International examples of circular economy and carbon neutrality in construction projects

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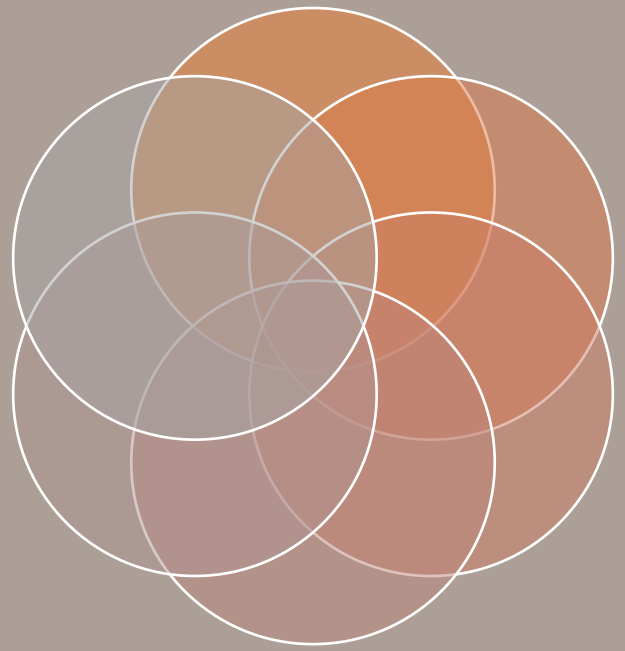
AIMS OF THE RESEARCH

to inform Victorian building and construction with industry and policy innovation conducted internationally

to enhance innovation through understanding of opportunities and challenges of digital transformation



to identify current best practice policy innovation in sustainable building

to enhance training and capabilities, and thus workforce productivity, participation, diversity, equity, and inclusion

to identify models for managing business risk in a subcontractor based building and construction industry like Victoria

to provide empirical examples of how to ease workforce shortages in Victoria

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ORGANISATIONS VISITED

Arup (New York office)	Associated Builders Contractors (Washington office)	BC Materials, BESIX Watpac (Belgium)	Birmingham 2022	Brickworks (NY design studio)	Bruxelles Environnement
Building Environment – Smart Transformation BE-ST	Embuild Brussels Vlaams-Brabant	Federation of Master Builders	International Code Council (Washington DC headquarters)	Laing O'Rourke (UK)	Lendlease (UK)
Multiplex (Canada)	TOWN, Sandwell Metropolitan Borough Council	University College of London Sustainable School of Construction	University of Toronto Mass Timber Institute	US Senator Tim Kaine's office	Wates Group

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Case Study 1: Marmalade Lane, Cambridge, UK

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‘Inevitably in our work, we have to challenge what people think they want and what estate agents say that people want… We had two different systems of off-site manufacturer. One was a CLT panel-based system and the other one was the timber frame… By involving people right from the outset, it really gives ownership in the product but you also have a better product as a result of it.’ (Head planner, UK)

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Case Study 2:
BC Materials, Belgium

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‘This is probably one of the closest things that you can get to having a CO2 neutral wall, because the rammed earth, you can make it without baking anything, the clay, the sand or the gravel in it. Most of it is waste… it’s excavated earth that is mixed and then rammed. Then you attach a layer of hempcrete, which is a biobased insulation that’s probably CO2 negative and that you can apply without having to bake again. Obviously, the lime that you use is something that you have to bake, but it’s compensated by the uptake of CO2 emissions by the hemp.’ (Circular economy practitioner, Belgium)

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Case Study 3: YW Kitchener-Waterloo, Canada

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‘woody products, for example, different CLTs with isolation, and also other properties … we try to balance it with the concrete and the steel, to see that where it is still not a bad idea to use maybe 20 per cent, 20 per cent other materials, because they will be more durable. That is about the mitigation effect of this affordable housing.’
(Senior academic, Canada)

Conclusions

- Workforce
- Construction processes and methodologies
- Climate resilience and industry preparedness
- Building outcomes and consumers

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