



Translating Developing Science into Public Awareness and Social Organisation in W. Sumatra.

R. Shannon, S. McDowell, and J McCloskey

University of Ulster, School of Environmental Sciences, Coleraine, Ireland (j.mccloskey@ulster.ac.uk)

Social idiosyncrasies confounding cross-cultural scientific interventions on an intra-regional and international scale continue to blight the positive benefits robust science offers to vulnerable communities inhabiting areas prone to natural hazards. The sustained malice inflicted by these phenomena upon socioeconomic systems epitomises the perilous task facing mitigation bodies attempting to communicate scientific forecasts and interweave technical knowledge into social policy internationally. This quandary continues to confront disaster officials and scientists in Sumatra. Palaeoseismological studies, coupled with a developing understanding of stress transference between earthquakes, reveal that the Mentawai segment of the Sumatran forearc is the most plausible candidate for future rupture. Simulations of tsunami propagation and inundation illustrate that the coastal regions of western Sumatran, inhabited by approximately 2 million people, lie in immediate mortal threat.

Many Sumatrans live with stark memories of the 1600 km megathrust rupture in December 2004, which spawned one of the worst global natural atrocities of recent time. The earthquake accelerated collaboration between seismologists, geophysicists and geologists and has produced unrivalled advances in understanding fault locations, geometries and potential rupture characteristics of the Sumatran forearc. Nowhere else on earth are scientists more aware of the impending threat of another magnitude 8+ megathrust earthquake. However with the twenty-first century being tainted by natural disasters which have typified the blatantly ambiguous linkages which exist between science and society, assessing to what extent this notion is exemplified in the Sumatran context is imperative.

Here we begin to present the results from a social survey, conducted in the Sumatran cities of Padang and Bengkulu between May and September 2008. The campaign sought to dissect the broader societal complexities and moral values harboured by these communities towards earthquake and tsunami threat. A bottom-up approach was incorporated whereby qualitative and quantitative techniques were employed to assess a holistic array of factors believed to influence risk perception and intended behavioural change. Communities representing the “last mile” of hazard mitigation were targeted. Closed ended questionnaires and semi-structured interviews were used to acquire data from approximately 200 respondents in Padang and 80 in Bengkulu. Additionally 90 closed-ended questionnaires were distributed amongst 9th grade Senior High students in 3 schools and interviews conducted with teachers and class-representatives in each city. Engagement with groups and organisations responsible for utilising and disseminating scientific information effectively also comprised an important component of the investigation. Subsequently semi-structured interviews were conducted with government representatives, scientists and community leaders in both cities. These interviews were devised to collect data pertaining to the utility of science in hazard preparedness and mitigation and furthermore establish how risk communication decisions, objectives, mediums and implementation strategies have developed.

Preliminary findings indicate that scientific knowledge pertaining to earthquake and tsunami threat amongst respondents in both cities is good. However the relationship between this knowledge and desired risk perception levels and intended emergency risk reducing behaviour is not linear. Non-scientific sources often prevail and can significantly influence attitudes to risk, having a detrimental impact upon respondent's accurate interpretation of risk. Subsequently actions become misguided, with vulnerability to hazards increasing and valuable resources wasted. Predictions made regarding earthquake and tsunami threat are frequently hailed, sometimes spuriously, as deriving from the scientific arena. The failure of these predictions amplifies distrust towards the scientific community which is a direct result of the ambiguous definition harboured towards science and scientists by citizens.

Hazards knowledge and more generally knowledge of nature in Sumatra has not been traditionally constituted by science. Thus cross-cultural interventions of science derived from a western context cannot be expected to be absorbed rationally without significant appreciation of the social and cultural idiosyncrasies embedded within the region.