

Economic and financial recovery from disaster

Handmer and Hillman consider ideas of economic flows that support local prosperity

Abstract

Economic recovery from disaster is about the resilience of local economies, although it may concern regional or national economics, especially in small or poor countries. Is the aim of recovery simply to restore the pre-disaster state? Or should disasters be embraced as opportunities to make local economies more resilient? Overall economic activity is the normal measure, but we are also concerned with what the activity is doing for the people and enterprises within the region under study – including a range of intangible factors. Depending on our spatial and temporal scales, we may find that economic recovery from disaster is partial at best. We may find that the economy boomed following disaster but that some sectors are left devastated. In some cases, there may be no recovery. We argue that the priority in economic recovery should be on maintaining the economic flows that support the prosperity and activities of the affected area.

Introduction

Disasters destroy assets, undermine the flows of goods and services, and disrupt people's sense of security, thereby forcing reallocation of household, commercial and government finances. Economic and financial recovery is essentially about building resilient local economies. To do this we need to know about the losses and the benefits flowing from the disaster, the impacts on assets, on flows of goods and services and on capital accumulation, and the distribution of these impacts through space and time. Recovery may result in changes in competitiveness through adoption of new technologies when destroyed assets are replaced, and new or innovative approaches to maintaining economic activity during a crisis. Often recovery may be "marketed" to help with sectors especially sensitive to outside views, such as tourism, to encourage investment, or to show progress for political purposes. This may benefit recovery, but may also obscure problems. The research literature on economic recovery is sparse, although there appears to be a surge of interest in the

topic (eg Byrne et al 2004; Rose 2004). A literature summary is not presented; instead reference is made to published material in the text as appropriate.

This paper aims to provide a critical overview of some of the issues in economic recovery and examine some conceptual issues in the context of approaches to recovery. (In this paper "recovery" refers to economic and financial recovery). It presents brief examples to illustrate the main issues; and drawing on this material, offers some suggestions. Specifically, it suggests where limited recovery resources should be spent for maximum benefit.

Economic and financial loss assessment

In disaster assessments economics is often confused with any analysis based on money. However, an economic analysis is based on a particular set of principles. Analyses not based on these principles are usually called financial analyses. Economics is concerned with the impact of an event on the economy of the area selected for analysis. Both positive and negative impacts on this defined economy are counted (based on the principles of cost-benefit analysis). Defining this economy in space and time is a key step. For example, we might want to know how the economy of far North Queensland is managing after the area was hit by a cyclone. The study area could be defined by a number of local government areas and we could then examine the impact on the economy of these areas for the selected time period (also see Queensland Government 2002). For discussion of these issues see BTE (2001); Handmer et al (2002); EMA (2002); and the manuals from the UK's Flood Hazard Research Centre at Middlesex University.

Overall economic activity is the usual measure (macro-economics), but we are also concerned with what the activity is doing for the people, enterprises and economic sectors within the region under study (financial loss also occasionally known as meso and micro-economics). The case studies reported below illustrate the type of losses involved. Following normal disaster loss assessment practice intangibles such as human capital, and social and environmental items, are included.

Scale is critical. In general, the larger and more diverse the economy under examination, the smaller the impact of a given event. The time dimension can dramatically

alter a loss assessment as well. Many losses are made up following a disaster, and other losses may appear. Insurance is a key redistributive mechanism in enabling the domestic and business sectors of the economy to recover, but may not be a good indicator of economic loss.

Measurement of economic impact requires data, and the emphasis now is generally on approaches and sophisticated models that require increasing amounts of high quality data. (Data quality is a universal problem—see for example the Bureau of Meteorology's project on climate data quality <http://www.bom.gov.au/climate/change/quality.shtml>.) However, appropriate data is often unavailable and some effort is going into approaches that draw on average data for similar circumstances (Handmer 2002). If our interest is on illustrating causal linkages and impacts on parts of the economy not well captured by official statistics, then qualitative and narrative approaches may be more useful (see Benson and Clay 2004).

Aims of recovery: the enhancement of local economic activity

The idea of restoration following disaster is based on an implicit assumption that disasters are abnormal, and the aim is therefore to restore normality. There may be circumstances where disasters are far from abnormal, for example earthquakes in New Zealand or droughts in inland Australia. "Normality" can be a contributing factor to the community's vulnerability to disaster. In other cases, restoration may not be possible or seriously delayed: people may be left with permanent injuries or trauma, parts of the local economy may not be able to re-establish, and the area may be stigmatised as a scene of tragedy. Looked at more positively, opportunities for major change and economic enhancement may present themselves, especially where disasters are not repeated frequently.

Rather than simply restoration, infrastructure and economic recovery offer the opportunity for substantial, strategic improvements following disaster. For example, destroyed infrastructure is frequently replaced with up-to-date facilities, and local commerce may receive new equipment and training. Many analysts argue that ideally, this should be about making the local economy (and community) more sustainable (Monday 2002). Can or should the aim be to go beyond restoration to try to make local economies more sustainable (Monday 2002; King and Gurtner on Bali 2003)? Post-disaster improvement or betterment is frequently mentioned in the context of the need to look forward rather than dwelling on the past (eg Faulkner 2001). Occasionally, disaster may be seen to offer opportunities to some groups for development where it was previously not permitted, for demolition of previously protected structures, and for restructuring of the local economy. It may also provide an opportunity for some individuals to relocate or change and improve their livelihoods.

Any examination of economic recovery needs to be explicit about the macro factors of scale, wealth, and the type of disaster, for example whether it is a rare earthquake or repetitive flooding; and whether the interest is with recovery over a short or long period. Many official recovery efforts run for relatively limited periods of about 12 months, although there is increasing recognition that for many groups recovery can be a very lengthy process. Some sectors of the economy can take many years to regain their pre-impact productivity. Typically only formal economic activity is measured. In all societies informal activity (the so called black or underground economy) is important, and in many poorer areas it may be a key part of people's livelihoods (Syrett et al 2004).

There may be significant differences in economic recovery between rich and poor countries. More research and evaluation of recovery efforts have taken place in poorer countries to satisfy aid donors, and because the impact of disasters often seems large and long lasting (see for example Benson and Clay 2004). (A notable exception may be the assessments conducted by the US General Accounting Office). Similar research and evaluation is required in developed countries (CSMAC 2004).

The aim of recovery should be to ensure that the economy continues to function providing livelihoods and other services for those in the affected area. Recovery programs should support the affected economy so that it can do this. Opportunities to make local economies more sustainable should be sought especially those that help reduce "future hazards and their associated risks." (New Zealand MCDEM 2004: 7). Case Study 2 (page 48) illustrates this forward looking approach. In poorer countries many people prefer investments in livelihood security to those directed at the hazard (e.g. flood levees).

Although the approach of supporting local commerce where possible may seem obvious, it is not universally accepted among economists (IFRCRC 2001). The Red Cross uses the analogy of a leaking bucket, "plugging the leaks ensures that post-disaster resources re-circulate within the local economy rather than leaking out of it" (IFRCRC 2001). Although this idea is based more on recovery in poorer economies, the approach can be applied in Australia and New Zealand, especially in rural communities where aid funds are less likely to recirculate. The recent and ongoing Australian drought is illustrative (Alston and Kent 2004). The NSW drought strategy included provision of hampers to affected landowners. The contents for the hampers were procured locally thereby not undermining local businesses. Similarly, whitegoods have been made available to bushfire affected communities via vouchers redeemable at local stores, rather than donated directly from the manufacturers (Andrew Coughlan per com 26/7/04). Case Study 1 summaries drought impacts on small businesses and farmers.

Case Study 1

Drought in Condobolin, NSW

Condobolin is 463 km west of Sydney and is part of the Lachlan Local Government Area. It became officially eligible for drought relief on 10 October 2002. There are a variety of assistance packages available for both local businesses and farmers who are drought affected (Alston and Kent 2004).

Farm Businesses

Alston and Kent (2004) identify the main impacts of drought on farming businesses which can be tabled as

Impact on Farming Business

Asset (Stock) Impact	Flow Impact
<ul style="list-style-type: none"> - Sale of stock purchases - Sale of capital equipment with OH&S 	<ul style="list-style-type: none"> - Postponement of capital purchases - Diminished compliance with OH&S - Use of off-farm employment - Focus on survival, not maintenance - Inability to afford labour for drought work - Restructuring of debt

In the case of Condobolin:

- Production from livestock fell by 50%.
- Some farm businesses were without crop income for 2–3 years.
- Most thought the drought had cost them between \$60,000 and \$100,000.
- 72% of partners/wives have been working off the farm.
- Large reliance on welfare/charities such as St Vincent de Paul etc.

Small Businesses

Alston and Kent (2004) found that small businesses in smaller towns were hit hardest, with only a small proportion being aware of available assistance.

For Condobolin the impacts were:

Economic Impact on Small Business— Condobolin Drought

Asset (Stock) Impact	Flow Impact
<p>Volume of stock down and non-availability at times of certain items. Expenditure.</p>	<ul style="list-style-type: none"> - Employment of town people in small business is reliant on farm. - A marked downturn of 60%–75% has been noted. "Shop local campaign has helped. - Farming contractors down by as much as 86%. - Businesses forced to diversify. - Increase in debt being carried by small businesses up to 20% higher than usual. - Financial support not really designed for small business or farmers, eg Centrelink.

Other financial and economic losses

Tangibles	Intangibles
<ul style="list-style-type: none"> - Youth employment suffers as positions such as apprenticeships disappear. - Local employment diminished. eg one local government dept had shrunk from 23 full time positions to 6. 	<ul style="list-style-type: none"> - Exit of human capital and expertise in pursuit of employment. - Loss of next generation of farmers as their families encourage them to pursue other careers. - Affect on quality of education of children. - Skill of workforce declines as youth forced to take unskilled labour instead of learning trades.

Assets and economic flows

Stocks and flows

Economic losses can be considered in terms of capital or assets, and the flows of goods and services (production, income and employment). Some households and communities may have considerable assets but limited flows while others may have virtually no assets but substantial flows of funds. The latter would include those dependent on remittances and welfare, as well as many service industries. In contrast some communities may depend on assets such as fruit trees, or on a tourist attraction like coral reefs, that once destroyed, take years to replace while not producing income. Note that if tourists go to another location within the specified economy, for example a State, then the sector and the economy may be no worse off.

Obsolete industrial plants or even recreational facilities may not be replaced because the start up or replacement cost, and/or the cost of complying with contemporary standards, is prohibitive. This may leave the community with the challenge of reinventing itself, something that is very difficult in areas with declining economies. From a recovery perspective, an interesting question concerns whether economies dominated by flows are more resilient than those dominated by capital. Table 1 sets out some examples of disasters by flow and stock impacts. Case Study 2 details an oyster contamination episode and illustrates some of the losses and issues and highlights the importance of flow impacts (as does Case Study 1).

Much recovery effort and political attention typically focuses on asset restoration: it is visible, easily valued and politically easy to manage. From a social perspective, community members may fast-track the physical recovery in order to convey a facade of holistic recovery. This is also due to psycho-social aspects of community recovery whereby the appearance of reconstruction may be therapeutic. Often damaged assets are replaced with new updated facilities increasing the capital wealth of the community, businesses or householders. However, this may lead to increased costs for some asset owners if, for example, householders find that they face increased local taxes or insurance costs for the new assets. Replacing assets creates much activity and the appearance of a minor economic boom (assets are not counted in GDP figures but replacing them is). This may be misleading if local people and enterprises do not benefit (see below “Do economies boom..?”).

The 2001 *World Disaster Report* (Rietveld et al 2001) calls the emphasis on assets during recovery “Thing Theory” and finds that the approach can damage the local economy rather than assist it for two basic reasons: the financial benefits are likely to go to large companies from outside the affected area (also see above under the “Aim of recovery”); and it takes funds away from helping local enterprises through training, grants and loans. As observed it also ignores the informal sector which may be the major part of a local economy especially in poorer countries. Many disasters do not involve asset destruction in which case the issue would not arise, but lack of asset damage may also mean lack of visibility—and lack of recovery support.

Table 1. Examples of types of disaster by economic category

<p>Economic Flow: Losses Dominate (Most common, but often less visible)</p>	<ul style="list-style-type: none"> • loss of power to the commercial centre of Auckland for two weeks; • loss of the gas supply for 5 million people in Victoria for almost two weeks; • the grounding of Australia's light commercial aviation (fuel contamination); • billions of dollars lost by Australians through corporate “collapses”; • anthrax hoaxes and media-fuelled anxiety about places and activities.
<p>Combination of assets and flows</p>	<ul style="list-style-type: none"> • Major earthquakes; • Deaths of 15 young people in the Childers fire; • UK foot-and-mouth disease resulting in the partial collapse of the farming and tourism sectors.
<p>Assets (or stock) Losses Dominate (Most spectacular and visible. Asset destruction will generally produce flow losses as well)</p>	<ul style="list-style-type: none"> • Tornados; • Complete destruction by fire of hundreds of homes and critical infrastructure in the Canberra bushfire; • Storm damage to tens of thousands of buildings and vehicles in a few minutes in the Sydney hail storm.

Case Study 2

Oyster Contamination at Wallis Lake, NSW

(Drawn from Department of Health and Ageing and Health Council 2003)

Wallis Lake is located on the mid-North Coast of New South Wales. It possesses well-established industries in tourism, boating, as well as commercial and recreational fishing. Wallis Lake also produces over 2.4 million dozen oysters (21,000 bags) per annum. This translates into a wholesale value of some \$8.5 million (about \$3.50 per dozen oysters).

In 1997 444 people around Australia developed Hepatitis A through consumption of oysters from Wallis Lake. One in seven cases was hospitalised and one death occurred. A class action suit was launched against 14 different respondents.

The Great Lakes Council undertook a survey that revealed that many of the commercial and residential premises were releasing effluent into the waterway or were at high risk of doing so. As a result the sewerage system was upgraded and policies to improve water quality were put in place including increased monitoring, more public toilets, regulations regarding waste disposal from boats, and fines for non-compliance. The episode caused reputation problems for the whole oyster industry in NSW, and the solutions have benefited the whole industry not simply that located at Wallis Lake.

The local, State and national costs and benefits of the contamination episode are summarised in the Table.

Negative Economic Impacts

ELEMENT	FLOW IMPACT	ASSET (STOCK) IMPACT
Oyster Industry	Local oyster farmers say that market share has not recovered and remains about 15%–20% below pre-1997.	
Fishing Industry	Lost up to 30% below the market value. Local production fell by 75% (\$1000 a day).	The Wallis Lake commercial fishing catch dropped 9% from the previous four years.
Health		National health cost of a Hepatitis A outbreak (500 persons, one death, 70 hospitalised), is \$12.1 million.
Tourism	Accommodation take was down \$1.1 million in the 2nd and 3rd quarters of 1997 in the region.	
	About 40,000 fewer guest nights in the region in the 2nd and 3rd quarters of 1997 than in 1996.	
Employment	Employment in oyster farms fell by 60 workers.	
Public Perception		Product name and investor and consumer confidence suffered for oysters state wide—the value of the industry fell.

Positive Economic Impacts (DHACA, 2003)

ELEMENT	FLOW IMPACT	ASSET (STOCK) IMPACT
Infrastructure		\$200 million expansion of the Country Towns Sewage Scheme for NSW. \$11m for Wallis Lakes area.
Compliance Stronger legislative controls over on-site sewerage systems led to the following changes:		
Property Value	Elimination of sewage smells improving property prices. More opportunity to subdivide because of sewerage services.	
Local Business	Local businesses benefited by avoiding crisis revenue loss.	
Health	Consumers avoid ill health and community avoids associated costs.	
Oyster Industry	Oyster producers avoid potential litigation.	Increased value (and output) due to upgrade of facilities.
Tourism	Less risk of tourism service providers being unable to open. Improved water quality results in long term increase in visitor use, tourism, and boating.	

We argue that the emphasis in economic recovery should generally be on maintaining economic flows within the affected area. Achieving this may require the protection of certain assets. For example fruit trees or vineyards take many years from planting to full productivity so their destruction is particularly serious.

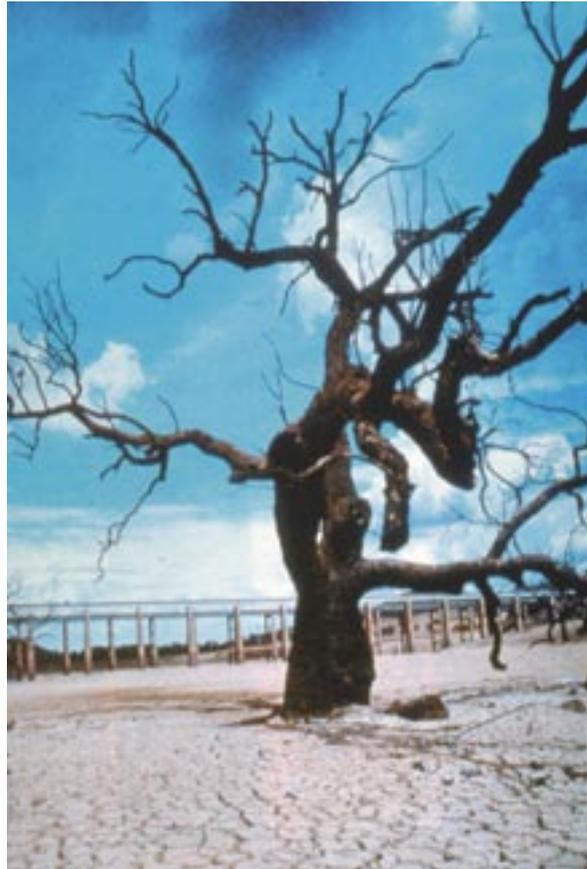
Continuity planning and management

Continuity planning, whether for business, government or other sectors, is an approach dedicated to protecting economic (and social) flows rather than simply focusing on the protection of assets. It also has the advantage of being generally sound business practice as, if properly done, it makes the enterprise concerned more resilient to most shocks. The focus on keeping the enterprise running acknowledges that key assets and facilities may be unavailable for many reasons following disaster including those related to access, safety and criminal investigations. This may be the case even if the facilities are relatively undamaged. Implementation of continuity (and therefore recovery) management starts with disaster warnings. Unless there is no warning, it should not wait until disaster impact.

Do economies boom after disaster?

Typically, local economies in rich countries receive massive inflows of resources (insurance, aid, money spent by media and emergency response, rebuilding, etc) during and following a disaster, provided the impacts are visible or well insured. This has led some observers to argue that disasters are economically beneficial. Another aspect of this apparent benefit is that outdated or obsolete equipment is replaced with state-of-the-art facilities. In economics, only the depreciated or market value of the destroyed equipment can be counted as a cost of the disaster. The rest is a benefit (for the local economy) of the event. Skidmore and Toya (2002) argue that disasters stimulate long-term economic growth, although this appears to be the case primarily for rare earthquake events (Benson and Clay 2004). Such booms may be economically misleading, as funds for this must come from elsewhere within the economy under consideration, or from outside in the form of aid or insurance. This reinforces the importance of spatial and temporal scales in economic assessment.

As outlined earlier, economic assessment is primarily concerned with the net economic impact of a disaster on the specified economy, and with the distribution of the costs and benefits. There is evidence from the US that even though a local economy may boom following disaster, some sections of the affected community will be substantially worse off (Albala-Bertrand 1993). An enquiry into wildfires and rural poverty in the US reached similar conclusions finding that severely disadvantaged communities did not benefit from available recovery programs following wildfires (PWCH



Fruit trees and vineyards are considered economic assets

2001). Similar patterns have been found in poorer economies (IFRCRC 2001).

Conclusions

Economic performance is a (perhaps, the) central factor in modern economies, and few if any localities are content with static or declining economic activity and livelihood insecurity. Economic and business aspects of recovery should therefore receive high priority. This attention should build local resilience by ensuring that local livelihoods and local commerce are restored or enhanced, and by reducing the risk of future disasters. A macro-economic approach needs to be combined with examination of distributional and sustainability issues to satisfy the New Zealand MCDEM recovery principles (2004).

We have three substantive conclusions:

- Clarity over the short and longer-term aims of economic recovery is fundamental. To what extent should change and enhancement be encouraged? This is closely connected with the idea of using disasters to move towards a more sustainable local economy. Some apparently positive changes may make local economies less sustainable.
- We take the view that economic recovery refers to local enterprise in the affected area as much as to the performance of the overall economy. Good

performance by the macro economy may not indicate that local livelihoods and enterprises are healthy or recovering from disaster. Recovery strategies need to be carefully formulated to avoid undermining local commerce.

- Economic flows such as income, rather than assets (or stocks) per se, are generally critical to local economic performance. The emphasis should be on maintaining these flows within the local economy—if necessary by the protection of certain assets, for example environmental or other assets on which a local tourist industry is based.

Recovery effort should give priority to local employment, productivity and income, rather than major asset restoration. This is often an issue of visibility as many disasters do not involve obvious asset destruction.

Reconstruction of symbolic or community assets may be important for social recovery but may do little for the local economy. Often the reconstruction that is obvious to visitors and media as indicating strong economic recovery may not be seen positively locally.

Continuity planning should help mitigate disaster impacts, prevent a post-disaster slump in the local economy, preserve a sense of “normality”, and speed recovery. It should be encouraged for commerce and other sectors.

Acknowledgements

A longer version of this paper was presented at the New Zealand National Recovery Symposium. We thank the organizers and sponsors of that event, especially Sarah Norman. Our appreciation goes also to the referees who provided constructive comments for this version.

References

Albala-Bertrand, JM 1993. *The political economy of natural disasters with special reference to developing countries*. Oxford: Clarendon Press. Chapter 8.

Alston, M. and Kent J. 2004. *Social impact of drought*. Wagga Wagga: Centre for Rural Social Research, Charles Sturt University.

Benson, C and Clay E 2004. *Understanding the economic and financial impacts of natural disasters*. Washington DC: World Bank.

BTE 2001. *Economic Costs of Natural Disasters in Australia*. Report 103. Canberra: Bureau of Transport Economics (Now BTRE).

Byrne, M, Frew, SL, Rose, A & Sutter, D (2004), 'Economic resilience in the face of catastrophe – session summary', 29th Annual Hazards Research and Applications Workshop, Boulder, Colorado: University of Colorado. July 11–14.

CSMAC (Community Services Ministers' Advisory Council). 2004. *Review of Community support and recovery arrangements following disaster*. Disaster Recovery Sub-Committee of the Community Services Ministers' Advisory Council.

Department of Health and Ageing, and Health Council. 2003. *Guidelines for economic evaluation of environmental health planning and assessment: volume 2 – case studies*, Canberra: Commonwealth of Australia.

Emergency Management Australia (EMA) 2002. *Economic and financial aspects of disaster recovery*. Canberra: EMA.

Faulkner, B. 2001. Towards a Framework for Tourism Disaster Management. *Tourism Management*. vol.22: 135–147.

Handmer, J. 2002. The chimera of precision. *International Journal of Mass Emergencies and Disasters*. 20(3): 325–346.

Handmer, J.W., Read, C. and Percovich, O. 2002. *Disaster loss assessment guidelines*. Published by the Queensland Department of Emergency Services and Emergency Management Australia. Canberra.

King D. and Gurtner Y. 2003 Community participation in disaster response and recovery. *Safer sustainable communities – 2003 Australian Disaster Conference*. Emergency Management Australia, Canberra.

Monday, J. 2002. Building back better: creating a sustainable community after disaster. *Natural Hazards Informer* 3. Boulder: University of Colorado.

New Zealand (MCDEM) Ministry of Civil Defence and Emergency Management. 2004. *Focus on recovery: a holistic framework for recovery*. Wellington: MCDEM.

PWCH (Program for Watershed and Community Health). 2001. *Wildfire and poverty report*. Eugene: University of Oregon.

Queensland Government 2002 *Disaster loss assessment case study*. Qld Department of Emergency Services and Emergency Management Australia. (Written by Percovich, O. and Handmer, J.)

International Federation of Red Cross and Red Crescent Societies (IFRCRC), 2001. *World Disaster Report* Geneva: IFRCRC.

Rietveld, K. Simms, A and Sparrow J. 2001. The ecology of disaster recovery. In International Federation of Red Cross and Red Crescent Societies. *World Disasters Report: focus on recovery*. Geneva: 35–57.

Rose, A (2004), 'Defining and Measuring Economic Resilience to Earthquakes', *MCEER Research Progress and Accomplishments*, vol. 2003–2004: 41–54.

Skidmore M and Toya H 2002. Do natural disasters promote long run growth? *Economic Inquiry*. 40(4): 664–687

Syrett S, Evans M, and Williams C. 2004. Report on the black economy for the UK Office of the Deputy Prime Minister. Reported on 19 August 2004 in http://news.bbc.co.uk/go/pr/fr/-/1/hi/tuk_politics

Authors

Professor John Handmer is Innovation Professor of Risk and Sustainability at RMIT University. He is an Adjunct Professor at the Australian National University and holds a research position at Middlesex University, London.

Marnie Hillman spent several years as the Coordinator, Disaster Response for Red Cross NSW, specifically involved in the disaster recovery field. She is now a Division Controller with the New South Wales State Emergency Service.

