



Wilton Park



Images by: IJG, Shaun D Metcalfe, DVIDSHUB's photostream, MFA Netherlands, Staff Sgt. Wayne Gray,

Conference report

**Disaster risk reduction in Asia:  
identifying and maximising opportunities for action**

Monday 12 – Wednesday 14 December 2011 | WP1125

Held in Pattaya, Thailand



## Conference report

# Disaster risk reduction in Asia: identifying and maximising opportunities for action

Monday 12 – Wednesday 14 December 2011 | WP1125

Held in Pattaya, Thailand

### Summary

Significant strides have been made in Asia to reduce the impact of disasters, particularly reducing deaths caused by floods and earthquakes. However, given Asia's continued rapid economic growth and urbanisation greater efforts are needed to reduce the economic and social impacts. Asian cities need to become more resilient to both current and future risks. Asia constitutes 30% of the global land mass yet 60% of the world's population. Increased population pressures and urbanisation alongside a changing climate will put increasing strains on the natural and built environments. Additionally, weather related disasters will challenge governments resources and the ability to respond to natural disasters. In the future, as existing risk patterns intensify and effects are felt across borders and regions, it will be economically prudent and more efficient for countries to cooperate on disaster mitigation.

Recent disasters in Japan, Pakistan and Thailand have highlighted the devastating impact natural occurrences of flood, storm or earthquake can have on lives and economies across Asia when they become a disaster.

Key conclusions from the discussions:

- Prevention pays if it is done well. However, Asia's economic growth is increasing vulnerabilities and a trade-off is needed between growth and managing risk. Significant financial resources and political will are needed in Asia to prevent natural phenomenon creating disasters and reducing the economic and social impact such disaster have.
- New scientific and technological developments such as satellite mapping, land use mapping (as recently completed in Sri Lanka), improved forecasting can make a significant difference to assessing risk and forecasting disasters. Sharing such data through new means, including websites and social media, and ensuring scientific information is easily understood by policy makers is critical.
- Increasing urbanisation in Asia increases the risks and vulnerabilities. Governments should work with the private sector and communities to manage those risks as large-scale infrastructure and other development is taking place. Improving land use planning is critical; also building codes. Lessons from India's public infrastructure planning codes, the Rockefeller Foundation project in urban cities in Asia, or group incentives to "build back better" after a disaster in Payang in Indonesia are valuable lessons for others in Asia.
- Greater recognition of the natural ecosystem of water courses and their management is needed, particularly in the face of extreme weather, increased rainfall intensity and resulting flash floods.
- Government policies to create whole disaster plans and ensure adequate planning regulations etc are critical to reducing risks (India, Bangladesh, South Korea for example)

- A culture of financing risk is needed in Asia; lessons from other regions, such as Latin America, would be hugely beneficial, to develop pooling of risk and greater use of insurance instruments.
- Pilots projects reducing risk, many set up through community approaches or donors, need to be shared across Asia and ways found to scale them up. Changing behaviours is critical. Vietnam's community based disaster management, Dhaka's city volunteer system, or Philippines Red Cross 143 approach could be replicated elsewhere.
- Countries making the most progress in reducing risks and impacts of disasters are those where political will, government policies and local communities are working most effectively together.

## Climate and disaster trends in Asia

1. The frequency of natural disasters has been growing globally; and Asia-Pacific is now the most disaster prone compared to other regions of the world. Over the course of the 20th century, Asia accounted for 91% of all deaths and 49% of all damage globally due to natural disasters. Levels of prevention and preparedness vary from country to country and regional cooperation is limited. Extreme weather events are increasing with climate change, and the severity and frequency of events are only expected to intensify in coming decades.<sup>1</sup> Yet understanding the risks Asia faces is complex due to its diversity in language, cultures, level of development and urbanisation, and size.
2. Historically, there has been a focus both for international assistance and national disaster management plans to be response driven. Since the late 1980s, to reduce vulnerabilities and disaster risks, a paradigm shift occurred away from response towards mitigation and prevention. However, according to the World Bank, between 2000 and 2008 the donor community spent 20% of humanitarian aid on disaster response and only 0.7% on risk reduction. If mitigation and reduction are effective disaster risk reduction (DRR) strategies, then why are donor funds directed towards response when prevention strategies are proven to be more sustainable and effective?
3. Recently fewer Asian countries have requested international assistance post-disasters; instead national governments are taking greater responsibility. During the 2011 floods in Cambodia, no external assistance was requested by the national government. However, it is feared that the underlying causes of disasters, such as poverty, are not being addressed. Huge pockets of poverty and social exclusion exist in many Asian nations, and supporting the vulnerable populations to ensure greater resilience to disasters is a challenging task. Many now question what responsibility the international community has, and will have in the future, if governments become completely self-reliant and what impacts that will have on the vulnerable populations.
4. Increasing temperature trends and changes in rainfall patterns have been observed in Asia which have consequently caused water related disasters in previously dry areas. In 2009, 16 of the 42 disasters in the Asia-Pacific were caused by floods that followed tropical storms. An increase in the variability of rainfalls causes severe landslides, mudslides and flashfloods, even though according to the International Panel on Climate Change (IPCC) the total annual amount of rainfall has decreased. Pakistan has experienced a shift in monsoon regions- whilst rains were historically more pronounced in the North East, an additional 25 districts in the North West now experience monsoon rains. Pakistan also suffered increased flash flooding.
5. Water related disasters, either drought or flood, will have increasing impacts on already severely water stressed populations of Asia and will continue to be a main concern for the region. According to the United Nations, 90% of the global population exposed to floods lives in Asia and the Pacific. Rapid glacial melt in the Himalayas, integral for South Asia's water systems, is expected to cause unpredictable excesses and shortages of water. Additionally water quality and shortages arising from sea-level intrusion and salt-water contamination will further strain water resource management.
6. In the past 20 years as a result of natural disasters, there has been a significant increase in the number of houses damaged, the number of people affected, the number

of local areas reporting losses and the damage to health and educational facilities. Whilst the number of deaths from natural disasters has decreased, the economic damage has significantly increased. According to the United Nations, while Asia generates 25% of the world's GDP, 42% of global economic losses and 85% of the deaths due to natural disasters occur in Asia. During the 2011 floods in Thailand, 60% of Thailand's GDP was located in the floodway and as a result Thailand's economy shrank by approximately 3.5%<sup>2</sup>. Economic growth in Asian nations has increased the exposure of economic assets to hazards, yet increases in GDP have not been translated into a reduction of vulnerability.

7. An increase in the frequency of disasters will significantly affect populated regions not least urbanised ones. According to the United Nations, Asian cities are home to nearly 1.7 billion people, nearly half of the urban population of the world. It is estimated that 60% of all global population growth will occur in Asian cities and urban population centers in Asia are estimated to double by 2050. Rural to urban migration and migration as a result of economic aspirations and/or climate change will put increasing pressures on a city's ability to respond to hazards.

## Science and its application for DRR

8. With the application of science, vulnerabilities of communities can be diminished if risk reduction methods are implemented within projects. Specifically, scientific data is vital for the successful administration of projects and scientific tools are key to examining the impacts of disasters. Scientific mechanisms explored include satellite images, geonodes and early warning systems (EWS).

## Satellite imagery

9. Opportunities for efficient DRR action can be maximized through satellite applications. Satellite images are objective, timely, comprehensive, accessible, and recyclable and can display both the current situation and the vulnerabilities of an area<sup>3</sup>. Baseline geographic information combined with satellite imagery allows for a detailed and comprehensive preliminary analysis and feedback into DRR. Crowd-sourced data is used to support imagery analysis and mapping activities. Social media via crowd-sourced geo-photo's improved understanding and validation of the 2011 flood situation in Thailand.

## GeoNode

10. GeoNode is an open source platform which stores and shares geospatial data, manage information and support a community of users by communicating with other users.<sup>4</sup> It aims to reduce the impact of disasters by empowering decision makers with better material and tools to support their decision. For example, geonodes assist the making of effective risk assessments by providing a location for information from numerous agencies to be compiled and stored.

## Early warning systems (EWS)

11. Forecasting rainfall and storms is critical. Early warnings need to be turned into early action, and particularly action prior to a disaster occurring. They are a key mechanism to saving lives and reducing the impact of flooding on communities. However, they require more attention because the tools are available, yet are not being fully utilized and applied. EWS could be more effective with greater coordination and communication amongst the many stakeholders especially in relation to river systems; strong political will and leadership are necessary to promote and encourage the use of forecasts amongst stakeholders. Longer-range forecasts are also needed.
12. Science should be easy to interpret, implement and mainstream, and three recommendations regarding the use of scientific information include:
  - Scientists should have a degree of accountability. Appropriate and significant



information should only be released with the intention of reducing the vulnerability of those concerned.

- Science communicators need to be used to disseminate and provide the information in a language local communities can understand. Science needs to be distilled in a simple fashion and tailored to the differing needs of the individuals at risk.<sup>5</sup>
- Technology should be applied in a regulated and legislated manner; corporate social responsibility is encouraged.

13. Although data sharing should be encouraged between agencies, providing open data is difficult and concerns regarding misinterpretation of the data by the public or media needs to be addressed.

### **Improving urban planning**

14. Cities are concentrations of risks to climate change and these dense population centres are vulnerable to both slow and rapid onsets of disasters. The potential economic loss is extremely high, not only to the current mega-cities, but also to those where future growth will occur. Climate response needs to be developed and integrated into the planning and budgetary processes of cities. The capacities of cities to reduce risks of disasters needs to be enhanced, knowledge networks should be strengthened expanded and better understood.

15. Cities have a unique set of vulnerabilities due to the established systems of dependencies, and often lack the social and non-structural solutions that have been successful in rural areas in building resilience. Volunteer networks and social cohesion is more difficult to sustain in urban areas and urban centres have limited capacity to manage disasters. In Dhaka, in the event of an emergency 60,000, volunteers in neighbouring districts have been trained to respond and assist the Bangladeshi capital. Emergency response planning elsewhere is often inadequate in urban centres and information for all hazards, such as escape routes, are seldom available.

16. Earthquakes occur relatively frequently in the region, providing governments with an opportunity to learn from past mistakes and improve current emergency and rescue plans. Earthquakes become a disaster when poorly constructed houses and buildings collapse. The damage of a potential earthquake increases when cities expand beyond their carrying capacity. Kathmandu's increasing urbanisation and minimal building standards will leave the city buried by rubble in the event of a major earthquake.

17. Investments in urban centres must be able to absorb the development pressures and facilitate growth whilst not enhancing risk. Risk drivers need to be examined and reduced both within city limits and suburbs surrounding the city. Resilience needs to be fed back into political and land use planning, and particularly, greater political attention must be directed to enhancing climate resilience of cities. Greater resilience can be achieved where there is an interaction between urban system analysis, climate change impacts, and vulnerability assessment.

18. Challenges to urban resilience planning include population pressures, informal settlements and the rising value of land. The urbanisation process results in increased land pressures, when rural migrants move to already overcrowded cities they have no alternative but to occupy generally risk-prone, unsafe land and construct insecure homes. Migrants often incur greater risks from natural hazards such as floods and landslides as a result of having to live in closely built structures on flood plains, riverbanks or steep slopes surrounding cities.

19. The Rockefeller Foundation is undertaking projects in ten Asian cities of second and third tiers in size where the population growth is expected. This provides valuable opportunities to increase resilience to climate change as cities expand.<sup>6</sup>

## Improving land use planning

20. More emphasis is needed in analysing the relationship between the built and natural environments. Global development trends such as population growth and rapid urbanisation are overriding the functions of ecosystem, when the built environment continuously takes priority over the natural environment and a natural flood becomes a disaster.
21. Land use changes exacerbate the effects of disasters and can cause severe impacts such as flooding and landslides, potentially inducing serious human and economic consequences. Extensive deforestation increases the volume and velocity of water runoff and similarly uncontrolled development, such as embankment building, obstructs the natural drainage system. Such approaches need to be revised and river management reconsidered. The Thailand flooding has put focus on the management systems. Bangkok's flood systems were designed to cope with rainfall in the surrounding area and coastal flooding but not a vast volume of water from upstream.<sup>7</sup>
22. In coastal areas mangrove forest destruction and their consequent effects on coastal communities is an example of how changes in land use are increasing vulnerabilities of communities. Mangroves are critical components to the overall resilience of coastal areas to threats posed by tropical storms, tsunamis and other natural disasters and minimize the damage to property and loss of human life.<sup>8</sup> Development pressures negatively affect mangroves and reduce natural barriers to disasters; the percentage loss of mangrove is of similar value to the increase in GNP per capita.
23. With expected land use pressures, other recommendations for land use planning include:
  - a) Land use planning issues must be addressed and need to consider a changing climate.
  - b) Land use plans should be comprehensive and developed at the regional and national level. However, recognising that regional planning is difficult, cooperation must be improved.
  - c) Land use changes have regional impacts and structural buildings such as dams negatively impact communities and food production downstream.<sup>9</sup>
  - d) Land use planning should be based on scientific data and the output should be simple and easily interpretable.
  - e) The mapping of land use in Sri Lanka was cited as an example for other countries.

## Private versus public accountability towards DRR

24. Both private and public infrastructure should be built according to strict building standards in order to facilitate DRR. In India this has been successful for the public sector; all public infrastructure must first be approved by a planning commission. In consultation with engineers, the projects are properly assessed and consider a long list of hazards such an approach could be replicated elsewhere across Asia.
25. The private sector is currently increasing its investments throughout India as a result of economic growth and DRR concerns need to be enforced upon them. It is argued that the private sector, largely accountable for economic growth and financing infrastructure, should be held responsible for the risks they create, rather than having the public sector pay for them. There has been greater exposure to disasters, yet there is no apparent link between growth and disaster reduction.

## Disaster risk financing

26. Ensuring the adequate financing of risks to disasters is critical both pre and post-disasters; capital is necessary to manage disasters regardless of the preparation efforts. Asia is growing rapidly and is consequently increasing its vulnerability, yet a culture of disaster risk financing does not exist and a gap between insured losses and

economic losses prevails. Due to the social structures in the region, social insurance is more pertinent. Furthermore, countries do not have the resources to manage both risk mitigation and response and are faced with the dilemma of having to choose between the two. However, various options are available and should be considered.

Challenges to risk financing in Asia are included below.

- a) Asian countries currently have no interest in transferring risk, yet for risk financing to be successful a demand needs to be present. There are lessons from experience in Latin America, where governments at the national level have been involved for example the Calamity Fund in Mexico which parcelled up different risks which were reinsured through Swiss Re. Capital bonds are also optional allowing large transfer of risk for an earthquake or hurricane. Greater pooling of risk is needed.
- b) A gap to financing is the unavailability of historical and current reliable data. If governments wish to enable a culture of insurance, an effort must be made to close the gap and governments must be committed to obtaining consistent data for risk financing.
- c) Greater use of risk assessments is needed by government.
- d) The concept of climate change should be better understood by insurance companies who are currently unwilling to price climate change risk over 20-30 years.
- e) The large poor population is often uninsured and additionally poverty reduction programmes are at risk due to global economic growth. Whilst, disasters have the greatest impacts on the poorest in Asian societies, they might be the most resilient by practicing simple and traditional mitigation strategies. Although the poor would most benefit from the insurance policies, it is often unavailable to them and is believed to be expensive.

Additional recommendations for risk financing include:

1. Linking loans from donor communities (including the World Bank) and private sector banks to DRR. Donor aid and post disaster loans are a very important source of financing; they are a source of cheap funding to help recovery and reconstruction in the aftermath of a disaster. The donor community and banks must be encouraged to make the granting of these loans contingent disaster mitigation and resilience building.
2. Promoting credit-linked insurance for large urban projects as well as development projects. Governments should implement policies that mandate the purchase of insurance and DRR for large investments in urban cities (infrastructure, hospitals etc). The insurance companies would price the risk and the price will signal the level of DRR; promoting hazard resistant development.
3. Supporting provincial risk financing via sovereign insurance and risk transfer. Provincial governments often need large amounts of money after they have been struck by a low- frequency, high-impact disaster. The money mobilised for this tends to be diverted from development projects that hurt long-term growth trajectories. In order to close such a funding gap, government could procure insurance or reinsurance, leveraging the benefits of the global capital pool.

## **Disseminating DRR knowledge across Asia**

27. Sharing of transformational knowledge needs to occur and success stories of effective mechanisms needs to be disseminated across Asia. Bangladesh has a concrete Standing Order on disaster management; the tasks of all individuals on how to act and respond are clearly detailed during a disaster. Several suggestions have been made regarding the sharing of DRR developments:

- a) Best practices and knowledge must be shared from pioneering countries, with a potential of developing an Asian guideline. Similarly, there has been a slow

- internalisation of lessons of past disasters and this also needs to be distributed amongst stakeholders.
- b) Efforts must be made to provide gender-specific information. (In the 2011 Tsunami 70% of the victims were women).
  - c) Sharing learning is crucial to ensure stakeholders and communities learn from and replicate successful projects from one situation or country to another.
  - d) Intergenerational risk communication is vital and should be encouraged, as is communication between cultures.<sup>10</sup>
  - e) Active coordination is necessary with those that can provide information with those linked to community actors. Decentralization needs to occur to empower communities.
28. The Philippines Red Cross Model 143 is an example of successful community involvement and an effective mechanism that could be shared and expanded across Asia. The Red Cross Model 143 ensures effective preparation and response during disasters aiming to have 44 volunteers per barangay location with one team leader, trained in emergency and disaster response, health and welfare and voluntary blood donation and advocacy. The volunteers educate themselves via reading material provided by the Red Cross; this allows for effective training of countless volunteers throughout the Philippines. Communities need to be engaged not only because they are the first responders, but their involvement provide ownership and ensure sustainability of projects. It is also important to scale-up DRR pilot projects and pilots need to show good results including ensuring local trust has been achieved. Funding should be leveraged from micro financing to the Global Adaptation Fund. Increased efficiencies will ensure greater value for money.

### **Behavioural change for promoting DRR**

29. Behavioural change and capacity development needs to occur at all levels, particularly at the local level Therefore a “pull from the bottom” to improve the coping mechanisms is necessary. A culture of safety and resilience needs to be integrated into society and be part of people's everyday lives. Currently a disconnect exists between knowledge and action, although for example academia is aware of building codes for disaster management, these need to be improved, enforced and taught to civil engineering students. Imposing resilience from a top-down directive is difficult to sustain.
30. Communities too, are aware of their unstable building practices yet choose not to act. In Indonesia a study found that even though individuals were recently hit by a disaster, there was no motivation to rebuild a house with safer building standards. The “build back better” programme was initiated by engineers after the Padang earthquake in Indonesia, and found that although people were increasingly aware of safer building practices, and generally people could name three specific practices, insecure homes continued to be built. Even the death of a family member was not sufficient motivation to initiate safer building practices; only individuals that had themselves been traumatised during the earthquake made efforts to rebuild with safer standards. Although a challenge persists in integrating science with the community, a deeper understanding of communities and what their incentives are to build back better is necessary.
31. A new programme is being initiated in Padang to test incentives and sanctions that aim to encourage safer building practices. This will include the provision of micro-credit to finance rebuilding that will have financial benefits contingent on small collectives of around 6 households all building back to a safer standard. This programme will be closely monitored to evaluate its effectiveness; if successful in Padang then the next challenge will be to evaluate whether these incentives are sufficient in areas that have not experienced a recent earthquake.
32. Scenarios and real-time exercises have been valuable in encouraging government officials to understand and prepare for hazards.<sup>11</sup> Rather than having to convince



government officials of the possible occurrence for example, of a volcanic eruption, real time scenarios are effective in creating awareness.

33. Additionally, the prevalent disposition regarding urban centres as the only place for economic development and growth should be adjusted, yet is unlikely to occur. There is a large pull in Asia to urbanise, and with urbanisation increasing risks and pressures are cast upon a city. In the future, economic growth should be encouraged away from urban capitals, assisting the transfer of labour out of the large cities and particularly promoting safer DRR practices in the expanding cities.

### **Political involvement for DRR**

34. Political commitment is vital for promoting DRR, and an indicator of that commitment is the resources allocated to reduction and mitigation. Communities must initiate pressure on their local authorities for assistance, and as part of an effective “bottom-up” approach, resources will be mobilised when sufficient pressure is felt. The local level should advocate diligently and consistently for greater government involvement in disaster reduction and mitigation. However, a balance between bottom-up and top-down is required.
35. There is a disconnect of dialogue, and a general lack of awareness and engagement from politicians towards DRR. Political commitment and involvement requires transparency and accountability, which demands monitoring at the local level. The political process cannot be ignored and a reliable contract should be built between civil society and governments. Additionally, dialogue will be necessary between local communities and government bodies for successful relationships to be maintained. Ultimately, national governments have a responsibility to accommodate the needs of the most vulnerable of their societies.
36. Messages to the public should be non-political and a primary knowledge source should be responsible for disseminating information to the public. During the 2011 floods in Thailand, excessive, exaggerated and mixed information was provided to the public by various agencies creating chaos and unnecessary evacuations. Disaster recovery is often used by politicians to expand their political platform and gain public approval, whilst disaster mitigation strategies are ignored because they do not provide enough public recognition.
37. DRR in isolation is difficult to impose and sustain, and should instead be involved in the overall development process. DRR should be integrated with climate change adaptation (CCA) and applied to current and future programmes and goals at the community level. Communities will play a key role in developing those guidelines and assisting in sustainable project development.

### **Recommendations for DRR implementation in Asia**

38. Additional suggestions for developing DRR strategies in Asia include:
- i. During a crisis, leadership and coordination is of great importance and should be improved. Governments should have a focal point for managing disasters and gaps such as awareness, public information, planning and capacity building need to be addressed.
  - ii. Existing best practices and practical information needs to be better documented and shared across the region.
  - iii. Attention should be focused on strengthening capacities of national governments for mitigation and assisting transboundary cooperation.
  - iv. For project implementation to be successful the needs of communities and their motivation for applying DRR strategies should be better understood and DRR practices should be mainstreamed with development strategies.

## Conclusion

39. Asia is extremely disaster prone and the current economic growth in the region needs to be translated into greater emphasis and focus on DRR. Although mitigation and response have been recognised as successful strategies, governments need to be motivated and focus their strategy and resources here. Much has been achieved throughout the region, however given Asia's vulnerability and exposure in the world; more action will be needed to improve the region's mitigation and reduction strategies. Disaster Risk Reduction is currently seen as a sector. However, it should be viewed much more as economic and social development in a hazard prone area and in a changing climate. Governments, the private sector and communities will increasingly need to work together to reduce the causes of risk from the impact of natural and human-induced disasters.

**Felice Bakker and Robin Hart**

Wilton Park | January 2012

Wilton Park reports are brief summaries of the main points and conclusions of a conference. The reports reflect rapporteurs' personal interpretations of the proceedings – as such they do not constitute any institutional policy of Wilton Park nor do they necessarily represent the views of the rapporteur.

Should you wish to read other Wilton Park reports, or participate in upcoming Wilton Park conferences, please consult our website [www.wiltonpark.org.uk](http://www.wiltonpark.org.uk)

To receive our e-newsletter and latest updates on conferences subscribe to <https://secure.wiltonpark.org/en/secure/subscribe?action=subscribe>

---

<sup>1</sup> In 2006 alone the region experienced 226 floods

<sup>2</sup> Estimated economic cost of the South-East Asian floods of 2011 is \$6.3 billion

<sup>3</sup> In Nicaragua satellite imagery was responsible for relocating a school away from a landslide prone area

<sup>4</sup> See websites such as: [www.geonode.org](http://www.geonode.org); [www.haitidata.org](http://www.haitidata.org) for further information

<sup>5</sup> During the 2011 Floods in Thailand, flood forecasting did occur, however organizations and institutions were unable to apply the forecasts and anticipate the scale of impact

<sup>6</sup> Asian Cities Climate Change Resilience Network ([www.acccrn.org](http://www.acccrn.org))

<sup>7</sup> Rainfall in Thailand was 32% higher than normal; 14 billion cubic tonnes of water passing downstream via the river systems

<sup>8</sup> During the 2004 Asian Tsunami, coastal communities with healthy mangrove forests suffered fewer casualties and less severe property damage than those with degraded or deforested mangroves

<sup>9</sup> Hydro projects in India will have environmental impacts on Bangladesh; the flow therefore needs to be controlled and regulated to ensure that the benefits are maximized and the negative effects are minimized

<sup>10</sup> Intergenerational risk communication was successful for the population from the Island of Simeulue in Indonesia during the 2004 Tsunami, almost all residents survived due to the local inherited knowledge of tsunamis

<sup>11</sup> In Cameroon, government officials were given a scenario (volcanic eruption) in real time and shown what would happen in days and how many people, building, and schools would be destroyed