Catastrophic risk: How vulnerable is the UK to systemic transport failure?

John Manners-Bell, CEO, Transport Intelligence Ltd

At a recent lunch in London hosted in conjunction with Hanover Fox International, John Manners-Bell, Ti's Chief Executive, spoke about how the level of interconnectivity of networks has increased the risk of catastrophic failure and what needs to be done to make the UK's response more robust.

Given the hurricane which has just wrought chaos on the East Coast of the USA, the subject of catastrophic risk is highly topical. Although it is easy to think that this sort of crisis only occurs in other parts of the world, we forget that here in the UK we have also experienced some very real disruptive events which have cost our economy billions.

For example, between 2008 and 2010 the UK endured three excessively cold winters. Low stocks of salt and a lack of a centralised plan to deal with the freezing temperatures meant that much of the country's infrastructure was brought to a grinding halt. Stocks of grit ran out in some places, which left roads impassable. On occasion, airports, including Heathrow, were overwhelmed with snow; train services were frequently thrown into chaos. In 2010 alone, the cost of this disruption was estimated to be £1.6bn.

Then in 2011, this was followed by the Volcanic Ash Cloud which shut down air space across Northern Europe. Government response was slow and uncoordinated as it struggled to get a grip on the science and its implications for safe flying. The cost to the airline industry and the UK economy was huge. One estimate put it at £100m a day.

However, it could be said that the most worrying crisis of all was the swine flu outbreak of summer 2009. 392 people died, although it could have been much worse - at the beginning of the crisis the Government was warning of a potential 65,000 fatalities. It is assumed that if a future flu pandemic takes hold, up to 50% of the workforce could be affected, with each person who falls sick taking between 5-8 days off work. The swine flu outbreak of 2009 provided a very real warning of what could happen and the potential impact on the UK's society and economy.

Although on the face of it these crises were very different, there are some underlying similarities. For instance, one could say that the response of the UK Government to all of them was characterised by incompetence or, at the very least, by an inability to understand and deal with the situations as they unfolded.

However, what I want to briefly deal with is the impact which these crises had, or at least could have had, on the UK's vital *networks*. By this I mean the energy, information and communications technology, transport, human and financial networks which underpin the economy and social fabric of the country.

Understanding the wider impact of an event is made more difficult as it is impossible to view individual networks in isolation. Increasingly networks are interwoven and interconnected in ways which have become increasingly difficult to map or understand.

If, for example, there were an anthrax scare or other terrorist attack on a part of the London Underground, it would be likely that the decision would be made to shut down the whole of this particular network. Passengers would spill out onto the streets of London, and at the first opportunity they would be on their cell phones, potentially overloading the mobile telecoms network. Websites would be bombarded with enquiries, and the heavy volumes could bring down the internet. What impact would this have on the emergency services? With news spreading, traffic chaos would not just be restricted to London, but would spread out to the M25 and the major motorway interchanges. Overland train stations would be overwhelmed. Economic and humanitarian damage would be considerable.

Let me give you another example related to the electricity networks and their role in underpinning pretty much every other network in the UK - mobile networks, financial markets, IT, lighting, the traffic signals on the road and rail. With electricity down, garages cannot operate and trucks, cars – ambulances - are not able to fill up. As has been seen in New York, when the power goes out, life comes to a halt.

The critical nature of the electricity power supply has not gone unnoticed by malign forces. The technology systems of the main power and distribution companies are consistently under attack – and there was even a threat by one group to black out the Opening Ceremony of the 2012 Olympics.

However, a significant crisis came from another source. When temperatures fell to below -15 degrees in the winter of 2010, there was a threat to the infrastructure of electricity sub-stations. It needed large numbers of engineers to physically defrost critical components. This meant that at a time of crisis to one network, additional stress was placed on another – the human network.

The obvious question is, what would happen if the UK had been in the middle of a swine flu pandemic at the time of the severe weather and this meant that half of the engineers hadn't been able to show up to work? This could be termed an 'alignment of vulnerabilities' which means that when multiple events coincide (and these on their own need not be critical) networks can topple one after another.

Organisations may have developed resilience to one event, but not to multiple. Academics refer to this as the 'Swiss cheese model'. Imagine each slice of Swiss cheese represents the defences to a particular threat and each has a hole in it – the vulnerability as it were. Only if all the holes in each slice of Swiss cheese line up do the defences completely fail. We would like to think that the chances of multiple vulnerabilities aligning are small – but are the chances? For example, a very cold winter occurring at the same time as a flu pandemic would seem to be eminently possible.

These are exactly the sort of multiple crisis scenarios which are currently being looked at in the US – of course their exposure to major disasters, such as the latest Hurricane Sandy, are a lot greater than ours, which increases the chances of catastrophic network failures. When I was in the US a couple of weeks ago, I was at a workshop discussing what would happen to Florida if a hurricane occurred at the same time as an Anthrax attack. How would medicine, food and water distribution networks cope?

Publicly in the UK, our preparations for a disaster are in place – 'Gold level' planning for instance. This involves front line emergency services liaising with local councils and other parties on a regional basis.

However, there is a major risk that these plans have been developed on the assumption that the front line response can operate in a 'bubble'; somehow isolated from the transport, technology, electricity and human networks which are so critical.

In addition, what these plans are lacking, in my opinion, is the involvement of the private sector. You may recall at the time of Hurricane Katrina, that the US government was widely condemned for its weak response to the humanitarian disaster in New Orleans. The only effective response was that by the US's largest grocery retailer, Wal-Mart. With an extensive network and an agile supply chain strategy it managed to supply its outlets throughout the stricken area with essential goods, whilst government aid supplies were non-existent.

In the same way, the fact that the major UK grocery retailers have the best and most comprehensive distribution networks is ignored by any Governmental response strategy. The major road freight operators and express companies who deliver to homes and businesses throughout the country on a daily basis are also seemingly irrelevant. These, at the very least, could be used to deliver medicines in the event of a pandemic.

In conclusion, it is my opinion that the UK is far more vulnerable to a catastrophic event than we might believe. The complex interconnections between networks mean that far more work needs to be undertaken

to understand the possibility of system failure through a series of chain reactions. That is, a small event occurring in one network which leads to a snow-balling effect in others, eventually resulting in partial or complete shutdown.

At the same time as this, resilience needs to be improved. The public sector cannot assume that it is immune from network failure, especially when most of these networks operate outside of its control. There must be a collaborative effort which pools the resources and networks of both the public and private sector. A failure to adopt this approach will mean that the UK's response to crises and disasters will go on being characterised by ineptitude and confusion.

About the Author

John Manners-Bell MSc FCILT, CEO of Transport Intelligence, has over two decades experience working in and analysing the global logistics industry. He is a member of the World Economic Forum's Logistics and Supply Chain Global Agenda Council and has advised a wide range of governmental organisations and industry bodies.

For more information contact John Manners-Bell on jmannersbell@transportintelligence.com.

About Transport Intelligence

With a research organisation spanning the world's key markets, Transport Intelligence (Ti) is the leading provider of expert analysis dedicated to the global logistics industry. Ti has developed a range of market leading web-based products, reports, profiles and services used by all of the world's leading logistics suppliers, manufacturers, consultancies and banks.

*For more information visit: **www.transportintelligence.com***

About Hanover Fox International

Hanover Fox International is a quality-driven executive search consultancy, operating at senior and board level across a range of sectors. Its approach provides a powerful combination of industry specialisation and inter-practice cooperation, enabling clients to benefit from its strong understanding of their own markets, whilst sharing the experience of other related and complementary sectors.

*For more information visit **www.hanoverfox.com***