ESRC Research Seminar

The Governance of Eco-City Innovation

www.westminster.ac.uk/ecocities-esrc

Seminar 2 (11 October 2011)

Eco-city innovation: integrated systems management & policy coordination

Synthesis Report

The second in this series of Economic and Social Research Council (ESRC) funded seminars was hosted by the University of Westminster in London on 11 October 2011. The event was orchestrated by Alice Owen (Arup), Lars Frederiksen (Aarhus University) and Peter Head (Ecological Sequestration Trust), who are partners in this ESRC initiative. It brought together researchers and practitioners to reflect on *integration* in contemporary international eco-city developments. Integration – the recombination of existing knowledge in new ways – was posited as an important aspect of what makes eco-cities innovative.

The seminar's content was framed by three key questions relating to innovation and integration:

How can developments be integrated spatially into existing social and geographic contexts?

How can people, practices and technology be integrated so that the lifestyles in eco-city developments fulfil the planning or political aspirations?

How can integration take place between the main institutions that need to work together on eco-city developments?

The talks and discussions considered research and policy implications of the various integration challenges at local, national and international levels – a key objective of this series of seminars as a whole.

Summary of Key Discussion Points

A core theme throughout the discussion was the need to consider scale when addressing integration. Peter Head (Ecological Sequestration Trust) argued that responding to the threat of global climate change and concurrent urbanisation processes – the main drivers behind current eco-city innovation – requires thinking and action beyond the city. There is, thus, a need to integrate urban and rural systems, given their interdependence and in order to provide an effective scale for addressing climate change mitigation and adaptation. At the same time, there is a need for better integration at the (sub-)city level, by

interlinking various environmental, urban and technological systems to achieve better resource management and efficiency. Furthermore, and crucially, attention needs to be paid to the role of governance and community engagement. Integration across systems and scales, however challenging to achieve in practice, has to be at the heart of eco-city governance efforts.

But a familiar analytical problem quickly becomes apparent: discussions of integration are problematised by the multiple nature of the eco-city.[1] The constituent parts requiring integration differ from one eco-city to the next, are combined in rather different ways, and reflect differing breadths of conception. It is clearly unsatisfactory to theorise the eco-city as a given 'building block' within a process of integration. A helpful framework in this respect, which positions urban infrastructural innovations of different types along two dimensions, was proposed by Mike Hodson and Simon Marvin (University of Salford). On one of its dimensions, initiatives aiming to 'retrofit'

existing cities, or adapt existing socio-technical systems, are distinguished from those involving the development of new cities, or systems. The second dimension distinguishes innovation focused on one particular network (for example, energy production, or food security) from that which takes a more systematic, integrated approach. Within this model, for example, 'transition towns' would be categorised as 'retrofit' and 'integrated' initiatives; the introduction of a district heating system, by way of contrast, would be a 'new' and 'network-based' project. Many eco-cities with a strong international media presence (such as Dongtan, Auroville and Masdar) would thereby be characterised as 'new builds' as well as adopting an 'integrated' approach. The novelty of a fully integrated urban system draws on its vision of the city as a circular metabolism; integration means that value can be extracted from this circularity. It is this particular goal of integration, in other words, which more than anything else distinguishes eco-cities from 'normal' ones.

This is not to deny the significance of less ambitious initiatives within the broader quest for urban sustainability. Curitiba might be positioned within this framework as a 'network-based' 'retrofit' initiative (given its very prominent emphasis on public transport renewal). Nevertheless, its widely admired successes have had practical and psychological significance for the eco-city movement generally. Innovation in urban integration may involve the successful combination of technologies developed elsewhere; small-scale 'demonstration' projects with a more focused remit therefore still have an important role to play.

Simon Marvin suggested that many larger 'world' cities currently see themselves as aiming for systemic integration, while 'ordinary' (regional) cities are pursuing a more ad hoc, piecemeal transition. Smaller cities, in this model, focus their attentions on fostering, for example, eco-entrepreneurialism; it is world cities which have the potential to be highly visible 'critical sites' for demonstrating more integrated visions of urban sustainability. This has much, it was argued, to do with governance arrangements; metropolitan authorities typically have a broader remit – which implies a broader policy vision as well as broader powers.

Examples given of 'ordinary' cities in this respect included Glasgow and Manchester. Nevertheless, one participant commented that many regional cities in the UK are increasingly developing links with other international cities to develop sustainability initiatives. Their influence on global

---

[1] See synthesis report from previous ESRC seminar in May 2011, available from:
http://www.westminster.ac.uk/__data/assets/pdf_file/0010/91819/ESRC-1-Synthesis-Report.pdf

developments, in other words, may be less mediated than their conceptualisation as 'feeders' into more integrated projects might suggest.

The success factors for planning and delivering integrated eco-city solutions may in any case not derive from traditional institutional capacity. Practical experience suggests that eco-cities differ from 'normal' development projects in several fundamental ways; 'best practice' in terms of managing this process is still open to contestation. Thus, as William Wu (Imperial College London) pointed out, the design, delivery and operation of eco-cities is treated as a 'new market category' by built environment professionals; novelty makes participation desirable partly because of the potential for 'early mover' firms to shape the category. Based on research looking at the design process of Dongtan, a low-carbon city near Shanghai, Andrew Davies (Imperial College London) and Lars Frederiksen (Aarhus University) illustrated these difficulties by identifying the ways in which the complexities of 'integrated urbanism' necessarily make this process a 'radically new' one. By definition, these complexities describe more than the cumulative difficulties of implementing various series of technological systems in parallel; instead, the interaction of these technologies means that in effect a 'system of systems' is to be delivered. Difficulties are magnified by the newness of the technology, introducing unusual levels of uncertainty. Furthermore, the challenge is not simply one of technological compatibility. Crucially, different systems are understood and delivered by different professions; there is also therefore a concomitant need to integrate the differing expectations, skill sets, behavioural norms and discursive frameworks which different professional groups bring with them. The problem is thus revealed to be as much one of social organisation as of technological innovation.

But is it possible to develop a single model for managing this new type of integrative project? The complexity and variety of the variables involved – both in terms of how systems relate internally and how they are embedded in the outside world – appear at first to quash the possibility of a detailed prescriptive approach. In practice, an open-ended approach is therefore required at company/business/project level. Based on their research, Davies and Frederiksen suggested that successful integration may rely on 'capability development' in a three-way dynamic mutual relationship between 'reuse' (identifying and nurturing existing practices and synergies which are still of use), 'renewal' (that which is innovative, whether radically so or only incrementally), and 'reinforcement' (the process of gaining support for coalitions internally but also externally). External reinforcement was crucial for eco-city designers Arup in the mid-2000s, when the challenge of developing eco-cities related not only to technological innovation but also – simultaneously – to creating new markets for this technology. The danger, in short, lies in imposing social or technological norms onto the process; rather, social learning should be built into it, with the expectation that experience gained on previous projects will be at best only partially transferable.

But managing the delivery of eco-cities as discrete projects is a relatively bounded exercise. The more difficult challenge of looking beyond the city walls raises questions about the interface between new sustainable technologies and existing ones. Ellen van Bueren (Delft University of Technology) showed scale to be an important dimension of these questions. While traditional sources of energy (power plants) are centralised and concentrated spatially, newer green technologies may either take up more space (for example solar farms), or alternatively be of smaller scale but distributed more widely (micro-generation). This causes scale 'frictions' in various ways. First, centralised systems are not designed to accommodate decentralised storage. Second, there is a lack of land available in existing urban systems to accommodate newer energy generation systems. Third, there is a lack of institutional capacity to coordinate decentralised/distributed energy system. Addressing these complex problems of coordination requires new systems of adaptive, dynamic governance, informed by an understanding of sustainability as more of an ongoing transition than a specific long-term goal.

The 'frictions' with external social actors are further exacerbated, however, by the contested status of eco-cities, as outlined by Simon Marvin and Mike Hodson. Once again, the identity and delivery of such complex interventions cannot be seen as given, but rather as profoundly political processes. Even an understanding of eco-cities as 'visionary experiments' is potentially problematic, allowing for an interpretation of them as 'premium ecological enclaves' developed in parallel with traditional socio-technical regimes and turning their back on them. 'Transcendent urbanism' on this view takes the form of an 'archipelago' of bounded, secure spaces rather than a movement towards collective global security. More unequivocal opponents, meanwhile, are able to draw on discourses of 'greenwash', likening eco-cities to 'Potemkin cities': politically expedient showpieces which lack substantive impact on broader agendas.

From an innovation studies perspective, however, accusations of 'greenwash' miss the point insofar as technological innovations are occurring and actually being trialled; similarly, boundedness *per se* in any given eco-city initiative should not be equated with irrelevance. A 'multi-level perspective' (MLP) model as offered by Frank Geels (University of Sussex) understands eco-cities as important 'niches', typically integrating disparate technologies and demonstrating the products of this integration. From this perspective, the 'strategic management' goal is not simply one of knowledge transfer leading to replication of the same bounded niche elsewhere. Rather, such niches represent intentional departures from mainstream socio-technical regimes. The challenge is for technological (niche) systems to create sufficient internal momentum to break through into the mainstream regime and thereby transform it. Such momentum is facilitated when different technologies are combined in different ways. Thus, we can observe a variety of eco-city approaches - in other words, they follow different innovation paths.

Break-through may also depend on 'windows of opportunity' occurring within the socio-technical regime, following changes in the broader 'socio-technical landscape' which put pressure on the existing regime. Looked at from an MLP perspective, policies to encourage such transitions would support the 'niches' where R&D into specific technologies, as well as combinations of technologies, can be developed and integrated. Financial subsidies are an important aspect of this, while building up 'momentum' also depends on facilitating flows of knowledge. Peter Head proposed the introduction of different policies at different scales: light-touch incentives at national level; land-use planning at the regional level, involving the private sector; along with a strong emphasis on local community involvement – grass-roots acceptance may well be an important reason why certain niches 'break through' into the mainstream. Alice Owen (University of Leeds and Arup) suggested that variance in the adoption of 'green technology' in different places and by different social groups is often poorly understood. Policies, therefore, cannot assume that apparent advantages of any technology will be shared by their intended users.

The political process, however, cannot be reduced to questions of whether satisfactory policies are introduced by 'authorities' at different scales: doing so would risk misunderstanding individual authorities as monolithic. The implications of ignoring divisions within external agents were highlighted in Jelisaveta Mihajlovic's (Northumbria University) talk on the governance of historic city centres in Serbia, where conflicts have often arisen between the town planning and urban heritage conservation functions of local government. Such discursive differences have practical implications for the delivery of any significant aspect of the built environment. Integration with 'a local authority' or any other institutional agent may in reality require the building of a series of specific coalitions.

The 'niche', then should not be managed as a defensive silo or passive demonstration project; the onus is on its managers to develop an adaptive approach to communications.

Ian Short (Institute for Sustainability) outlined the practical experience which the Institute for Sustainability (IfS) has gained in this respect. IfS, based in London, was set up to run demonstration projects and conduct research/knowledge transfer programmes to disseminate best practice. The Institute is also involved, as an independent facilitator, in brokerage, such as in the case of the 'total community retrofit' initiative in Bromley-by-Bow/Poplar in East London. Specific successes 'on the ground', he argued, were less related to simply making ideas public or encouraging networking, than to identifying particular groups and individuals to be targeted with tailored, relevant information. The importance of such individualised approaches may not be obvious when an initiative is labelled as an 'integrated' sustainability initiative (such as the Bromley-by-Bow/Poplar project). Delivery here did not depend on the strategic support of any overarching body, but rather on tactical engagement with specific local actors – particular corporate actors, finance actors, local authorities, community groups, etc.

Outlook

Analysing the ways in which any technology is integrated with society has practical benefits for its development and implementation in future. Part of the appeal of the eco-city, and one cause of its detractors' scepticism, no doubt lies in the boldness of its vision of socio-technological integration: it is a 'system of systems' embedded in and delivered through complex social and political processes. The functionality of its components may be uncertain; their combination doubly so; the barriers to breaking out of the 'niche' – even for a successful demonstration model – may appear insurmountable. Evidently, however, progress – however slow – has been achieved to date, and this progress appears in many cases to have had a primarily political foundation. Accordingly, the next ESRC seminar, in February 2012, will focus more specifically on the political framework and management of eco-cities.

Report by Robert Cowley and Simon Joss[2]
University of Westminster
October 2011

---

[2] Robert Cowley is a doctoral researcher at the University of Westminster, working on a thesis on eco-cities as social places. Simon Joss is the lead co-ordinator of the ESRC Eco-Cities Seminar Series.