

Embracing the challenges of urban resilience

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Australia's growth since European settlement has been heavily oriented to urban areas. It is not surprising then that most of the ongoing material wealth is intertwined with risks faced by urban places and systems.



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Urban resilience presents multiple challenges to the disaster risk reduction sector, as well as to the many professionals and other stakeholders who manage and use the built environment. A range of guides, initiatives, charters and strategies aim to improve urban resilience. However, it remains unclear how the enormity of the task can be addressed comprehensively, even while specific actions may be effective in targeted ways. This paper suggests that the field of action and core 'work' of resilience depends on embracing and working on the problematics of achieving city resilience.

Escaping definitional tangles and reducing risk

While accurate definitions of resilience are important, becoming tangled in arcane and sometimes needless complexities can be counterproductive. However, using the well-established, researched and practised field of risk science and risk reduction provides a powerful foundation. Risk assessment is not always precise but it is usually the best way to inform decisions, to determine the characteristics of risks and to establish priorities for action. Resilience thinking adds useful connections and depth, such as acknowledging that we are embedded in complex socio-ecological systems, that 'bounce back' alone is not enough, and that no single end point for achievement exists.

Recognising urban areas as riskscape

Urban areas are inherently places of risk - riskscape. These risks are diverse and variable depending on the interactions of built structures and people with a range of natural and other systems. Deeper enquiry often reveals an incomplete understanding about urban risks, for example:

- how proximate to vegetation or coastlines or low-lying areas should structures be

- are the materials used appropriate to withstand storms
- is the structure maintained adequately
- how capable and knowledgeable are the people.

Determining changeable risks in dynamic urban systems

Urban places are dynamic. Their function relies on a changeable and interacting complex of systems including physical structures and spaces, technology, infrastructure, economics, social and ecological elements. The challenge is to determine what risks exist in this context (what needs to be resilient to what) and whether any actions taken will have the desired effects. Further, the size, location, design and interactions of urban places with various hazards is changing rapidly. For example, consider that Australia had limited numbers of high-rise buildings only 30 years ago but now faces new risks associated with high-rise living that are only recently being acknowledged. Every evolving variation of urban places has ongoing and changeable risks. Consider how the COVID-19 pandemic changed views on urban density, emergency communications, supply chains, the need for open space and technologically reliant work, education, health and shopping.

Owning risk and risk transfer

Urban development and change create and modify risks for users and occupiers. Urban development has a tendency towards irreversibility, meaning that once land is cleared, streets are laid out and land is subdivided, many of the core foundations of that settlement remain for long periods of time. As part of this process, risk is passed on from landholders to developers, decision-makers and then to individual householders, users and occupiers. This extends to the emergency planners and responders who manage risks in urban places. Risks need to be

consciously determined, acknowledged and considered at each step to avoid the creation of undesirable and enduring riskscapes.

Acknowledging spatial and temporal scales

Urban places have problems of scale. The challenges of where things should go and 'how much' (density) should be in a particular place (e.g. housing, jobs, schools, open space, shops, health). This is combined with complex connections between activities (via transport systems, infrastructure, services) and with other environmental, social and economic systems that function at diverse scales. Existing urban areas have resulted from change that occurred in increments over time under varying circumstances and diverse competing demands. Also, as places change, this builds upon all that has come before, including poor and good decisions, changing technology, demographics and costs. It is little wonder that urban riskscapes are multiple and are intertwined.

Embracing the logics of decisions and governance

Urban places are the outcome of decisions over time. Some are by formal decision-making by city planners, building practitioners and politicians. However, the vast majority of decisions are made by disparate people, businesses and organisations, mostly about matters that are unrelated to risk management. Improving resilience has become another set of considerations. It is necessary to acknowledge that there are limits to what additional regulation can achieve, even while this is often justified as a way of improving individual and collective outcomes. It is clear that integrated action, the 'joining up' and alignment of objectives across diverse actors and actions, is required to manage risks. Despite these challenges, it is appropriate to involve diverse stakeholders as this has been shown to improve decisions and to facilitate uptake of positive change.

Dealing with new and existing urban risks

A fast-growing large city physically changes by only 1–2% per annum. Small towns are also subject to changes, for example, the ageing or decline in population or increasing population associated with newcomers looking for a certain lifestyle, with flexible work arrangements becoming common or seasonal tourism. While it is important to focus on avoiding unacceptable new risks when change occurs, it is also important to recognise that most risk is embodied in existing, often older, elements of settlements.

Acknowledging internal and external drivers of risk

The drivers of risks are multiple in any circumstance. Taking action to improve resilience requires acknowledgment that many factors are outside the control of the parties involved. It would stand to reason to prioritise action on matters where control of risk drivers is the greatest. However, it is also appropriate to influence others who could help reduce risks. Further, is it possible that decisions within our control are modifying other's risks? For example, consider the affects across jurisdictions and various parties relating to flooding that result from upstream vegetation removal, construction of non-permeable surfaces, modifications

of flow paths and changing expectations of water management in catchment areas.

Recognising adaptation, mitigation and transformation assumptions

When we reduce risk and improve resilience, it is challenging but important to acknowledge that the goals are often informed by assumptions or limitations between adaptation, mitigation and transformation. For example, it seems sensible to adapt existing structures in fire-risk areas to improve their resistance to bushfire. However, it would be better to mitigate the risks of bushfire by taking actions to avoid climate change and the effects this has on bushfire (and other) risks. Even better would be to transform the underlying systems we rely on, particularly in urban areas, to redress and improve the environment in ways to achieve multiple sustainability goals, as well as reducing bushfire risks and avoiding costly and ultimately inefficient mal-adaptations.

Dealing with uneven vulnerability, consequences and risks

The consequences of hazardous events are highly uneven across geographical space and urban areas. This is a function of exposure, the characteristics of hazards and the vulnerability of people and the systems they rely on. There is an ongoing need to look beyond physical aspects and to undertake fundamental actions to reduce *human* vulnerabilities. Lower resilience is strongly associated with lower socio-economic status, certain genders, cultural background, education and health.

Anticipating dilemmas of recovery and resilience

Recovery is a key part of the disaster cycle, however, it receives little attention until an event occurs. There are many opportunities to improve resilience during this phase, particularly if strong mechanisms are put in place prior to events. Unfortunately, valorous attempts to rebuild, build back better and use non-systematic thinking that reinforce risks in urban areas are often pursued.

Relying on technology and brittle systems

Urban places rely on an array of technological and infrastructure systems that have brought vast benefits to the quality of life over time. In parallel, considerable advances have been made in technological prediction, warning, communication and other systems. These systems are important, and no doubt will continue to evolve. However, it is important that we anticipate, model and fail-safe systems with redundancies and low-tech fall-backs in urban areas to maintain function.

Determining what risk is acceptable?

No urban environment is without risk. However, we have generally avoided determining the level of risk that is deemed acceptable. Without this, we cannot model and subsequently plan and design urban places that manage risk to improve the resilience of our communities.