Policies, particularly regarding actions to lessen the impacts of future events, are often driven by an assessment of costs. In particular, the investment in adaptation is cost-effective compared to the costs of the impacts. The understanding of costs, however, is linked to an understanding of the risk. It is important to note that the costs of an event identify and costing the intangible that can have a bigger impact on society (e.g., business bankruptcy or decisions to relocate). Planning development in a location that is susceptible to losses due to redeployment of funds. In their analysis, Australia’s Productivity Commission (2012) suggested that the cost-benefit of adaptation plans towards accommodating risk (e.g., raised floor levels rather than investing in protection, e.g., flood levees). As the risks associated with the increase in the future, it is essential to articulate and understand the full consequences (e.g., tangible and intangible costs) so that good investment and decision making are targeted correctly.

Reference
The climate context

Climate change has the potential to change the frequency (increase or decrease) and magnitude of extreme weather events. Over the last 50 years, there has been an increase in the frequency of some types of extreme weather events in Australia. For example, the number of days with severe storms has increased in the eastern half of Australia (IPCC 2012). There is some evidence of observed changes in the past five decades (Table 1), and in future scenarios, there is increasing evidence of the potential for changes to the frequency and intensity of many types of extreme weather events across Australia (IPCC 2012). There is some evidence of observed changes in climate extremes in the past five decades (Table 1). The IPCC (2012) report noted that there have been changes in climate extremes, such as floodplains and coastal zones. There is some evidence of observed changes in climate extremes in the past five decades (Table 1). The IPCC (2012) report noted that there have been changes in climate extremes, such as floodplains and coastal zones.

Recent unprecedented climate-related extreme events have affected many parts of Australia, e.g., the exceptionally high number of days with severe storms in 2011 (IPCC 2012). This adds to the uncertainty that emergency management already faces as a result of climate variability.

There are many good examples of ongoing improvements in strategic planning, and management of, extreme events. For example, most states have now implemented heatwave warning systems and response plans. At a national level, the Council of Australian Governments (COAG) agreed in 2009 to adopt a whole-of-nation resilience-based approach to disaster management, published in 2011 as the National Disaster Resilience Strategy. This approach recognises the need for a national coordinated and cooperative effort to enhance Australia’s capabilities to withstand and recover from significant climate-related extremes, such as storms, floods and bushfires. This approach seeks to deliver improved resilience across the nation by building disaster resilient communities.

Table 1: Cost of recent disasters in Australia

<table>
<thead>
<tr>
<th>Event</th>
<th>When</th>
<th>Where</th>
<th>Insurance</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyclone Yasi</td>
<td>21 Jan 2011</td>
<td>QLD</td>
<td>$3.18 billion</td>
<td>$12.33 billion</td>
</tr>
</tbody>
</table>
| Queensland floods | 21 Jan 2013 | Toowoomba, Lockyer (Queensland) | $21 million | ($US 1 million (May 2011)
| Cyclone Larry  | 16-21 Apr 2006 | Qld | $350 million | $350 million |
| Cyclone Yasi  | 21 Jan 2011 | QLD | $3.18 billion | $12.33 billion |
| Cyclone Yasi  | 21 Jan 2011 | QLD | $3.18 billion | $12.33 billion |

Knowledge and communication:

Knowledge and communication efforts are essential parts of pre-disaster planning, and are a critical component of the success of any emergency management strategy. Knowledge is essential to manage the impact and consequences of future hazards. This information can also usefully feed into community programs to raise risk awareness.

Community education is currently often funded through project grants rather than core funding. This does not create sustained behavioural change and an enduring partnership in disaster management. The policy is aimed at delivering sustained behavioural change and enduring partnerships in disaster management, published in 2011 as the National Disaster Resilience Strategy. This approach recognises the need for a national coordinated and cooperative effort to enhance Australia’s capabilities to withstand and recover from significant climate-related extremes, such as storms, floods and bushfires. This approach seeks to deliver improved resilience across the nation by building disaster resilient communities.

Under a changed and changing climate the adaptive options available to communities to manage the risks from extreme weather events will need to be more than a simple multiplication of existing emergency management capabilities. The new response required is different from the traditional one. This is true for all hazard types. There is a growing belief that building resilience takes time, which it does. New technologies and new approaches will continue to influence the current state of risk reduction strategies. At the community level, for example, initiatives to inform the public about climate-related issues continue to gain in importance.

Table 2: trends in observed climate extremes since 1950 (Source: Table 3, IPCC 2012)

<table>
<thead>
<tr>
<th>Climate feature</th>
<th>Trend</th>
<th>Increase (%)</th>
<th>Increase (per decade)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Temperature</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Precipitation</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
</tr>
<tr>
<td>Extreme events</td>
<td>Increase</td>
<td>Increase</td>
<td>Increase</td>
</tr>
</tbody>
</table>


**The climate context**

Climate change has the potential to change the frequency (increase or decrease) and magnitude of extremes. A number of extreme events have occurred in Australia in recent years which have been attributed to climate change (e.g. tropical cyclones, rainfall events, heat waves, fire danger). These events have been highlighted in national reports such as the EMA's (2008) 1000-year floods report and the IPCC's (2007) special report on extreme events and disasters.

Recent unprecedented climate-related extreme events have affected many parts of Australia, e.g. (i) exceptionally heavy summer rainfall in many parts of NSW, Victoria and SA in 2010/11; (ii) storm surge and flooding along the east coast of Australia in 2011; (iii) the floods in Victoria and SA in 2010/11 and 2011/12; (iv) large scale bushfires in Victoria during Dec 2009 and early 2010; (v) the 2010-11 Queensland floods; (vi) Cyclone Yasi in 2011.

The task of figuring out what to do next is made all the more complex by a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experienced emergency managers need to participate in developing risk management plans. Australia does not have a centralised emergency management system, rather it has networks of diverse stakeholders from different agencies. As a result, there can be a lack of consistency in coordination and structure, and different levels of experience and knowledge. Strategies to better incorporate knowledge are being promoted. A common scenario exists across the emergency management sector—weaknesses and adaptations to emerging risk issues are still largely evolving. This means that the sector is still evolving and that emergency managers are often not able to draw on the experiences of others.

**Table 1: Observed changes in extremes since 1950 (Source: Table 3-2, IPCC 2012)**

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Region</th>
<th>Change</th>
<th>Statistical Significance</th>
<th>Confidence Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Coast Lows</td>
<td>Southeast Australia</td>
<td>Increase in WD</td>
<td>High</td>
<td>Likely decrease</td>
</tr>
<tr>
<td>Heat waves</td>
<td>Many areas, including parts of WA, SA, NT, and QLD</td>
<td>Increase in warm days</td>
<td>Medium</td>
<td>Likely decrease</td>
</tr>
<tr>
<td>Floods</td>
<td>Many areas, particularly in Qld, NSW, and VIC</td>
<td>Increase in WN</td>
<td>Medium</td>
<td>Likely decrease</td>
</tr>
<tr>
<td>Storms</td>
<td>Many areas, particularly in QLD and VIC</td>
<td>Increase in storm events</td>
<td>Medium</td>
<td>Likely decrease</td>
</tr>
<tr>
<td>Cyclones</td>
<td>East coast of Australia</td>
<td>Increase in TC intensity</td>
<td>High</td>
<td>Likely decrease</td>
</tr>
<tr>
<td>Bushfires</td>
<td>All states except NT</td>
<td>Increase in fire danger</td>
<td>Very likely</td>
<td>Likely increase</td>
</tr>
</tbody>
</table>

**Table 2: Cost of recent disasters in Australia**

<table>
<thead>
<tr>
<th>Event Type</th>
<th>Amount ($AUD)</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Floods</td>
<td>12.6 billion</td>
<td>Victorian state budget released in 21 January 2013</td>
</tr>
<tr>
<td>Storms</td>
<td>5 billion</td>
<td>Insurance Council of Australia as at March 2012</td>
</tr>
<tr>
<td>Bushfires</td>
<td>4 billion</td>
<td>Victorian state budget released in 21 January 2013</td>
</tr>
</tbody>
</table>

**Table 3: Risk management in the emergency management sector (Source: Table 3, IPCC 2012)**

<table>
<thead>
<tr>
<th>Risk Management Area</th>
<th>Strategies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prevention</td>
<td>Early warning systems, community education and awareness</td>
</tr>
<tr>
<td>Mitigation</td>
<td>Building codes, land-use planning, infrastructure development</td>
</tr>
<tr>
<td>Preparedness</td>
<td>Emergency plans, resource allocation, training</td>
</tr>
<tr>
<td>Response</td>
<td>Resource deployment, command and control, communication</td>
</tr>
<tr>
<td>Recovery</td>
<td>Rehabilitation, reconstruction, social services</td>
</tr>
</tbody>
</table>

**Current effects, impacts and issues**

Under a changing and changing climate the adaptation options available to communities to manage the risk from extreme events will need to be more than simple multiplying of existing emergency management capabilities. The challenge is to design a strategy that is different in kind and not just in degree from the same in the future. There is a growing need to build enhanced resilience to extremes across more of the population. Government agencies have powerful instruments to manage the risks that will be affected by climate change, including land use planning, regulation and by implementing risk management policies and planning (e.g. 2009 National Climate Change and CSIRO 2012). There will need to be a greater emphasis on risk assessment and risk management at all levels of government.

**3. Future effects, impacts and issues**

Under a changed and changing climate the adaptation options available to communities to manage the risk from extreme events will need to be more than simple multiplications of existing emergency management capabilities. The challenge is to design a strategy that is different in kind and not just in degree from the same in the future. There is a growing need to build enhanced resilience to extremes across more of the population. Government agencies have powerful instruments to manage the risks that will be affected by climate change, including land use planning, regulation and by implementing risk management policies and planning (e.g. 2009 National Climate Change and CSIRO 2012). There will need to be a greater emphasis on risk assessment and risk management at all levels of government.

**Adaptation: what this means for managing the sector**

**3.1 Preparedness**

The emergency management agencies need to be prepared not only to buy, but also to build in more resilience, possibly more complex, events occurring in locations not previously at risk. Agencies will require flexibility, agility and have changed response and capacity. Opportunities to begin this process have been missed in the wake of the Victorian events. Policy and governance: The emergency management sector is already seeing a change in the way business is done. Moving from a sole focus on response and recovery to a focus on managing the ongoing risks and adapting to changing circumstances, including building planning, thinking and action that are consistent with reducing risks and adapting to changing circumstances. Policy and governance: The emergency management sector is already seeing a change in the way business is done. Moving from a sole focus on response and recovery to a focus on managing the ongoing risks and adapting to changing circumstances, including building planning, thinking and action that are consistent with reducing risks.

**4.1 Preparedness**

The emergency management agencies need to be prepared not only to buy, but also to build in more resilience, possibly more complex, events occurring in locations not previously at risk. Agencies will require flexibility, agility and have changed response and capacity. Opportunities to begin this process have been missed in the wake of the Victorian events. Policy and governance: The emergency management sector is already seeing a change in the way business is done. Moving from a sole focus on response and recovery to a focus on managing the ongoing risks and adapting to changing circumstances, including building planning, thinking and action that are consistent with reducing risks and adapting to changing circumstances.

**4.2 Mitigation**

Mitigation strategies need to better plan for increased risk and change. Proposals that incorporate building regulation and insurance policies are the two main policy strategies identified for reducing the risk and change. The disaster risk financing and insurance (e.g. the 2010-11 Queensland floods) continues to be developed around disaster risk financing and insurance.

**4.3 Response**

Emergency management at state and local level have been developed in response to a range of disasters. The need to incorporate planning and insurance policies continue to be developed in response to a range of disasters. The need to incorporate planning and insurance policies into risk management is well respected, and has been widely acknowledged internationally. The disaster risk financing and insurance (e.g. the 2010-11 Queensland floods) continues to be developed around disaster risk financing and insurance.
The climate context

Climate change has the potential to change the frequency (increase or decrease) and magnitude of extremes. The impact of these changes will vary depending on the type of extreme event, the region and season etc. Climate change has the potential to change the frequency (increase or decrease) and magnitude of extremes. Prevention is defined here as “Regulatory and physical measures to ensure that emergencies are prevented, or their effects are limited to some specified level.”


- Mild increases in the high level of certainty of some sea-level rise resulting from thermal expansion.
- Large increases in heat wave and storm surge affected by intensity of storms: these are estimated to be increased by 1.5°C. There is some evidence of changes in the past five decades (Table 1). The IPCC (2012) SREX summarised in Box 1.

2. There is a high level of uncertainty over the potential for hail events to increase in some regions.

3. Extreme heat has become an increasing problem in many regions. For example, most states have now implemented heatwave warning systems and response plans. At a national level, the Council of Australian Governments (COAG) has agreed in 2009 to adopt a ‘whole-of-nation’ resilience-based approach for emergency management purposes on the assumption that improved warnings and emergency response will adequately manage the increased risk (e.g. extensive losses during 1974 cyclone Tracy reflected inadequate building standards, and led to their fundamental redesign). This transition is prompted in part by major events in the recent past that emergency response was not able to reach adequate risk reduction.

Policy and governance: The emergency management sector is already seeing a change in the way business is done. Managing natural hazard events is no longer viewed as a one-off effort, but is becoming a part of everyday management, especially at the planning stage considering risk, community and policy development. This transition is prompted in part by major events in the recent past that emergency response was not able to reach adequate risk reduction.

Australia does not have a centralised emergency management system as it has networks of diverse stakeholders from different agencies. As a result, there can be a lack of consistency in legislation and structure, and different levels of experience and knowledge. Strategies to reduce corporate knowledge are generally not in place. A common across-agency recognition of the critical role of risk is the basis of the sector’s resilience. Risk systems frameworks need to be evidence-based rather than assumption-based based on allocation of resources. Further evidence is needed to support this approach. Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.

The risk management is increasingly looking at planning mechanisms to reduce risk and prevent disasters consequence of natural hazards. For example, hazard mapping (potentially) funding and funding projects are logical steps in improving the agility and accountability for understanding risk is needed, encompassing policymakers and practitioners, and with a goal of improving the agility and accountability for understanding risk. Over the next few years, there is a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experiences must be incorporated into the sector’s risk frameworks. Further evidence is needed to support this approach.

Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.

The risk management is increasingly looking at planning mechanisms to reduce risk and prevent disasters consequence of natural hazards. For example, hazard mapping (potentially) funding and funding projects are logical steps in improving the agility and accountability for understanding risk. Over the next few years, there is a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experiences must be incorporated into the sector’s risk frameworks. Further evidence is needed to support this approach.

Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.

The risk management is increasingly looking at planning mechanisms to reduce risk and prevent disasters consequence of natural hazards. For example, hazard mapping (potentially) funding and funding projects are logical steps in improving the agility and accountability for understanding risk. Over the next few years, there is a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experiences must be incorporated into the sector’s risk frameworks. Further evidence is needed to support this approach.

Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.

The risk management is increasingly looking at planning mechanisms to reduce risk and prevent disasters consequence of natural hazards. For example, hazard mapping (potentially) funding and funding projects are logical steps in improving the agility and accountability for understanding risk. Over the next few years, there is a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experiences must be incorporated into the sector’s risk frameworks. Further evidence is needed to support this approach.

Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.

The risk management is increasingly looking at planning mechanisms to reduce risk and prevent disasters consequence of natural hazards. For example, hazard mapping (potentially) funding and funding projects are logical steps in improving the agility and accountability for understanding risk. Over the next few years, there is a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experiences must be incorporated into the sector’s risk frameworks. Further evidence is needed to support this approach.

Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.

The risk management is increasingly looking at planning mechanisms to reduce risk and prevent disasters consequence of natural hazards. For example, hazard mapping (potentially) funding and funding projects are logical steps in improving the agility and accountability for understanding risk. Over the next few years, there is a growing awareness that policy must address the problems facing emergency management practitioners and that on-ground experiences must be incorporated into the sector’s risk frameworks. Further evidence is needed to support this approach.

Community education should include overcoming the ‘cry wolf’ mentality and building understanding that hazard warnings are critical risk frameworks, which must be always acted on even if previously the hazard had not eventuated or was less severe than predicted. This should be complemented by work to improve warning capability.

Australia is currently often funded through project grants rather than core funding. This does not create sustainable planning and implementation of hazard planning and response frameworks, mostly because funding is not available for such evaluations, so that the outcomes of decisions are poorly understood. Education needs to address these shortcomings, so that lessons learnt from previous events are incorporated into the planning and hazard information systems.
4.2 Recovery
Rebuilding after a disaster often involves clean-up and restoration of private and community assets, but climate change may force communities to consider a new normal incorporating increased risk of hazards. Where this is not acceptable, then relocation may become a necessary part of adaptation. Migration can be driven by a desire to find new opportunities and escape the increased risk of hazards. In these cases, the economic opportunities of staying are greater than the costs. A challenge will be to work with those that don't have the resources to change or to move. Repeated losses in a location may reduce individual or household ability to cope with the impacts.

Cost: Decisions around climate to lessen the impacts of future events often involve an assessment of costs – in particular, the investment in adaptation is justified in terms of the impacts. The understanding of costs, however, is often weak due to an absence of an events identifying and costing that can have a bigger impact on society (e.g. business bankruptcies or to decisions to relocate, planned development in floodplains necessitates backfilling of landf l. In their example, Australia’s Productivity Commission (2010) suggested that the cost-benefit of adaptation plans to accommodate risk (e.g. raise floor levels) might be higher than investing in prediction (e.g. forecasting). As the risks associated with adaptation increase in the future, it will be essential to articulate and understand the full consequences (e.g. tangible and intangible costs so that long-term and investment are well targeted correctly.

Policy implications
The points below provide clarity about what is required to shift the balance more completely from a focus on reactive emergency management to a focus on preparedness.

Land-use planning and building
- Maintain climate change adaptation and emergency risk management into land-use planning. To ensure construction demand trends do not create untenable risk, explicit regulation on the development of a governance body for land-use planning may be required.
- While COAG has acknowledged that disaster management should be incorporated into planning principles, no guidance is yet available on implementing this for many risk and government needs.
- Provide recurrent funding for education to ensure sustainable long-term change. Understanding what flood or cyclone can do should be a priority for Western Australia and Queensland. Many frost events lead to the freezing and has to be taught to school and secondary school through to land-use planners and engineers.
- Ensure community planning with local engagement and people (e.g. local people join)
- Utilise social media as both an intelligence-gathering opportunity and warning channel. Its important know who can’t see/hear a broadcast because of a disability, and to develop strategies to reach these individuals.

Resilience and vulnerability
In order to continue to develop resilience and reduce vulnerability, policy needs to:
- Engage a wide audience to develop a common understanding of what represents a resilient community. Processes of understanding the factors that create resilience, and more transparently to deal with much of the information available on this topic.
- Provide support for community development to build resilience and manage risks. For example, support for community development to ensure resilience and management processes.
- Expand the resilience approach to emergency management of the National Disaster Resilience Strategy into a broader range of sectors beyond emergency management.
- Ensure programs to support the least resilient are available, sufficient, funded, and sustainable.

Policy context – risk appetite
- Determine the political risk appetite, i.e. what risks are people prepared to accept to determine the extent of policy needs adapting to those hazards. What is the best? How can we achieve?
- Decision-making needs to take into account what is known, what the knowledge gaps are, and the uncertainties.

Approach
The policy guidance provided in this brief was developed at a workshop held in Melbourne. The workshop was attended by policy makers and managers from within Fire Commissioner Victorian, Tasfire, Dr. Simon Reid, NSW SES (Steve Opper). Australasian Fire and Emergency Services Authorities Council, Ambulance Victoria, Australian Emergency Management Institute, Paul Barnes (QUT), David King (JCU), Michael Howes (GU), John Handmer (RMIT) and NCCARF staff.

NCCARF’s research programs have delivered over 140 reports on climate change adaptation, many of which address the topics of the Policy Guidance Briefs. For more information, please see www.nccarf.edu.au/publications4

References

NCCARF is producing a portfolio of twelve Policy Guidance Briefs in 2012-13 on critical climate change adaptation topics. For a complete list of available Policy Guidance Briefs, please go to: www.nccarf.edu.au/policy-guidance-briefs

Key Points
- Emergency management needs to be re-targeted to suit both the risk from climate events - cyclones and storms, bushfires, extreme heat and flooding.
- These events cause great financial and emotional hardship for individual and communities, and can result in significant loss of life.

Emergency management and climate change adaptation

We depend on emergency management, (including prevention) to deal with most of the risk from climate events – cyclones and storms, bushfires, extreme heat and flooding.

1. Emergency management needs to be re-targeted to suit both the risk from climate events - cyclones and storms, bushfires, extreme heat and flooding.
2. These events cause great financial and emotional hardship for individual and communities, and can result in significant loss of life.
3. NCCARF is producing a portfolio of twelve Policy Guidance Briefs in 2012-13 on critical climate change adaptation topics. For a complete list of available Policy Guidance Briefs, please go to: www.nccarf.edu.au/policy-guidance-briefs
4. Key Points
   - Emergency management needs to be re-targeted to suit both the risk from climate events - cyclones and storms, bushfires, extreme heat and flooding.
   - These events cause great financial and emotional hardship for individual and communities, and can result in significant loss of life.
5. Policy Guidance Brief 10

National Climate Change Adaptation Research Facility
www.nccarf.edu.au

NCCARF Staff
10
Policy Guidance Brief 10

Policy implications

Policy context – risk appetite

Approach

References

Key Points
Article 4.2 Recovery

Refurbishing after a disaster often involves clean-up and restoration of private and community assets, but climate change may force communities to consider a new normal incorporating increased risk of hazards. Where this is not acceptable, then relocation may become a necessary part of adaptation. Migration can be driven by a desire to find new opportunities and to leave behind localities where economic opportunities of staying are greater than the risks. A challenge will be how to work with those that don’t have resources to change or those. Repeated relocates in a location may reduce individual or household ability to cope with the impacts.

Cost: Decisions around acute to lessen the impacts of future events often involve an assessment of costs – in particular, will the investment in adaptation be cost-effective in the future? The ‘cost-effective’ is a complex measure of an event’s identifying and costing the intangibles that can have a bigger impact on society (e.g. business bankruptcies or decisions to relocate, planned development of infrastructure, so-called ‘house of cards’), and to develop strategies to reach these individuals.

Policy implications

The points below provide clarity about what is required to shift the balance more completely from a focus on reactive emergency management to a focus on preparedness.

Land-use planning and building

• Mainstream climate change adaptation and emergency risk management into land-use planning. To ensure community decision-makers do not create unacceptable risk, explicit legislation on the development of a governance framework and land-use planning may be required.

Public education

• Actions within the emergency management sector: translating lessons and understanding consequences
• Bring experience of recovery and management of an incident forward into planning and preparedness.

• Essential parent education in elementary and high schools to provide all students information and understanding of effective recovery and management.

• Improve school evacuation plans.

Public education

• Develop and promote effective and tailored to the community and tailored modules of learning. Successful cyclone and flood education campaigns have presented resilience education with preparation knowledge, and this could be done for other hazards. Public education campaigns should be risk-based and focus on addressing the wider impacts of disaster encouragers people to participate because the hazard and hazards to their people (e.g. people on boats).

• Provide relevant funding for education to ensure lasting positive change. Understanding what flood or extreme weather events do should be taught in all Eastern Australian schools. All students should teach from their primary and secondary school through to land-use planning and engineers.

• Ensure community programs use education (e.g. people on boats).

• Utilise social media as both intelligence-gathering opportunity and warning channel. It is important to know who can’t hear a siren and a broadcast because of a disability, and to develop strategies to reach these individuals.

Resilience and vulnerability

In order to continue to develop resilience and reduce vulnerability, policy needs to:

• Engage a wide audience to develop a common understanding of what represents a resilient community. Processes of understanding the transformative nature of resilience, and more effective tools to develop and implement these policy needs to.

• Provide support and education, financial and technical and partner to communities to build resilience and manage risks for vulnerable communities.

• Support government agencies to enhance the role they play in building and developing the resilience.

• Expand the resilience approach to emergency management of the National Disaster Resilience Strategy: into a broader range of disaster beyond emergency management.

• Ensure programs to support the least resilient are available, sufficiently funded, and sustainable.

Policy context – risk appetite

• Determine the risk appetite (i.e., what risks are people prepared to accept) to determine the extent of policy needs in adapting to future hazards. What can we afford? What can we accept?

• Decision-making needs to take into account what is known, what the knowledge gaps are, and the uncertainties.

The policy guidance provided in this brief was developed at a workshop held in Melbourne. The workshop was attended by policy makers and managers from within Fire Commission Victoria, Tasmania, Red Cross, NSW SES (Steve Opper), Australian Fire and Emergency Services Authorities Council, Ambulance Victoria, Australian Emergency Management Institute, Paul Barnes (DFAT), David King (UCD), Michael Howes (EDA), John Hadamar (RMIT) and NCCARF staff.

NCCARF’s research programs have delivered over 140 reports on climate adaptation, many of which address the topics of the Policy Guidance Briefs. For more information, see www.nccarf.edu.au/publications4

References


National Climate Change Adaptation Research Facility, Gold Coast.


Policy Guidance Brief 10

NCCARF is producing a portfolio of twelve Policy Guidance Briefs in 2012-13 on critical climate change adaptation topics. For a complete list of available Policy Guidance Briefs, please go to: www.nccarf.edu.au/policy-guidance-briefs

Approach

Emergency management and climate change adaptation

We depend on emergency management (including prevention) to deal with much of the risk from climatic events - cyclones and storms, bushfires, extreme heat and flooding. These events cause great financial and emotional hardship for individual and families, and can result in significant loss of life.

Key Points

- Emergency management needs to be integrated to ensure that climate change adaptation is taken into account in other activities, such as rural development and coastal management. This will ensure that the costs and benefits of adaptation are considered.

- Long-term and sustained funding is needed to achieve necessary change in the balance of emergency management from response to prevention and preparation.

- Lessons learnt from events need to be incorporated in policy in a timely manner.

- Land-use planning and emergency management need to be better connected to incorporate risk management into planning.

- Community education is critical to improving resilience and social understanding of risk, and requires dedicated and adequate funding.