DESIGNING THE BUILT ENVIRONMENT THROUGH A WIDER LENS

Approaches to recover from shocks and thrive in better times

Disruptive events, such as wildfires and the COVID-19 pandemic, have highlighted the need to shape inclusive communities, protect existing assets and build resilience. These and other issues require new thinking and perspectives.

The following Q&A features a discussion with Kieran Power and Michael Tyrpenou, WSP Australia, who address how to develop a broader view and inclusive approach to designing cities and rural communities. Kieran Power is National Lead, Climate Change and Resilience, and Michael Tyrpenou is Principal, Social Strategy and Design.

What thinking can help guide the reshaping of urban environments?

Kieran Power: We need to focus on helping urban centres and their inhabitants thrive in good times and survive when faced with major shocks like floods or pandemics. This means embracing the possibility that sometimes the best solution to an urban problem may be a non-infrastructural one. While I understand the appeal of trying to build our way out of the

economic turmoil caused by COVID-19, at the core of any infrastructure project should be seeking to meet a demonstrated need. The focus should be the outcome we want, not just another asset to manage.

An iconic example is the free app City Mapper, which was first developed for London in 2011 using open transport network and timetable data to assist people in navigating what can be a notoriously challenging city to get around. Similar platforms have since sprung up globally, but at the time it was game-changing. By providing advanced route-planning guidance in a way that integrates—like never before—different transport modes, such as underground rail, overground rail, bus, light rail, ride sharing, cable car, ferry, walking, private bicycle, shared bicycle and private car, the app helped to optimize use of the transport system in a way that constructing more infrastructure could not have achieved. Platforms like this one can shed light on efficient but underutilized routes, optimize connection between services, and allow commuters to more easily chart the quickest alternative route when major disruptions occur, such as the 2017 London Bridge attack or the 2018 "Beast From the East" cold wave that hit Europe.

Obviously, apps can't solve all our problems. To build new public infrastructure where there is a clear need, we need to find ways to facilitate effective cost sharing between those who stand to benefit. This applies to both new infrastructure and in making our existing assets resilient to a changing climate and the new demands of life during and after COVID-19.

The benefits will be shared, so too should the costs.

Can you provide an example focused on strengthening the resilience of existing assets?

Kieran Power: Consider a developed coastal area in need of new flood-protection infrastructure due to rising sea levels. This hazard could potentially affect a diverse range of asset owners, including businesses and households along the waterfront, the local government and utility owners. Without effective cost- and benefit-sharing mechanisms, individual asset owners are left to manage their own risk profiles independently, which can lead to inaction or self-serving approaches that don't meet community needs or address the issue effectively.

So how do you bring these disparate stakeholders together to develop an effective solution and a fair answer to the question: Who pays? What's needed is a collaborative process to assess how the investment affects each stakeholder's exposure to risk and helps them avoid future costs, such as clean-up after a flood or lost business during closure. The challenge is identifying and comparing the priorities of stakeholders who may value very different things. For a business, the reduction in risk from new coastal defences could be measured in the increased capacity to trade year-round without disruption; if the business is not willing to contribute their share to access this benefit, they have the option to relocate elsewhere. However, for a local government, it may not be a simple case of return on investment—for example, they also need to consider the less tangible value that protecting the area may have for the local community.

Of course, identifying the right solution is not the same as delivering it. The alliance-contracting model is a common approach in Australia for translating this cost-and-benefit-sharing ethos—often called "pain share" and "gain share"—into project delivery and is an emerging delivery method in other parts of the world.

What recommendations can you make to help cities and regions identify and meet their infrastructure needs?

Kieran Power: It's important to take a whole-of-life approach to infrastructure decision-making—one that values the benefits of including flexibility, upfront, even if it results in higher capital expenditure. COVID-19 has certainly demonstrated the importance of flexibility, such as the ability to repurpose infrastructure to respond to shifting needs. A good example is building new commuter car-parking facilities with conduits that allow for easy installation of additional electric-vehicle-charging infrastructure as demand begins to grow. For the long-term, we need to take a wider view of emerging needs for city spaces and how to best use them. For example, on George Street in Sydney's central business district, one iconic building transformed part of its car-parking space into an urban farm.

It's also important to have a holistic perspective of cities. Systems within cities are increasingly complex and interconnected—a failure in our power or communication networks can have cascading consequences for transport or water. In good times, we can benefit from this interconnectivity through better and more efficient service delivery. But by linking and automating more systems, we can also create single points of failure with broad-ranging consequences for other systems. To build the resilience of all these systems, we need to proactively pinpoint critical interdependencies. In Australia, we saw cascading consequences first-hand last summer when emergency bushfire

response was hampered by widespread failure in telecommunications networks.

We must also take into account the natural systems that our built infrastructure requires to function. Consider the green spaces in and around our cities that regulate temperatures; without them, buildings and critical infrastructure may be at increasing risk of overheating. Or, consider dunes that provide natural protection to coastal settlements at no charge; once gone, they are gone forever, with engineered alternatives coming at much greater cost.

Turning to regional areas, the bushfires in Australia have certainly called attention to the need for resilience in the face of natural disasters. What approach is essential to help communities identify their infrastructure needs, rebuild and endure similar events in the future?

Michael Tyrpenou: The recent bushfires in Australia have demonstrated the importance of listening to impacted communities, showing empathy and working alongside them to find the right solutions within the specific environment and locations that define them. This inclusive process alone helps build resilience by enabling community members to take ownership of what the future looks like for these impacted areas.

We as designers, need to think beyond the event itself to seek an understanding of how communities want to live in the future. No one knows a community better than the people who live, work or play within it, so when making decisions, designers and other external actors should work in tandem with these communities to contribute to the decision-making process.

A human-centred design approach to recovery and ongoing risk reduction is inclusive,

accessible and participatory. Its focus is on understanding the needs and lived experiences of those directly and indirectly impacted through disasters. Using face-to-face methods, such as participatory research, ethnography and co-design, designers can make more informed choices about ongoing recover-and-risk reduction. Developing public trust, participation and collaboration lead to meaningful conversations throughout the decision-making process. This approach can be at odds with the thirst for action amidst the backdrop of a 24/7 news cycle, polarizing political ideologies and election timeframes—but provides empathetic and empowering outcomes for those impacted.

How can human-centred design foster inclusive communities?

Michael Tyrpenou: Inclusive communities are built on a foundation of understanding. A human-centred approach to infrastructure design seeks to understand local communities and what makes them tick. It advocates for an empathetic relationship between designers, communities and the environment so that the design of infrastructure meets community need. A human-centred design methodology helps designers better understand the lived experience of community members. It challenges long-held assumptions by seeking to understand how communities live now and what they want for the future. Assumptions about community, when not supported by evidence, can have significant impacts on the lives of community members—putting up barriers to access and participation in public life. When creating solutions, designers need to look beyond demographics to identify opportunities, issues and risks felt by local people.

This approach, however, is only successful if it engages local community members from all walks of life, not just those with the loudest voice. Human-centred design requires focus on

those who struggle to have their voices heard and feel excluded from public life due to traditional barriers such as age, culture, ability and socio-economic status. Their input is essential to shape inclusive communities and improve social, economic and environmental outcomes.

What takeaways can you each offer for those interested in designing urban and rural communities that have the ability to adapt and thrive?

Michael Tyrpenou: Start with people and place, not the infrastructure itself, in order to drive social outcomes. Listen to what communities need, step into their shoes and get to know what they're going through— before making assumptions about what others think is best. Empathy goes a long way in building both trust and great outcomes for communities.

Kieran Power: Once you've identified the needs, make sure they can be met in good times and bad. Remember that needs change gradually and also suddenly, as we have seen with COVID-19. Take a realistic view of the shocks and stresses that could impact assets and services in the future, and design with them in mind.

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