

Disaster Resilience:

Preparing, responding and adapting

An IRU network area of research strength
addressing one of the major challenges of our times

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The Asia Pacific region is one of the most disaster prone in the world. In comparison to other regions it experiences disaster at a rate disproportionate to its land mass. The region has both developed and developing economies, a rich mixture of cultures, and geography ranging from the driest continent on earth to small tropical island nations that barely rise above sea level.

Disasters in the region are diverse. In recent times these have included terrorist attacks such as the Bali bombings, devastating wildfires such as the **2009 Black Saturday Fires in Victoria** and volcanic eruptions such as the **2010 Mount Merapi eruption in Indonesia**. Most recently severe **flooding in Queensland and Victoria** and **Cyclone Yasi** in north Queensland have challenged our ability to respond and survive through these extraordinary impacts.

These events are challenging, they can traumatise individuals and communities and severely strain our emergency response services. Such events are even more challenging for fragile or weak states in our region, which is why Australia has been called upon to assist its neighbours in the Asia Pacific.

One major example of the high quality cross-disciplinary research of the IRU network is in relation to disaster resilience. **Across the IRU network our universities are focused on evaluating the effectiveness of current strategies and developing better disaster management approaches to ensure we are all well prepared for future events.**

In this snapshot we set out the major themes to our work:

- preparing for and reducing the potential physical damage
 - emergency response strategies
 - adapting to our changing world
- improving our responses when disasters do strike; and
- addressing the psychological impact of disasters on those in disaster areas and those whose job it is to respond to major disasters.

A handwritten signature in black ink that reads "Ian O'Connor".

Professor Ian O'Connor
Vice-Chancellor and Chair, IRU

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Preparing for and reducing the potential physical damage

Members of the IRU group of universities collaborate with international associations such as the World Health Organization (WHO) and the World Association for Disaster and Emergency Medicine (WADEM) to improve the management of disasters and preparation for them. These include **emergency response strategies**, with a focus on population health and rescue, as well as **adaptation strategies** including managing risk and improving the ability of coastal urban areas to withstand catastrophic weather events.

EMERGENCY RESPONSE STRATEGIES

The **Flinders University Research Centre for Disaster Resilience and Health (FURCDRH)** is a leader in disaster and emergency research in the Asia-Pacific region.

Bridging the lack of evidence in disaster health practice, with a focus on disaster preparedness and response

There is a lack of evidence worldwide to support disaster health practice and evaluation of the effectiveness of relief and recovery strategies. The Centre provides a coordinated research program developing up-to-date and current knowledge for health practice in disaster. It has close affiliations with the **World Association for Disaster and Emergency Medicine (WADEM)**, providing the Secretariat for the President, hosting the Nursing Section and supporting the Oceania Chapter. The Centre is also an **International Council of Nurses (ICN) Research and Development Centre for Disaster Nursing**. There are nine ICN Centres internationally, with the Flinders Centre the only one focussed on disaster preparedness and response. Current projects have brought significant results, such as identifying the factors impacting upon the willingness of the nursing workforce to respond to disasters, the impact of catastrophic fire rating days on health workforce and how the homeless and vulnerable cope with heatwaves.

Developing country specific emergency response strategies

The Flinders Centre in conjunction James Cook University's, **Centre for Disaster Health and Emergency Response (CDHRER)**, the **World Safety Organization (WSO)**, and the **World Health Organization (WHO)** has evaluated country specific health and emergency response strategies for regions hit by disaster, including the **Asian Tsunami** and **Christchurch Earthquakes**. Following **Cyclone Yasi** the **CDHRER** as a **WSO** collaborating centre, has been researching injury patterns as well as resilience and recovery of health infrastructure. Collaboration with the School of Education is evaluating disaster preparedness in educational institutions, with a particular emphasis on preparedness of, and for, students with disabilities.

Managing health and safety at large events

In addition, **FURCDRH** is part of the **WHO's Advisory Group for Mass Gathering Health and Pandemic Response**, assessing current knowledge and systematically reviewing evidence underpinning emergency and public health practice for major events such as the Olympic Games.

Evaluating Australia's Emergency Warning System

The Torrens Resilience Institute, of which **Flinders University** is a member, has evaluated the **Australian National Emergency Warning System** assessing its use and usefulness during recent events to identify how it can be improved and is developing a toolkit for the assessment of community resilience.



ADAPTING TO OUR CHANGING WORLD

Multidisciplinary research assisting decision makers in government manage risk

The **National Climate Change Adaptation Research Facility (NCCARF)** established in 2007 with commonwealth funds, at Griffith University Gold Coast, includes IRU consortium partners Murdoch University, James Cook University and the University of Newcastle. **NCCARF** is leading the research community in a national interdisciplinary effort to generate the information needed by decision-makers in Government and people in vulnerable communities to manage the risks of climate change impacts. Disaster resilience is addressed through the **National Adaptation Research Plans for Settlements and Infrastructure, and Emergency Management**.

Building our ability to respond to increasing demands

Griffith University is also part of the **South East Queensland Climate Adaptation Research Initiative (SEQCARI)**, along with the **CSIRO** and other Queensland Universities, developing adaptation strategies to assist decision-makers in government, industry and the community. The Griffith work is examining human settlements in multiple sectors including urban planning and management, emergency management, human health, coastal management and physical infrastructure. A major component is investigating the suitability of existing disaster management arrangements and the various sectors' capacity to handle increasing demands. **SEQARI** is the first comprehensive, regional study of climate change adaptation in Australia.

Urban researchers helping coastal communities adapt

Griffith University's **Climate Change Response Program** focuses on adapting Australia's towns and cities to the impact of changes in the climate. The Program's research targets the full array of physical, environmental, social, psychological economic, institutional and legal issues that affect our capacity to respond.

Impacts unevenly shared across individuals and communities

In particular populated coastal communities are vulnerable. **Griffith's Urban Research Program** is the largest dedicated urban research grouping in Australia. Its work is based in the understanding that climate change policy must address the fact that its impacts will be unevenly shared across individuals and communities.

Australian building codes keeping pace with environmental change

The **Griffith Centre for Coastal Management** is researching the sustainable management of urban environments in coastal areas, with researchers who are experts on the effects of extreme weather events on coastal communities, including infrastructure and waterways.

Since 1977 the **Cyclone Testing Station (CTS)** at James Cook University has been researching, testing and advising industry and governments on building practices which minimise loss and suffering as a result of severe winds. The **CTS** has caused major rewrites of Australian building codes. The evidence from Cyclone Iasi shows that houses built to these standards almost all survived – it was the older houses that were destroyed. The **CTS** collaborates in the **USA, Canada, India, Sri Lanka, Vietnam, Tonga and Fiji**. In conjunction with the **University of Florida**, following hurricanes in the USA and **Tropical Cyclone Yasi**, the Centre is targeting structural priority areas such as tiled roofing and garage doors. In conjunction with **Texas Tech University** the three institutions are working towards the development of improved wind speed monitors.

The **James Cook Centre for Disaster Studies** is a multidisciplinary research unit specialising in emergency management and meteorology, contributing to the understanding of hazard awareness, education and vulnerability. The Centre has been actively involved in the **Bushfire Cooperative Research Centre (CRC)** and members have researched impacts and recovery of terrorism and civil war, as well as the **Indian Ocean Tsunami**. The Centre has links with the **Natural Hazards Centre** at the **University of Colorado**.

From a different angle, Murdoch University researchers in the **CRC for Plant Biosecurity**, are working to reduce economic and social impact from incursions of harmful pests and diseases through new control, risk mitigation and recovery strategies. Academic staff in Veterinary Clinical Sciences, the School of Veterinary, Biomedical and Animal Sciences, work in parts of South East Asia, assessing the risks and developing strategies associated with the transmission of zoonotic diseases. Likewise James Cook University's tropical health researchers are working to spread mosquitoes which cannot bear the dengue fever virus in place of those which do.



Improving our responses when disasters do strike

We can prepare for disasters and work to avoid them or limit their impacts, but once an event happens we have to respond. The health workforce and emergency services - paid and volunteer - has a major role to play in responding to disasters and also to enable the community to tackle the impact of disaster. Research undertaken by IRU member universities means we understand better how to protect the wellbeing of the emergency response workforce and improve processes for specialist disaster response.

Post Graduate courses help spread this knowledge throughout the emergency and disaster workforce.

Enhancing volunteer programs for lower attrition and more volunteers

James Cook University's **School of Nursing, Midwifery and Nutrition**, is a WHO Collaborating Centre. It has developed mental health standards for disaster nursing collaborating with 35 centres worldwide.

Emergency service agencies in Australia are dependent on volunteers to provide their response. The **Bushfire CRC** funded, enhancing fire fighter volunteering project at La Trobe University addressed the problem of falling volunteer numbers across fire fighting agencies. The project has been very successful in assisting agencies to improve volunteer recruitment and support programs, resulting in fewer volunteers leaving as well as additional recruits.

Improving processes for specialist disaster response

The University of Newcastle's expertise in forensic odontology was very important in the aftermath of the **Victorian Bushfires** for identifying victims, bringing certainty for relatives and friends. The procedures and protocols used by odontologists were commended by other specialist disaster recovery groups. The work is reflected in the **Disaster Victim Identification Odontology Guide** for the **Australian Society of Forensic Odontology** being used in the **UK** and **NZ**.

Since 2010 the **Disaster Resilience and Health Research Centre** at Flinders University have undertaken numerous research projects into disaster response. Both Flinders and Charles Darwin Universities are working together to develop collaborative projects for response to disaster and humanitarian crisis. Both have close links with the **National Critical Care and Trauma Response Centre**.

Postgraduate courses disseminating the research outcomes

In the curriculum

The IRU universities run postgraduate courses to disseminate their research outcomes to those who work in emergency and disaster response roles. Some examples are:

- **The Masters in Humanitarian Response** – Charles Darwin University
- **The Masters of Disaster Preparedness and Reconstruction** – The University of Newcastle
- **Master of Public Health; Disaster Management stream:** Anton Breinl Centre, James Cook University
- **The Graduate Certificate in Policy Analysis** – Griffith University
- **International Disaster Nursing short course** – Flinders University

Addressing the psychological impact of disasters on those in disaster areas and those whose job it is to respond to major disasters

Of equal importance to the physical impact of disasters, are the potential long term psychological affects these events have on communities, individuals and children. Communicating risk and encouraging people to prepare both physically and mentally is crucial. Researchers across our network have investigated these issues with information on disaster preparation being used by various agencies.

Being prepared is likely to reduce trauma

Griffith University's **Behavioural Basis for Health Program**, continues to refine materials and information available to the community on preparing for, and coping with, natural disasters building on work initially developed at **James Cook University**. The materials have successfully been incorporated into community awareness materials by **Emergency Management Australia (EMA)**, the **Queensland Police Service (QPS)**, the **Australian Psychological Society (APS)**, **State Emergency Services (SES)** and the **Red Cross**. These agencies are using the findings and the materials from this research to assist people to prepare for, cope with and respond adaptively to recurrent disasters such as cyclones and bushfires.

Children are very alert to the mood of the adults around them. JCU has produced advice on how to demystify cyclones for children.

Communicating risk – how people can be encouraged to prepare

The **2009 Victorian Bushfires** highlighted the problems of communicating the potential for significant disasters and ensuring preparedness. La Trobe University research in conjunction with the **Bushfire CRC** is focussed on how to communicate risk, getting people to prepare and respond sensibly to expected events through studies of human behaviour under stress. This research is being used by emergency services agencies and by local governments affected by the **Black Saturday Bushfires** in their municipal public health and safety planning.

Understanding psychological adaptation over time

The Psychological Adaptation to Climate Change Program within the **Behavioural Basis of Health** and **Griffith University's Health Institute**, is documenting and monitoring the psychological adaptations to the threat of climate change and natural disasters over time through a two year national survey research platform.

Our Contact Details

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