

# INSPIRING CORPORATE ACTION FOR

# - ECOSYSTEM RESTORATION



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# **Corporate Ecology Restoration Roadmap: A Thought - Paper**

# Introduction

The objective in ecology is to deduce the system of life on this planet. Ecology tries to identify the patterns of relationship between living beings and non-living entities. This symbiosis between all life forms and their surrounding environment is akin to that of an intangible web of cross dependence. The marvel herein is how this ecological web always reaches a state of balance in its natural state, such that the entities in the web collectively check each other to maintain that balance without requiring any external intervention.

This ecological system of Nature has always been an abundant source to fulfil the needs and wants of human civilization and thus our dependence on our environment can never be taken for granted. Since the industrial revolution and rapid industrialization, human societies all over the world have extracted maximum resources from this ecological system and such is the case today that the ecological balance has been disturbed due to excessive depletion. As a consequence, concerns such as global warming, climate change, overpopulation, extinction of life forms are now a threat to the very existence of life on planet Earth. Thus, restoring the damaged ecosystems in an efficient and cost-effective way is not only the need of the hour but also our collective responsibility towards Mother Nature.

On this 05th of June 2021 – We celebrate the World Environment Day and also usher into the United Nations Decade on Ecosystem Restoration.<sup>iv</sup> This day marks the beginning of the Restoration Decade – 2021 to 2030, where the next 10 years from now, we shall witness a collective focus on prevention of ecological degradation, strive to reverse ecological degradation and restore ecological balance.<sup>v</sup> This decade of global effort will be aimed at restoration of the planet's ecological system, thus ensuring optimum health for both Human-kind and Mother Nature.

# The United Nations Environment Restoration Decade (2021-2030)

The UN Restoration Decade (2021-2030) is an initiative by the United Nations Environment Programme (UNEP), challenging everyone to restore our degraded ecosystems within a 10-year window. The purpose of the Restoration Decade is to heal the imperilled ecosystem intrinsically and aim at a healthier future. Actions will be focused on reversing the degradation of landscapes, lakes, coastal areas, oceans to regain their ecological functionality and improve their capacity to meet the future needs of the society<sup>vi</sup>.

This challenge can be met successfully only if – governments, private sector partners, academia and civil society all join hands towards a common cause of finding solutions to the restoration of the degraded environment.

The 2030 Agenda for Sustainable Development and its 17 Goals were adopted by the global leaders in September 2015. These Sustainable Development Goals ('SDGs') cut across disciplines, sectors and institutional mandates, acknowledging the integrated nature of the many challenges that humanity faces – from gender inequality to inadequate infrastructure, from youth unemployment to environmental degradation.' The SDGs were adopted in September 2015 as a part of the resolution, 'Transforming our world: the 2030 Agenda for Sustainable Development' and thus the UN Restoration Decade (2021-2030) is aimed at achieving the above 2030 Agenda.

# SUSTAINABLE G ALS





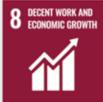


































# Indian Initiatives at the National level

Whilst the United Nation is doing its job in restoring the ecological balance, the Government of India is committed to achieve the 17 SDGs which comprehensively cover Social, Economic and Environmental ('ESG') dimensions of development. The Government of India has assigned the NITI Aayog the role of overseeing the implementation of the 17 SDGs and also spread awareness about these Sustainable Development Goalsviii. It is the government's vision to bring together all the stakeholders in the Indian society to build the requisite capacities for the realisation of the SDGs by 2030.

The incorporation of Corporate Social Responsibility ('CSR') reporting in the Companies Act, 2013 making it mandatory for companies to set aside a percentage of their yearly profits towards social welfare or environment conservation is a step by the government towards actualisation of the goals<sup>xi</sup>.

The recent Business Responsibility and Sustainability Reporting ('BRSR') mandate by SEBI directed towards listed companies to disclose their initiatives on ESG parameters too is an example of weaving the SDG realisation within private business operations<sup>x</sup>.

# Proposal of Corporate Ecological Restoration Plan

## **Ecological Threat**

India witnessed a sixfold increase in annual material consumption between 1970 and 2015, from 1.18 billion to 7 billion tonnesxi. It is forecasted that by 2022, India will be the most populous nation in the world and by 2030 its annual material consumption would reach an exorbitant 14.2 billion tonnes. An inference from the above statistics can be drawn that the extraction of resources would be heavily strained to support the demand of a growing population. For businesses to sustain in such explosive demand, new methods of business operations are a needed requirement. Indian economy works on a linear economic model wherein goods are made, used and thrown. This leads to humongous waste generation and given the present situation, India only recycles 20 percent of its waste.

The present linear economic model has a severe ecological impact as well as social and economic ramifications. The

adoption of a circular economic model and transition from a linear model is the need of the hour, which requires adoption of environmentally aware strategies in operations by business houses. Such new strategies can turn the role of businesses from environment depleters to catalysts of ecological restorationxii. **Economically speaking**, businesses will in the near future be required to adhere to the increasing stakeholder scrutiny and investor expectations vis-a-vis the environmental sustainability and *longevity* of their stakes and investments. This manifests an interestina business context for organizations to operate, since it represents a huge challenge and yet an opportunity at the same timexiii. Organizations that are willing to innovate and re-invent themselves may identify business models and competitive advantage over their peers, while organizations that are slow to respond could face growth challenges.

From Linear
Economic Model to
Circular Economic Model.



Fig.2

# Proposed Methods for Corporate Ecological Restoration Plan

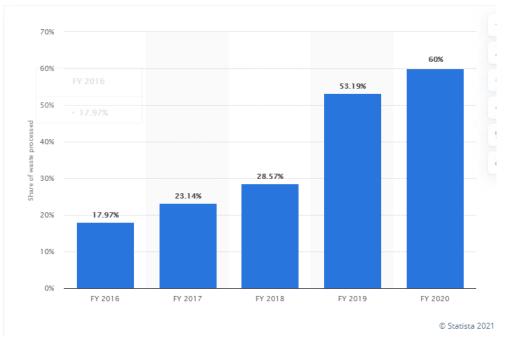
proposed that business organisations should adopt the circular economic model in contrast to linear model of economy that operates on the principle of 'take-make-waste'. A circular economy aims to ensure economic development with benefits to business. society and the environment as well as curbs the negative impacts economic activity has on health and natural systems. Circular Economic model (hereon forwards as CE) prefers activities that save value in terms of energy, raw materials to be used in production and the use of human resources. It encourages the use of products in a manner that is durable, by reusing and recycling them extracting maximum value from already made productsxiv. CE models prevent the use of non-renewable resources and instead encourages to depend upon renewable sources of energy.v. furtherance of the proposal, business organisations adopt the CE model in their business operations and strategies

and should strive to reuse, recycle and products refurbish the to maximum calorific value without depleting the ecological reserves. Such operations would help them reduce carbon footprint (with minimum carbon emissions) and also help restore the nutrient value of the ecological system<sup>xvi</sup>. The CE model pursues corporate actions to be mapped on 17 parameters of the SDGs like good diet for employees, clean water, cleanliness in premises and green energy usage across the value chain.

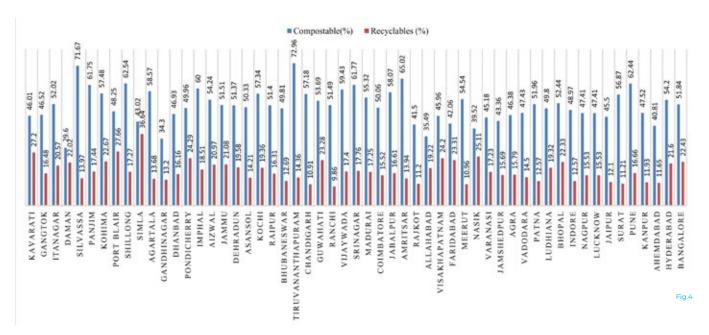
#### Waste Management

The first step towards circular economy is changing our perspective with respect to waste. A new way of dealing with material cycle is imperative, for waste is required to be looked at as a by-product with some nutrients still left to be extracted rather than simply disposing it offxvii. This is where the reduce, reuse and recycle idea creates the loop of circular economy.

## Share of waste processed in India from 2016 to 2020



Private sector's participation can help unlock immense value as well as tap on the opportunities that the transition to circular economy can pose. In India companies such as ITC, Mahindra and Tata along with others have placed importance on adopting ESG practices in their business strategy. If more companies practice such adoption other smaller and newer companies will also be motivated to adopt practices in business that are environmentally beneficial.xviii



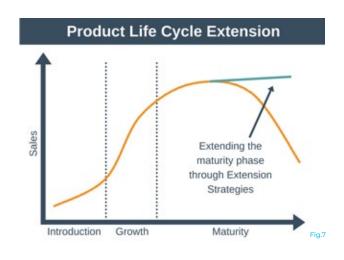
A few examples of circular economic business models are highlighted herein for reference xix-



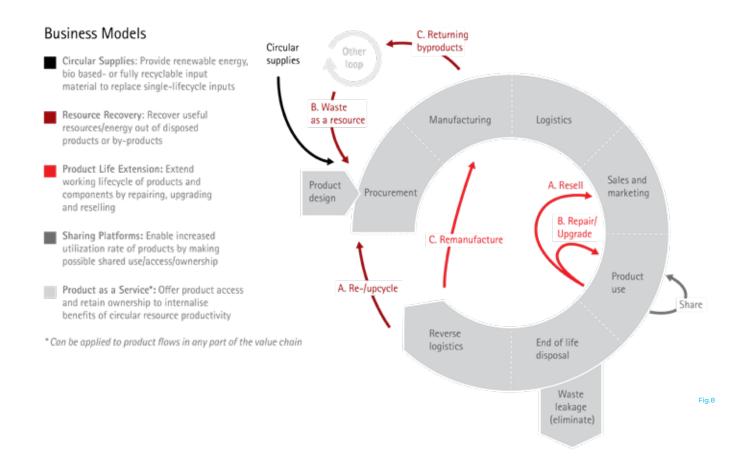
**a.** Recovery and Recycle - Major footwear companies manufacturing waste produced and the post-consumer shoe wastage to convert them into raw material for manufacturing other sport equipment. Thus, this process helps recover useful resources from materials which could otherwise have been discarded as waste. This process helps save depletion of raw material from the environment, decrease the damage to ecological system and also improves the company's business ethics making it more sustainable and investor friendly.



Product's life extension Products such as automobiles and electronics, when near the end of their life cycle, instead of being disposed of as waste are called back by the manufacturers for extracting a lot of useful materials that can be reused in manufacturing new products. Apart from reusing them, some companies even repair the product replacing the dead components with new parts and selling the repaired model as a new model with the same warranty and rights to the customer.



**C. Sharing resources -** This is a major highlight of CE model where an underlying distinction is made between products that are only to be used and products that are to be used only if owned. Ownership patterns are innovated upon and what emerges are business models such as that of leasing or short-term renting of lodging spaces. This helps curb un-necessary construction of buildings, preserving the environment and at the same time being beneficial to all the stakeholder in the business – the person leasing the space for a short time (earning opportunity) and the person benefitting of the lease (less expense compared to hotel room expenses).



**C.** Product as a service - Renting of clothes, charging cost for the usage of light appliances etc help save the consumers the expense they would have incurred on owning the product yet gives them the same facility of utilising the product as a service instead. This business model helps curb the burden on environment raw material extraction and also create a sustainable business model for the company rendering such services.



At the core of CE Model lays a shift towards complete elimination of waste – i.e., waste not in the traditional sense of junk, but any kind of underutilization of assets and resources. These methods of utilising maximum value from the limited resources without overburdening the system and creating a win-win situation for all the stakeholders has immense potential for environmental restoration as well as unlocking immense economic value which in the linear economy remains unutilised. For instance, urban mining from electronic waste such as gold in small quantities which if recycled can help create a sustainable business opportunity. Steel recovery from end-of-life cycle automobiles, plastic recovery from polyethene bags and discarded toys all pose brilliant environmentally conscious and economically sustainable business opportunities.

# Benefits of Corporate Ecological Restoration Plan

# **BENEFITS OF A CIRCULAR ECONOMY**

The future is not just product driven...

A circular economy fosters sustainability in the construction industry by helping close the gap between production processes and the Earth's natural ecosystems:



Fig.10



When industries use their resources to the maximum extent possible along the policy of reuse, recycle and reproduce, it enables them to reduce their cost of production. Such companies will be able to save their costs in respect of purchasing raw materials. The shift to CE will lead to use of more products that are recycled and reused and lessen the dependence of manufacturing companies on expensive virgin material. The amount of capital saved in costs towards purchase of various materials in production can instead be allocated towards remanufacturing and recycling activities<sup>xxi</sup>. Beyond raw material efficiency alone, businesses will also create economically-important outputs, and not contribute to production of waste. Instead, generate raw material for other players in the economy, or even as deliberately-designed flows for their own business by reintroduction and reusing such waste.

## **New Opportunities**

CE model is found to have increased the demand for innovators and entrepreneurs who provide services in respect of recycling the industrial produce and ensuring its

ecological disposal. It will give rise to a new economy that is based on provision ecological servicexxii. A shift towards CE will increase demands for newer business services such as industries that remanufacture parts or components, provide mechanisms and platform for facilitating longer use and more utilisation of products. It will improve the relationship companies with their consumers as they appreciate the companies that work in a sustainable mannerxxiii.





Adoption of CE model, shall help business organisations effortlessly comply with various government disclosure obligations and reporting mandates. Organisations in India are required to follow the ESG reporting indicators according to the SEBI BRSR sustainability framework.xxiv In addition to the Indian reporting requirements, CE model can also be instrumental to companies whilst they prepare their sustainability reports as per global disclosures standards. Frameworks of international repute such as GRI, IIRC, TCFD, SASB etc are recognised in various countries. Ecologically aware business operations will help organisations inadvertently comply with these formats, and thus attract international recognition.

Furthermore, Circular Economy has been increasingly associated with CSR recently. In India, with the enactment of the Companies Act, 2013 it has now become mandatory for Companies to take up CSR projects on social welfare activities. In the present times, the ambit of CSR activities has grown manifold and is playing an important part in achieving the Sustainable Development Goals. Section 135 of The Companies Act, 2013 has made it mandatory for companies fulfilling certain criteria, to implement CSR policies in their business operations and report their performance along those lines\*\*. The implementation of the strategic approach with regard to CSR is increasingly important for the competitiveness of enterprises in terms of the circular economy. As CSR requires undertakings to engage in internal and external stakeholders, this allows them to better anticipate and take advantage of the rapidly changing public perceptions and circumstances of activity.



#### Circular economy Environmental win Environmental win Reduced virgin material and Reduced wastes and emissions energy input - Virgin inputs are predominantly / to the extent possible renewable from productive ecosystems Renewables are CO<sub>2</sub> neutral fuels and their wastes are nutrients that can be used by nature INPUT OUTPUT Economic win - Value leaks and losses are reduced Reduced raw material and - Reduced waste management costs Social win The value in resources is used many times, not only once - Reduced emissions control costs Reduced costs from environmental through new uses of the value embedded in resources legislation, taxation and insurance - New markets are found for the Reduced costs that arise from Increased sense of community, environmental legislation, taxes and insurance cooperation and participation through the sharing economy New responsible business image attracts investment Image, responsible and green market potential - User groups share the function and service of a physical product instead of individuals owning and consuming the physical product

Circular Economy will directly help in improving the environmental performance of the business, which will organically lead to enhanced social integrity and improved governance. This progression towards sustainability not only improves the compliance performance of businesses but also attracts investors, especially, institutional investors interested in sustainable businesses. The CE model practically ensures sustainability and other long-term benefits to industries, at the same time also attracts investor confidence. In a report titled Intentional Design: Embracing the Circular Economyxxi, New York investment firm Cornerstone Capital Group evaluated a range of sectors to identify critical resource issues and identify examples of companies that are adopting circular economy practices into their supply chain management. It was observed that in many cases, companies are increasing their efficiency, reducing waste, and saving money through their investments in the relevant processes and technologies. For investors, forward-thinking asset managers that increasingly incorporate circular economy stands as a crucial consideration in their investment processes. Furthermore, the public and investor sentiment is traversing towards an abhorrence against pollution recently and most investors immensely value the ESG reports of any company before investing. Hence, to appeal to such investors, circular economy is the perfect and only alternative to the current wasteful linear business model in place.

Since the circular economic model creates new profit opportunities and reduced cost of capital, economic growth in terms of GDP is also potentially possible due to lower costs of production and judicious use of inputs. These changes will affect demand, supply and prices eventually influencing the economy as a whole.\*\*\*

Since the circular economy as a concept means using less raw material and more recycled inputs, it will significantly reduce a company's dependence on raw material and increase its resilience, eventually shielding them from future vulnerabilities. Furthermore, threats of disrupted supply chains due to volatile prices or other reasons are also reduced as the businesses already have alternative materials sources. Hence the cost of capital will be reduced marginally along with the creation of a new market for business services like collection and reverse logistics which support reintroduction of end of use products in the system, remarketers and sales platforms of products which facilitates longer use or higher utilisation of products etc.\*\*



Another benefit of circular economy practice being introduced in the business models of companies are green and climate bonds. A green bond is like any other bond where a debt instrument is issued by an issuer for raising funds from investors. However, what differentiates a Green bond from other bonds is that the proceeds of a Green Bond offering are 'ear-marked' for use towards financing 'green' projects. SEBI (Issue and Listing of Debt Securities) Regulations, 2008 govern public issue of debt securities and listing of debt securities issued through public issue or on private placement basis, on a recognized stock exchange. Thus, an issue of Green Bonds in India shall be governed under ILDS Regulations, requiring issuer to make disclosures as required under ILDS Regulations. Green Bonds enhances issuer's reputation and showcases its commitment to sustainable development. They typically have a lower interest rate than the loans offered by the commercial banks. Foreign investors are focussing more on green investments which in turn may help in reducing the cost of raising capital. They have been crucial in increasing financing to sunrise sectors such as renewable energy, thereby contributing to sustainable growth.

The Green Bond Principles\*\*\*, a set of voluntary best practice guidelines, identify key opportunities for green bond projects. Several of these opportunities cover elements of the circular economy, including renewable energy, energy efficiency (including efficient buildings), sustainable waste management, sustainable land use (including sustainable forestry and agriculture), clean transportation and clean water. Investor demand for green bonds continues to grow as ESG criteria become increasingly important. Institutional investors, ESG investors, governments, corporate treasuries and retail investors are all including green bond projects into their portfolios.

# **Conclusion**

As we celebrate this World Environment Day and begin our journey towards the Restoration Decade, business organisations must embrace the changed expectations of the future world. Business organisations must endeavour to take into consideration (in their business strategies) aspects such as how their decisions may impact the communities and the environments in which they operate. Businesses have

successfully played the role of economic engines driving societies towards growth and meeting all its needs and wants, yet time has come wherein their responsibility expands towards the environment and the ecological system's wellbeing as well. Sustainability of business enterprises will depend on its overall contribution to the social wellbeing and initiatives it undertakes such as tackling climate change, community health preservation, education and development etc. Businesses cannot afford to function and survive in the long run unless it behaves in a legitimate and socially responsible manner. Governments of various countries have already begun to scrutinise the activities of companies under different dimensions of sustainable development.

Thus, the corporate ecological restoration plan herein proposed, will not only help organisations strategize their sustainability plans but also improve their stakeholder performance. The proposal of corporates taking the baton to restore ecological balance, will not only be beneficial to the environment but also improve their financial performance, stakeholder relationship, risk management and create new opportunities for business expansion.

# **Legasis Celebrates and Hosts**



# **About Legasis**

Legasis Services Private Limited is a legal support services company that focuses on providing customized legal support services to our client-partners globally. Our solutions embody both, our Knowledge Quotient and high-end technology, in equal proportions. We incorporate Artificial Intelligence, Machine Learning, the Internet of Things (IoT), and Advanced Analytics technologies to help clients turn data into intelligent insights.

Legasis was founded by licensed attorneys with a deep understanding of what companies need most to boost productivity and deliver results. Over the last 15 years, we have created a niche for ourselves with the highest ethical standards and client centricity. Our satisfied clients have stayed with us and referred us to others, allowing us to grow and develop even better products and services.

Our solutions are configurable to meet specific needs and are backed by world-class support. When you collaborate with Legasis, you are not just buying software; you are getting real solutions to your legal support needs.

## References

- i 'What does Ecology have to do with me', The Ecological Society of America (May 25, 2021), www.esa.org/about/what-does-ecology-have-to-do%20with%20me/
- ii Valentine Seymour, 'The Human-Nature Relationship and Its Impact on Health: A Critical Review', Frontiers in Public Health (May 25, 2021), www.frontiersin.org/articles/10.3389/fpubh.2016.00260/full
- iii 'World met target for protected are coverage on land, but quality must improve', United Nations Environment Programme (May 25, 2021), www.unep.org/news-and-stories/press-release/world-met-target-protected-area-coverage-land-quality-must-improve
- iv 'When is World Environment Day', Business Standard (May 25, 2021), www.business-standard.com/about/when-is-world-environment-day
- v 'Decade on Ecosystem Restoration', International Union for Conservation of Nature (May 25, 2021),
- www.iucn.org/theme/nature-based-solutions/initiatives/decade-ecosystem-restoration
- vi 'Decade on Ecosystem Restoration', International Union for Conservation of Nature (May 25, 2021),
- www.iucn.org/theme/nature-based-solutions/initiatives/decade-ecosystem-restoration

vii 'The 2030 Agenda for Sustainable Development', United Nations: Department of Economic and Social Affairs (May 25, 2021), https://sdgs.un.org/goals

viii Sustainable Development Goals, NITI Aayog (May 25, 2021), http://niti.gov.in/reports-sdg

ix Pulari Kurian, 'Sustainable Development Goals and Corporate Social Responsibility Convergence', IMPAKTER (May 25, 2021), impakter.com/sustainable-development-goals-corporate-social-responsibility-convergence/

x Dr. KK Upadhyay, 'Sustainability Reporting – Journey to BRSR', CSR Vision (May 25, 2021), www.csrvision.in/sustain-ability/sustainability-reporting-journey-to-brsr/

xi Prasanna Kartik, 'As India Rebuilds it Economy – It's time to make it circular and sustainable', Observer Research Foundation, (May 25,2021) www.orfonline.org/expert-speak/india-rebuilds-economy-time-make-circular-sustain able/

xii 'Accelerating India's Economy Shift', FICII Circular Economy Symposium 2018 (May 25, 2021)

https://ficcices.in/pdf/FICCI-Accenture\_Circular%20Economy%20Report\_OptVer.pdf

xiii 'Challenges and Opportunities of Circular Economy', Gore Consulting (May 25, 2021),

www.ecomms.agency/single-post/2019/07/30/challenges-and-opportunities-of-the-circular-economy

xiv 'The Circular Economy in Detail', The Ellen Macarthur Foundation, (May 25, 2021) www.ellenmacarthurfoundation.org/circular-economy/concept

xv Prasanna Kartik, 'As India Rebuilds it Economy – It's time to make it circular and sustainable', Observer Research Foundation, (May 25,2021), www.orfonline.org/expert-speak/india-rebuilds-economy-time-make-circular-sustain able

xvi 'Climate Change Mitigation', European Environment Agency (May 25, 2021) www.eea.europa.eu/themes/climate

xvii 'The Future of Waste: Five things to look for by 2025', The Guardian (May 25, 2021) www.theguardian.com/sustainable-business/2015/feb/23/future-of-waste-five-things-look-2025

xviii 'The Future of Waste: Five things to look for by 2025', The Guardian (May 25, 2021) www.theguardian.com/sustainable-business/2015/feb/23/future-of-waste-five-things-look-2025

xix 'Accelerating India's Economy Shift', FICII Circular Economy Symposium 2018 (May 25, 2021)

ficcices.in/pdf/FICCI-Accenture\_Circular%20Economy%20Report\_OptVer.pdf

xx Rinkesh, 'Waste Management and Waste Disposal Methods', Conserve Energy Future (May 25, 2021)

www.conserve-energy-future.com/waste-management-and-waste-disposal-method s.php

xxi 'Financing the Circular Economy: Capturing the Opportunity', The Ellen Macarthur Foundation (May 25, 2021)

www.ellenmacarthurfoundation.org/assets/downloads/Financing-the-circular-economy.pdf

xxii 'Financing the Circular Economy: Capturing the Opportunity', The Ellen Macarthur Foundation (May 25, 2021)

www.ellenmacarthurfoundation.org/assets/downloads/Financing-the-circular-economy.pdf

xxiii 'The Circular Economy in Detail', The Ellen Macarthur Foundation, (May 25, 2021) www.ellenmacarthurfoundation.org/circular-economy/concept

xxiv SEBI issues Circular on "Business Responsibility and Sustainability Reporting by listed entities", (May 25, 2021)

www.sebi.gov.in/legal/circulars/may-2021/business-responsibility-and-sustainability-reporting-by-listed-entities\_50096.html.

xxv Richard Teberner, 'Benefits of a Circular Economy', CMI IT Solutions (May 25, 2021) www.newcmi.com/blog/the-benefits-of-a-circular-economy

xxvi 'Intentional Design: Embracing the Circular Economy', Cornerstone Capital Group (May 25,2021)

cornerstonecapinc.com/wp-content/uploads/Intentional-Design\_Embracing-the-Circular-Economy.pdf

xxvii 'The Circular Economy in Detail', The Ellen Macarthur Foundation, (May 25, 2021) www.ellenmacarthurfoundation.org/circular-economy/concept

xxviii 'Sustainable Finance', International Capital Market Association (May 25, 2021) www.icmagroup.org/sustainable-finance/

xxix Disclosure Requirements for Issuance and Listing of Green Bonds, SEBI (May 25, 2021) www.sebi.gov.in/sebi\_data/meetingfiles/1453349548574-a.pdf

xxx 'Sustainable Finance', International Capital Market Association (May 25, 2021) www.icmagroup.org/sustainable-finance/

#### Fig.1

https://www.un.org/sustainabledevelopment/news/communications-material/

## Fig.2

https://unctad.org/news/circular-economy-silver-bullet-emissions

#### Fig.3

https://www.statista.com/statistics/1147662/india-share-of-waste-processed/)

### Fig.4

https://cpcb.nic.in/uploads/MSW/Waste\_generation\_Composition.pdf used in Akhilesh Kumar, Avlokita Agrawal, Recent trends in solid waste management status, challenges, and potential for the future Indian cities – A review, Current Research in Environmental Sustainability, Volume 2, 2020, 100011, ISSN 2666-0490, https://doi.org/10.1016/j.crsust.2020.100011.

(https://www.sciencedirect.com/science/article/pii/S2666049020300244

#### Fig.5

https://simapro.com/2016/five-ways-to-circular-economy-and-lca-product-as-a-service/

### Fig.6

https://www.futurerecycling.com.au/sustainability/circular-economy/

#### Fig.7

https://expertprogrammanagement.com/2011/01/product-life-cycle/

#### Fig.8

https://www.accenture.com/t20150523T053139\_\_w\_\_/us-en/\_acnmedia/Accenture/Conversion-Assets/DotCom/Documents/Global/PDF/Strategy\_6/Accenture-Circular-Advantage-Innovative-Business-Models-Technologies-Value-Growth.pdf

#### Fig.9

https://www.firmhouse.com/blog/what-is-product-as-a-service-paas

#### Fig.10

https://www.middleeast.polypipe.com/search?combine=Circular+Economy

## Fig.11

https://www.europeanbusinessreview.com/circular-economy-sustainability-and-business-opportunities/

#### Fig.12

Korhonen, Jouni & Honkasalo, Antero & Seppälä, Jyri. (2018). Circular Economy: The Concept and its Limitations. Ecological Economics. 143. 37-46.

10.1016/j.ecolecon.2017.06.041.Accessed at -

https://www.researchgate.net/figure/Circular-economy-for-sustainable-development -The-win-win-potential-of-circular\_fig2\_318385030