

Better public education and new forecasting tools are the keys to cutting deaths from tsunamis, writes Lord Hunt

# Wake-up calls

The devastating tsunami that struck the Indonesian islands of Mentawai may have caused about 450 deaths, with hundreds more still missing, and compounds the disaster caused in the country by the eruption of Mount Merapi in Java on Tuesday. Following a magnitude 7.7 earthquake on Monday night, the Mentawai Islands were engulfed with estimated three-metre waves that affected thousands of households.

What has shocked many about this latest disaster is the fact that, more than five years after the cataclysmic Indian Ocean tsunami of 2004, when at least 187,000 people died (with 43,000 still missing), there were no greater preparations against last week's tsunami devastation. This is especially puzzling to some as, since 2004, our understanding of the risks of tsunamis and how to reduce their impact has advanced considerably through warnings, forecasting and better tsunami-resistant construction and design. For instance, in the past five years there has

Communities and infrastructure need to be resilient against the most likely kinds of natural hazards

been significant progress in most aspects of warnings around the world, and the Indian Ocean region now has a system in place.

Much of the explanation for this apparent paradox stems from the fact that, even with a warning system in place, some communities close to epicentres may still not receive the warnings in time. This was exactly the issue with last week's disaster.

With Mentawai no more than 100 kilometres from Monday's earthquake epicentre, the tsunami waves reached the shores of the islands within 15-30 minutes; even if a tsunami alert had been issued by a warning system, it would have arrived too late for many people to have time to escape. This underlines the fact that, in almost all major earthquake-generated tsunamis (the exceptions occur when the source area is more or less uninhabited), at least 80 per cent of the casualties occur in the zone of felt seismic shaking from the source, and within the first hour.

So does this mean that there is nothing

we can do to assist communities near earthquake epicentres from tsunamis? The short answer is "no" in at least two main respects.

First, whether there are warnings or not, communities and infrastructure need to be resilient against the most likely kinds of natural hazards. Since 2004, for instance, many people near the Indian Ocean coastline sleep at higher elevations to avoid surprise tsunamis at night.

Research is now leading to more ambitious solutions for building resilient infrastructure. At several research institutes, including Delft University of Technology and University College London, laboratory wave-makers have reproduced tsunami events. But mathematical models and computations are now needed to turn the experiments into reliable estimates for engineers and for community planners to build tsunami-proof structures and plan more resilient communities. With global warming, these calculations also take account of the increasing danger as the sea level rises – which is happening three times faster in tropical seas where tsunami risk is greatest.

Resilience also involves understanding how hazards affect local situations. Education for Self-Warning and Voluntary Evacuation (Eswave) is the best and most cost-effective method, whether in developed countries (as with earthquake drills in California) or in developing countries (as with tsunami-earthquake response procedures that saved many lives in Chile this year). Eswave helps explain to local communities the diversity of tsunami waves (and the appropriate responses), such as:

- High surge waves, as occurred in Mentawai, which increase in height as they travel at speeds of about 10 metres a second or more up the beach and several kilometres inland, drowning and destroying villages in their path.

- Depression waves, as happened in Thailand and Sri Lanka in 2004 and in Samoa last year, when the water withdraws – lulling people into relaxing or even approaching the beach – before returning as large, surging waves.

The wider use of Eswave could have almost certainly saved lives in Mentawai by teaching local people to find higher ground or move further inland when they felt the initial seismic shaking or perhaps seen initial sea level changes. Survivor accounts indicate that they felt the earthquake, but that many did not react until the early tsunami waves were breaking on the shorelines. This contrasts strikingly with the behaviour of many communities in the southwestern Pacific, who know that



earthquake shaking often precedes a tsunami: mortality rates from tsunamis in such communities are at least 90 per cent lower than in adjacent communities of immigrants who are not tsunami-aware.

Forecasting is the second main way to mitigate tsunami risks. Perhaps the most promising research for improving our predictive skills is holistic geophysical forecasting.

This makes use of the fact that tsunami-related disturbances are so large and so powerful that they disturb the solid earth, the oceans and the atmosphere. These disturbances do not lead just to mechanical forces and releases of heat, as in storms, but they also affect electrical, magnetic and molecular processes, especially higher up in the atmosphere.

Modern instruments have become so sensitive that they can measure magnetic fields one millionth of the strength of the

earth's magnetic field; they can detect tremors in the earth's rigid outer layer long before large earthquakes and tsunamis actually occur. Research at Moscow's Geoelectromagnetic Research Centre confirms that the motions in tsunami waves can be detected over many hundreds of kilometres from distant measurements of weak, slowly changing magnetic fields.

This new frontier of prediction is path-breaking and already achieving exciting results. However, true success will only be achieved when human lives are routinely saved by applying both this and other tsunami-related research in practice.

**Lord Hunt is a visiting professor at Delft University and emeritus professor at University College London, and former director-general of the UK Meteorological Office**

Alice Wu

alice@thepros.com.hk



## Buying the hype

Could someone please certify us as "property obsessed"? There would be nothing wrong with that, because everybody else in the world seems to be as obsessed as we are. In fact, the story – of virtually-no-interest loans, moving into a dream home and the fact that everyone else seems to be buying – is an old one, possibly among the longest-running acts on the global stage.

This is the stuff that popped the American property bubble. By the time we reach Act 2 – "Repossessions and Foreclosures" – we find people forced out of their homes and into bankruptcy, working people losing their jobs, governments printing money and resorting to "blame it all on the Chinese". The narrative is compelling, but here we are, still talking about buying. Never mind that globalisation, financial markets and easy lending help to push up prices. Never mind the horrors of past property busts. Everyone wants a piece of that home-ownership action.

The government is beginning to sound like a broken record. Financial Secretary John Tsang Chun-wah repeatedly cites the risks of buying yet inadvertently fuels the price rise with interest rates so low that the only way to go is up. We will hear none of it. Negative equity? What's that? Actually, don't ask: we don't want to know. It can sound silly when people talk about climbing the social ladder, because there no longer seems to be a ladder. There's only one step: home ownership.

No one seems to know when our social status system became so simple, but I suspect it happened during our hyper-property days of the 1990s. Those who were around with enough money to buy before the property boom are the ultimate social climbers – the winners who made millions from the shoe-box geese that laid the golden eggs. They are the heroes we all should aspire to be.

Those who joined the bandwagon later may take comfort – while they slave away for the rest of their lives paying for their purchase – from their sense of smugness. That's because they are still above the lowly renters. Because if you rent, you suck!

This tale has consumed us like the plague, swallowing our headlines, identity, social consciousness and culture; and it is taking us, and all our money, right into the hands of property developers.

For all the talk about the apparent "evilness" of our property tycoons, we are still buying into it – and happily. Look at politicians' remarks and media stories: nothing seems unrelated to property. Even the private lives of property developers – most recently, the story of one becoming the grandfather of three surrogate grandsons – are front-page material.

Nothing else matters. Owning property is even a prerequisite for marriage, or so we have been told by a love-stricken young man whose girlfriend allegedly laid down the law of "no flat, no love".

This is serious stuff; the future of our social fabric is at stake. A future with no marriages and possibly no babies? The government must come up with an ingenious plan to sell us affordable flats that will only appreciate in value – without driving property already purchased into negative equity. Otherwise, the Tsang administration will go down in history as the one responsible for Hongkongers' self-extinction.

Or is this just the biggest PR stunt of all time? I say this equation – linking dream homes with dreamy marriages and living happily ever after – blows away the PR textbook case of selling cigarettes to women as "torches of freedom" to save the tobacco industry. Every bit of attention we pay to this tall tale, with its melodrama and exaggerated emotions, helps fuel the property market. Yet friends who are looking to buy tell me homes are being snatched up faster than designer handbags.

I'm still waiting for Act 3 – when we all wake up to the fact that we are not defined by home ownership. And further, that this obsession (which includes calling property developers names) not only makes suckers out of us, but makes the "evil empire" that much richer.

**Alice Wu is a political consultant and a former associate director of the Asia Pacific Media Network at UCLA**

## Voices: Manila tragedy

# Holding up a mirror to a broken country

Frank Ching

Two months ago, all of Hong Kong was caught up in a frenzy of anger, frustration and sadness stemming from the needless deaths of eight tourists and the wounding of seven others at the hands of a disgruntled former police officer in Manila who wanted his job back.

We now know from the report of the fact-finding committee appointed by Philippine President Benigno Aquino that Rolando Mendoza felt he was a victim of injustice and oppression. He was angry and frustrated that the Ombudsman's office for nine months ignored his repeated motions for reconsideration of his dismissal, violating its own rules of procedure.

The report makes it clear that there is plenty of blame to go around. Serious mistakes were made by the mayor, the vice-mayor, top police officers, the negotiator, the assault team leader – virtually all those involved in handling, or mishandling, the hostage crisis.

The entire report of the committee, headed by Justice Secretary Leila de Lima, has been released and makes fascinating, sometimes poignant, reading. It makes no attempt to shift the blame. Looking unblinkingly at the whole sequence of events from Mendoza's dismissal, it finds Philippine society itself was culpable; the incident shows the nation in microcosm.

Indeed, Mendoza himself seems to be Everyman: "A man with a perceived injustice and oppression done against him, so common in Philippine society," it says,

"cornered and forced to a murderous and insane mission, the incompetence and insubordination of a police commander, the aggravating vigilantism of a politician, the disregard for the proper use of a crisis system by the crisis responders, the reckless irresponsibility of media people".

This is a description of a broken society. And yet, as the committee says: "These are our own ghosts that we should now face squarely if we are not to repeat August 23, 2010.

Looking at the whole sequence of events, the report finds that Philippine society itself was culpable

"This is our society, this is our culture, these are Filipinos at their worst," the report cries out. "At some point in time, an oppressed Filipino crying out for justice may again snap and seize [people], in exchange for justice without him having to pay any amount... but at the cost of human lives.

"For in truth, justice has become a commodity in this country, with no less than heartless bureaucrats in charge of its dispensation on the condition that they are paid to give what is already owed to a man, even to the shameless extent of asking it from a lowly policeman."

The sympathy for Mendoza is manifest. "This is our society," the report says. "It drives otherwise

ordinary and simple men to turn into murdering monsters at a snap. Because they feel oppressed and need justice but are asked for money.

"They ask for redemption but are faced only with extortion. Officials without shame, policemen without competence, politicians without care, reporters without conscience, a nation without luck. Mendoza was only the instrument in the murder of eight innocent human beings."

The report concluded with words of pure poetry: "In this investigation, this committee looked into the hostage-taking incident and ended up looking into the nation's soul, and find that we are all equally guilty of pulling the trigger of the gunman. This is our country seen through a mirror, and that mirror was Rizal Park, August 23, 2010."

Aquino said his administration would strengthen its ability to respond to future crises. Judging by the report, he will need not just to overhaul the country's security forces, but to transform its society as well.

Like Hong Kong, the Philippines has undergone a catharsis. Let us hope that both societies emerge the better for it.

**Frank Ching is a Hong Kong-based writer and commentator. frank.ching@scmp.com**

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## Voices: Poverty

# Passive charity a poor choice for business

James Chen

Hong Kong's social sector needs to be fundamentally revitalised. To do so, we need to embrace a much richer definition of social engagement itself, and begin to ease the traditional opposition between business and charity. While the recently proposed Community Care Fund has been portrayed as a public-private partnership, the fund's request for one-off donations, quite conversely, hardens the divide between private enterprise and public purpose. As such, it represents an increasingly outdated model of philanthropy, and moreover misses the core problem faced by Hong Kong's social sector.

The chief executive must ask local business leaders to give – and to give more than just money. Merely asking for signed cheques fails to engage the rich talents and celebrated resourcefulness of our local business leaders, and does not enlist the broader range of resources business leaders have at their disposal. Hong Kong's business leaders should be encouraged to offer more than financial support – namely, to make social investments: leveraging time, ideas, expertise, social networks and years of business acumen towards building a more equitable and inclusive economy.

Mechanisms to facilitate a more active public-private partnership are being launched elsewhere in the world. Consider, for example, the novel idea of the Social Impact Bond, recently launched in Britain. It involves private investors pooling money in a bond that helps fund social organisations trying to reduce rates of criminal offenders returning to prison. If the programmes

succeed, investors in the bond receive their money back and even receive a small profit, financed by a fraction of the funds the government saves due to the programme's success. This represents a potential win for business, non-profit social services and the public sector.

The Social Impact Bond and the Community Care Fund represent very different approaches towards a similar social goal: active investment vs passive charity. More than money, Hong Kong's social sector is most in need of ways to spark and support bold new ideas, and to encourage our most talented policymakers and social innovators to pursue them vigorously. These innovators and social investors will increasingly lead the social sector, and it is imperative that a Community Care Fund develop programmes to identify and nurture promising talent and scalable, effective projects.

Ahead stands the opportunity to forge a new model of how business, community and government can work together towards making a sustainable social impact. Hong Kong's compact size and enormous wealth offer a real chance for us to lead the new generation of socially engaged businesses and non-profits. Poverty is too often overlooked in our city, so I applaud the sentiment behind the Community Care Fund. The future challenges we face, however, call for much more action, and this city's most vulnerable residents count on us to get it right.

**James Chen is chairman of the Chen Yet-Sen Family Foundation and founder of Bring Me A Book Hong Kong, co-sponsors of the Feng Zikai Chinese Children's Picture Book Award**

## Voices: Environment

# Guard the biodiversity that sustains us all

Stephen Hopper

In this, the UN's International Year of Biological Diversity, the environmental challenges we face are severe and increasing, and the need for action has never been more urgent.

Our lives, and those of all other creatures on this planet, are both part of and dependent on biodiversity. Plant and fungal diversity lies at the very foundation of biodiversity, and on them all other life depends. And yet, despite our dependence on this incredible natural heritage for our very lives and well-being – and those of future generations – we are squandering it at an unprecedented rate. Species extinctions are occurring at a rate far greater than the natural cycle, owing largely to habitat destruction caused by human activities such as deforestation and land clearance. Evidence suggests that climate change will accelerate this loss.

But there is hope amid the gloom. In fact, there is no technical reason why a species should go extinct, and great achievements in protecting biodiversity are being made. For example, scientists and conservationists around the world are collaborating on projects such as the Millennium Seed Bank partnership, founded and co-ordinated by the Royal Botanic Gardens, Kew. This partnership of more than 100 institutions in over 50 countries has already conserved 10 per cent of the world's wild plant species, and is working towards conserving 25 per cent, focusing on those that are rare, endangered and useful.

What is needed now is the political will and financial resources to underpin these efforts. At the

national level, it is essential that biodiversity conservation is "mainstreamed" – made an integral part of government policy and sustainable management practices worldwide. Poverty alleviation, central to the UN Millennium Development Goals, is largely measured in the growth of gross domestic product, but must include sustainable management of the natural capital on which economic health depends.

Effective conservation programmes are based on sound scientific knowledge. Kew's leading work in understanding and conserving plants around the world is hence a key pillar in the fight against biodiversity loss.

A deep understanding of plant science is essential in planning and executing conservation projects. Kew's recent work with various other organisations has revealed for the first time that one in five of the world's plant species is threatened with extinction. As a result, we now have a baseline from which to measure progress in plant conservation around the world.

Biodiversity is essential to our health, wealth and well-being, and we now have the ability to halt its destruction and turn the tide. It is simply a question of priorities.

Committing the political will, and a small fraction of the world's financial resources, to biodiversity conservation – and the scientific research that underpins it – would bring indispensable long-term benefits, including a healthy planet for our children. The time to start is now.

**Stephen Hopper is director of the Royal Botanic Gardens, Kew. Copyright: Project Syndicate**