

A SANDWICH, A BUTTERFLY AND A CAKE! - A CIRCULAR ECONOMY?

WHAT ARE THE BOUNDARIES TO A CIRCULAR ECONOMY?

CONTEXT FOR THE ACTIVITY

This activity emphasises the importance and consequences of choosing system boundaries. Where should they be drawn? Do we, to paraphrase Buckminster Fuller “Start with the Universe” ...start with a ‘big picture’ – science, and setting system conditions? Or do we focus on, say, product design or business models or tools? Zoom out or zoom in? This workshop activity contrasts the ‘circular’ materials notion with the idea of an economy as material, energy and information stocks, flows and feedback.

RESOURCES AVAILABLE

- 1:R1A intro PPT slide
- 1:R1 PPT build up in stages of a circular economy
- 1:R2 Card prompts – six items, one blank
- 1:R3 PPT ‘A sandwich, a butterfly and a cake’ proposal

ORGANISATION

- Plenary and dialogue around PPT
- Small group (4s) around card prompts
- Plenary debrief

TASK(S) AND RUNNING ORDER

- 1) Dialogue around classic ‘circular economy’ diagram build up. Why does it matter? Is it sufficient?
- 2) Consider in groups the R2 cards. Categorise them as ‘very relevant’, ‘perhaps relevant’, ‘marginal’ to circular economy. Add own item(s)
- 3) Feedback and debrief on the cards.
- 4) Dialogue around R/3 short slide set.
- 5) Reflection: “Where do circular economy boundaries lie for you?”

TIMINGS

Overall approximately 85 minutes. Task 1: 15 mins; Task 2: 20 mins; Task 3: 20 mins; Task 4: 15 mins; Task 5: 15 mins.

AIM OF THE ACTIVITY

To give an early introduction to the circular economy overall. This activity emphasises the importance of ‘big picture’ – of science, design, business and setting system conditions. It is based on the idea of an economy as material, energy and information stocks, flows and feedback.

GUIDANCE FOR FACILITATORS INCLUDING DEBRIEFING NOTES

There are two PowerPoints in this workshop activity. Successively, they act as lead in to a card exercise for small group work and as a conceptual proposal and jumping off point for further reflection.

TASK

1

The first PowerPoint 1:R1 is a stage by stage build-up of what is called the butterfly diagram. Use the PowerPoint slides to develop dialogue around the classic 'circular economy' diagram build up. Why does it matter? Is it sufficient? This diagram is generically based on the 'cradle to cradle' design approach which identifies two materials pathways; the first through the biosphere and the second through the technosphere. The first pathway has the characteristic that all material flows are suitable for consumption, for being regenerated through soils via environmental/ecological processes etc. 'Waste' here is quite literally 'food'. The result is increases in natural capital - the 'stock' and multiple benefits (more flows, better environmental resilience, more diversity). The technosphere is the pathway for durables, which in the general scheme are posited as offering use (a flow of services) within defined periods before being recovered as products, components or materials and being restored to represent a new and useful stock.

TASK

2

1:R2 is a card set for use with small groups. Each of the prompts contains a short quote which, potentially pushes at the boundaries illustrated in 1:R1 or reconfirms them. Use groups to categorise the cards. Categorise them as 'very relevant', 'perhaps relevant' or 'marginal' to circular economy. Groups should add their own items. Not all of the cards are closely linked to even a wide conceptualisation of circular economy, as this helps groups with deciding what is relevant and to what degree.

TASK

3

In a plenary debriefing with the groups use the letters on the cards in 1:R2 to gather a quick 'heat map' of what is coming out. Use a flip chart or pre-prepared proforma slide. Ask for clarification and comment, maintaining a quick pace and involving as many people as possible. Look for some common markers such as:

What about the social impacts?

This is mostly just about resources, right?

It's not economics really if there is no money circuit?

Is the focus mostly on business models?
I think so.

Who has done the rest of the work, as I think this is a start of a better model?

What about climate change, any proposal without that close to home seems pointless?

This is business as usual with digital advantage woven into it I don't see debt as 'pollution' - what an odd idea!

The aim of this task is to help participants position circular economy for themselves, to create their own sense of where it fits. Some common 'fault lines' are around the following:

Circular economy = digital boosted resource efficiency + access over ownership in an age transitioning to renewables. It follows not leads.

Circular economy = is about production and consumption and is usually deficient on social equity and biodiversity/climate change

Circular economy = doesn't connect well to monetary circuits, to macro-policies, it's a useful part of the overall discussion however

Circular economy = is a reflection of a framework for thinking related to contemporary science and it focuses on resources and to a lesser extent energy.

TASKS

4

5

The follow up to the cards discussion is 1:R3 which is a short PowerPoint proposal which makes a case for seeing circular economy as a reflection of a broader shift in thinking than 'circular economy = digital + resource efficiency + access over ownership' and how in common with all systems perspectives it requires enabling 'rules of the game' and a recognition that the economy is embedded in social and ecological contexts.

This PowerPoint, 1:R3, is a short slide sequence which describes the circular economy as 'a sandwich' where there is science and philosophy as the top layer and where the practical action around products, components and materials and a shift to selling goods as services is the middle layer of the sandwich. In discussion around 'the sandwich' slides, make the point that in practice most action and discussion is usually in the 'sandwich filling' around products, components and materials and a shift from product to service platforms.

The bottom layer of the sandwich is the system conditions or 'rules of the game'. This layer includes a posited relationship with monetary flows, ICT and other infrastructure and fiscal decisions. The final 'cake' slide in the PowerPoint builds on this financial dimension to introduce the idea of the monetised and non-monetised economy.

Use the PowerPoint to develop the dialogue. At the end of this activity ask participants to reflect on the question: "where do circular economy boundaries lie for you?"

SUPPLEMENTARY RESOURCES

(for task 4 and 5)

Visual representation of materials, energy and information flows in a circular economy. Available as Figure 1 in the Introductory Booklet.

REFERENCES AND FURTHER READING

Ellen MacArthur Foundation (2015) *Towards a circular economy* Volumes 1, 2 and 3 Executive summary. December 2015. Available at:

<https://www.ellenmacarthurfoundation.org/publications/towards-a-circular-economy-business-rationale-for-an-accelerated-transition>

Raworth, K. (2017) *Doughnut Economics. Seven Ways to Think Like a 21st-Century Economist*. Random House.

Webster, K. (2015) The circular economy – where does money fit in?. Article in *Circulate* news magazine, August 2015. Available at:

<http://circulateneeds.org/2015/08/the-circular-economy-where-does-money-fit-in/>

THUMBNAIL RESOURCES

CLICK TO DOWNLOAD HIGH RESOLUTION VERSIONS FROM BELOW

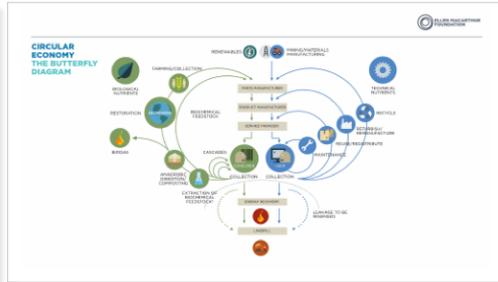
1:R1A INTRO PPT SLIDE

1:R/A ACTIVITY 01: A SANDWICH, A BUTTERFLY AND A CAKE! - A CIRCULAR ECONOMY? 

KEY ENQUIRY
What are the boundaries to a circular economy?

TASK(S)
1) Dialogue around classic 'circular economy' diagram build up.
Why does it matter? Is it sufficient? (Time)
2) Consider in groups the 1:R/2 cards. Categorise them as 'very relevant', 'perhaps relevant', 'marginal' to CE. Add own item(s) (Time)
3) Feedback and debrief on the cards (Time)
4) Dialogue around 1:R/3 short slide set (Time)
5) Reflection: 'Where do CE boundaries lie for you?' (Time)

1:R1 PPT



1:R2

ACTIVITY 01 1:R2 

PROMPT A
"Debt creation is a form of economic pollution"
Lord Adair Turner

ACTIVITY 01 1:R2 

PROMPT B
Perverse subsidies for extractive industries are \$400bn p/a - 24 countries
OECD estimate

ACTIVITY 01 1:R2 

PROMPT C
"Increasing inequality depresses demand"
New Economics Foundation (UK)
An economy wasting potential to grow

ACTIVITY 01 1:R2 

PROMPT D

ACTIVITY 01 1:R2 

PROMPT E
Uber, AirBnB, Netflix, Ofo*

*Chinese bike share

ACTIVITY 01 1:R2 

PROMPT F
Tesla + SolarCity + Autonomous vehicles
(greater than the sum of the parts)

1:R3 PPT

THE SANDWICH 

SYSTEMS THINKING

- SCIENTIFIC WORLDVIEW
- COMPLEX ADAPTIVE SYSTEMS
- HOW WE TEACH AND LEARN



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SYSTEMS THINKING

- SCIENTIFIC WORLDVIEW
- COMPLEX ADAPTIVE SYSTEMS
- HOW WE TEACH AND LEARN

PRODUCTION & CONSUMPTION

- CRADLE TO CRADLE
- PRODUCT SERVICE SYSTEMS ETC
- SLOW RESOURCE FLOWS AND 'CLOSE LOOPS'



THE SANDWICH 

SYSTEMS THINKING

- SCIENTIFIC WORLDVIEW
- COMPLEX ADAPTIVE SYSTEMS
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PRODUCTION & CONSUMPTION

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- PRODUCT SERVICE SYSTEMS ETC
- SLOW RESOURCE FLOWS AND 'CLOSE LOOPS'

ENABLING CONDITIONS

- GOVERNMENT 'RULES OF THE GAME'
- ICT INFRASTRUCTURE
- ADJUSTED TAX AND SPENDING



A CAKE 



The diagram shows a cake on a stand, divided into layers representing different sectors and resource flows. Labels include:

- PRIVATE SECTOR** (top layer)
- PUBLIC SECTOR** (middle layer)
- INTERNALS & EXPORTS, CARING, SHARING ETC.** (bottom layer)
- NATURAL CAPITAL, CLEAN AND CLEAN WATER, RESOURCES, SOILS, FORESTS, BIODIVERSITY** (base)
- NON MONETISED** (left side)
- MONETISED** (right side)