Regional issues in disaster risk reduction, including those related to climate change adaptation, and policies related to mainstreaming disaster risk reduction into socio-economic development planning

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Content

Disaster Risks in Asia and the Pacific

As the most disaster prone region in the world, building resilience is one of the most important current challenges for Asia and the Pacific. Rapid and uncontrolled urban expansion with poor land use planning and management and environmental degradation, coupled with an ever more complex society having deep interlinkages at the local, national, regional and global levels, have led many policymakers to recognize the need to move away from addressing single issues to treating economic or social sectors holistically.

During the past decade, disasters affected 2.5 million people in Asia-Pacific and resulted in almost 800,000 deaths. A person living in Asia and the Pacific is almost twice as likely to be affected by a disaster as a person living in Africa, almost six times more likely as a person living in Latin America and the Caribbean, and 30 times more likely than a person living in North America or Europe. This trend is also reflected in the region's economic losses — in 2011, losses in Asia and the Pacific represented 80 per cent of the global disaster-related losses, even though the region only generated a quarter of the world's gross domestic product (GDP). This risk will be further aggravated by the impacts of climate change, which is predicted to generate more frequent and extreme disasters. Combined with other shocks, such as financial crises, the development agenda of the region is poised to face serious compounding challenges with serious development implications.

Studies have indicated that disasters can seriously set back development gains and erode the ability of people to recover from further successive shocks over time and climate change will worsen these existing pressures. One study covering seven Asian countries has indicated that many people already feel the potential impacts of climate change in the form of higher temperatures, lower rainfall, less predictable weather, an increase in intensity of extreme weather events and droughts, and an increase in insects and pests. Many people are already adapting by supplementing their income with other work, growing alternative crops, changing agricultural practices, migrating and changing jobs[1.]

The present document explores the issues related to disaster risk reduction and climate change implications for development in Asia and the Pacific. Though the analysis is not exhaustive given the complexity of this issue, options for integrating disaster risk reduction and climate change adaptation into development will be discussed, along with potential collaborative efforts that countries may benefit from through regional dialogue and cooperation.

[1] BBC Climate Asia

Recent trends and impacts of climate change

According to the recently released fifth Assessment Report from the IPCC, warming of the climate is indisputable and unprecedented. Climate change symptoms include atmospheric and ocean warming, sea level rise, reduced snow and ice cover and increased greenhouse gas concentrations[2.] The report indicates that the frequency of heat waves is likely to have increased in large parts of Asia and Australia, with warmer days and nights globally, which is virtually certain to continue throughout the 21st century.

Changes in extreme weather and climate events have been observed since 1950 to the extent that it's considered likely that human influence has more than doubled the chance of heat waves occurring in some locations. It's very likely that heavy rainfall will intensify and become more frequent in the mid-latitude and wet tropical areas by the end of the century and monsoons will intensify over the 21st century, starting earlier and/or retreating later, resulting in longer monsoon seasons in many areas.

Presently, it is difficult to show evidence of increased drought, though it's considered likely that this will become more prevalent by the year 2100[3]. Despite this, drought and desertification are serious problems for Asia and the Pacific already, affecting many people's livelihoods and long term food security. Water has been previously shown to be scarce in some areas[4], and with glaciers, snow cover and permafrost shrinking at alarming rates, water resources will become an even greater concern in the future. Glacial runoff and snow cover are important water resources for many countries, yet by the end of the 21st century the global glacier volume is projected to decrease by 15-55 per cent under a best case scenario (0.3°C to 1.7°C temperature rise), or up to 85 per cent under the worst case scenario of the IPCC report, where temperatures rise between 2.6°C to 4.8°C. Global temperatures have already risen by 0.85°C between 1880 and 2012.

Over the period 1901 to 2010, global mean sea level rose by 19 cm and is estimated to rise further by 26-55 cm under the best case scenario, or to 45-82 cm by 2100 under the worst case. It is virtually certain that this rise will continue far beyond 2100 due to the thermal expansion of the sea. In addition, the ocean surface has become slightly acidic since the industrial era which is projected to continue. Ocean acidification impacts the development and regeneration of coral reefs which are important buffers against some disasters. It may also damage marine organisms such as oysters, clams sea urchins and some plankton species, weakening the entire marine food web and placing people reliant on these marine resources for food or income at risk.

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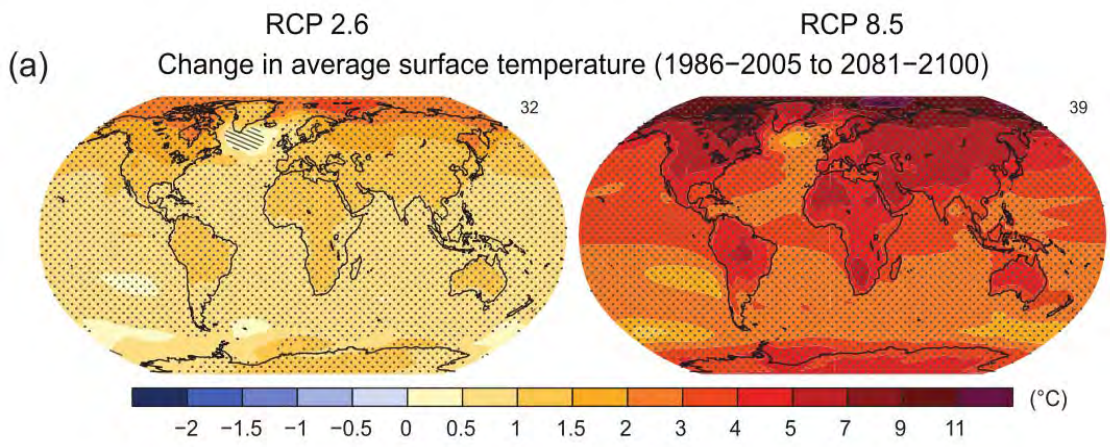
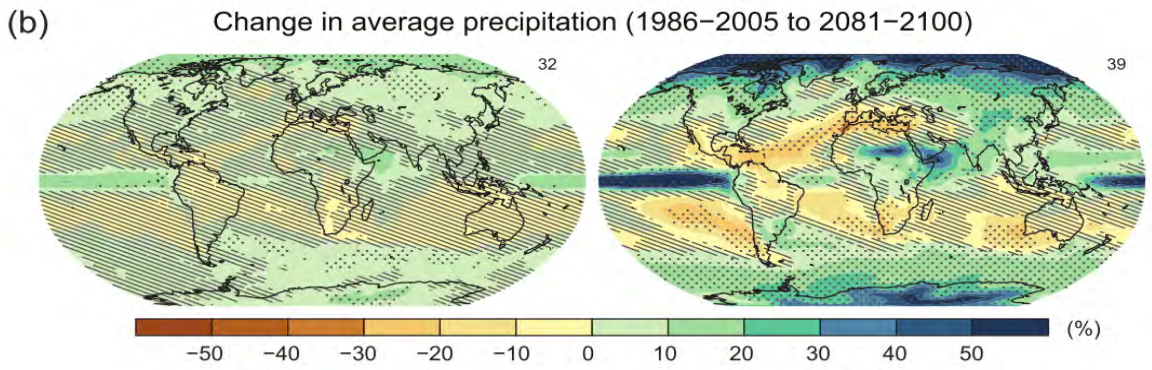
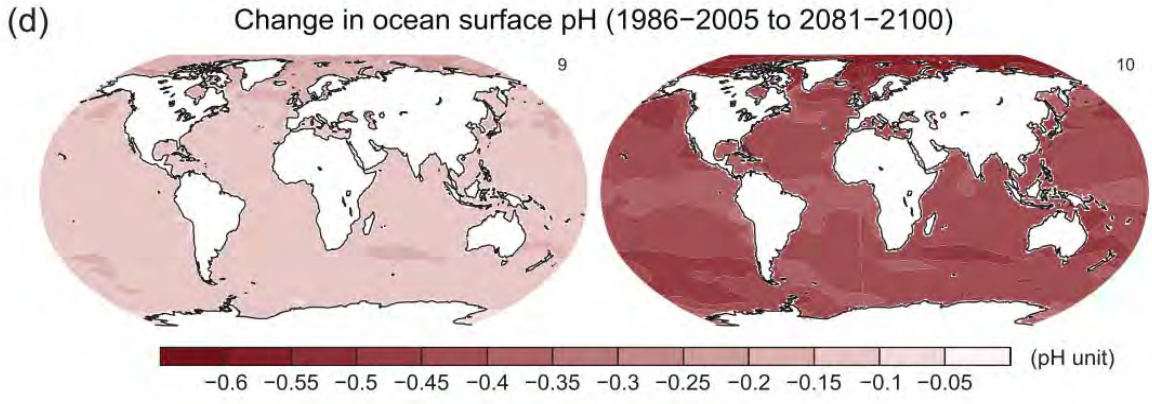
[2] AR5 Summary
3 AR5
4 theme study

Figure 1: Main projected changes from a best and worst case scenario of climate change.



model simulations, that is, 0.3°C to 1.7°C (RCP2.6), 1.1°C to 2.6°C (RCP4.5), 1.4°C to 3.1°C (RCP6.0), 2.6°C to 4.8°C (RCP8.5)





Challenges to disaster risk reduction and climate change adaptation

The projected impacts of climate change have been discussed at length from the national to international level and are likely to have significant implications on the ability of member States to develop in a sustainable manner. The World Bank estimates that the cost of adapting to climate change will range from $75 billion to $100 billion per year for a temperature rise of 2 to 4 degrees, with Asia and the Pacific likely to bear the brunt of the burden.

A study by the Asian Development Bank also considered the adaptation costs and benefits for a number of sectors in China, Japan, Mongolia and the Republic of Korea. The infrastructure sectors considered were power and communications, water and sewerage systems, roads and other transport, health and schools, and urban and housing. The total cost of climate proofing infrastructure during 2011-2050 in these countries was estimated to be $23 billion/year averaged over all climate scenarios, ranging from $150 million/year in Mongolia to $11 billion/year in China. It concluded that Japan would probably receive the greatest economic benefits from climate proofing roads, housing, and urban infrastructure, while in the Republic of Korea, the greatest economic benefits would result from adapting social infrastructure (health and schools), urban infrastructure, housing, and roads to climate change. In China and Mongolia, the picture was more complex, with some infrastructure types having high costs and others large benefits. For China, the net benefits of adaptation were negative for all categories of infrastructure except roads[5].

The study concluded that in aggregate and over all climate scenarios considered, waiting for the need to change infrastructure was more likely to be less costly than adapting to climate change. They also concluded that richer countries were more likely to adapt than poorer ones, simply because the economic loss will be greater as their exposed assets are more vulnerable. However, the conclusions raise an important core point in the climate change debate - that of economic versus non-economic loss value[6].

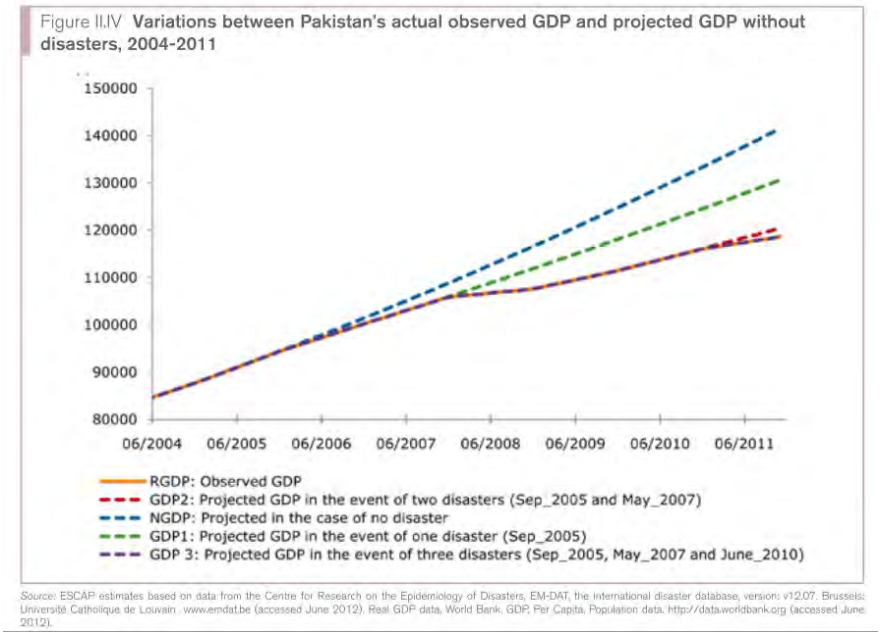
In arguments for climate change mitigation and adaptation, loss and damage are often reflected in economic terms as they are easier to quantify. However, non-economic losses should not be overlooked. Some, such as the loss of human life, is openly counted when a disaster strikes, while others such as a reduction in biodiversity, destruction of items of cultural significance, the loss of sovereign territory or water resources due to inundation and salt intrusion, are much harder to quantify.

Despite a cost-benefit analysis attempted for some countries mentioned above, disasters and a growth in their intensity and/or frequency due to climate change have considerable potential to undo many development gains which cannot be effectively quantified through economic means.

[5] ADB 2013
6 ADB 2013

According to the Asia Pacific Disaster Report, the succession of disasters that struck Pakistan in the form of an earthquake in 2005, Cyclone Yemyin in 2007, flooding in 2010 and again in 2011 seriously affected the country's GDP and development trajectory[7].

Figure 2: Country Development Scenarios without and with disasters



Though it's difficult to establish the link between disasters and the impact of achieving the MDGs, some case studies do provide insights into this. In 2007, Cyclone Sidr struck Bangladesh causing $1.67 billion in damage. Damage and losses in the social sector, such as the destruction of schools and health centers, affected education, child mortality and health related MDGs. Damage in the productive sector set back efforts to reduce extreme poverty and hunger. Likewise, education suffered in Pakistan after the various disasters due to the collapse of many schools, the loss of teachers and the use of the remaining schools to house displaced people, resulting in a drop in primary school enrolment.

A key challenge in the argument relating to climate change is the uncertainty of certain scenarios, the long lag-time between cause and effect, and economic modeling methods that may not adequately account for non-economic losses. Just as we are now feeling the impacts of greenhouse gas emissions released 50 to 100 years ago, our actions now will have implications far beyond the next 100 years. This creates a picture of uncertainty and hesitation for planners who need to weigh up investing in development options with immediate benefits and investing in those that may significantly benefit future generations. In addition, there can be an underlying assumption that the world will be richer in the future and therefore able to manage the additional damage caused by climate change. From a

7 APDR 2012

purely economic perspective, if the investment in climate change mitigation or adaptation pays less than other investments then they are less attractive.

Eventually however, countries will adapt to climate change in one way or another. The economic issue is: "should countries investment upfront in climate proofing (ex-ante adaption), which requires them to make assumptions about what the future climate will be, or by spending money after the actual climate outcome is known (ex-post adaption)?" The moral (social and environmental) issue is: "how do you value the human lives that may be saved through ex-ante adaptation or the ecosystem services underlying our economies and livelihoods that may be lost through inaction?".

This is an argument that underlies disaster risk reduction as well as climate change. It is a cognitive barrier facing many policymakers. Though many agree that prevention is better than a cure, unfortunately most policymakers focus only on events that have recently happened, such as an earthquake or cyclone, but over time memories fade and people seldom give weight to the needs of future generations. In addition, people tend to underestimate the extent of their ignorance of an issue and the uncertainty, or likely hazards, in the world they live, yet overestimate their ability to predict the future. Policymakers are particularly likely to fall victim to the wisdom of hindsight. They know they will be blamed for decisions that work out badly, but get little credit for successful planning that may prevent a catastrophic event.

During a recent expert group meeting on "Strategies towards building resilience to disasters in Asia and the Pacific"[8], participants discussed various barriers to disaster risk reduction and climate change adaptation that include the followings:

Lack of evidence-based information: There is clear need for evidence-based resilience to effectively plan and budget for disaster risk reduction and climate change adaptation. Effective planning and budgeting for disaster risk reduction and climate change adaptation requires information on the long term implications of doing nothing. This should move beyond economic analysis though and capture the long term development setbacks and non-economic losses. Examples of methodologies that try to address these issues include environmental impact assessments, vulnerability assessments and risk analysis. Greater