

Challenges in the Circular Economy Business Model

Moving away from virgin materials

Taiwan 29th May 2023

Peter Calliafas

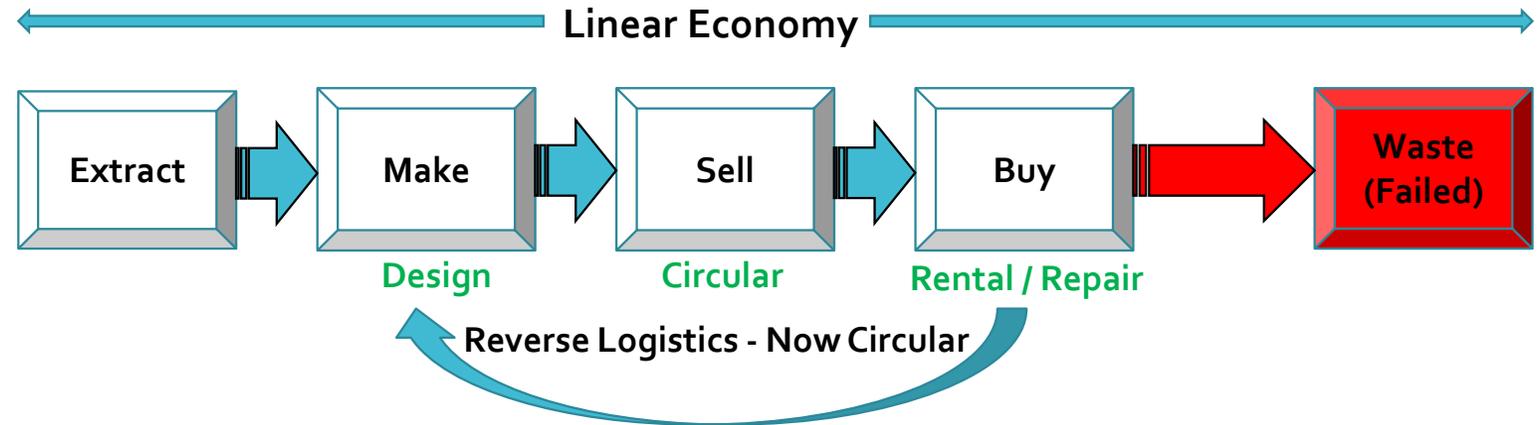
Areas to be explored and discussed

1. Key differences between a linear economy model and a circular one. The importance of policy, regulation and tax.
2. An example of reverse logistics in operation.
3. The importance of design, reuse, rental and repair.
4. The importance of consumerism behaviour as a demand driver for change.
5. Composite Plastic Railway Sleepers: A Circular Economy case study.

These help to illustrate the building blocks of a circular economy model, depending upon i) policy and regulation, and/or ii), the material/s in question, and/ or iii), the product category, and/or iv), the business / commercial case. **There is not a one size fits all approach for each economic, and/or, business sector.**

Key differences between a Linear Economy model and a Circular one.

The importance of policy, regulation and tax



- Consistent Government policies across all these stages are a 'must have', to provide business, investment and financing confidence. All policies need to be joined up.
- Examine the role of regulation to promote change behaviour. Rigorous regulation for waste but light touch for reverse logistics. What is 'waste' and what is not is key.
- If products placed on the market have no circular demand, should they be banned?
- Consider a tax on the use of raw materials in products and a tax escalator policy, a beneficial tax for circular products; to change in part, purchasing and decision behaviours. Examine the present extent of tax relief provided, for what, is it sufficient?
- In terms of business model change, pilot studies, Govt to be investor of first resort.

UK milk deliveries in 1970. A circular economy illustrative business model in place previously, with deliveries by an ELV cart too. Do have a watch (only 8 minutes long).

<https://www.youtube.com/watch?v=LPMkyY4CXJE>

Reverse logistics in operation



Stainless Steel Beer Kegs

- **Brewers retain ownership of the stainless steel kegs.**
- **Return of empty containers on each delivery.**
- Almost 50% UK beer production sold in stainless steel kegs or casks.
- Average lifespan 15 years.
- Helps to control industry costs benefitting everyone.
- Benefits the environment.



The importance of design

A 350 cockpit

<https://www.airbus.com/en/products-services/commercial-aircraft/cockpits>

<https://aircraft.airbus.com/en/save-up-to-25-maintenance-costs-with-the-a350>

Cockpits designed for flexible flying

- “Airbus fly-by-wire technology and its commonality philosophy, **make aircraft operations, training and maintenance easier**, while reducing pilot training time”.
- “The identical display screens are fully interchangeable and have the same part number for reduced spares requirements, while the advanced design and mature technology reduce maintenance costs by up to 80%”.
- “Other than fuel, maintenance is the highest Cash Operating Cost component. **The A350 is designed for lower maintenance costs**, with efficient systems using simpler architecture, fewer parts and higher reliability”.



Courtesy: AIRBUS

In a circular economy, the upfront design for an end purpose is critical: whether this is for i) operational / maintenance purposes, ii) reuse, iii) repair or iv) recycling. Otherwise, **a lack of an upfront design philosophy just perpetuates the linear economy business model.**

The importance of reuse and rental

<https://www.grover.com/de-de/how-it-works>

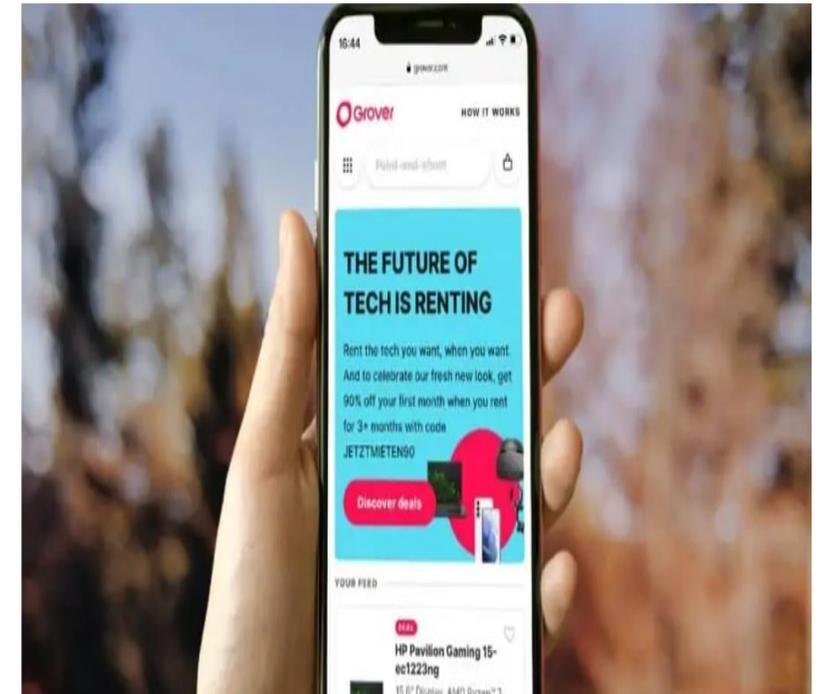
“Rent as long as you want”

1 month, 3 months, 6 months or 1 year?

“Become part of the circular economy”

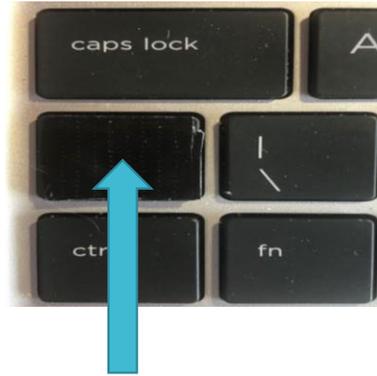
Instead of disappearing into a drawer, devices are rented out. Between 2015 and 2022, Grover rentals replaced approximately 100,000 new units.

UK investors back Grover's €60M funding to boost subscription model in consumer tech for generation rent



“The rental circular economy promotes a type of **sustainability**-focused approach that aims to reinforce a long-term focus on responsible customer use of products and innovative modes of transportation, logistics, and procurement”.

The importance of repair



Can't just replace the key, have to replace the whole keyboard – I have tried!



"Your appliance repair/replacement has been completed; this will be dispatched to you via courier & delivered within 7 days. XX Customer Service" – a different brand ethos.



Apple launches 'self-service repairs' in the UK, letting people fix their own iPhone

Most users are still encouraged to have repairs done by Apple or independent providers

Andrew Griffin • Tuesday 06 December 2022 10:31



SUSTAINABILITY

Why Repair Services Are a Growing Business

Brands are stepping up in-store offerings and investors have bet millions on start-ups in the space as interest in sustainability and resale boosts demand to keep clothes in good condition for longer.



"Repair is recognised as having a high potential to maintain value within the economy since repaired products have a higher value than the materials that are extracted from them through recycling at end-of-life (European Commission, 2016)"

<https://circulareconomy.europa.eu/platform/sites/default/files/2022-12/Repair%20sector.pdf>

The importance of consumerism behaviour as a demand driver for change

<https://www.eea.europa.eu/publications/influencing-consumer-choices-towards-circularity/enabling-consumer-choices-towards-a>

The growing awareness by consumers of sustainability, the circular economy, and climate change will influence their demand for products and services: this demand will then impact producers, and the products offered.

- Purchase decisions are predicated on age, occupation / financial circumstances, the buyer's personality, maintaining social image.....
- Branded goods vs non branded goods?
- Price and convenience is still a key decision point.
- Is 'greenwashing – in all its forms' about the origins of the product, its sustainability, local environmental and social impacts; all influencing the purchase decision?

“Policies aiming to promote circular economy-consistent decisions by consumers will be most effective if they take account of the factors shaping individual behaviour and nudge consumers towards making choices that favour the greatest circularity”



Fast fashion graveyard - Atacama desert

Selfridges Launches A New Second-Hand Shopping Experience With A Carboot, Swap Shops & Upcycle Workshops

Selfridges is going circular with its new 'Worn Again' initiative, which brings a more sustainable approach to shopping.

Laura Rogan - 21 April 2023



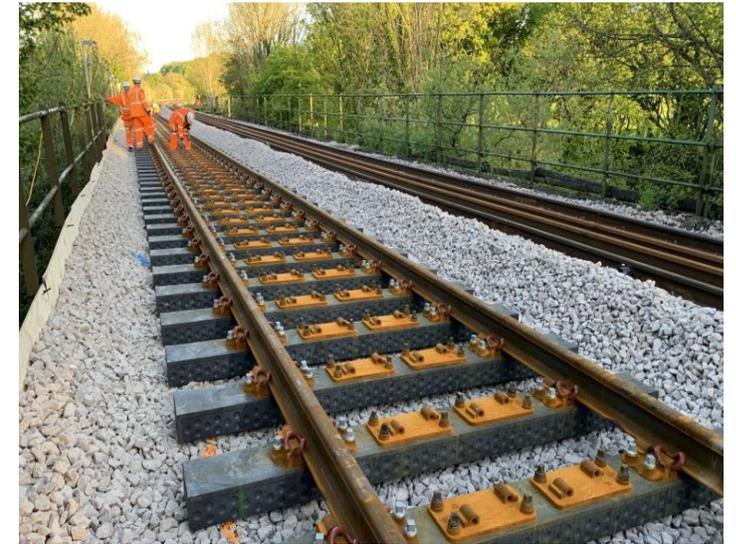
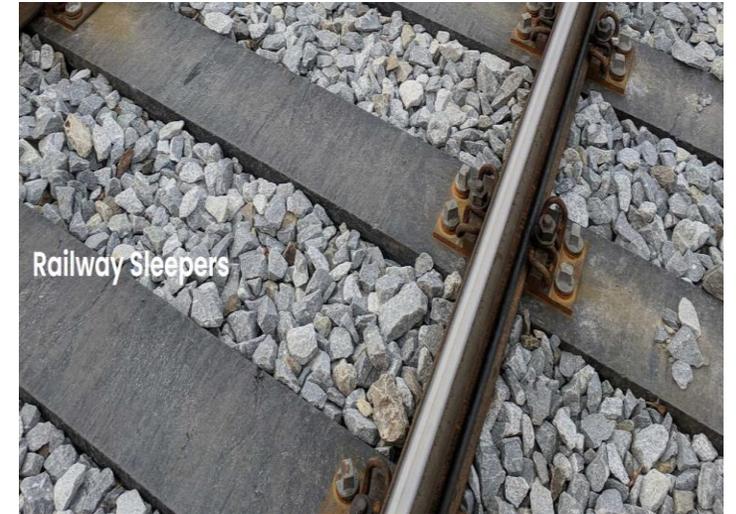
Composite Plastic Railway Sleepers

A Circular Economy case study

<https://sicut.co.uk/>

- Sustainability, hardwood provenance and creosote ban were key drivers.
- Early investment opportunity spotted.
- Made from HDPE and other materials.
- Resilient to climate change. No degradation in track from weather or liquid spillages.
- Huge reduction in whole life costs (> 10x unit cost vs hardwood).
- Better performance and longer asset life than wood (but also concrete and steel).
- Substantial reduction in embedded carbon of up to 200,000kg CO₂e per track km.

Installed in Network Rail, London Underground (UK) and in other countries



400,000,000 metric tonnes of plastic is produced each year. Bn's since 1950. Microplastics in the air, environment, food chain, blood transfusion products, even in breast milk. We can't recycle our way out of the plastics problem. **Polymer design for circularity is key**

THANK YOU