

# Opinion: What resilience should mean to policymakers

March 14 2017, by Dr Kemi Adeyeye

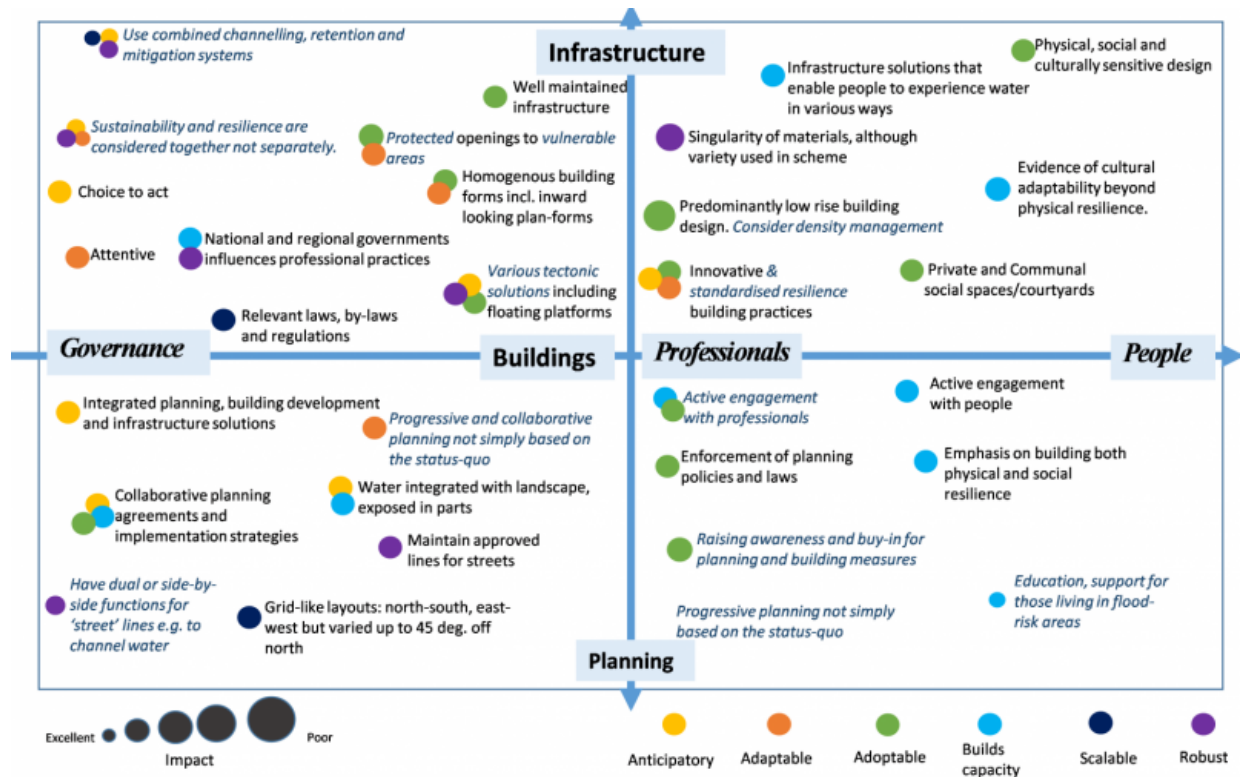


Figure 1. Combined integrated resilience map showing applicability and impact. The chart (after: Roberts 2013 ) presents combined case study findings along two axes, in four quadrants. The x-axis shows the contributions of important stakeholders including governance representatives; professionals such as architects, engineers and planners; and the people. The y-axis shows the physical outputs through planning, building and infrastructure solutions. The content of the map presents the physical and social solutions, highlighting impact (the size of the circles), and the range, based on the 6 applicability measures presented in the conceptual framework. In many instances the applicability measures overlap,

and the map therefore shows the most relevant measure for the particular case.  
Credit: University of Bath

Evidence, and perhaps the experience of seemingly perpetual rain on one's face, suggests that the weather is one thing that is increasingly variable and difficult to predict. The impact of this goes beyond deciding whether to take an umbrella, or wear an extra layer of clothing, when you go out in the morning. Like other shocks, temperamental weather can and does affect various aspects of economic, environmental and social life. In an ideal world, both policy and the built environment would be developed with a level of inbuilt resilience (that is, the capacity to cope with and absorb shocks), a recognition of the need to adapt, change and reorganise, and measures to mitigate the impact of future shocks.

Indeed, most human and physical systems are designed to cope with 'extremes' – but often within the range of what is 'expected'. 'Unprecedented' is now a common term used by politicians, the media and some experts to describe current weather events that are extreme, but not within the expected range of extremity. One unprecedented event soon supersedes the next, however, and the next one after that – so to what extent are these events really unprecedented? And to what extent can the impact and consequence of weather events such as flooding be considered a surprise? For scientific answers to these questions, I encourage the reader to review the work of my colleague Dr Thomas Kjeldsen. In this piece, however, I will spend some time considering the concept of [anticipation](#), before concluding with what resilience should really mean to urban planners and policymakers.

## **Anticipating change**

Studies show that, as human beings, we are ontologically programmed to engage in ideations that allow the anticipation of space, time, causality and subjective probability. This is referred to as our evolutionary potential– i.e. our ability to promote preparedness and maximise the probability of proactive change through historical memory, knowledge, expertise and experience. Anticipation is innately formed through memory and experience rather than the unknown. To this end, we are prone to engage in [mental time travel](#), reliving past experiences as the basis for imagining the future. However, we should also be aware of the fact that experiences are carried forward in time through memory (individual or collective), which means that such practices can affect welfare. That is, the effectiveness of memory and/or experience to engender actions and preparedness for resilience can vary depending on how we remember, with a consequent impact on the actual outcomes of shocks. The problem with relying too much on memory is that we soon forget – another useful evolutionary skill to help to cope with trauma.

Anticipation can be both forward- and backward-looking. Using the term 'unprecedented' suggests that the extent of our anticipation remains backward-looking, and this supports the prevalent reactionary approach to resilience – whereby capacity is only expanded after it has been overwhelmed by an extreme event. But we need both; forward-looking anticipation, particularly in the context of climate change, needs to be underpinned by past learning. Now, I am sure that scenario planning is taking place across the policy realms at present, building on our current tools and codes to explain and take action when the unexpected event happens. However, this approach does not always translate into dynamic planning for potential future uncertainties – when a comprehensive, flexible response may be required for the next unprecedented scenario.

## **Rising above the flood**

Take flooding. There are some good social and economic reasons for

current and future developments on or near water. There is also little choice in some instances. For example, most of the Netherlands lie several meters below sea level. As mentioned later, their planning and building developments have therefore advanced to effectively manage the associated risks. For others, flooding can be cyclical, but also sudden. This introduces general and specific issues to the equation to do with quality of life; economic, environmental and social vulnerability; security; physical, urban and building resilience; and so on.

These are factors that should not be ignored. The OECD forecasts that without effective change, the total global population exposed to flooding could triple to around 150 million by the 2070s due to continuous sea-level rise and increased storminess, subsidence, population growth and urbanisation. Further, asset exposure could grow dramatically, reaching US \$35 trillion in the same period – roughly 9% of projected annual GDP. The NHS budget for instance is at present around 7% of UK GDP. Unlike the NHS, however, inaction on resilience is a bill that is best avoided. Exposure to risks does not necessarily translate into impact when resilience is "designed in" through coping and adaptive mechanisms.

So how can we design systems that are resilient and able to contend with unpredictable challenges, such as environmental change? Staying with the theme of flooding, we can learn from approaches that have worked at other times and in other places to better anticipate the future. We can learn not to be so set in our ways, but to dare to be flexible and embrace new ways of working. This is particularly important in the UK context, where our planning rules are entrenched in tradition and our design and building practices can be slow to evolve. Although innovative practices have started in some areas, changes remain piecemeal, and inconsistently applied across the country. Unlike global exemplars of building codes and standards, resilience requirements are still not explicit in the UK Building Regulations – so we are therefore missing out on a more

consistent, widespread implementation, in addition to losing the opportunity to promote resilience alongside current sustainability standards, especially in housing developments.

## **Facing the future**

Better integration of good governance, planning, infrastructure and architectural design would be a good first step towards closing the gap between where we are today and our future potential. On governance, there need to be visionary, non-ambiguous and tangible planning policies and regulatory requirements for resilience – particularly in the built environment. Formal building and planning policies, as they stand, could do more to promote forward-looking design and planning solutions, or to facilitate the development of resilience and adaptive capacity against natural events.

But new laws and regulations will not be enough. More should also be done to better equip individuals and communities for the task of planning and acting in their own best interests, or even actively participating in or influencing policy processes. It should also be possible to improve individual and collective anticipation by the positive utilisation of experiences of and effective responses to past climatic extremes – "memory". Actions taken to improve agency by making better use of wider communication networks to provide access to information, raise awareness and improve action for resilience would also be a positive step.

## **Building resilience**

Examples as old as the Indus Civilisation and as contemporary as the Waterwijk in Ypenburg show that good governance and social measures are not enough on their own. Effective planning, good infrastructure and

innovative architecture should be combined to reduce physical and social vulnerabilities. This underpins the argument for an integrated design approach to [resilience](#) (Figure 1).

Policymakers and planners of the built environment who plan to adhere to such an approach should aim to achieve three major goals. Firstly, to deliver solutions that emphasise social place-making and capacity building – building communities whilst placing water at the forefront of communal consciousness, for example. Secondly, to implement resilient infrastructural solutions that are flexible but future-proof. Thirdly, to encourage solutions that are not all about hiding water in underground drainage networks, but rather integrate water into the social fabric of a community through planning, engineering and architectural design.

Collaborative working between policymakers and diverse stakeholders – including building professionals – is key to achieving this. Planners should work positively with architects and engineers to deliver the most effective solution possible within the individual context. Innovative architectural ideas and solutions should be encouraged and, further, the needs of the public should be fully integrated within the decision-making process. For this to happen, government departments will need to talk and work more effectively together at the national, regional and local levels. There also need to be better mechanisms to include knowledge agents and the public in solution-forming conversations; technologies such as smart web-tools, and innovative apps can help to facilitate this process.

**More information:** Adeyeye, K., Codinhoto, R., and Emmitt. (2016), "Integrated Design for Flood Resilience", Emmitt, S., & Adeyeye. K. (Eds.), Proceedings of the ID@50 Integrated Design Conference 2016, 26 June – 1 July 2016, Bath, UK: University of Bath. ISBN-13: 978-0-86197-192-3. ISBN-10: 0-86197-192-2.

[www.researchgate.net/publication/309111111-Integrated-Design-for-Flood-Resilience](http://www.researchgate.net/publication/309111111-Integrated-Design-for-Flood-Resilience) **FOR FLOOD RESILIENCE**

Provided by University of Bath

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