



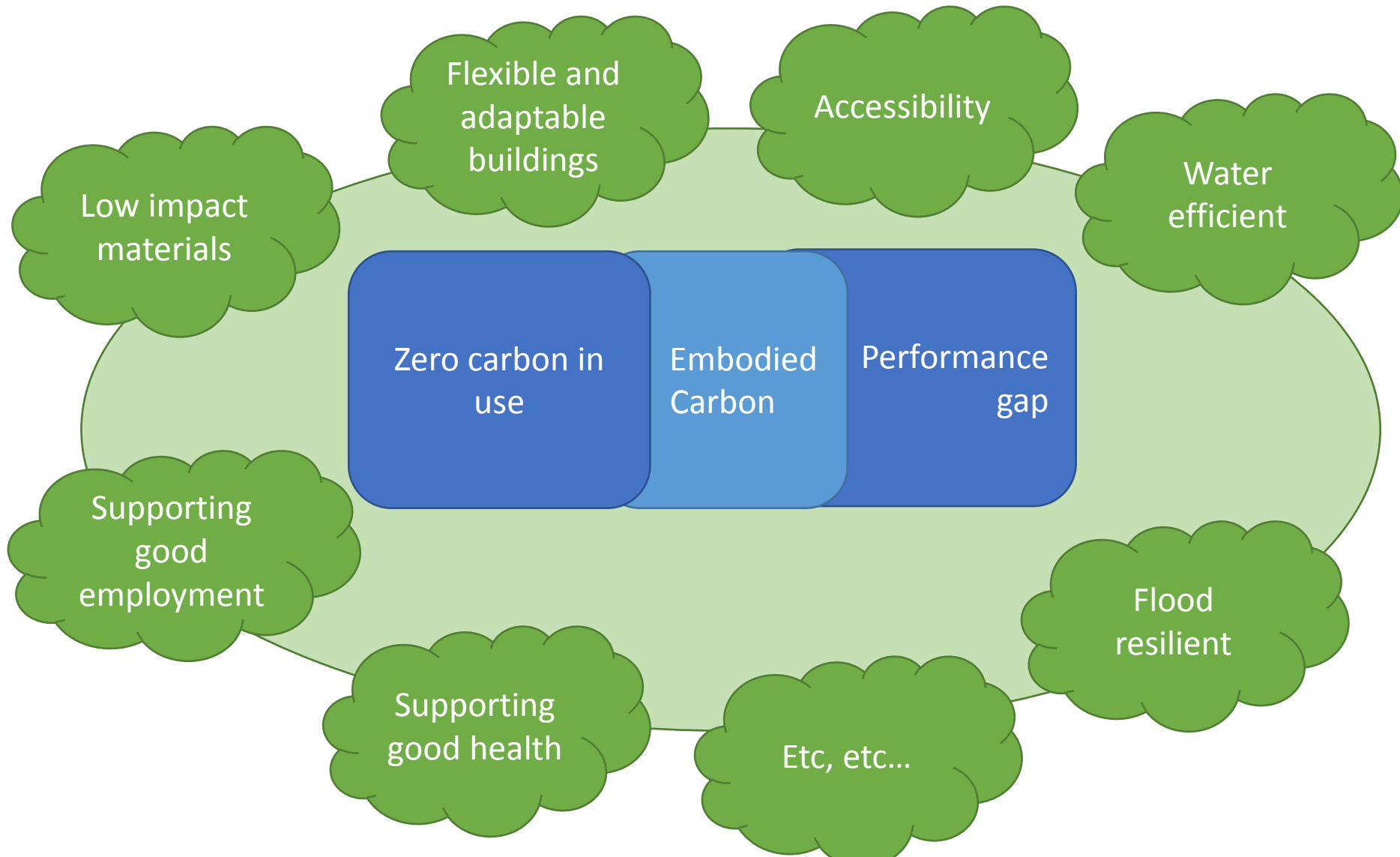
# Skills & Knowledge for Sustainable Construction in Leeds

Dr Alice Owen & Dr Kate Simpson

Sustainability Research Institute

[a.m.owen@leeds.ac.uk](mailto:a.m.owen@leeds.ac.uk)

[k.simpson2@leeds.ac.uk](mailto:k.simpson2@leeds.ac.uk) / [@Dr\\_KateSimpson](#)



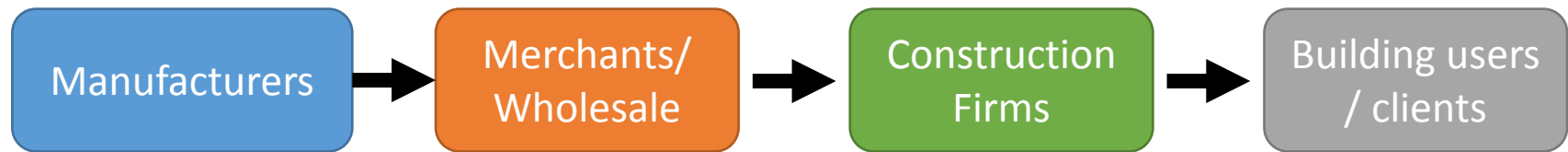


Who influences whether or not sustainable construction happens?

Lots of research on sustainable design

Lots of research on what building users want and do

But that's not the same as what happens.



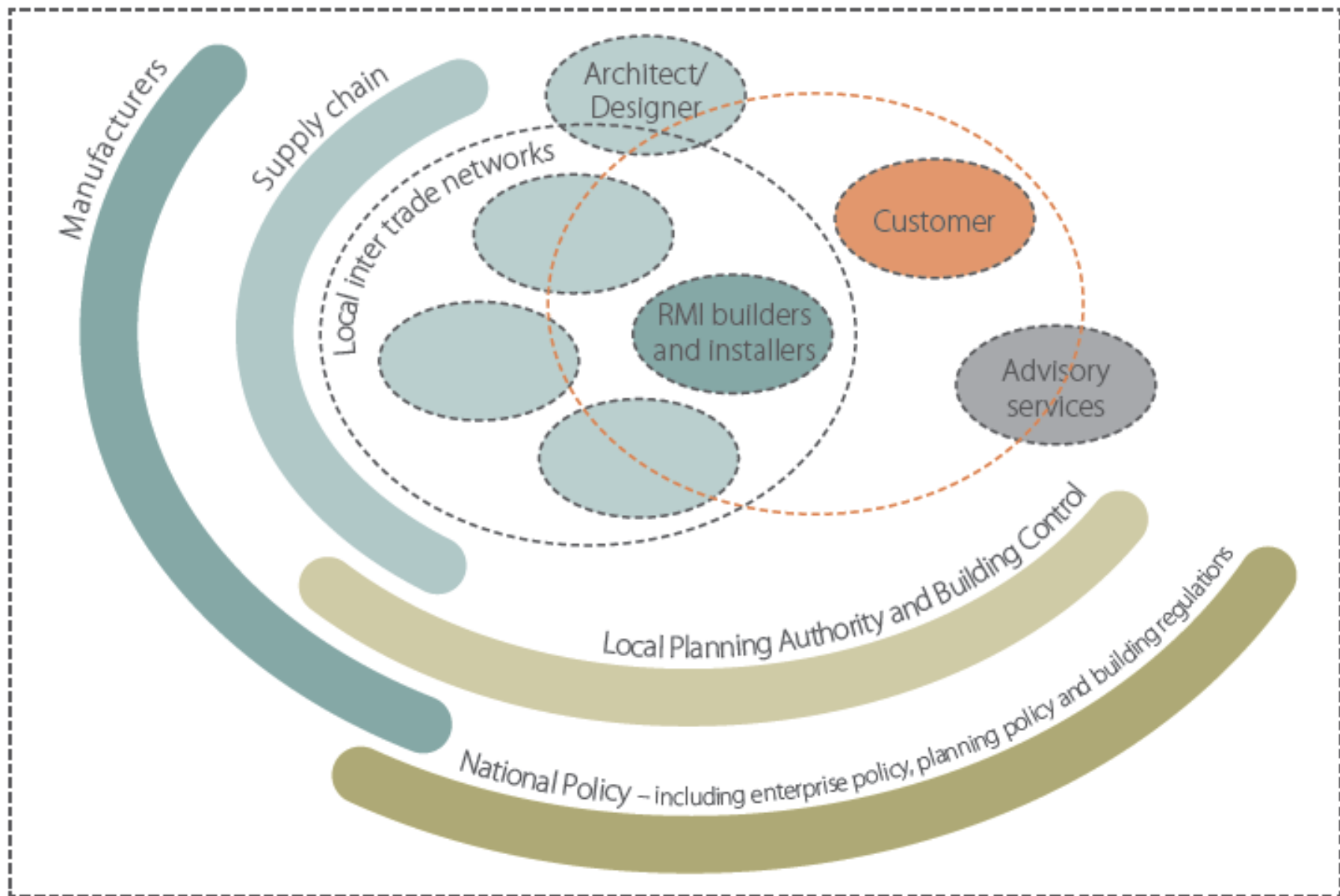
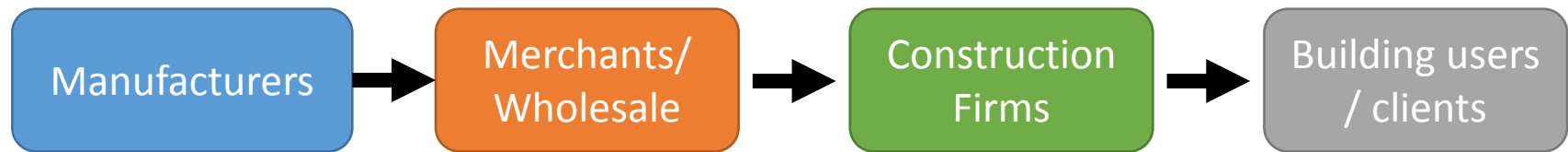
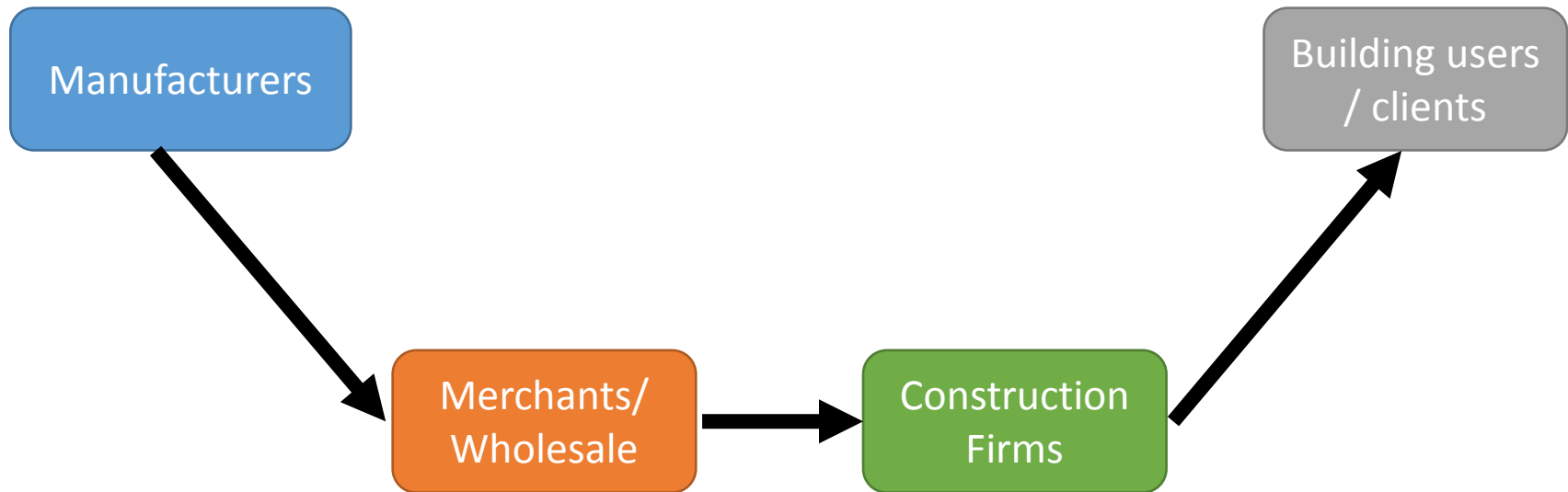
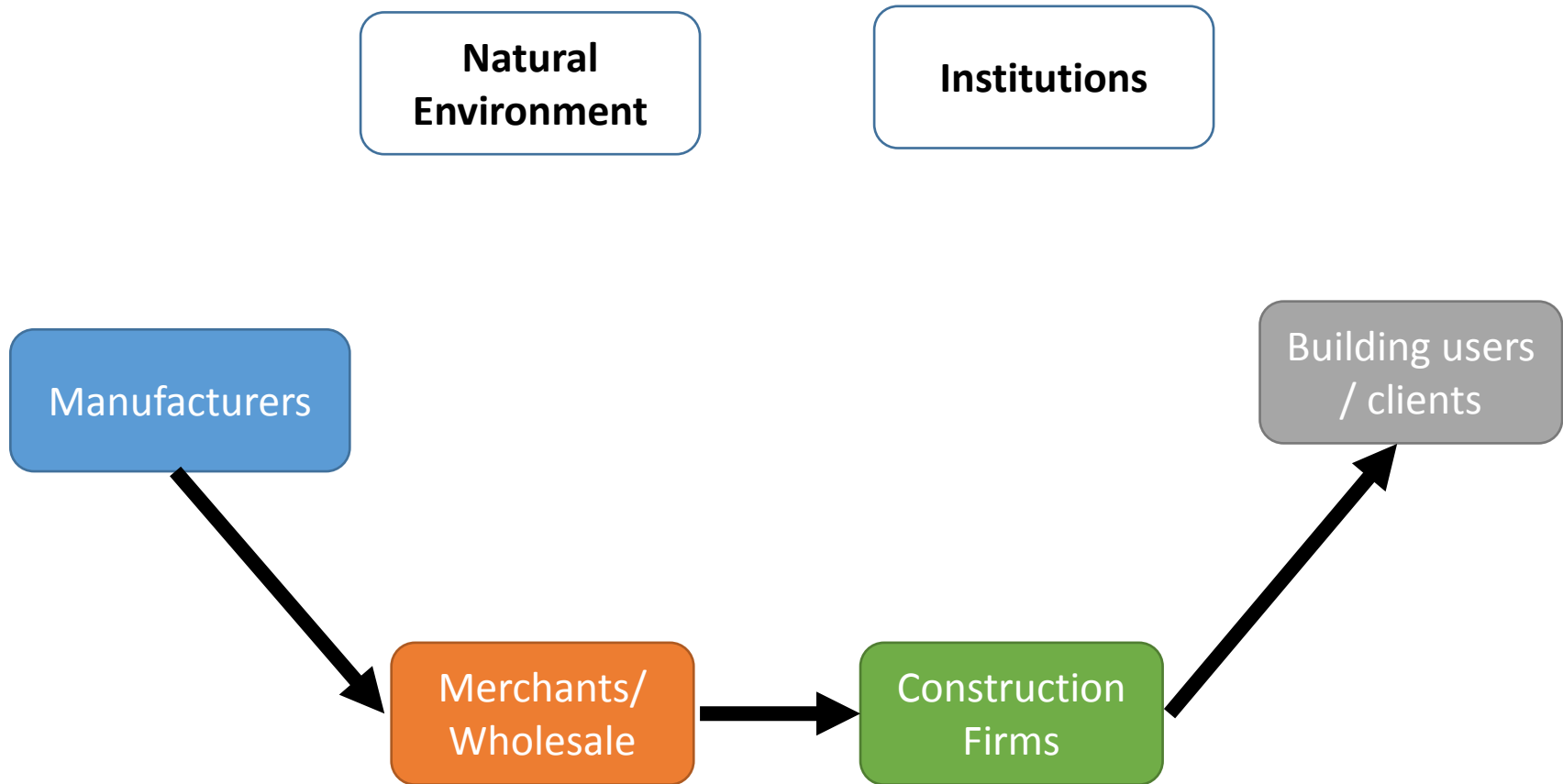


Figure 3: The home energy retrofit system

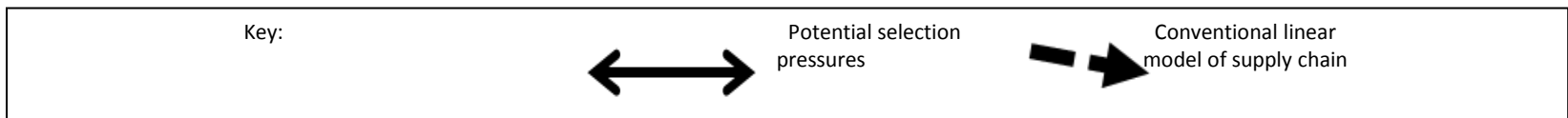
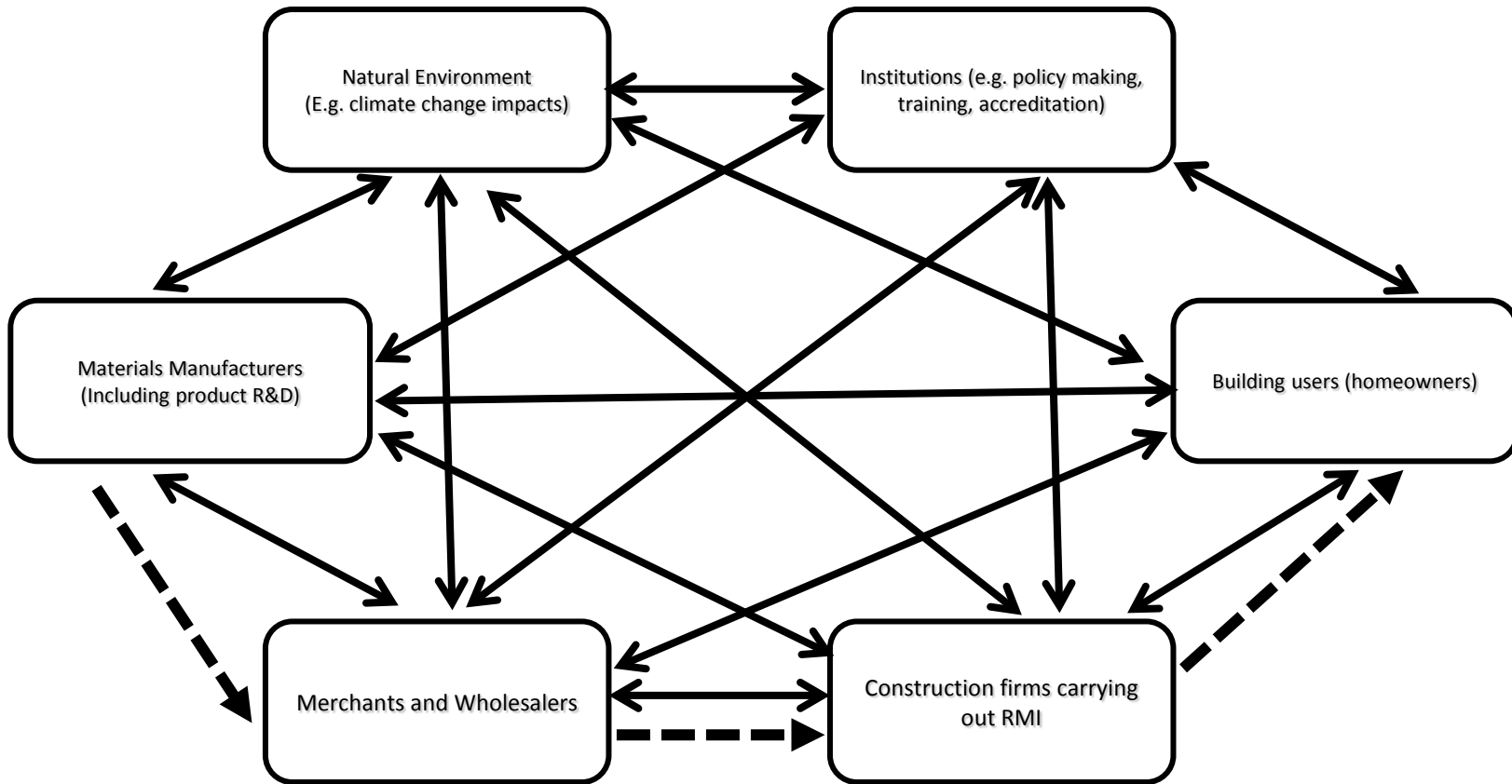








# Construction Supply Chain Network?







## Three themes emerged:

- Whole Building Performance
- Social Value
- Lean Manufacture



## Whole Building Performance

Building performance expertise for the trades – on site toolbox talks, for example achieving quality and good airtightness through communication and awareness between trades

Clerk of works role – a formal set of competences so that someone has the overview



Image sourced from: Roberts et al, 2005



## Whole Building Performance summary

What skills?	Who should learn?	How can we deliver it?
Overview of need for good building performance – climate change, health etc	Builders/ trades people for toolbox talks	Toolbox talks on new sites pre, during and post builds
Practical issues and common challenges	Managers for higher level 'clerk of works' type top-up	Online / virtual tools with pics and quizzes
Air-tight factors and thermal bridging		One-week intense courses
Air movement		Higher level university courses for clerks of works
Measuring building fabric		



## Social Value

- What do you get from “slow” construction?
- LATCH is the inspiration – one to one training
- Can projects deliver social benefits through employment, skills development, community building as they are carried out?
- Small is valuable and effective the challenge is to replicate not to grow.



Image sourced from: [latch.org.uk](http://latch.org.uk)



## Social Value summary

What skills?	Who should learn?	How can we deliver it?
Communication	All trades	NVQ additions
Awareness of other trades	All levels of construction professions	Formal courses
Respect of quality and performance – and why!		Continuous learning
Choice of materials		Time on social enterprises in apprenticeship routes
Collaboration		

## Lean Manufacture

- Quality principles and processes
- ‘Engineering’ precision
- Minimum waste
- Learning and continuous improvement
- Breaking down barriers between trades – upskilling whilst de-skilling to multi skill on-site.!



Image sourced from: @CituUK on Twitter





## Lean Manufacture summary

What skills?	Who should learn?	How can we deliver it?
Lean principles: <ul style="list-style-type: none"><li>- Efficiency</li><li>- Less waste</li><li>- Accuracy</li></ul>	New entrants	Blended approach: Some on the job, some classroom, minimal e-learning
Manufacturing processes	Existing offsite manufacturing staff	<ul style="list-style-type: none"><li>- New entrants: College</li><li>- Existing staff: on the job</li></ul> delivered by factory managers, line leaders etc
Digital technologies	Individuals new skills research evidence highlights	Industry apprenticeship routes  Ambassador talks by lean specialists



# What's "for Leeds" about all this?

Building performance – not much

Social Value – works with the grain of Leeds tradition of activism

Lean Manufacture – Leeds-based firms Citu, Ilke Homes, Bauman Lyons and others are investing heavily in offsite/modular building manufacture



Image sourced from: [Leeds-list.com](https://www.leeds-list.com)



## What next?

- SRI briefing note: <http://www.see.leeds.ac.uk/research/sri/briefing-notes/>
- Hopefully – continuation project with a developer
- Leeds College of Building
  - T levels
  - South bank campus / city lab
- Leeds Beckett ongoing technical / performance research
- Offsite Housing focused Impact Accelerator Project



Thank you for listening!

Questions welcome.

a.m.owen@leeds.ac.uk

k.simpson2@leeds.ac.uk / @Dr\_KateSimpson