

“As a senior policy maker, I see an increasing trend of moving on from considering sustainability and infrastructure as a series of separate, individual issues and towards viewing them collectively, as part of a city system. But we must avoid the trap of thinking of a city only as a ‘system of systems’. Cities are where people, ideas and creativity come together.”

Mark Kleinman
Greater London Authority

Top down versus bottom up

What changes in cities will come from the top down (such as central planning) and what will come from the bottom up (such as social media or market forces)? How do they meet?

At a glance

Modern, technocratic public policy began in the 19th century to replace what was seen as the selfish whims of individuals with dispassionate, multi-criteria analysis, optimisation and systems thinking. Since that time, there is an emerging sense that the pendulum may have swung too far, with increasingly top-down decisions that lose sight of local, highly contextualised knowledge. The challenge is to redefine the balance between these two modes of governing cities for sustainability as we learn more about which problems can be addressed top down and which can only be resolved through bottom-up, collective action. How can unofficial governance be incorporated into and/or complement traditional modes of city governance? What are the risks inherent in this approach? When is it appropriate? Cities will sometimes need top-down governance to ensure the free actions taken by one group do not impede others. But how do you build a system that can cope with emergent, bottom-up governance as well as top-down planning while simultaneously making cities more socially and environmentally sustainable?

How local are systems?

The top-down approach to city design and operation allows trade-offs between different parts of the city and different elements of infrastructure. For example, energy supply and demand can be balanced, surface water run-off can be directed to where it will do the least overall harm and transport systems can be optimised so the greatest number of people is served. Further, cost effectiveness of investments in sustainability can be improved.

However, this top-down approach comes at the expense of residents' control over their local community. The system of

the entire city is optimised, but this creates winners and losers. A more bottom-up approach reduces this problem, but at the expense of creating a patchwork of solutions that is less than optimal for the performance of the city's engineered systems.

At what spatial scale must a system be optimised to provide harmony between the top-down and bottom-up approaches? In hydrological systems, it is often possible to treat catchment areas separately: solutions that work for one catchment area need not be imposed on all catchment areas uniformly. What is the analogue within cities? At what spatial scale can a city allow local citizens to find local solutions to sustainability, and how can a top-down approach then ensure that these local solutions are brought together to bring sustainability to the city overall?

Key questions

These issues led to three areas where better answers are needed:

- How can cities use larger-scale systems approaches for the built environment while allowing for local flexibility?
- How can informal and formal systems of governance run in parallel and complement each other? At what spatial scales is one or the other appropriate?
- How can people be enabled and inspired to act in a more sustainable way without prescribing set answers or imposing solutions on them?

Questions of scale

How do we create effective institutions within cities, when they might be involved in both formal and informal planning? Governance can operate outwards, starting with local city governing bodies and progressing on to regional, national or even international bodies. By coordinating these levels of decision, nesting them one inside the other (the quintessential form of top-down planning), it becomes possible to coordinate actions so they are, in some sense, 'optimal' ways of reaching environmental and social sustainability. But governance can also operate inwards into parts of the city, city blocks or even individual groups of residents, where NGOs, local citizen organisations and charities play important roles. Somewhere in the middle sits a network of governance, with smooth transitions from top-down to bottom-up approaches when one or the other is needed. To date, no city has solved the problem of making the transition smoothly, in large part because the two approaches usually meet at points where they come into conflict. Does local governance lead to more adaptability and greater sustainability, or would local governance be more vulnerable to pressure groups, local interests or to delivering only short-term solutions?

Local governance is important in helping cities adapt to changing circumstances and making decisions which are in their own best interests. It is difficult to unearth evidence that localism and decentralisation benefits cities in the UK. Similarly, there is limited evidence concerning the benefits of centralised governance, so it is not at all clear which approach (top-down, bottom-up or a hybrid approach) would be favoured by increased evidence.

“You need local governance to understand the contextual nuances which you’re never going to get elsewhere. And for me it’s only through local governance that you’re going to address how to get to sustainable and resilient cities.”

Jo da Silva
Arup International Development

Individual companies can take action on sustainability, but genuine impact will only come if these actions are scaled up to the level of a city. However, if the scale is too large, then effective change becomes impossible. Cities occupy a 'sweet spot' as they are a manageable size and are the right scale to be effective agents of change. Because of their size – sitting between individual businesses and global initiatives – cities may have more power than national governments to effect local change and can potentially respond more rapidly and be more targeted than national government legislation.

While city governance can be powerful, there is a role for central government, especially in regional planning and development and reaching national sustainability targets through local decisions. There can also be a role for multinational planning under some circumstances, since sustainability solutions in one city or one nation can – through the global supply chain and global economies – affect the sustainability of other nations. This can occur, for example, with leakage of carbon through global trade, or water usage embedded in products that are consumed in one city but produced elsewhere. What is the relationship between what happens at a city level and what happens nationally or multi-nationally? Can cities proactively take actions on complex large-scale environmental issues, or can they only adapt to them?

Catalyzing and communicating change

Cities can create a list of sustainability actions but, in order to put these into practice, collective action is needed. Formal governance is one possible lever to stimulate change, but in areas where there is no governance, or governance would not be an effective tool which actions can still be taken? How can people be moved to take actions if not required to by governance institutions?

The answer lies in part in identifying 'high value' institutions and knowledge brokers, or people who are thought to influence others. Who are these leaders in cities? How do they exert their influence, and whom do they affect? How can we better understand these actors and networks? Are there 'acupuncturelike' interventions (such as targeting specific street corners to reduce crime at a neighbourhood level) where a change in governance or change to the way we act at a local scale has ripple effects throughout a city? Spatially and socially resolved networks, supported by motivating 'intermediaries' and 'thought leaders', possibly play a larger role in governance now than they have in the past.

We need to be more inclusive in our thinking about decision-making. There are governance structures, businesses and the third sector, but there is also groundswell – the informal process whereby viewpoints are expressed – which can affect how certain things get done and how other things are blocked. The security of cities is a good example: the police cannot do their job without the support of the majority and no-go areas can develop. Essentially, societies comply with the law because the law reflects what society sees as reasonable. The compliance is far more impressive than the failure to comply. Does this mean that city governments are at the mercy of their citizens, not the other way round?

To inspire change and capture people's hearts as well as their minds, messages around sustainability must be communicated in an emotionally engaging way because the sustainability challenges we are facing are not just technical but also personal and political. This includes providing visions of what it would be like to live in such future cities.

How can people be enabled and inspired to change their behaviour or to act in a more sustainable way without simply providing them with the answers or imposing the solutions on them? Is it possible to create solutions to sustainability that are so intuitive people do not have to think about them? And if we want to engage people in collective action, what sort of narratives work best? Is it most effective to say, for example, that we can all come together in a city like Cambridge to work collectively to deliver energy efficiency (bottom up) or is it more effective to be prescriptive and say 'this what I want you to do' (top down)?

The research challenge on the horizon

It is clear that we do not yet have a 'transmission' for the governance vehicle. Some solutions can safely be taken from the bottom up, empowering local communities to act in whatever way best meets their needs and aspirations. Other aspects of sustainability require at least some top-down design and management to ensure local communities do not simply pass off their sustainability problems to other communities. But we do not know where this transition between top-down and bottom-up governance occurs. We have two gears but no clutch, causing us to lurch from one gear to the other. Thus, the central research question for the future is how can we design governance systems that allow for a seamless and collaborative transition between bottom-up approaches that are effective at a local level and top-down constraints necessitated by the sustainability concerns of the larger city?