

Annotated Bibliography: Retrofit vs New Builds

1. Pomponi, F., & Moncaster, A. (2018). Embodied carbon mitigation and reduction in the built environment – What does the evidence say? *Renewable and Sustainable Energy Reviews*, 81, 2431–2444.

This article provides one of the most comprehensive syntheses of embodied carbon data across building types and construction methods. It highlights the significant carbon savings achievable through retaining existing structures, making it highly relevant to retrofit–new build comparisons. The authors critically evaluate methodological limitations in life-cycle carbon assessments, providing useful insight for designing robust research methods. This source supports the argument that retrofit often offers measurable carbon advantages.

2. Femenías, P., Mjörnell, K., & Thuvander, L. (2018). Rethinking deep renovation: The perspective of Swedish housing companies. *Building Research & Information*, 46(7), 804–818.

This study examines the barriers and drivers influencing decisions around deep retrofit within large housing portfolios. It offers practical insights into economic, organizational, and regulatory challenges that shape retrofit feasibility. The findings reveal that while deep renovations improve energy performance, long payback periods and tenant disruption are major constraints. This contextual understanding enriches the analysis of practical challenges compared with new build strategies.

3. Power, A. (2008). Does demolition or refurbishment of old and inefficient homes help to increase our environmental, social and economic viability? *Energy Policy*, 36(12), 4487–4501.

Power's influential work compares demolition and replacement with refurbishment for aging housing stock. The study argues strongly that refurbishment generally produces lower environmental impact and better preserves community cohesion. It provides empirical evidence on carbon savings, waste reduction, and social value that are difficult to recover when opting for new builds. This source helps frame retrofit as a multi-dimensional sustainability strategy, not just an energy-efficiency measure.

4. Ürge-Vorsatz, D. et al. (2020). Advances Toward a Net-Zero Global Building Sector. *Annual Review of Environment and Resources*, 45, 227–269.

This review outlines global pathways for reducing both operational and embodied emissions in buildings, making it directly relevant to net-zero policy contexts. The authors discuss retrofit and new construction as complementary strategies, with a strong emphasis on the urgency of upgrading existing stock. Its global policy perspective strengthens understanding of regulatory frameworks influencing retrofit–new build decisions. The article also offers methodological insights into evaluating lifecycle carbon impacts.

5. Bullen, P. A., & Love, P. E. D. (2011). Adaptive reuse of heritage buildings. *Structural Survey*, 29(5), 411–421.

Although focused on heritage buildings, this paper provides a strong conceptual foundation for understanding the environmental and economic benefits of reusing existing structures. The authors highlight significant reductions in material consumption, waste, and embodied energy compared with demolition and new build. They also identify challenges such as technical constraints and regulatory barriers that complicate retrofit projects. This research supports nuanced evaluation of when retrofit delivers the greatest value.

6. Davies, P., & Osmani, M. (2011). Low carbon housing refurbishment: A decision-making process. *Engineering, Construction and Architectural Management*, 18(6), 638–656.

This paper investigates decision-making frameworks for low-carbon retrofits, providing insight into how project teams evaluate cost, carbon, and practicality. It identifies inconsistencies in lifecycle costing methods and the need for more standardized assessment approaches. The findings help inform how your research might structure its comparative analysis of retrofit vs new build performance. The work is useful for understanding the complexities behind choosing appropriate retrofit strategies.