The Circular Economy:

A New Means of Production

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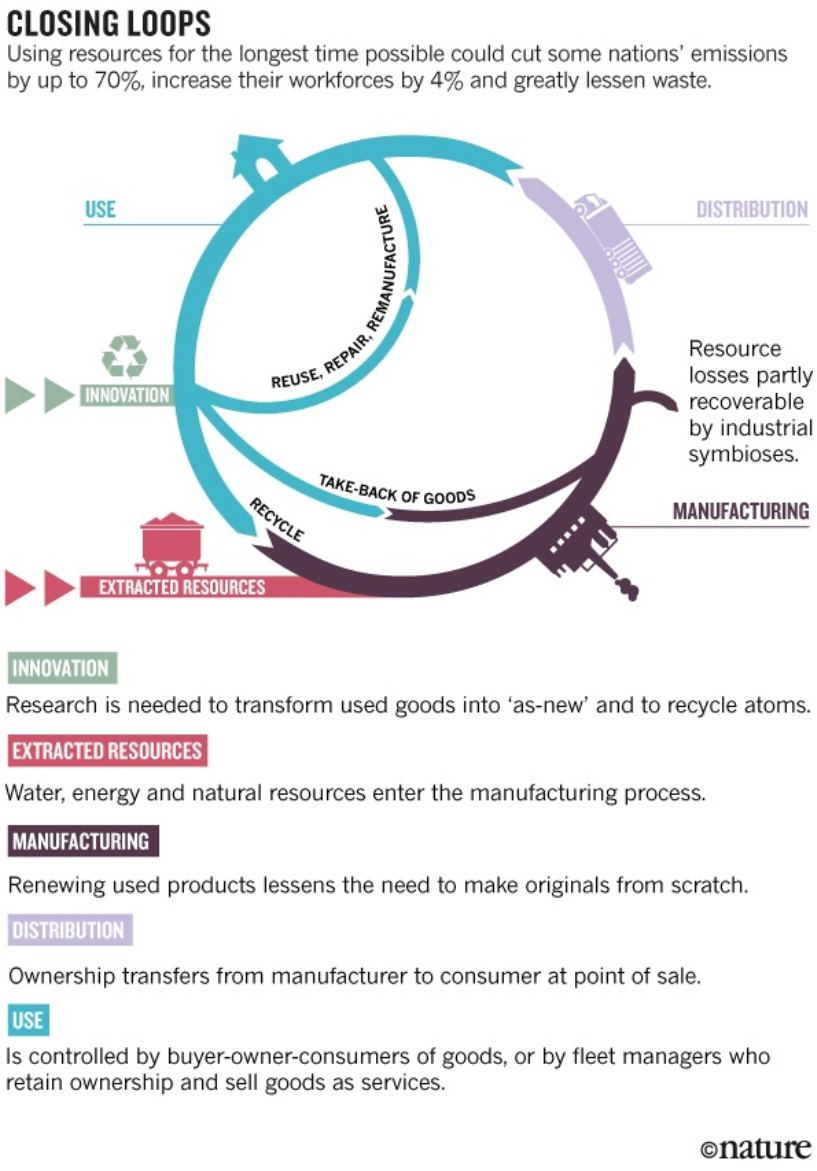
The Human Anomaly

In nature, one organism's trash is truly another organism's treasure. Within a food-web, thousands of species are intertwined through a series of relationships that, while not always intentional, allow for the proper allocation of resources for all. While the average person is most likely acquainted with the natural model of "predator vs prey", what is unseen in these ecosystems is of equal importance. Take the example of the Sea Cucumber, which obtains nutrients by feeding off of organic debris on the ocean floor. In addition to its role of a natural vacuum cleaner, the Sea Cucumber gives back to its environment by recycling nutrients into the food-web and filtering ocean sediments. Not only that, but its eggs are a source of nutrients for a large variety of marine animals. Detrivores like this are a vital part of the Earth's many ecosystems, and yet their ability to thrive off of waste products while giving back to their ecosystems is not emulated in human activity. Instead of living like these adapted species, the current economy refuses to adapt its ways of consumption to something more efficient and beneficial for all. Capitalism in its current form exists in the form of a wasteful linear economy. What does this mean? Well, to put it simply, it fuels the wasteful culture

that exists within modern capitalism. In a linear economy, a product's life is simple yet inefficient. Companies harvest raw materials, turn them into various products, sell them to consumers, and then are thrown away by consumers when the item's lifecycle has come to an end. The average person does not need to be an economist to understand why this cycle is unsustainable, as new raw materials are needed for all production and all trash is simply dumped into the Earth. In terms of consumption, humans are an anomaly in nature that is incapable of recycling its resources. What if this were not the case? What if humans connected the "loose ends" in their consumption and created an economy that reflected the efficiency found in nature? The answer is a circular economy, and it is more attainable than one would think.



What is it?

What is a circular economy and what processes does it entail? For starters, a circular economy is broken into two sectors. The first "half" of a circular economy focuses on companies that "foster reuse and extend service life through repair, remanufacture, upgrades, and retrofits". Additionally, the other "half" of a circular economy focuses on recycling goods in order to turn old wastes and goods into new or "as-new" resources. For example, look at this potential scenario for tire companies. If tires are made with the intention of having a long and durable life, existing

industries could expand by incorporating new branches that exclusively repair and regroove tires. Replacement tires are not out of the picture, however, as used tires could be collected by waste management services and sold back into the tire manufacturing industry. For example, Michelin tires have “developed mobile workshops to repair and regoove tire at clients’ premises and aims to develop products with longer service lives”, with “worn tires sent to Michelin’s regional plants for retreading and reuse”. Linear economic models currently are focused on minimalizing waste costs through landfill disposal rather than recycling, but in a circular economy these wastes are turned into manufacturing inputs. While this may sound easy, there are a few roadblocks that are currently impeding progress. Technology needs to “catch up” with the newest recycling demand of this generation: recycling atoms of metals on a large scale. Some companies have already achieved this, but the process consumes a large amount of energy while only partially recovering the metals. The ability to re-harvest precious metals will give a circular economic model more agency than every before, as companies will be able to de-polymerize, de-alloy, de-laminate, de-vulcanize and de-coat materials that can be remanufactured and sold again. Another hurdle currently stands in the way of the circular economy as well: convincing businesses and consumers that new products do not always equal better products. The culture of capitalism thrives off of “new”. New products are the life blood that keeps the machine from breaking down, and without “new” there would be no catalyst driving the linear economy. Even the way economists currently measure economic success, GDP, only measures the amount of “new” products sold. “New” is so ingrained into our modern capitalist cultures that it will take huge government efforts and further education on the topic within the general public for the idea to take off. China is an example of a government that has successfully begun to incorporate circular economic ideas into its policies. Taking a closer look into China as a case study will allow a closer look into the potential benefits of implementing a circular economy, and will provide evidence for how it is possible to implement this ideology even in the United States.

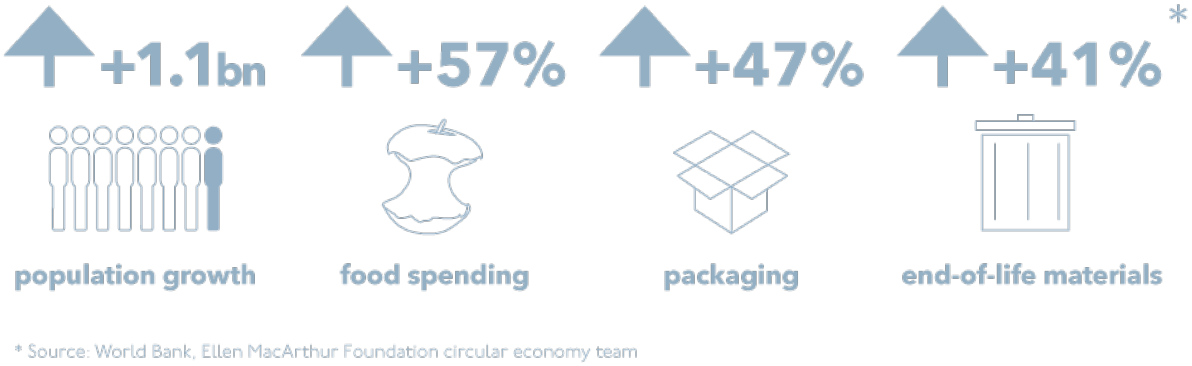
Case Study of China

In 2011, China consumed more raw materials than the 34 countries within the Organization for Economic Co-operation and Development (OECD) combined, totaling to 25.2 billion tones. It took .54 kilograms for OECD countries to produce $1 worth of U.S GDP, while it took China 2.5

kilograms of materials to produce that same dollar of revenue. In addition to this, 30% of China's total import costs resulted from imported fuels and minerals in 2012. What was the response to this? A circular economy. China enacted legislature in 2005 in order to "close industrial loops to turn outputs form one manufacturer into input for another" and "reduce the consumption of virgin materials and the generation of waste". The result of this mass effort was staggering. China improved its resource intensity by 34.7% and its waste intensity by 46.5%, which points to an overall theme of China reducing its tie between resource consumption and economic growth. These are good starting points, but they are only the beginning for China's future economic model. China is still above the OECD's level of resource intensity (.5 kilograms to one US dollar of GDP), but hopes to lower this statistic in subsequent years through recirculation within primary industries such as iron, steel, and aluminum. At any rate, these rapid increases in resource efficiency have helped to stay the tide of growth in China against the need for more natural resources. What does this mean for the United States and its future economy?

Conclusion

In an economy that is growing and consuming more and more rapidly, conserving resources is key to the future of production. With population, food consumption, shipping, and wastes all expected to increase, it is abundantly more important to conserve what resources are available before they all go to waste. While the idea of a circular economy is pleasing, it will take more than necessity to spark this change. To make a difference today, start using what you have for longer, start repairing what is broken, and join the movement to encourage smart recirculation of resources.



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