workbenchx

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An Introduction to Circular Economy

A LOT of money is being left on the table; the world's leading Original Equipment Manufacturers (OEMs) for components like electric motors and bearings through to platforms like cranes are searching for ways to increase their participation in the circular economy. Their motivation ranges from legislative pressure, a desire to reduce waste, promote sustainability, increase operating margins to a simple desire to protect their brand.

That sounds great, though what does circular economy mean? According to the Ellen MacArthur Foundation there are three key principles: eliminate waste and pollution, circulate products and materials at their highest value as well as regenerate nature. A scientist would just say, minimize entropy increase in our supply chains. The figure below synthesizes how to accomplish this, using techniques such as maintenance or refurbishment to keep engineered equipment operational as long as possible.

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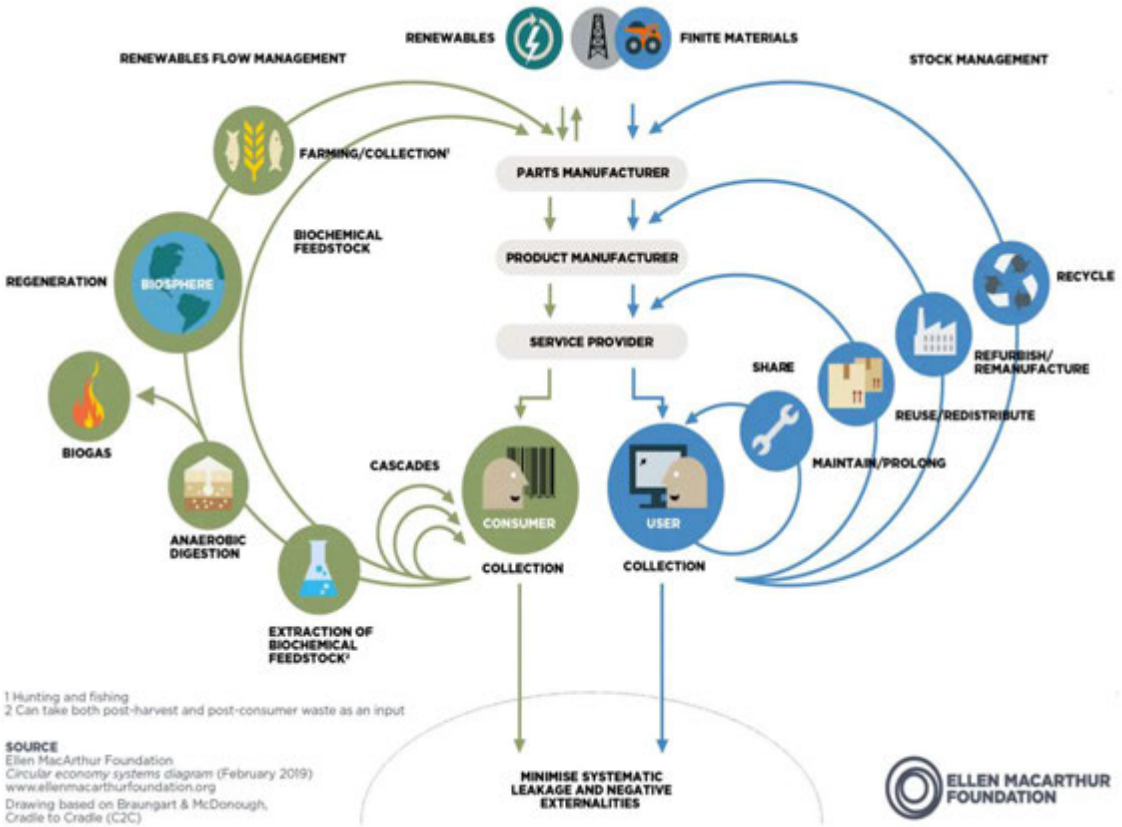

Butterfly Diagram from Ellen MacArthur Foundation

On the technical (right) side the distinction between the loops is frequently highly subjective. The UN's International Resource Panel make efforts to differentiate between repair, refurbishment and remanufacture. Technically this drills down to expected life cycle implications and whether the operation happens in the field, workshop or factory is also important. From a commercial perspective the primary difference is warranty implications for different operations. Though practically none of these are legally protected terms, as such different businesses offer services which blur the boundaries.

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Remanufacturing, a circular process and its benefits

Remanufacturing is a crucial process for circular supply chains. Remanufacturing involves restoring used products to like-new condition with a structured process that involves (1) collection and inspection of used products, (2) disassembly of products, (3) cleansing and surface processing of subparts, (4) inspection and sorting, (5) component remanufacture and replenishment by new components, (6) product reassembly, (7) final inspection. This process extends the life of industrial equipment and offers substantial economic and environmental advantages. Read here for more detail.

Cost Savings: Remanufactured products typically cost 30-40% less than new ones, providing significant business savings. For instance, SKF's remanufacturing services have helped companies reduce their maintenance costs by up to 50% while extending the service life of their equipment.

Environmental Impact: Remanufacturing significantly reduces waste and conserves raw materials. Caterpillar's remanufacturing program, for example, has helped divert millions of tonnes of materials from landfills, demonstrating the substantial environmental benefits of this approach.

Energy Efficiency: The remanufacturing process consumes less energy compared to producing new products. ABB's remanufacturing efforts have shown that this process can reduce energy consumption by up to 60% compared to manufacturing new equipment.

Job Creation: The remanufacturing industry creates skilled jobs in local communities, contributing to economic growth and stability.

Supply Chain Resilience: Circular supply chains can help companies reduce their dependence on raw material imports, improving supply chain resilience.

The economic activity for US remanufacturing was estimated at US$ 60 Billion in 2019 with only approximately 5 % of eligible goods undergoing the process. This implies an opportunity of US$ 4.8 Trillion, taking a pessimistic view for savings of 20 % for remanufactured goods, which implies inefficiencies of US$ 1 Trillion in the global economy.

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Businesses have been doing this for decades

Most businesses operating heavy equipment have actually being engaging in circular economy for decades. It is typically done for large high value assets but not for components like bearings. With lots of names like repairables, rotables, off-site repair, rebuild and many more. The core aspect of activities is the same, a piece of equipment is sent off for another party to do work on it before it returns to site for operation.

The reason this US$ 1 Trillion opportunity exists is historically the cost of accessing the opportunity has been seen as greater than the value. The drives for the high costs include:

- Difficult to connect end-of-use parts to circular economy service providers.
- Expensive to assess the condition of end-of-use parts.
- Not cost-effective to execute circular economy activities

WorkbenchX is building a technology solution to eliminate these friction points. To change the point where it makes sense to do investigations to find circular solutions for electro-mechanical engineered equipment and components.

Opportunity for your business

The true impacts of adopting circular processes in an organization's operational efficiency are challenging to state upfront. Case studies from ABB and SKF show that financial savings of 40% can be achieved or that life extension can be extended by up to 50%. Want to see how WorkbenchX's innovative platform can help turn your waste to cash? Schedule a call to see possible impacts.

About WorkbenchX

WorkbenchX's mission is to accelerate the world's transition to a circular industrial economy. It is bringing to market an innovative network platform that bridges the gap between original equipment manufacturers, equipment users, and service providers to build a circular industrial economy. With an AI-powered supply chain platform for the circular economy, WorkbenchX focuses on closing the loop for industrial components, equipment and machinery. Its primary goal is to make it easy to identify, execute, and report on the highest-value circular opportunity.