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Circular Designing and Green Growth: Insights on Future of Sustainability

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Abstract

The movement in sustainability and green growth approaches are not new though its application and broad basing its outcome on business is a growing phenomenon. It involves a set of key stakeholders including, but not limited to, the sovereign governments, businesses and civil society organizations to be able to orchestrate a fine balance between policy, implementation approaches and its review and reporting, including transparency for purposes of gauging uptick and progression of stated mandates. In this day and age, more than anything else, consumer pressure on manufacturers of the products is leading a sort of momentum, witnessing a new era of corresponding public policy with civil society holding any ultra-virus actions to account in quest to safeguarding the interest of consumers stands more nuanced. In this context, the issues of responsible outsourcing, traceability, supply chain management and its bearing on green growth and clean ecosystems will only help the manufacturing processes improve its efficiency and overall outcomes. These outcomes are expected to arrive at an equilibrium product price point, ensure traceability and set standards for fairness in quest for responsible consumption.

Key Words

Circular Designing, Sustainability, Sustainable Development Goals, Green Growth, 2° C, Net Carbon

Sustainability and green growth issues have been evolving since the early 1990s with deep commitments by leading businesses in the West and Europe leading the momentum through embedded business practices of innovation and technology infusion for impact on scale. This, however, has had impact on pricing making such products out of reach of many making a business case for broad basing of such processes through collaboration and financial support to be provided by the global north to the global south in a bid to build an inclusive and equal ecosystem, intended covering large number of consumers on scale while addressing the access issues. In the year 2000, though millennium development goals were announced by the United Nations towards broadening of goals of mutual cooperation and creating an ecosystem for a fairer world, these goals expired in the year 2015 transitioning into 17 sustainable development goals ratified by 193 nations worldwide to work towards a more fairer world where no one is left behind. In parallel, Paris Climate Agreement accord came to be ratified by 187 nations committing to not allow the temperature rise more than 2° C by the year 2030 on their path to becoming a net-zero-carbon economies by the year 2050.

2° C and Zero-carbon Pathways

There are some unsettled issues, however, of financing and technological transfer support to be extended by the global North to the global South in order for the global South to be able to fairly compete and fix its problems of climate crisis and environmental challenges to be able to remain 1.5° compliant by 2030 while working towards a zero-carbon economies by 2050 in a fair and consequential manner.

Notwithstanding the unresolved issues and imminent challenges, the nations in the global South, with support from multilateral institutions, have been acting with agility and ensuring progress on climate and environmental issues satisfactorily. India, Japan, South Korea and China have been achieving good progress through their domestic efforts that combine the pursuits of their internally aligned development goals. The case of India in achieving 2° C

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norm compliance by 2030 is well on way through mindset and lifestyle change and focus on solar energy and e-mobility. India's commitment to a zero-carbon economy by the year 2050 largely depends on the facilitation of global North's green growth funds.

As the concept of circular design is work in progress across sectors, industries and geographies, it has however visible and wide application and potentially high-value outcomes. Economies that are high on this agenda are not only beneficial on leveraging concrete actions from innovative outcomes but also are being able to save cost and contribute more fully to climate and environment issues in addition to being compliant with international multilateral agreements.

Circular Design and Its Role

The role of design is now extending the form and function of the product or service to more contribution to building innovative solutions that emphasize the wise consumption for natural resources. It is the responsibility of the design to build a strategic plan that considers reusing or recycling the materials used in production.

The circular economy has been introduced a few years ago and aims to promote a wider sustainability strategy. The circular design is playing an essential role in this new nonlinear economy through building a design-thinking process that intends to build new business models that consider the future of the product waste in multiple dimensions.

In early 2019, Ellen MacArthur Foundation and IDEO published the *circular design guide* that aims to reduce waste, natural resources consumptions and build new innovative business models that consider alternative futures for the product and its materials instead of turning it into waste. The circular design shifts the *sustainable design principles* from focusing on the product to a more holistic approach to focus on the overall business model (Adele, 2017).

Interdependence Between Design and Economy

The circular design is inherited from the term 'circular economy' giving the fact that design plays an essential role in modern business and economy. The circular economy was first introduced by Pearce and Kerry (1990). They highlighted that the current economy is based on a linear approach that does not consider the sustainable measurements that propose to reduce waste and natural resources consumption.

According to Nat Hunter in the Great Recovery, the natural resources are consumed very fast which reflects on the prices of raw materials. For example, copper prices have tripled in the last three years. In the UK, 290 million tons of valuable resources are turned into waste every day. Additionally, the UK can actually save GBP 220 bn year by simply designing products that aim to eliminate waste.

As the design plays an essential role in the current linear economy, it is expected to play a more potent role in the circular economy (Bocken, 2016). The design for the circular economy is considered a wider approach to the design for sustainability as highlighted by Professor Ruud Balkenende of Delft University of Technology. While the design for sustainability starts with thinking in the product and its eco-impact, the design for circular economy starts by focusing on optimizing the economic potentials of the available resources through a new business model that aims to restore natural resources while enhancing the human health.

The Role of Design in the Circular Economy

According to the above discussions, the circular economy is acknowledging new business models that try to reduce waste and minimize the usage of natural resources through recycling, reusing and regenerating products. One of the examples of these new models is the usage of *Zipcar*—a model that allows consumers to use a car whenever they need instead of buying a car. Another example is the usage of cloud services to store documents and images instead of buying hardware storage devices.

In the circular economy, the extended role of design becomes increasingly important as it contributes to building a new innovative and circular business model (Chapman, 2018). As IDEO is one of the leading companies that promote the design thinking, it presents a design-thinking process that can be adopted to ensure that the circular design goals are met during the new product development (NPD). This process includes four stages: understand, define, make and release.

Elements of Circular Design

The circular design model was introduced by Ellen MacArthur Foundation and IDEO. The process and the model is presented (see Figures 1 and 2), known as the butterfly diagram, which shows that instead of ending the product lifecycle to the landfill, four loops can be used in the following order:

Reuse: In this loop, the product can be reused. For example, instead of selling washing machines, it could be rented when needed.

Refurbish: The product returns back to the company to restore and sell again after full quality check such as refurbished mobile phones.

Remanufacture: The product parts can be detached to be used again in the manufacturing process such as using the electronic parts in the manufacturing process again.

Recycle: The product is recycled to be used in another industry. For example, the high-quality paper can be recycled after use to create cheap paper packs.

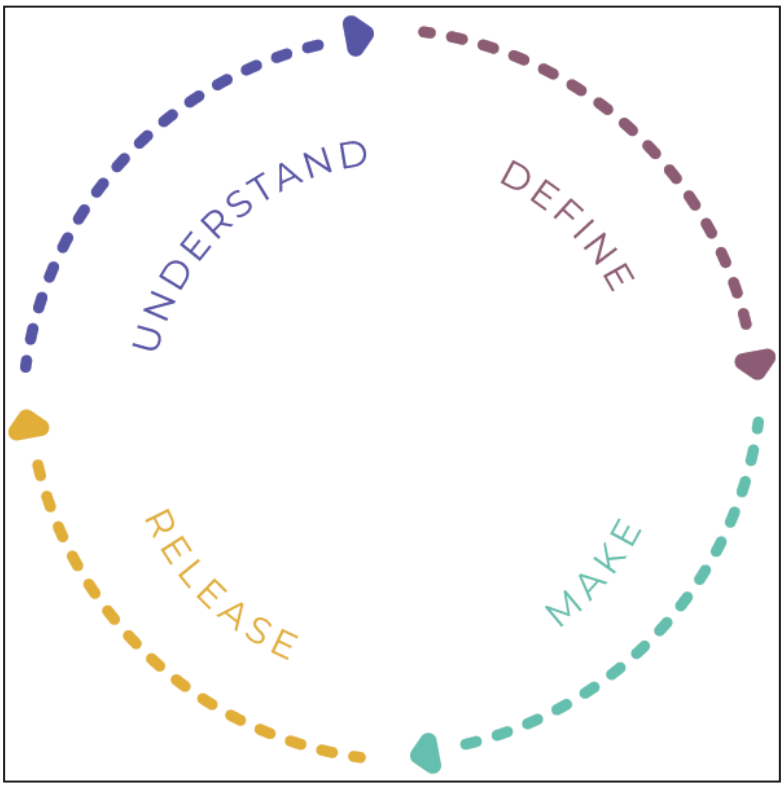

Figure 1. Circular Design Process

Source: https://www.ellenmacarthurfoundation.org/explore/circular-design

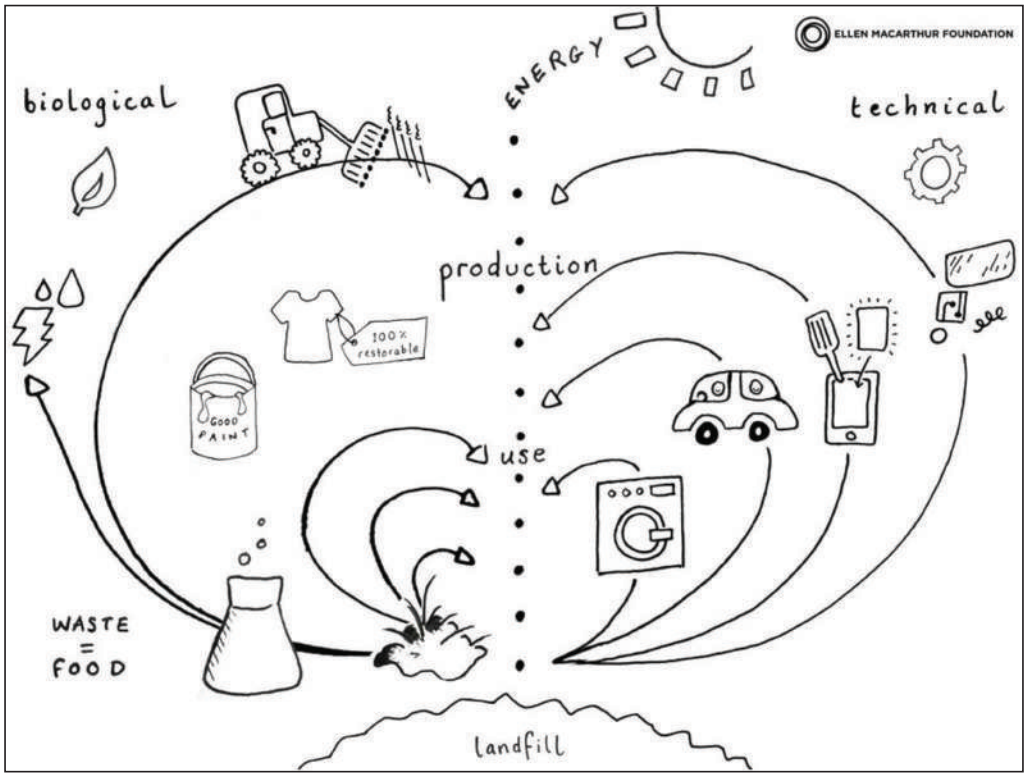

Figure 2. The Butterfly Diagram for the Circular Design

Source: https://www.ellenmacarthurfoundation.org/assets/design/Circular_Flows_Final.pdf

The above four loops can be used to build new circular business models based on the four stages design process highlighted earlier.

Stage 1: Understand
In this stage, the design team along with the stakeholders tries to understand the different products and why the user needs the product (Elzbieta, 2019). Then, they try to brainstorm the different solutions that can be adopted to deliver the same service with considering the circular design loops above. Part of the tools that can be used in this process includes the following:

- *Service flip* is a document that aims to investigate the different products, why the users need it and how the product offering can be altered to become a service that can be delivered to the consumers without any waste.
- *The inside out* aims to investigate the product components and how they can be used after reassembling it to its basic components.
- *The digital system* lets the design team learn from the software industry to build agile, evolved and scalable products.
- *Learn from nature* aims to learn how the nature around us handles its elements including the biological waste.

Stage 2: Define
At this stage, the business goal is defined and the multidisciplinary team is formed. In this stage, the team starts to form the business model canvas that provides a plan for the production process and create the brand promise for the product.

Stage 3: Make
At this stage, the team starts to create a user-cantered research to understand how the final product will look like, brainstorm the product idea and how it reflects the business model defined in the previous stage. Also, this stage involves creating the product prototype and defining the materials that will be implemented in the production.

Stage 4: Release
The product is launched to the market in order to learn the consumer experience through a 'consumer journey map' and other tools to get the consumer feedback about the product. Also, at this stage, the last elements of the business model are completed such as building partnerships (Lewandowski, 2016).

Bilateral Versus Multilateral Approaches

International arrangements are arrived at through bilateral arrangements (between two nations), while others that cover and integrate many and/or several countries at one go are in the nature of multilateral arrangements (Pandey, 2019, November 9). Multilateralism processes currently, largely due to international politics, seem to weaken which is amply reflected in weakening of some of the major multi-lateral institutional arrangements, such as World Trade Organization and the United Nations, which many feel, may not turn out to be good for fairness, openness and transparency of purposes for which these were set up.

Some of the key issues central to finding answers include, but are not limited to, the following:

1. How are various industries, sectors and geographies taking up for implementation the circular designing directed ideas and concepts towards their sustainability of processes, products and efficiency goals?
2. What are the key local-global dimensions and considerations while implementing the contours of circular economy to be able to leverage benefits thereof?
3. Is circular designing a key aspect in enhancing levels of sustainability across sectors and products and geographies?
4. Shall the concept also in some way warrant multilateral approach to escalate the benefits of circular economy equitably?
5. How can local-regional and -global partnerships expedite the efforts of various stakeholders to enhance their efforts in achieving what they have set out for climate and environment protection?
6. How international agreements such as Paris Climate Agreement and UN-backed Sustainable Development Goals impede and/or expedite national efforts towards their remaining 1.5° compliant by 2030 and their targeted focus on reaching a 'zero-carbon' economy status by 2050 (Pandey et al., 2018).
7. Is cost on leading such innovations and processes expected to come in the way of developing economies and what could be financing and policy options to address the issue for a potential parity between global North and global South?
8. What could be some of the drivers of the change including mindset issues?
9. Mindset issues followed by lack of awareness are likely to change over time and hence solutions to these twin issues would be critical for achieving success of the goals of keeping climate change under cheque in quest to achieve net carbon status of economies by the year 2050.

Going forward

Green growth and design thinking are integral to sustainability besides being interdependent and intertwined both from the points of view of mandate and objectives they have inherited and the pathways these two elements

cut across. While green growth is largely driven by improvement in processes, traceability, efficiency, resilience and impact, the circular design offers a unique platform for the actualization of such plans offering an ecosystem approach. Take the ecosystem out and the plank of performance of the green growth droops.

Circular design has its unique building blocks covering products, packaging and services across sustainable material choices, sustainable manufacturing processes and sustainable labour practices embedding values of reuse, repair, recycle and remanufacture. Such an ecosystem offers multiple-use cases for products and services while ensuring durability, standardization and modularity.

In a circular designing, it is important to edit the entire process that there is no waste as its outcome, and in case there is the one, it can have the potential to convert itself into an asset.

Green growth and circular design eventually through both ecosystem approach and inbuilt mechanisms take due care of sustainability that does not only combine broad aspects of technical inputs but more importantly also embed within its scope and impact a layer of traceability to be able to sustain its weight on impact at scale, enhancing value of end products (Pearce & Kerry, 1990).

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