



PracticalSustainability

...with you from theory to practice



The Circular Economy

Presented by: Karen Formosa

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Introduction

What is the Circular Economy?

The circular economy is a transformative approach to economic development that benefits businesses, society, and the environment.

It focuses on creating a closed-loop system and aims to minimize waste and maximize the use of resources by rethinking how products are designed, used, and disposed of.

It seeks to keep resources in use for as long as possible, extract the maximum value from them while in use, and then recover and regenerate products and materials at the end of their service life.



The circular economy promotes principles like *reduce*, *reuse*, and *recycle*.

Linear vs Circular

Before diving into strategies that organizations can implement to become more circular, let's briefly examine the differences between the traditional linear economy model and the circular economy model.

	LINEAR ECONOMY MODEL	CIRCULAR ECONOMY MODEL
FLOW OF MATERIALS	One-way flow from resource to waste	Closed loop keeping resources in use
PRODUCT LIFE CYCLE	Short-term use with disposal at the end	Extended use with multiple life cycles
ECONOMIC APPROACH	Growth through increased production and consumption	Growth through efficiency, innovation, and value retention
CONSUMER MINDSET	Ownership and disposability	Access over ownership, participation in maintenance and recycling

This simple table highlights the main differences and helps show why the need for a change to a circular model.

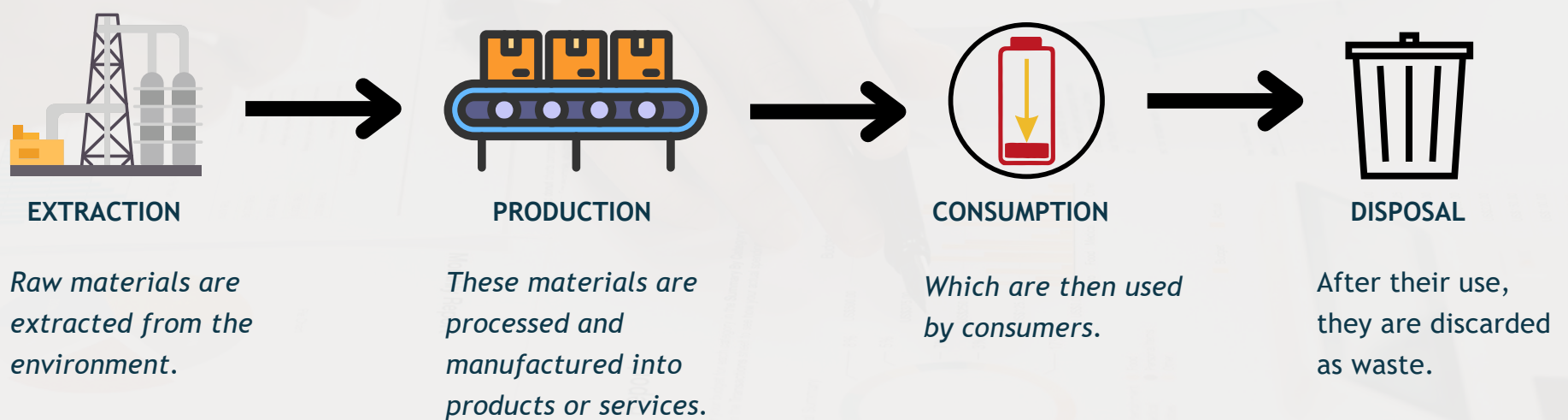
It should also be said, however, that it is quite hard to find pure versions of either models in the real world – rather, it is better to consider linear and circular as two opposite economic models and that organizations exist somewhere on a scale in between these two extremes.

The Linear Economy Model

The linear economy model uses a very much straightforward approach and is often described as a one-way system of resource use.

It follows what is known as the "take-make-dispose" path.

Flow of the Linear Economy Model



Take

Raw materials are extracted from the Earth. This includes mining minerals, cutting down forests for timber, drilling for oil and gas. Essentially, it is pulling resources from nature without necessarily considering their renewability.

Make

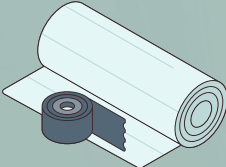
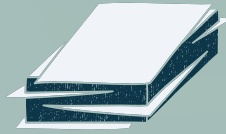
The extracted raw materials are manufactured into products. Industries transform these materials into goods, ex. clothing, electronics, furniture.

Dispose

After the products are used, they are discarded. Often, they're thrown away after a short lifespan, ending up in landfills or incinerators. This creates waste and environmental pollution.

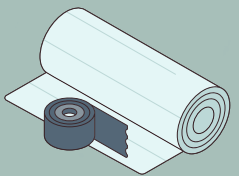
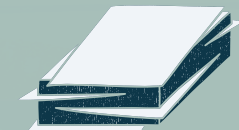
A Simple Example: Disposable Coffee Cups

Take



Trees are cut down to produce paper, and oil is extracted to make the plastic lining.

Make



The materials are then manufactured into single-use coffee cups.

Dispose



After one use, the cups are thrown away.

Characteristics of the Linear Economy Model

- ▶ It is very **resource intensive**, in that, it heavily relies on the continuous extraction of natural resources.
- ▶ It has a **high waste generation**, in that it creates significant waste. This is because products and services are designed for the short-term and are often discarded after a single use.
- ▶ It has a significant and negative **environmental impact**. The process contributes to resource depletion, pollution, and environmental degradation.
- ▶ As resources become scarcer, extraction and production costs rise, leading to **economic instability** and increased prices for consumers.
- ▶ Communities near extraction sites and waste disposal facilities often endure harmful health and environmental effects. These consequences can lead to **social inequalities**.

The linear economy model, with its **Take → Make → Dispose** framework, has been the backbone of industrial and economic growth for decades.

However, its inherent reliance on finite resources and unsustainable practices has led to significant environmental, economic, and social challenges.

Something has to change.

The Need For Change

Being that the resource availability is finite, (i.e. limited), and the waste is high - in the long run, the linear model is **unsustainable**.

And as resources become scarcer, costs for extraction and production rises, which also makes the model less economically viable.

These downsides, along with others, are the drivers for ***circular economy models***, which promote resilient and regenerative systems that can adapt to future challenges and opportunities.

Transitioning from a linear economy to a more sustainable model is not just an environmental necessity but an economic and social imperative.

The circular economy offers a viable alternative, aiming to create a closed-loop system where resources are continually reused, repaired, and recycled.



The Circular Economy Model

In contrast to the linear economy, a circular economy aims to address the different challenges by designing out waste, keeping products and materials in use for longer, and regenerating natural systems.

It can be applied to:



PRODUCTS

Creating durable products that can be repaired or upgraded instead of being discarded.



SUPPLY CHAINS

Establishing closed-loop supply chains where materials are continually cycled back into production.



BUSINESS MODELS

Shifting from ownership to service-based models, such as leasing or sharing platforms, to maximize product usage.

Business Participation

Organizations can participate in the circular economy by adopting various strategies and practices (enablers).

These strategies tackle every aspect of the product cycle from design to recovery, and span different fields of technology, policy, operations and consumer behaviour.

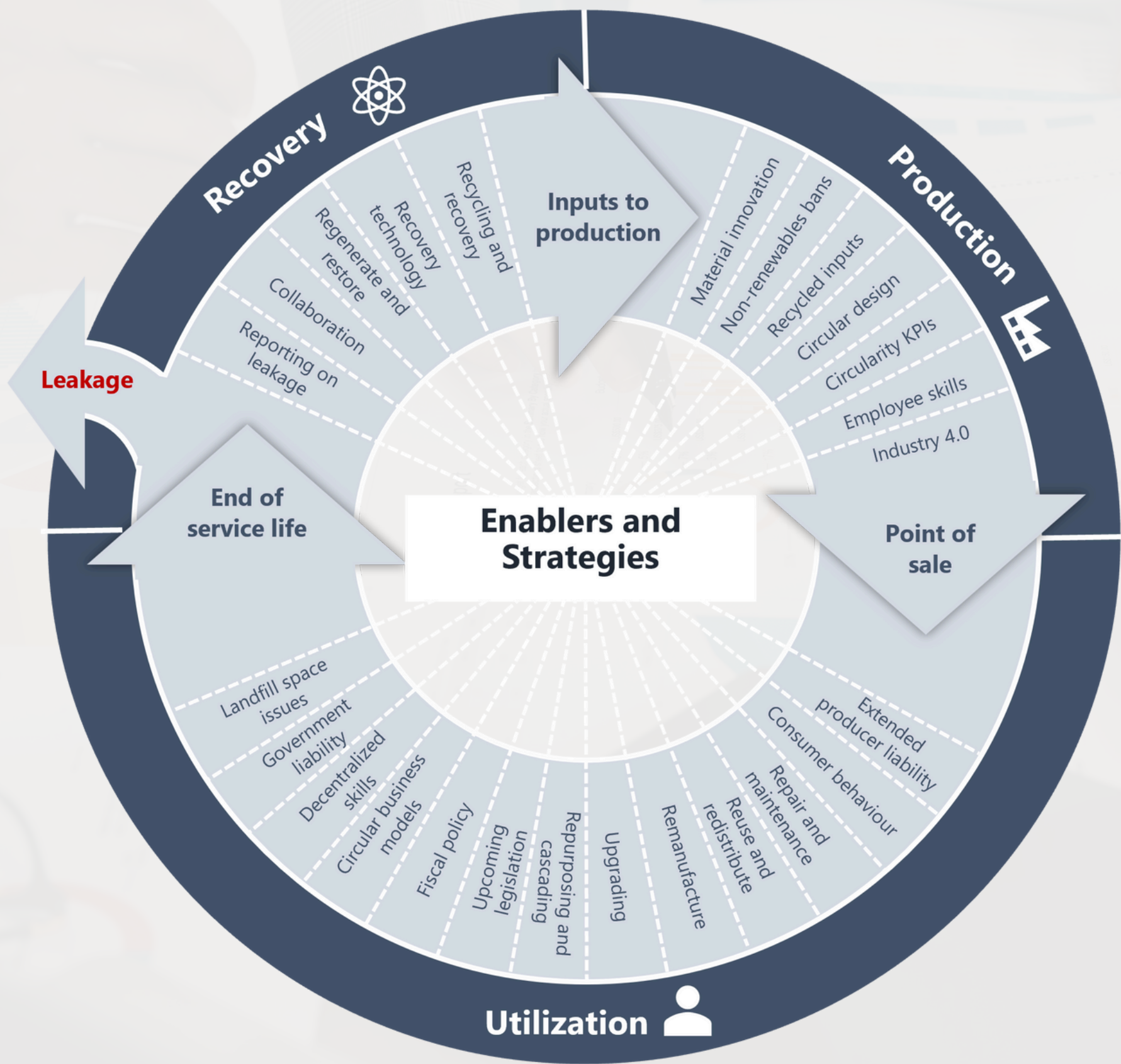
By adopting these practices, organizations can contribute to a more sustainable and resilient economy while also gaining competitive advantages and meeting the growing demand for environmentally responsible products and services.

All the enablers are important in different contexts - some are more relevant in particular areas than in others.

Let's have a look at what these are.

Strategies and Enablers

This diagram below gives a holistic view of the strategies and enablers organizations can use to participate in the circular economy.



It looks at these circularity enablers in three different stages.

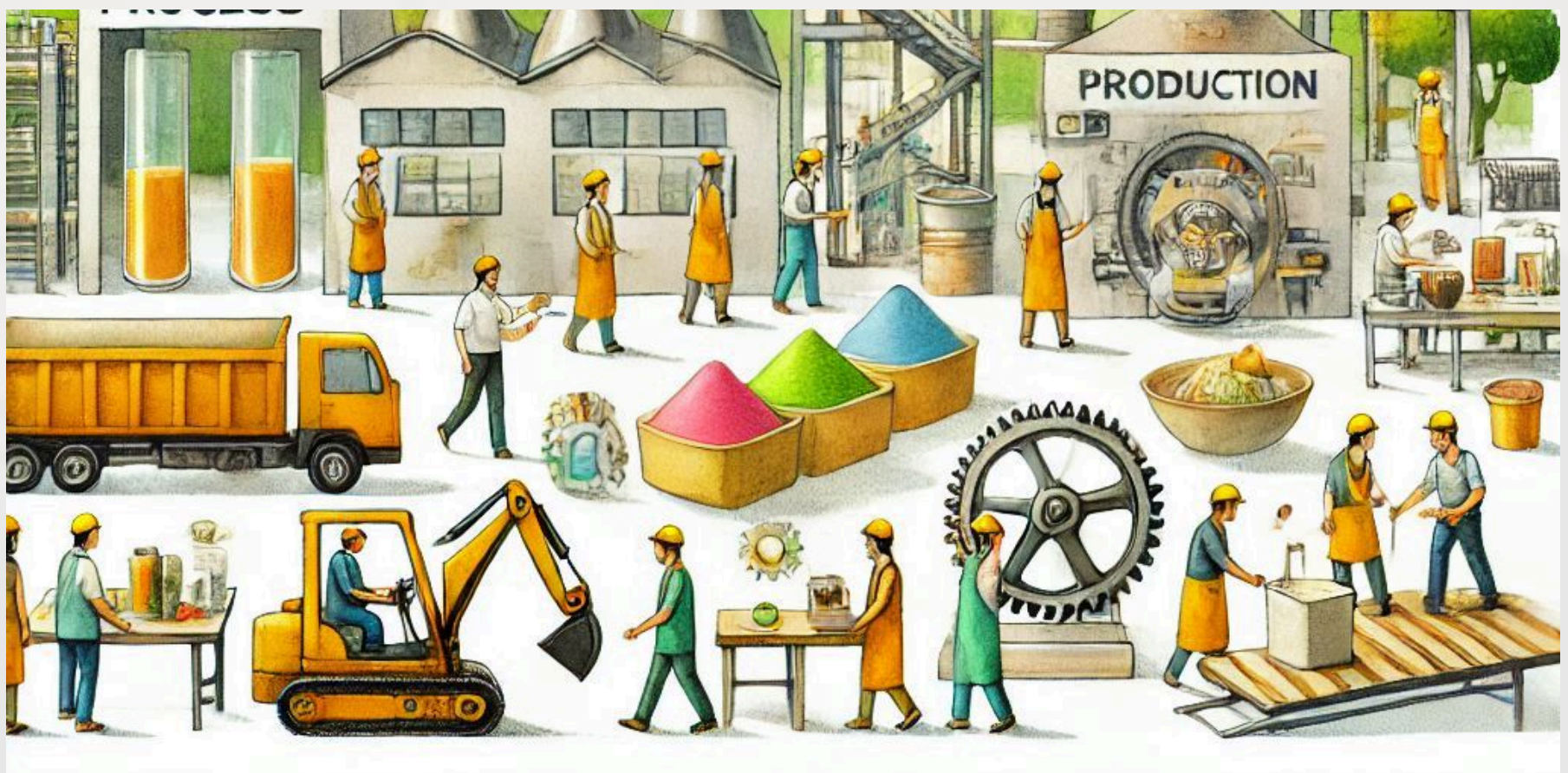
Production

Starting from the very beginning of the product life cycle - the ***inputs to production***.

To make a product more circular before and during production, it's crucial to focus on design, materials, and manufacturing processes that emphasize sustainability and resource efficiency.

Outlined here are the various strategies that can be undertaken by organizations to be more circular at the initial stages of a product's life.

- **Material Innovation**
 - **Recycled Inputs**
 - **Circularity KPIs**
 - **Industry 4.0**
 - **Bans On Non-Renewables**
 - **Circular Design**
 - **Employee Skills**



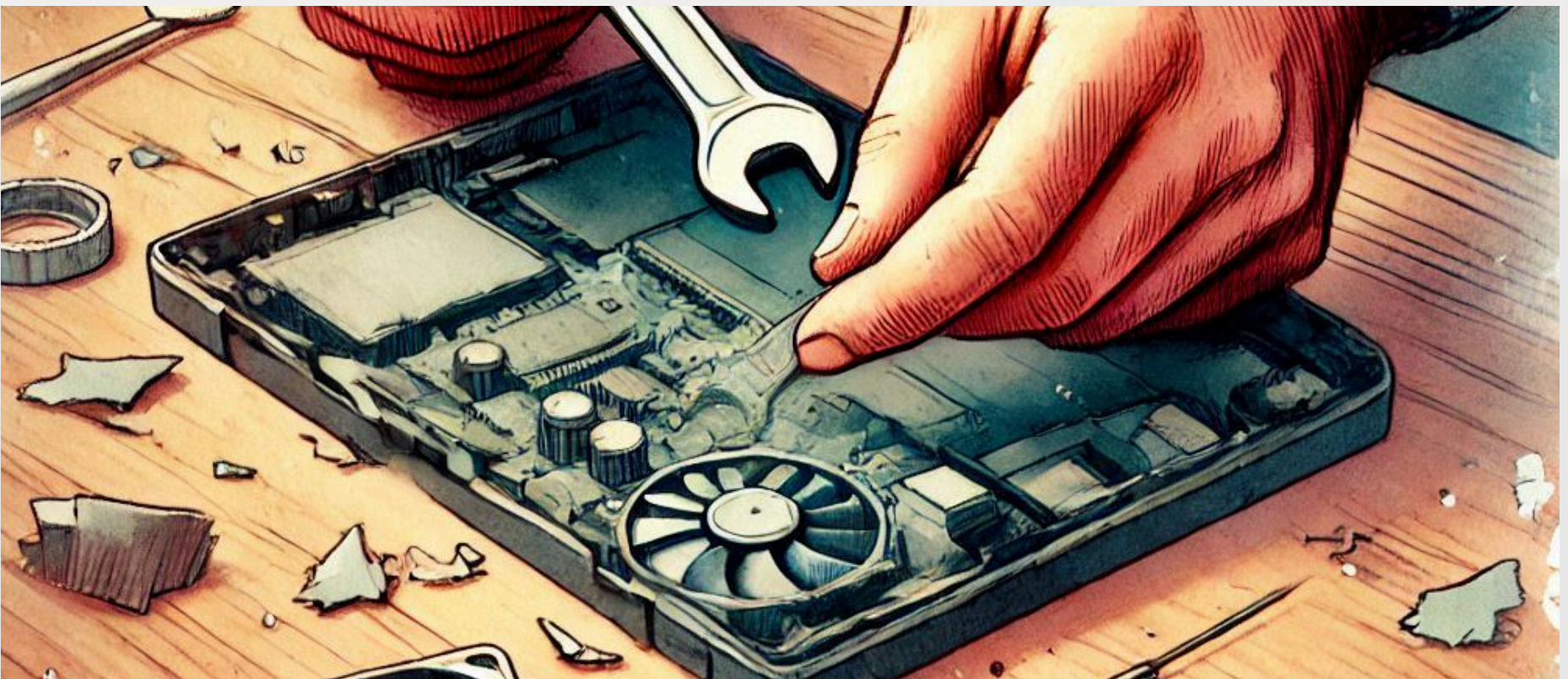
Utilization

How can the product or service be more circular while in use? Who is responsible for it?

Making a product more circular while in use focuses on maximizing its utility, extending its lifespan, and ensuring that it remains within the economic loop.

Here are some strategies to achieve this:

- | | |
|-----------------------------------|--------------------------------------|
| → Landfill Space Issues | → Extended Producer Liability |
| → Government Liability | → Consumer Behaviour |
| → Decentralized Skills | → Repair and Maintenance |
| → Circular Business Models | → Reuse and Redistribute |
| → Fiscal Policy | → Remanufacture |
| → Upcoming Legislation | → Upgrading |
| | → Repurpose and Cascade |



Recovery

At this stage, the focus lies on what happens to the product or service when it reaches its end of life.

In a circular economy, the end of a product's life is not seen as the end but rather as a new beginning. And so, by focusing on the recovery of a product, it creates a sustainable, closed-loop system where materials continuously cycle through the economy, reducing waste and conserving resources.

- ➔ **Recycling and Recovery**
- ➔ **Recovery Technology**
- ➔ **Reporting on Leakage**
- ➔ **Regenerate and Restore**
- ➔ **Collaboration**



Leakage

It is almost impossible to think of any business as being truly circular and therefore having a fully closed system. There will always be some leakage.

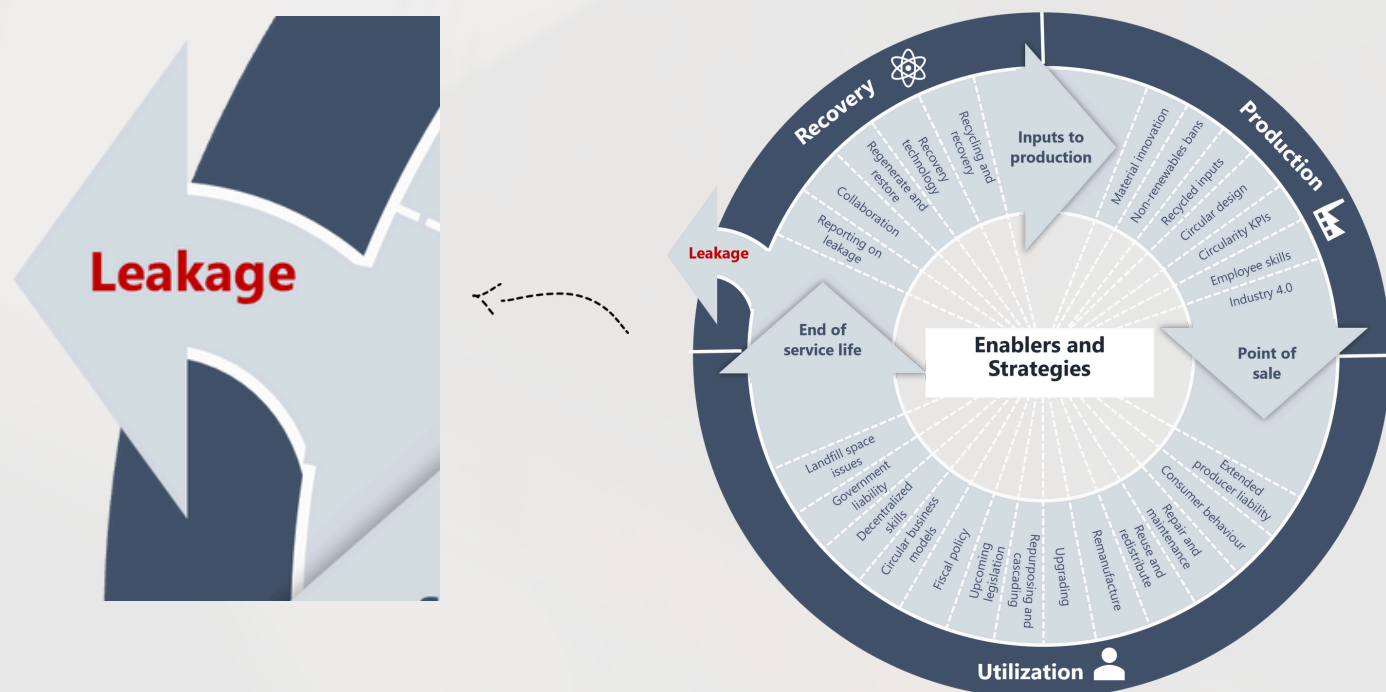
Furthermore, within the same business, there will be areas that are more circular than others.

Looking back at the diagram, **leakage** is shown as an arrow jutting out of the diagram and it refers to the loss of materials, energy, or value from the system.

Essentially, it's when resources or products escape the intended circular loop and end up as waste or pollution. It is that part of the product or service that *cannot* be recovered or reutilized.

This can happen at various stages, such as during production, consumption, or disposal.

Circular models aim to close these material loops, thereby reducing leakage of material to energy recovery or landfiling - hence the term circularity.



Benefits to Business

Participating in the circular economy offers numerous benefits to businesses.



ECONOMIC ADVANTAGES

Cost Reduction

By reusing materials and reducing waste, costs associated with raw materials and disposal can be cut down.

Revenue Streams

Circular models can open up new business opportunities, such as leasing, refurbishing, and recycling, which can generate additional revenue.



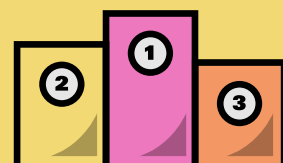
ENVIRONMENTAL SUSTAINABILITY

Resource Conservation

Circularity help conserve finite resources by extending the lifecycle of products and materials.

Waste Reduction

Minimizing waste through reuse, repair, and recycling, reduces the environmental footprint of businesses and helps combat pollution.



COMPETITIVE EDGE

Market Differentiation

Companies can differentiate themselves from competitors by showcasing their commitment to sustainability.

Customer Loyalty

Consumers prefer to support brands that prioritize environmental responsibility, leading to greater customer loyalty and brand trust.



REGULATORY COMPLIANCE

Meeting Standards

With the increasing regulatory pressures, circular practices help businesses stay compliant with laws and standards.

Avoiding Penalties

Non-compliance with environmental regulations can result in legal actions and hefty fines, which can be avoided through sound circular practices.



INNOVATION AND RESILIENCE

Driving Innovation

Circularity encourages businesses to innovate in product design, supply chain management, and business models.

Building Resilience

Reducing dependence on raw materials and creating closed-loop systems can make businesses more resilient to supply chain disruptions and resource shortages.



SOCIAL RESPONSIBILITY

Community Engagement

Circular practices often involve local communities, leading to job creation and social benefits.

Corporate Social Responsibility (CSR)

Demonstrating a commitment to sustainability aligns with broader CSR goals and enhances a company's reputation.

Conclusion

Transitioning to a circular model is not just a trend; it is a strategic move towards a sustainable, resilient, and prosperous future for businesses and the planet.

Circularity ensures that businesses are prepared for future challenges and creates a balanced approach to resource use and waste management.

Also, as consumers increasingly demand sustainable practices, businesses that prioritize circularity will be well-positioned to meet these expectations and drive positive societal impact.

The enablers explained here, are often referenced in isolation, but looking at them holistically gives a general understanding of what the enablers mean in the context of the circular economy.

Moreover, understanding them provides a practical view of how an internal leader, and the organization, can actively participate in circularity.

Circularity in business is a win-win strategy that ultimately aligns economic success with environmental stewardship.

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