

15 March 2023

Interview Agenda

Investigation of circular economy implementation strategies, barriers and enablers

Context

This is a follow-up interview to the questionnaire that you completed on circular economy practice in rail infrastructure projects. Highlighted results from the survey are included as an appendix to this document for reference. Fifteen interviews will be undertaken in total, with five each representing contractor, consultant and client organisations. Findings from the completed survey and interviews will contribute towards an ongoing doctoral research project at Loughborough University. The overarching aim is to develop a framework for applying circular economy principles in rail infrastructure projects.

Interview Aim

This follow-up interview aims to further investigate the most important circular economy implementation strategies, barriers and enablers (as rated by questionnaire respondents).

Agenda

The following items will be covered:

Interview Section	Duration (minutes)
1: Life cycle stages and circular economy implementation strategies	20
2: Circular economy implementation barriers and enablers	20
3: Potential framework to apply circular economy principles	10
Total: 50	

Section 1: Life cycle stages and circular economy implementation strategies 20 min

The questionnaire results reveal that project brief and design are seen as important stages for industry-wide circular economy implementation in rail infrastructure projects.

- Q1.1 Why do you think these stages are of major importance (90/94%*)? 1 min
- Q1.2 Why do you think the following strategies are of major importance? 10 min

Project brief

- i Specifying reuse of the existing asset (75%*)
- ii Whole life costing (64%*)

Design

- iii Design out waste (84%*)#
- iv Design for durability (71%*)

- P1.2.1 The literature identifies buildings are demolished for non-technical reasons (land value, market forces). Do you think this is an issue for rail infrastructure? 3 min
- P1.2.2 Whole life costing is associated in the literature with establishing a business case and comparing different options. What do you think it is best used for? 3 min
- P1.2.3 Balancing cut and fill is highlighted in the literature as especially relevant for civil engineering. What aspects of designing out waste do you think are most relevant for rail infrastructure? 3 min
- P1.2.4 The literature identifies a need for balance between flexibility and durability. How do you think this applies to rail infrastructure? 3 min
- P1.2.5 Product-as-a-service is identified in the literature as important. Why do you think it is not highly rated by respondents (44%*)? Is this specific to rail infrastructure?

*percentage of questionnaire respondents that rated strategy to be of major importance

#i.e. design for recovery and reuse/recycling; offsite construction; materials optimisation; waste efficient procurement; deconstruction; flexibility/adaptability

Section 2: Circular economy implementation barriers and enablers **20 min**

The questionnaire results reveal that a variety of factors are seen as important barriers and enablers to industry-wide circular economy implementation in rail infrastructure projects.

Q2.1 Why do you think the following factors are major barriers or enablers? 8 min

Barriers

- a Short-term vision (66%*)
- b Lack of ownership between client and operator (63%*)
- c Resistance to change (business as usual) (60%*)

Enablers

- d Client leadership (88%*)
- e Making decisions based on total rather than capital expenditure (75%*)#
- f Circular economy public procurement requirements (72%*)

P2.1.1 Short term vision is identified in the literature as a barrier for clients, consultants, and contractors. Who do you think is responsible? 2 min

P2.1.2 The rail infrastructure client and operator is commonly one organisation. Why do you think lack of ownership is seen as a significant barrier? 2 min

P2.1.3 Resistance to change is identified in the literature as a construction sector barrier. Do you think it is more or less significant for rail infrastructure? 2 min

P2.1.4 Client leadership is rated higher than any other answer. Why do you think this is? Do you think it is more or less significant for rail infrastructure? 2 min

P2.1.5 Making decisions based on total rather than capital expenditure is rated especially highly by clients (100%*). Why do you think this is? 2 min

P2.1.6 What public procurement requirements have the greatest potential? 2 min

*percentage of questionnaire respondents that rated factor a major barrier or enabler

#total expenditure accounts for both capital and operational life cycle costs

Section 3: Potential framework to apply circular economy principles**10 min**

The questionnaire results reveal that a framework to apply circular economy principles is seen as an enabler by most respondents (94%)#.

Q3.1 What is your interpretation of the term framework in this context? 1 min

P3.1.1 Based on your experience, what do you think is the best purpose and structure for a framework, i.e. visionary (hierarchy, route map), process (protocol, flow chart) or assessment (matrix, checklist) related? 3 min

P3.1.2 Based on your experience, what aspects of rail infrastructure (assets, components or materials) should a framework target? What particular rail infrastructure assets, components or materials have the greatest potential for applying circular economy principles? 3 min

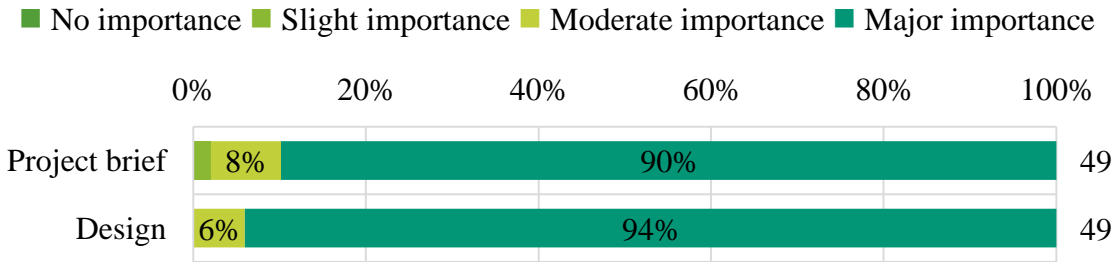
P3.1.3 Based on your experience, what organisational level (industry-wide, supply chain or individual firm) should a framework be targeted at? Which stakeholders should be involved in its development? 3 min

P3.1.4 Do you have any further thoughts or observations on the questionnaire results?

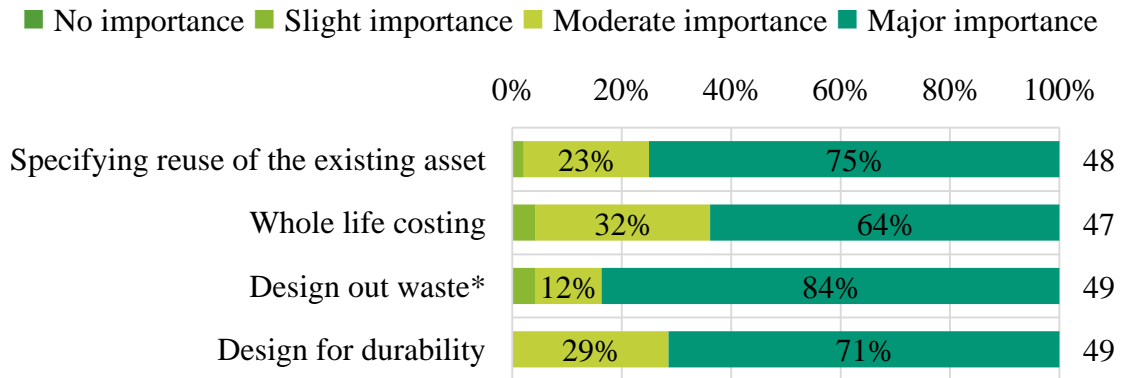
#circular economy principles are variously defined in the literature, but for this interview comprise: keeping resources in use for longer; designing out waste and pollution; making efficient use of resources; recovering and reusing resources

Appendix A: Highlighted questionnaire results

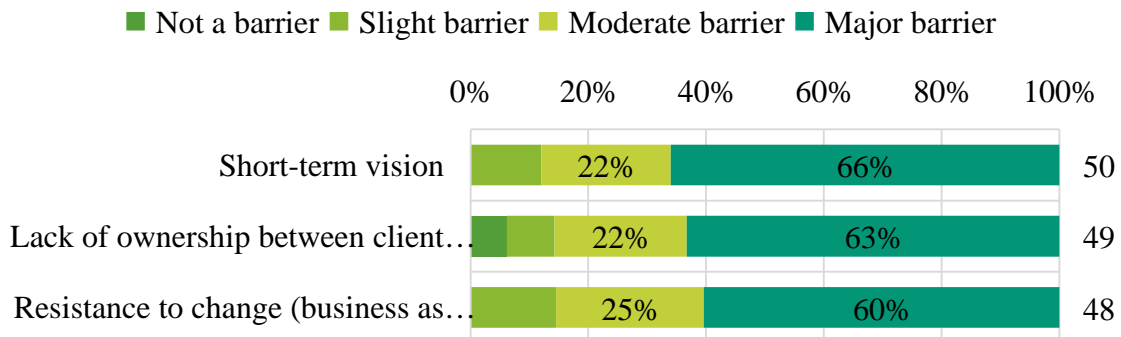
Life cycle stages



Strategies



Barriers



Enablers

