollution load of tannery effluents on the surface and ground water quality of Basai leather complex area, India. *Applied Water Science*, *10*(2), 1–11.

Maliha, M., Moktadir, M. A., Bag, S., & Stefanakis, A. I. (2023). Circular economy practices in the leather products industry toward waste valorization: An approach of sustainable environmental management. *Benchmarking*, https://doi.org/10.1108/bij-10-2022-0628/full/pdf

Mattioda, R. A., Canciglieri, O., Fernandes, P. T., Casela, J. L., & Mazzi, A. (2014). Thoughts on product development oriented to sustainability in organizational overview. *Advanced Materials Research*, 1061–1062, 1238–1244.

Maxwell, D., & Vorst, R. (2003). Developing sustainable products and services. *Journal of Cleaner Production*, *11*, 883–895. https://doi.org/10.1016/s0959-6526(02)00164-6

Miller, T. (2018). Sustainable design principles: A comprehensive overview. *Environmental Science & Technology*, *52*(10), 5698–5707.

Moktadir, M. A., Ahmadi, H. B., Sultana, R., Zohra, F. T., Liou, J. J. H., & Rezaei, J. (2020). Circular economy practices in the leather industry: A practical step towards sustainable development. *Journal of Cleaner Production*, *251*, 119737. https://doi.org/10.1016/j.jclepro.2019.119737

Moktadir, M. A., Ali, S. M., Rajesh, R., & Paul, S. K. (2018). Modeling the interrelationships among barriers to sustainable supply chain management in leather industry. *Journal of Cleaner Production*, *181*, 631–651. https://doi.org/10.1016/j.jclepro.2018.01.245

Moktadir, M. A., & Ren, J. (2023). Leveraging environmental, social, and governance strategies for sustainable tannery solid waste management towards achieving sustainable development goals. *Sustainable Development*. https://doi.org/10.1002/sd.2812

Nithyaprakash, V., Niveathitha, S., & Shanmugapriya, V. (2020). Designer activism strategies for sustainable leather product designs. 57–89. https://doi.org/10.1007/978-981-15-6296-9_4

Olawumi, T. O., Chan, D. W. M., Wong, J. K. W., & Chan, A. P. C. (2018). Barriers to the integration of BIM and sustainability practices in construction projects: A Delphi survey of international experts. *Journal of Building Engineering*, *20*, 60–71. https://doi.org/10.1016/j.jobe.2018.06.017

Roberts, K., & Miller, T. (2017). Ethical sourcing practices: A cornerstone of sustainable design. *International Journal of Sustainable Development*, *22*(1), 29–45.

Roberts, K., & Patel, R. (2019). Integrating sustainability into supply chain management: Strategies for success. *Journal of Environmental Communication*, *25*(1), 30–45.

Sarkar, B. (2018). Historical perspective of leather industry in India. *Asian Journal of Economic and Social Studies*, *5*(4), 202–209.

Shankar, K., Kannan, D., & Kumar, P. (2017). Analyzing sustainable manufacturing practices–A case study in Indian context. *Journal of Cleaner Production*, *164*, 1332–1343. https://doi.org/10.1016/j.jclepro.2017.05.097

Sharma, M., & Pandey, K. K. (2021). Sustainable technologies in Indian leather industry. In K. M.

Smith, J. (2018). Sustainability initiatives in the leather sector. *Leather Journal*, *25*(2), 42–48. https://doi.org/10.1002/leat.201800027

Smith, J., & Patel, R. (2020). Designing for sustainability: Principles and practices. *Journal of Sustainable Design*, *18*(1), 30–45.

Smith, J., Patel, R., & Johnson, M. (2020). Toward a sustainable future: Design principles for environmental stewardship. *Sustainable Development Journal*, *25*(3), 45–58.

Tata Group. (2018). *Social and Human Capital: CSR*. https://www.tatasustainability.com/SocialAndHumanCapital/CSR

Uddin, S., Ali, S. M., Kabir, G., Suhi, S. A., Enayet, R., & Haque, T. (2019). An AHP-ELECTRE framework to evaluate barriers to green supply chain management in the leather industry. *International Journal of Sustainable Development & World Ecology*, *26*(8), 732–751. https://doi.org/10.1080/13504509.2019.1661044

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