

Civil Defence in Peru

A Case Study in Participative Responsibility

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This paper is based on research conducted as an observer at the National Institute for Civil Defence (INDECI), Lima, Peru in 2014

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Summary

"Understanding the public is critical to effective communication. It is usually difficult to change pre-existing beliefs unless those beliefs are explicitly addressed. And it is nearly impossible to design successful messages that bridge the gap between the expert and the public without knowing what the public thinks".

(*WHO Outbreak Communication Guidelines*, 2005, p1)

Disaster resilience planning is now an ongoing focus for Emergency Management (EM) planners worldwide. What individuals in the general community experience, perceive and do in an emergency event, and the level of their adaptive capacity, play a large part in management outcomes. Human behaviour is influenced by a broad range of subjective, intangible or emotional factors such as instinct, affiliation, traditions, customs, heritage, loyalty, denial, optimism, avoidance, indifference, resignation or fatalism. So to interrogate methodologies of community engagement, a range of subjective human behavioural factors can be considered as important as objective situational analyses of hazard, risk, threat and vulnerability.

In Peru, the National Policy on Disaster Risk Management clearly defines the issue as a social process (*Política Nacional del Gestión del Riesgo de Desastres*, CENEPRED, 2013, p1). In the management of emergencies in Peru, leaders and planners at the *Instituto Nacional de Defensa Civil* or INDECI (the National Institute for Civil Defence) effectively combine two distinct strategic areas: the technical and the social. These are harnessed together synergistically to address challenges of EM planning, operations, logistics and resource management alongside the broad spectrum of human behaviour and response possibilities. To align these two strategic areas, INDECI utilises resources and methodologies that are simple, practical and effective. This enhances the objective of developing the community's role into one of shared, participative responsibility. Consultation with a diverse range of stakeholders is routine and communications are unambiguous and effective. Because expectations are clear and simple, widespread community engagement is achievable.

Acknowledgements

This study was made possible by the receipt of an Emergency Services Foundation award in 2014. I thank Jenny Davis, ESF Executive Officer, and the ESF Board for their support and investment in this research and VICSES for their endorsement of the project.

I thank Dr Guillermo Anad for his cultural and linguistic expertise and assistance for translation and interpretation in Australia and Peru.

This paper was developed from action research undertaken at INDECI, the *Instituto Nacional de Defensa Civil* (National Institute for Civil Defence) in Lima, Peru in June 2014. The assistance given to me by everyone at INDECI and at other agencies was inestimable on a personal and professional level. More than forty professionals from nine organisations provided me with time, information, published materials and collaborative experiences. I owe all of those people my thanks. A list of the agencies, institutions and the personnel who assisted me is in Attachment A. In particular I wish to gratefully acknowledge the generous support of General Alfredo Murgueytio Espinoza, Chief of INDECI, and Dr. Francisco José Ambía Camargo, Chief of the INDECI Office of Co-operation and International Affairs.

Editorial Notes

In this paper, all references to Australian Emergency Management (EM) and response operations are assumed to be applicable to any emergency service agency in both urban and rural areas unless otherwise stated.

There is no distinction made between waged or unwaged Australian emergency service responders.

The paper is not an exhaustive analysis of Peruvian emergency management practices. It is limited to the record of my experience as an observer at INDECI.

The Author's EM Background

In Australia, SES is the control agency for response to flood, storm, tsunami and earthquake. The paper refers to particular examples of SES operations in urban areas, as my primary operational experience in EM is as Controller of the VICSES Footscray Unit.

VICSES Footscray Unit responds to emergencies within the territory of the City of Maribyrnong and the City of Melbourne. This territory is of significant strategic importance. It includes critical infrastructure (bridges, hospitals, freeways etc.) public transport including the underground City Loop rail section, the downtown central business district (CBD) and Docklands, government agencies, major industries, the Port of Melbourne and Melbourne's two rivers, the Yarra and the Maribyrnong.

My experience extends to assisting other agencies in major events. I have been periodically deployed within Victoria or interstate to assist other agencies such as the CFA or TasFire as a Staging Area Manager, Safety Officer or Crew Leader, for example during the Melbourne hailstorm 2010, Brimbank and Whittlesea storms 2011, Nathalia floods 2012, Tasmanian fires 2013, Halls' Gap fires 2014, and Gippsland fires 2014.

My professional career as an academic researcher and educator sets a useful foundation for working as a volunteer in EM. Expertise in experiential methodologies, social inclusion and interdisciplinary studies assists in determining new directions in local unit activities and for leading a team of skilled volunteers in delivering tangible outcomes for the community.

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Introduction

Background to the Project

In 2014, I submitted a proposal to the Victorian Emergency Services Foundation and received a grant to visit the *Instituto Nacional de Defensa Civil* (INDECI, the National Institute for Civil Defence) in Lima, Peru. The purpose of my visit was to attend as an observer/participant at the *Simulacro Nacional de Sismo y Tsunami* (the National Earthquake and Tsunami Simulation) in the capital Lima, where more than 70% of the population participates in national or bi-national emergency drills every year. My visit as an observer consisted of

- Observation of special events/emergency exercises
- Field trips to sites of recent emergency events
- Conducting interviews with key personnel
- Attending meetings and briefings

The objective of this project was to investigate innovative strategies to promote the understanding of emergency preparation, response and rehabilitation in the community as a shared responsibility that is participative, not passive. I considered:

- What community engagement methodologies are in play that persuade more than 70% of a diverse multi-ethnic population in Peru to actively participate in a national emergency exercise?

and following on from 'lessons learnt' from the Peru experience:

- What strategies can be used to support diverse local Australian communities to take on a greater share of responsibility in preparing for, and responding to, an emergency?

Relevance of the Project

This project is relevant to the development of community resilience planning in Victoria. The rationale behind this project's focus on participative responsibility was based on the premise that in Australia, despite the perennial high incidence of natural emergency events (fire, flood, drought, cyclone, storm etc.), and predictions of increased frequency and intensity of future events, the anecdotal evidence suggests that the Australian community is becoming more dependent on professional -whether waged or volunteer- emergency service workers to respond, save lives and property, and assist in rehabilitation. In many regions, the general community appears to have a decreased capacity or willingness than in previous generations,

to help themselves or each other.

While recent reforms in Victorian approaches to Emergency Management generated from reviews such as the 2011 Comrie Review (*Review of the 2010-11 Flood Warnings and Response: Interim Report*, 30 June 2011) and the *Final Report* of the 2009 Victorian Bushfires Royal Commission have consistently referred to the notion of shared responsibility and building community resilience, strategies to activate that shared responsibility are less defined.

How can communities learn to participate actively in their responses to emergencies? What level of training do they require? How will appropriate and relevant knowledge transfer occur? These questions involve the social dimension of emergency management. I contend that it is this social dimension which is the most critical area for development of future EM planning in Australia.

Tangible Outcomes: Community Participative Safety Project

One aim of this research is to design and develop a community-focused engagement project which can be delivered by VICSES Footscray as a pilot and then replicated across other SES units or emergency service organisations. The project content is developed from concepts and strategies, or 'lessons learnt' from INDECI in Peru.

Broadly, the project is comprised of three key components:

1. Primary school level interactive 'Safety Games' programme
2. Australian Migrant English Programme (AMEP) safety lesson
3. FloodSafe community: engaging local residents whose properties are identified as at risk of over-floor flooding in the Maribyrnong River Valley and facilitating the formation of local Floodwatch groups.

The project is currently in draft stage with further community and local government consultation pending. It is not the purpose of this paper to present the project in detail.

Part 1: The Victorian Emergency Management Context

Social and Demographic Factors

In the local urban response area, VICSES Footscray services the municipal areas of the City of Melbourne and the City of Maribyrnong. The populations of these areas are:

- multicultural
- multilingual
- include many new arrivals and transient groups
- from a diverse range of socioeconomic groups

The legacies of multiculturalism have contributed to the vast changes undergone in Australian social life post-WWII. Australian cities have developed into vibrant, creative, international places, characterised by diverse cultural influences of food and fashion, language, the arts, media and entrepreneurship. There are few cities in the world that match major Australian cities' multicultural mix.

In the City of Maribyrnong for example, there are over 80 different languages spoken and 91 different faiths followed. Almost 40% of the residential population is born overseas and more than 50% have both parents born overseas, from any of 135 different countries (*Maribyrnong City Council Multicultural Policy 2012-2017*, <http://profile.id.com.au/maribyrnong>).

In the City of Melbourne, there are at least 122 languages spoken, and 44% of residents were born overseas and only 52% speak English at home. There is a high proportion of inner-city apartment-dwellers or overseas-born students. Education is the source of Victoria's second-highest export income, and 67% of the City of Melbourne's student population are international students. (see also *City of Melbourne 2006 Multicultural Community Demographic Profile*, Melbourne City Research, Melbourne, 2008; *Victoria's Population Diversity*, Victorian Multicultural Commission, Melbourne, 2008).

Challenges

The cultural mix has been of enormous benefit to Australian society and culture, but it also presents some challenges to EM, experienced by front line responders. These include:

- Language and communication, for example, residents who do not speak English and/or with low or no literacy in their own native language
- Different social practices, such as the situation where some community members may have preferences about speaking to a person of a particular gender (for example, where a female resident may not be permitted to speak to a male emergency

responder who is not a relative, or a male resident may prefer not to speak to a female responder)

- Diversity of background and life experiences, for example, where new arrivals have come from living for years in rudimentary refugee camps and have had limited exposure to or understanding of, technologies and practices taken for granted by more established Australian communities
- Understanding of volunteerism, for example, differences in attitudes to volunteering in communities where responsibility is expected first to the immediate family, then to the extended family or clan, then to others

The anecdotal experience of VICSES Footscray operational members suggests that many individuals in our local area, both from the cohort of residents from long-established local families or from newer Culturally and Linguistically Diverse (CALD) communities, are less resilient than in previous generations, are more reliant on emergency service workers, or have unrealistic expectations. They may have limited practical ('hands-on') capabilities because of education, family or cultural background factors, or face communications -language and literacy- limitations.

The challenges in dealing with these communities are experienced by all EM organisations and are repeated across Australia, particularly in large urban population centres. Those challenges are not only related to factors of local resource management by institutions such as municipal councils, emergency response agencies (such as police, fire, ambulance, VICSES), support agencies (such as Red Cross, Salvation Army, St Johns First Aid, Chaplains), and government bureaucratic agencies (such as Centrelink, Department of Housing Services, Department of Environment and Primary Industry). A substantial range of material and human resources are activated in an emergency but their efficacy is significantly influenced by social factors, that is, people and their

- customs
- education
- cultural background
- economic circumstances
- domestic living arrangements
- historic exposure to hazards and local knowledge

The Social Dimension

Emergency Service Organisations have historically maintained an agency-centred approach to EM, with a strong focus on logistics and human and material resources within their

specific organisations. I suggest that, to develop a whole of community approach to EM, it is the aforementioned social factors that play a significant part in preparation, planning and outcomes; that determine the success or otherwise of response; and that impact on future planning and resource allocation. The social factors influence questions of education, perception, and action, in particular:

- Community preparedness is a shared responsibility, but what do diverse communities understand this to mean?
- How do they interpret their situation, make effective decisions and act on those decisions?
- In contemporary Australian society, is there a level of complacency, dependence or passivity that inhibits the ability of individuals to respond effectively?
- Do they expect an emergency service organisation to act for them?
- Does this contribute to increasingly unrealistic demands on an emergency services (volunteer or waged) workforce?
- Is this sustainable?

Therefore, any methodologies which foster greater community engagement, educate communities to participate more actively and encourage them to take on greater responsibility when faced with an emergency, might alleviate demands on a system which relies in large part on a volunteer workforce. If the community takes on a greater shared responsibility, this might diminish inappropriate and unsustainable demands on both volunteer and waged emergency service workers. This will allow those workers to respond more effectively to targeted, legitimate tasks.

Demands and costs to other stakeholders such as government bodies, insurance companies, local councils, and NGOs may decrease as community participative responsibility and resilience increases. Outcomes are not seen as limited to VICSES tasks, but applicable in an all-hazards, all-agencies, whole-of-community approach to emergency management.

For individuals, a sense of empowerment and increased confidence might aid material, physical and emotional recovery, as suggested by the Insurance Council of Australia: "A resilient community is better able to withstand an event and recover from residual impacts" (*Improving Community Resilience to Extreme Weather Events*, Insurance Council of Australia, Melbourne, 2008, p 3)

Part 2: Emergency Management in Peru

Social, Demographic and Geographic Factors

Peru is a developing country with one of the world's fastest-growing economies, classified as an emerging economy. It has an estimated population of 31 million. The capital city, Lima, is the 27th most populous city in the world, with around 10 million inhabitants. Official languages are Spanish and Quechua, but there are many indigenous languages spoken in different regions, with up to 23 dialects. High likelihood and frequency of emergency events, diverse and difficult terrain and climatic conditions, communications (diversity of language and literacy in a multi-ethnic population) and ad hoc urban design and construction practices are all factors which present geographic, social and demographic challenges.

Peru is located on what geologists call the Pacific Ocean 'Ring of Fire' due to its intense seismic activity. On average, there are 400 earthquakes annually in Peru, many of significant magnitude. In 2012, for example, a total of 225 earthquakes with magnitudes of 4.0 and above occurred. There have been catastrophic earthquakes, all greater than 7.0 on the Richter scale, with significant fatalities and major damage in 1940, 1970 and 1976. Computer modelling shows that potentially damaging shock waves from major earthquakes can reach Australia and Asia.

In Peru, there are two climatic seasons -wet and the dry- and three main geographic zones: a narrow arid coastal region, the Andes mountain range and the Amazon Basin. The coastal region, including the capital Lima, is at sea level with a desert climate, joining the Atacama desert (one of the driest places on earth) in the South. The Amazon region is tropical rainforest with limited access and infrastructure. Half the Peruvian population lives in the Andean highlands. Most mountains are between 3 and 4 thousand metres and the highest is Mt Huascarán, at 6,768 metres. The Andes extends offshore; to an ocean trench 100 km out to sea which is as deep as the range is high on land. The range is still being uplifted by the Nazca and South American plates under the Pacific Ocean, accounting for the continual earth movements.

INDECI, the National Institute for Civil Defence

The authority responsible for emergency management in Peru is the *Instituto Nacional de Defensa Civil* (INDECI), the National Institute for Civil Defence. This organisation is responsible for the leadership, coordination, facilitation and supervision of the formulation and implementation of processes of preparation, response and rehabilitation in the Peru National Plan for Disaster Risk Management. INDECI is tasked with developing and

proposing plans and advising the Presiding Council of Ministers (Cabinet), as well as the institutions and bodies which make up SINAGERD (the National System for Disaster Risk Management) about the policies, direction and strategies related to preparation, response and rehabilitation (*¿Quiénes somos?*, INDECI information brochure).

The current structure of INDECI was created in 2011, but it had evolved from 1970, when a 7.9 earthquake occurred in the coastal region of Ancash and caused ice and rock falls from the north face of Mt Huascarán. Floods and landslides buried cities and towns and more than 100,000 people were killed or missing, presumed dead.

Effecting Cultural Change: Inter-Agency Collaboration

Importantly, INDECI strategies work to effect cultural change by a process of collaboration with all stakeholders, including the whole of the community, government departments, other ESOs and service providers. The cultural change includes these considerations:

- an emphasis on the culture of prevention
- intercultural aspects of EM
- citizens' rights

For example, I was invited to attend a meeting of the *Comité Técnico Sobre Incendios Forestales* (the Working Technical Committee on Forest Fires) on 3 June 2014 held at INDECI headquarters. Apart from technical, training and resource issues, all aspects of the consequences of fires were discussed; particularly the social and economic impacts, and concerns regarding world heritage and cultural patrimony. The meeting was chaired by INDECI and was comprised of officers from the Department of Culture, INDECI Directorate of Response, Fire Services Head of USAR, National Parks, Tourist Police and Environment Protection, National Forests Service, the Cultural Officer from the Office of National Defence and the Director-General of Forests and Wildlife from the Department of Agriculture.

Of particular concern in incidences of wildfire is the risk to tourists who do not speak Spanish, and the threat to the tourist economy through loss of business in a major event. Tourism is Peru's third largest industry and second largest employer. The UNESCO world heritage listed historic sanctuary of Macchu Picchu is one of the most iconic tourist destinations in the world, attracting up to three thousand visitors daily. In 2013, over 1.2 million people visited Macchu Picchu. The thousands of trekkers who hike the Inca Trail to Macchu Picchu are even more at risk, as they walk through remote and inaccessible terrain. The threat of fire in this site is significant on a human and economic scale.

Simulacro Nacional de Sismo y Tsunami: the National Earthquake and Tsunami Simulation

Every year, INDECI conducts up to four national emergency earthquake and tsunami simulation exercises that involve the whole of the community. Cross-border exercises have also been held with neighbouring countries such as Chile or Bolivia. In 2014 the exercises were held on 30 May, 27 August, and 9 October (nocturnal). There are additional exercises held in schools, four per annum. Since 2011, these school exercises and the national drills have been mandated by legislation. The *Simulacro* does not include the participation of hospitals, medical clinics or other services whose activities cannot be interrupted.

According to INDECI, more than 70% of the population across the nation actively participates in the drills. In 2013, the participation rate was 72.12% for the daytime exercise and 68% for the night exercise. The main objectives of the *Simulacro* are to evaluate the response capability of the general population and the Civil Defence authorities, to apply the procedures and protocols of the first responder teams, to test how the emergency and evacuation routes worked, especially in areas that could be flooded by a tsunami, and to strengthen the response process of the National System of Disaster Risk Management (SINAGERD).

The actual risks are significant: apart from the estimated 400 earthquakes per annum in Peru, there are 12 active volcanoes across the nation. Seven of these have been active in the last 15 years, and three are classified as dangerous: Sabancaya, Misti and Ubinas. During the time I was an observer at INDECI, the Ubinas volcano was continually active, and three days after the *Simulacro*, Lima experienced an earthquake of 5.4 (2 June 2014). The risks are seen to be increasing, with seismic activity experienced in areas such as Puno, where this has never occurred before. INDECI recognises the threat of climate change and employs experts on climate change adaptation within the Disaster Risk Management division.

The Emergency Scenario

The *Simulacro Nacional* simulated an emergency after a one-minute-long earthquake located at sea 190 km off the coast of Lima, measuring 8.0 on the Richter Scale, with an intensity of between VII and VIII on the Mercalli Scale. It was conceived at a depth of between 30 and 50 kilometres. This magnitude earthquake would provoke a tsunami that would reach low lying coastal areas within 15 to 20 minutes. Many suburbs of Lima are located in these low-lying areas and are vulnerable to the threat of tsunami. These areas are populated with homes, schools, businesses, road, rail and air infrastructure etc. In such a scenario, an estimated casualty toll of 50,000 people may be likely. The simulation also included activation of

international requests for assistance.

Key Actions

INDECI identifies the following as key actions to be practised and evaluated in the *Simulacro Nacional*:

- Activation of alarm systems
- Activation of the emergency response communications networks
- Evacuation of people from their homes, public or private locations, to secure zones
- Use of the evacuation routes
- Setting up of centralised points for the delivery of humanitarian aid
- Setting up of temporary accommodation facilities for affected people
- Functioning of the Emergency Operations Centres and the Civil Defence functional roles

Procedures

What is the scope of a whole-of-nation simulated emergency evacuation exercise? What do people do and where do they go? Provision for the duplication of resources for a city and its inhabitants is unrealistic. The plan is not to evacuate residents away from a city the size of Lima. There would also be inadequate resources outside of the main city and no access to whatever critical infrastructure remained operational. Instead, a national evacuation plan involves the standard procedures of earthquake response:

1. If indoors: If the building is secure, take cover or shelter in the strongest part of a building, away from items that may fall, then when the tremors have ceased, move outside to a secure open area, away from buildings, trees, signs, power poles, other hazards. If the building is not secure, evacuate immediately.
2. If driving: Stop immediately if it is safe to do so, and stay in the vehicle until safe to proceed.
3. If outside: Move to a safer open area (parks, plazas, wide streets), away from buildings, trees, signs, power poles, other hazards.
4. Calm is emphasised: "don't shout, don't run, don't push".

(*Infórmate y Prepárate ante un Sismo o Tsunami* booklet, INDECI; see also *Emergency Information Handbook*, New York State Division of Homeland Security and Emergency Services, www.dhSES.ny.gov; *What To Do in an Earthquake*, www.ses.vic.gov.au).

The first priority in Peru is to educate people to move to a strong area of the building then exit structures that may become unstable and move to safer, open areas. The Safety Plans of commercial buildings will show designated safe or reinforced structural elements within the

building where people can take cover. These areas are clearly marked with signage.

Then the procedure is to orderly evacuate buildings and re-group in nearby safe zones (*zonas seguras*). These zones are marked by large yellow circles painted on flat open areas such as roads and car parks where local individuals and groups can assemble.

In the event of a tsunami, escape routes in high-risk coastal areas are clearly marked on existing roadways and lead to safer areas on higher ground.

Warning Systems

In a real event, the community is alerted to an imminent earthquake or tsunami by various warning systems. Earthquake is its own alert, clearly felt. Other warnings include local community alarms such as church bells, police or fire sirens. There are alarms directly off the coast of Lima and tsunami sirens all along the Peruvian coast. Broadcasts of emergency warnings are enshrined in law to be transmitted by national TV and radio stations.

The *Simulacro* Drill

The *Simulacro* was scheduled for 1500hs on 30 May 2014. On the same day, there were three scheduled school evacuations, at 1000hs, 1500hs and 2000hs. These times correspond to the three different daily school intake sessions, a timetabling arrangement which is standard in Peru. Schools must conduct four simulation/evacuation drills annually, including one at night. This was legislated by the national government in 2011.

At 0800hs I was taken to INDECI HQ. There I was briefed by Dr José Ambía, Chief of the Office of Cooperation and International Relations, before travelling to the location of the first drill, at a suburban school, the *Colegio José Olaya Balandra*, in the port district of Callao. The second drill was at 1500hs in the downtown central business district of Lima.

School Evacuation in the Port District of Callao

Callao is a significant location with essential infrastructure. It is an important naval base and Lima's main port. Historically, it has been subject to major disasters. In 1746, for example, a tsunami completely destroyed the port, which had been founded in 1537, two years after the founding of Lima. During the colonial period Callao was the main shipping port for all trade and commerce from the Americas to Europe.

Also located in Callao are Peru's main airport; the Jorge Chávez International Airport, the military college *Colegio Militar Leoncio Prado*, the National University of Callao, and the

Naval hospital, the *Centro Médico Naval*. This hospital houses the US Naval Medical Research Unit 6 (NAMRU-6), a biomedical research laboratory of the US Navy and the only US military command in South America. It researches infectious tropical disease threats, has a live animal research facility and is classified as Biosafety Level 3. Clearly, the district of Callao is a significant emblematic location both in terms of essential modern infrastructure, international relations and its historical association with previous emergencies.

In 2014, the first evacuation drill of the day at the local school, *Colegio José Olaya Balandra*, attracted national and inter-regional media organisations. Journalists from TV Peru, Canal N and Radio Nacional were filming. This drill featured on national news broadcasts and in press articles. The Minister for Education, Flavio Figallo, and his staff were in attendance. The Head of INDECI, General Alfredo Murgueytio, and other key members of INDECI were present to monitor and oversee the exercise.

School Evacuation, Sequence of Events

At 1000hs the evacuation drill began. The sequence of events was:

1. Emergency sirens sounded, all students and staff exited their classrooms, running at a steady pace (1 min from classroom to designated assembly area).
2. Students assembled in their class groups on their designated yellow circles painted on the Tarmac of the open assembly area. They linked arms around each other's shoulders, for stability, moral support, keeping the group together.
3. Staff directed their students to commence the evacuation, via a permanently signed route, to reach higher ground in a local plaza before the tsunami reached the school (15 mins).
4. Staff, students, media, and all personnel on site ran, in an orderly manner at a steady jogging pace, to reach the safe area. General Murgueytio led the evacuation, setting the pace at the front. The youngest children ran in a line holding onto a rope, led by their teacher. The distance covered 11 city blocks. There was no panic or misdirected energy; it was routine.
5. The route crossed busy highways but traffic spontaneously slowed and gave way to the evacuees without incident.
6. At the safe area, students were accounted for. Teachers provided games such as balls and hoops for students to occupy themselves while they waited. In a real event, it is pre-arranged that parents will come to collect their children from this safe area.
7. The INDECI mascot, named Tato, attended and stayed until the exercise was stood down. Tato is the figure drawn in caricature and used on INDECI website publications, banners and other printed materials. The figure is smiling, youthful, and

appealing. He holds the INDECI emblem (oval-shaped) in his hand as a defensive shield. There are simple positives for the use of this mascot:

- a. The caricatured illustrated figure appeals to children; it is like them
 - b. It is non-threatening, with a cheerful face and demeanour
 - c. The mascot's name is very familiar in Spanish; 'Tato' is a common nickname
 - d. The name also reinforces a clear message: that civil defence is everybody's work, as Tato is a compilation of the first syllables of '*Tarea de Todos*', part of the INDECI slogan *Defensa Civil: Tarea de Todos*, Civil Defence: Everybody's Work.
 - e. The costume is flexible and easy to use. The main costume part is head and shoulders only, placed over the body of the wearer. Even though the mascot costume does not allow the wearer to speak, they can use hand signals, gestures and body language. They can move and walk easily. This allows the mascot a practical level of communication and interaction with people.
8. General Murgueytio, the Minister for Education and other officials addressed the assembled evacuees with a hand-held megaphone. The use of a practical, portable, lightweight amplification device resolves a communications issue, as it is unlikely that a Public Address system or microphone would be readily available in multiple open spaces in an emergency event, or that the power supply would be intact.
 9. The TV journalists interviewed numerous officials, including this author as an international observer. Various excerpts from interviews here and at subsequent locations were broadcast on national TV and radio channels and commentated on for the following 3 days.
 10. Previous evacuation drills along this route had taken 21 minutes, 19 minutes and this one took 18 minutes for the final students to arrive. General Murgueytio counselled the evacuees and the media that there was room for improvement, as everyone needed to arrive within 15 minutes.
 11. It was estimated that nationally, around 8 million students participated in this school drill.

After the exercise had finished and the students returned to their school, General Murgueytio and his staff proceeded to another site for the Drill scheduled for 1500hs. This was at a high-rise apartment building in Callao, where a 'vertical evacuation' took place. Vertical evacuation refers to people assembling on the roof of a stable multi-story building to escape a tsunami, when they have little chance of escaping by road. Instead of going along, they go up. The school evacuation, like any evacuation by a land/road route is referred to as a 'horizontal

evacuation'.

The *Simulacro Nacional*, CBD General Public Evacuation

After the school evacuation had finished, I was taken to the downtown centre of Lima, where INDECI was installing their mobile *Puesto de Comando Avanzado* (forward command post) in the Plaza de Armas, in readiness for the national exercise at 1500hs. It was a Friday afternoon, just after workers return from lunch and during a busy commercial hour. The pedestrian and vehicle traffic at this time is also heavy.

The Plaza de Armas is the main plaza in Lima, directly in front of the Presidential Palace. The plaza is a colonial era construction dating from 1532, 140 square metres in size, bounded by Lima's main Cathedral, the Archbishop's Palace, the Town Hall, and other nearby major commercial locales such as banks, shops, and administration centres. It is the heart of the business district as well as a major tourist attraction. The buildings around the plaza have been destroyed by earthquakes previously and many were re-built in the early 20th century.

At the plaza, I was briefed by Luis Vallenias, Director of Emergency Preparation and Response. INDECI staff were in attendance and temporary portable communications towers were set up outside. Local politicians and government officials visited during the course of the afternoon. Inside the mobile command post tent, a DVD of previous events was on continuous playback, including one that showed a model of the 1746 tsunami, with shock waves reaching Australia and Asia. That earthquake completely destroyed most of the city of Lima. The colonial-era buildings that now form the heart of the city were constructed post-1746. The centre of Lima was designated a World Heritage site by UNESCO in 1988.

CBD Evacuation, Sequence of Events

At 1500hs the simulation began. The sequence of events was:

1. Warning sirens signalled the emergency. The sirens were from various sources: police car sirens in the streets, emergency sirens from local buildings and the cathedral bells. The bells continued to ring.
2. All traffic stopped and people waited, then exited their vehicles.
3. Groups of people started moving from nearby buildings into the Plaza and assembled at designated points. The movement was brisk but unhurried, with no sense of panic.
4. Each group was led by a colleague carrying an identifying banner. These leaders form part of a civilian corps of *Brigadas*. There are brigades for every high-rise building, office, school, or residential apartment block.
5. There were numerous role-playing 'injured' evacuees, both adult and children, carried

to the Plaza on stretchers, and given first aid attention.

At the end of the exercise, I was taken to the suburb of San Borja to observe the *Centro de Operaciones de Emergencia Nacional* (COEN) the National Emergency Operations Centre, where live reports from across Peru were being monitored.

Part 3: INDECI Challenges and Strengths

"Education is the basis for the whole culture of prevention"

Hernando Tavera, Director of the Seismology Program, Peru Geophysics Institute (*El Sueño de un Terremotito*, IGP, 2013 p 61)

Practices and methodologies used in Peru to encourage widespread community engagement and active participation in relation to the threat of tsunami and earthquake, are simple and practical; this makes them achievable and effective. Notwithstanding, there are significant challenges for EM planners in Peru, particularly from a sociocultural perspective. These include the built environment: urban planning, design and construction factors, and communications: language, literacy and education in a diverse community.

The Built Environment

Inner City Slums

In downtown Lima, many buildings from the Spanish colonial period remain standing. Some areas of the city have been renovated, but many parts are impoverished, slum neighbourhoods. Buildings in these areas often house a high number of residents with low income levels. Building owners do not earn enough rent to cover costs of renovation, so the process of decay continues. Although at risk of collapse, many inner-city residents face that possibility with either resignation, or complacency. As one taxi driver pointed out to me "These buildings have stood for 500 years, through many earthquakes, and they are still standing". In conversation with a local market stallholder, I pointed out a half-collapsed building adjacent. Only parts of the walls remained and the ceiling was sunken in a 'pancake' formation. Informal occupants were living behind a sheet of blue plastic strung across the opening where a wall once was. The stallholder assured me the building was sound as, after all, "it was built by the Spanish, it must be strong".

Shanty Towns

Around the outskirts of Lima, extensive informal settlements or shanty towns called *pueblos jóvenes* ('young towns') have sprung up. The settlements began in the 1970s as illegal land invasions which were tolerated by governments. The settlements attract people from the interior of Peru, who move to the city in search of work, or homeless people from the city.

Lima's shanty towns are a form of direct democracy mixed with community management. Peruvian law permits that once temporarily settled, this public land can be claimed as freehold after 10 years' occupation. Local networks are well established and informal

communities are included in activities such as the *Simulacro Nacional*.

The houses are built from a combination of reclaimed or cheap materials, or mud brick. These are often on unstable public ground on hillsides and constructed in an improvisatory, precarious fashion. Once occupied, these shanty towns are improved with more substantial building materials of bricks, glass and cement. In many areas, services and infrastructure such as sealed roads, sewage and running water have been added gradually after direct action campaigns.

This form of urban growth alleviates social issues of homelessness, but ad hoc construction practices expose the communities to substantial risk of landslip/slide, structural collapse and widespread damage in an emergency event. There is also an ongoing flood risk from the Rimac River which flows through central Lima. This river rises from December to April and an extensive series of retaining walls is under construction to mitigate the flood risk.

Planning Regulations

INDECI cannot unilaterally make decisions affecting other statutory bodies such as local councils, which operate autonomously. This has an impact on public safety in particular with regard to building codes. In the beachside region of Costa Verde, for example, councils control the planning applications. In 2014 they granted 30-year extensions on waterside restaurant leases. Some of these businesses have already been subject to over-floor flooding in recent years with changes in tidal levels.

All major commercial buildings are required to have a safety plan (*Plan de Seguridad*) and to register it with INDECI. This was implemented by law in 2011. INDECI conducts a technical inspection to approve the plan. The Plan must address three main areas of first aid, fire and evacuation. However, in the inner city of Lima, many buildings have internal areas that have been converted into commercial centres (small malls). The volume of people passing through these areas now does not tally with the numbers the buildings were originally designed to accommodate, resulting in overcrowding and an increased risk of structural collapse in an emergency event.

Instituto Geofísico del Perú (IGP): Peru Institute of Geophysics

The management of the built environment is also being addressed by the Peru Institute of Geophysics (IGP). This institute is the main scientific authority on earthquake and tsunami in Peru. Its role is to conduct research and observe and monitor earth, air and aerospace. A new

initiative of the IGP from 2014 is to align geophysics and society by including the social dimension in all areas of research, meetings, workshops etc.

The IGP has a network across Peru of 50 seismic monitoring stations, 18 satellite stations, 38 accelerometers and 40 GPS stations which measure slow earthquake movements. In 2014-2015, the IGP is installing an additional 200 accelerometers, one for every district in the city of Lima, and one for every town in every region.

This automatic monitoring system can produce a map identifying major earth movement zones in one hour or less. The IGP public earthquake information service (*Servicio Sismológico Nacional*) transmits information 3 to 4 minutes after an earthquake. It has a direct satellite line to INDECI, and to the *Dirección de Hidrografía y Navegación* (DHN, Department of Hydrography and Navigation) tsunami alarm. The IGP also broadcasts on a national TV channel. Twice a year, DHN and INDECI check and evaluate the system.

The IGP is staffed by renowned scientists and other experts and includes 97 full time staff and 95 contractors. There are currently 20 PhD students working at IGP. There are 96 engineers, of whom 20 have PhDs and 27 have Masters degrees. The administration is undertaken by 50 staff.

The IGP began a major study into building practices and regulations in 2012. In order to change building codes, reliable data on the existing situation and risk is needed. The aim of the IGP is to study the viability of the ground as well as construction methods and to build well-engineered houses. They are considering three integrated functional aspects:

- the structural integrity of the building
- the stability of the soil
- the function of the building and its vulnerability (for example, is it used as a hospital, school, fire station etc.)

To amass accurate data on earth movements, new building codes stipulate that all constructions over 10,000 sqm must have an accelerometer installed. This will provide information to a research database about seismic activity in order to "avoid loss of life, secure basic services continuity and minimise property damage" (*Norma técnica de diseño sismorresistente E. 030 Resolución Ministerial No. 079-2003 - Vivienda*, Technical Regulation: Earthquake Resistant Design, Residential).

Relocation

In areas of significant risk, it may be deemed unsafe to rebuild and communities should instead be relocated. INDECI does not currently have the authority to overrule building

planning decisions, but it is anticipated that questions such as the capacity to overrule will be incorporated into the political debate during 2014-2015 and action for change will then be taken.

In 2014 the Ubinas volcano was active and consideration was given to relocating the local communities. In a previous eruption of the Ubinas volcano in 2006, the population was relocated temporarily. A new community was built for them, with a new health centre, school, homes and other services. However, the new location was short-lived and after only six months, the residents returned to their previous locations.

The same occurred in the district of Lucre, which experienced major flooding of the local Lucre River and lagoon in 2010 and 2013. The town of Huacarpay was completely covered by floodwater in 2010 and residents were relocated to higher ground, but when the waters receded, many returned and re-settled their family land. As in most areas of Peru, there are numerous archaeological sites along the Lucre floodplain and people have historic ties to land in this district dating back to pre-Inca times.

This behaviour was discussed at a meeting of the *Equipo Técnico de la Red Humanitaria Nacional* (Ad Hoc Meeting of the Technical Committee of the National Humanitarian Network, 2 June 2014, INDECI Headquarters) to which I was invited. The meeting was chaired by Chief of INDECI General Alfredo Murgueytio. The committee had representatives from the United Nations Food and Agricultural Organisation (John Preissig, FAO Coordinator), the *Centro de Operaciones de Emergencia Nacional* (COEN, the National Emergency Operations Centre, Ing. Claudia Ocaña), INDECI Director of Response (Crl. Edgar Ortega), the National Adviser on Disaster Response (Ana María Rebaza) and the Red Cross (Jaime Huertas).

The committee discussed the social aspects of relocation, determining that the main reasons the relocation was not sustained was the people's strong connection to land, both historical, social and spiritual. In addition, farm land became more fertile after volcanic ash falls. There was also a culture of complacency or resignation (residents have generational memories; it has happened before, it will happen again, it is fate, etc.). Further, for impoverished individuals who had been provided with new homes, there was an economic opportunity to earn income by renting out their previous (or new) residence.

In 2014 the *Ley de reasentamiento* (Relocation Law) was passed by presidential decree. This will deem land which has been evacuated will become the property of the State, and the State

will be responsible for it not being re-occupied.

INDECI Strengths

A major focus of INDECI's EM strategies are their successful public information, education and community preparedness campaigns.

Brigadas (Brigades)

A key aspect of active participatory community engagement is the formation of *brigadas*; volunteer civil defence brigades. The objective is to have one brigade for every apartment block, office building, school, shopping mall or other shared space where groups of people live, work or congregate. The brigades are formed by eight crew members, aged between 19 and 40 years, one of whom is a trained first aider. The crew members can attend basic training courses delivered by INDECI, but are not expected to develop high-level rescue or emergency response skills. In general, people are encouraged to help others, particularly vulnerable persons, and in families, to give each person a designated role.

The role of the *brigadista* (recognised by their tabard) is to lead building evacuations, access caches of resources (for example, first aid) and assemble their group of evacuees in the designated safe zone. In Australia, this type of function might be compared to a workplace fire warden. In Peru, it is far more extensive, applied in all types of occupied properties and using eight crew members in a group. The use of the community in organised small groups has many advantages:

- It alleviates demand on emergency services as people are managing their own egress and assembly.
- The formation of small local groups from a shared work- or domestic- place encourages people to know each other, look out for each other and account for each other. There is greater social interaction and common purpose.
- The training requirements are minimal, easing the demand on the training organisation (in this case INDECI).
- The training requirements are minimal, so they are achievable for most community members; there is no deterrence factor of excessive workload. This leads to increased likelihood of community involvement.

- Having eight crew members spreads the workload, or in a major event provides a greater level of assistance. It also allows for attrition or absence of some members in an emergency event.
- If local brigades can attend to basic first aid or the 'walking wounded', then emergency response resources can be effectively targeted to more urgent needs
- The 'sub-text' sends a strong message: help yourselves, don't rely on emergency rescuers. That sub-text is kinaesthetically reinforced every time a Drill is practiced.

In sum, the use of civil defence brigades is a simple, practical and effective strategy to develop increased levels of community participation and responsibility in their individual and communal situations.

Language and Literacy

INDECI strategies of public information, messaging and education are tailored to the differing needs of diverse communities and languages. Peru has four and a half million Quechua people (a group of 46 languages and dialects). INDECI print materials are issued in Spanish and Quechua, as are materials from the Ministry of Education. In the Andean region of Cusco, local INDECI staff are bi-lingual in Spanish and Quechua and park rangers are similarly required to speak both languages. In areas with low literacy rates, an important communication delivery method is through oral transmission in public spaces such as markets, local meetings or radio broadcasts.

Publications, Guidebooks, Education Programmes

INDECI has a community engagement division which has 19 staff or advisors. The division writes and produces in-house print materials such as posters, pamphlets, booklets and guidebooks. The materials are not only for EM staffers, but are produced for other stakeholders, such as the publication *Guía para periodistas* (Guidebook for Journalists) and *Guía de actuación y comunicación social en gestión reactiva de desastres* (Guidebook for Action and Social Communication in Disaster Response Management). This latter publication is designed for use by the President, the Ministerial Advisory Council, INDECI, government ministers and regional local government officials. The publication contains information on the legal or legislative basis for actions, objectives, and a step by step sequence of recommended actions for each of the aforementioned personnel, categorised under headings such as:

- Actions
- Key Messages (Immediate)
- Key Messages (After the Event)
- Tasks for Personnel
- and, for the President; Messages to the Nation.

The guidebooks are simple, practical and effective, with advantages such as:

- the emphasis on clear, accurate and transparent messaging across all sectors, minimising uncertainty and confusion
- uniformity of information dissemination, avoiding conflicting messages
- readiness; all personnel can use the guidebook as an immediate *aide-memoire* and refer to their corresponding information and recommended course of action without delay
- simplicity and ease of use: the guidebooks are A6 pocket-sized, with separate removable A8 sized guides enclosed for each function

Educational materials are also produced in the INDECI Directorate of Development and Strengthening of Human Capacitation. The community is encouraged to participate in their own risk management, guided by publications such as the *Manual de Mapa Comunitario de Riesgos (Manual of Community Map of Risks, INDECI, 2013)*. This manual is designed for rural communities and is a resource which enables the population to conceptualise the extent of danger, vulnerability, resources and risk of disaster. The manual clearly states (p 9) that "*la elaboración de los mapas...es responsabilidad de la comunidad, en razón que sus miembros conocen su realidad fenomenológica, el territorio, potencialidades, limitaciones y recursos locales*" (the working out of the maps...is the responsibility of the community, because they know their environment, the territory, what might happen, limits and local resources).

The manual is a practical template for the community to use to map out efficient and effective actions which might be taken in response to adverse events. The manual has blank tables and lists to fill in, diagrams of the local area to illustrate and other information, to be completed by the community. Even in areas where everyone has GPS and mobile phone technology, they are encouraged to illustrate and complete the tables and diagrams by hand, together; as the value is also in a communal experience, generating discussion and sharing knowledge.

The practice of community participation is evident in other institutions. For example, the SERNANP (*Servicio Nacional de Áreas Naturales Protegidas por el Estado*, Parks and Wildlife) plan of Intercultural Environment Education for the Amazon region is part of the Peru Amazonian Co-Management Project 2013-2017. This project consults with Amazonian indigenous community organisations in the management of nature reserves. The publication *Guía para contextualizar la Educación Ambiental Intercultural* (SERNANP, Lima, 2013) sets out lesson plans and methodologies for use in regional schools and communities.

Other agencies in Peru also produce publications aimed at community engagement. In particular, the use of colourful images and storyboard or comic-book formats reflect the concern with educating young people, who will transmit that knowledge through to their parents and family members. Some examples include:

1. *Cuidémonos de las heladas*, a comic book teaching about high altitude weather conditions, SENAMHI, Lima, 2013
2. *En busca de un mejor lugar para vivir*, a comic book teaching about climate change, SENAMHI, Lima, 2011
3. *Cuidemos Nuestro Santuario Histórico de MachuPicchu*, a picture book about nature and cultural conservation in Macchu Picchu, SERNANP, Lima, nd
4. *El Sueño de un Terremotito*, and
5. *Tres Amigos y el Terremotito*, both storybooks for young children written by Dr. Hernando Tavera, Chief Scientific Researcher, Seismology, IGP, Lima, 2013

Mochila para emergencias: Emergency Backpack

Having a personal emergency backpack ready for any event is promoted by INDECI. In Australia, an emergency kit is often designed as items packed into a large box or tub, reflecting the reality of Australian landscape and living arrangements; that people might be driving their car to evacuate from their home. Residents of rural, fire-prone areas are more likely than urban dwellers to have an emergency kit prepared. In Peru, two thirds of the population lives and/or works in high-density urban centres. In an emergency, they are likely to be on foot. A backpack is easier to carry and also leaves hands free.

Slogans, Terminology and Key Messages

INDECI has a guiding motto: '*Defensa Civil: Tarea de Todos*' (Civil Defence: Everybody's Work), which is used on all publications, promotional materials, media messages, TV ads etc. This guiding motto implies devolution of responsibility back onto the whole of the

community, and its regular use sends a clear message that the community is actively involved, not a passive recipient of assistance. As Guillermo Gonzales Navarette, Chief of the INDECI Office of Social Communication, explained to me: "*Todos somos Defensa Civil*" ("Civil Defence is all of us", personal interview, INDECI Headquarters, 6/06/2014).

This social dimension is included, for example, in the *Guía de Actuación* (p10) under the section heading *IV. Principios de la comunicación social en caso de desastres de gran magnitud* (Social Communication Principles in Major Disasters). A five level pyramid diagram is modelled on the World Health Organisation Expert Consultation on Outbreak Communications (Singapore 2004). The WHO conducted an extensive review of risk management literature and developed its strategy from that consultation, recognising that "it is time to acknowledge that communication expertise has become essential to outbreak control" (*WHO Outbreak Communication Guidelines*, 2005, p1; see also http://whqlibdoc.who.int/hq/2005/WHO_CDS_2005_28_eng.pdf?ua=1). The strategy was assessed by experts from a range of cultures, political systems and economic development.

In INDECI's *Guía de Actuación* (p10), the areas of best practice are listed as

1. Trust
2. Announcing Early ("decide and tell" strategy)
3. Transparency
4. The Public
5. Planning

The stated objective is to design key messages that include the public in solutions to problems and to promote the necessity of the public's participation in the solution: "tell them what they can expect and what they can do to improve their own safety" (*ibid*, p 11).

Slogans and public messages which are repeated reinforce simple, basic concepts. The language used is inclusive and written in common usage, not technical, terms. For example, an INDECI public information banner and brochure showing a range of signage (evacuation routes, safe area, fire extinguisher etc.) is titled 'Signs Which Save Lives'. This is a more urgent word usage than one such as 'Safety Signs'.

Key safety messages are delivered regularly on TV by well-known influential journalists (comparable in Australia to, for example, Tony Jones or Michelle Grattan). This gives the

messages authority and *gravitas* along with the acceptance or approachability of a familiar media figure.

Typically, for slogans or ad scripts, there will be no more than three words, terms or phrases used. This not only reinforces simplicity, it adds to the phonic cohesion of the words, and harnesses the rhythm and flow of the language to aid communication. The verb tense used is often in the imperative; a call to action. Note that in Spanish language, the imperative uses a reflexive verb, which also reinforces a personal injunction to act. For example, *prepárate* means get (yourself) prepared.

Repeated public messages broadcast include:

1. "*Únete/infórmate/prepárate*" Get together, Get informed, Get ready

This catchcry uses three simple words, the final syllables of the words rhyme, the message is in the imperative, calling people to action.

2. "*Preparados estamos seguros*" (if we are) Prepared, we are safe.

This might be translated in English as "Be prepared, Be safe", drawing a line of logic and consequence between the first and the second states (if you do A then B will happen). This example uses three simple words, the final syllables of the words rhyme, the words used indicate a statement of readiness.

3. "*Prepárate/ubícate/evacuá*" Get ready, Get Safe (in a safe place), Get out (evacuate).

This slogan was used in advertising materials in preparation for the *Simulacro Nacional*. Again, a three-word, unambiguous message.

4. "*La seguridad empieza en casa*" Safety Begins at Home

This is the title of the Family Plan Manual published by INDECI in their Directorate of Development and Strengthening of Human Capacity. The Family Plan clearly directs responsibility back to the community: "The Family Emergency Plan centres primarily on the principles of common good and self-help in disaster risk management" (*Plan Familiar de Emergencia "La seguridad empieza en casa"*, INDECI, 2014, p 4).

5. "*Preparados vivimos seguros*" Prepared, We Live Safely

This is the slogan of the 2013-14 'Meeting of Children and Adolescents Prepared in Responsive Disaster Risk Management'. The meeting was a community education proposal

initiated by INDECI, with the support of UNICEF, Save the Children, the Education Department, Parliament and other organisations. The objective is to develop and strengthen the leadership capacities and skills of young people, to respect their right to participate and bring their voice into agency planning (*Encuentro de Niñas, Niños y Adolescentes Preparados en la Gestión Reactiva del Riesgo de Desastre Perú 2013-2014*, INDECI, 2014, p 9).

This type of language construction is similarly used by other international EM agencies, such as the New York City Office of Emergency Management with their call to "Make a Plan/Gather Supplies/Get Informed" (*Ready NY, My Emergency Plan*, NYC OEM, NY, nd).

Virtual tools

INDECI has a range of technological tools, with open access for all institutions, government organisations and individuals. These include the risk management information system developed by CENEPRED: SIGRID (*Sistema de Información para la Gestión del Riesgo de Desastres*), the interactive geospatial information system SINPAD (*Sistema de Información Nacional para la Respuesta y Rehabilitación*) and GIS systems.

Website: www.indeci.gob.pe

The INDECI website publishes information in three languages: Spanish, Quechua and English. It is a popular site, visited mostly by people aged 18-34 yrs. In 2014, there were 13 million hits from January to April. After an 8.2 magnitude earthquake and 2.11 metre tsunami occurred on 1 April in Iquique, northern Chile, there were 51 million hits on the website. The INDECI Office of Social Communication monitors in real time tweets, messages, blogs etc. with analyses according to age and gender.

The scope of material published on the website is extensive, and ensures a high degree of transparency and accountability to the public. In a major event, the situation, mission, execution, administration, command and communications, and safety information is published and updated regularly. The public is, in effect, given information Australian ESOs might include in an IAP (Incident Action Plan) and SMEACS briefing. For example, the report of an earthquake in Cusco on 29 September 2014 includes the following:

1. The situation: what happened, details of the earthquake from IGP data, and what authority is responsible for action
2. Location: a list of all affected districts

3. Map: with details of the location, intensity, earth movement and damage (IGP)
4. Separate detailed aerial images of particular districts and details of damage ('google maps' view)
5. A series of tables detailing the preliminary evaluation of damage to
 - a) life and health
 - b) property (residences and public buildings)
 - c) transport and communications
 - d) agricultural infrastructure
 - e) services (water, electricity, etc.)
6. Tables detailing the delivery of supplies to the region from INDECI central stores in Lima (ration packs, tents, bedding, crockery, cutlery, clothes, tools, educational materials and games for children etc.)
7. Numbers of evacuees and temporary accommodation
8. Financial situation
9. Actions: a chronology of all actions taken by authorities starting from one hour after the earthquake occurred
10. Appendices containing details of dead and injured people, affected schools, damage to the agricultural sector, evaluation of basic services, photographs

(Informe No. 9: Informe de Emergencia No. 662 - 29/09/2014/COEN-INDECI/1800 horas, Centro de Operaciones de Emergencia Nacional. Report No. 9, Report of Emergency No. 662, National Emergency Operations Centre, 29 September 2014).

In-House TV and Radio Production

INDECI produces television Ad campaigns at their own dedicated media studio, located at their headquarters. The National broadcasters (TV Peru, RTP) are obliged to transmit these ads at an agreed frequency. There are also mini reports and updates broadcast weekly on five other radio stations. In addition, once or twice a week there are regular 20 minute interviews with INDECI spokespeople, open to talkback calls from the general public. The press office

produces monthly reports on public awareness and information acceptance and there are plans for the development of a dedicated civil defence broadcast band on Radio Nacional Peru.

The culture of direct communication with the public is practised in other institutions. *The Servicio Nacional de Meteorología e Hidrología* (National Meteorology and Hydrology Service, equivalent to the Bureau of Meteorology in Australia) also has telephone lines open to the public, who can ring in and speak directly to a staff member about current updates.

INDECI does not seek to protect the community from exposure to the reality of consequences. The content broadcast in television and radio ads is explicit and the potential effects of a major emergency are not downplayed. For example, in the *Simulacro Nacional* scenario, it was estimated that there might be 50,000 casualties. The message is clear: there will be fatalities, you might die.

In Australia, there are differing views in the EM sector about the style of public messaging and how explicit it should be. There is some caution about exposing the community to traumatic scenes, or potentially re-traumatising people who have previously been exposed to natural disasters.

This view is in contrast to those who cite the effective shock value of graphic media campaigns targeting emotional responses, such as the Victorian Transport Accident Commission (TAC) road safety public education campaigns. Since 1989 the TAC has produced over 40 TV ad campaigns whose efficacy has been supported by research indicating "clear links between levels of TAC publicity supporting the speed and alcohol enforcement programs and reductions in casualty crashes" (Monash University Accident Research Centre Report No.52, *Evaluation of TAC Road Safety Television Advertising*, Cameron, M., Haworth, N., et al, Sept. 1993).

In another instance of effective hard-hitting ad campaigns, the 2013 Victorian Cancer Council report 'What helped to Quit' states "more than a third (39.3%) of recent quitters said anti-smoking TV campaigns helped a 'great deal or somewhat' in staying quit" (www.cancervic.org.au/about/media-releases/2013-media-releases/may-2013/quit-s-most-emotional-campaign-yet.html, accessed 10/02/2015).

Similarly, according to Metro Trains in Victoria, their multi-award winning public safety campaign 'Dumb Ways to Die' (McCann Melbourne, 2012, mccann.com.au/project/dumb-ways-to-die, accessed 10/02/2015) contributed to a 30% reduction in near-miss accidents during the period Nov 2012-Jan 2013 compared to the corresponding period 2011-2012

(Stephen Cauci, 14/02/2013, <http://www.theage.com.au/victoria/no-dumb-luck-metro-claims-safety-success-20130214-2eelt.html>, accessed 14/02/2015).

Other EM Concerns and Capacities

Firefighting and USAR (Urban Search and Rescue)

In Lima, the Firefighting Academy has been in operation for 35 years and each year has an intake of 120 new recruits. Firefighters have dual roles as they also provide 85% of ambulance services. Firefighters undertake national level training in hazchem, hygiene/water treatment and USAR. USAR crews are drawn from the police, armed forces and firefighters. There are fifteen 8-member crews, who are trained and credentialled by the USA and are accredited by the United Nations.

Remote Area Hazards

Following a meeting at INDECI, I was invited by César Gino Rodriguez Rojas, Technical Assistant at the *Servicio Nacional de Áreas Naturales Protegidas por el Estado* (SERNANP, similar to National Parks and Wildlife) to visit the Ranger Station at Piscacucho. This is located in the Macchu Picchu Historical Sanctuary, where the Inca Trail commences. The purpose of the visit was to meet and exchange ideas about EM practices and methods, particularly firefighting. Six park rangers from other stations within the Sanctuary came to Piscacucho for the meeting. We shared extensive discussions about EM and exchanged information, print resources and visual media from our respective services. We also went on field excursions to sites of recent landslide and fire events, to meet local people and to visit Inca ruins at an archaeological site not accessible to the public.

Fire Risk: Macchu Picchu

There are few archaeological sites in the world as spectacular as Macchu Picchu. It is situated in remote mountains north-west of Cusco. Many tourists trek to Macchu Picchu along one of the Inca trails, which pass through steep terrain as high as 4,200m. Other Inca sites of Paukarkancha, Runquraqay, Sayaqmarca, Phuyupatamarca and Wiñaywayna are encountered along this route. The UNESCO World Heritage site extends across an expansive area of more than 32,000 hectares, overseen by a staff of more than 30 park rangers at six ranger stations. In addition there are 300 staff employed by the Ministry of Culture with responsibilities for Macchu Picchu.

Rangers are posted to stations for one-year periods. A posting can be to any of Peru's national parks, not necessarily near their homes. They are rostered on for a 22-day period then have 4 days' break, when they might choose to go home to their families, or often, the family might come to meet them at a nearby town. Rangers receive firefighting training from the USAID

Forest Service and First Aid courses delivered by medical professionals from Spain. Apart from the rangers, many parts of the national park have no other medical services.

Some of the Macchu Picchu Ranger Stations are accessible by 4WD, others only on foot from the nearest village. Once inside the heritage site, transport is along a series of trails on foot. Some local villagers, who live by subsistence agriculture and manufacture of traditional crafts, may use donkeys or horses to transport their goods. Conducting emergency response activities in this territory is a formidable challenge, not so much because of the severity of the events themselves, but because of the inaccessible remote wilderness terrain, high altitude, snow and sub-zero temperatures. Landslides and precipitous rivers breaking their banks are common. Fire outbreaks are often scrub or grass, as much of the vegetation is low-growing in areas of high elevation. Some of this, such as *pasto gordura* (an introduced species) and *pasto kikuyu* are highly combustible. Underground fires burning for months at a time are also a hazard. Combating a fire outbreak, or rescuing an injured tourist within the park boundaries might mean carrying all equipment and walking 2-4 hours or more to reach the location through rugged mountainous terrain, and the same to return.

Until the last two years, the site of Macchu Picchu was regularly under threat by fire each year. This was a substantial risk to the local and national economy and a constant threat to life. The rangers recruit and train local people to form community firefighting crews, and educate villagers about fire prevention and management. This has reduced the hazard significantly.

Health Risk: the Amazon *Friaje*

A climatic effect in the Amazon Region is the cause of an unusual health condition, known as *friaje*, which is a significant concern for the Ministry of Health and public health management. In the autumn-winter months of June to August, cold winds from the south-east ('*surazo*') disrupt the stable temperatures in the Amazonian zones. While the normal average temperature may be around 19 degrees, it is extremely constant and not variable. However, the cold south winds can cause the temperature to drop to around 13 degrees. Although this drop may seem inconsequential, the people of the Amazon region are not adapted to sudden changes in temperature, and their weakened immune systems expose them to pneumonia. Often this is fatal. Public education campaigns developed by INDECI stress the importance of using blankets and bedclothes, headcoverings, jumpers, and in rural districts, to bring animals in under shelter. Again, public information highlights three basic steps, with a three-word simple slogan, in the imperative:

"Prepárate/Abrígate/Infórmate" Get prepared, Rug up, Get informed.

Part 4: Re-assessing the Balance for Australian EM Workers

"Our emergency management arrangements struggle when confronted by widespread, intense, rapid onset and/or prolonged events"

(Victorian Premier Ted Baillieu, *Victorian Floods Review*, 2011, p IV)

Agencies such as the CFA and the SES have historically provided the Australian community with a skilled, reliable service and individuals have an expectation that their singular request for assistance (RFA) will be responded to expeditiously. In many cases, even in a major event with multiple RFAs, the expectation might be characterised as individualistic rather than community-focused. Further, individuals in communities often have divergent perceptions of what constitutes an emergency. It is not uncommon for emergency services to be called for tasks that are more appropriately categorised as regular home maintenance which are preventable and the responsibility of the resident, or that should be referred to a private contractor. This is a waste of highly skilled volunteers, whose training is directed towards preparation for emergency operational duties, not sundry maintenance.

The lack of basic maintenance knowledge or ignorance of simple safety measures is now commonplace in the Victorian community. SES volunteers repeatedly encounter people who do not know how to take preventative action like turning the electricity switchboard or water mains off and on. In the case of fire services, there is ongoing tragic loss of life through residents not having smoke detectors installed or working. For first aiders and surf lifesavers, safety messages go unheeded, as in 2014 Victoria had the highest number of drownings for 10 years (*National Drowning Report 2014*, Royal Life Saving Society Australia; see also www.waterfirstaid.com.au)

Range of Emergency Requests

Common and recurring examples of tasks VICSES crews are called out to, include:

- a blocked downpipe (preventable, usually manageable by the resident)
- flooding from an overflowing washing machine (manageable, not an emergency)
- a commercial building site where loose materials have become hazardous in wind (preventable, the builder's/ owner's responsibility)

- a DH&HS government social housing property with loose roof tiles, where the Manager declines to engage a contractor, for reasons of high cost after-hours, or risk to a professional contractor in wet weather, and refers the tenant to SES
- a vacant home renovation where a tarp has come loose and rain will enter the premises (no residents, no threat, covered by building insurance, builder's/owner's responsibility).

The consequence of repeated callouts to non-emergency RFAs are part of a range of factors that contribute to volunteers questioning the balance of their work and personal lives versus their significant volunteer training and time commitment. This can lead to the loss of enthusiasm, reduced periods of service or, over time, volunteer burnout.

Volunteer Service: What is Reasonable?

What level of service can be reasonably expected of volunteers? Following every major event, there is an After Action Review (AAR). Depending on the severity of the event, this may expand to a government review or royal commission. Such reviews and analysis focus on Emergency Service Organisations and how they can be improved. The 2009 Bushfires Royal Commission (*Final Report: 2009 Victorian Bushfires Royal Commission*, 2009, Victorian Bushfires Royal Commission), The Green Paper (*Towards a More Disaster Resilient and Safer Victoria*, State of Victoria, September 2011) and the Victorian Floods Review (*Review of the 2010-2011 Flood Warnings and Response: Final Report* by Neil Comrie, State of Victoria, 2011) for example, identify issues with agencies being stretched beyond their capacity.

Victoria has since altered EM arrangements, setting up Emergency Management Victoria to operate within an all-hazards, all-agencies framework. While it is undeniable that our ESOs must aim to develop practices of constant improvement, this creates increasing demands on emergency service workers.

Within VICSES, many members are regularly upskilling in order to be operationally ready for major events and to develop the corporate capacity of the organisation. The majority of volunteers have full time employment, and family or other responsibilities. As a regular volunteer they are expected to undertake activities in their spare time such as:

- train and maintain skills on a weekly basis
- attend other weekend training courses to upgrade or learn new skills

- serve on an operational response crew 24/7 when rostered
- deploy to other suburbs, regions or states in major events
- organise and administer their local Unit (which is in effect a small business)
- maintain unit finances and raise funds to purchase or maintain resources not provided by government funding
- maintain a fleet of vehicles and other equipment
- run community education programmes and participate in community events
- undertake further training such as qualifications as a Certificate IV Trainer or a Certificate IV in Frontline Management
- provide qualified trainers and assessors to their own unit or to other units
- undertake higher-level emergency management courses, for example, to train in the roles of Incident Controller, Operations Officer, Safety Officer.

In the case of VICSES Footscray Unit, service statistics show that in 2014, VICSES Footscray volunteers contributed more than 7,000 working hours to the community, or more than 136 hours every week. The dollar value of this service, if charged at a conservative rate of \$80ph, would be almost \$11,000 per week or \$568,600 annually. If all SES units are contributing half a million dollars' worth of work per annum, this is saving the State in excess of \$76.5 million annually in Victoria alone.

Participative Responsibility: Easing Demands on Volunteers

If the community can be educated to take more responsibility for itself, then a corresponding decrease in inappropriate demands on volunteers might be anticipated. To be effective and sustained, that community responsibility should be participative, not passive. That is, people in the community should be able to take effective action to manage their own circumstances where safe and appropriate, rather than immediately call for assistance from emergency response agencies. Is this achievable?

I use the words *participative responsibility* to denote an active level of engagement, distinct from other cognitive engagement strategies such as raising awareness, theoretical instruction or information sharing. These latter activities are essential and informative, but do they generate active participation? Participative responsibility has a clear implication: people must act. What will motivate them?

In the case of Peru, the frequency and extent of natural disasters is an obvious motivating factor. Peru is subject to hundreds of natural emergency events annually. On average, 400 earthquakes are sustained each year. The population is habituated to the nature of the potential destruction and are motivated by self-preservation. But this is also true of Australian conditions; bushfire in particular is an emergency event which is ever-present in the Australian landscape, but many residents fail to design, build and maintain their properties to best mitigate the fire threat, to evacuate early when there is a threat, or to permanently quit the area should it prove a mortal threat.

CONCLUSION

"The best, most opportune and targeted help is that which comes from the community and from individuals themselves, especially in prevention, in self-awareness of exposure to risk, and in being prepared in order to minimise the consequences of a disaster"

Política Nacional de Gestión del Riesgo de Desastres, CENEPRED, 2013
(*National Policy of Disaster Risk Management*, Centre for the Estimation, Prevention and Reduction of Disaster Risk, General Principles, p 5)

Participative responsibility is incorporated in the national discourse in Peru. It begins at the level of National Policy and is incorporated at all levels of government and institutional planning. The planning is put into effect by agencies led by INDECI, with characteristics that cross dynamically between the technical and the social.

What Makes INDECI Effective?

INDECI is comprised of dedicated, creative staff who deliver programmes and resources that are targeted and effective. Aspects of INDECI practices which support this outcome are:

1. Standardisation: INDECI is a national agency so responsibilities and strategies are centralised and unified in one institution.
2. Collaboration: INDECI practices are collaborative, engaging with all relevant agencies and stakeholders and working together from the start of an event.
3. Social Dimension: INDECI knows its stakeholders and social factors are recognised as crucial to EM. INDECI practices are adaptable, inclusive, multi-lingual, respectful of cultural differences and peoples' rights.
4. Communications: public information, messaging, TV ads, radio releases, educational materials etc. are written and produced in-house by community education teams and media personnel. The style and content is clear, relevant and timely.
5. Language: language is direct, not euphemistic. There is a clear message than not everyone will be saved in a major disaster. Words are simple and economical (3-word slogans, 3-line messages etc.).
6. Guiding Motto: INDECI effectively uses and promotes its guiding motto: *Defensa Civil: Tarea de Todos* (Civil Defence is Everybody's Work). This message nominates the whole of society as being responsible for action.
7. *Brigadas*: The community is engaged as responders in small teams called *brigadas* (brigades), in all apartment and office blocks, workplaces and schools. Being a brigade member is easy and achievable. Participants are not overwhelmed with

training and service, but their participation leads to agencies and institutions benefiting from fewer demands on their services.

8. Practice/Rehearsal: Mandatory emergency drills are practised regularly. This normalises them and provides data for future response planning (numbers of people engaged, timings of evacuations, casualty estimates etc.). Both vertical and horizontal evacuations are practised.
9. Leadership: Leaders are not faceless officers; they are active exemplars using affiliative, expert styles of leadership. The leadership is closely engaged with the public, from the highest position down.
10. Expertise: INDECI and associated agencies attract and employ highly qualified professional personnel, building a corporate culture of business and research excellence.

All of these aspects are fundamental in developing a culture of prevention and shared responsibility among the general public. A participative approach gives agency to individuals in the community, which leads to their increased input into, and ownership of, solutions. Recovery is influenced by the preparedness of the community and their adaptive capacity. As INDECI advises "The importance of working with the communities is fundamental, because it allows them to share the responsibility of identifying their needs and the solutions to their problems" (*Manual de Mapa Comunitario de Riesgos*, Manual of Community Map of Risks, INDECI, 2013, p 15).

Attachment A: Institutions, Agencies and Personnel Consulted

Embassy of Peru in Australia

1. Luis Quesada Inchausteguí, Ambassador
2. Alberto Gonzales Mejía, Minister Counsellor

Embassy of Australia in Peru

1. John Woods, Ambassador
2. Sophie Davies, Deputy Head of Mission, First Secretary
3. Paola Vicente, Program Officer

INDECI *Instituto Nacional de Defensa Civil* (National Institute for Civil Defence), Lima

1. General Alfredo Murgueytio Espinoza, Chief of INDECI
2. Abog Francisco José Ambía Camargo, Chief of the Office of Co-operation and International Affairs
3. Sergio Alvarez Gutierrez, Consultant Researcher: Disaster Risk Management, Specialist in Public and Environmental Health, Climate Change Adaptation, Department of Policy Plans and Evaluation
4. Abog. Marco Antonio Pimentel E.
5. Ing. Félix Augusto Icochea Iriate, Department of Rehabilitation
6. Ing. Marco Antonio Tantaleán del Aguila, Sub-Director of Response Resource Management, Office of Preparedness Planning
7. Mag. Blanca Vilchez Rojas, General Office of Social Communications
8. Mag. Martha Giraldo Limo, Department of Development and Strengthening of Human Capacitation
9. Lic. Guillermo Pedro Gonzales Navarrete, Chief of the General Office of Social Communications
10. Luis Vallenias, Director of Preparation and UNDEC Representative, Department of Response
11. Luis Granados
12. César Cotrina, Office of Internal Affairs
13. Susana Trujillo Vargada, Translator, Office of International Affairs

INDECI *Instituto Nacional de Defensa Civil* (National Institute for Civil Defence), Cusco

1. Lic. Héctor Delgado Layme, Education Coordinator and firefighting instructor, Cusco Regional Office
2. Dr. H. Gustavo Infantas Gibaja, Director, Cusco Regional Office

COEN *Centro de Operaciones de Emergencia Nacional* (National Emergency Operations Centre)

SERNANP *Servicio Nacional de Áreas Naturales Protegidas por el Estado* (Parks and Wildlife), Ministry of the Environment

1. César Gino Rodríguez Rojas, Technical Assistant, Administration, General Secretariat
2. Ing. Marcos L. Pastor Rozas, Technical Assessor, Department of Ministerial Advice
3. José Carlos Nieto Navarrete, Chief of the Macchu Picchu Sanctuary
4. Jessica Álvarez, Assistant to the Director

Insituto Geofísico del Perú (Peru Institute of Geophysics)

1. Dr. José Macharé Ordoñez, Technical Director
2. Dr. Hernando Tavera, Chief Scientific Researcher, Seismology

CENEPRED *Centro Nacional de Estimación, Prevención y Reducción del Riesgo de Desastres* (Centre for the Estimation, Prevention and Reduction of Disaster Risk)

1. María Mercedes de Guadalupe Masana García, Chief, CENEPRED
2. Dr. Antonio Rojas Crisótomo, Chief, Office of Cooperation and International Relations

Consejo de Ministros (Council of Ministers, Cabinet)

1. Ing. Rosario Guevara Salas, Secretariat of Disaster Risk Management
2. Margarita Hortencia Camacho Ramos

Specialist Units, Firefighters, USAR

1. Commander Brigadier César R. Villegas Castañeda, Chief of USAR, Peru, Directorate of Specialist Units
2. Enrique Benavente, 'Roma 2' Station Chief, Lima

SENAMHI *Servicio Nacional de Meteorología e Hidrología* (Bureau of Meteorology and Hydrology)

Ing. Teresa García

Macchu Picchu Historic Sanctuary Ranger Station at Piscacucho

1. Danilo Quispe Rodríguez
2. Javier Olivera Paredes
3. Javier Isaac Huayllapuma Rodríguez
4. Ever Chuchullo Tanquipa
5. Sandra Álvarez Hidalgo
6. Rosmeri Anselmo Chuguilir

Red Cross

1. Jaime Huertas, Director Emergency Response
2. Jorge Menéndez Martínez, Executive Director

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www.ses.vic.gov.au

<http://sigrid.cenepred.gob.pe/sigrid>

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www.waterfirstaid.com.au

http://whqlibdoc.who.int/hq/2005/WHO_CDS_2005_28_eng.pdf?ua=1

www.youtube.com/watch?v=IJNR2EpS0jw ('Dumb Ways to Die' ad)

INDECI Audio Visual Materials

Material Audiovisual de Campañas Institucionales

Simulacro Nacional por sismo, Spots TV

Simulacro Nacional por sismo, Piezas gráficas

Simulacro Nacional por sismo, Cuñas radiales