Engineers in a Circular Economy

If there's anything you can take from the marvellous documentary series 'Seven Wonders of the Industrial World' is that Engineers have often taken it upon themselves to find and design solutions to some of humanity's core problems and pursuits be it health, transport, energy and building to name just a few. Unfortunately, in the linear nature of how this work is typically executed, a number of intersecting issues and paradoxes have emerged that threatens not just humanity but the planet as a whole namely in the areas of resource depletion, biodiversity loss, global climate change, water scarcity and waste proliferation. As our global population grows, Engineers like never before need to pivot, rethink and embrace this new challenge as the next suite of pressing problems to solve. In that vein, Engineers need to embrace 'Circularity'.

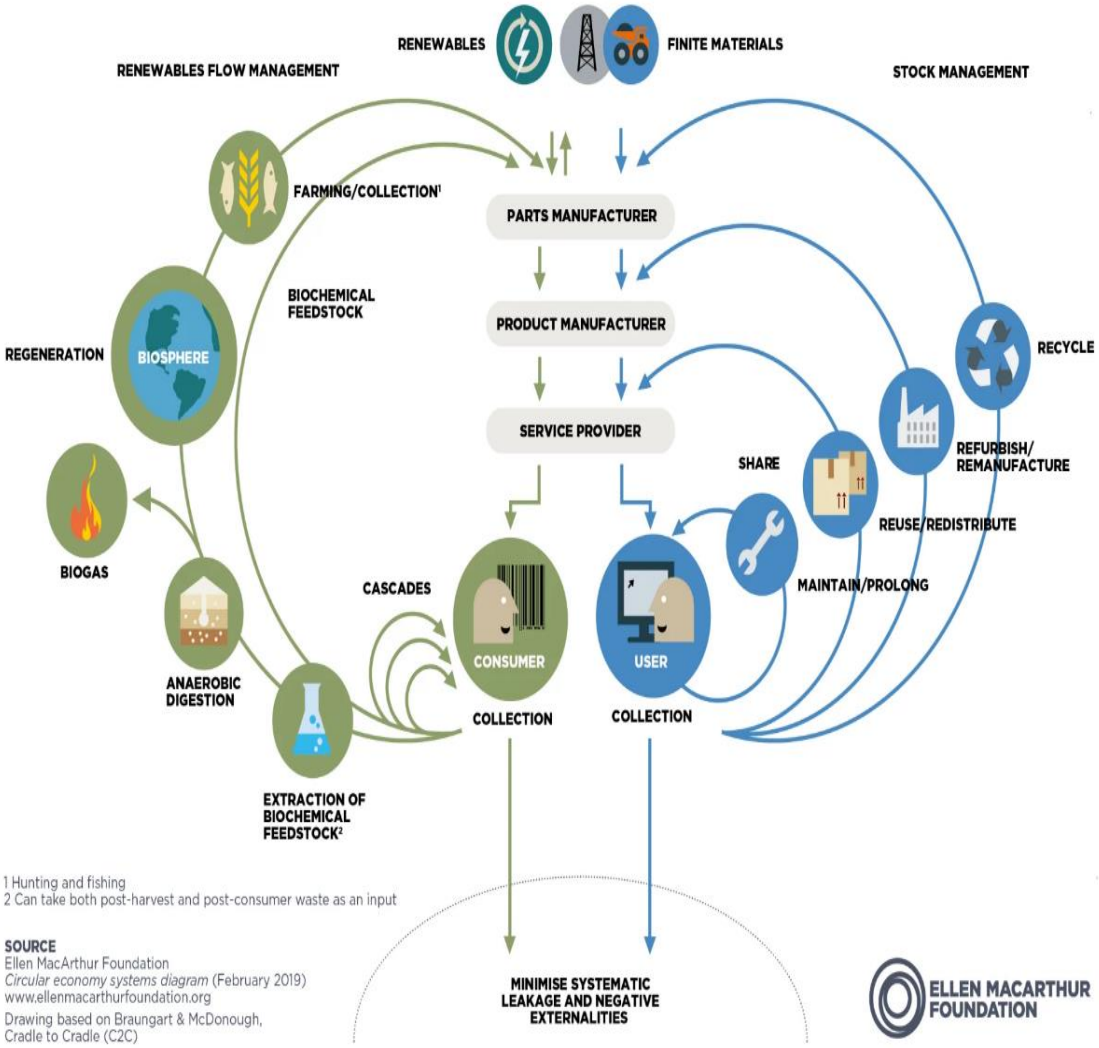
Engineers can, using their technical and analytical skills, create solutions for what is called a 'Circular Economy' – an approach which can work across all facets of engineering as well as other technical and non-technical disciplines. In a book titled 'Circular Economy, Industrial Ecology and Short Supply Chain[1]', the authors shine some light on how the circular economy impacts engineering. They believe that evidence of circular economy engineering emerges first in cities and neighbourhoods. They report that new industrial models are being built around the circular economy:

"These include reuse, repair, recycling, functional economy, eco-design, industrial ecology, sustainable supply and responsible consumption, in other words a profusion of concepts which demonstrates that the definition of circular economy has not yet stabilised completely."

The Ellen Macarthur Foundation, a global Circular Economy think tank, has produced the graphic below as a way of detailing what a Circular Economy should look like[2]:

[1] Gallaud, Delphine & Laperche, Blandine. (2016). Circular Economy, Industrial Ecology and Short Supply Chain. 121-122. 10.1002/9781119307457.index.

[2] https://ellenmacarthurfoundation.org/the-circular-economy-in-detail-deep-dive



The circular economy is defined by how long resources can be kept and used - the hope is that resources can be kept and reused for as long as possible. It is also known as the zero-waste economy. However, generating waste is almost unavoidable in industrial situations. But engineers must think how to eliminate waste, or alternatively, use that waste to create something else.

In Australia, the Labor Federal Government recently announced the formation of A Circular Economy Ministerial Advisory Group[3]. The fifteen (15) appointed members includes Engineers Australia CEO Romilly Madew. Romilly was previously the CEO of Infrastructure Australia (IA), before joining IA, Romilly was the CEO of the Green Building Council of Australia for 13 years. Romilly's involvement in this group is a signal of where the engineering profession is steering towards. As intimated earlier, a Circular Economy will require all engineering disciplines to contribute. A Circular Economy will not be optimal without the right integration of data, sensoring, knowledge, risk management, systems thinking, innovation and, if anything else, courageous leadership.

[3] https://www.dcceew.gov.au/environment/protection/circular-economy/ministerial-advisory-group#:~:text=The%20Advisory%20Group%20advises%20the,to%20a%20more%20circular%20economy

Events from the EA Sustainable Engineering Committee will increasingly focus on aspects surrounding the involvement and potential of Engineers in a Circular Economy. Keep an eye out for upcoming events.

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