Queensland cyclone 2009_3

Key Topics:

- exposure [2]
- framework [3]
- modelling [4]

Natural hazard exposure information modelling framework [5]

This project addressed the data and knowledge gaps and requirements for disaster resilience, resource assessment, emergency management, risk mitigation policy and planning. It identified the fundamental data requirements and modelling framework to derive exposure information to enable a better understanding of the vulnerability of people, buildings and infrastructure.

Project: detail Notabs

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Description

Exposure in disaster risk reduction describes what is at risk; including people, buildings, infrastructure, businesses, hazardous substances and primary industries. Exposure information comprises the details needed to support situational awareness at all levels of governance and in various phases of disaster management.

The severity of a disaster depends on how much impact it has on exposure. The scale of impact in turn depends on the decisions made as a part of disaster mitigation. Therefore, exposure information is a fundamental requirement for decision making in disaster mitigation.

This project addressed the data and knowledge gaps and requirements for disaster resilience, resource assessment, emergency management, risk mitigation policy and planning. It identified the fundamental data requirements and modelling framework to derive exposure information to enable a better understanding of the vulnerability of people, buildings and infrastructure.

The project is a significant step towards developing national exposure information capabilities in Australia. The framework will support impact assessments on people, economy, infrastructure and the environment, caused by natural hazards such as bushfires, floods, cyclones and earthquakes.

A number of nationally consistent frameworks were developed, which will help a diverse range of end-users. The frameworks include:

- Built environment exposure – considers the attributes of assets to assess their vulnerability to natural hazards. The building exposure considers usage, type, structural system, number of storeys, size, age, attachments, replacement value and contents value. The infrastructure sectors considered are transportation, energy, communication, urban water supply, waste management, hazardous substances and major industries. The primary industries considered are agriculture, fishing, forestry and mining sectors.
- Business and economics exposure – consists of business definitions, assets and activities which are deemed necessary for assessment of business continuity, disruption, resilience and recovery indicators in disaster management.

The study also reviewed current exposure information provision capabilities to identify key issues, needs, gaps, overlaps and deficiencies. An extensive literature review has been undertaken, along with stakeholder consultations to identify comprehensive list of information requirements. A survey with end-users identified significant gaps in the availability of existing data and the translation into meaningful information for evidence based disaster decision making. The built environment exposure information framework has been completed. To reduce the complexity, it categorises the information into three levels depending on the requirements of the user: policy and planning; response and recovery; research and analysis. The framework presents the fundamental characteristics of exposed assets to natural hazards as components, elements and attributes. The exposure components considered in the framework are buildings, people, businesses and infrastructure.

Read the final report here. [32]

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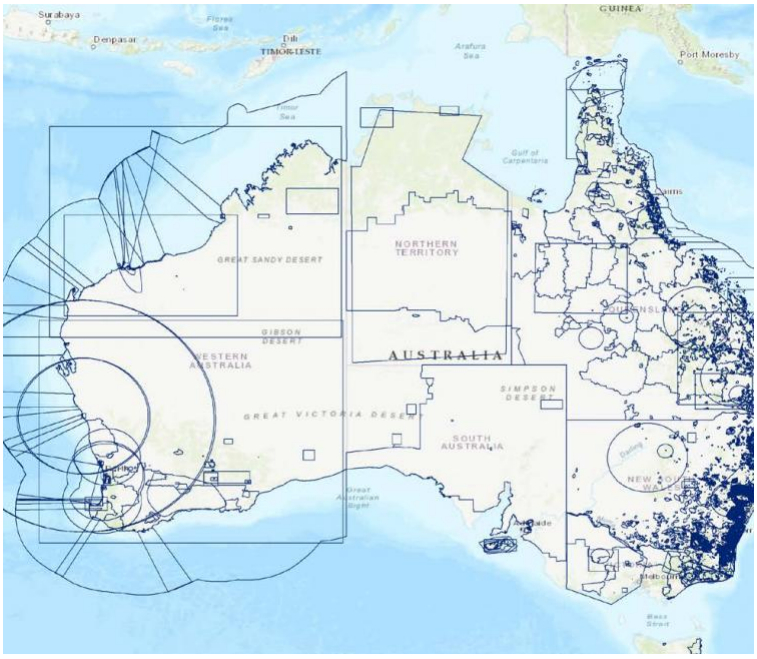

21 DEC 2020

Uncovering exposure to natural hazards
EXPOSURE, FRAMEWORK

[33]

30 JUN 2020

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EMERGENCY MANAGEMENT, PRESCRIBED BURNING

[34]

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COINCIDENT EVENTS, FORECASTING

[35]

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[36]

18 DEC 2018

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[37]

17 NOV 2017

New online - November 2017

[38]

14 SEP 2016

New online - September 2016

[39]

23 MAY 2016

New online - May 2016

[40]

17 MAY 2016

Videos highlight research benefits

COASTAL, INDIGENOUS COMMUNITIES

[41]

Publications

Year	Type	Citation
2021	Report	Charalambou, C. [42], Dunford, M. [15] & Bradley, J. [43] **Australian Exposure Information Platform enhancement project** [32]. (Bushfire and Natural Hazards CRC, 2021). Google Scholar [44] BibTeX [45
2018	Report	Nadimpalli, K. [6], Mohanty, I. [9], Vidyattama, Y. [14], Kalantari, M. [13] & Rajabifard, A. [11] **Australian natural hazards exposure information framework: guidelines for national consistency and comp**
2018	Report	Vidyattama, Y. [14] **Constructing a data reliability framework for the natural hazard exposure information system** [51]. (Bushfire and Natural Hazards CRC, 2018). Google Scholar [52] BibTeX [53] End
2017	Report	Nadimpalli, K. [6], Mohanty, I. [9], Kalantari, M. [13] & Rajabifard, A. [11] **Business exposure information framework** [55]. (Bushfire and Natural Hazards CRC, 2017). Google Scholar [56] BibTeX [57] EndN
2017	Report	Nadimpalli, K. [6] **Natural hazards exposure information framework: annual project report 2016-17** [59]. (Bushfire and Natural Hazards CRC, 2017). Google Scholar [60] BibTeX [61] EndNote XML [62]
2016	Report	Nadimpalli, K. [6] **Natural hazards exposure information framework: Annual project report 2015-2016** [63]. (Bushfire and Natural Hazards CRC, 2016). Google Scholar [64] BibTeX [65] EndNote XML [66
2016	Report	Nadimpalli, K. [6] & Mohanty, I. [9] **Built environment exposure information framework** [67]. (Bushfire and Natural Hazards CRC, 2016). Google Scholar [68] BibTeX [69] EndNote XML [70]
2015	Presentation	Nadimpalli, K. [6] **Natural hazard exposure information framework** [71]. (2015). Google Scholar [72] BibTeX [73] EndNote XML [74]
2015	Report	Nadimpalli, K. [6] **Natural hazard exposure information modelling framework: Annual project report 2014-2015** [75]. (Bushfire and Natural Hazards CRC, 2015). Google Scholar [76] BibTeX [77] EndNot
2015	Report	Nadimpalli, K. [6] **Natural Hazards Exposure Information Modelling Framework Annual Report 2014** [79]. (2015). Google Scholar [80] BibTeX [81] EndNote XML [82]

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05 Dec 2014	Natural hazard exposure modelling framework [89]	519.75 KB	[90] (519.75 KB) framework [3], modell
04 May 2016	Hardening buildings and infrastructure - cluster overview [91]	0 bytes	[92] (0 bytes) [93], infrastructure [94],
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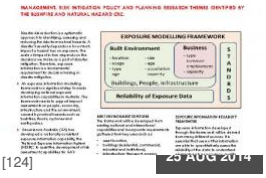
Posters

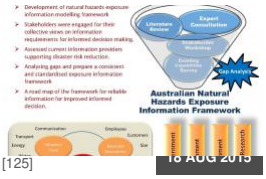


[124] 25 AUG 2014

Natural hazards exposure information modelling framework

[124]

Exposure is referred to as the elements at risk within a given area that have been, or could be, subject to...



[125] 18 AUG 2015

What is in the Disaster Zone?

[125]

EXPOSURE [2], FRAMEWORK [3]

What information is needed for disaster governance? How to achieve national consistency in information?

[126] 18 AUG 2015

Business and Economic Exposure Information Framework

[126]

EXPOSURE [2], FRAMEWORK [3]

Ready access to information improves business resilience. The same type of information can be used to...

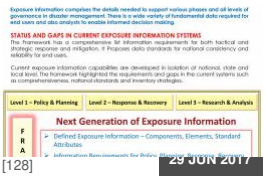
[127] 12 AUG 2016

Natural hazards exposure information framework – reliability index for situational awareness

[127]

INFRASTRUCTURE [94], RESILIENCE [105]

This project will identify the data requirements and modelling framework to derive exposure information to...



[128] 29 JUN 2017

Natural Hazards Exposure Information Framework - a step towards national consistency

[128]

EXPOSURE [2], FRAMEWORK [3]

Exposure information comprises the details needed to support various phases and all levels of governance in...

Linked Projects

Mapping and understanding bushfire and natural hazard vulnerability and risks at the institutional scale [129]

ECONOMICS AND STRATEGIC DECISIONS [130]

Prof Roger Jones
Victoria University [131]

[131]

Economics of natural hazards [132]

ECONOMICS AND STRATEGIC DECISIONS [130]

Dr Veronique Florec
University of Western Australia [133]

[133]

Improved decision support for natural hazard risk reduction [134]

ECONOMICS AND STRATEGIC DECISIONS [130]

Prof Holger Maier
University of Adelaide [135]

[135]

Optimising post-disaster recovery interventions in Australia [136]

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Natural hazard exposure information modelling framework [5]

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Cost-effective mitigation strategy for building related earthquake risk [140]

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University of Adelaide [135]

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SCENARIOS AND LOSS ANALYSIS [142]

Dr Matthew Mason
University of Queensland [143]

[143]

An analysis of building losses and human fatalities from natural disasters [144]

SCENARIOS AND LOSS ANALYSIS [142]

Dr Katharine Haynes
University of Wollongong [145]

[145]

The Australian Natural Disaster Resilience Index: A system for assessing the resilience of Australian communities to natural hazards [146]

UNDERSTANDING AND ENHANCING RESILIENCE [147]

Dr Melissa Parsons
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