

## The academic view: creating better homes

Interviewer: [Gareth Byatt](#) – Principal Consultant, [Risk Insight Consulting](#)  
Interviewee: [Richard Fitton](#) – Professor of Building Performance at [The University of Salford](#) & [Energy House 2.0](#) Technical Director

**March 2023**

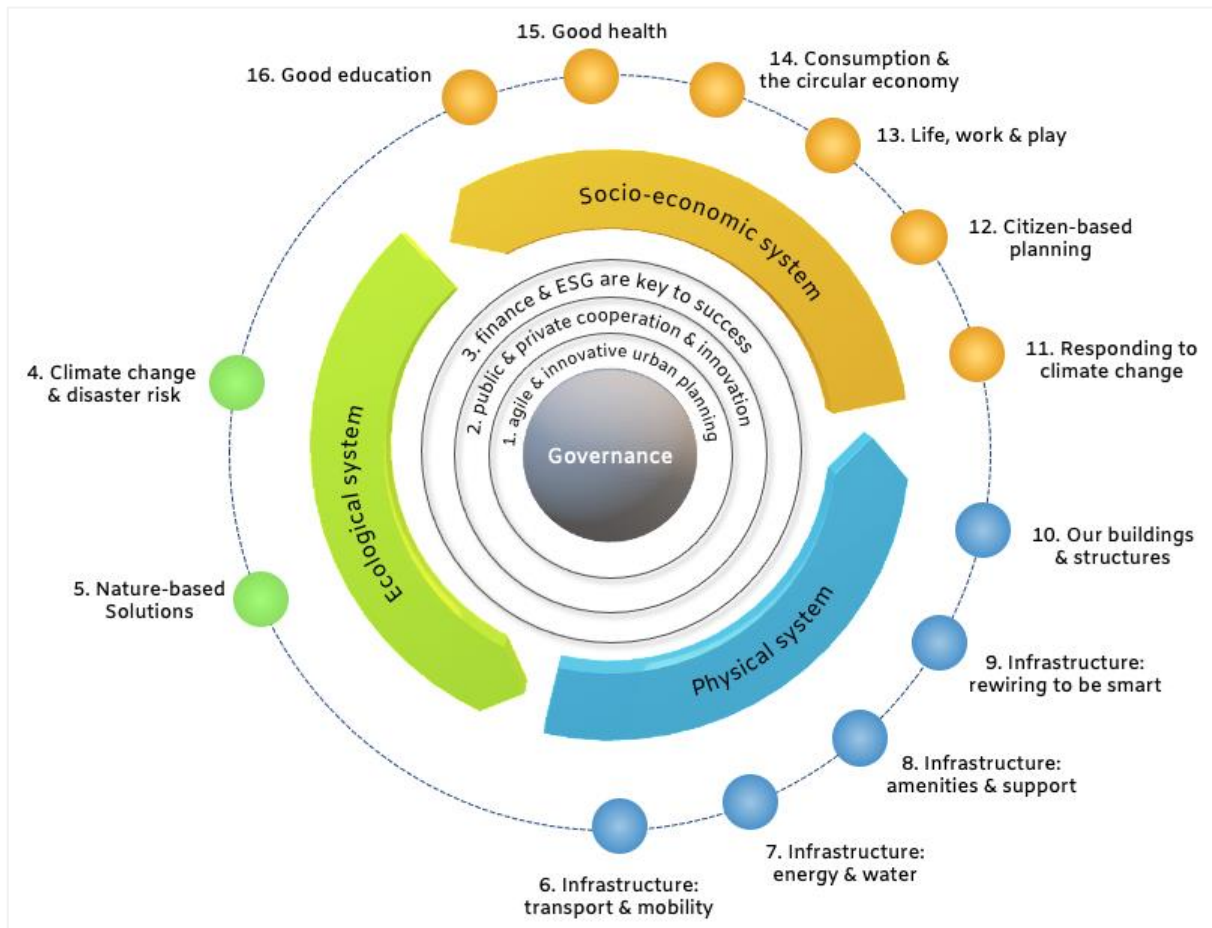


Detached homes at Energy House 2.0, the research facility at the University of Salford  
Photograph: [Christopher Thomond/The Guardian](#)

Richard,

Thank you for making the time to talk with me about the [Energy House 2.0](#). There's some great information about it online, on [the project website](#) and by various other parties.

I'd like to link our discussion points about better housing to some aspects of an urban system I use (per the diagram below), which links to the 17 UN Sustainable Development Goals ([the SDGs](#)) and [the 2030 Agenda](#) (point 7 – infrastructure: energy & water, and point 10 – our buildings and structures – are of particular relevance).



Urban system image by author

**Gareth:** Energy House 2.0 is an example of a partnership between academia and business, if I understand correctly. I know that in June 2022, the construction of test houses inside the environmental chambers of Energy House 2.0 started, in partnership with [Barratt Developments](#), [Bellway Homes](#), and [Saint-Gobain](#), and that they were completed soon after, in January 2023 (officially launched on 12-13 January 2023). What types of outputs, linked to the overall project objectives, are you hoping to see, and will all outputs be made available to anyone (e.g. as findings published on the project website)?

**Richard:** *The key outputs which are linked to the overall scope of this project are to “put buildings through their paces” for energy and carbon and robustness to climate change. We want to see how real buildings in our test facility chambers perform in terms of energy performance, comfort and how people can practically live in them. We are testing against current predictions and scenarios for climate change, and how buildings can cope with them, especially the more severe climate predictions.*

**Gareth:** I know the Energy House 2.0 project is an EU-funded project. Are its outputs intended to support housing development across Europe as well as the UK, and perhaps further afield?

**Richard:** *Yes, absolutely. Will Swan and I, the co-founders of this project, will consider the project a failure if it does not support measures internationally. We have designed the chambers for all types of climate conditions, from extreme heat to extreme cold and harsh weather, and we want to ensure we are part of the global effort towards better housing for everyone.*

**Gareth:** This is good to hear, Richard (I review housing in various parts of the world through my work in urban resilience). Reducing embodied and operational carbon is a crucial area of focus for the UK housing industry as it works out how to meet UK government standards that require a significant reduction in carbon emissions for new-build homes from 2025 onwards (with the new policy [drawing mixed reviews](#)). The same is true elsewhere around the world. Is part of the intent / hope of the Energy House 2.0 project to inform and support policy development of planning and / or building regulations in the UK, and other parts of Europe and elsewhere? Linked to this, I imagine the project has linkages with green building institutes and advisory bodies, such as [the Passivhaus Trust](#) (Institute), [the Green Building Council](#) and / or others such as [the International Energy Agency](#) (IEA).

**Richard:** *We do indeed hope that we can provide outputs that support policy development. Will and I sit on several boards with government and NGOs such as [the BRE](#) (Building Research Establishment) plus various Zero Carbon groups and international standards. We do have linkages with the likes of Passivhaus.*

*The other side to our work is advising the industry. We are not here to shape the private sector or to design and build the house of the future. We will feed back all the problems and the solutions that we uncover and work with through in this project, as an impartial party.*

**Gareth:** I'm going to hone into one particular building material now (I appreciate that houses are built from a wide range of materials). One of the things I have discussed recently with a number of people is the impact that the cement industry has globally on the sustainability of the built environment. The global cement industry accounts for something like 3% of all global emissions, yet from what I can see, most of the cement industry is not changing how cement is made, and the construction industry still uses a lot of it. The International Energy Agency (IEA) – which, as of early 2023, state that necessary changes to the cement industry are not on track – has [a dedicated section about cement on their website](#), and many other organisations focus on and produce reports about “greening the cement industry”. Can your project help the cement industry to change? I'm thinking about “the long tail” of the cement industry and the construction industry overall, not just the large materials producers and suppliers that talk about their demonstration and test plants for new production methods.

**Richard:** *This is an interesting point. We have been awarded funding to extend our research into materials and to undertake a detailed lifecycle cost analysis (LCA) on a building, including the deconstruction of it, and what is best for reuse and recycling. So yes, cement is part of the consideration here.*

**Gareth:** Do Nature-based Solutions (NbS) play a part in the Energy House 2.0 project?

**Richard:** *We are not specifically incorporating examples of NbS in the Energy House 2.0 chamber right now, but we will probably do so in due course. We do focus on NbS at the university though. We have a separate project called [IGNITION](#), which aims to demonstrate the benefits, in economic and other terms, by exploring innovative financing mechanisms and developing the arguments for NBS through the Living Lab at Salford University. The project looks at green walls, green roofs, a rain garden, and utility infrastructure, measuring the energy performance and efficiency of the structure.*

You can view a video about the IGNITION project on YouTube, [via this link](#).

**Gareth:** I was discussing urban environments with [Alain Bertaud](#), a respected urban economist and professor at NYU Stern, recently. In our discussion we talked about the challenges urban planners have in working with an existing urban environment which takes time to change. New build projects help us change, but there's still a lot of existing building stock. As well as your work to help new housing developments to be better and more efficient, can the outputs from your work support improvements (such as retrofitting) to existing housing stock? I know Salford university houses [the original Energy House project](#) which built an early 20th-century two-up, two-down terrace house inside an environmental chamber to test retrofit ideas.

**Richard:** *You raise a crucial point here – thank you! A key thing I can say is that the original Energy House 1 project (which I set up) is staying, and it is certainly being used. We continue to work on research that relates to existing housing stock. For example, we have done some work for [Nesta](#) (an innovation agency for social good). We have recently just finished some new research relating to Energy House 1 which will be published soon, and we have begun work looking at infrared heating.*

*If you look at the press, you will see that Energy House 1 still gets a lot of coverage, which we are thankful for. Both Energy House 1 and Energy House 2.0 link to each other (by design). If you want to visit Energy House 1, it continues to be booked up a year in advance since it opened.*



The first Energy House 1, at the research facility at the University of Salford  
Photograph: [Octopus Energy](#)

**Gareth:** It's great to see the linkages between Energy House 1 and Energy House 2.0, Richard. For my last question, what's the number one thing you'd like to be realised and achieved in cost-effective and intelligent housing design, construction and maintenance up to 2030, and maybe beyond?

**Richard:** *I would say that the number one priority for me, as things stand at the moment, is to demonstrate and prove how a typical future standard home can and will be "carbon efficient and more" – by which I mean that it is also cost-effective and simple to own, run and maintain. House builders will not build something that people cannot afford, and people want a house that is straightforward to live in, that doesn't need 10 different apps to operate different things, that if they go wrong, they need a specialist to visit.*

**Gareth:** Thank you very much for your thoughts and perspectives, Richard. I am very much looking forward to following the progress of the [Energy House 2.0](#) project. I'm sure this project will be valuable to students at Salford as well, as they develop their own careers after graduating from their studies.