

The Role of Graphic Design of Packaging in Achieving Sustainability

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ABSTRACT:

Seeking to sustainability plays a vital and important role in improving the quality of human life, protecting the ecosystem, and preserving natural resources for future generations as long as possible. Achieving sustainability is not only the task of the governments of countries, as called for by the United Nations, but rather the task of all organizations, institutions, companies, and even individuals. Since design aims to serve people and facilitate their lives, the function of design in achieving sustainability is no less important than its aesthetic and beneficial function. From here comes the role and importance of graphic design in preserving the environment and taking into account all considerations that protect human life, facilitate his life and preserve his survival. The research problem is illustrated in defining the meaning of sustainability and its importance. The research aims at presenting different solutions of using graphic design in packaging that achieve sustainability. To reach this concept, the research uses the qualitative method by collecting data and images and analyzing them using the grounded research. The research resulted at identifying the considerations have to be followed while using graphic in design.

1- Introduction:

The world is in a critical situation. Everyone, including graphic designers, has an impact on the planet because we all need resources for almost everything we do. Deforestation is destroying ecosystems and putting lives at risk while paper production produces large amounts of air pollution and water pollution. The graphic designer must think about how their design will affect the world. in terms of the environment and society. We must develop a greener strategy. Sustainable graphic design is an approach that considers the impact of the design being created on the environment.

2- Sustainability:

There is no universally agreed definition of sustainability. In fact, there are many different viewpoints on this concept. One of them is the quality of not being harmful to the environment or depleting natural resources, and thereby maintaining long-term ecological balance. It also can be defined as the capacity to be maintained at a constant level without exhausting natural resources or seriously harming the environment. Another definition is proposed as meeting the needs of the present, without compromising the ability of future generations to meet their own needs. It is about ensuring a balance between social welfare, environmental care and economic growth.

3- History of sustainability:

The history of sustainability can be traced back to the earliest human civilizations, when a sustainability issue would either be effectively resolved or cause the society to deteriorate after it had previously flourished.

Early societies were made up of hunter-gatherers who roamed around in search of food and water. After taking what they could from the land, they would leave. It was a precarious existence with no guarantee of food or water.

Groups of people discovered a more long-lasting answer through agriculture between 8000 and 10,000 years ago, establishing farms to create their own local food supply. As a result, people were compelled to relocate since vital resources (such as water and soil) were being depleted.

Significant technological advancements resulted from the Industrial Revolution in the 18th and 19th centuries, including the discovery of coal and fossil fuels for use in engines and later in the production of electricity. The human population's demand of non-renewable resources increased exponentially as a result of these technical advancements.

Through improved fertility, longer life expectancies, and lower baby and child death rates, advances in medicine have led to rising populations and overpopulation. The world population rose considerably from 500 million to 1 billion people between 1650 and 1800, and from 1 billion to 7.7 billion people between 1800 and now.

Ecologists, botanists, and politically astute economists like the Reverend Thomas Malthus warned of the negative effects of industry on the environment and society on civilizations and the entire planet during the 19th century.

Following World War II and the Great Depression, industrialized countries started to see rapid growth in the 1950s. Environmental organizations expressed concern about the costs of many modern technologies and benefits, including plastics, chemicals, nuclear energy, pesticides, synthetic fertilizers, and the increased usage of fossil fuels on the environment and wildlife in rural areas. Given the worries about pollution, the rapid growth of the population, consumerism, and the depletion of natural resources, environmentalists forecast the peak in oil production in the 1970s.

The world was dealing with serious environmental issues by the late 20th century. The world was made aware of how dependent on non-renewable resources it had grown during the energy crisis of the 1970s. individuals in underdeveloped nations, where poverty and malnutrition are common, view development as a necessity to raise their level of living, but individuals in affluent nations are worried about resource overuse.

Over the last 50 years, significant historical events have drawn attention to the world's environmental crisis.

The World Conservation Strategy was issued in 1980 by the International Union for Conservation of Nature.

It published the "World Charter for Nature" in 1982, highlighting the global ecosystems' degradation.

The Brundtland Commission (the United Nations globe Commission on Environment and Development) released its report titled "Our Common Future" in 1987 and recommended that development be sustainable, satisfy the needs of the underprivileged, and not worsen environmental issues already present in the globe. By the middle of the 2000s, several nations were unable to support themselves and were forced to import resources from other nations to meet their demands. As a result of increased public awareness, people started making more sustainable lifestyle decisions, and the first renewable energy sources including wind turbines, hydroelectricity, solar and wind power plants began to appear.

The greenhouse effect, which is when the earth's surface temperature rises and causes ice sheets to melt, rising sea levels, ocean acidification, and extreme weather events like hurricanes, floods, and tsunamis, has been a major concern for nations throughout the twenty-first century.



Figure 1: United Nations Sustainable Development Goals

The United Nations released a set of Seventeen Sustainable Development Goals in 2016 that were more ambitious and aimed to "banish a whole host of social ills by 2030." At a meeting held at UN headquarters in New York, all 193 Heads of State and other prominent world leaders unanimously accepted the Agenda for Sustainable Development. At the time, UN Secretary-General

Ban Ki-moon stated, "The seventeen Sustainable Development Goals (SDGs) are our shared vision of humanity and a social contract between the world's leaders and the people." The 17 goals and 169 targets are intended to end poverty, combat inequality, and combat climate change during the course of the next 15 years. They are described as "a to-do list for people and the planet and a blueprint for success".

4- Types of sustainability:

It is too important to note there are various forms of sustainability as following:



Chart 1: The 3 forms of sustainability

- 4.1- The Economic Pillar:

The profit pillar is another name for the economic pillar. The majority of firms believe they are on more stable basis there. A firm needs to be lucrative to last.

- 4.2- The Environmental Pillar:

The planet pillar is another name for the environmental pillar. It frequently attracts the most interest. Many businesses are working to minimize their water use, packaging waste, carbon footprints, and other environmental harm. These actions can benefit the economy in addition to the environment. For instance, cutting back on packaging materials can lower costs and increase fuel efficiency.

- 4.3- The Social Pillar:

The social pillar, sometimes known as the "people pillar," connects to social license, another clearly defined notion. Employees, stakeholders, and the community in which a firm works should all be in favor of it. There are many ways to gain and keep this support, but ultimately it boils down to treating employees fairly and acting responsibly in both the local and global communities.

Businesses are refocusing on employee retention and engagement initiatives, offering more flexible perks like enhanced maternity and paternity benefits, flexible scheduling, and opportunities for learning and development.

Companies have developed a variety of strategies to give back to the community, including fundraising, sponsorship, scholarships, and investment in regional public initiatives.

A company needs to be aware of the social issues that need to be addressed on a worldwide basis, such as child labour and providing aid to those in need.

5- Importance of sustainability:

Sustainability has a lot of advantages, both now and in the future. If more sustainable decisions are not taken, we won't be able to protect our planet's ecosystems or carry on as we already do. It's conceivable that humanity will run out of fossil fuels, many animal species will go extinct, and the atmosphere will be permanently harmed if detrimental processes are kept up without any changes. The advantages of sustainability include the expansion of resources that can be relied upon, pure and clear water, and clean air and nontoxic atmospheric conditions. Large brands compete to attain sustainability because of this. IKEA, a well-known Swedish furniture company, is leading the way for businesses everywhere by pledging to be sustainable by 2030. In many countries Ikea uses electrical cars for delivery services (figure 2). It also uses the recycled craft paper bag in packing (figure 3). The shopping bag can be used more and more (figure 4). Even its packaging is so minimal so it does not exert too much space in the environment (figure 5).



Figure 2: Ikea electric car



Figure 3: Ikea craft bag



Figure 4: Ikea shopping bag



Figure 5: Ikea storage area



Figure 6: Ikea paper cups



Figure 7: Ikea Electric delivery bike



Figure 8: Ikea Sustainable store



Figure 9: Ikea sustainable building

In many of its stores, Ikea uses paper cups, plates and forks in stead of using plastics (Figure 6). It uses also bikes in delivery servicesc (figure 7). In London, Ikea designed one of the most sustainable stores around the world, But concealed beneath its recognisable blue visage are a number of eco-friendly technologies: Half of the water utilised in the structure will come from rainwater gathering. The spaces used for circulation are naturally lighted. Solar panels spanning 12,000 square metres are installed on the roof. And one of London's largest green roofs, measuring 4,000 square metres (figure 8 & 9).

6- Sustainability and graphic design:

Despite the fact that graphic design generally deals with communication and aesthetics issues, sustainable graphic design does it in a way that is knowingly and purposefully less destructive to the environment. Design success and environmental impact are given equal weight in sustainable architecture.

The term "sustainable design" describes the design process that incorporates an environmentally friendly viewpoint and takes into account natural resources.

There are several reasons why graphic design doesn't place enough emphasis on sustainability: The trend-centered discipline views sustainable design as a less lucrative path, and/or designers simply are unable to incorporate the principles of sustainability into already-formed standards of design. Lack of education just keeps designers in the dark. Sustainability and its integration into

design are good but superfluous in the eyes of graphic designers.

Some people believe that sustainable design will undermine their intended aesthetic or practical objectives since it restricts the available resources, tools, and methodologies. Because they merely don't believe their efforts will make a difference, designers are disregarding the concept of sustainability. What's more, designers do not even take into account applications of sustainable practise because they are inconvenient.

While publications, seminars, and entire degrees in industrial and architectural design are devoted to sustainable development, graphic designers have opted for a less proactive approach. Sustainable design is regarded as a separate subcategory of design in graphic design.

The same principles of sustainability are used in greener design, which secures our essential resources so that our ecosystem can flourish. These principles are reduce, reuse, and recycle. It goes without saying that a lot of print materials, ink, and paper are used in graphic design. The continued use of computers and digital presentation tools like projectors and TV displays, however, is another part of the profession (figure 10).



Figure 10: The 3 terms related to sustainability

Recycling is the process of disassembling a product into its component parts, which can then be used to create a new product. This process uses a lot of energy.

Reusing means utilizing something in its original state, unaltered. This makes the process more

sustainable by cutting down on emissions and waste.

Minimizing the production of any products that use excessive amounts of energy and resources.

The most effective way to ingrain greener practices in consumers' minds is through packaging design. Designers must make packaging more practical by allowing it to stack, adding features that act as measurement instruments to the packaging, etc. A product's value is raised as a result.

Consumers are more inclined to keep a product and reuse the packaging, keeping products out of landfills, when a package is more adaptable. In the sustainable design movement, packaging serves a variety of functions, including easing consumer burdens and inspiring creativity or the adoption of more adaptable items in daily life.

The public's shopping tastes are shifting towards goods that make people feel better about their purchases as their awareness for the environmental impact of packaging and products develops. Simply branding a product as green usually increases appeal in the eyes of the consumer and has a significant impact on the ultimate product selection (figure 11).

Finding, purchasing, and favoring greener options becomes more commonplace for consumers and the broader public. They, in turn, raise demand for those substitutes and, eventually, cultivate a more environmentally conscious society as a whole.



Figure 11: Green Packaging

Green packaging, sometimes referred to as sustainable packaging, refers to the use of materials and manufacturing processes for product packaging that have minimal effects on the environment and energy use.

Sustainable packaging is produced with consideration for the environment, utilizing renewable resources that can be recycled and biodegraded.

7- Ways of sustainable packaging as a means of graphic design:

- **7.1- Reusable Packaging:**

One of the most well-known companies specializing in reusable packaging is “Loop”. The consumer can order everything from condiments to cleaning goods and send the empty containers back to the maker so they can be reused as seen in (chart 2).

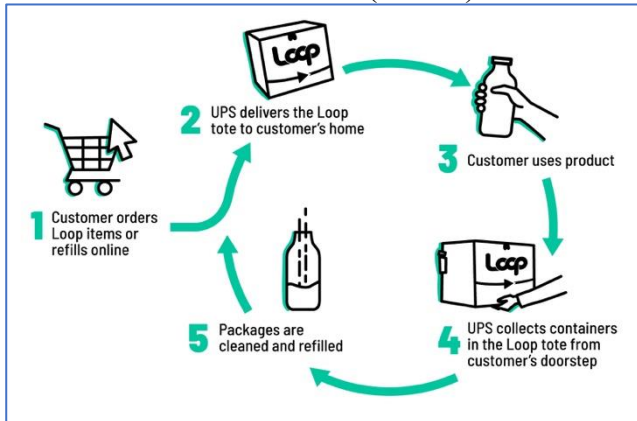


Chart 2: The cycle of Loop Company

Its Loop partners include Procter & Gamble, Nestlé, PepsiCo, Unilever, Mars, Clorox, Coca-Cola, Mondelēz, Danone. Examples are shown in (figure 12 & 13).



Figure 12: Milka reusable packaging



HÄAGEN-DAZS ICE CREAM

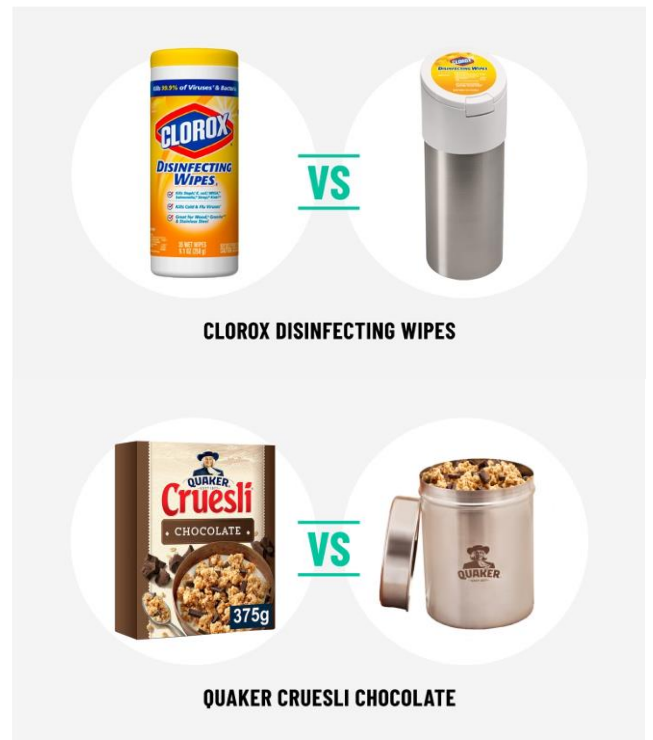


Figure 13: Examples of Loop reusable products

Returnity is another packaging business that works in the reusable packaging industry. It aids e-commerce businesses in creating returnable packing options for their goods. Customers can utilise it easily thanks to the clear instructions provided for returning products (figure 14).

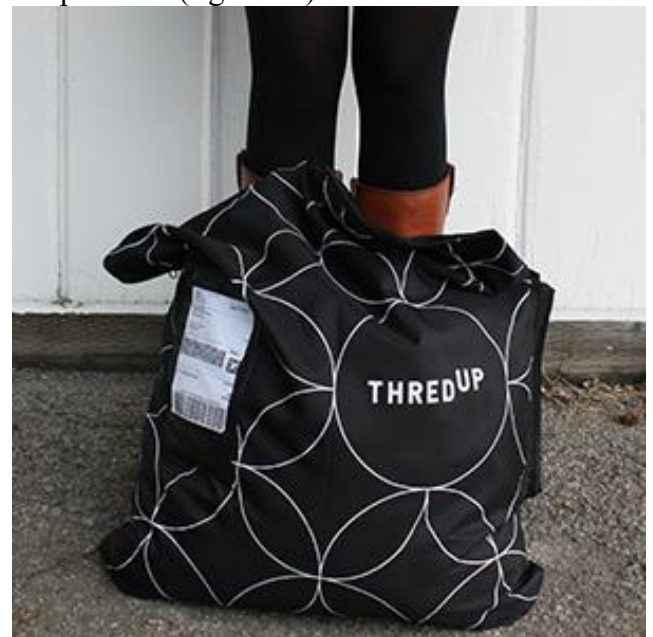


Figure 14: Returnity bags

7.2- Plant Based Packaging:

Manufacturers are investigating a variety of plant-based materials for consumer goods, including pineapple-based leather. So why not use the same reasoning when choosing packaging materials? After all, life-cycle evaluations typically show that renewable plant-based materials perform better than plastics. (Figure 15) shows an example.



Figure 15: Leather alternative pineapple products

As seen in (figure 16), Coca-Cola has updated the wasteful packaging style it popularized in the 1970s, the plastic bottle, since 2009. It accomplished this by combining 30% of plastic resins that are not biodegradable with plant-based ingredients to make its Plant bottle. Though a prototype bottle made entirely of plants was announced in 2015, the product hasn't yet been released.



Figure 16: CocaCola Plant-Based bottle

“Plantic”, a producer of biodegradable packaging, has begun employing its plant-

based polymers in the United States and Australia. The source of the raw materials is sustainable and renewable. (Figure 15) presents an example.



Figure 17: Plastic Packaging

IKEA makes its packaging from mushrooms. Mycelium, the molecular building elements of mushrooms, has been combined with agricultural products in a packaging material created by Ecovative Design. IKEA and other well-known companies have already adopted Ecovative's fully biodegradable packaging designs (Figure 18).



Figure 18: ikea mushroom packaging

7.3- Edible Packaging:

At the dinner table, some creative package designers made the decision to close the waste loop. Why not simply eat your food wrapper after you complete your meal rather than

putting it in the trash? The concept behind edible packaging is just that.

Ooho edible water bubble

Recently, 30,000 eatable Ooho water bubbles were distributed at the London Marathon. a great replacement for plastic bottles.

The pouch can be eaten or thrown away after you have finished drinking the contents; it will biodegrade in four to six weeks (Figure 19).



Figure 19: ooho water bubbles

Loliware biodegr(edible) cups

As shown in (figure 20), Loliware is employing seaweed to find a creative solution to the problem of ocean garbage. Plastic cups may be replaced by appealing, colourful seaweed products like this edible cup.



Figure 20: loliware edible cups

- **7.4- Plantable Packaging:**

Sustainable packaging that genuinely provides some good is the next step beyond sustainable packaging that causes no damage. That is the concept behind plantable packaging, which includes seeds in the pulp of the package. Here are a few illustrations.

Pangaea Organics

Pangaea Organics created packaging that includes seeds in partnership with the organic seed business Seeds of Change. When planted, its bath and body care products can take root and bring therapeutic herbs to life (figure 21).



Figure 21: Pangaea Organics

Bloom Chocolate

The rose, orange, and mint plants that are used to manufacture Bloom Everlasting Chocolate's natural flavorings are sprouted from seeds that are infused into the biodegradable packaging. Each bar of chocolate comes with a handy instruction sheet that may be used to turn the product into your upcoming do-it-yourself gardening project (figure 22).



Figure 22: Bloom plantable Chocolate

- **7.5- Biodegradable Plastic Alternative:**

Many environmentally conscious businesses still prefer the appearance, feel, and touch of plastic packaging, but they search for guilt-free alternatives. Fortunately, businesses have created materials with comparable advantages. However, these lack the lengthy lifespan and chemicals generated from fossil fuels that make ordinary plastic such an issue.

L'Oréal's Paper Bottles

Skincare products from Loreal's Seed brand of environmentally friendly cosmetics are packaged in paper-based bottles rather than plastic. Glue is not required because of the recyclable packaging's usage of a paper label and interlocking tabs. Surprisingly, you may store the bottles in your shower because they are water resistant (figure 23).



Figure 23: L'Oréal's Paper Bottles

- **7.6- Minimal Packaging:**

The best packaging designs use the least amount of packing as is practical. Many businesses that rely significantly on packaging, like Amazon, look for ways to reduce the size, weight, and other aspects of their packaging designs.

Puma's Clever Little Bag

Puma's new shoe packaging design, dubbed "The Clever Little Bag," is a reusable, resource- and material-efficient bag intended to do away with needless cardboard. It uses 65 percent less cardboard in the design of its packaging.



Figure 24: Puma's Clever Little Bag

- **Packsize Packaging:**

Exactly sized boxes that fit. A product can be instantaneously measured and packaged in the smallest package using Packsize's automated in-line packaging equipment. This prevents any standard-sized cardboard from being lost during delivery (figure 25).



Figure 25: packsize packaging

- **7.6- Recycled Packaging:**

As shown in (figure 26), Nike's packaging is made entirely of post-consumer waste. Nike accepted the challenge of using recycled materials from the waste stream, such as milk cartons and orange juice containers, to make a difference with its shoe packaging. It has a sturdy construction and can be worn as a rucksack.



Figure 26: Nike's recycled packaging

- **7.7- GreenKraft clamshell containers:**

GreenKraft offers plastic substitutes for delivered food by using recycled cardboard.

Its innovative designs aid in reducing wasteful take-out food packaging (figure 27).



Figure 27: GreenKraft clamshell containers

8- Criteria of sustainable packaging:

- 1- It is advantageous, secure, and healthful for humans during its entire life cycle.
- 2- Its performance and price are competitive.
- 3- Renewable energy is used to ship, source, and recycle it in addition to producing it.
- 4- Renewable or recycled source materials are prioritised; for example, paper is used in place of plastic.
- 5- It is produced using clean manufacturing best practises.
- 6- Its components are safe to use during its whole life cycle.
- 7- It has a closed-loop design that makes it totally recyclable, biodegradable, or reusable.

9- Considerations have to be followed while using graphic in design:

While other design disciplines use sustainable development tools and processes, this paradigm is still missing from the graphic design sector. In contrast to other professions like product design, architectural design, etc., the majority of graphic design institutions do not offer sustainable education.

The role of the graphic design industry in achieving sustainability is becoming ever more crucial as it serves as a vital visual communicator and marketing tool for various businesses both inside and outside the creative sector. A wide range of factors, including both traditional and digital graphic design domains, are taken into account in the sustainable

practise for graphic designers. Materials, ink, paper, and the design itself are among these factors.

Here are some advices to achieve sustainability in packaging design:

Design:

- Make the most of less by being creative in your downsizing.
- Reduce the amount of paper used in the design's production.
- Print as little as possible; use digital resources instead. When possible, use a printing option to decrease your product's negative environmental effects.

Paper:

- • Despite the transition to digital media like emails, ebooks, and digital advertising, printed materials are still a crucial component of the graphic design process. Due to the fact that trees are used as a source for paper for printing, the growing use of paper has a detrimental effect on the environment. The usage of steel, power, and fuel by the various equipment is another requirement of the paper business.
- Consideration should be given to wise paper use. It is possible to utilise recycled paper to consume fewer forest resources. Implementing industrial technologies that lessen the amount of fuel and power used during the paper-making process helps to lessen the process's negative environmental effects.
- Seek certification: Several certifying organisations offer a seal of approval for paper material derived from environmentally friendly sources.

Printing Ink

- • Toxic heavy metals including barium, cadmium, and lead, which pose serious dangers to human health and the environment, can be found in inks. Ink should be utilised carefully to reduce waste in order to lessen the pollution that printing inks cause.

Another consideration: You can supply clients with environmentally friendly solutions. For

example, graphic designers can provide a client an environmentally friendly option, encourage them to adopt a sustainable strategy, and highlight this approach in their goods to boost the value of their brand.

10- Research results:

- Graphic design often addresses communication and aesthetics-related challenges, but sustainable graphic design does so in a way that is consciously and purposely less harmful to the environment. In sustainable packaging, the success of the design and the environmental impact are both equally important.
- When a package is more adaptable, consumers are more likely to keep a product and reuse the packaging, keeping products out of landfills. Packaging has many uses in the sustainable design movement, such as reducing consumer burdens, fostering inventiveness, or encouraging the use of more adaptable products in daily life.
- As people's awareness of the effects that packaging and products have on the environment grows, the public's purchasing preferences are shifting in favour of things that make consumers feel better about their purchases. A product's appeal increases in the eyes of the consumer simply by being branded as green, and this has a big impact on the choice of that product.

11- Conclusions:

Sustainable graphic design prioritizes the impact the design has on the environment. It's time for designers to start considering the environment. Eco-friendly graphic design must permeate the industry. There is no avoiding this. The future of graphic design lies in sustainability.

Fortunately, more graphic designers are starting to strive to work towards sustainability. It's critical that each and every designer understand the difficulties we face and their part in solving them. People are creative creatures. Nobody can fix the most important issues facing the world if we are unable to.

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