The right to the city – energy and climate change

Mike Hodson and Simon Marvin

Introduction

Cities are critical sites in our understanding of both energy and climate change. They are often simultaneously represented as being a significant part of the 'cause' of climate change, since urban areas and their inhabitants may be responsible for up to 75 per cent of global human energy consumption and carbon emissions; as foremost among the 'victims' of climate change, particularly the vulnerable coastal megacities of the global South; and, as key sites of 'innovative responses', such as through the actions of the representatives of large cities in the C40 network.[1] All cities face the critical challenge of how to ensure they can guarantee their long-term ecological *and* economic survival in a context of human-made global ecological change – referred to as the Anthropocene period (see below) – that implies greater uncertainty about climate change and the availability of critical resources such as food, water and energy (see Dalby 2007).

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1 The C40 was formed in 2005 and is a group of the 'world's largest cities committed to tackling climate change (because) cities and urban areas consume 75 per cent of the world's energy and produce up to 75 per cent of its greenhouse gas emissions', see http://www.c40cities.org/

Strategically, we are interested in trying to understand whether emerging ecological and resource constraints lead to particular types of response and to what extent these responses imply quite different cities (Hodson and Marvin 2009). In what follows we present two different pathways that are currently being discussed. The question is: Is the response to environmental crises and resource constraints based on the desire to develop relative autonomy for a city, as it seeks to withdraw from reliance on national and international infrastructure to by-pass uncertain and vulnerable resources and develop its own local resources and thereby create a form of bounded security? For that response, eco-cities are the iconic examples. Or alternatively, are responses to constraint based on a wider concept of social needs, the right to a minimum level of energy service, and more collective ecological security that addresses the needs of all communities and attempts to build a concept of global security? Here, the idea of relocalisation movements is key. In this brief review we critically assess emerging responses and the unsettling implications they have for the conception of our collective rights to the city. As David Harvey (2008) argues:

> The question of what kind of city we want cannot be divorced from that of what kind of social ties, relationship to nature, lifestyles, technologies and aesthetic values we desire. The right to the city is far more than the individual liberty to access urban resources: it is a right to change ourselves by changing the city. It is, moreover, a common rather than an individual right since this transformation inevitably depends upon the exercise of a collective power to reshape the processes of urbanization. The freedom to make and remake our cities and ourselves is, I want to argue, one of the most precious yet most neglected of our human rights. (p.23)

Critically, the questions we want to ask are: What does urban energy security mean? Which social interests are dominating the search for urban energy security, which social interests are excluded and what consequences does this have?

Cities as planetary terraciders/terraformers – Urbanatura in the Anthropocene

Cities are the material representation of today's energy-intensive economies, where carbon-based energy systems – oil, electricity and mobility systems – have made the huge agglomerations of cities and modern industrial systems possible. Urbanisation completely dominates the huge metalogistical systems made up of resource flows, energy, water, waste foods as well as flows of people and goods that make up the contemporary world. The prefix 'meta' helps us to view the city as an active intermediary, as a site of material transformation that anticipates, modifies and excretes the movement of resources, materials and people

Cities are connected through intensive airline networks, logistical transportation systems, enormous energy and water grids as well as communication and ICT systems interconnecting markets, production and consumption systems, people, organisations and governments. Yet in the contemporary period there is a recognition that these industrialised systems – not all located in cities, but certainly largely controlled by organisations located in large global cities – have ecological effects that are beginning to change the global ecological context within

which cities attempt to ensure their continued reproduction (Luke 2003).

Geologists at the University of Leicester have suggested that a new epoch has begun, which they call the Anthropocene (see Zalasiewicz et al. 2008). It is proposed that this is the result of human actions whose critical markers include disturbances of the carbon cycle and global temperature, ocean acidification, changes to sediment erosion and deposition, and species extinctions. This period coincides clearly with the development of industrialisation and the global growth in urbanisation that resulted in an estimated 50 per cent of the world's population living in urban areas by 2000. Indeed, 'the cover of *GSA Today* in which this work appears makes the case rather strongly, showing the high-rise buildings of Shanghai fading out into the distance. It's a stark reminder of how megacities like this one are transforming the planet'.[2]

Cover of Geological Society of America.

There is increasing recognition of the fact that the metalogistical systems that make the very notion of cities possible are actually reshaping global planetary ecologies through resource depletion, carbon production and pollution. In turn, these effects themselves reshape the context within which contemporary cities then have to ensure their own economic (and ecological) reproduction. It is possible to see that there are multiple ways in which cities can be represented in relation to climate change and resource constraint, but that these need to be understood through an existing system of uneven economic divisions of labour between and within cities.

While cities exist within a highly unified and integrated global space of capital flows, particular cities vary widely in their access to ecological resources. Highly energy-intensive urban environments in the US contrast with the cities of the global South, where millions do not have access to clean water, energy and basic telephones. The US has almost 5 per cent of the world's population, but it generates about 25 per cent of greenhouse gases. Americans' ability to tap into and control global ecosystems of fossil fuel means that US cities are able to be far more spatially expansive and destructive than if they had to survive solely on the resources available in their national space. Clearly then, global cities are able to exert control over critical resources in competition with residents and refugees in other less important and more ordinary cities.[3]

2 See http://www.centauri-dreams.org/?p=1701

3 As well as the differences between cities of the North and South, there are of course also significant internal differences within all cities in terms of levels of social access to critical resources such as energy, water and a clean local environment.

Consequently, we would expect significant differences in the capability of cities to respond effectively to energy security and climate change. Critically, which cities have the resources, knowledge and expertise, social and institutional relationships, wider governance capacity to shape systemic and managed (rather than project and piecemeal) change in the social and technical organisation of their cities and infrastructure? Anthropocenic change creates a new urbanatura – a much more unpredictable context for the longer-term development and reproduction of cities marked by climate change, resource constraint, as well as energy, water and food security issues (see Luke 2008). Now, cities' ability to ensure their longer-term economic and material reproduction will be dependent on their ability to guarantee their ecological security and access to energy sources under the changed ecological conditions of climate change and resource constraint.

Urban energy security – Relocalisation as divisible or collective security?

Urban responses to the mentioned pressures are being developed in two quite different ways. First, there is a set of responses to these pressures focused on the development of 'new-build' eco-developments. The second set of responses focuses on more bottom-up community-based approaches around relocalisation. Figure 2 compares these approaches. Let's look at each of these in turn in more detail.

The first focuses on new styles of development projects, sometimes called eco-cities

Figure 1: Urban Energy Security Compared

NEO-LIBERAL RESPONSES	FEATURE	'ALTERNATIVE' RESPONSES
Transcendence of limits	Ecological constraints	Work within limits
Commercial – banks, developers architects, utilities	Social interests	Community – NGOs, environmental groups, charities
Divisible	Concept of security	Collective
Productionist-scale economies	Scale of solution	Consumption – small local
Eco-urbanism – eco-cities, regions, blocks and towns	Type of build	Retrofitting – existing and new
Product of bounded security and by-pass	Consequences	Mutual interdependencies
Dongtan (Shanghai), Masdar (UAE)	Exemplars	Transitions Towns, Relocalisation

but replicable to other scales – eco-regions, eco-blocks, eco-towns, eco-villages. These responses have at their core the claim that they are able to transcend conventional notions of ecological constraint – climate change and resource constraint – as they build ecological security by internally producing their own food, energy and other critical resources. The 24 September 2008 issue of *Scientific American* announced that 'massive developments proposed for the US, China and Abu Dhabi aim to reduce or even *eliminate* the environmental cost of city living' (added emphasis, Biello 2008). Eco-blocks have been developed as a new type of urban 'gated community' development that is 'resource self-sufficient (i.e. carbon neutral) in its operation (or close to it), and if it could replicate and spread throughout the world, this would be a major force in reversing global climate change' (Fraker 2006).

Scientific American then goes on to look at three examples of eco-city development: Treasure Island in San Francisco, Dongtan in Shanghai and Masdar in the United Arab Emirates. What all these cities seek to do is to reduce their reliance on external resources of food, water and energy and extract value from waste streams, although the extent to which this is possible varies between developments. For example, Dongtan and Treasure Island are seeking to reduce external energy and water requirements by up to half, whereas in the longer term Masdar aims to be carbon neutral.

> A sheikhdom whose wealth rests on black gold is building a city that will not rely on any of it. Subterranean electric cars – dubbed Personalized Rapid Transit – will ferry passengers from point to point because the city of Masdar, whose name translates as 'the source', will be off-limits to automobiles. Solar power plants in the surrounding sand, already in early construction, will provide electricity for lighting and air-conditioning and for desalinating ocean water. Wind farms will contribute, along with efforts to tap geothermal energy buried deep underneath the earth. The municipality, which will ultimately aim to be zero carbon and zero waste, will boast a plant to produce hydrogen as well as fuel from the residents' sewage, according to planners Foster + Partners. Perhaps most important for the desert city, all water will be recycled; even residents' wastewater will be used to grow crops in enclosed, self-sustaining farms that will further recycle their own water. (Biello 2008)

Common to these different developments – promoted by different sets of commercial, developer, architectural and engineering interests – is the notion of test beds, demonstrations or experiments of what might constitute new models of sustainable cities. Critically, it is not clear whether at these scales it is possible to achieve their energy and ecological objectives, given the disappointments with large multi-user buildings. But these developments are also designed to be financial as much as eco-technical projects. Masdar's property developer was quoted as saying: 'We want Masdar city to be profitable, not just sunk cost. If it is not profitable as a real-estate development, *it is not sustainable*' (added emphasis, quoted in Bullis 2009). There are, then, clearly commercial limits to the development of eco-cities. As Gary Lawrence argued, the reason that Dongtan did not aspire to carbon

neutrality was partly technological but also because of the 'need for the owner to make a profit' (quoted in Biello 2009). The intention is to develop new models of development whereby the developer can extract value from being an infrastructure provider by internalising and commodifying resource flows within the development. Ultimately, the objective is to turn the whole development process, including the energy and infrastructure, into a single financial product that is replicable in other contexts.

In this sense, eco-urbanism may represent an attempt to build privatised and bounded ecological spaces that can anticipate and transcend ecological constraint and climate change for their users. Consequently, there are clearly limits involved in developing transcendent urbanism. While it may be possible to create contexts where it is commercially viable, this is likely to mean these are designed, as in the case of Masdar, 'as a playground for the rich' (Friend quoted in Bullis 2009).

For the developers of these cities, it is critical to develop and test new models of urbanism and then roll these out in other contexts as a form of replicant eco-urbanism. Yet these new models assume a number of key features that raise worrying issues about the degree to which we can talk about *fair* cities. First, they are being developed by a limited range of commercial interests that explicitly seek to develop eco-cities as potentially replicable global financial products that can be developed in any context and transcend ecological limits. Second, their success is partly measured by the degree to which they can be profitably reproduced, therefore reducing their replication to specific market-based circumstances, which in any case will be developed for elites in order to help ensure their replicability. Third, they are strongly technocratic and productionist-oriented, and fit logically with the claim that, by incorporating clever eco-technics within the design of cities, it is possible to carry on reproducing cities largely without changing the organisation of society or the economy. Given such issues, one wonders about the relevance of new styles of urbanism that are promoted for their ability to remarkably transcend eco-limits yet at the same time do so in such a socially regressive and market-oriented way, where success is reduced to their economic replicability.

Our concern then is that eco-cities represent one particular response to the problems of climate change, resource constraint and energy security in a period of particular ecological emergency and economic crisis. As such, we should see them as the purest attempt to create neo-liberalised environmental security, not at the scale of the whole city or even the planet, but in the form of a more bounded divisible security in order to try to guarantee ecological security for elites.

But there are also other debates that include wider sets of social interests and try to put other social objectives on the urban policy agenda. These include the Transition Towns and Relocalisation movements being developed as local social and behavioural responses in a number of urban contexts in the UK and US. For example, there are now 28 Transition Towns in the UK:

> A Transition Initiative is a community that is unleashing its own latent collective genius to look Peak Oil and Climate Change squarely in the eye and to dis-

> cover and implement ways to address this BIG question: 'for all those aspects of life that this community needs in order to sustain itself and thrive, how do we significantly increase resilience (to mitigate the effects of Peak Oil) and drastically reduce carbon emissions (to mitigate the effects of Climate Change)?' The resulting coordinated range of projects across all these areas of life leads to a collectively designed energy descent pathway.[4]

Such strategies seem to imply a more collective approach to innovation around climate change and resource constraints, one that is not solely oriented towards technical fixes, and a more socially and culturally driven approach to new solutions and configurations. Critically, these are designed in context and cut across all aspects of urban life. A key focus is on resource reduction rather than reproducing the productivist bias of commercial approaches. To take another example, a US network draws together over 172 urban post-carbon groups world-wide. What is interesting about this network is that:

> The Relocalization strategy developed in response to the environmental, social, political and economic impacts of global over-reliance on cheap energy. Our dependence on cheap nonrenewable fossil fuel energy has produced climate change, the erosion of community, wars for oil-rich land and the instability of the global economic system.[5]

This implies a more critical view of our reliance on energy and the resultant implications. Evidently, there would be significant benefits in looking further at such alternatives and how they compare and contrast with the strategies involved around eco-cities. There would be value in contrasting the different logics in terms of the social interests, the solutions developed, the balance between productionist and demand solutions and the implications of such strategies. More widely, there would be benefits in considering how other constructions could be based on concepts, such as mutual interdependence, relationality, trading and trade-offs, fair shares and environmental justice.

Conclusion

There are a range of critical pressures to re-internalise energy and other infrastructure flows within the conception of urban development. A new set of eco-technics is seeking to develop internalised metabolisms that are simultaneously an attempt to build ecological security for the few and an attempt to create new mobile financial products of integrated urban development as a new opportunity for capitalist reproduction. Our argument is that the dominant logic of neoliberal responses is the creation of 'bounded' security in new ecological enclaves for premium users that ignore wider distributional questions about uneven access to resource politics. These are the ecologically secure gated communities of the 21st century that seek to internalise ecological resources and build strategic protection from climate change and wider resource constraints.

4 http://www.transitiontowns.org/ (accessed 29 January 2008).

5 http://relocalize.net/about/relocalization (accessed 29 January 2008).

Consequently, at the moment markets for new eco-developments are likely to exist only in premium sites – that is, world cities – where the premium product that is produced is largely irrelevant to the claims of reproducibility made by its proponents. It is likely that eco-funding through bailouts may be used to accelerate the development of such solutions in an attempt to reconfigure capitalist urban development. Of course, such premium ecological environments have relatively little to offer to the real challenge of re-engineering and systemically retrofitting existing urban environments to reduce energy and water use, accelerate low-carbon technologies and provide affordable energy for all users.

At the same time, it is not even clear if the claims made about the new self-reliant and autonomous developments are achievable. There is a long history of eco-buildings and districts not achieving the savings claimed for them, as users behave in unanticipated ways. In any case, we are usually only talking about forms of greater autonomy and self-reliance – therefore, only relative forms of 'by-pass'. Will centralised infrastructure networks act as the provider of last resort when local technologies fail? Critically, what about forms of mobility – especially internationally: how will these be provided?

In contrast to these conventional responses, there are alternative movements that are less commercially focused, more locally based, less technologically fixated, which are also trying to put questions about relocalisation back on the urban agenda. Movements such as green jobs, Transitions Towns and Relocalisation are trying to develop an alternative discourse about greater self-reliance. Part of this discourse are questions of social control – technology for whom by whom –, attempts to link investment to local need and the development of interdependencies and mutuality rather than securitisation, although these are more marginal and external to the dominant responses.

Finally, if we are to build fair cities that advance collective planetary security, we need to think about linking these disconnected logics of development together rather than allowing a dominant security-led approach to sit alongside a much more marginal set of approaches. We need more interaction in the following five ways. First, to bring together questions about which social interests are involved and excluded – we need to bring users back into questions about resource futures. Second, to bring together over-technicised and over-socialised responses – we need socio-technical change. Third, to develop knowledge and expertise that is not just about 'new-builds' and security, but about retrofitting the existing city. Fourth, we need to emphasise questions about need and the politics of interdependencies rather than bounded security for some. Fifth, it is crucial to develop a debate about the consequences of a new style of urbanism rather than the creation of new urban eco-technic and financial products as a response to ecological crisis.

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Acknowledgements

We are grateful to our colleagues in SURF, Tim May and Beth Perry, for their support in developing the ideas in this paper and to Vivian Liang for excellent help in securing the permissions for the figures and photographs illustrating this contribution. Our thanks also to the editors of the report for providing constructive and helpful feedback on the paper.