



# REGIONAL DEVELOPMENT MISSION FOR ASIA

## CLIMATE VULNERABILITY PROFILE



US Foreign Assistance: <sup>1</sup> (thousands USD)	Requested FY 2012	Requested FY 2013
Estimated total:	65,440	45,283
Adaptation:	6,000	6,000
Agriculture:	3,000	2,700
Malaria:	7,000	7,200
Water:	2,500	1,000
Priority Adaptation Country in 2011:	YES	
Key Climate Stressors:	Extreme events, Flooding, Sea level rise, Heat	

## INTRODUCTION

USAID's Regional Development Mission for Asia (RDMA) supports bilateral programs in Burma, China, Laos, Thailand, and Papua New Guinea. The mission also manages regional programs in East, Southeast, and South Asia and the Pacific. Countries in the region are politically, socially, and economically diverse; however, they face similar development and environmental challenges. Priority economic sectors in the region include agriculture, food security, human settlements, infrastructure, forests, ecosystem biodiversity, disaster management, health and sanitation, and resource-based livelihoods, including tourism and fisheries. RDMA addresses challenges brought about by non-climate stressors such as poverty, increased urbanization, rural-urban migration, environmental degradation, and civil unrest. Climate change impacts exacerbate these challenges and place additional stress on livelihoods, infrastructure, and ecosystems.

## PROJECTED WEATHER AND CLIMATE CHANGES

**TEMPERATURE:** Overall, a warming trend has been observed in the region. Minimum and maximum temperatures have been increasing and are projected to continue on a similar trajectory. Projections for South Asia suggest the region may experience stronger warming than other regions in Asia, with a 2.4-4.5°C increase in average annual temperature by the end of the century. In the Pacific region, temperatures may rise by up to 2-3°C by the end of the century.

**PRECIPITATION:** Historically, precipitation trends in the region have been highly variable, and climate model projections show a range of potential precipitation patterns in the future. Depending on the season and region, rainfall intensity and frequency could either increase or decrease. North and Southeast Asia are expected to experience more intense rainfall events in warmer years than in colder years. Overall, annual rainfall may decline in Southeast Asia and increase in North Asia over the rest of the century.

**EXTREME EVENTS:** Models project that South Asia will experience more severe heat extremes and an increase in the intensity and frequency of tropical storms and other extreme weather events throughout the century. In the Pacific region, more tropical cyclones, floods, and storm surges are projected.

**SEA LEVEL RISE:** The region is vulnerable to sea level rise, which causes erosion and salt water intrusion in coastal areas. In Southeast Asia, sea level is anticipated to rise at a rate of 1-3 mm per year. Projected sea level rise in the Pacific by the end of the century ranges from 0.19-0.58 m.

## KEY CLIMATE IMPACTS AND VULNERABILITIES

Higher air and water temperatures and changes in precipitation patterns, floods, droughts, and sea level rise will impact human settlements and infrastructure, agricultural production, food security, the spread of pests and diseases, water quality and supply, energy, and transport and communication systems. Glacial melting, a result of warmer temperatures, can cause runoff, variation in river flows, and may increase glacial lake outburst floods. Climate changes can also damage or destroy forests, grasslands, mangroves, and coral reefs, which are rich in biodiversity. Climate change impacts can also impact human health directly or indirectly. Direct health impacts include heat stroke and morbidity or mortality due to extreme events. Indirect health impacts include impacts on agriculture, water, and infrastructure, which may affect disease prevalence. Populations dependent on natural resources for their livelihoods and living in low-lying, coastal, and densely populated areas are highly vulnerable to climate change. The Pacific Island countries, Asian coastal cities, the Mekong River Basin, the Coral Triangle, and the Greater Himalayan region and Tibetan Plateau are highly at risk to climate changes, as they may have significant economic, social, and environmental costs in these regions.

## KEY USAID PROGRAM VULNERABILITIES

RDMA has a range of programs that are likely to be affected by climate change.

**HEALTH:** The Asian countries that RDMA supports continue to suffer from HIV/AIDS, avian influenza (AI), malaria, and tuberculosis (TB). RDMA supports a number of programs across Asia that manage HIV/AIDS and battle AI, TB, and malaria. As part of these efforts, USAID builds capacity for infectious disease research and surveillance, helps countries communicate and understand behavioral changes, and delivers a suite of health services. Public health programs, particularly those helping to address the spread of malaria and other diseases, are vulnerable to climate changes. Rising temperatures, heavy rainfall events, and increased flooding can contribute to the spread and prevalence of malaria and other diseases while a decrease in water quality and availability can lead to an increase in cases of cholera and diarrhea.

**ECONOMIC GROWTH:** RDMA projects in this area focus on economic integration, enhancing trade and growth, and improving management of coastal and marine resources. These projects are vulnerable to extreme weather events and other types of climatic changes. Floods and storms can impact infrastructure such as roads, ports, communication systems, and facilities that are vital to economic growth. In addition, projects supporting key economic sectors such as agriculture, industry, tourism, and energy are vulnerable to climate impacts through disruptions or damage to various elements throughout the supply chain.

<sup>1</sup> US foreign assistance includes both USAID and Department of State program funding, but in most cases the bulk of this funding is implemented through USAID. In order to have comparable figures in these categories, all country profiles use figures from the Congressional Budget Justification (CBJ) (see <http://transition.usaid.gov/performance/cbj/185016.pdf> and <http://transition.usaid.gov/performance/cbj/158269.pdf>). Between the time of the budget request and the 653(a) report to Congress, these figures can change significantly.

**ENVIRONMENT:** Asia contains some of the world's fastest growing economies and highest rates of population growth. This brings about many transnational environmental challenges, such as supplying clean water and sanitation services, providing clean energy and energy security, sustainably managing natural resources, and conserving biodiversity. USAID/RDMA addresses these challenges through a number of programs that promote regional cooperation, but these programs themselves are also vulnerable to climate change impacts. For example, both flooding and drought will make it difficult to store and supply clean water and provide effective sanitation services. Furthermore, as climate shifts occur, the type and distribution of natural resources such as fisheries and certain plant and animal species will likely change. These impacts will exacerbate the existing vulnerabilities of natural-resource dependent populations.

## ACTIONS UNDERWAY

RDMA already has projects that address climate vulnerability and risk in various sectors and communities. The highest priority for regional programming is to ensure that government, communities, practitioners, the private sector, and civil society have access to appropriate information, tools, and methods needed to carry out assessments and make informed decisions on how to address challenges posed by climate changes. Several RDMA-funded assessments have been carried out on climate change and adaptation in the Asia-Pacific region. In the Mekong River Basin, RDMA is funding a study on climate change impacts on agriculture and ecosystems. The program also includes the implementation of integrated ecosystem and community-based adaptation pilot projects in the Basin. To address adaptation capacity, information, and financing needs in the Asia region, RDMA launched the Asia Climate Change Adaptation Project Preparation Facility program. Other donors and multilateral development banks have also provided funding and support for a range of adaptation activities; most of these however, have been early stage efforts—including assessments, studies, strategy development, and pilots—rather than adaptation implementation.

## CHALLENGES TO ADAPTATION

Overall progress on adaptation throughout the region has been limited, particularly in relation to the implementation of adaptation strategies. Challenges to adaptation include inadequate data on local climate change impacts and vulnerabilities, limited understanding of adaptation concepts by policy makers, limited capacity to develop and implement adaptation plans, weaknesses in and limited capacity of governance structures at national and subnational levels, lack of financial resources to implement adaptation projects, and limited knowledge on accessing donor funding. There is also a need for improved civil society engagement; greater cooperation and coordination at the regional, national, and local levels; and the implementation of relevant and effective climate change related laws, policies, and regulations. In addition, addressing pressing sustainable development issues related to poverty, access to resources, economic growth, and urbanization may be considered higher priority for countries in the region than climate change adaptation if they do not see clear linkages between the two.

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## RESOURCES

Adaptation Partnership, 2011. Review of Current and Planned Adaptation Action: South Asia. Available at: <http://www.adaptationpartnership.org/resource/south-asia-review-current-and-planned-adaptation-action>

Adaptation Partnership, 2011. Review of Current and Planned Adaptation Action: The Pacific. Available at: <http://www.adaptationpartnership.org/resource/pacific-current-and-planned-adaptation-action>

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USAID/ASIA, 2012. RDMA Programs. Accessed 5/3/2012. Available at: <http://transition.usaid.gov/rdma/programs/index.html>

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