PRE-DISASTER MULTI-HAZARD DAMAGE AND ECONOMIC LOSS ESTIMATION MODEL

Project Overview

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Date: 18 March, 2014

An Australian Government Initiative

SCOPE OF THE PRESENTATION

1) Project Implementation Team

2) Problem Statement

3) Objectives

4) Expected Outcomes

THE TEAM

❑ **University of Melbourne**

- Professor Abbas Rajabifard (Project Leader)
- Associate Professor Nelson Lam
- Dr. Mohsen Kalantari

❑ **Deakin University**

- Associate Professor Mehmet Ulubasoglu (Co-Lead Researcher)
- Dr. Prasad Bhattacharya

❑ **Asian Disaster Preparedness Centre (ADPC)**

- Dr. Peeranan Towashiraporn

* The University of Melbourne and Deakin University are now recruiting <u>two Post-docs</u> to facilitate the implementation of this project.

END-USERS

❑ Geoscience Australia

❑ Risk Assessment, Measurement and Mitigation

Subcommittee- RAMMS

❑ Association of Public-Safety Communications Officials

(APCO) Australia

❑ Attorney-General's Department

❑ Country Fire Authority (in-progress) &

❑ Metropolitan Fire Brigade- Victoria (in-progress).

PROBLEM STATEMENT

❑ In Australia, natural disasters are estimated to cost an average of <u>AU$1.14 billion</u> annually (BTE, 2001).

❑ Some illustrative <u>natural disasters</u> include– Cyclones Mahina (1899) and Tracy (1974), floods in New South Wales (1955) and South-east Queensland (1974), earthquake in Newcastle (1989), and landslide in Thredbo (1997).

❑ Among all natural disasters, <u>bushfires</u> are more intrinsic to the Australian environment, significantly re-shaping the ecosystems, landscapes and biological diversity. For instance, Black Saturday (2009), Ash Wednesday (1983), Black Tuesday (1967), and Black Friday (1939) are some of the worst bushfires in Australian history.

PROBLEM STATEMENT

- ❑ Over a series of catastrophic events, the emergency response system of Australia has proven to be very effective at saving human lives,
- ❑ but the mitigation and preparedness phases in Disaster Risk Reduction (DRR) appears to be less successful in minimising the adverse economic impacts of natural disasters.

- ❑ One of the significant problems observed in this connection is the lack of efforts to estimate the full economic impact of natural hazards, taking into account all the affected sections of the economy.
- ❑ This effort should consider not only the primary effects of the natural disasters, but also its secondary effects due to losses propagated through the economy due to inter-sectoral linkages.

PROBLEM STATEMENT

❑ The research consortium formed for this project identifies two major requirements that seek immediate attention to bridge the related gap –

- First, a disaster risk assessment system that provides quantifiable potential *damages* as a result of different types of disasters for regions of Australia, and
- Second, a method that will estimate the indirect economic *losses*.

OBJECTIVES

❑ To build a spatially-enabled scenario-based pre-disaster multi-hazard damage and economic loss estimation model to support decision makers in reducing disaster risks.

EXPECTED OUTCOMES

1) **National Level:** A research paper that develops a dataset to enable the analysis of natural disasters like bushfires, floods, storms and earthquakes and sector-specific economic growth in Australia, which is to be submitted to the premier Australian economics journal, 'The Economic Record'.

2) **State Level:** A detailed quantitative investigation aiming to deliver:

   a) A spatial dataset for the visualisation of data including hazard perception and risk maps for bushfires, floods, and earthquakes in order to obtain a multi-hazard risk map of the state of Victoria;

   b) A macroeconomic model integrating different scenarios of disaster risks to be used in estimating the potential economic losses;

   c) An optimal economic policy package to reduce disaster risks;

   d) A catastrophic risk financing strategy to facilitate the execution of the optimal economic policy package

THANK YOU