

# Providing emergency supplies to flood prone areas

## Background

Much of eastern Australia, including most of Queensland, was affected by serious floods in January and February 2009. A major impact of flooding can be the loss of essential services and fresh food supplies on which communities depend. Lack of fresh food can result from interruption to electricity supplies and damage to warehouses and stores, or from damage to transport links such as state and national highways.

Following the 2009 floods, there were very limited supplies of fresh meat and vegetables in Cairns. While some dry goods could be shipped to Cairns by sea and air, the flooding of the Bruce Highway halted truck shipments of all types while a shortage of refrigerated containers precluded shipping of fresh and frozen food by sea. Major retail food outlets in central Cairns thus had very limited or no supplies of fresh meat and vegetables. Electrical services to businesses and homes were disrupted.

This experience raises questions about priorities in the provision of emergency services to communities that have been isolated by flooding, especially in the light of the potential for changed frequency and/or intensity of cyclonic events in northern Australia due to climate change. Cairns was identified as a potential case study for a cost-benefit analysis of the use of private sector logistics, possibly with some government subsidy, to meet this challenge.

## Public and private sector emergency services in Cairns

### OBJECTIVES

This project aimed to:

- » identify and measure the preferences of Cairns households for the provision of different combinations and qualities of post-cyclone emergency services; and
- » estimate the economic costs and benefits of faster reconnection of utilities (electricity, water and sewerage) and re-supply of fresh food.

### BENEFITS OF POST-CYCLONE SERVICE PROVISION

The social benefit of better service availability after a disaster can be estimated from individual households' willingness to pay for improvements.

Because most emergency services are not available in commercial markets, this information needs to be

obtained through stated preference surveys. Using discrete choice experiment methods, a random sample of Cairns residents was surveyed to estimate the benefits of improved delivery of emergency services after a cyclone had occurred.

The discrete choice experiment survey approach allows interviewees to choose from alternative 'bundles' of emergency services that include a cost component.

Based on the advice of focus groups of Cairns households, the services comprising the 'bundles' were:

- » accommodation of pets in shelters;
- » longer duration of police patrols after a cyclone;
- » faster reconnection of utilities like electricity, water and sewerage; and
- » faster re-supply of fresh food.



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**Cairns households were on average prepared to pay about \$124 per annum for faster resupply of fresh food, and \$357 per annum for faster reconnection of utilities, but only about \$11 per annum for each additional day of police patrols. However, on average, households expressed an aversion to paying for the for accommodation of pets in a shelter after a cyclone.**

## BENEFITS OF POST-CYCLONE SERVICE PROVISION (continued...)

From their choices, estimates were made of residents' average willingness to pay for different levels of these post-emergency services.

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## EVALUATING THE COSTS

Determination of costs for the analysed emergency services proved to be more challenging because it involved commercially sensitive information. Nevertheless, estimates were developed using available information.

Faster re-supply of fresh food could be achieved by the very expensive options of 'flood-proofing' the Bruce Highway or railway connections, chartering Australian coastal vessels or issuing Single Voyage Permits to foreign shipping, or prepositioning food in specially constructed warehouses. The most feasible and least expensive option would probably be to charter aircraft.

Faster reconnection of electricity by the commercial supplier was estimated to cost less than providing all households with an emergency generator.

## COST-BENEFIT ANALYSIS

Comparison of the costs and benefits of post cyclone emergency services, assuming a return period of 5 years for a Category 5 cyclone, indicated overall net economic (i.e. social) benefits. The sole exception was for the provision of post-cyclone shelter for pets, where net benefits were negative.

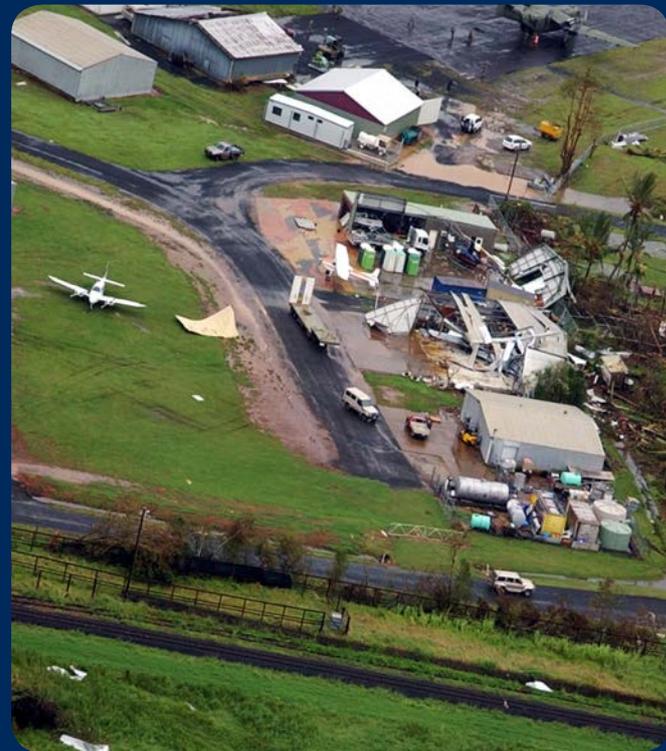


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## The role of government

In broad terms, the results of the research suggest that the faster re-supply of fresh food and the faster reconnection of utilities are two aspects of emergency services that are particularly valued by the residents of Cairns. It is likely that communities facing similar circumstances and with similar socio-economic characteristics would mirror these preferences.

Government agencies can be used to restore basic services more quickly following a flood. However, this benefit may reduce government funds available for other publicly provided goods and services such as health services or education. Governments need to ensure that the social benefits of a post-flood recovery investment are greater than the corresponding social costs.

This document summarises key findings from the NCCARF report *Benefits and costs of provision of post-cyclone emergency services in Cairns*. The project was led by Leo Dobes, The Australian National University. The full report is available at: [www.nccarf.edu.au/publications/benefits-and-costs-postcyclone-emergency-services](http://www.nccarf.edu.au/publications/benefits-and-costs-postcyclone-emergency-services)

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