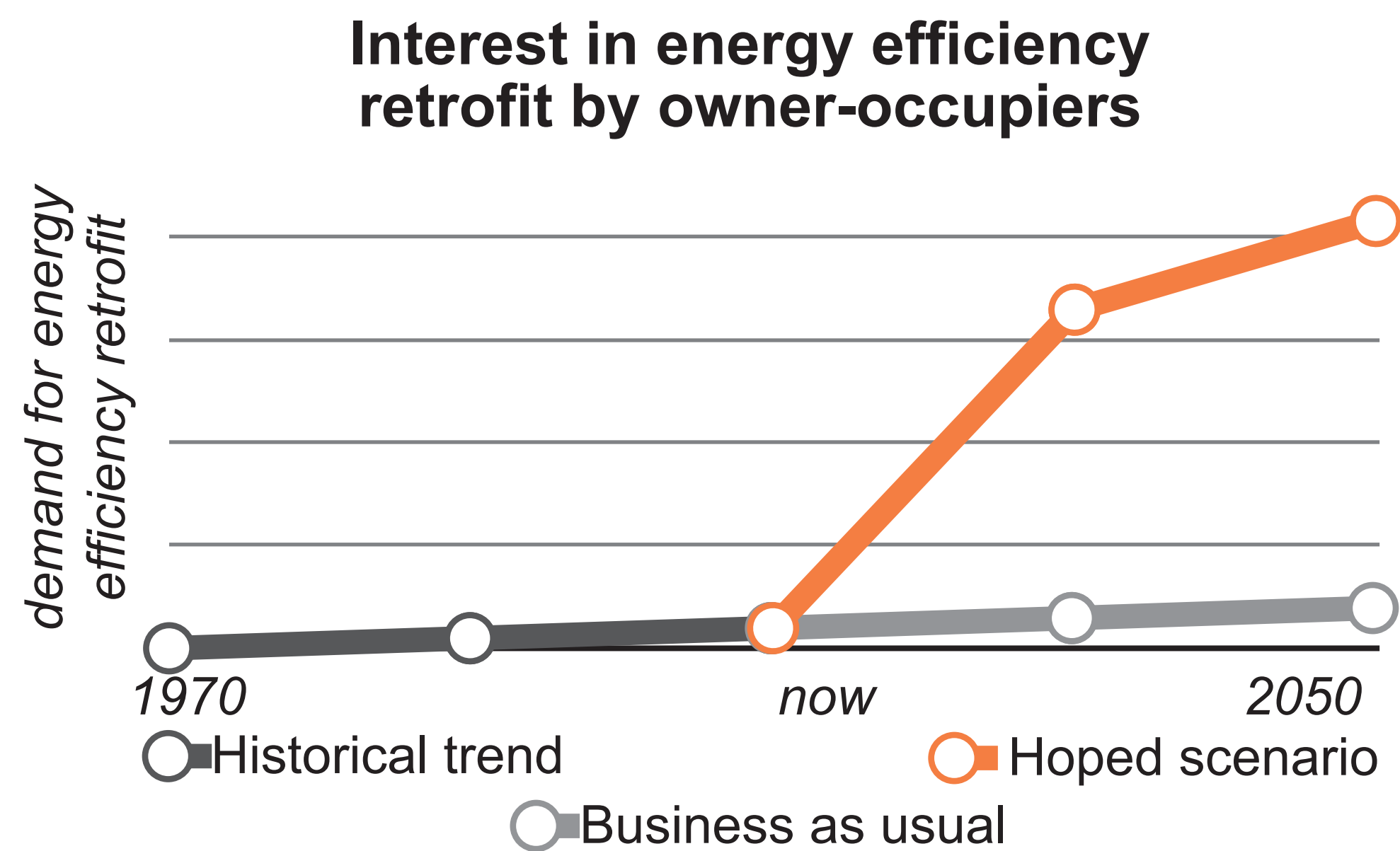


Three stages of domestic renovation decision processes

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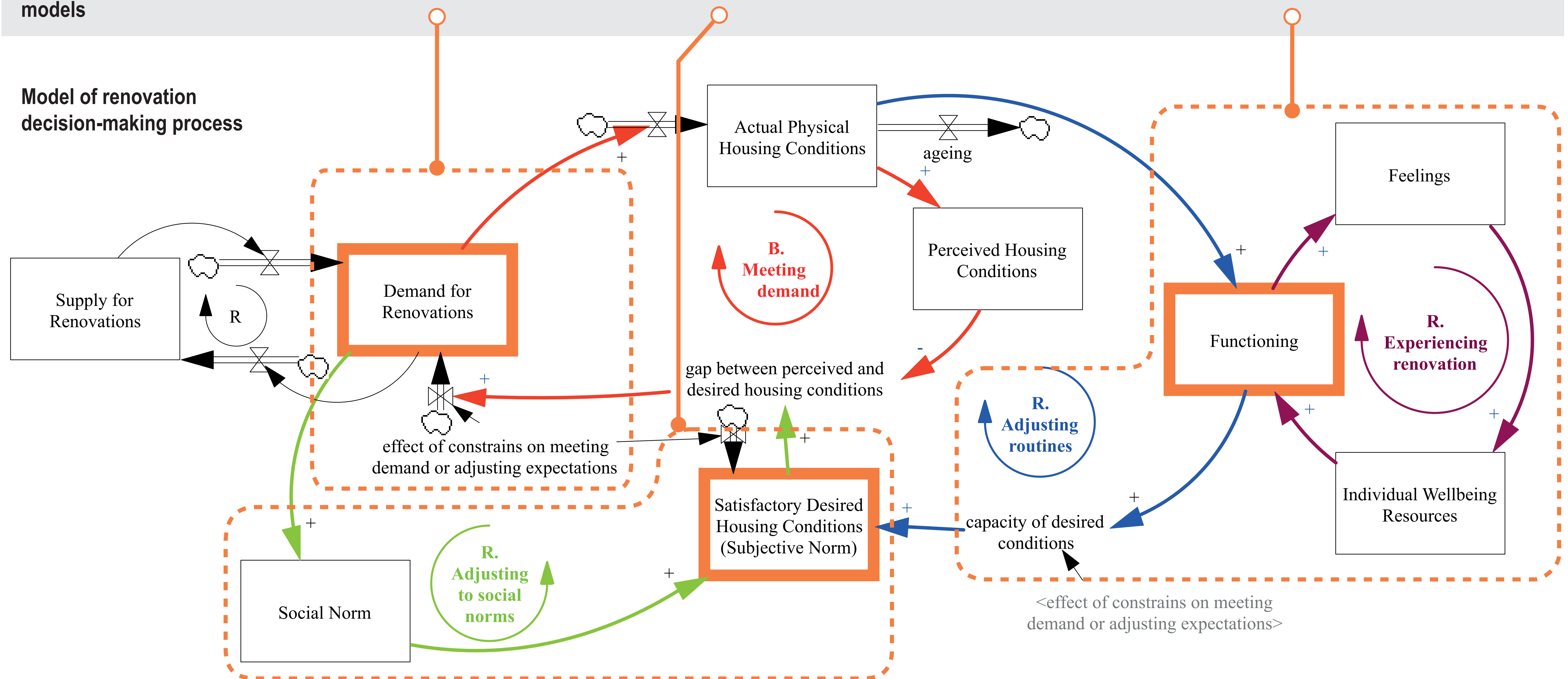
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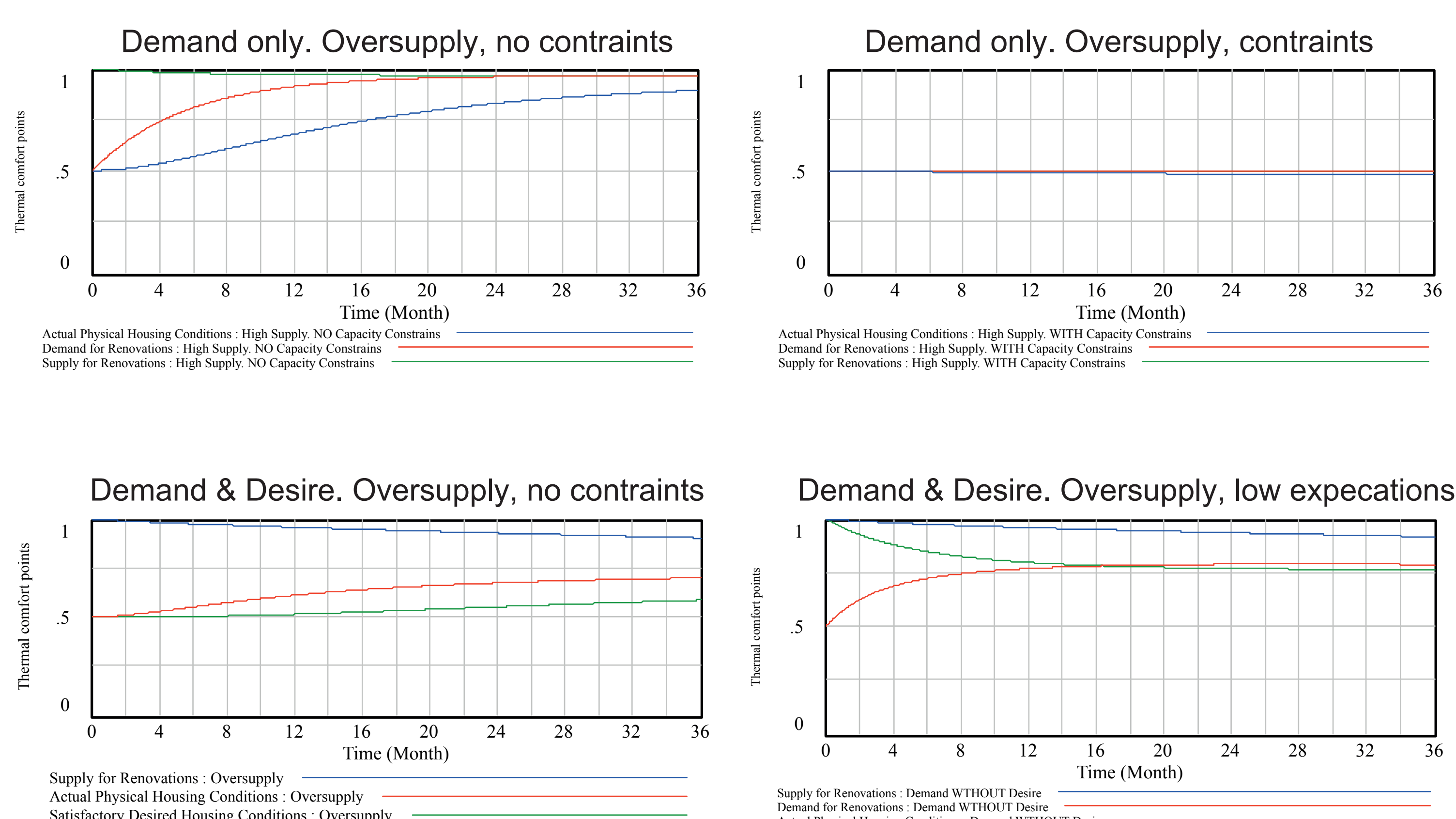
Abstract.

Encouraging homeowners to renovate their homes to be energy efficient is widely recognised as an important strategy to reduce energy use and carbon emissions associated with housing use and, thus, mitigate climate change. This research investigates a wider boundary of the renovation decision process that includes the following three stages: demand for renovations, desire to renovate, forming desires through experience and within the conditions of domestic life. System Dynamics modelling is used to analyse the structure of the decision-making process and behaviour it generates. Different decision-making theories and models are proposed for different stages of the decision-making process. Preliminary results reinforce the hypothesis that addressing a problem solely from a narrow perspective of financial investments and benefits would be insufficient to insure a desired level of energy efficiency retrofit.

	Stage 3	Stage 2	Stage 1
Decision stages	<i>Planning.</i> Weighting benefits against constraints and proceeding with a renovation.	<i>Thinking about.</i> Becoming interested and starting thinking about a renovation.	<i>Experiencing living conditions.</i> Emergence of a need from conditions of everyday life.
Influences [1]	<i>Immediate.</i> Informing point of decision - e.g., which renovation products?	<i>Proximate.</i> Shaping decision intentions, - e.g., how or what to renovate?	<i>Ultimate.</i> Explaining emergence of decision process - e.g., why renovate?
Decision-making theories	<i>Psychological and economic.</i> Individual decision-making	<i>Sociological.</i> Social aspects of decision-making	<i>Socio-technical.</i> Individual and social aspects of decision making are co-shaped by a physical world.
Decision-making models	Discrete models.	Diffusion and acceptance [2] models.	?



Preliminary results



Expectations / feedback from the conference:

- Have you seen any modeling of socio-technical theories of individual behaviour, where personal and physical norms are co-shaped by a physical world?
- Any modelling of routines as shaped by functioning enabled through a physical structure of the world?
- At the moment the *Gap between desired and perceived conditions* (arguable dissatisfaction) and *Feelings/ experience of renovations* are separated. How to model experience influencing dissatisfaction?

References

1. Wilson, C., Crane, L., Chryssochoidis, G. (2015) 'Why do homeowners renovate energy efficiently? Contrasting perspectives and implications for policy', *Energy Research & Social Science*, 7, 12–22.
2. Ulli-Ber, S., Gassmann, F., Bosshardt, M., Wokaun, A. (2010) 'Generic structure to simulate acceptance dynamics', *System Dynamics Review*, 26(2), 89–116.