

## ***Sustainability and the Megalopolis Seminar Series***



### ***Security, Resilience and the Megalopolis***

***29<sup>th</sup> April 2009***

**bridging the gaps**

Supported by: Sustainable Urban Spaces

#### **Speakers**

Prof. Gloria Laycock (Jill Dando Institute of Crime Science)  
'Ensuring Security and Resilience in the Megalopolis'

Dr. Mark Pelling (Kings College London Department of Geography)  
'The Urbanisation Process and Resiliency in a Rapidly Expanding Mexican Urban Region'

Prof. David Crichton (Benfield UCL Hazard Research Centre)  
'Climate Change and Catastrophe Risk: An Insurance View'

#### **Summary**

In the fourth of the sustainability and the megalopolis seminar series, speakers drawn from UCL's Jill Institute, Benfield Hazard Research Centre and Kings College's Department of Geography addressed the risks of, and resilience to, crime and natural disasters in megalopolises.

In her presentation 'Ensuring Security and Resilience in the Megalopolis', **Gloria Laycock** focused on the ways in which crime science could be applied to the problems of increasing urban scale. Crime science, she explained, draws on sociology, psychology, geography, economics, criminology, and physical and computer sciences. In doing so, it researches and identifies the specific problems that lead to crime and how it can be averted. At present an over-reliance on the criminal justice system to control and reduce crime alongside a sometimes misdirected emphasis on societal problems such as poverty, unemployment, poor education and parenting, drugs, and alcohol as the causes of crime, ignores more practicable design solutions and control opportunities.

Housing design, market layout, operating systems, product design and regulatory systems and legislation, can all potentially drastically reduce crime. When designing out crime in housing developments there are features to avoid: complex networks of paths and alleys, houses that do not face each other, communal and unsupervised parking areas. Likewise, narrow thoroughfares in markets facilitate crime. Operating systems can be altered to reduce opportunities for crime. For instance, car crime in multi-storey car parks is much lower in those with valet parking than those with manned exits, and theft of shoes can be easily avoided by not displaying them in pairs. Product designers can also design in anti-theft devices to items that are particularly vulnerable. Weak regulatory systems and poorly drafted legislation facilitate crime. Criminals will try to keep themselves anonymous, thus regulatory systems such as the Vehicle Registration and Licensing systems need, ideally, to be simple in order to be able to ensure, survey and

enforce compliance, to respond to changing circumstances, to take into account privacy and data protection issues and to be able to join up with other regulatory systems. Legislation, meanwhile, must be rigorously drafted in order to design out loopholes that enable questionable activities and projects to go ahead. Concluding, Laycock argued that increased urban scale inevitably leads to crime and disorder; however, there is the potential to design out crime in developing megalopolises at the planning stage.

**Mark Pelling**, in his presentation ‘The urbanisation process and resiliency in a rapidly expanding Mexican urban region’, went on to address urban disaster risks and the potential to build social capacity to adapt to the effects of climate change. Urban regions are increasingly sites of poverty as the urban world moves to low and middle income countries; Africa, for instance, is the most rapidly urbanising continent, with a larger urban population than North America or Western Europe. Urban systems, whether smaller or larger reach beyond the urban fabric; impacts on cities thus affect, through production and consumption chains, the rural and cities in other countries.

Given the large populations residing in cities around the world, and the percentage of national GDP generated by them (Dhaka’s GDP is 60 % of the national GDP) there has been surprisingly little work that looks comparatively at disaster risks in cities. In an urban context dense land usage, interdependent life support systems, social fragmentation, and low capacity in local government all contribute to increased risk. Compound disaster events can thus lead to major infrastructural disruption and major disaster events can affect whole urban regions and even other cities. When seeking to reduce risk local government rarely functions properly, often suffering from under-investment, while national and international engagement with localised risk is often problematic. Despite a lack of knowledge and despite a lack of top-down international community engagement with these disaster risks, however, the people affected are generating knowledge by creating hazard maps and building local capacity for resilience through social capital and micro-credit.

An ESRC funded project looks at resilience, urbanisation and climate change in four cities: Cancun, Playa del Carmen, Tulum, and Mahahual in the Quintana Roo region of Mexico—the most rapidly urbanising place in the Americas. Cancun, for instance, marketed as a beach resort, has only a tiny stretch of sand and sits in a vulnerable position between beach and a lagoon. Residents, Pelling explained, attached their identity not to these vulnerable tourist resorts but to their home villages. The resorts and the residents were thus remarkably independent of, and unattached to, place. Resilience theorises social learning and self organisation as ways in which stress can be absorbed while maintaining function. In a context of climate change, however, Pelling argued the problem of resilience is not how to maintain livelihoods and lifestyles in a context of change, but rather, how to improve well-being and human lives for those that are marginalised in a context of institutional inertia.

In his presentation **David Crichton** addressed ‘Climate and Catastrophe Risk: an insurance view’. Insurance providers are now convinced that climate change is happening and agree that there is a trend of increasing natural disasters. There are still conflicting reports on what the effects of climate change will be; however, the Prudence model (<http://prudence.dmi.dk>) predicts an increased frequency in heatwaves, heavy winter precipitation in central and northern Europe, increases in summer rainfall in north-eastern Europe, extreme wind speeds between 45°N and 55°N, and increases in storm surge along the North Sea Coast. Crichton thus argued that architects, planners and insurers must start working together to help society adapt to climate change. A 7 metre sea level rise is predicted if Greenland

or West Antarctica ice melts (fig. 1), 14 metre if they both melt (fig.2), and 84 metres if East Antarctica melts as well (fig.3). Should we therefore start defending our estuaries using civil engineering, like the Dutch Rhine Barrier, or should we look at relocating our cities?

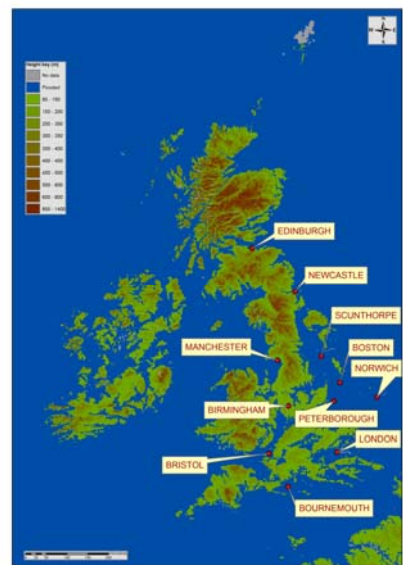


Fig.1.

Fig.2.

Fig.3.

(source: Benfield Hazard Research Centre)

Insurers look at risk by analysing 3 component parts—hazard, exposure, and vulnerability—and look at which of these can be reduced most easily. Hazard can be reduced by cleaning rivers and drains of weeds, modifying lakes, rivers, and reservoirs to cope with increased rainfall, applying sustainable drainage techniques, and promoting natural flood management. Vulnerability can be reduced by building in architectural features that make the building less vulnerable, encouraging demountable defences, and extending housing benefit to pay for contents insurance. Finally, exposure can be reduced by not building in the flood plains, purchasing and demolishing flood damaged properties and publishing detailed flood maps in local shopping centres. At a time of growing hazards from climate change it is essential that insurers think about reducing each of these different components as life becomes more uncertain in the future.

The Foresight Project is predicting enormous flood losses in coming years. Despite this, there is more and more building in flood plain areas, creating insolvency issues for insurers. It is now necessary that insurers not only react, but anticipate flood risk by researching and collecting data and constructing computer models, and manage flood risk by working in partnership with other key stake holders to lobby the government. At present, planners have taken insurance for granted. Availability of insurance against flood has been guaranteed since 1961; however, this guarantee expires in England and Scotland in 2013. We have thus reached a tipping point at which climate change, economic recession, EU flood directives, new technology in flood mapping, and new databases on flood claim costs, will incur huge changes in the insurance world as it relates to natural disasters.

Four main themes emerged in the discussion that followed.

### **1. The differing salience of risks.**

Time-scales and economic expedience were seen to be central to the differing salience of risks. Disaster events, such as the extreme flooding described by David Crichton, might not happen for another 70 years, and consequently are not high up on government agendas. Plans to build on flood plains in the Thames Gateway respond to 'risks' related to current housing problems in the capital while disregarding the increasing flood risks in the future connected to climate change.

Economic factors mean insurance companies, for instance, consider road accidents to be a greater risk to cars than theft. Attempts, therefore, to get insurance companies to reduce premiums for those with better security on their cars are largely futile.

Our frameworks are implicitly there to deal with incremental change. The risk of a certain level or frequency of extreme weather events and criminal activity is deemed to be acceptable and can be coped with. As we move ever further towards various tipping points, however, at what point do we reassess our capacity to handle risk; and to what extent are our current political systems able to deal with risks posed so far in the future?

### **2. Governance and the capacity to handle risk.**

Urban contexts give characteristics to risk; however, cities are not inherently risky in and of themselves. Governance is the key issue. Although cities have the capacity to marshal resources and skills to reduce vulnerability to climate change, observation indicates that urban governance is consistently failing to do this. There needs to be political will, inclusiveness in decision making, and good relationships between municipal and national government if cities are to increase their capacity to handle risk.

Countries, such as Japan, that have necessarily learnt to respond to natural disasters, such as earthquakes, could be quicker to learn how to respond to the effects of climate change. The response to risk management in Japan has been characteristically technocentric; however, it does not necessarily cover all the populations at risk. What if the nature of the hazard changes, so that the object at risk is increasingly people rather than structures? Japan has deliberately started to move away from technological solutions because they have found that measures such as structural flood defences are not sustainable and 50% of the costs of a flood are repairs to defences. They, along with countries such as China, Scotland and Wales are therefore returning to natural flood management which is more sustainable. England however still seems to see concrete as the only solution. It abandoned its only natural flood management demonstration project in 2007.

### **3. Local communities and the capacity to handle risk.**

Climate change means there is uncertainty in the future; there is therefore indecision as to where to invest in resilience to climate change. The most effective way to protect to the future is in the investment in strong integrated local communities. In recent years, there has been a move towards sustainable flood management in Japan, in which control has been taken out of the hands of the engineers and handed to the communities. Since 2000 people in upland communities have started to plant trees and block off their land drains to slow down the water flow down the mountains. Communities have thus been building social capital.

The question is thus how to build these communities in megalopolises. Good examples are few and far between, and those that do exist are often built around strong personalities rather than on sustainable solutions that can be institutionalised.

#### **4. Who bears the consequence of risk and how does that determine response?**

Insurance is how people deal with risk. In developing countries, infrastructure will be insured by private capital; however, individuals will rarely be insured. At present, governments look to protecting cities as the economic motors of development, while avoiding broader humanitarian issues. David Crichton raised the example of Houston. Despite being one of the richest cities in the USA, it is also the site of deplorable poverty. The city lies almost entirely on low level swamp land and the only high ground is occupied by the wealthy. The overall infrastructure thus does not provide for its poorer inhabitants and makes them the bearers of risk.

Similarly, in the case of crime, car manufacturers were slow to fit anti-theft devices in their cars as they were not the bearers of risk, the customer was. The individual can thus do little to reduce their vulnerability to risk. They can increase security on their homes to protect from crime; however, they cannot alter urban design that facilitates that crime. Central government must therefore take a more active role in the course of designing and building homes, for instance, in order to make people more resilient to both crime and natural disasters.

Anonymity in urban areas contributes to an increased vulnerability to criminal and environmental hazard. Communities are thus unable to support each other in the event of natural disasters, or exert the necessary social pressure that stops people from committing petty crimes. Building active local community is therefore vital when adapting to the increased security and environmental hazards of the megalopolis.

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We would appreciate your comments, please email [karolina.kendall-bush@ucl.ac.uk](mailto:karolina.kendall-bush@ucl.ac.uk) with any comments or corrections you may have.