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Circular Economy: Paradise Restored?

- Summary -

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Once upon a time, in the 1970s, the tiny Pacific island of Nauru had the highest income per head in the world after Saudi Arabia. The money has come from phosphate mining by Britain, Australia and New Zealand. The phosphate deposits are used as fertiliser and were built up over a very long time from the accumulation of seabird droppings. However, now most of it is gone – as have most of the seabirds that provided it, because the phosphate mining has ruined their habitat. Much of the island was ruined for the locals too, so much so that the Australian government had a plan of relocating most of the island inhabitants to another island off the Queensland coast. Today Nauru is heavily in debt, and relies on hand-outs from Australia.

The cautionary tale of Nauru provides an ample illustration of unsustainability of the linear economy and its consumption model. A linear economy's wealth creation depends of the collection and sale of as much natural resources as possible, their transformation into as many products as possible, which are subsequently thrown away to make space for new products. Gradually, both businesses and governments are starting to realise that unless we do come up with a different model of acquiring and using the resources the future generations of ordinary people will end up pretty much like those living on Nauru.

The alternative is the circular economy model. The term relates to the concept of the circle of life and energy, which assumes that nothing comes from nothing and nothing is ever wasted. If the human race is to prolong its existence on this planet, it should at least aspire to change its model of existence in the image of nature's own.

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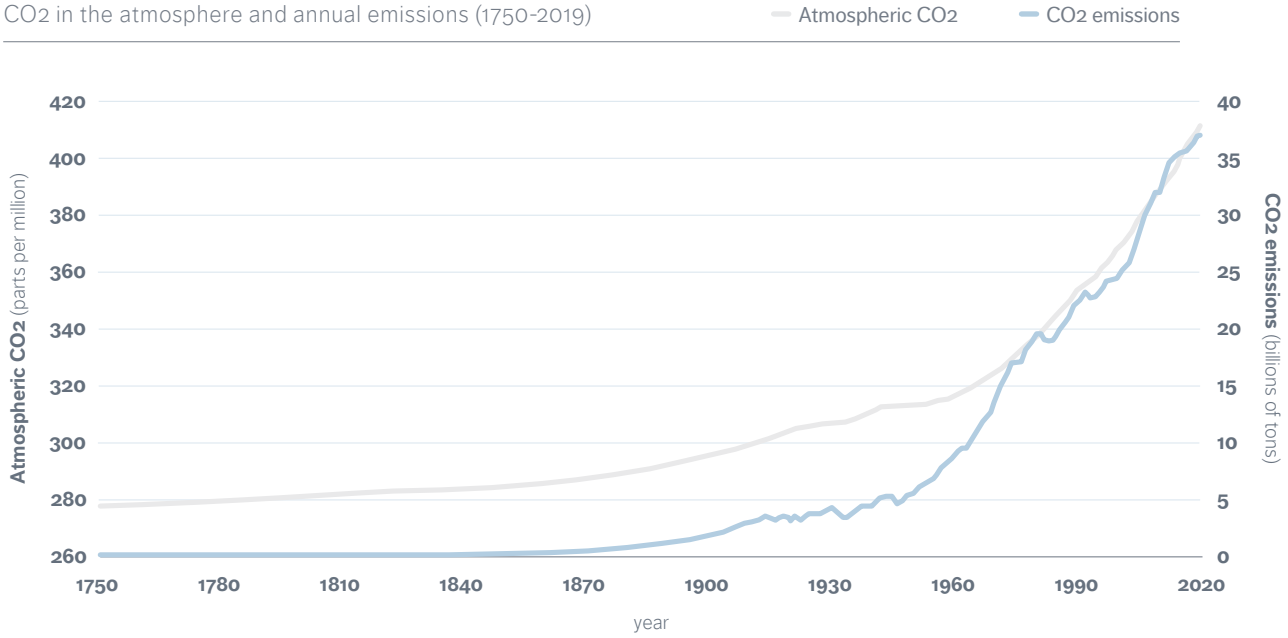
Energy consumption for both domestic and industrial needs accounts for 73% of greenhouse gas emissions caused by humans, according to the World Resources Institute, because of the fossil fuel combustion. Farming and industrial processes generate most of the rest. Because of these greenhouse gas emissions, the world is likely to be about 3°C warmer than pre-industrial levels by the end of the century, even if countries make a serious effort to keep to current commitments, and if the energy industry continues its shift towards renewables. That's much higher than the 1.5°C threshold regarded by many scientists as marking the line above which climate change starts to become much more catastrophic.

Figure 1:

CO_2 in the atmosphere and annual emissions (1750-2019)

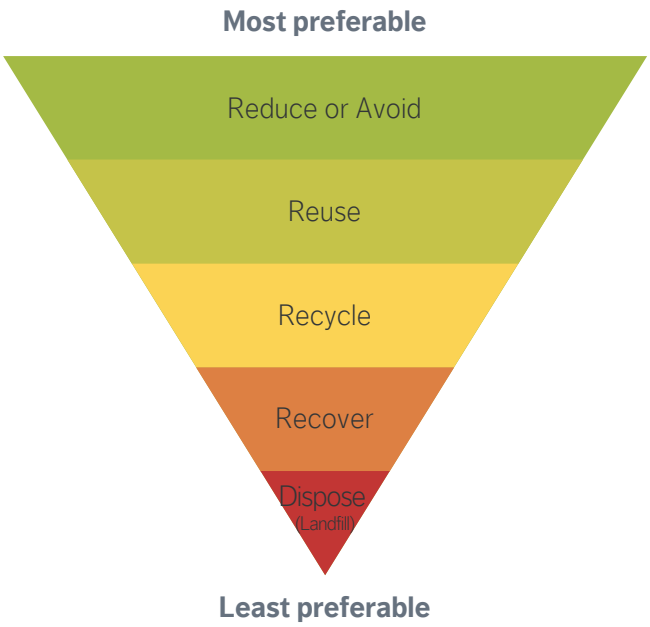


Source: NOAA Climate.gov - Data: NOAA, ETHZ, Our World in Data

Solutions

In 1979, Ad Lansink, biochemist and Dutch MP, argued that the best way forward was to construct a hierarchy of options in the production of goods and services. This has become known as the Lansink Ladder (see the chart below). Most consumers certainly haven't heard of this term but in many countries they're becoming increasingly keen on Reducing, Reusing and Recycling – and on buying from the companies that use recycled materials in their production. As the production/consumer shift grows and deepens, long term investors have an important role to play investing in companies that help bring the Lansink Ladder to life. There are many challenges to overcome, not least for the companies to focus on the production of perhaps more expensive but more durable products made to last, and for the consumers to move away from cheap disposable goods. From the investment perspective, we are convinced that the circularisation of the global economy this will be a long term, significant and positive market theme.

Figure 2:
Lansink's Ladder



Governments on the case

If governments and consumers are setting ethical or social rules and pursuing higher environmental and health standards, it's much easier for companies to play their part in making the global economy more circular. An important Avoidance strategy is renewable energy. Governments worldwide have already made big commitments to the wider adoption of renewable energy through the Paris Agreement. The cost of wind and solar energy has already come down significantly, and in a number countries renewable energy is the cheapest option in some areas. Over the next decade or so, Hydrogen is bound to follow as the next big new thing in green energy generation and it is already attracting government subsidies and substantial inflows from institutional investors. The United Nations also adopted 17 Sustainable Development Goals for 2030, which include "affordable and clean energy" and "sustainable production and consumption patterns". In 2020, the EU published its new Circle Economy Action Plan with an emphasis on preventing overpackaging, while in 2018 China, which was previously the centre of the global recycling trade, imposed strict restrictions on what kind of plastic can be imported. China's decision has already had a domino effect, with India, Thailand, Vietnam and Taiwan imposing or planning to impose partial or total bans on the import of plastic scrap. Middle-income countries such as China no longer willing to take rich-country detritus will increases the pressure on the developed economies to reduce the quantity in the first place. The EU's Single-Use Plastics Directive will ban products for which alternatives exist on the market, such as single-use plastic cutlery, by 2021. This will have a knock-on effect, reverberating along the full consumer and production value chain.

Facilitating a cultural shift in consumption

The surge in interest in the circular economy issues of climate change, efficiency in energy and resource use, and waste management, has given birth to entire new industries that have breathed new life into existing companies and gave birth to new ones.

Proliferation of cheap disposable goods and materials is a key negative by-product of the linear economy. If this if to stop, a move to a circular economy will have to involve a significant change in today's consumer culture and the values on which it is based.

A move from disposable goods to quality, longer lasting products is inevitable. And it is perfectly possible, given that things that lasts longer, and that is considered worth holding onto for longer, begins to look good value even if the ticket price is higher than for rivals. A good example of reinforcing this philosophy was an advertisement for a Patek Philippe watch, which stated that its purchaser will "merely look after it for the next generation".

Some companies are also experimenting with products that can repair themselves, such as self-healing leather and building materials. Scientists have experimented with incorporating calcium sulfoaluminate into cement-based materials, to close cracks that may appear later*. US firm SAS Nanotechnologies has invented self-healing microcapsules in paint that act as an anti-corrosive pigment.

Another approach to extending the life of both products and raw materials is modularity: creating products with a limited number of standardised and easily separated components that can be replaced, or recombined to make new products. The Dutch company Fairphone has created a smartphone designed to last much longer than the typical device, because users can easily replace their own screens, batteries and other parts as they shatter, wear out or become outdated.

* https://www.researchgate.net/publication/257407061_Self-healing_of_surface_cracks_in_mortars_with_expansive_additive_and_crystalline_additive

Getting better at recycling

There will be many business opportunities to provide better solutions at recycling, as standards are bound to tighten. The United Nations Environment Programme estimates that only 1% of rare earth elements, which include the neodymium, dysprosium and praseodymium used in electric vehicle magnets, are Recycled. However, 18% of metals have Recycling rates above 50%. There's a clear economic as well as environmental benefit: making virgin aluminium is immensely energy-intensive, but Recycling aluminium consumes 95% less energy than producing it from raw material. That's given society a powerful incentive to Recycle aluminium; hence the spread of reverse vending machines, which allow consumers to reclaim their deposits on beverage cans. In Germany the Recycling rate has reached 99%, proving what is possible. Manufacturers will increasingly be working on producing more easily recyclable materials, including fabrics for clothes.

Striving for a sustainable circle of life

The journey to a circular economy will be no easy route march along a smooth, paved road; it will instead be a hard slog along rough terrain. It will require new business models, a shift in consumer behaviour and consumption patterns, and the ingenuity and inventiveness of cleantech. Some of these models, such as sharing economy ideas, are in their infancy in many sectors.

It will also involve cutting down on some things that developed nations have grown used to over a generation or two, and that the emerging markets middle classes are only just beginning to enjoy.

And while the world economy today, according to current assumptions, is only about 8% circular, we suspect that the change will come sooner than many people think, spurred by a sense of urgency and enabled by innovation. Investors will have an important role to play in helping bend the straight line by allocating resources towards companies working to build circular economy. If we don't want the whole world to end up like Nauru, we need to think in a circular way.

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