



Introduction: from 'sustainable' city-regions to synergistic,

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'sustainable city-regions' and beyond – towards urban synergy and social intelligence

Guest Editor **Joe Ravetz** introduces the Special Issue on Urban and Regional Ecology and Resilience

Picture a child born today, as an adult in the 2030s, somewhere in middle England. *'She shares a cramped flat with four young people, quite a way from the nearest town, but with the rising costs of housing and the dangerous decline of urban areas it is as good as could be expected. Through the window, the view is brown and dusty, as climate change has already begun to lead to the desertification of the countryside. The nearest hypermall is 20 miles along the toll road, but most shopping is done through online 24-hour delivery. With food price inflation at 10%, wastage is rare.'*

Similar dark visions come up regularly in scenarios and urban outlooks.¹ Even now, the shortages of housing, jobs, water and energy are forcing key questions upon us. What are towns and cities for? Whose countryside is it? And who should decide?

Today, there are crucial choices to be made, with profound impacts on our future. The UK has thrown itself into a radical reshaping of most forms of spatial planning, urban development, and environmental policy. This brings both opportunities and threats. In particular, there are questions on goals and aspirations – climate adaptation and resilience, sustainable consumption and production, and so on – and widening gaps with reality and current trends.

CURE (the Centre for Urban and Regional Ecology), at the University of Manchester, was set up in 2001 to work on 'sustainable city-regions', as

promoted by the TCPA² and explored in the large-scale case study *City-Region 2020*.³ Since then, models for urban planning and environmental policy have come and gone; but the state of the art in knowledge has (we think) shown some progress. This Special Issue on Urban and Regional Ecology and Resilience, featuring research conducted at CURE, reviews the state of the art and prospects for the future.

First, this introduction looks at concepts of urban ecology and resilience; and then looks beyond the 'sustainable' to the 'synergistic' city-region, based on synergy and shared intelligence. Subsequent articles each highlight a topical research/policy theme, offering outlooks on the challenges and opportunities ahead. As the CURE mission continues to evolve, from 'urban ecology' towards a wider 'urban resilience', we need to keep looking several steps in front.

Context

For the first time in history, *homo sapiens* is about to destabilise its entire habitat, with a temperature rise of 2-4°C expected to cross tipping points for irreversible change. But climate change is only part of the picture: there are other global limits, such as in water, food, soil, biodiversity, forests and other essentials of life. At the centre of this picture are cities ('settlements', 'city-regions', 'functional

urban regions'; and other definitions). On current trends the global urban population may double to 6 billion by 2050, of which the majority are likely to live in 'informal settlements'.⁴ As cities are the engines of growth and development, they tend to concentrate economic development and material throughput. At the same time, they have the greatest potential to become more efficient, with low-/zero-carbon systems, local food and resource cycles, and creative spaces for social enterprise.

All this raises questions on the meaning of a 'sustainable city-region' – arguably the most suitable scale for integrated planning with social, economic and environmental goals. Are we talking about local or national self-containment? Local 'greening' while the UK (and similar nations) continues to import its materials from other countries with cheaper labour and lower standards? Or a city-regional contribution to global sustainability, where different goals may be in conflict – environmental stability, social equity, or economic development? Such questions will run and run.

The city-region 2013

At its launch in 2000, the *City-Region 2020* work was billed as the 'world's largest feasibility study', exploring the principles and practice of full-on sustainable development in the 'living laboratory' of Greater Manchester. It aimed to show how real progress depends on links between different sectors, at various spatial scales, between upstream causes and downstream effects, between 'hard' technology and 'soft' human factors, and between social 'demand' and economic 'supply'.

Over a decade on, we can now check some outcomes in Greater Manchester. There is some noticeable change in recycling, green infrastructure, renewable energy, light rail, and cycle routes. There is more modest progress in other public transport and energy efficiency strands. In contrast, the embedded carbon footprint of mass consumption continues to rise – as witnessed by regular traffic jams around major shopping malls. Also rising are the impacts of air travel, marine transport, and road freight, together with new forms of energy demand such as patio heaters, wide screens, and online shopping deliveries.

Many creative initiatives on climate change are now being undermined by austerity cuts and policy 'mission creep'. The Green Deal for home energy efficiency has so far been a non-starter; and the regional clusters and centres of excellence in sustainable technologies have been scattered in the Coalition Government's hasty (and arguably reckless) removal of strategic governance. Greater Manchester is one of the best-organised city-regions in the UK, and its Local Enterprise Partnership is in better shape than most; but there is continuing upheaval of structures and a dire lack

of funding. The Greater Manchester Low Carbon Hub has four core staff, but could do with 400, and renowned institutes such as Envirolink have disappeared in the 'bonfire of the quangos'. However, the Greater Manchester Climate Change Strategy does show some green shoots, with a 'triple helix' combination of university expertise, business innovation, and strategic governance.⁵ With electric vehicle charging posts now on the streets, solar panels on many roofs, and a strategic cycling network taking shape, the 2020 goal of a 48% carbon reduction seems not so impossible...

'As cities are the engines of growth and development, they tend to concentrate economic development and material throughput. At the same time, they have the greatest potential to become more efficient, with low-/zero-carbon systems, local food and resource cycles, and creative spaces for social enterprise'

The emerging agenda – research approaches

The sustainable city-region concept is based on ecological principles, applied to the complex tangle of human and natural systems which self-organise and evolve. In this way, urban/regional ecology shows at least three distinct levels:

- ecology **in** the city-region – ecosystems, habitats, biodiversity within cities and urbanised areas;
- ecology **of** the physical urban system – flows of energy and materials through the city-region, and/or patterns of land and landscape change; and
- human ecology **of** a whole urban system – wider cross-cutting human-environmental interactions, such as political ecology, industrial ecology, social ecology, ecological design, ecosystem services, eco-psychology, and so on.

This approach was then applied by CURE to a wide spectrum: climate change mitigation and adaptation, resource flows, peri-urban development, landscape planning and assessment, green economics, ecological democracy, and cultural capital. Working this through, some fundamental themes began to emerge, in particular the themes of '*resilience*' and '*transition*' – wherever ecological systems meet human systems. For example, if a community is vulnerable to flooding (as many are),

we need to analyse the problem in terms of water, ecosystems, land use, climate change, policies, etc. And then the agenda shifts to the question of 'so what then?'. We need to think about improvements to the community's technical resilience to extreme water hazards, its social resilience for working together in emergencies, and its economic resilience for investment before/after the event. Then we find that many communities in this age of austerity are vulnerable not only to flooding, but to a whole combination of physical, social, cultural, economic health, and demographic problems. So we have to look not just at problems and solutions one by one, but at broader system-wide risks and vulnerabilities, and the response in *resilience* of various kinds. Then we can look at the potential for system-wide changes through *transitions*, at the scale of city-regions or other viable social, economic, or ecological units.

The emerging agenda – research themes in this issue

So what do we now know about urban ecology and urban resilience, and what is the outlook for the next generation of research? This Special Issue presents an overview of key themes. Addressing the overarching challenge of climate change, Seb Carney writes on participative climate scenario modelling, enabling urban-regional climate policy via the capacity-building of stakeholders. The other side of the climate coin comes from Jeremy Carter and Aleksandra Kazmierczak – as climate change now appears more or less inevitable, adaptation and resilience planning is then a prime shaper of the built environment and green infrastructure. Ian Douglas looks at a lesser-known but crucial climate change impact – ground stability and its policy regime (not visible in the current National Planning Policy Framework).

All this sets new agendas for the city-region in transition. One is urban ecology itself: Aleksandra Kazmierczak and John Handley review the agenda for multi-functional 'green infrastructure'. The story of infrastructure planning is told by Iain White, for water supply and demand, and the extremes of floods and droughts. A wider view of the urban throughput or metabolism, with the principle of 'cradle-to-cradle' production and consumption and the transition towards a circular urban economy, is presented by Ian Douglas, Nigel Lawson and Joe Ravetz.

The question is then how policy and governance can respond. One agenda is the distribution of costs and benefits (always controversial and political), as in Graeme Sherriff's story of the Greater Manchester congestion charge – a sign of the challenges ahead in sustainable transport. Clive George reviews the many branches of impact assessment, and the potential for a more effective and intelligent form of policy evaluation. Meanwhile, integrated planning

clearly needs proactive public participation, and despite many hurdles there are ways forward, as set out by Joanne Tippett, creator of the 'Ketso' participation toolkit. To round off, Joe Ravetz flags up new methods for future studies, with an example of a 'knowledge outlook' for UK city-regions.

Ways forward

There are now libraries full of research on climate change, environmental science, resource/waste flows, sustainable consumption, landscape, and ecological design... all of which are interconnected parts of a larger whole. But to understand and work with this 'whole' seems to go against the grain of 'silo' governance, 'winner-takes-all' business, and the 'disciplinary excellence' of academics. The emerging policy/research programme at CURE on the 'shared intelligence' of city-regions and communities at every scale is one response.⁶

The overall notion of 'sustainable development' is often measured through indicators and checklists, which (arguably) hide the internal contradictions and (at least some) self-delusion, at least for those in the developed world. We plan for 'sustainable communities' while extracting energy and materials from others; climate scientists, like others, take frequent long-haul flights; and the nice-sounding 'localism' idea may only widen the rich-poor divide. Many such contradictions were embedded in the 'sustainable city-region' programme... so what have we learned? Perhaps something about how social, cultural and governance systems manage their internal contradictions (for example the politician who opens a climate conference in the morning and an airport runway in the afternoon). But more positively, we have learned something about how to mobilise opportunities which bring together contradictory social values, business models or policy agendas, with the outcome of a wider transition.

To frame this new thinking, the '*synergistic*' city-region focuses on a more dynamic angle to the sustainability concept: focusing on the capacity for thinking ahead, creative innovation, responsive adaptation, value creation, and turning problems into opportunities. In the face of the global challenges set out above, there is urgent need for cities to be more adaptive and innovative, but much of the reality is rigid and short-sighted. For example, there is a current spotlight on technological 'smart' cities; but it is clear that 'smart' means little if the underlying governance and market systems are effectively 'stupid'. So the emerging agenda focuses on the crucial qualities of *resilience*, and how to build it through *shared intelligence* – a combination of social learning, deliberation, evaluation, innovating, collaborating, and strategic decision-making. The contrast between the 'sustainable' city-region and the emerging 'synergistic' way of thinking can be visualised as in Fig. 1 – a very rough

Sustainable development / ecology / functional model

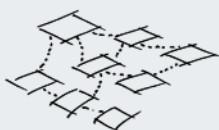
Goals and directions:

Sustain/safeguard the city-region resources (image – balancing present versus future needs)



Policy and action agendas:

Indicators, planning, regulation, market measures



Framing the city-region:

An object with structured functions and boundaries



Research agenda:

Vertical/horizontal/functional connections (supply chains, policy linkages, etc.)



Synergistic development / resilience / cognitive model

Goals and directions:

Co-evolution of intelligent city-region (image – riding the waves of turbulence)



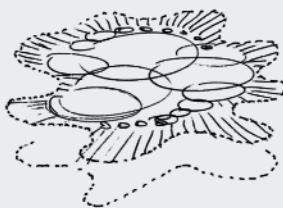
Policy and action agendas:

Social learning, creative collaboration, design for opportunity



Framing the city-region:

A dynamic learning, thinking hub, crossroads, and meeting point



Research agenda:

Social learning, synergistic intelligence, multi-value chains/cycles/constellations



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Above

Fig. 1 From 'sustainable city-regions' to a synergistic model

picture of a thinking process and landscape of knowledge-into-policy.

UK state and outlook

How to apply such ideas in practice? Many in planning and regeneration have been confused since 2010, when Coalition policy brought not only radical changes in structures, but a different mindset. The shift from 'top-down targets' to 'bottom-up free market' has come alongside the abolition of regional strategy, massive cuts to local government, and what is arguably a wholesale attack on the principles of the welfare state. The previous assumptions that sound evidence would feed in an orderly stream into 'robust planning' have shifted to a more entrepreneurial approach, in which

'unlocking local potential' merges seamlessly into 'freeing the market', and then into 'rewarding investors'.

So the concept of the 'sustainable city-region' and its follow-on is now called to address a rather different situation from before. Above the policy detail, and many unresolved questions as of 2013, three key themes each raise questions:

- **Localisation:** When the 'localism' agenda first emerged, it seemed that subsidiarity was being pushed to new frontiers; now, neighbourhood planning seems more about shaping market expectations for development. In this situation, could 'local intelligence', potentially aided by new social media, be a catalyst to enable communities to self-organise and mobilise?

- **Functions and values:** The 'ecosystem services' approach to identifying functions is part of a logical chain: it then leads to valuing those functions, and then to exchanging values on the open market.⁷ Whether through taxes, subsidies, property rights, tradeable quotas, or other exchange systems, there is a fundamental shift from the 'social justice' choice to the 'economic optimum' choice. Can we fit the 'system level' concepts of resilience and transitions to the otherwise 'linear' concept of ecosystem services and their itemised values?
- **Marketisation:** The interchange of financial incentives with planning permissions is a challenge to the social contract of planning – but some argue that trading of values should lead to 'optimal' solutions.⁸ The danger in practice is that money values are more tangible and thereby more powerful than other kinds of values, and there is also the unfortunate tendency of monetary systems to increase the gap between rich and poor. Can we envision a system of 'urban intelligence' and exchange which enables social/ecological entrepreneurs, and which recirculates investment in common resources, for the benefit of the whole community rather than for the winners who take all?

the risks of winner-takes-all economics, but to provide positive visions and pathways for resilient and *synergistic* pathways for cities and regions.

This is the guiding principle for the next generation of CURE research-policy activity, now relaunched as a 'Centre for Urban Resilience and Energy'.¹¹ We see *resilience* as 'ecology in motion', and *energy-climate* as the fulcrum point for human-environment relations (not excluding many others). We see research not only as a matter for internal academic disciplines, but also as a wider 'co-production' and 'co-evolution' of multi-lateral shared intelligence. All this aims towards a more synergistic kind of governance and enterprise, fit for a turbulent century. The child of today and adult of 2030 deserves at least this much.

● **Joe Ravetz** is Co-Director of CURE, at the University of Manchester, and is Guest Editor for this Special Issue. The views expressed are personal.

Notes

- 1 See J. Ravetz: 'Urban futures – what will we need to know?'. *Town & Country Planning*, 2013, Vol. 82, Oct., 443-6
- 2 A. Blowers (Ed.): *Planning for a Sustainable Environment*. TCPA. Earthscan, 1993
- 3 J. Ravetz: *City-Region 2020: Integrated Planning for a Sustainable Environment*. Earthscan, with the TCPA, 2000 (There is a Chinese language version, translated by J.-C. Lin and T.-T. Hu, published by Chan's Publishing Co. (Taiwan))
- 4 P. Roberts, J. Ravetz and C. George: *Environment and City: Critical Perspectives on the Urban Environment around the World*. Routledge/Taylor & Francis, 2009
- 5 See the Greater Manchester Low Carbon Hub website, at www.agma.gov.uk/low_carbon_hub
- 6 J. Ravetz: *Urban 3.0: Creative Synergy and Shared Intelligence for the One Planet Century*. Earthscan, 2014 (forthcoming)
- 7 *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A Synthesis of the Approach, Conclusions and Recommendations of TEEB*. UN Environment Programme, 2010. www.teebweb.org/wp-content/uploads/Study%20and%20Reports/Reports/Synthesis%20report/TEEB%20Synthesis%20Report%202010.pdf
- 8 *Open Source Planning*. Policy Green Paper 14. Conservative Party, 2010. www.conservatives.com/~media/Files/Green%20Papers/planning-green-paper.ashx
- 9 *Cities of Tomorrow: Challenges, Visions, Ways Forward*. European Commission, Directorate General for Regional Policy, Jun. 2011. http://ec.europa.eu/regional_policy/sources/docgener/studies/pdf/citiesoftomorrow/citiesoftomorrow_final.pdf
- 10 See, for example, the Smart Cities Stakeholder Platform website, at <http://eu-smartcities.eu/>
- 11 Details are available from the interim website, at www.urban-energy.org

'There has never been a more crucial time, not only to demonstrate the risks of winner-takes-all economics, but to provide positive visions and pathways for resilient and synergistic pathways for cities and regions'

Next steps

The UK planning system is not alone in facing crucial questions: all over the developed world, governments that have been wrong-footed and undermined by global casino finance are swinging to the right, and the 'great British planning experiment' is being watched closely. Europe itself is seeking an urban and territorial focus for its big-spending Cohesion Funds, but is caught between the principles of social-ecological justice and free-market enterprise.⁹ It also sees cities as the hubs for low-carbon 'smart' approaches to energy, transport, and waste, with information technology as the catalyst for change, and highly dependent on innovation in policy and business.¹⁰ There has never been a more crucial time, not only to demonstrate