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Intro to Circularity Thinking *from consumption to regeneration*

Eoin Bailey – UK Innovation Manager



MANUFACTURE
ADVANCED
DESIGN
ENGINEERING



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David



March 11th 2022

INNOVATION MANAGEMENT

Circular Economy?

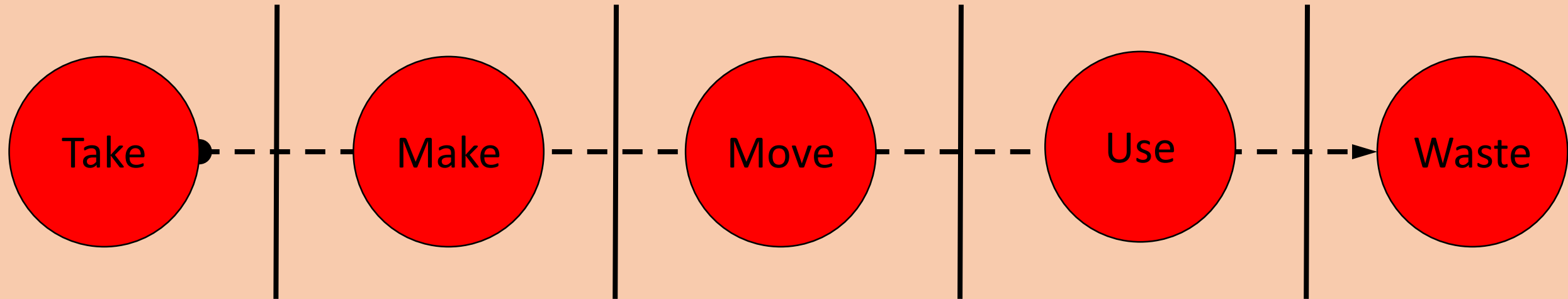
A Global Economy that is Circular by nature!

**Strategic (Designed) Solution
for Restorative Development
based on Full Lifecycle Understanding**

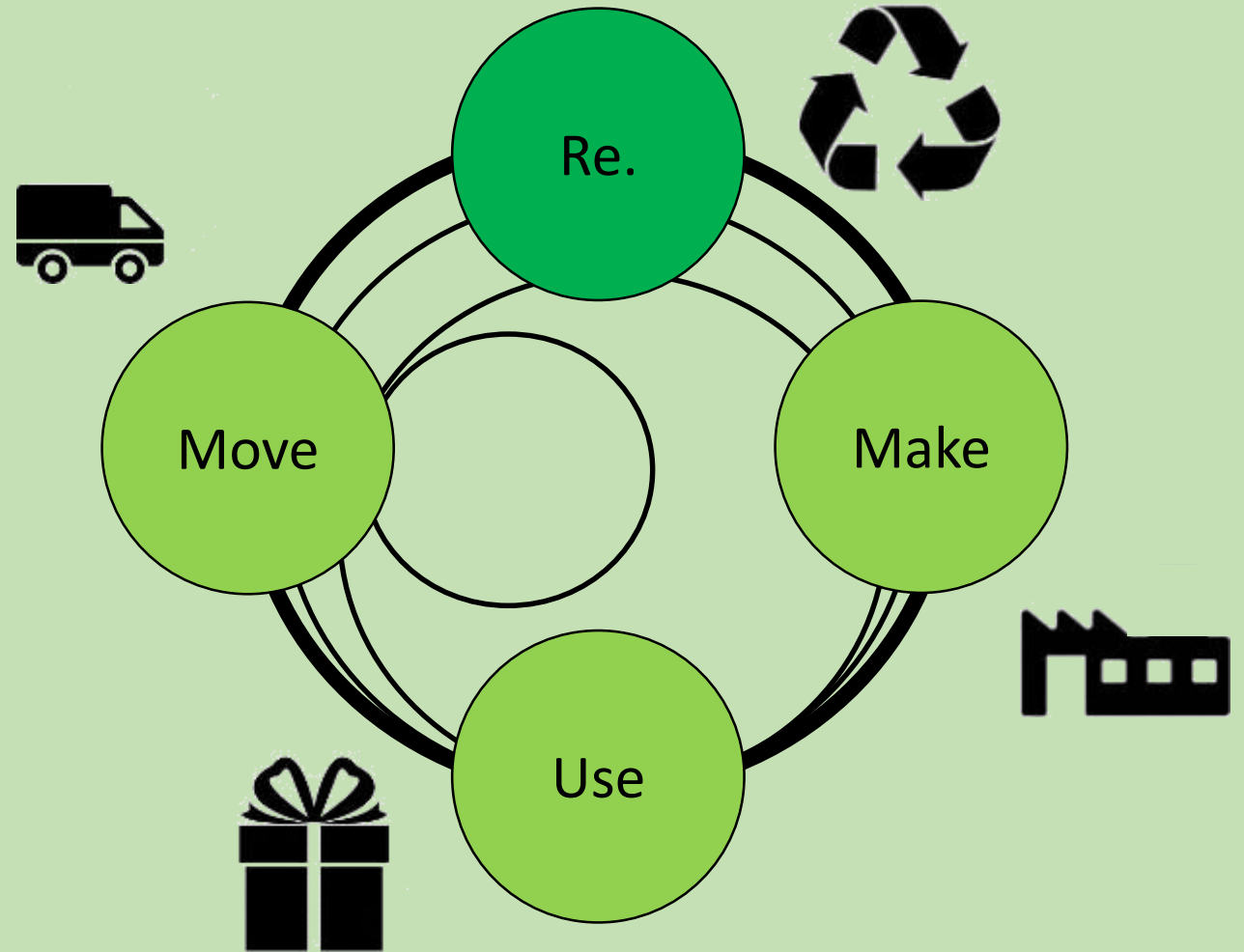
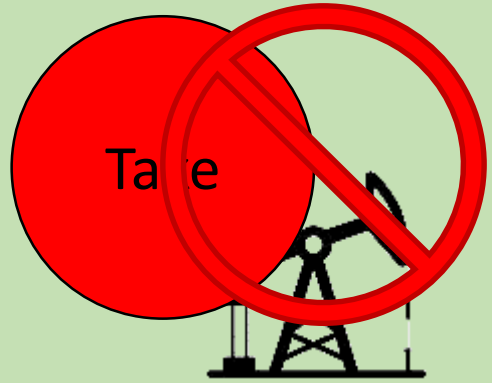
Bailey, E. (2011) 'Unintended Consequences: An evaluation of auto design, the impacts, the contradictions and role for a prosperous future.' Thesis. USWTSD



Current Linear Economy | Addiction



Future Circular Economy | Prosperity



Linear by Design



3.4 Million BC



Exploration

**Western
Society**



Socrates

470 BC

**Colonial
Exploitation**



Columbus

1492

**Nature
Disconnect**



Descartes

1596

**Perceived
Value**



Locke

1632



Consumption

1st Industrial Revolution



Mechanisation

1800

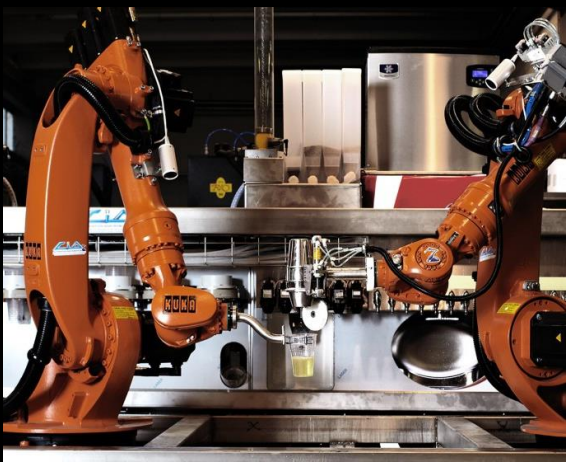
2nd Industrial Revolution



Mass Production

1900

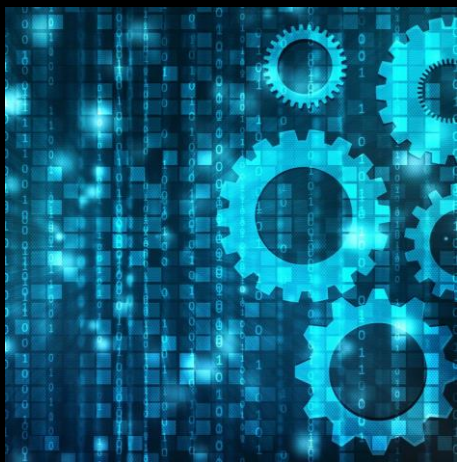
3rd Industrial Revolution



Automation

1950

4th Industrial Revolution



IoT

2015



Still, Linear by Design



March 11th 2022



Still, Linear by Design



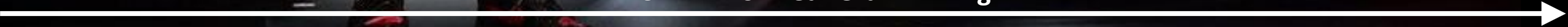
3.4 Million Year Old Thinking



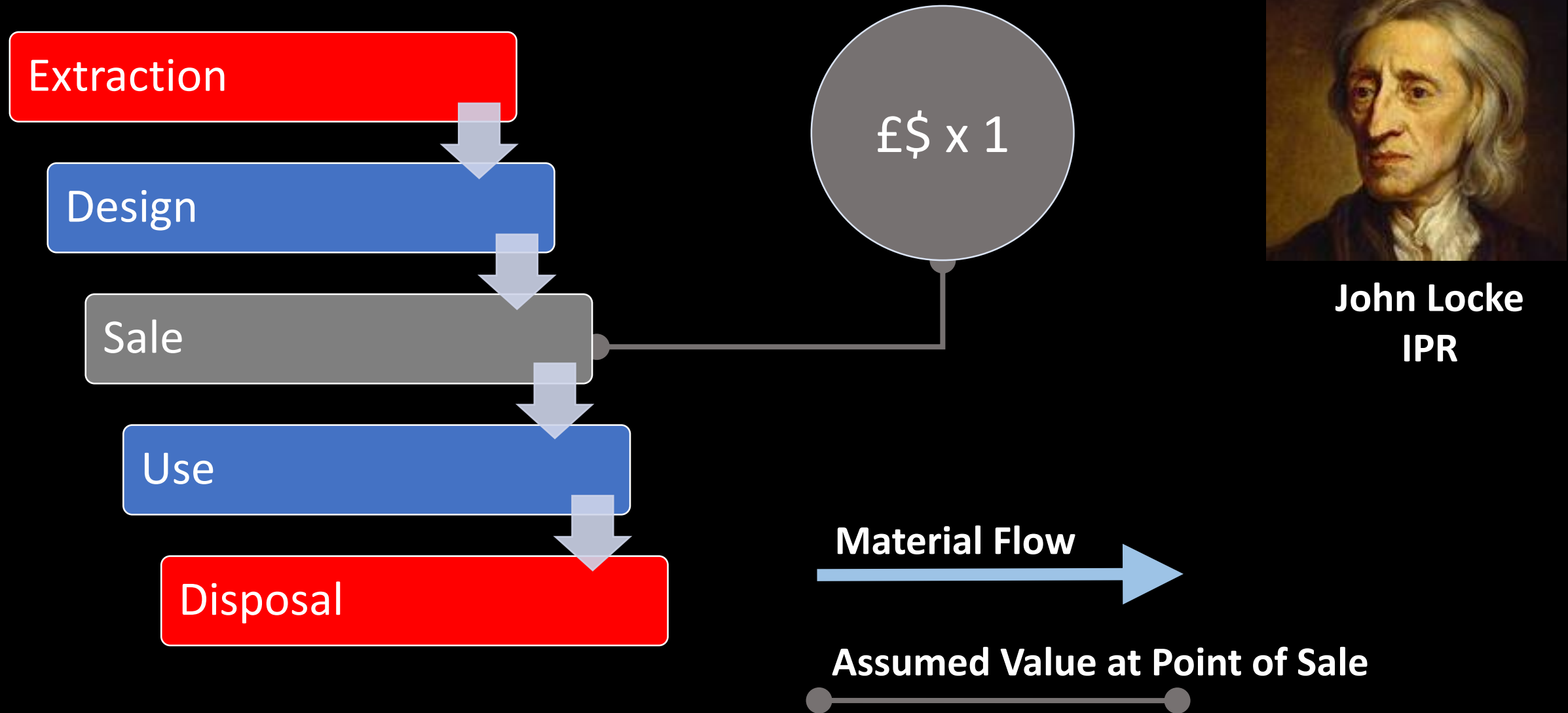
A photograph of Elon Musk standing on a stage at a Tesla event. He is wearing a black suit and is gesturing with his right hand. To his left is the front of a silver Tesla Model S, and to his right is a blue Tesla Model S. The background is dark with some stage lighting.

Still, Linear by Design

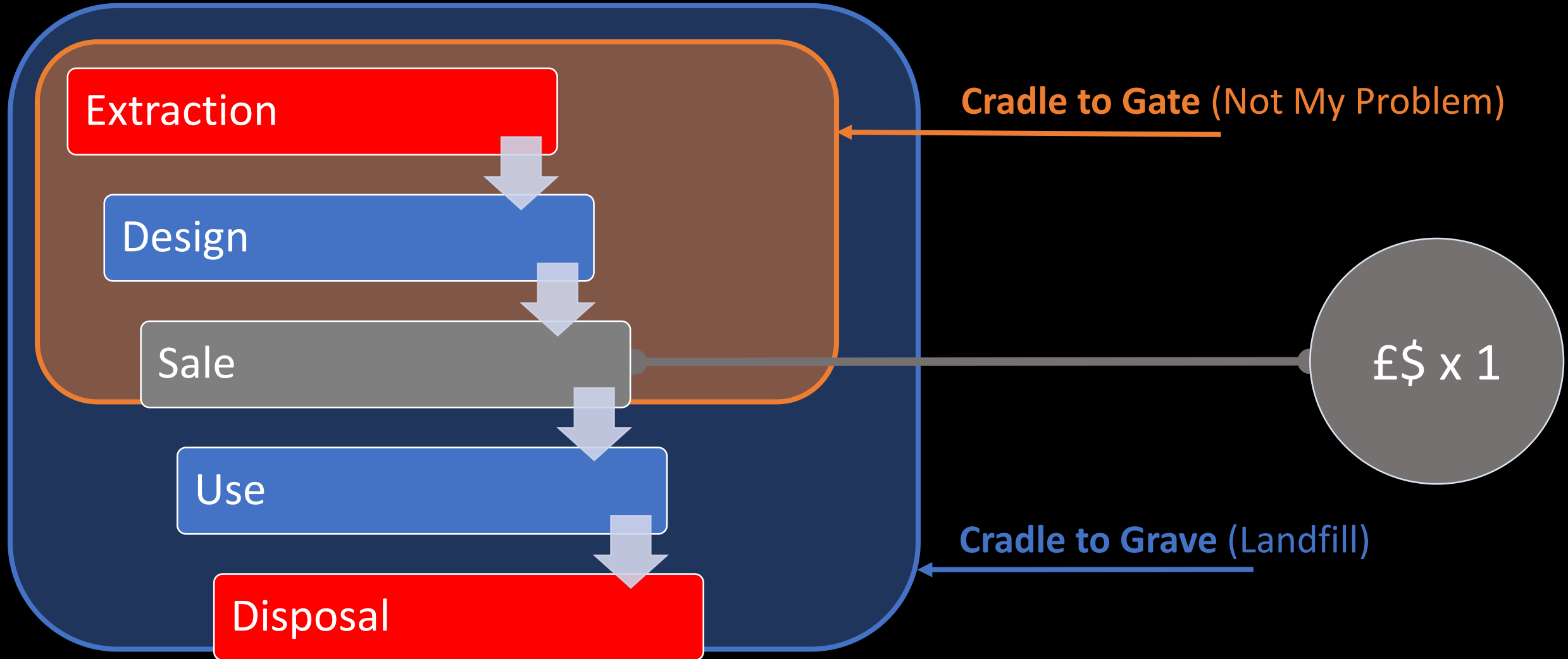
3.4 Million Year Old Thinking

A white arrow pointing to the right, spanning the width of the image.

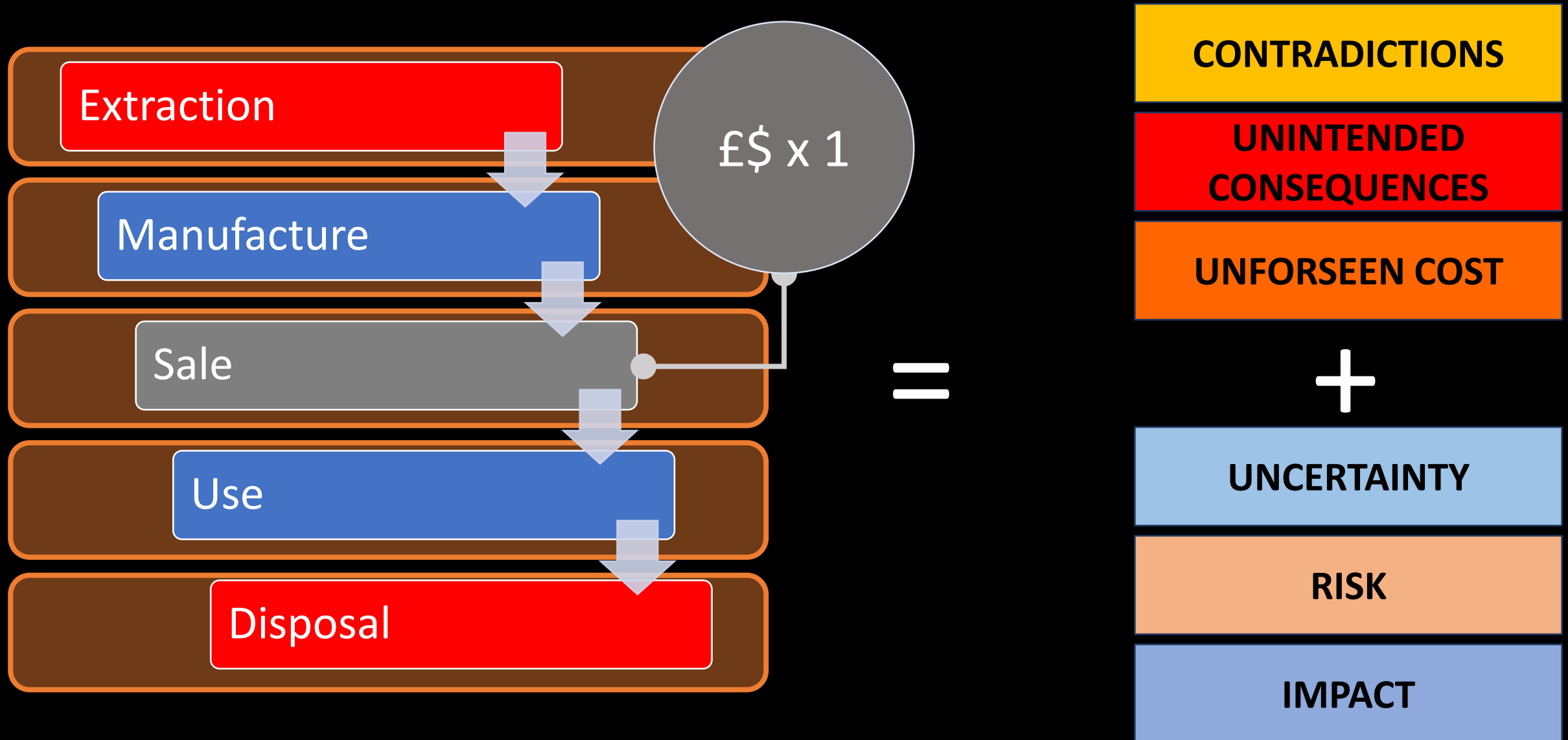
Linear Economy | Single Profit opportunity



Linear Economy | Misguided Lifecycle Understanding



Linear Economy | Silo Working | Legacy Knowledge

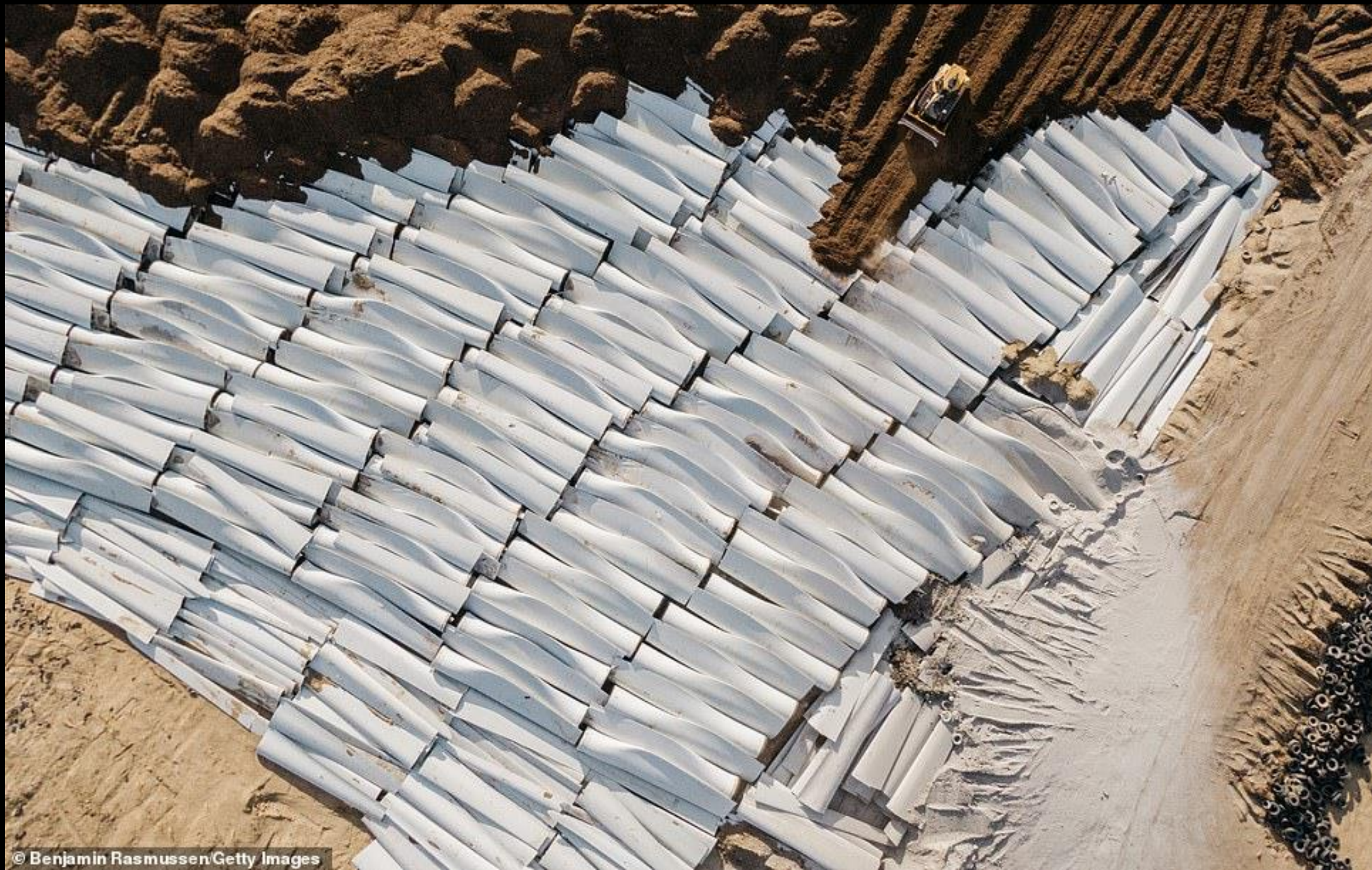




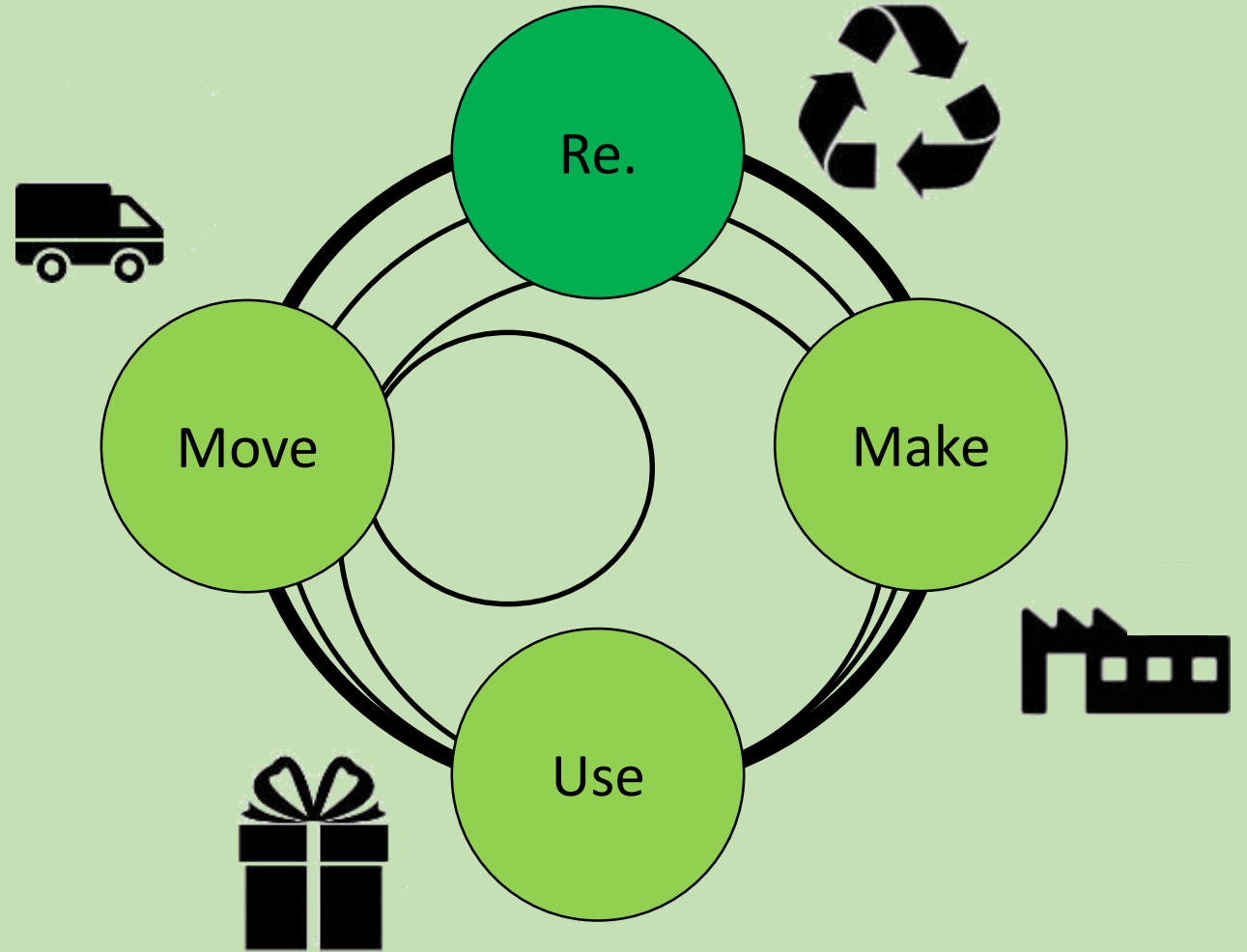
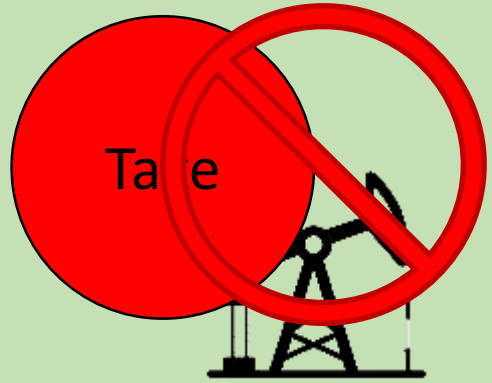




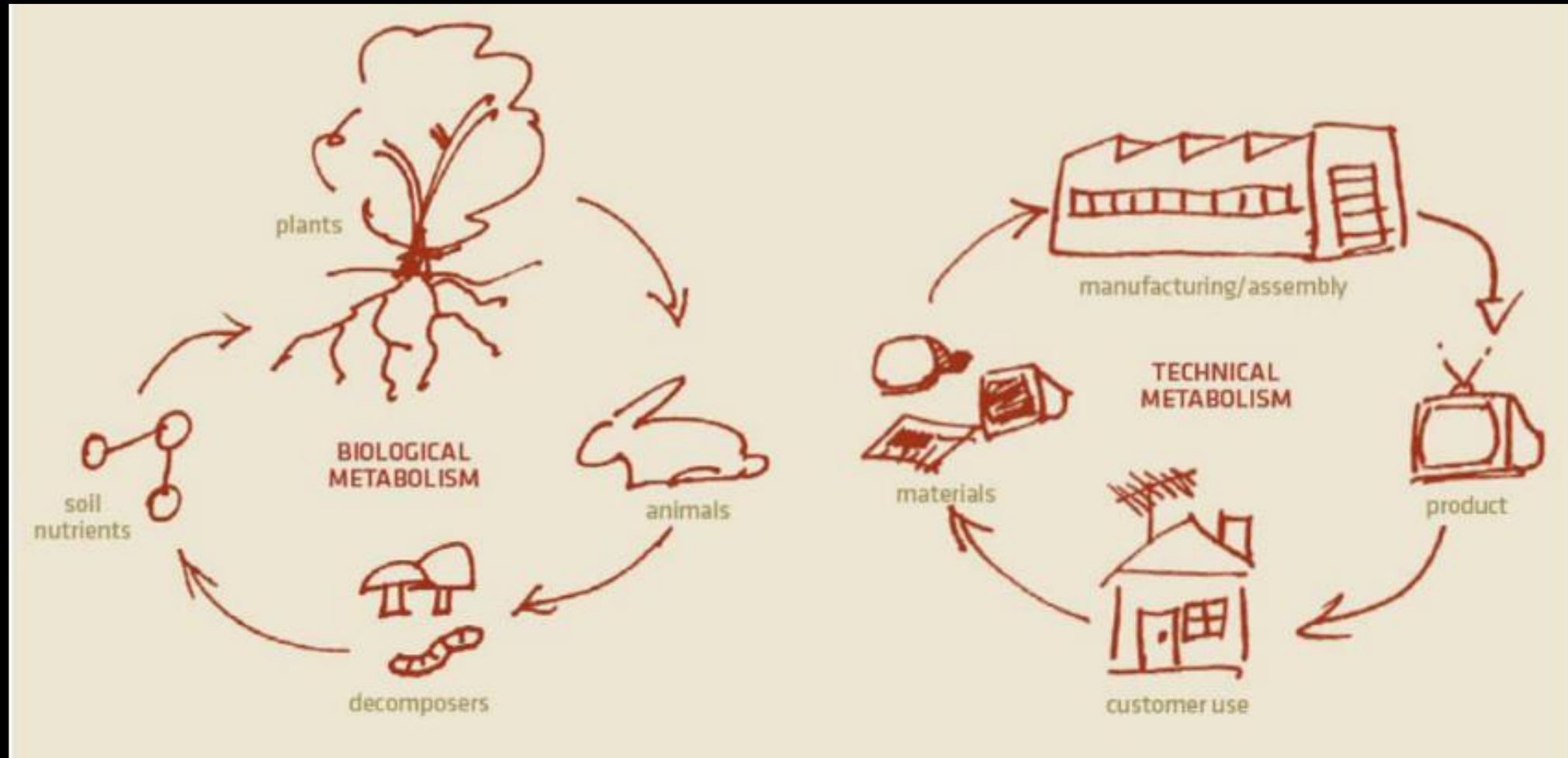




Future Circular Economy | is NOT just Recycling



Mimicking Natural Systems



Feedstock for New Development

Restorative Solutions

Circular Economy

Cradle to Cradle

Ecodesign

Performance Economy

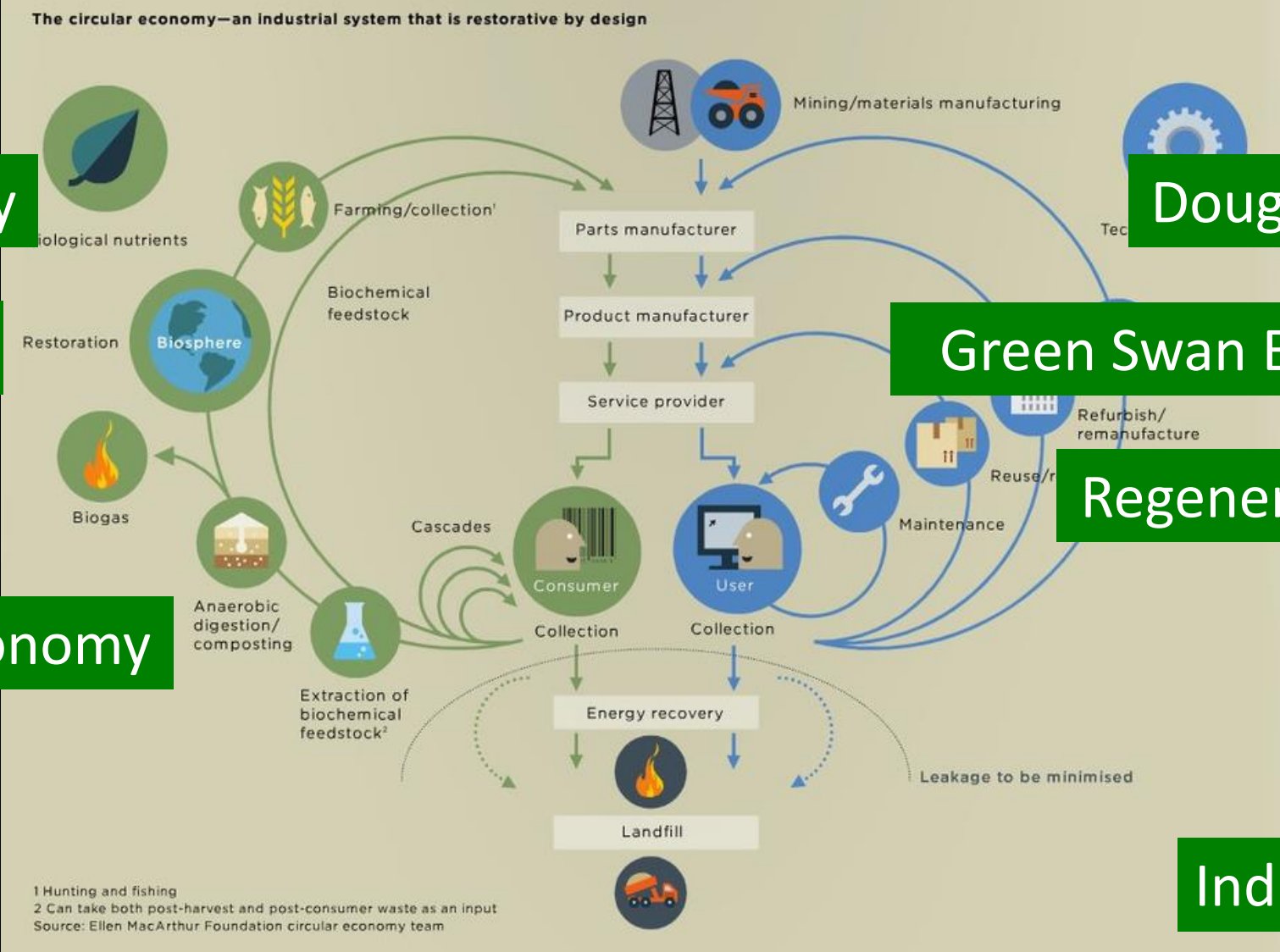
Doughnut Economics

Green Swan Business Strategy

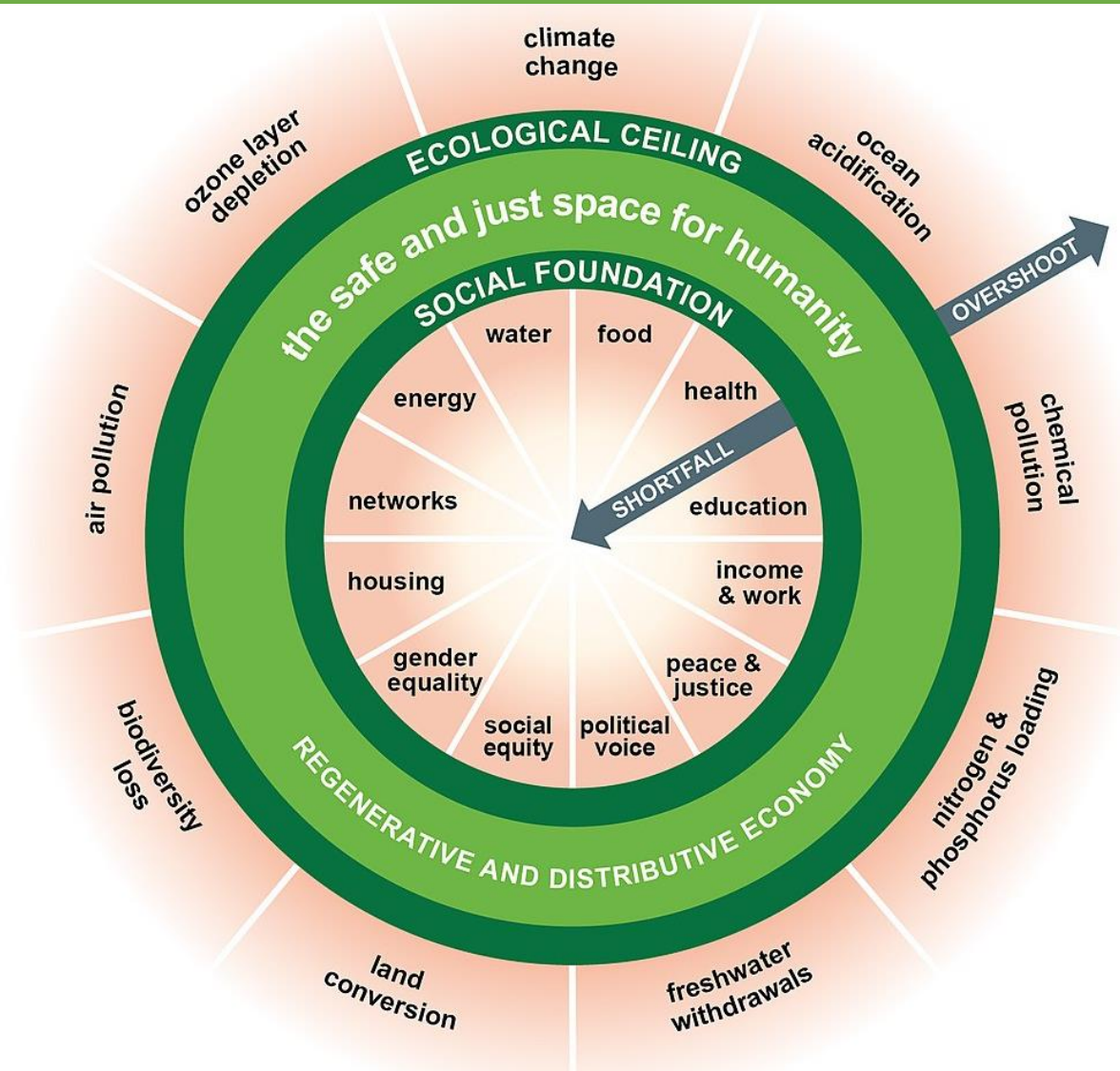
Regenerative Leadership

Biomimicry

Industrial Symbiosis



Doughnut Economics | within Society & Planetary Boundaries

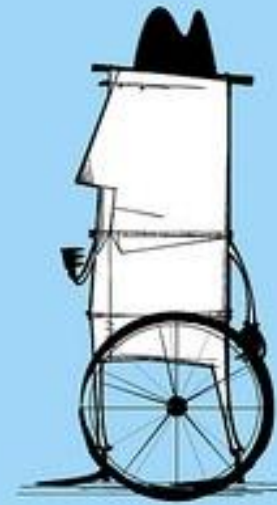


Systems Thinking | Lifecycle Performance

**CAN'T STOP.
TOO BUSY!!**



ERRR...?





The **LINEAR ECONOMY**
has created the need to
have the UNSDG's

CIRCULARITY
addresses the failures of
the past, while
eliminating the UNSDG
need for the future



**United
Nations**

Department of Economic and Social Affairs
Sustainable Development

Ask Questions | Full Lifecycle Deep Dive

Your Business:

Material Resourcing
Resource Efficiency
People Engagement

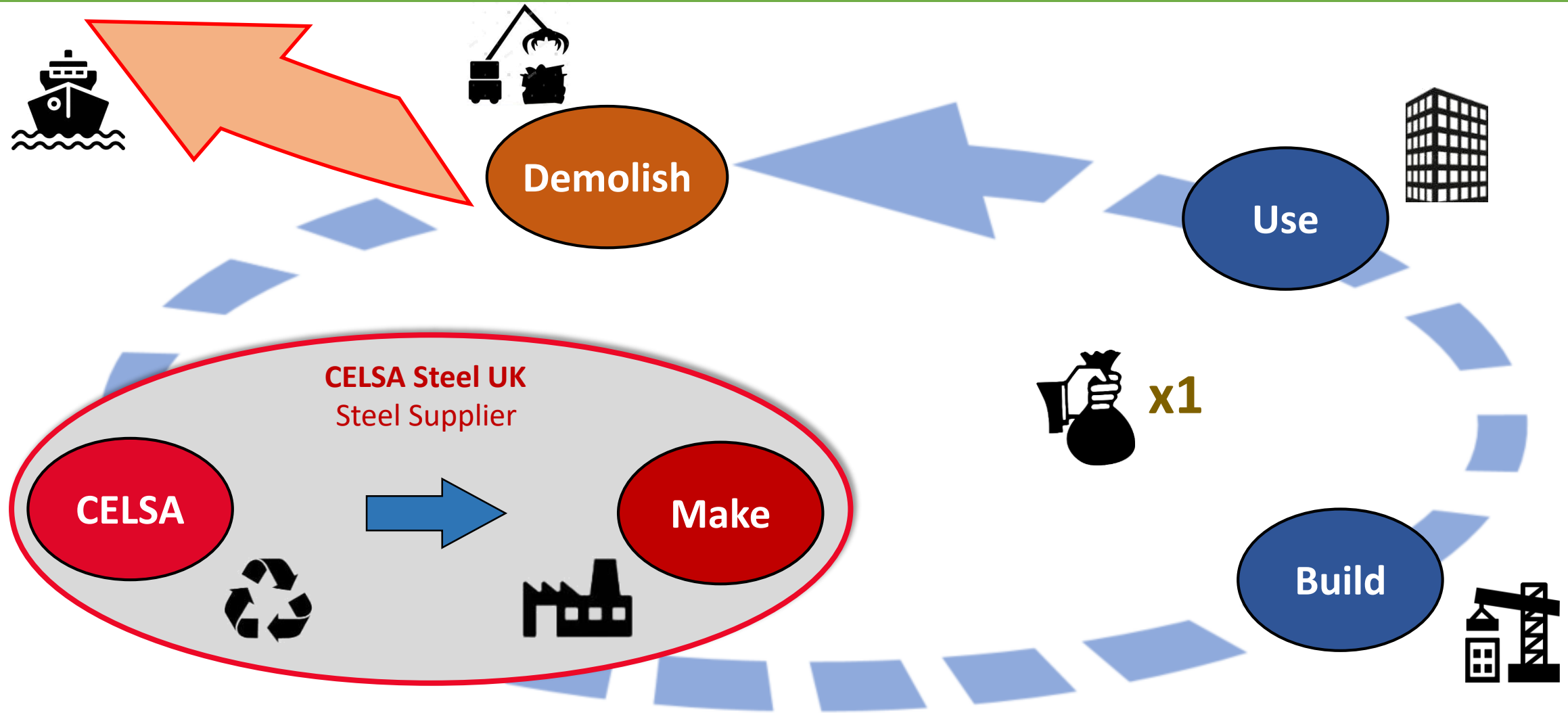
Your Supply Chain:

Customer Challenges
Suppliers or Strategic Partners
Policies, Directives & Standards

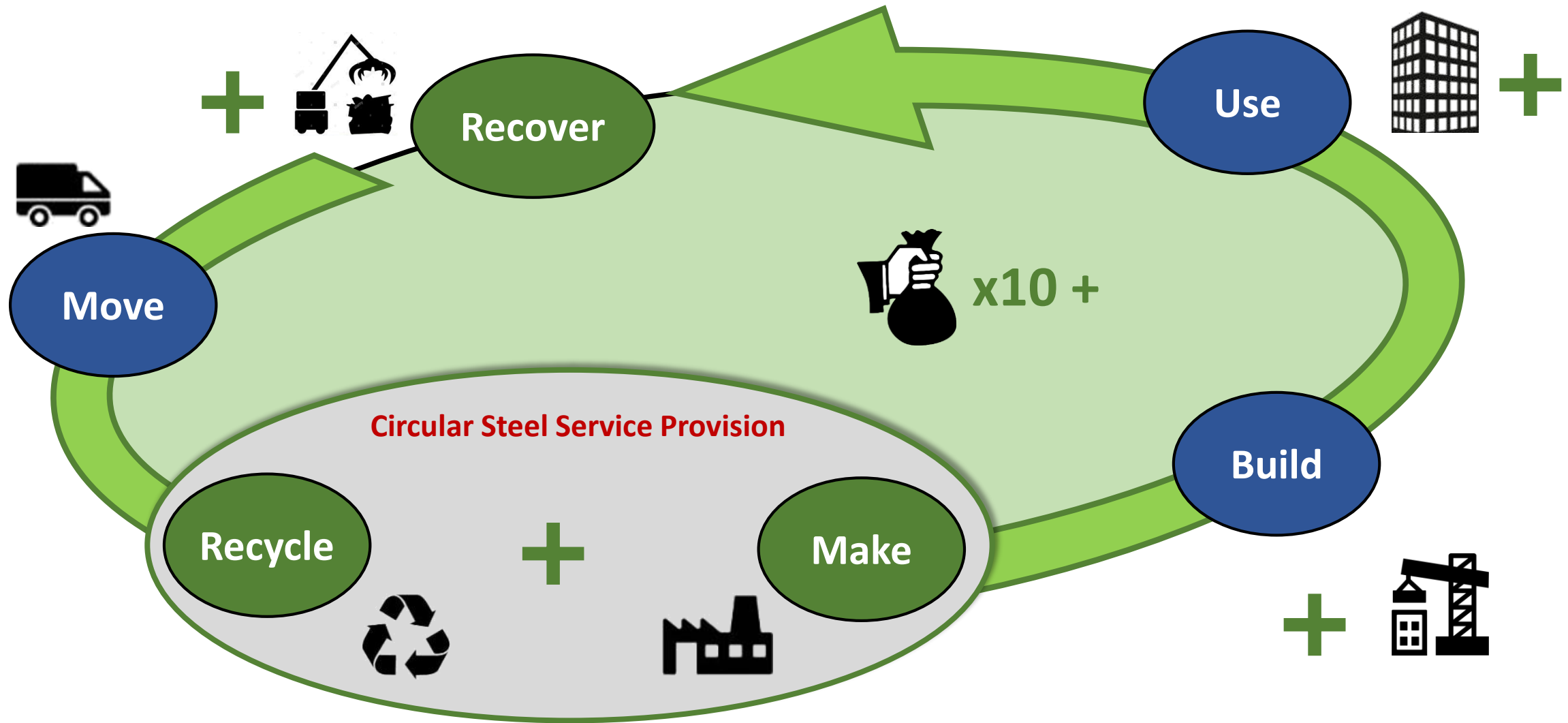
Your Lifecycle:

Lifecycle Impact
End-of-Life

CELSA Steel UK | No.1 Recycler | Commodity Steel Producer



Recycled Steel | within a Linear Economy



Circularity Service Solutions

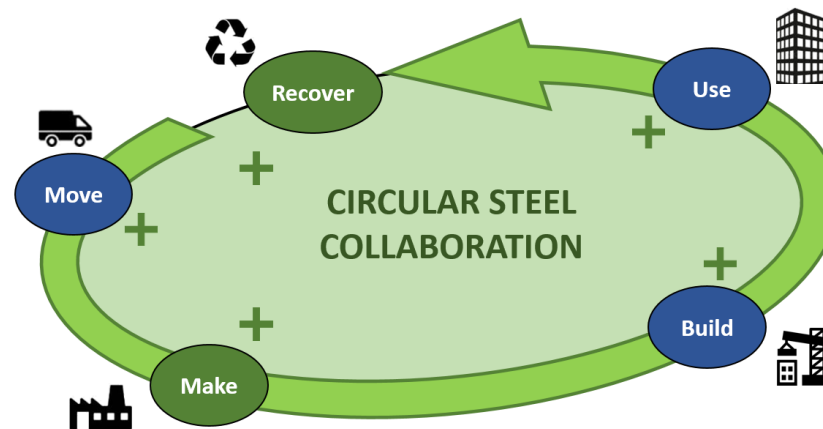
CELSA Steel UK | Collaborative Benefits

FACILITATOR BENEFITS

CELSA UK

- DIRECT TO SOURCE SUPPLY
- FORECASTING CAPABILITY
- DEFINED QUALITY
- REDUCED CARBON FOOTPRINT
- INCREASED RESOURCE EFFICIENCY
- STREAMLINED LOGISTICS
- DATA COLLECTION & ANALYSIS
- OPERATIONAL EFFICIENCY
- ENERGY EFFICIENCY
- SCOPE 2 & 3 SOLUTIONS
- BRAND VALUE
- CUSTOMER SATISFACTION
- CUSTOMER COLLABORATION
- NEW BUSINESS MODELS
- NEW SKILLS & SUSTAINABLE JOBS

MULTIPLE VALUE OPPORTUNITIES



COLLABORATOR BENEFITS

SUPPLIER | CUSTOMER | CLIENT | GOVERNMENT

- **REDUCED SCOPE 3 EMISSIONS**
- INCREASED RESOURCE EFFICIENCY
- STREAMLINED LOGISTICS
- DATA COLLECTION & ANALYSIS
- INCREASED ENERGY EFFICIENCY
- BIODIVERSITY REGENERATION
- SOCIAL INCLUSIVITY
- IMPACTING ACCOUNTING
- FULL LIFE CARBON
- MATERIAL BANKING
- VALUE RETENTION
- NEW BUSINESS MODELS
- NEW SKILLS & SUSTAINABLE JOBS
- **WELLBEING FOR FUTURE GENERATIONS**

Platform for Circular Service Delivery



CELSA Circular Steel

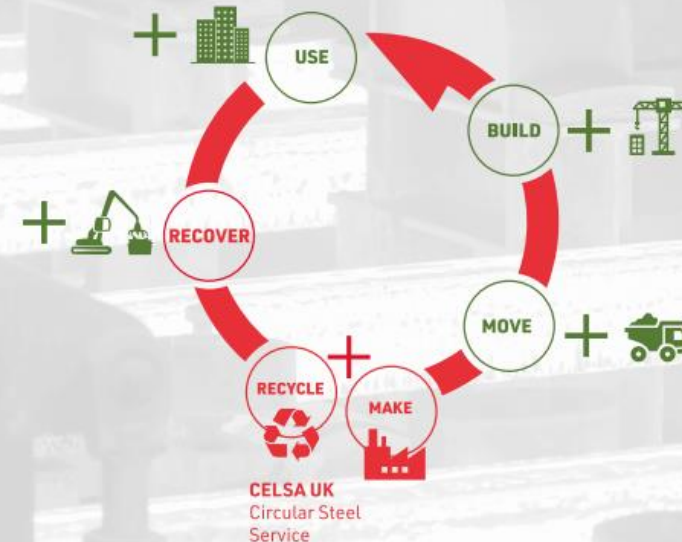
Embracing a sustainable future
through collaboration

Voucher Scheme

Voucher Scheme

Circularity Collaboration

We have created a platform for circularity collaboration that supports resource efficiency and carbon reduction across the built environment supply chain.



86% less emissions
than ore processed
steel making

98% recycled
content in our
finished products

100% of our scrap
comes from the UK



Platform for Circular Service Delivery



orangebox



Seating as a Service

riversimple[®]



Mobility as a Service

BS 8001:2017 Circular Economy Principles



1. Systems Thinking

- Understanding the system-wide impacts and opportunities

2. Innovation

- Rethinking and utilising our business management as lens for value creation

3. Collaboration

- Securing system-wide benefits by cooperating with lifecycle stakeholders

4. Stewardship

- Taking responsibility for our actions, while protecting and advancing our industry

5. Optimisation

- Keeping materials at their highest level of value

6. Transparency

- Being honest and open about circular benefits and barriers



ALWAYS THINK FULL LIFEYCYCLE

Because stuff doesn't disappear

WASTE is BAD DESIGN

So redesign the entire system

COLLABORATION is KEY

Circularity is a team sport

Circular Thinking | Circular Action



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Thank You Questions Welcome

MADE
MANUFACTURE
ADVANCED
DESIGN
ENGINEERING



Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

What's next for you?