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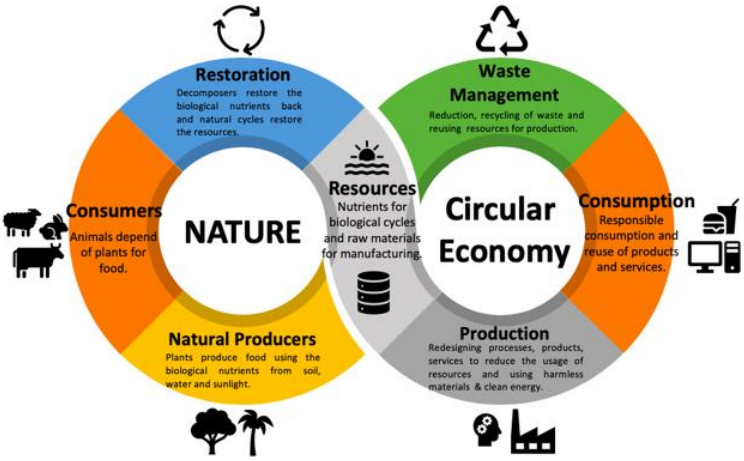
Linear Risks

'Linear Risks' account for developments and trends such as future volatility in resource supply and price, failures in the value chain, and disruptive new business models. To identify 'Linear Risks', the WBCSD uses a typology of four risk factors - market, operational, business, and legal risks.

- **Market risks involve market and trade related factors that impact business' assets and liabilities, such as price volatility, resource scarcity, trade bans, higher interest rates, lower investor interest, etc.**
- **Operational risks involve factors that threaten the internal operations of a firm, such as supply chain failures, internal process failures, worker safety issues, difficulty hiring or retaining talent, etc.**
- **Business risks are a result of emerging societal, economic and political trends that threaten the firm's strategic business plan objectives, such as changing consumer demands, new technologies, new business models, etc.**
- **Legal risk arises from the failure to comply with current as well as future regulations, standards or protocols, such as sourcing rules, new government policies, extended producer responsibility, and fines or lawsuits**



A Circular Economy

"Take-Make-Waste" vs. "Make-Remake-Remake"

Why do people talk about "circular economy" when discussing sustainability? What does economy have to do with sustainability? Can it lead us towards a future in which 9 billion people can live well? Recall that sustainability is considered the "triple bottom line" and includes people, planet, and profits. So, in a sustainable business, profit has an equal weight in relation to people and planet, and that business is striving to protect profits into the future while protecting people and planet. One strategy that businesses are implementing to meet this goal is to move from managing resources in the traditional linear economy that reflects a "Take-Make-Waste" model to a circular economy that reflects a "Make-Remake-Remake" model.

Corporatefinanceinstitute.com states that essentially, a circular economy describes a regenerative economic system. There are three main principles of a circular economy.

#1 Minimization of waste and pollution - The concept suggests the minimization of waste and pollution by reducing damages from economic activities.

#2 Extension of the useful life of products and materials - A circular economy aims to extend the useful life of the products and materials by creating the loops of the materials and products circulating in the economy. The goal is achieved through the active reuse, repair, and remanufacturing of the products and materials utilized in the economy.

#3 Regeneration of natural systems - A circular economy enhances natural capital and creates the necessary conditions for the regeneration of natural systems.

In a traditional linear economy, natural and synthetic materials are indiscriminately combined to deliver products, services, and infrastructure; lifecycles are short and end in the disposal of both natural and synthetic components; and the entire process is fueled by fossil fuels. As a result, resources are depleted, waste accumulates, and value diminishes.

> *"It's time to rethink how we design, make, and use the things we need, from the food we eat to the clothes we wear."*
>
> – ellenmacarthurfoundation.org

About the Author

Donna Switzer is the founder of Beyond Compliance LLC Consulting of the Greater Philadelphia Area, a woman-owned sustainability and environmental, health and safety (EHS) consulting firm that partners with organizations to solve environmental, social and governance (ESG) requirements. Donna is passionate about reducing risks associated with air emissions, wastewater discharges, waste management, and workplace safety. She has worked with a broad range of organizations in chemical, pharmaceutical, manufacturing, construction, insurance, and power sectors in developing, implementing, and evaluating key sustainability and EHS programs.

Donna is an Adjunct Professor at Villanova University and holds the following certifications: Certified Sustainability Practitioner, Certified Professional Environmental Auditor, and Certified Hazardous Materials Manager.

Risks from the exposure to the effects of linear economic business practices - utilize scarce and non-renewable resources; prioritize sales of virgin products; fail to collaborate; and fail to innovate or adapt - will likely negatively impact an organization. *See the Linear Risks sidebar.*

Alternatively, in a circular economy, natural and synthetic materials are distinguished and directed into separate cycles at end-of-life; lifecycles are long and include mechanisms for recovery, recycling, reuse, and sharing; and the process is fueled by renewable resources. In this scenario, resource consumption is stabilized, waste is eliminated, and value is maintained. Circular economy aims to reach the maximum efficiency in the use of finite resources, the gradual transition to renewable resources, and recovery of the materials and products at the end of their useful life.

A 2017 WBCSD publication found that 80% of companies surveyed cited **accelerating growth or enhancing competitiveness** as the primary driver for circular strategies. Only 20% recognized risk mitigation as a value driver for moving towards a more circular model.

Sometimes businesses stay stubbornly stuck in a linear economy because it is predictable and controllable whereas a circular economy is complex and unpredictable. However, to keep products, components, and limited resources at their highest utility and value at all times, engineers must make the shift to circular systems design. To make the shift, engineers can:

- Design out waste
- Build resilience through diversity
- Work toward energy from renewable resources
- Think in systems and cascades

Examples of companies shifting to circular systems include.

- Manufacturing: Siemens redesigns manufacturing processes to be more efficient and flexible using insight from analytics.
- Logistics: Ikea optimizes truck and container loads to minimize transportation with smart packaging.
- Design: Adidas replicates genetic sequences of spider silk to create bio-based nylon replacement.
- Product Use: BMW and Daimler started a joint venture for a car sharing platform that offers a product as a service, pay as you go solution to urban mobility.
- End of Use Recycling: Interface carpet tile manufacturer partners with global communities enabling residents in poverty-stricken areas to exchange discarded nylon fishing nets for an additional source of income. Those nets become face fiber in the carpet tiles.

In conclusion…

Apart from strong moral arguments, the transition to a circular economy will be driven by the promise of additional business opportunities. This includes material savings, increased productivity and new jobs, and possibly new product and business categories. All in all, the circular economy will lead us towards a future in which 9 billion people in 2050 can live well and sustainably.

If you would like more information about how you can plan for and implement a successful sustainability program, please contact us. We can work with you to illustrate your risk of staying in a linear model, evaluate alternative materials or sources, determine how your product use and end of use may be adjusted to be re-usable, or identify for the engineers in your organization the tools necessary to re-design for remake.

Resources:

https://corporatefinanceinstitute.com/resources/knowledge/economics/circular-economy/

https://www1.villanova.edu/university/engineering/academic-programs/departments/sustainable/executive-education.html

https://www.wbcsd.org/Programs/Circular-Economy/Factor-10/Resources/Linear-Risks

https://www.weforum.org/agenda/2014/01/need-circular-economy-revolution/

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