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RE-DWELL

Deliverable 5.13. Compendium of scientific publications (year 1)

Version 1

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Executive summary

This is a report of the publications made by early-stage researchers from June 2021 to September 2022.

A total of 34 conference contributions – including abstracts, papers and posters – have been submitted, accepted and/or presented during this period. This document contains the list of contributions, classified by authors and keywords. The abstracts are included in the annex and published on the project website.

The document includes some reflections on the interrelationships between the lines of research emerging from the publications, as well as some suggestions for further research in the next two years of network activity.

1. Introduction

This is the first in a series of three compendiums of scientific publications produced by early stage researchers (ESRs) in the course of their PhD research in the RE-DWELL network. In the first year of activity, 34 conference contributions have been made, including posters, abstracts and papers (see Table 1 and Annex 1).

The aim of RE-DWELL is to provide a platform for a holistic analysis of affordable and sustainable housing, viewed through a transdisciplinary perspective, which transcends disciplinary boundaries and involves experts and non-experts. Transdisciplinarity is "a new form of learning and problem solving involving cooperation among different parts of society and academia in order to meet complex challenges of society."¹ Undoubtedly, the lack of affordable and sustainable housing is an increasingly challenging societal problem that needs to be addressed with this holistic and transdisciplinary approach.

When seen as a whole, the contributions weave together to provide an emergent knowledge base for a variety of topics related to our research on affordable and sustainable housing in Europe. This compendium and the keywords used herein (Table 2) will, over the years, develop into a framework for data collection on the research on this subject, a shared taxonomy of affordable and sustainable housing. The need to agree on terminology is an important issue in an organisation as transdisciplinary and multicultural as RE-DWELL; it is something that is currently being explored through the development of the RE-DWELL vocabulary. Together with the library of affordable and sustainable housing case studies, the vocabulary currently forms the collaborative knowledge base of the project.

RE-DWELL ESR projects lend themselves to categorisation according to scale (housing, neighbourhood or city), the housing lifecycle stage and the methodology and methods of analysis. They are perhaps dominated by a concern for the social dimensions of sustainability, including affordability – the climate crisis is, after all, very much a social justice issue. Saskia Furman is developing a new process for socially inclusive, holistic retrofitting using feminist methodologies to engage stakeholder groups. This links strongly to Leonardo Ricaurte's work with Clarion Housing on the development of post-occupancy evaluation tools for social value. Ricaurte and Furman are working at the scale of the housing itself while Andreas Panagidis is exploring the use of the urban living lab as a way of developing social connections and knowledge exchanges at a neighbourhood level. Shared ownership is a key issue in all of this, which is why Androniki Pappa focuses on the potential of urban commons for sustainable local development.

Empowerment, or autonomy, is an important dimension of well-being. Effrosyni Roussou is exploring the methodologies and implications of co-design and Zoe Tzika is examining the role

¹ Klein, J. T., Grossenbacher-Mansuy, W., Häberli, R., Bill, A., Scholz, R. W., & Welti, M. (Eds.). (2001). *Transdisciplinarity: Joint problem solving among science, technology, and society: An effective way for managing complexity*. Springer Science & Business Media.

of community participation in the provision of affordable and sustainable housing with a focus on case studies in Barcelona. Aya Elghandour is developing an integrated life-cycle costing (LCC) framework for delineating a household's health and well-being.

Environmental sustainability is of course key to affordability both in terms of society and the planet. Life cycle analysis in off-site construction for the promotion of cradle-to-cradle sustainability is the focus of Annette Davis' research, while Mahmoud Alsaad is working on the environmental sustainability of future social housing by examining current sustainability practices and developing a framework that overcomes misconceptions about environmental sustainability and reduces the risks of fragmented approaches. There are clearly links between these and the other affordability-oriented projects across the RE-DWELL network.

The industrialisation of the housing sector, coupled with the use of digital technologies, is seen as facilitating more affordable and sustainable housing. Carolina Martín is exploring how ICT and BIM technologies can facilitate the adoption of mass-customization methods to produce housing that adapts to the demands of dwellers over time.

Christophe Verrier is working at the policy level looking at housing governance beyond city boundaries. The governance of energy poverty alleviation is the focus of Tijn Croon's research. Marko Horvat is undertaking a comparative analysis of the impact of social housing policy modernisation in selected post-socialist countries. Alex Fernández is looking at policies for the promotion of affordable and sustainable housing while Anna Martin is examining the impact of the housing crisis on people at the edges of the housing system, the housing precariat, in two contrasting situations: Hungary and Denmark. Comparative analysis is itself an evolving area of research.

One of RE-DWELL's tasks, which is being explored through the Research Methods and Tools courses included in the training programme, is to develop a framework of methodologies for conducting housing research. As so many of the ESRs are working closely with industry partners to develop responses to real-world problems, their work could loosely be described as participatory action research, a methodology that is explicitly mentioned in the work of Effrosyni Roussou and Zoe Tzika. But ESRs work with a variety of methodological approaches. Leonardo Ricaurte is exploring the potential of a capabilities approach in the development of a post-employment evaluation system based on social value. Alex Fernández is working across quantitative economic modelling and critical political economy approaches to housing policies and finance. Much of the focus is on the development and integration of transdisciplinary and mixed methods, for example through the work of Anna Martin. There is also a focus on participatory action research and on ethnographic methods, for example in the work of Effrosyni Roussou. And Mahmoud Alsaad uses a meta-research approach to examine non-empirical data coupled with evaluation research to review, describe and evaluate current processes of sustainability practices in order to develop a framework for addressing sustainability challenges in housing.

Table 1. ESRs publications

ESR	References	Contribution type
ESR 1 Anette Davis	Davis, A. (2022, August). <i>Designing housing to meet circular goals: industrialised construction in combination with design for disassembly</i> [Conference paper presentation]. The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain	Conference presentation
	Davis, A., & Quintana, A. (2022, December). <i>Rethinking housing in building layers: Standard to aggregated LCA</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference presentation
	Davis, A. (2022, June). <i>Industrialised Construction: key moments in housing from past to present</i> . Arquitectonics, Barcelona.	Conference paper
	Davis, A. (2022, November). <i>Industrialising housing to meet circular goals: a cradle-to-cradle assessment in combination with design for disassembly and building layers</i> . VIBRArch, Valencia International Biennial of Research in Architecture.	Conference paper
ESR 2 Saskia Furman	Furman, S. (2022, June). <i>The emergence of affordable housing and its relationship to social housing: The history of housing commodification in England</i> . Arquitectonics, Barcelona.	Conference paper
	Furman, S. (2022, August). <i>Deep energy retrofit of social housing: A holistic approach</i> . The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.	Conference presentation
	Tzika, Z., & Furman, S. (2022, December). <i>Housing retrofit for achieving holistic sustainability: A case study analysis through existing social and environmental frameworks</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract
ESR 3 Christophe Verrier	Verrier, C. (2022, December). <i>Making sense of a new national context in comparative housing: personal and systemic reflections of a researcher's journey in France</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract
	Verrier, C. (2022, August). <i>Land use and local housing regimes: What place for affordability?</i> . The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain	Conference abstract

ESR 4 Aya Elghandour	Elghandour, A., & Hadjri, K. (2023, July). <i>Design as an advocate for households' health and wellbeing</i> . UIA World Congress 2023, Sustainable Futures Leave No One Behind.	Conference paper
ESR 5 Mahmoud Alsaeed	Alsaeed, M. (2022, August). <i>Environmental sustainability of future social housing</i> . The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.	Conference presentation
	Alsaeed, M. (2022, December). <i>Mode 2 Science: Exploring a common ground of knowledge production in the fields of housing and sustainability</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract
ESR 6 Marko Horvat	Horvat, M. & Bežovan, G. (2022, August-September). <i>Analysis of sustainability of service providers for social integration of the homeless in Croatia</i> . European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.	Conference paper
ESR 8 Andreas Panagidis	Panagidis, A., Charalambous, N. (2022, December). <i>Co-creation from the South: The case of Cyprus</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference paper
	Panagidis, A. (2022, August). <i>Configurations of Fragmented Infrastructure: The case of Nicosia situated at the Global North-South interface</i> . RC21 Conference: Ordinary Cities in Exceptional Times, Athens.	Conference abstract
ESR 9 Effrosyni Roussou	Charalambous, N., Roussou, E., & Panayi, C. (2022, August-September). <i>Co-creating urban commons through community-engaged pedagogies</i> . EAAE Annual Conference, Madrid.	Conference presentation
	Charalambous, N., Panayi, C., & Roussou, E., (2022, August-September). <i>Community-engaged design: learning through live projects in residential environments</i> . European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain	Conference presentation
	Roussou, E., & Charalambous, N. (2022, December). <i>On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract
ESR 10 Zoe Tzika	Tzika, Z., & Furman, S. (2022, December). <i>Housing retrofit for achieving holistic sustainability: A case study analysis through existing social and environmental frameworks</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract
	Tzika, Z., Sentieri, C., Csizmady, A., & Martinez, A. (2022, August). <i>Models of housing co-creation as a means to achieve more</i>	Conference abstract

	<i>affordable and sustainable housing? Barcelona as a case study.</i> The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.	
	Tzika, Z., & Sentieri, C. (2022, February). <i>Understanding co-creation in the transdisciplinary research of sustainable and affordable housing.</i> Reinventing the city, Scientific conference AMS Institute, Amsterdam.	Conference abstract
ESR 11 Tijn Croon	Croon, T. (2022, December). Targeted energy poverty alleviation in social housing: prototyping policies with housing association professionals. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference paper
	Croon, T.M., Hoekstra, J.S.C.M., Elsinga, M.G., Dalla Longa, F., & Mulder, P. (2022, June). <i>Mind the gap: the use of poverty gap indices to quantify energy poverty in the Netherlands.</i> 3rd International Conference on Energy Research & Social Science, Manchester, UK.	Conference poster
ESR 12 Alex Fernández	Fernández, A., Bezovan, G., & Pandzic, J. (2022, August-September). <i>Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK.</i> European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.	Conference paper
	Fernández, A. (2022, September). <i>A queer reading of housing policy: the case of homeownership subsidisation.</i> UBH 2022, Upsetting Binaries & Hierarchies, Leiden	Conference paper
	Fernández, A., Haffner, M., & Elsinga, M. (2022, August-September). <i>Understanding the impact of energy efficiency on the housing costs to income ratio: an Instrumental Variable approach.</i> European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.	Conference paper
	Fernández, A., Haffner, M., & Elsinga, M. (2022, June). <i>Analysing the financial impact of housing retrofit policies on Dutch homeowners: Comparing user cost and cash flow approaches.</i> 3rd International Conference on Energy Research & Social Science, Manchester, UK.	Conference poster
	Fernández, A., Haffner, M., & Elsinga, M. (2022, October). <i>Comparing the financial impact of housing retrofit policies on Dutch homeowners.</i> SBE22 Delft 2022.	Conference paper
	Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Comparing the financial impact of housing retrofit policies on Dutch homeowners [Conference publication].</i> IOP Conference Series: Earth and Environmental Science.	Conference publication

ESR 13 Androniki Pappa	Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022, November). <i>Understanding Participation through a Data-driven approach</i> . SIGraDi 2022, Critical Appropriations, Lima.	Conference paper
	Pappa, A., & Paio, A. (2022, June). <i>Commoning (in) the neighbourhood, righting the city. nature for innovative and inclusive urban regeneration</i> . Nature for Innovative and Inclusive Urban Regeneration (NATiURB), Milan.	Conference paper
	Pappa, A., & Paio, A. (2023, July). <i>Mapping urban commoning: the case of Lisbon</i> . UIA World Congress 2023, Sustainable Futures Leave No One Behind.	Conference paper
	Pappa, A., & Paio, A. (2022, December). Local partnerships in urban regeneration: The case of Lisbon. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract
ESR 14 Carolina Martín	Martin, C., Paio, A. (2022, July). <i>Democratising housing design through data-driven digital tools</i> . CAAD Futures 2023, TU Delft.	Conference paper
ESR 15 Leonardo Ricaurte	Ricaurte, L.. (2022, December). <i>New approaches to post-occupancy Evaluation: Unveiling the social value of housing design</i> . RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.	Conference abstract

Table 2. Keywords and publications

Active citizenship	Panagidis, A., Charalambous, N. (2022). <i>Co-creation from the South: The Case of Cyprus</i>
Affordability	<p>Fernández, A., Haffner, M., Elsinga, M. (2022). <i>Analysing the financial impact of housing retrofit policies on Dutch homeowners: Comparing user cost and cash flow approaches</i>.</p> <p>Fernández, A., Haffner, M., Elsinga, M. (2022). <i>Comparing the financial impact of housing retrofit policies on Dutch homeowners</i>.</p> <p>Tzika, Z., Sentieri, C., Csizmaday, A., & Martínez, A. (2022) <i>Models of housing co-creation as a means to achieve more affordable and sustainable housing?</i></p>
Affordability of housing	<p>Elghandour, A., Hadjri, K. (2023). <i>Design as an advocate for households' health and wellbeing</i>.</p> <p>Fernández, A., Haffner, M., Elsinga, M. (2022). <i>Understanding the impact of energy efficiency on the housing costs to income ratio: an Instrumental Variable approach</i>.</p>

Affordable housing	<p>Davis, A., & Quintana, A. (2022). <i>Rethinking housing in building layers: Standard to aggregated LCA.</i></p> <p>Davis, A. (2022). <i>Industrialised Construction: key moments in housing from past to present.</i></p> <p>Furman, S. (2022). <i>The emergence of affordable housing and its relationship to social housing: The history of housing commodification in England.</i></p>
Architectural geography	<p>Ricaurte, L.. (2022, December). <i>New approaches to post-occupancy Evaluation: Unveiling the social value of housing design.</i> RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.</p>
BIM	<p>Martin, C., Paio, A. (2022). <i>Democratising housing design through data-driven digital tools.</i></p>
Circular economy	<p>Davis, A. (2022). <i>Industrialising housing to meet circular goals: A cradle-to-cradle assessment in combination with design for disassembly and building layers.</i></p>
Civil organisations	<p>Horvat, M. & Bežovan, G. (2022). <i>Analysis of sustainability of service providers for social integration of the homeless in Croatia.</i></p>
Cluster	<p>Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Analysing the financial impact of housing retrofit policies on Dutch homeowners: Comparing user cost and cash flow approaches.</i></p> <p>Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Comparing the financial impact of housing retrofit policies on Dutch homeowners.</i></p>
Co-creation	<p>Charalambous, N., Roussou, E., & Panayi, C. (2022). <i>Co-creating urban commons through community-engaged pedagogies.</i></p> <p>Charalambous, N., Panayi, C., & Roussou, E., (2022). <i>Community-engaged design: learning through "live" projects in residential environments.</i></p> <p>Croon, T. (2022). <i>Targeted energy poverty alleviation in social housing: Prototyping policies with housing association professionals.</i></p> <p>Martin, C., & Paio, A. (2022). <i>Democratising housing design through data-driven digital tools.</i></p>
Commoning	<p>Charalambous, N., Roussou, E., & Panayi, C. (2022). <i>Co-creating urban commons through community-engaged pedagogies.</i></p> <p>Pappa, A., & Paio, A. (2022). <i>Commoning (in) the Neighbourhood, Righting the City.</i></p>
Commons	<p>Roussou, E., & Charalambous, N. (2022). <i>On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden.</i></p>

Community engagement	Tzika, Z., & Sentieri, C. (2022). <i>Understanding co-creation in the transdisciplinary research of sustainable and affordable housing</i>
Community-engaged design	Charalambous, N., Panayi, C., & Roussou, E., (2022). <i>Community-engaged design: learning through live projects in residential environments.</i>
Comparative housing	Verrier, C. (2022). <i>Making sense of a new national context in comparative housing: personal and systemic reflections of a researcher's journey in France.</i>
Construction codes	Alsaeed, M. (2022). <i>Environmental sustainability of future social housing.</i>
Cooperative housing	Tzika, Z., Sentieri, C., Csizmady, A., & Martínez, A. (2022). <i>Models of housing co-creation as a means to achieve more affordable and sustainable housing?</i>
Cradle-to-cradle	Davis, A. (2022). <i>Designing housing to meet circular goals: Industrialised construction in combination with design for disassembly.</i> Davis, A., & Quintana, A. (2022). <i>Rethinking housing in building layers: Standard to aggregated LCA.</i>
Data-driven design	Martin, C., & Paio, A. (2022). <i>Democratising housing design through data-driven digital tools.</i>
Data-driven evaluation	Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022). <i>Understanding participation through a data-driven approach.</i>
Data visualization	Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022). <i>Understanding participation through a data-driven approach.</i>
Deep energy retrofit	Furman, S. (2022). <i>Deep energy retrofit of social housing: A holistic approach.</i>
Design and build pedagogy	Roussou, E., & Charalambous, N. (2022). <i>On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden.</i>
Design for disassembly	Davis, A. (2022). <i>Designing housing to meet circular goals: Industrialised construction in combination with design for disassembly.</i> Davis, A., & Quintana, A. (2022). <i>Rethinking housing in building layers: Standard to aggregated LCA.</i> Davis, A. (2022). <i>Industrialising housing to meet circular goals: A cradle-to-cradle assessment in combination with design for disassembly and building layers.</i>

Design practice	Elghandour, A., & Hadjri, K. (2023). <i>Design as an advocate for households' health and wellbeing.</i>
Design studio	Charalambous, N., Roussou, E., & Panayi, C. (2022). <i>Co-creating urban commons through community-engaged pedagogies.</i>
Energy efficiency	Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Understanding the impact of energy efficiency on the housing costs to income ratio: an Instrumental Variable approach.</i>
Energy poverty	Croon, T. (2022). <i>Targeted energy poverty alleviation in social housing: Prototyping policies with housing association professionals.</i> Croon, T.M., Hoekstra, J.S.C.M., Elsinga, M.G., Dalla Longa, F., & Mulder, P. (2022). <i>Mind the gap: The use of poverty gap indices to quantify energy poverty in the Netherlands.</i>
Energy transition	Croon, T.M., Hoekstra, J.S.C.M., Elsinga, M.G., Dalla Longa, F., & Mulder, P. (2022). <i>Mind the gap: The use of poverty gap indices to quantify energy poverty in the Netherlands.</i>
Environmental sustainability	Tzika, Z., & Furman, S. (2022). <i>Housing retrofit for achieving holistic sustainability: A case study analysis through existing social and environmental frameworks.</i>
Growth regime	Fernández, A., Bezovan, G., & Pandzic, J. (2022). <i>Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK.</i>
Hedonic pricing	Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Understanding the impact of energy efficiency on the housing costs to income ratio: an Instrumental Variable approach.</i>
Homeless	Horvat, M. & Bežovan, G. (2022). <i>Analysis of sustainability of service providers for social integration of the homeless in Croatia.</i>
Homeownership	Fernández, A. (2022). <i>A queer reading of housing policy: The case of homeownership subsidisation.</i>
Household health	Elghandour, A., Hadjri, K. (2023). <i>Design as an advocate for households' health and wellbeing.</i>
Housing decarbonisation	Alsaeed, M. (2022). <i>Environmental sustainability of future social housing.</i>
Housing democratisation	Martin, C., & Paio, A. (2022). <i>Democratising housing design through data-driven digital tools.</i>
Housing policy	Fernández, A., Bezovan, G., & Pandzic, J. (2022). <i>Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK.</i>

	<p>Fernández, A. (2022). <i>A queer reading of housing policy: The case of homeownership subsidisation.</i></p> <p>Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Analysing the financial impact of housing retrofit policies on Dutch homeowners: Comparing user cost and cash flow approaches.</i></p> <p>Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Comparing the financial impact of housing retrofit policies on Dutch homeowners.</i></p>
Housing research	Alsaeed, M. (2022). <i>Mode 2 Science: Exploring a common ground of knowledge production in the fields of housing and sustainability.</i>
Housing systems	Verrier, C., (2022). <i>Making sense of a new national context in comparative housing: personal and systemic reflections of a researcher's journey in France.</i>
Hyper-commodification	Furman, S. (2022). <i>The emergence of Affordable Housing and its relationship to Social Housing: the history of housing commodification in England.</i>
ICTs	Davis, A. (2022). <i>Industrialised construction: Key moments in housing from past to present.</i>
Inclusionary housing	Verrier, C. (2022). <i>Land use and local housing regimes: What place for affordability?</i>
Industrialised construction	<p>Davis, A. (2022). <i>Designing housing to meet circular goals: Industrialised construction in combination with design for disassembly.</i></p> <p>Davis, A., & Quintana, A. (2022). <i>Rethinking housing in building layers: Standard to aggregated LCA.</i></p> <p>Davis, A. (2022). <i>Industrialised construction: Key moments in housing from past to present.</i></p>
Instrumental variables	Fernández, A., Haffner, M., & Elsinga, M. (2022). <i>Understanding the impact of energy efficiency on the housing costs to income ratio: an Instrumental Variable approach.</i>
Knowledge production and transfer	Alsaeed, M. (2022). <i>Mode 2 Science: Exploring a common ground of knowledge production in the fields of housing and sustainability.</i>
Life cycle assessment	<p>Davis, A., & Quintana, A. (2022). <i>Rethinking housing in building layers: Standard to aggregated LCA.</i></p> <p>Davis, A. (2022). <i>Industrialising housing to meet circular goals: A cradle-to-cradle assessment in combination with design for disassembly and building layers.</i></p>
Life cycle stages	Davis, A. (2022). <i>Industrialised Construction: key moments in housing from past to present.</i>

Live studio	Roussou, E., & Charalambous, N. (2022). <i>On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden.</i>
Local housing policies	Verrier, C. (2022). <i>Land use and local housing regimes: what place for affordability?</i>
Local partnerships	Pappa, A., & Paio, A. (2022). <i>Local partnerships in urban regeneration: The case of Lisbon.</i>
Mass customisation	Martin, C., & Paio, A. (2022). <i>Democratising housing design through data-driven digital tools.</i>
Mode 2 science	Alsaeed, M. (2022). <i>Mode 2 Science: Exploring a common ground of knowledge production in the fields of housing and sustainability.</i>
Neighbourhoods	Tzika, Z., Sentieri, C., Csizmady, A., & Martínez, A. (2022). <i>Models of housing co-creation as a means to achieve more affordable and sustainable housing?</i>
Participation	Tzika, Z., & Sentieri, C. (2022). <i>Understanding co-creation in the transdisciplinary research of sustainable and affordable housing</i>
Participation evaluation	Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022). <i>Understanding participation through a data-driven approach.</i>
Participatory action research	Charalambous, N., Panayi, C., & Roussou, E. (2022). <i>Community-engaged design: learning through live projects in residential environments.</i> Tzika, Z., & Sentieri, C. (2022). <i>Understanding co-creation in the transdisciplinary research of sustainable and affordable housing</i>
Participatory budget	Pappa, A., & Paio, A. (2022). <i>Local partnerships in urban regeneration: The case of Lisbon.</i>
Participatory strategies	Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022). <i>Understanding participation through a data-driven approach.</i>
Planning	Panagidis, A. (2022). <i>Configurations of fragmented infrastructure: the case of Nicosia situated at the Global North-South interface.</i>
Policy prototyping	Croon, T. (2022). <i>Targeted energy poverty alleviation in social housing: Prototyping policies with housing association professionals.</i>
Post-occupancy evaluation	Ricourte, L. (2022, December). <i>New approaches to post-occupancy Evaluation: Unveiling the social value of housing design.</i> RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Post-socialist transition	Fernández, A., Bezovan, G., & Pandzic, J. (2022). <i>Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK.</i>
Poverty gap	Croon, T.M., Hoekstra, J.S.C.M., Elsinga, M.G., Dalla Longa, F., & Mulder, P. (2022). <i>Mind the gap: The use of poverty gap indices to quantify energy poverty in the Netherlands.</i>
Quality of life	Ricaurte, L.. (2022, December). <i>New approaches to post-occupancy Evaluation: Unveiling the social value of housing design.</i> RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.
Queer theory	Fernández, A. (2022). <i>A queer reading of housing policy: The case of homeownership subsidisation.</i>
Retrofit	Fernández, A., Haffner, M., Elsinga, M. (2022). <i>Analysing the financial impact of housing retrofit policies on Dutch homeowners: Comparing user cost and cash flow approaches.</i> Fernández, A., Haffner, M., Elsinga, M. (2022). <i>Comparing the financial impact of housing retrofit policies on Dutch homeowners.</i> Furman, S. (2022). <i>Deep energy retrofit of social housing: A holistic approach.</i> Tzika, Z., & Furman, S. (2022). <i>Housing retrofit for achieving holistic sustainability: A case study analysis through existing social and environmental frameworks.</i>
Right to the city	Pappa, A., & Paio, A. (2022). <i>Commoning (in) the Neighbourhood, Righting the City.</i>
Service providers	Horvat, M. & Bežovan, G. (2022). <i>Analysis of sustainability of service providers for social integration of the homeless in Croatia.</i>
Shearing layers	Davis, A. (2022). <i>Designing housing to meet circular goals: Industrialised construction in combination with design for disassembly.</i> Davis, A. (2022). <i>Industrialising housing to meet circular goals: A cradle-to-cradle assessment in combination with design for disassembly and building layers.</i>
Social housing	Alsaeed, M. (2022). <i>Environmental sustainability of future social housing.</i> Croon, T. (2022). <i>Targeted energy poverty alleviation in social housing: Prototyping policies with housing association professionals.</i> Furman, S. (2022). <i>The emergence of affordable housing and its relationship to social housing: the history of housing commodification in England.</i>

Social integration	Horvat, M. & Bežovan, G. (2022). <i>Analysis of sustainability of service providers for social integration of the homeless in Croatia.</i>
Social policy	Fernández, A., Bezovan, G., & Pandzic, J. (2022). <i>Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK.</i>
Social service	Horvat, M. & Bežovan, G. (2022). <i>Analysis of sustainability of service providers for social integration of the homeless in Croatia.</i>
Social sustainability	Tzika, Z., & Furman, S. (2022). <i>Housing retrofit for achieving holistic sustainability: A case study analysis through existing social and environmental frameworks</i>
Social value	Ricaurte, L.. (2022, December). <i>New approaches to post-occupancy Evaluation: Unveiling the social value of housing design.</i> RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.
Spatial agency	Roussou, E., & Charalambous, N. (2022). <i>On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden.</i>
Sustainability	Davis, A. (2022). <i>Industrialised Construction: key moments in housing from past to present.</i>
Sustainability practices	Alsaeed, M. (2022). <i>Environmental sustainability of future social housing.</i>
Sustainability research	Alsaeed, M. (2022). <i>Mode 2 Science: Exploring a common ground of knowledge production in the fields of housing and sustainability.</i>
Sustainability tools	Alsaeed, M. (2022). <i>Environmental sustainability of future social housing.</i>
Sustainable development goals	Pappa, A., Paio, A. (2022). <i>Mapping urban commoning: the case of Lisbon.</i>
Sustainable housing	Davis, A., & Quintana, A. (2022). <i>Rethinking housing in building layers: Standard to aggregated LCA.</i> Davis, A. (2022). <i>Industrialising housing to meet circular goals: A cradle-to-cradle assessment in combination with design for disassembly and building layers.</i>
Targeted policy	Croon, T.M., Hoekstra, J.S.C.M., Elsinga, M.G., Dalla Longa, F., & Mulder, P. (2022). <i>Mind the gap: The use of poverty gap indices to quantify energy poverty in the Netherlands.</i>
Taxation	Fernández, A. (2022). <i>A queer reading of housing policy: The case of homeownership subsidisation.</i>

Taxonomy	Pappa, A., & Paio, A. (2022). <i>Mapping urban commoning: the case of Lisbon.</i>
Transdisciplinarity	Roussou, E., & Charalambous, N. (2022). <i>On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden.</i>
Unsupervised learning	Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022). <i>Understanding participation through a data-driven approach.</i>
Urban areas	Tzika, Z., Sentieri, C., Csizmady, A., & Martínez, A. (2022). <i>Models of housing co-creation as a means to achieve more affordable and sustainable housing?</i>
Urban commoning	Pappa, A., & Paio, A. (2022). <i>Mapping urban commoning: the case of Lisbon.</i>
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Urban infrastructure	Panagidis, A. (2022). <i>Configurations of fragmented infrastructure: the case of Nicosia situated at the Global North-South interface.</i>
Urban living labs	Panagidis, A., & Charalambous, N. (2022). <i>Co-creation from the South: The case of Cyprus.</i>
Urban planning	Verrier, C. (2022). <i>Land use and local housing regimes: what place for affordability?</i>
Urban regeneration	Pappa, A., & Paio, A. (2022). <i>Local partnerships in urban regeneration: The case of Lisbon.</i>
Welfare state	Fernández, A., Bezovan, G., & Pandzic, J. (2022). <i>Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK.</i>
Wellbeing	Elghandour, A., & Hadjri, K. (2023). <i>Design as an advocate for households' health and wellbeing.</i>

2. Dissemination

The abstracts included in the Annex of this report have been published in the project website section Dissemination : Publications (Figure 1). Each publication in the website contains the abstract and keywords, as well as associated concepts, case studies and blogposts. Also, a relational graph shows the links between the publication and the related items (Figure 2).

Publications

Contributions to conferences and journals made by ESRs in the course of their research

Eighandour, A., & Hadji, K. (2023, July). *Design as an advocate for households' health and wellbeing* [Conference paper]. UIA World Congress 2023. Sustainable Futures Leave No One Behind. **CONFERENCE**
A.Eighandour (ESR4), K.Hadji (Supervisor) [Read more →](#)

Fernández, A., Haffner, M., & Elsinga, M. (2022, August-September). *Understanding the impact of energy efficiency on the housing costs to income ratio: an instrumental variable approach* [conference paper]. European Network for Housing Research (ENHR) Conference 2022, Barcelona, Spain. **CONFERENCE**
M.Elsinga (Supervisor), A.Fernandez (ESR12), M.Haffner (Supervisor) [Read more →](#)

housing must pass to present [conference paper], Barcelona, Barcelona. **CONFERENCE**
A.Davis (ESR1) [Read more →](#)

Tzika, Z., & Sentieri, C. (2022, February). *Understanding co-creation in the transdisciplinary research of sustainable and affordable housing* [Conference abstract]. Reinventing the city, Scientific conference AMG institute, Amsterdam. **CONFERENCE**
C.Sentieri (Supervisor), Z.Tzika (ESR10) [Read more →](#)

affordable housing X
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circular economy (2)
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ENHR
community-engaged design (1)
design (1)
comparative housing (2)
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Figure 1. View of Publications in RE-DWELL website

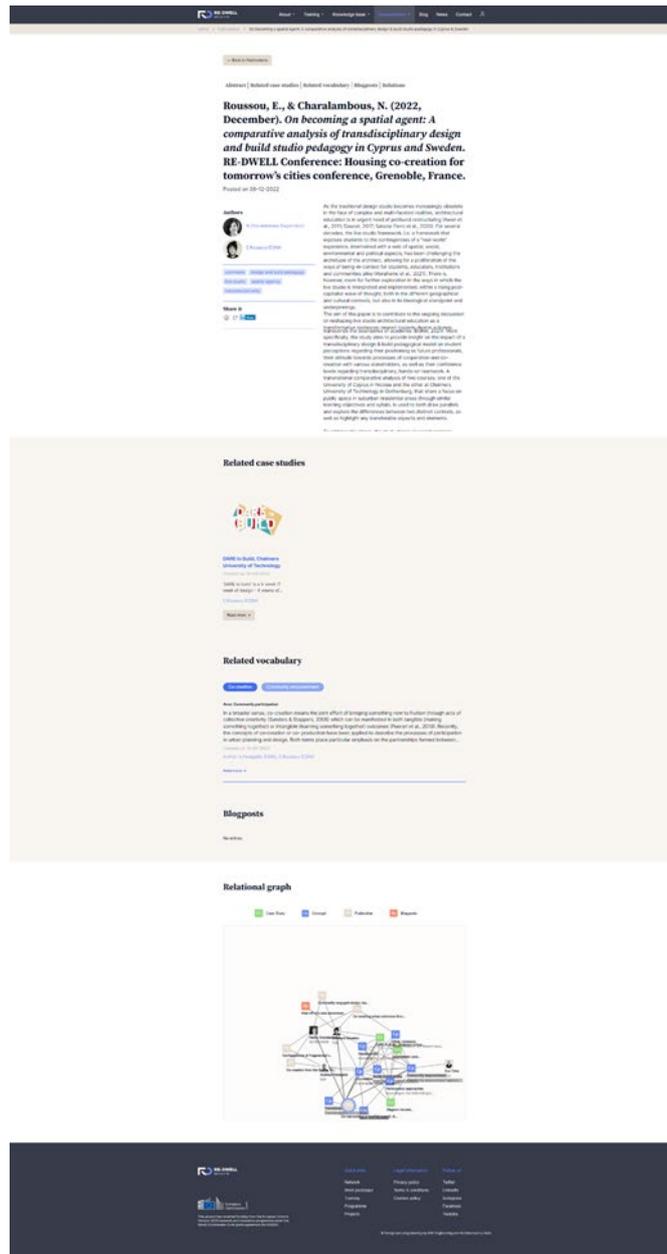


Figure 2. View of a publication in the RE-DWELL website

3. Conclusions

This compendium has provided a detail description of the contributions to the knowledge base of affordable and sustainable housing that have already been made by the fifteen ESRs, in some cases working with their supervisors. It also offers an emergent format for the management of knowledge in this area. In this regard, there is still some way to go in building links across ESR research projects and in the development of co-produced outputs. These linkages have appeared, for example, through the co-creation of a very successful workshop by the ESRs at the International Social housing Festival in Helsinki in June 2022, but are not yet reflected in project outputs. Moreover, the number of publications with different ESRs as co-

authors will need to increase in the coming years to advance RE-DWELL's transdisciplinary research on affordable and sustainable housing.

Co-creation is at the core of the transdisciplinary research methodology that underpins RE-DWELL's work. Whilst several of the researchers are working under this umbrella, as well on participatory action research, there appears to be a need for more reflection and explicit discussion of research methodology across the network team. Indeed, RE-DWELL offers an extraordinary opportunity for a research methodology based on the articulation of practice and industry. It is important to focus on this area if we are to fulfil the promise of transdisciplinarity that lies at the core of this project.

Annex 1 – Abstracts

Alsaeed, M. (2022, August). *Environmental sustainability of future social housing* [Conference presentation]. The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: Recent decades have been marked by burgeoning environmental challenges and excessive resource consumption, leading to a climate emergency. Besides this global dilemma, there has been an upsurge in unsustainable practices, especially in housing design, construction and operation. In the UK, the social housing sector forms up to 18 per cent of the entire housing stock (4.2 million units in 2021), consumes up to 5.3 per cent of the country's energy and causes 3.6 per cent of its carbon dioxide emissions. These figures are expected to increase rapidly along with their associated environmental costs. Therefore, new ways of building sustainable homes that address climate change issues and create better places for people to live must be considered.

This PhD study has two aims; a) to establish a better understanding of sustainable social housing and the emerging concept of decarbonisation by investigating the definitions, principles, and theories associated with its constructions; b) to examine sustainability practices currently in use in the UK, namely, sustainability tools, codes, and guidelines.

To accomplish its aims, this PhD adopts a mixed-methods approach. First, a qualitative investigation to form a theoretical base and establish definitions, principles, and policy timelines through qualitative instruments that include desk study, focus group discussions, and semi-structured interviews with housing practitioners. Second, the quantitative approach aims to map the current-practices landscape and measure how effectively current practices meet environmental sustainability targets; the quantitative tools include questionnaires (end-users and practitioners) and analysis of decarbonisation progress using statistics.

The expected outcome is a policy and practice framework that addresses the environmental sustainability of social housing and provides practical design and planning guidelines for achieving a 'decarbonised' housing sector in the UK. And pave the way for future studies on achieving sustainable social housing through simplified and effective codes and standards.

Keywords: construction codes, housing decarbonisation, social housing, sustainability tools, sustainability practices

Alsaeed, M. (2022, December). *Mode 2 Science: Exploring a common ground of knowledge production in the fields of housing and sustainability* [Conference abstract]. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Abstract: The field of housing research is highly diverse, theoretically dependent and intertwined with politics, economics, social and, more recently, environmental studies. Sustainability research, on the other hand, is often perceived as a very complicated, practice-oriented field that studies the interactions between the economic, social and environmental pillars of society. The 'mode II science' is an emerging concept that calls for the production of context-oriented, scientifically reliable and robust social knowledge. Housing and sustainability are ambiguous and highly bifurcated fields, and many scholars refer to them as extremely branched areas of study. As a result, researchers have developed and adapted different approaches to their studies. However, there does appear to be a division among the research methods that examine the unique characteristics of both fields as interconnected entities. The aim of this study is to a) identify the prevailing research approaches for both topics and b)

find a common research base to facilitate the effective testing of the adaptability and applicability of the mode II science principles to housing and sustainability research.

In doing so, this research uses an exploratory study that examines the definitions, prevailing characteristics and research approaches currently used for both fields, and then creates a set of comparative variables that show the range of possible connections. This leads to a proposal for an innovative mixed research method that takes into account the characteristics of both fields and contributes to ongoing debates about methods of knowledge production in 'sustainable housing'

Keywords: housing research, knowledge production and transfer, mode 2 science, sustainability research

Charalambous, N., Roussou, E., & Panayi, C. (2022, August-September). *Co-creating urban commons through community-engaged pedagogies* [Conference presentation]. EAAE Annual Conference, Madrid.

Abstract: The importance of empowering and engaging citizens in the shaping of their living environments to ensure a sustainable and affordable development and promote a sense of community has been highlighted in recent years (UN-Habitat). Citizens and professionals (architects, public institutions, private enterprises) are called to adopt new roles within the spatial design and provision process, which often challenges the ability of the latter to respond effectively to the rising need for a community-engaged design approach. The necessity to train future architects in conceptualising and implementing solutions, within a transdisciplinary framework, that uphold the sustainable development goals, reveals the need to revisit, assess and rework the relevant pedagogical approaches.

This paper reflects on a community-engaged housing studio approach and a subsequent design & build co-creation workshop at the Department of Architecture, University of Cyprus, in the design and development of a public space in a residential neighbourhood in Nicosia. The housing studio incorporates principles of inclusivity and sustainability and aims to create the conditions for an integrated framework to facilitate sustainable urban governance and to create a community of practice in which students, educators, researchers, enterprises, dwellers and the local municipality can work together to foster a participatory, co-creation process. Drawing from the tools and methods of live studios and Urban Living Labs, this transdisciplinary process involves the aforementioned participants at various levels and stages, and follows a circular methodology of (1) assessing and understanding, (2) engaging and co-creating, (3) co-designing and implementing and (4) assessing and evaluating.

Reflecting on the outcomes, the paper discusses the opportunities and limitations of a community-engaged design methodology to expose future graduates to real world contingencies which, through interaction with different stakeholders, can encourage a sense of community and empower the citizens as decision makers with a sense of responsibility for their residential environment.

Keywords: co-creation, commons, design studio

Charalambous, N., Panayi, C., & Roussou, E., (2022, August-September). *Community-engaged design: learning through live projects in residential environments* [Conference presentation]. European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: Living environments are complex entities that are constantly changing in terms of demography, social structures, and spatial arrangements. These ubiquitous changes entail the creation of a diverse urban population and have a direct impact on everyday patterns of living, domestic activities, and family structures. Questions of inclusion, equal access to housing, and affordability have been negotiated in the context of globalization, changing forms of production, declining welfare, and developing technologies. Affordable housing to facilitate sustainable cities for all is a significant global challenge; UN-Habitat highlights the importance of empowering and engaging citizens in the shaping of their living environments to ensure a sustainable and affordable development and to contribute to promoting a sense of community by bringing together people who share common goals. Citizens and professionals need to take on new roles while the ability of urban designers, architects, and public planning institutions to effectively adopt new roles and implement a community engaged design approach, is often questioned.

This paper reflects on a community-engaged design approach in a residential neighbourhood in Nicosia, involving architects (students, educators, researchers), residents and other external stakeholders. Participatory Action Research methodology was implemented, due to its participatory context, its reflective framework and circular process of evaluation and improvement and consisted of four phases: 1. design of the co-creation framework (stakeholders, site analysis); 2. implementation of the co-creation framework phase (identification and validation phase-identification of needs, issues, opportunities, threats-, development and selection, assessment and evaluation; 3. the assessing the impact of the co-creation framework phase on participants (interest, opinions, attitudes); the reflection and recommendations. Reflecting on the outcome, the paper discusses the potential of a community-engaged design approach to encourage a sense of community and to empower the citizens as decision makers who have a sense of responsibility for their residential environment.

Keywords: co-creation, community-engaged design, participatory action research

Croon, T. (2022, December). *Targeted energy poverty alleviation in social housing: prototyping policies with housing association professionals* [Conference paper]. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Abstract: The negative consequences of energy poverty have been known for decades, but the sense of urgency and subsequent establishment of policies have substantially differed across countries. One of the reasons mentioned in the literature is that insights from research are not adequately communicated to policymakers and practitioners. In parallel, The body of scholarship on energy poverty measurement has grown rapidly, but its use in practice has hardly been addressed. This project intends to combat this mismatch, by proactively engaging with various housing association professionals across Europe to find out how qualitative and quantitative knowledge on energy poverty can inform retrofit strategies in different policy contexts. It examines the key role of housing associations with a significant share of their predominantly low-income tenants living in energy poverty in the 'just transition'. Furthermore, it explores how their apparent techno-economic approach to retrofit provision could be altered by organizing focus groups with housing association professionals in France, the UK, and the Netherlands. Professionals from different departments will be urged to discuss whether, and if so why, they consider energy poverty to be a policy priority not only from a behavioural perspective but also from a housing quality perspective. We proactively work with them to learn how qualitative and quantitative knowledge on energy poverty can inform alleviation strategies in different policy contexts. The focus groups will be set up as 'innovation journeys', with the participants acting as

'co-researchers' or 'co-designers'. First, I will give a brief explanation about energy poverty measurement. Then, assuming that the housing association is properly informed as to which households are most vulnerable, we will collectively explore the potentially alleviating policy interventions available. We will look at opportunities and obstacles regarding finance, staff capacity, and regulations, thus allowing for a comparison between the three countries. While the sessions will have a rather flexible structure, we will ensure that targeted retrofit is at the heart of the discussion (besides e.g. information provision, behavioural change, and rent policy). The study thus uses an abductive approach, 'prototyping' possible ways towards a desired policy outcome (energy poverty alleviation). It is an exploratory phase in which new policy interventions can be discovered and provisional guesses can be made concerning their effects.

Keywords: co-creation, energy poverty, policy prototyping, social housing

Croon, T.M., Hoekstra, J.S.C.M., Elsinga, M.G., Dalla Longa, F., & Mulder, P. (2022, June). *Mind the gap: the use of poverty gap indices to quantify energy poverty in the Netherlands* [Conference poster]. 3rd International Conference on Energy Research & Social Science, Manchester, UK.

Abstract: Since late 2021, domestic energy prices have risen rapidly in Europe. This puts pressure on household expenses and could lead to more energy poverty, particularly among low-income households living in inefficient homes. Accurate statistics on energy poverty help to inform resource allocation and better target short-term and long-term support policies. However, most statistics only provide information about the incidence of energy poverty but not about the energy consumption differences among households. We discuss how poverty gap indices can help to determine the gravities and inequalities suffered by many and therefore substantiate policy design. Using microdata from the Netherlands, we compare conventional energy poverty indicators and calculate their poverty gap indices. As these are relative indicators, we use a fictional price shock to explain how poverty gap indices are needed to provide a robust overview under various market conditions. The results demonstrate that while the incidence of energy poverty was relatively low in 2019, significant gaps among Dutch households have appeared since then. Energy poverty in the Netherlands also seems to have an evident spatial component. We argue that visualisation techniques from traditional poverty literature help to draw comparisons between time periods, regions, and subgroups. Finally, we outline the benefits and potential problems of indices that public entities need to consider before allocating funds based on their modelled outcomes.

Keywords: energy poverty, energy transition, poverty gap, targeted policy

Davis, A. (2022, August). *Designing housing to meet circular goals: industrialised construction in combination with design for disassembly* [Conference paper presentation]. [Conference presentation]. The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: The current lack of sustainable and affordable housing is a global issue which has reached a crisis point. Conventional construction approaches used to solve sustainability issues in housing often contravene affordability and, as a result, if either of these two aims is achieved, it is often to the detriment of the other. The application of Design for Disassembly (DfD) in combination with Industrialised Construction (IC) can simultaneously provide environmentally and economically sustainable solutions to these ongoing housing challenges. Despite the potential benefits, DfD in combination with IC is rarely implemented in practice.

The purpose of this working paper is to reassess the doctoral research proposal, currently titled ‘Designing housing to meet circular goals: Design for Disassembly in combination with Industrialised Construction’ one year after beginning the project. The objectives of this paper will be achieved through a brief literature review of DfD and IC and how these can be combined to improve the sustainability of housing, with a focus on reducing environmental impacts. This will be followed by an overview of the methodology, in which a mixed-methods approach is proposed to address the research aims and objectives. Qualitative data from an interdisciplinary pool of experts will be collected, alongside a quantitative approach applied to three in-depth case studies using Life Cycle Assessment (LCA).

The core aim of this project, which is part of the Horizon 2020 funded research programme RE-DWELL, is the production of new knowledge towards addressing the lack of sustainable and affordable housing in Europe (RE-DWELL 2020).

Keywords: cradle-to-cradle, design for disassembly, industrialised construction, shearing layers

Davis, A., & Quintana, A. (2022, December). *Rethinking housing in building layers: Standard to aggregated LCA* [Conference abstract]. RE-DWELL Conference: Housing co-creation for tomorrow’s cities conference, Grenoble, France.

Abstract: There is growing interest to utilise Industrialised Construction (IC) in combination with Design for Disassembly (DfD) to provide sustainable and affordable housing based on circular economy principles. A circular approach to construction is a high priority in the EU and on a global scale, as highlighted by the Circular Economy Action Plan, the Europe-wide framework Level(s), and changes in leading Green Building assessments. These assessments are increasingly reliant on quantitative data and cradle-to-cradle Life Cycle Assessments (LCA) to measure resource and energy efficiency. However, applying a Whole Building LCA to industrialised housing designed for disassembly is an unresolved issue. Industry professionals apply different lifespans to conduct the assessment, which often do not take into account the varying lifespans of different building components.

It is important to use a reliable Whole Building LCA methodology that is aligned with sustainable construction practices, not only to appropriately measure and reduce the environmental impact of housing, but crucially to be able to define environmental targets at a policy level. Therefore, the aim of this paper is to improve the conventional Whole Building LCA methodology, for application to housing built using DfD in combination with IC. The long-term aim of the on-going research is to enable technical stakeholders to make better informed design decisions throughout all building stages and provide sustainable solutions based on more accurate information, within a less time-consuming process.

Within this paper, an adaptation of the ISO standards for LCA is proposed for large, prefabricated building components. This will be achieved by aggregating LCAs to form a cradle-to-cradle Whole Building LCA, which takes into consideration the different lifespans for building layers based on the Shearing Layers concept. To provide a more holistic overview of sustainability impacts, costing related to construction and maintenance and demolition will support the results. The methodology will be tested on research projects undertaken at the Universitat Politècnica de València (UPV).

The expected outcome of this project is an outline methodology to be used in industry, which will include a roadmap and recommendations to achieve this.

Keywords: affordable housing, cradle-to-cradle, design for disassembly, industrialised construction, life cycle assessment, sustainable housing

Davis, A. (2022, June). *Industrialised Construction: key moments in housing from past to present* [Conference paper]. Architectonics, Barcelona.

Abstract: Industrialised Construction (IC) is a broad term encompassing the systematic and controlled production of buildings. Industrialised solutions date back centuries and have been used to meet urgent housing needs; typically following periods of war, economic uncertainty, profound demographic change, and technological advancements. Today, in addition to using IC to provide affordable housing through economies of scale, the climate crisis has put increasing pressure on the construction industry to utilise these innovative solutions more than ever before. IC is increasingly associated with industry 4.0 and merging with ICTs such as BIM, to support an integrated project team and document information for all building life-cycle stages.

IC is inherently difficult to define and has expanded in response to technological developments and changes in society. This has contributed to the current lack of a common understanding of the term within the academic literature, amongst stakeholders involved in the delivery of housing across industry, and at the governmental level. Advancements in technology - and in particular ICTs - within the last decade mean that IC is developing at an increasing rate. To provide solutions to the current housing challenges and realise the full potential of IC, it is imperative to clarify the meaning of the term. Within this paper the multi-faceted concept of IC will be unpicked through the lens of three defining characteristics: construction methods, strategies, and supporting technologies. The multiple associated meanings will be investigated through key moments in housing throughout history to present day. In parallel, this paper gives an overview on the societal context, to provide the reader with an understanding of the motivation behind the use of IC throughout different time periods.

IC is therefore a dynamic term which needs to be continuously updated in a rapidly changing world. Whilst the construction industry has been slow to digitalise, and negative perceptions towards IC persist, there have been recent profound changes in its application to sustainability problems and to providing social and affordable housing. In this area, IC methods and the integration of BIM are giving rise to a paradigm shift in the planning of building stages beyond completion and towards circularity.

Keywords: affordable housing, ICTs, industrialised construction, life-cycle stages, sustainability

Davis, A. (2022, November). *Industrialising housing to meet circular goals: a cradle-to-cradle assessment in combination with design for disassembly and building layers* [Conference paper]. VIBRArch, Valencia International Biennial of Research in Architecture.

Abstract: The current lack of sustainable and affordable housing is a global issue which has reached a crisis point. Traditional construction approaches used to solve sustainability issues in housing often contravene affordability, and, as a result, if either of these two aims is achieved, it is often to the detriment of the other. The application of Design for Disassembly (DfD) in combination with Industrialised Construction (IC) can simultaneously provide environmentally and economically sustainable solutions to these ongoing housing challenges. However, the application of DfD and the planning of varying lifespans for different building components raises issues with the conventional Whole Building Life Cycle Assessment (LCA) methodology, which is used to quantify environmental impacts of the construction.

This paper first provides an overview of DfD and IC and outlines the importance of their application to provide resource efficient, affordable housing and how Shearing Layers concept can extend the building lifespan and better ensure a sustainable End-of-Life (EoL). The issue in applying a conventional Whole Building LCA methodology will then be discussed, and an outline as to how this can be adapted to align with the Shearing Layers concept in housing. The objectives of this paper will be achieved through a literature review, covering the theoretical principles of DfD and the key ISO standards related

to LCA. Based on the literature and theory, an aggregated LCA methodology is proposed which will be applied to case studies in future investigations by the author.

The result of the discussion reveals potential conflict between construction in practice and applying Shearing Layers and the adapted Whole Building LCA. The long-term aim of the on-going research is to empower technical stakeholders — architects, contractors, and government actors — to make impactful design decisions throughout the building process to provide more sustainable and affordable housing on a mass-scale.

Keywords: circular economy, design for disassembly, life cycle assessment, shearing layers, sustainable housing

Elghandour, A., & Hadjri, K. (2023, July). *Design as an advocate for households' health and wellbeing* [Conference paper]. UIA World Congress 2023, Sustainable Futures Leave No One Behind.

Abstract: Poor housing conditions such as overcrowding, dampness, and inadequate thermal insulation often fall within the challenging realm of housing affordability. These conditions not only pose a serious risk to a household's health and wellbeing but also to the entire national health system in the long-term. This paper highlights the potential role of designers in advocating the rights of households' health and wellbeing while taking into account stakeholders' requirements in the design process of affordable housing. It first draws attention to the current global challenges such as housing prices, energy poverty, and the Covid-19 pandemic in the European context. It brings together comparative evidence on the impact of these challenges on household health and wellbeing, public health, and housing affordability. Then, with a primary focus on the micro-level of the house itself, it discusses case studies from practice. In addition, it investigates literature from academia to provide an overview of housing features that contribute to creating healthy and affordable homes. This overview will inform the development of a conceptual framework for affordable housing design that promotes households' health and wellbeing. The findings will also contribute to developing a taxonomy for the design of affordable housing based on households' health and wellbeing.

Keywords: design practice, housing affordability, household health, wellbeing

Fernández, A., Bezovan, G., & Pandzic, J. (2022, August-September). *Analysing the role of housing subsidies within the Croatian economic growth strategy: a political economy approach to SSK* [Conference paper]. European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: Since 2017, Croatia has offered home-buyers a new housing subsidy programme that covers up to 50% of a monthly loan annuity for the first four years of a mortgage with a maximum limit of 100.000 EUR. Although the subsidy is not limited to first-time buyers, the target group is those under 45. According to recent economic evidence, this policy may have contributed to an increase in house prices and a consequent decrease in homeownership rate. This paper uses a political economy lens to contextualise this subsidy within contemporary changes in the Croatian housing system and, more broadly, social policy.

Our objective is to mobilise evidence from economic sources, sociology, and political science to address the role of housing in the reformulation of social policy in the Croatian transition. We ask the question: How does this subsidy position the Croatian housing system within the national growth strategy and social policy provision? We argue that this policy foments a shift towards financialised

growth and encourages the privatization of the welfare state as familist and middle households end up acquiring the subsidies made available through public funds.

Our research draws from semi-structured interviews with relevant stakeholders: civil servants, private financiers, and politicians; secondary data from European and national sources; and critical analysis of parliamentary minutes and policy documents. Finally, we define this subsidy as a new stage in the reframing of housing policy toward 'selected investment' in accordance with income and household composition.

Keywords: growth regime, housing policy, post-socialist transition, social policy, welfare state

Fernández, A. (2022, September). *A queer reading of housing policy: the case of homeownership subsidisation* [Conference paper]. UBH 2022, Upsetting Binaries & Hierarchies, Leiden.

Abstract: This talk examines how heteronormativity is embedded in housing taxation regimes producing a link between asset accumulation and normative formulations of familial structures. House prices have risen widely across Europe in the last decades. However, the rise in the appreciation of residential properties is unequally distributed. While older households have largely benefitted from a buoyant housing market as they downsize; younger households and private tenants, hindered by unaffordable rents and prices, struggle to access homeownership. These life-cycle patterns are accentuated in many countries by taxation regimes that lack tenure neutrality, that is, which favour mortgagors and homeowners over renters.

This presentation argues that housing policy has implicit biases towards particular forms of household composition readable in asset formation strategies. What does queer theory have to say about housing tenure and taxation? How does the lack of tenure neutrality affect queer populations? This presentation develops a reading of housing policy from a queer lens to unpack the assumptions about asset and family formation embedded in housing taxation. First, the focus will be on the theoretical possibilities of inserting queer theory in the housing taxation literature drawing from queer approaches to analyse housing policies with a focus on homeownership subsidies. Secondly, the presentation will interrogate the opportunities and barriers present in the main micro household-level datasets in the UK and the Netherlands to prospect the possibilities of quantitative empirical analyses. The ultimate goal of this presentation is to problematise the links between housing policy and household formation from a queer perspectives.

Keywords: homeownership, housing policy, queer theory, taxation

Fernández, A., Haffner, M., & Elsinga, M. (2022, August-September). *Understanding the impact of energy efficiency on the housing costs to income ratio: an Instrumental Variable approach* [Conference paper]. European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: Decarbonising the built environment is a critical element of the UK's strategy to achieve net-zero emissions by 2050. Enhanced standards in new homes and subsidies for retrofitting second-hand homes are among the measures put in place to encourage energy efficiency improvements across the housing stock. Over the past decade, a growing body of literature has focused on using hedonic pricing to determine the existence of real estate premiums linked to energy efficient homes.

More recently, as part of the credibility revolution in economics, instrumental variable (IV) approaches have served to improve hedonic pricing. This paper draws from the literature on hedonic pricing but

focuses on the housing costs to income ratio, a usual measure of housing affordability. As housing takes up an increasingly large proportion of households' income, the transition toward a low-emission built environment has the potential to exacerbate affordability issues. In this context, this question arises: "How does energy efficiency impact housing affordability?"

To understand the effect of energy efficiency on affordability, we apply an IV (2 stage least squares) approach using building age as the instrumental variable. Unlike traditional hedonic pricing approaches, which use repeated sales data; this paper relies on the English Housing Survey (EHS), a cross-section of households personal and dwelling characteristics. The results show that, while OLS estimates are biased downwards due to simultaneity with the rent proportion of the ratio; a linear IV model finds an 8 to 10% increase in housing costs to income ratio for energy efficient units among renters. The results for homeowners, while not as statistically significant, point in the opposite direction, to a decrease in mortgages with higher energy efficiency. An increase in the rent-to-income ratio has policy implications, as subsidies to landlords to improve energy efficiency can also lead to an increase in government spending on housing benefit.

Keywords: energy efficiency, hedonic pricing, housing affordability, instrumental variables

Fernández, A., Haffner, M., & Elsinga, M. (2022, June). *Analysing the financial impact of housing retrofit policies on Dutch homeowners: Comparing user cost and cash flow approaches* [Conference poster]. 3rd International Conference on Energy Research & Social Science, Manchester, UK.

The Renovation Wave is the latest addition to a set of European policies that aim to incentivise investment toward a low-carbon built environment. When it comes to housing retrofit, research has focused on how fabric interventions can reduce costs through energy savings and, in the long run, improve affordability. However, it is less clear how retrofit policies can have a positive impact on households with varying levels of income, energy costs and savings possibilities.

EU Member States have put in place large retrofit funding streams through grants, subsidised loans and tax deductions. This paper addresses the question: How do different housing retrofit policies impact homeowners' finances' and affordability over the short and longer-term in the Netherlands? This analysis draws mainly from the WoON 2018 dataset, a quantitative household-level survey. By focusing on household finances under different funding schemes, this paper aims to contextualise retrofit policies in the housing affordability literature. User costs are one of the main capital-based indicators of long-term affordability. Conversely, cash-flows are concerned with short-term monetary exchanges and indicate financial access to a dwelling in a given moment.

In the Dutch context of rising house prices, it is vital to measure the short and long-term economic implications of energy efficiency policies as they are likely to have a lasting impact on affordability and funding uptake. Our results show that depending on the policy adopted up to 85% of dwellings could be retrofitted with a profitable margin. The main impediment to retrofit are upfront costs that jeopardise short term affordability. On the contrary, from a user cost perspective, retrofit lowers costs over the long run. The regression analysis shows that those likely to benefit more from retrofit are middle and higher incomes in urbanised areas. This raises questions about the regressive nature of flat-rate grants and tax deductions.

Fernández, A., Haffner, M., & Elsinga, M. (2022, October). Comparing the financial impact of housing retrofit policies on Dutch homeowners [Conference paper]. SBE22 Delft 2022.

Abstract: The Renovation Wave is the latest addition to a series of European measures designed to incentivise investment in a low-carbon built environment. In terms of residential retrofits, research has focused on how structural measures can reduce costs through energy savings and improve affordability in the long term. However, it is less clear how retrofit policies can positively impact households with different income levels, energy costs and savings' opportunities across time.

EU Member States have provided substantial funding for retrofitting in the form of grants, subsidised loans and tax deductions. Using the Netherlands as case study, this paper addresses the question: how do different retrofit measures affect the finances and affordability of homeowners in the short and longer term? Our numerical analysis is mainly based on the WoON 2018 dataset, a household-level survey. By focusing on household finances under different financing schemes, this paper aims to place renovation measures in the context of the housing affordability literature. User costs are one of the most important capital-based indicators of long-term affordability. In contrast, cash flows deal with the exchange of money and indicate financial access to housing at a given point in time.

In the Dutch context of rising house prices, it is crucial to measure the short and long-term economic impact of energy efficiency measures, as they are likely to have a lasting impact on affordability. Our results show that if an appropriate policy was implemented, the majority of homes could be retrofitted with a cost-neutral margin, depending on energy prices and post-retrofit savings. The main barrier to retrofitting is the upfront cost, which threatens short-term affordability. Loans, either subsidised or private, offer an alternative to upfront costs but reduce cost-neutrality. On the other hand, from a user cost perspective, retrofitting lowers costs in the long run. Finally, a cluster analysis shows that middle and higher income groups would be most likely to benefit from retrofitting. This raises the question of the regressive nature and targeting of flat-rate subsidies and tax deductions.

Keywords: affordability, cluster, housing policy, retrofit

Fernández, A., Haffner, M., & Elsinga, M. (2022). Comparing the financial impact of housing retrofit policies on Dutch homeowners [Conference publication]. IOP Conference Series: Earth and Environmental Science.

Abstract: The Renovation Wave is the latest addition to a series of European measures designed to incentivise investment in a low-carbon built environment. In terms of residential retrofits, research has focused on how structural measures can reduce costs through energy savings and improve affordability in the long term. However, it is less clear on how retrofit policies can positively impact households with different income levels, energy costs and savings' opportunities across time.

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Keywords:

Furman, S. (2022, June). *The emergence of affordable housing and its relationship to social housing: The history of housing commodification in England* [Conference paper]. Arquitectonics, Barcelona.

Abstract: *Social housing* is often used synonymously with *affordable housing*, despite their disparity in meaning. A study of the context, emergence, and trajectory of each term clearly indicates a wider paradigm shift from welfare state towards individualism. Deregulation, financialization, and globalisation have facilitated the expansion of housing as a product of capital accumulation that outweighs the functional dwelling space with social or environmental value.

Today, housing is in a state of hyper-commodification where all material, social, and legal functions have been turned into commodities. Housing hyper-commodification directly conflicts with the United Nation's 1948 Article 25 "housing is a human right" by reducing access to housing to those who can afford the financial cost. Historically, social housing was a government-led answer to universal housing access. But shifting political, social, and economic priorities have generated a new ally – *affordable housing* – which differs from *social housing* in meaning, objective, associated policy, accessibility, and finance. Central to this change is a desire and pressure to achieve homeownership status, exchanging *social* inclusion for *financial* gain.

This paper catalogues the emergence of *social housing* from the industrial revolution until the mid-1970's and the emergence of *affordable housing*. *Affordable Housing* is then introduced and defined before continuing to follow both housing trajectories in the context of housing commodification. The conclusion identifies key historical moments that have shaped England's response through *social housing* and *affordable housing*, alongside corresponding stakeholder impact. The clarification of both terms is a necessary step towards ensuring all socio-economic groups are considered throughout the design and supporting policies of social housing, affordable housing, and sustainable housing.

Keywords: affordable housing, hyper-commodification, social housing

Furman, S. (2022, August). *Deep energy retrofit of social housing: A holistic approach* [Conference presentation]. The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: In Europe, 85-95% of the buildings that exist today will still be standing in 2050, and this extends to 75% to 80% of all dwellings. Meanwhile, the European Commission's 2030 Climate Target Plan is committed to a reduction in carbon emissions by at least 55% below 1990 levels by 2030, underpinning the journey to climate neutrality by 2050. Existing building stock needs to be quickly retrofitted to meet these targets, improve energy performance, reduce environmental impact, and safeguard the future. Yet the triple bottom line of sustainability makes it clear that the success or failure of sustainable buildings should be determined through a holistic analysis that not only includes energy performance, but other environmental, social, and economic factors. Deep energy retrofit (DER)

will, therefore, be discussed under these three topics: environmental – the value of energy upgrades, how and why they are determined and implemented; social – the value of social inclusion and resident engagement in deep retrofit; and economic – the value and importance of the economic aspects of deep retrofiting. In this way, it is possible to analysis how these topics intersect, and can therefore be utilised to increase holistic housing retrofit.

Keywords: deep energy retrofit, retrofit, sustainability

Horvat, M. & Bežovan, G. (2022, August-September). *Analysis of sustainability of service providers for social integration of the homeless in Croatia* [Conference paper]. European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: Homelessness is a complex social problem facing large cities in Croatia, a country that has made the transition from state socialism to a free market economy. During this period, the “give-away” privatisation of public rental housing took place and the state withdrew from the housing market, which is increasingly dominated by speculative interests. In view of the increasing number of homeless people, the government introduced programmes in 2011 to care for the homeless, which are managed by the major cities. The existing social integration programmes for the homeless are mainly run by civil society organisations. Previous studies have analysed the causes of homelessness and their demographic characteristics. The achievements of innovative practices such as “Housing First” speak to certain positive outcomes.

This paper reflects the current status of homelessness in Croatia by looking at national and local policies, and briefly introduces how homelessness is perceived in the neighbouring transitional (ex-communist) countries. The paper aims to understand the sustainability of the system of social integration of homeless people in Croatia, taking into account three components: financial sustainability of organisations, institutional capacity and social sustainability. The data collection was conducted through a survey, and a focus group is planned to follow. The research will provide answers to the main challenges related to the sustainability of organisations dealing with the social inclusion of homeless people and propose the necessary measures that would strengthen the system and thus contribute to more efficient and effective policies in the system. The research findings will be presented to the public and placed in the context of necessary policy changes.

Keywords: civil organisations, homeless, service providers, social integration, social service

Martin, C., Paio, A. (2022, July). *Democratising housing design through data-driven digital tools* [Conference paper]. CAAD Futures 2023, TU Delft.

Abstract: In a rapidly changing world with a pressing need to provide for affordable and sustainable housing, the integration of modern innovative techniques in the construction industry could lead to greater productivity and a higher democratisation of the built environment, which would in turn have a direct impact on global economic, environmental, and societal issues. Likewise, the co-creation process is a central element to achieve this democratisation, playing a major role in the management of business strategies by incorporating customer participation in the value creation processes. In order to achieve this, the use of digital technologies such as Building Information Modelling (BIM), have proven their potential to enable customer-centric strategies efficiently, embracing the mass customisation (MC) paradigm. MC promotes a demand-driven manufacturing strategy, where the company is able to align their production to the market’s needs offering a tailor-made solution and approaching economies of integration. Additionally, data-driven design strategies can ensure that the

design remains innovative and competitive, with an increased building performance and enable higher confidence in decision-making.

In this study we will address to what extent the use of BIM technologies and scripting software could bridge the gap between the creation of a wide variety of options that can accommodate different customer's needs and a dynamic optimisation of the building components. Through a literature review and a comparative case study research, the paper will gather empirical data from different developed tools and present the results from expert interviews. An important finding at the end of the paper is that it is possible to create inclusive and flexible solutions in the housebuilding industry while reducing the waste and cost in construction by incorporating contemporary digital tools; in this way, contributing to a democratisation of housing design.

Keywords: BIM, co-creation, data-driven design, housing democratisation, mass customisation

Panagidis, A., Charalambous, N. (2022, December). *Co-creation from the South: The case of Cyprus* [Conference paper]. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Abstract: Dominated by a technocratic state and a form of “Greek-Cypriot corporatism” (Mavratsas, 1998), civil society in Cyprus has been found to be underdeveloped (CIVICUS, 2011). This is reflected in the lack of citizen participation and the lack of decision-making power of the many people dwelling and working in the margins between the powerful state and the market to negotiate decisions. Informal and co-produced urban spaces (here understood as spontaneously co-produced) by actors who “do not typically fit into state-led and ‘professional’ planning schemes” (Galuszka, 2019, p. 144) are common, yet not recognised or institutionalised. These characteristics place Cyprus in the discussions around citizenship and participation in the global South.

In the meantime, new urban governance arrangements are on the agenda of many European governments promoting “active citizenship” and social innovation concerning the decision-making processes that involve citizens in the planning and provision of housing and public services (Bisschops & Beunen, 2019; Boonstra, 2015; Garcia & Haddock, 2016; Morgan, 2018). Furthermore, recent research is increasingly emphasising co-creation (Davis & Andrew, 2017; Koster, 2015) - the sharing of decision-making powers between municipalities, citizens and other actors – and this term is being applied in housing development and urban regeneration experiments at the neighbourhood scale. Innovative governance processes encouraging self-organisation to engage citizens beyond participation in planning are being investigated in settings labelled by the terms Urban Living Labs (ULLs), city labs or citizen innovation labs. In ULLs the joint knowledge and abilities of citizens, urban professionals, and local authorities is mobilised in collaborative environments where innovation can take place in real-life settings.

However, as these novel approaches are being transferred mainly from Northern cities to Southern Europe, there is a need to investigate co-creation by “seeing from the South” (Watson, 2009) as well as to avoid the mistake of applying a universal concept to contexts which to date have been perceived at the fringes of urbanity. In support of the “peripheral turn” in urban studies, it is important to challenge general guidelines that are replicated, including ULLs, and to adapt these novel governance approaches to their respective contexts (Galuszka, 2019). The ways in which civic engagement is fostered in Cyprus, especially regarding matters of urban development and informality, will form the main research question.

This paper aims to add to the theoretical discussion of co-creation, social innovation and active citizenship from a “southern” perspective, including the overlapping interpretations of the global South and Southern Europe. It will challenge existing parameters and guidelines of civic engagement and innovation in urban planning and housing by exploring the need to develop a southern perspective of

co-creation. The goal is to enhance the diversity of southern perspectives of urban theory, to challenge assumptions around best practices of sustainable urban development, but also to improve the methodology of applying co-creation to tackle housing and planning issues in postcolonial contexts.

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Keywords: active citizenship, urban governance, urban living labs

Panagidis, A. (2022, August). Configurations of Fragmented Infrastructure: The case of Nicosia situated at the Global North-South interface [Conference abstract]. RC21 Conference: Ordinary Cities in Exceptional Times, Athens.

Abstract: The processes of modernisation and urbanisation in Cyprus by previous colonial administrations aimed to replicate the “modern infrastructure ideal” (Graham & Marvin, 2001) and exert social control (Sioulas & Pyla, 2018). The newly established planning department undertook large infrastructural engineering projects related to water supply, electrification and road networks which largely determined the form of urbanisation. Subsequent Greek-Cypriot administrations adopting earlier planning mechanisms, have mainly followed technocratic formulae and the dominance of politics over civil society (Mavratsas, 1998; Trimikliniotis, 2001). Moreover, the processes of the island's urbanisation are situated at the “interface” between the planning rationalities of the global North and the lived realities of the global South (Watson, 2009). Nicosia, the capital city, is characterised by dispersed, low-density urban development, incessant parcellation of land and the overwhelming dominance of private car mobility (Constantinides, 2018; Ioannou, 2016) resulting in great deficiencies and fragmentations of urban infrastructures. Such political and spatial incongruities are conveyed by pockets of entitlement contrasted by the informal practices and claims to urban space through which under-resourced citizens perpetually strive to adapt and improvise. However, the social implications of disjointed and dispersed infrastructures have been greatly overlooked. In addition, despite being a country that has remained a “post colony” striving to be modern as characterised by Argyrou (2010), Cyprus is rarely examined from the perspectives of postcolonial urban theory or urban informality when speaking about urban planning or housing.

This paper focuses on the relation between the physical and social attributes of Nicosia’s peripheral expansion apparent in people’s daily confrontations with fragmented infrastructures. Using suburban infrastructure as a frame of examination, the method of visual ethnography is used in order to trace the socio-material practices that point to heterogeneous arrangements. These include among others, side-of-the-road vendors, do-it-yourself advertisements, improvised agricultural practices and informal home extensions. Furthermore, physical evidence of the lived, grounded realities that resist dominant land use configurations is juxtaposed with spatial planning logics. The paper highlights the need for a critical, Southern perspective of investigation, revealing human-infrastructure interactions that contest normative planning positions and North-South binaries. Therefore, this study aims to determine whether an “ordinary” geography of human-infrastructure interactions may lead to envisioning development processes that re-politicise land and infrastructure to shed light on alternative planning pathways that refute inherited trajectories of modernisation.

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Keywords: planning, urban infrastructure

Pappa, A., Paio, A., Duering, S., & Chronis, A. (2022, November). Understanding Participation through a Data-driven approach [Conference paper]. SIGraDi 2022, Critical Appropriations, Lima.

Abstract: Participatory models for urban regeneration have been increasingly integrated in local agendas. Yet there is still a need for evaluation methodologies of those models and their impact. This paper presents a data-driven and computational methodology to measure the impact of the BIP/ZIP Program in Lisbon. Using qualitative coding, data integration, unsupervised machine learning models for data clustering and interactive visualization dashboards the study aims to explore the large and complex dataset of the projects of the BIP/ZIP program and identify correlation patterns between their areas of implementation, the networks of project partners and the identified activities of the projects. The proposed methodology is a first step towards the development of a generalizable evaluation framework for participatory models of urban regeneration that will also contribute to the development of existing models.

Keywords: data-driven evaluation, data visualization, participation evaluation, participatory strategies, unsupervised learning

Pappa, A., & Paio, A. (2022, June). *Commoning (in) the neighbourhood, righting the city. nature for innovative and inclusive urban regeneration* [Conference paper]. Nature for Innovative and Inclusive Urban Regeneration (NATiURB), Milan.

Abstract: The advent of the urban commons as a response to the commodification of urban life (Foster & Iaione, 2016) and its excluding impact on the urban populations has consolidated a network of social actions, namely acts of commoning (Linebaugh, 2008) that produce and transform the city (Stavrides, 2016). While most of the commons-oriented initiatives largely depend upon horizontal relationships and values shared among active citizens, municipalities and public authorities also play a catalytic role in the level of citizen engagement with the commons through offering the appropriate institutional frameworks.

One such instrument of public policy is the program “Bairros e Zonas de Intervenção Prioritária” (BIP/ZIP), which focuses on priority intervention areas and fosters partnerships among different stakeholders to promote quality of life and territorial cohesion. Being the first participatory budget implemented at municipal level in Europe, BIP/ZIP has funded 426 projects since its 2011 edition addressing multiple urban issues and including diverse actors and activities.

In the example of BIP/ZIP, the study seeks to unravel the network of institutionally-supported commoning activities that are performed in the neighbourhood scale in an initial step to portray the Right-to-the-City. This is examined through the funded applications which are seen as the dialogue between grassroots commoning and institutional decision-making and together define the Right-to-the-City in the local context.

Towards this goal, the research initially conceives a framework to classify commoning practices based on their socio-spatial focus. The underlying themes that have emerged constitute commoning activities that 1. prioritise the most disadvantaged, 2. promote social development, 3. have a strong spatial character, 4. practice togetherness and solidarity, and 5. enhance the value of the neighbourhood and 6. expand the boundaries. In parallel, the case study of BIP/ZIP is examined through the successful applications that correspond to the funded projects. These are seen as the dialogue between the grassroots commoning and institutional decision-making and hence define the negotiated right to the city in the local context. A data-driven approach is employed to firstly map the projects and compose an index that includes information on their attributes such as themes, objectives and activities and secondly organise them using qualitative coding (Saldana, 2021) into the six commoning categories. The produced taxonomy contributes to the conceptualisation of the BIP/ZIP projects as urban commons, identifying patterns and drawing meaningful conclusions on the definition of the Right-to-the-city for the city of Lisbon.

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Keywords: commoning, right to the city

Pappa, A., & Paio, A. (2023, July). *Mapping urban commoning: the case of Lisbon* [Conference paper]. UIA World Congress 2023, Sustainable Futures Leave No One Behind.

Abstract: “Commons is best understood as a verb” (Linebaugh, 2008, p. 8). This paper explores the social practices of commoning in the neighbourhood that consolidate networks of solidarity in the city. These practices are formative of the urban life and hence the urban space and are a pathway for populations towards re-owning the urban value (Borch & Kornberger, 2015).

The research is grounded on the case study of the “Bairros e Zonas de Intervenção Prioritária” (BIP/ZIP), programme in Lisbon, the first participatory budget implemented in a European capital city (Falanga, 2019), that focuses on promoting social and territorial cohesion in priority urban neighbourhoods. The program enables bottom-up initiatives guided by local partnerships and to date has funded 425 projects in 67 neighbourhoods.

The mapping of the commoning practices and organisation according to their socio-spatial focus is concluded with the creation of a ‘commoning dictionary’, a taxonomic scheme that aims to highlight the contribution of these social processes for the achievement of the Sustainable Development goals and targets at a local level.

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Keywords: sustainable development goals, taxonomy, urban commoning

Pappa, A., & Paio, A. (2022, December). *Local partnerships in urban regeneration: The case of Lisbon*.

[Conference abstract]. RE-DWELL Conference: Housing co-creation for tomorrow’s cities conference, Grenoble, France.

Abstract: Collaborative forms of governance in urban regeneration are increasingly gaining ground in cities around the world, contributing to the active engagement of citizens in decision-making processes that affect their neighbourhoods and lives. In some cases, municipalities even attempt to embrace local grassroot initiatives led by active citizens, who creatively invent ways to regain and co-manage the urban commons. Extrapolated In the urban scale, such initiatives create networks of social practices of commoning that foster platforms of individual and collective rights (Stavrides, 2016) and help citizens reclaim the urban value (Borch & Kornberger, 2015).

In a similar vision, the Department of Housing and Local Development of the Municipality of Lisbon launched in 2011 a participatory budget program, namely BIP/ZIP, that serves as an instrument of public policy. The aim of BIP/ZIP is to annually fund bottom-up initiatives led by local partnerships in 67 priority neighbourhoods that enable responses to social and territorial emergencies. As of its 2021 edition, the program has funded 426 projects, involving 1403 different partner entities.

The aim of this research is to investigate the matrix of local partnerships that have been formulated throughout the eleven years of BIP/ZIP and understand their dynamic role for the city of Lisbon. The methodology employs data analysis and qualitative coding methods (Saldana, 2021) to (i) a map the

complex networks of partners, and (ii) explore the transformation of the urban governance through the emerging roles of different types of partners – organisations.

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Keywords: local partnerships, participatory budget, urban governance, urban regeneration

Ricourte, L.. (2022, December). *New approaches to post-occupancy Evaluation: Unveiling the social value of housing design*. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Abstract: This research focuses on identifying the spaces that are crucial in yielding the well-being and quality of life of residents in housing schemes. Post-occupancy evaluation (POE) is a promising method for assessing a building's capacity to meet social impact goals, comply with building regulations, and deliver improved sustainability and affordability. However, existing methods tend to focus on environmental outcomes rather than the less tangible social outcomes (Hay et al., 2017; RIBA & MacDonald, 2020; Samuel, 2020).

When it comes to housing, a decision about the height of a bench in a common space, the position of windows and porches in relation to a playground, or the size of a stairwell can affect the social value of a space. Only dialogue with inhabitants can bring these nuances to light. Although architects such as Herman Hertzberger (1963, 1991) have speculated on these effects, they have not yet been systematically studied or reconciled with contemporary debates on the social value of housing. In the field of urban design, for instance, Jan Gehl (Gehl, 1986, 2010, 2011; Gehl et al., 2006; Gehl & Svarre, 2013) has developed a scholarship programme and methodological approaches that rely on systematic participant observation and surveys to determine exactly what constitutes the spaces that support vibrant residential life and liveable neighbourhoods.

This paper investigates how these enquiries can be further complemented and informed by incorporating experiences from disciplines such as architecture geographies, in particular with regard to the research on 'building events' conducted by Lees and Baxter (Lees, 2001; Lees & Baxter, 2011), and Rose, Degen and Basdas (2010).

Overall, this study can contribute to the further development of a more structured and evidence-based POE to create and maintain learning loops that incorporate the experience of the inhabitants of the spaces and shed light on the design process of housing schemes. The research question guiding this research is therefore: to what extent can the social value created by the design of housing blocks be better informed and conceptualised through the involvement of participant observation and architectural geography as part of post-occupancy evaluation?

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Keywords: architectural geography, housing design, post-occupancy evaluation, quality of life, social value

Roussou, E., & Charalambous, N. (2022, December). On becoming a spatial agent: A comparative analysis of transdisciplinary design and build studio pedagogy in Cyprus and Sweden. RE-DWELL Conference: Housing co-creation for tomorrow’s cities conference, Grenoble, France.

Abstract: As the traditional design studio becomes increasingly obsolete in the face of complex and multi-faceted realities, architectural education is in urgent need of profound restructuring (Awan et al., 2011; Doucet, 2017; Salazar Ferro et al., 2020). For several decades, the live studio framework, i.e. a framework that exposes students to the contingencies of a “real-world” experience, intertwined with a web of spatial, social, environmental and political aspects, has been challenging the archetype of the architect, allowing for a proliferation of the ways of being-in-context for students, educators, institutions and communities alike (Abrahams et al., 2021). There is, however, room for further exploration in the ways in which the live studio is interpreted and implemented, within a rising post-capitalist wave of thought, both in the different geographical and cultural contexts, but also in its ideological standpoint and underpinnings.

The aim of this paper is to contribute to the ongoing discussion on reshaping live studio architectural education as a transformative pedagogy geared towards design activism, direct action and reclaiming learning as a commons that transcends the boundaries of academia (Bollier, 2021). More specifically, the study aims to provide insight on the impact of a transdisciplinary design & build pedagogical model on student perceptions regarding their positioning as future professionals, their attitude towards processes of cooperation and co-creation with various stakeholders, as well as their confidence levels regarding transdisciplinary, hands-on teamwork. A transnational comparative analysis of two courses, one at the University of Cyprus in Nicosia and the other at Chalmers University of Technology in Gothenburg, that share a focus on public space in suburban residential areas through similar learning objectives and syllabi, is used to both draw parallels and explore the differences between two distinct contexts, as well as highlight any transferable aspects and elements.

To address the above, the study draws on social sciences methodologies within a participatory action research (PAR) framework; a set of two questionnaires was handed out to the participating students of both courses, one in the beginning of each course and one at their completion, in order to trace and document both the collective and the individual shifts in mindsets and perceptions. Within the PAR framework, a reflexive insider researcher perspective methodology is used, solidified both by prior familiarity with these contexts in both a macro (cultural, historical) and a micro (educational, interpersonal) level, and by an active and immersed role as teachers throughout the process. This position enabled the enrichment of the research process by building bonds of trust between those involved, through which observation and in-depth analysis of formal (focus group session) and informal, everyday interactions was facilitated, while working collaboratively towards a common goal.

Building on the abovementioned, this paper reflects on the opportunities, implications as well as the limitations of a situated, transdisciplinary, design & build studio as a hub for training future architects in becoming socially conscious spatial agents, able to assess and respond effectively to complex challenges and work collectively towards a common future.

Keywords: commons, design and build pedagogy, live studio, spatial agency, transdisciplinarity

Tzika, Z., & Furman, S. (2022, December). *Housing retrofit for achieving holistic sustainability: A case study analysis through existing social and environmental frameworks* [Conference abstract]. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Abstract: There is growing interest in the sustainable retrofitting of the existing housing stock at a European level, as it is considered an important strategy to reduce carbon dioxide emissions and improve the energy performance of buildings. However, the issue of retrofit needs to be regarded beyond the strictly technical upgrade of buildings. The participation of the inhabitants in the retrofit process can promote significant benefits for residents, by meeting their needs in terms of comfort level, energy demands and wellbeing. At the same time, greater user participation implies more informed decision-making and better management and maintenance on behalf of the residents.

Currently, retrofit fails to tackle the triple bottom line of sustainability, including environmental, social, and economic perspectives, as a holistic framework that integrates efficient energy performance, social value, and affordability. Rather, retrofit typically occurs by single private homeowners, or as top-down management, where tenants have little to no say in retrofit measures. Retrofit can be applied as deep energy retrofit, prioritising net-zero carbon performance; over-time retrofit, planned, incremental stages with a goal to reach net-zero carbon performance; or partial retrofit, interventions are limited to the most significant or appropriate at that time. While each method has benefits and shortfalls, deep energy retrofit is currently lauded as the most desirable, to achieve environmental sustainability and reach a net-zero building.

However, arguments to reconsider this priority include safeguarding against future retrofit technologies and the inclusion of more socially sustainable perspectives. This research aims to understand the environmental and social implications of the process of retrofit. Following a single retrofit case study, we evaluated the social and environmental outcomes, using the criteria from two existing frameworks - Energy Performance Certificates (EPCs) and the Quality-of-Life Framework. The results of the study reveal how a retrofit process can be understood through an integrated perspective that considers environmental as well as social indicators.

Keywords: environmental sustainability, retrofit, social sustainability

Tzika, Z., Sentieri, C., Csizmady, A., & Martinez, A. (2022, August). *Models of housing co-creation as a means to achieve more affordable and sustainable housing? Barcelona as a case study* [Conference abstract]. The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain.

Abstract: In recent years, we have seen the emergence of collaborative housing projects in Barcelona. According to the literature, this appears because of several factors, among which, as a response to the social issues of exclusion and unaffordability of housing, and as a way to pursue more sustainable and collective ways of dwelling.

As part of the southern European context, where private ownership is the prevailing model of housing provision, collaborative housing seeks to create alternative and inclusive models of social housing with the active participation of the communities. Some of the objectives that the groups of cooperative housing projects in Barcelona, that use the legal form of ‘grant of use’ are explicitly mentioning are long-term affordability and security of tenure, the creation of housing that is aligned with the dwellers’ values and needs, and creating sustainable living environments and wellbeing. However, there is a gap in assessing to what extent this model is finally leading to affordable and sustainable results.

The aim of the research is to understand and evaluate if the initial objectives are finally met. To achieve that, first, the housing projects were geolocalised using GIS, and qualitative and quantitative data were added as characteristics of each one. The characteristics were divided into three categories: spatial/technical, social, and economic, which is helping us to classify, compare them accordingly and arrive at conclusions. Primarily, we conducted an exploratory analysis of the housing cooperatives in Barcelona to understand: the types of projects, who participates, the types of construction, and tenure. Secondly, we classified and compared the different projects to understand the relationships between their attributes. Finally, by applying sets of affordability and sustainability measures and indicators we assessed the extent to which they are being achieved, as an explanatory part of the research.

Keywords: affordability, cooperative housing, neighbourhoods, urban areas

Tzika, Z., & Sentieri, C. (2022, February). *Understanding co-creation in the transdisciplinary research of sustainable and affordable housing* [Conference abstract]. Reinventing the city, Scientific conference AMS Institute, Amsterdam.

Abstract: The housing crisis, especially in the countries of the European south, is characterized by a lack of supply, rising prices, and the deterioration of the housing stock. An increasing part of the population is facing inadequate housing conditions, exclusion from decent housing and energy poverty. The groups that are most affected, are the ones with limited economic, social, or cultural resources, such as low-income families, young people, immigrants, and the elderly.

The term co-creation is being used, as a way to include the local communities in the provision of affordable and sustainable housing solutions, that are meaningful and have an actual impact on their social life worlds. It is used to indicate the importance of active participation in the collective decision of the issues that affect them, and the design, implementation, and evaluation of actions that aim in affordable and sustainable living environments. Often centralized decision-making in the provision of affordable housing is not aligned with the needs and the perspectives of the local groups leading to dislocation and exclusion.

Furthermore, participation is being co-opted and used only in name to manipulate and legitimise processes where participants lack decisive power. For that, it is important to clarify the nuances between co-creation and other processes of participation. To draft our definition-in-process we will review the literature of co-creation to understand how we arrived at the term, and what are the

motivations and objectives behind it. Through a state-of-the-art review, we identified emerging concepts and values that define and distinguish co-creation from other more passive forms of participation.

Co-creation is understood as a potentially transformative process, in the context of transdisciplinary research for affordable and sustainable housing. It emerges and starts where the people are, strengthening the importance of representation, empowerment of the community, and their ownership over the process. Also, it is an iterative and reflexive process that aims to redistribute power and resources.

Keywords: community engagement, participation, participatory action research

Verrier, C., (2022, December). *Making sense of a new national context in comparative housing: personal and systemic reflections of a researcher's journey in France* [Conference abstract]. RE-DWELL Conference: Housing co-creation for tomorrow's cities conference, Grenoble, France.

Abstract: Considering the complex meshing behind housing systems, the fact that housing policies are highly contextual is nothing ground-breaking. Variegated political and institutional pathways, economic conditions, the state of the housing stock, or simply socio-culturally constructed housing aspirations each singularly shape the ways housing systems function so as to—in an ideal world—provide decent homes for all. This complexity leads to a particular set of challenges for comparative housing researchers.

For example, anyone discussing ‘social housing’ across national boundaries needs to account for the wide variations in the meaning of the term, which may refer to very different objects in different countries (Scanlon et al., 2014). It could refer solely to publicly owned units offered as a last resort option for the most vulnerable (like in the United States), while it may also refer to a broad tenure type geared at a range of household types by a wide variety of actors, whether public, not for profit or collective (such as a in Sweden or Singapore). In fact, even the previous sentences are oversimplifications, as only a—relatively—lengthy discussion of national specificities of different cases studied allows to create a space for comparison and differentiation (Haffner et al., 2009). In fact, defining and building understandings are a central piece of most comparative housing literature publications.

Yet, this relatively well acknowledged difficulty hides a wider conceptual issue; the words underpinning these definitions and differentiations tend to prevent leading researchers from making full sense of the various logics, institutions and actor behaviours operating within a specific housing system. In fact, where the literature is quite explicit on the multiple variations across contexts and what they mean for comparative work. Indeed, there is little interest given to the actual learning process, how individual researchers acquire the knowledge necessary to carry research on housing, whether at home or abroad. Ultimately, this poses a challenge for comparative work, specifically: how can one effectively understand the national specificities of an ‘external’ housing system to an extent that would result in meaningful comparative work.

Stemming as a reflection on van Heur’s (2020) call to better integrate personal histories and the role of researchers positionality in affecting the knowledge they produce, this contribution will reflect both the personal and systemic aspects involved in the process of “learning” a new housing system. Especially when it comes to carrying comparative work involving policies, institutions, and actors.

The presentation will be articulated around the personal experience of the author in “learning” the French and Dutch housing system, as well as a comparison of the syllabus of housing courses from different universities in France, the Netherlands, Canada and Austria. Ultimately, it aims to underline in which ways the intersection between the initial perspective of the researcher as well as the specific

idiosyncrasies of the researched system can allow to open new avenues. Similarly, it will also underline the difficulties involved in the process as well as possible shortcomings that can lead to issues, from cultural *faux pas* to incorrect inferences. Ultimately, this contribution aims to encourage housing researchers to reflect on the impact of their own frame of reference when engaging in comparative work.

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Keywords: comparative housing, housing systems

Verrier, C. (2022, August). *Land use and local housing regimes: What place for affordability?* [Conference presentation]. The New Housing Researchers Colloquium (NHRC), in the European Network for Housing Research (ENHR) Conference 2022. Barcelona, Spain

Abstract: Over the last few years, the transformation of European housing systems The apparent convergence of European housing regimes towards a Neoliberal model (Clapham, 2019) along with the ongoing rescaling of both state action and market forces since the 1980's (Brenner, 1999; Kazepov, 2010), calls for a rethink on the relevance of the national perspective to conduct comparative research on housing policies (Matznetter, 2020). This situation apparently leaves a gap between nationally understood housing policies and the actual practices of actors at the local level.

This paper, part of a broader research investigating the role of local institutional systems and actors in shaping varied housing outcomes within mid-sized urban development projects, looks into the specific practices of land development, and hypothesizes that current housing systems could be better understood by investigating the strategic adaptation of local actors to their institutional constraints. Seeing housing production as an intimately local process, the concept of local housing regime (Hoekstra, 2020) may represent a useful theoretical lens to understand the enabling and disabling factors shaping the decisions found on the ground. This does not mean that we need to subsume it only to context but rather that a systematic understanding of the forces at hand can steer policies capable of producing better housing affordability in the future. In order to further the reflection, the current article aims to review the literature on the topic, as well as conduct explorative interviews in the Netherlands and France.

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Keywords: Inclusionary housing, local housing policies, urban development, urban planning