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Aid and the environment – building resilience, sustaining growth

AN ENVIRONMENT STRATEGY FOR AUSTRALIAN AID

AUGUST 2007



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COVER PHOTO: *Healthy ecosystems and sustainable livelihoods are closely linked. A woman planting rice near Bakou village, Kendal Stoeung District, Cambodia.*

PHOTO: AusAID



ABOVE: Women collecting shellfish along the causeway, South Tarawa, Kiribati. PHOTO: Lorrie Graham

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Preface

This strategy was developed through an extensive, iterative consultation process. An initial paper was produced to canvass options for expanding environment-related support through the aid program. The strategy incorporates feedback on the options paper and comment from internal peer reviews, whole-of-government consultation, a reference group comprising seven highly regarded experts with world-recognised expertise across the key themes of the strategy, and the general public.

As part of the government consultation, comment was sought from a range of other Australian agencies involved in environmental management and the aid program including the Department of Foreign Affairs and Trade, the Department of the Prime Minister and Cabinet, the Department of the Environment and Water Resources, the Department of Industry, Tourism and Resources, the Department of Agriculture, Fisheries and Forestry and the Australian Centre for International Agricultural Research.

More than 30 submissions were received from a range of groups, including government agencies and non-government organisations (eg the Australian Council for International Development, the World Wide Fund for Nature, the Nature Conservancy, Oxfam, the International Union for the Conservation of Nature and World Vision Australia), other donor aid agencies (eg NZAid), research and education institutions (eg the Institute for Sustainable Futures, University of Technology, Sydney), the private sector, including the consulting industry (eg Cardno Acil) and the forest industry (eg Papua New Guinea Forest Industries Association), and private individuals.

Summary

THIS ENVIRONMENT STRATEGY FOR AUSTRALIAN AID SIGNALS A SIGNIFICANT INCREASE IN AUSTRALIA'S ENVIRONMENT-RELATED SUPPORT IN THE ASIA-PACIFIC REGION.

The countries of the Asia-Pacific region are facing urgent environmental pressures that are threatening the cornerstones of development – economic growth and poverty reduction. Governments throughout the region are strengthening their environmental management responses but significant challenges remain. Managing the adverse impacts of development and the escalating demand for natural resources are foremost among these.

Australia is a major player in environmental management in the region and has played an important role over many years in assisting partner countries to address key challenges. However, the 2006 white paper on Australian aid noted the growing importance of environmental issues and advocated a more strategic approach that takes greater account of the links between economic growth, poverty and environmental threats.

This environment strategy for Australian aid signals a significant increase in Australia's environment-related support in the Asia-Pacific region. Its goal is to:

sustain economic growth and reduce poverty in the Asia-Pacific region by improving the management of natural resources, increasing community resilience and better conserving natural heritage.

The strategy will guide a portfolio of activities that directly target environmental challenges and will support a stronger commitment to environmental management across all sectors of development. It encompasses a whole-of-government response within the region. Activity under the strategy will be informed by the overarching principles of the aid program – promote gender equality, work in partnerships and untie aid.

The environmental pressures confronting the region are wide-ranging and escalating. Many are longstanding but require substantially larger and better managed investments (safe water, for example). Others are more recent or have grown in urgency and become global in extent (climate change, for example). Australia's resources must be directed to priority areas in which Australia can contribute knowledge and expertise to achieve the greatest possible impact and effectiveness.

The white paper identified three themes as the main focus for Australian environment-related support in the Asia-Pacific region:

- > climate change
- > water
- > environmental governance.

Together, these themes provide scope for Australia to continue to support traditional areas of action (such as water supply and sanitation) but also to increase assistance for emerging priorities (for example, adapting to climate change and reducing emissions).

Environmental threats under the three themes vary greatly within the region. They demand tailored responses. The challenges faced by Pacific islands are very different from those confronting the large, industrialising economies of Asia. Actions under the strategy must take account of these differences.

CLIMATE CHANGE

The Asia-Pacific region already experiences high climate variability and frequent floods, droughts and tropical cyclones. These will intensify over time under predicted climate change trends.

The Pacific islands are not major emitters of greenhouse gases but they are vulnerable to the long-term impacts of rising temperatures, changes in rainfall, rising sea levels and intensifying tropical cyclones and storm surges. The key climate change challenges in the Pacific lie in developing adaptive responses based on sound knowledge. Australia will continue to support Pacific nations to better understand local vulnerabilities but will also include an increased focus on building adaptive capacities (disaster preparedness, for example).

In Asia the key long-term challenge is to shift to using clean energy. In the more immediate future, significant gains lie in reducing emissions through energy efficiency, clean energy technology and better forest management (deforestation accounts for around 20 per cent of total global emissions of greenhouse gases). Building adaptive capacities and resilience in cities and coastal and rural communities that are vulnerable to the impacts of climate change will also be crucial in many parts of Asia.

There will be a substantial increase in Australian support for climate change mitigation, both for individual countries and in the region more generally. Australia is currently playing a leading role in developing a major initiative – the Global Initiative on Forests and Climate – to substantially reduce emissions from deforestation in the Asia-Pacific region through sustainable forest management, reforestation and incentives to discourage deforestation.

The climate change objectives are:

- > to build knowledge of regional climate systems and support adaptive planning and adaptive measures (focusing primarily on the Pacific)
- > to reduce greenhouse gas emissions in significant emitting countries through energy efficiency and clean energy technologies (focusing primarily on Asia), and
- > to reduce greenhouse gas emissions through reforestation and avoided deforestation (focusing on countries where deforestation is an issue).

WATER

The geography of the Asia-Pacific region is highly diverse and water-related pressures vary greatly from place to place. The pressures include severe and deepening shortages in the higher latitudes of South Asia, serious pollution of water resources throughout Asia and localised contamination of groundwater in the Pacific. But the key challenges tend to be common across the region:

- > investing in water supply and sanitation infrastructure and in the capacities of institutions and communities to better manage these systems
- > protecting and restoring river basins and aquifers as the fundamental sources of freshwater through integrated management of water resources, and
- > reducing vulnerabilities to water-related natural disasters.

Australia will continue to support investments and capacity building to improve water supply and sanitation in the region. There will be greater emphasis on integrated approaches to managing water resources, drawing on extensive Australian experience and strengthening partnerships with Asia-Pacific nations in water governance.

The water objectives are:

- > to improve access to safe water and sanitation (especially in the Pacific and South-East Asia), and
- > to strengthen integrated water resources management, particularly through planning and allocation processes (in key river basins and islands).



ABOVE: Traditional pole fishing in a limestone landscape wetland in northern Vietnam. PHOTO: Bruce Bailey

ENVIRONMENTAL GOVERNANCE

The environmental threats in the region demand strong responses from governments. Key challenges lie in building institutional capacities in environmental governance and implementing measures to encourage and compel better management of the environment. Reliance on legislation in the absence of good administration and enforcement is not sufficient to halt and reverse the decline in environmental assets affected by development. Robust, holistic responses involving a range of mechanisms are needed, including knowledge and awareness, participatory planning, negotiation, incentives, legislation and regulation, stewardship and public–private partnerships.

The environmental governance objectives are:

- > to strengthen institutional capacities for environmental management, and
- > to improve enabling mechanisms for environmental management.

ADAPTIVE LEARNING AND MANAGEMENT

Progress towards the objectives and outcomes of this strategy will be monitored and evaluated at program and activity levels using a specific monitoring and evaluation framework. Monitoring will include tracking environmental outcomes and checking that processes to enhance these outcomes across the aid program are in place and working effectively.



ABOVE: Kanu Mikaera fishing with his sons Tokanna (left) and Tairo (right), Kiribati. PHOTO: Lorrie Graham

The problem

ENVIRONMENTAL CHALLENGES FACED BY COUNTRIES IN THE ASIA-PACIFIC REGION
DEMAND URGENT, COLLECTIVE ACTION.

Throughout the Asia-Pacific region, escalating environmental degradation and declining resource security are threatening the cornerstones of development – economic growth and poverty reduction. Development in Pacific countries is constrained by resource pressures, and economically successful Asian countries are increasingly seeing environmental degradation as a key bottleneck to sustainable growth.

The white paper on Australian aid recognised that sustainable economic growth is critical to long-term poverty reduction and that key environmental challenges must be addressed to secure recent development gains (Australian Government 2006). These links are firmly established and are embodied in the UN Millennium Development Goals (United Nations 2007).

Australia has already made important contributions to meeting environmental challenges in the region, drawing on a strong base of knowledge and expertise. Australia is a principal partner in multilateral environment agreements in the region and has provided support for a range of activities that seek to better inform and strengthen environmental management (AusAID 2006a). But the threats continue to grow and demand stronger responses.

Australia's response

SUSTAIN ECONOMIC GROWTH AND REDUCE POVERTY IN THE ASIA-PACIFIC REGION BY IMPROVING THE MANAGEMENT OF NATURAL RESOURCES, INCREASING COMMUNITY RESILIENCE AND BETTER CONSERVING NATURAL HERITAGE.

This strategy signals a significant increase in Australia's environment-related support in the Asia-Pacific region. Its goal is to **sustain economic growth and reduce poverty in the Asia-Pacific region by improving the management of natural resources, increasing community resilience and better conserving natural heritage.**

The strategy will build a portfolio of activities that directly target environmental challenges and will support a stronger commitment to environmental management across all sectors of development.

THE ENVIRONMENT

Australia promotes a holistic definition of the environment. The *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) defines the environment as inclusive of:

- a. ecosystems and their constituent parts, including people and communities;
- b. natural and physical resources;
- c. the qualities and characteristics of locations, places and areas;
- d. heritage values of places; and
- e. the social, economic and cultural aspects of a thing mentioned in a, b, c, or d.

This strategy encompasses challenges that are important to all aspects of the Act's definition.

The Australian aid program encompasses a whole-of-government approach to address development challenges in the Asia-Pacific region. While the Australian Agency for International Development (AusAID) is the primary implementing agency for the Australian Government's aid program, this strategy applies to all Official Development Assistance including that implemented by other Australian government agencies.

Australia will continue to build its engagement in:

- > directly targeting key environmental challenges
- > meeting regulatory obligations under the *Environment Protection and Biodiversity Conservation Act 1999* by ensuring that the environmental impacts of all aid activities are appropriately assessed and managed
- > supporting international environment agreements and conventions, and
- > building effective partnerships with multilateral and regional organisations and other bilateral donors for the achievement of shared goals.

Environmental pressures, risks and threats

THE KEY ENVIRONMENTAL CHALLENGES IN THE ASIA-PACIFIC REGION LIE IN MANAGING A GREAT RANGE OF ENVIRONMENTAL PRESSURES IN ALL OF THEIR COMPLEXITY WHILE SUSTAINING ECONOMIC GROWTH.

Reducing the environmental impacts of development and managing the growing demand for natural resources to generate income are foremost among the environmental challenges in the Asia-Pacific

region. The pressures and their associated risks and threats are summarised in table 1, drawing on a range of sources (Asian Development Bank 2002, 2004; World Bank 2005).



ABOVE: Agriculture, forestry and natural habitat in Ninh Binh Province, northern Vietnam. PHOTO: Bruce Bailey

TABLE 1: KEY ENVIRONMENTAL PRESSURES, RISKS AND THREATS IN THE ASIA-PACIFIC REGION

ASSET	PRESSURE	RISKS AND THREATS
Water	Demands on fresh water supplies from domestic, agricultural and industrial users are escalating and many surface and groundwater sources are overused and ecologically stressed.	Water shortages are a significant threat to food security, economic growth and poverty reduction in the region. Overuse of groundwater resources has placed coastal aquifers at risk from salt water intrusion.
	Pollution inflows from urban, industrial and agricultural sources to rivers, wetlands, coastal ecosystems and aquifers, in addition to naturally occurring contaminants, have reduced water quality in many areas to levels that threaten the health of the people, plants and animals using the resource.	Many communities do not have good access to safe and reliable water sources. Poor water quality is a significant cause of disease and death in the region, especially of children.
	Climate change is predicted to have wide-ranging but locally specific impacts on water resources in the region. For example, there will be a migration of monsoonal influences poleward, leading to a change in rainfall patterns. More localised impacts could include melting of the glaciers that feed Asia's major rivers and more frequent extreme weather events.	Rainfall, river flows and the likelihood of flooding and drought may be significantly altered as a result of El Niño (southern oscillation) and other climatic factors (which may affect the occurrence of tropical cyclones), placing increased stress on water resources, food production and subsistence livelihoods.
Air	Asian cities have among the highest levels of air pollution in the world. Fossil fuel combustion and inefficient combustion of biomass are key sources of atmospheric pollution and greenhouse gas emissions. Land use and certain agricultural practices are significant sources of greenhouse gasses (eg nitrous oxide emission from fertiliser use, and methane emission from wet rice cultivation and ruminants). Dust and smoke from agricultural land are major sources of pollution in some parts of the region.	Poor air quality affects health and is linked to respiratory disease, lung cancer, heart disease and premature death. Greenhouse gas emissions are linked to serious long-term climate change threats in the region.
Land	Land degradation and desertification resulting from intensified and poorly allocated land use are reducing the productivity of land resources in many grazing, mixed farming and irrigation areas of the region.	Falling and uncertain crop and livestock yields from stressed agricultural land are a major contributor to rural poverty. Siltation and landslides cause significant damage to infrastructure.
	Runoff of sediment and agricultural chemicals is a significant source of freshwater and marine pollution in the region.	Contamination from agricultural runoff is a threat to health and aquatic habitat in some parts of the region.
	Small and large-scale extraction of soil, gravel, sand, minerals and ore is poorly regulated.	Land degradation, coastal erosion, riverine erosion, contamination of rivers, dust pollution and acid mine drainage from poorly managed extractive industries threaten productivity and health.
Forests	In Asia, (eg Indonesia, the Philippines, Cambodia and Lao PDR) forest cover is being reduced at an unsustainable rate. Deforestation is also significant in parts of the Pacific (eg Papua New Guinea and Solomon Islands). Deforestation can exacerbate a range of other impacts, including flooding, land degradation and sediment pollution.	Deforestation is a major cause of habitat loss and loss of biodiversity in the region. It also contributes to land instability and poor water quality. In tropical and mid-latitude countries, deforestation is a significant source of greenhouse emissions and reduces the extent of carbon sinks. Deforestation is a major impediment in regional initiatives to reduce greenhouse emissions.

ASSET	PRESSURE	RISKS AND THREATS
Fisheries	Oceanic fisheries of Pacific and South-East Asian countries produce, for example, more than 60 per cent of global tuna catches, and are significant in national and regional economies and opportunities for economic growth.	Overcapacity and poorly regulated fisheries are threatening sustainability, with potential impacts on ecosystem structure and resilience, national and regional economies and food security.
	Local climate regimes and oceanic circulation patterns are strongly influenced by large-scale ocean–atmosphere oscillations. Related climate change has the potential to affect the distribution and abundance of oceanic species.	The effects of climate change on major ocean circulation patterns in the region, the intensity and frequency of El Niño (southern oscillation) events, and their impacts on the abundance, distribution and yields of species important for subsistence and commercial fisheries are poorly understood (AusAID 2007c).
	Industrial, domestic and agricultural pollution of coasts and estuaries is widespread, especially in Asia.	Contamination of fisheries is a threat to public health.
Habitat and biodiversity	The region includes seven of the world's 17 'megadiverse' countries. Several biodiversity 'hotspots' have been identified where exceptional concentrations of endemic species are experiencing a severe loss of habitat. Many species in the region are threatened by destruction and fragmentation of habitat, the illegal trade in wildlife, pollution of air, water and land, and invasions of exotic pests and diseases.	Degraded landscapes, rivers, wetlands, coasts and estuaries cannot function to provide essential ecological services. Loss of habitat and biodiversity reduces resilience in ecosystems and lessens their capacity to adapt to climate change. Loss of biodiversity reduces the potential for pharmaceuticals from bio-prospecting.
	Climate change is a significant threat to terrestrial, freshwater and marine biodiversity. Projected impacts include altered species growth patterns, range, lifecycle seasonality and community structure, and disruption to whole ecosystems as observed in coral bleaching events.	Habitat loss and extinctions have potential ramifications for major sectors of the economy, including subsistence livelihoods and tourism. Threats to coral reefs and other marine ecosystems from acidifying oceans, warmer water and rising sea levels are likely to be significant. It is estimated that 10 per cent of the world's corals have not recovered from the 1998 bleaching event (Wilkinson 2004).
Coasts and estuaries	More than 250 million people in South-East Asia and the Pacific live within 30 kilometres of the coast, and are highly dependent on the productivity of marine and nearshore resources. Overfishing and destructive fishing methods have reduced stocks to dangerously unsustainable levels in most inshore fisheries in Asia.	Falling inshore fish stocks exacerbates poverty throughout the region, and significantly increases pressure on other natural resources.
	The Pacific region is recognised as a globally significant area of biodiversity; the western Pacific contains the greatest marine diversity in the world. Coastal zone ecosystems are among the most productive in the world. Many coastal zones in the Asia-Pacific region, including coral reefs, mangroves, estuaries and small islands, are already significantly degraded as a result of drainage for farming and settlement, effluent pollution, coral mining, destructive fishing and hunting.	Degradation of coastal ecosystems is directly linked to loss of marine and aquatic biodiversity, including loss of important economic species. These species underpin both formal and subsistence economies in the Pacific and in coastal regions of Asia. Current pressures significantly reduce the resilience of coastal ecosystems and communities to climate change.
	Coastal erosion and salt water intrusion due to rising sea levels and increased intensity and frequency of tropical cyclones and tidal surges are particular issues for Pacific island countries and for the extensive low-lying deltas of Asia, particularly in Bangladesh and Vietnam.	Livelihoods of coastal communities are likely to be extensively disrupted under probable climate change and sea-level rise scenarios. Increased poverty and population displacement are predicted consequences of some low-lying islands and coastal areas becoming uninhabitable.

Setting priorities

AUSTRALIA'S RESOURCES FOR ADDRESSING THE ENVIRONMENTAL CHALLENGES IN THE ASIA-PACIFIC REGION MUST BE USED TO TARGET AREAS IN WHICH AUSTRALIA CAN ACHIEVE THE GREATEST POSSIBLE IMPACTS AND EFFECTIVENESS.

Collectively, the environmental challenges in the region are daunting and Australia's resources for addressing those challenges, though growing, are limited. They must be used to target areas in which Australia can contribute knowledge and expertise to achieve the greatest possible impacts and effectiveness. The white paper identified three main themes for Australian environment-related assistance in the Asia-Pacific region:

- > climate change
- > water
- > environmental governance.

These themes strongly align with Australian domestic environment policy in which water and climate change are among the highest priorities.

They also align well with the expertise and focus of Australia's environment and research institutions.

The themes reflect the needs and requests of partner nations in the region. Further consultations, particularly in the context of discussions on bilateral aid programs, will determine specific priorities and activities under the strategy.

The themes are interrelated. Environmental governance encompasses better management of all environmental assets (including water, air, land, forests, fisheries, habitat and biodiversity, and coasts and estuaries) and threats (including climate change). But the short-term and medium-term challenges in managing water and climate change in the region now warrant specific focus on these themes.



ABOVE: A pupil working in the taro garden at Montmatre High School, Vanuatu. PHOTO: Peter Davis

Three broad approaches

MANAGING NATURAL RESOURCES SUSTAINABLY WHILE BUILDING RESILIENCE IN COMMUNITIES AND NATURAL SYSTEMS WILL REDUCE ENVIRONMENTAL CONSTRAINTS TO DEVELOPMENT.

In addressing challenges under the three priority themes, specific responses and actions will be developed drawing on three overarching approaches:

- > improving management of natural resources
- > building community resilience
- > protecting natural heritage.

These approaches deal with different but closely interdependent elements of 'the environment', including people, their livelihoods and their behaviour. Concerted action under all three is needed to comprehensively address the challenges confronting the region. People in the region are highly vulnerable to serious environmental threats but they lack the capacity to manage and adapt to them. Because of this, the region is experiencing an escalation of environmental damage and loss of natural heritage on an immense scale.

IMPROVING MANAGEMENT OF NATURAL RESOURCES

Natural resources including water, land, forests and fisheries provide the fundamental building blocks for livelihoods and economic growth in the Asia-Pacific region. If these assets are not managed in a sustainable way, growth itself cannot be sustained.

Seventy per cent of all jobs in the region depend on natural resources and this proportion is even higher among rural communities. Thousands of communities derive their largely subsistence livelihoods directly from agriculture and fisheries.

In many areas these resources are already degraded, their productivity is reduced and the livelihoods they underpin are increasingly tenuous. Men and women have different roles in managing natural resources and it is important that their views and participation are equally enabled.

The drivers of resource depletion are complex and vary greatly but it is critical that they are understood. Engaging local communities and industries in identifying the problems and in formulating the solutions is the place to begin. There is never a simple solution but there are a number of principles and 'best practice' approaches that can assist. These take into account local vulnerabilities and drivers of change, and draw on a wide range of mechanisms to encourage sustainable development.

BUILDING COMMUNITY RESILIENCE

Vulnerabilities to resource depletion, climate change and natural disasters are high among poor communities, even in the relatively resource-rich areas of the region. Building resilience in communities through opportunities for education, good governance, improved essential services, options for diversified economies and local sustainable development initiatives can increase capacities to cope and adapt to environmental threats.

Healthy communities and healthy environments are inextricably linked. Resource depletion and poor environmental management undermine

the inherent regenerative capacities of natural systems and expose people and their surrounding environments to pollution and other adverse environmental impacts (eg polluted water, degraded land and toxic chemicals). These impacts, in turn, degrade the health and productivity of communities. Understanding the resilience of natural systems is crucial for building adaptive capacities and responding to change.

PROTECTING NATURAL HERITAGE

The intrinsic values of the natural environment and the cultural and scientific importance of biological diversity are central tenets of Australian policy on environment and development (Australian Government 1996). These principles – the rights of other species to exist and the responsibilities incumbent on nations to protect and conserve the environment – are enshrined in international agreements. Although conservation may limit certain commercial activities, the preservation of natural and cultural heritage and management for conservation also offer significant potential benefits in the form of tourism and other economic opportunities.

Healthy ecosystems provide a range of cultural and essential ecological services. Human societies depend intimately on these services, which are costly (if not impossible) to restore once degraded. They tend to be chronically undervalued and this is one of the primary underlying drivers of resource depletion and environmental degradation.

ECOSYSTEM SERVICES

‘Ecosystem services’ is a term used to describe the inherent capacity of the natural environment to provide services and benefits that are essential for human survival. Ecosystem services have been defined as the benefits that people receive or obtain from an ecosystem. Ecosystem services include provisioning (eg food, water), regulating (eg flood control), cultural (eg spiritual, recreational), and supporting (eg nutrient cycling, ecological value) services (Millennium Ecosystems Assessment 2005).



ABOVE: Pristine littoral forest, south-east coast, East Timor. PHOTO: Gerard Cheong

Environmental trends and challenges – three broad themes

AUSTRALIA WILL ADDRESS MAJOR ENVIRONMENTAL CHALLENGES IN THE ASIA-PACIFIC REGION UNDER THREE BROAD THEMES: CLIMATE CHANGE, WATER AND ENVIRONMENTAL GOVERNANCE.

CLIMATE TRENDS

‘Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures, widespread melting of snow and ice, and rising global average sea level.’

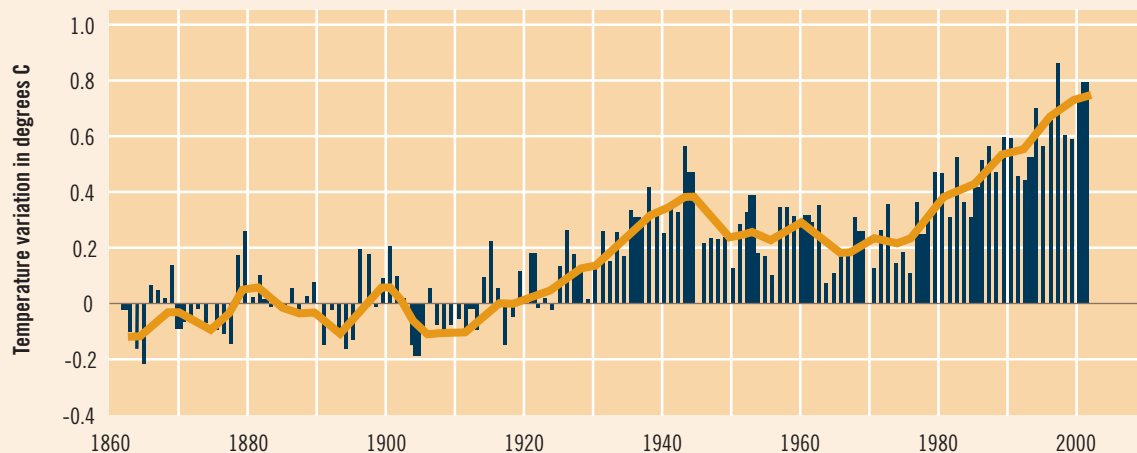
Eleven of the last twelve years (1995–2006) rank among the 12 warmest years in the instrumental record of global surface temperature (since 1850).’

IPCC WG I (2007a, p. 5)

Current modelling suggests that temperatures will increase in the Asia-Pacific region by an average of 0.5–2.0 °C by 2030 and by 1–7 °C by 2070 (CSIRO 2006).

Higher temperatures will drive major changes in regional weather patterns. More intense summer monsoons throughout the equatorial zone and a decline in winter rainfall in South and South-East Asia are expected to be accompanied by increasing climatic variability, changes in important circulations such as the southern oscillation and more frequent extreme floods and droughts. Ten of the 15 most extreme weather events reported during the past century in the Asia-Pacific region occurred in the last 15 years (World Bank 2006) and tropical cyclones have recently become more intense (CSIRO 2006).

FIGURE 1: VARIATIONS IN GLOBAL NEAR-SURFACE LAND TEMPERATURE



Source: Steffen (2006, p. 5).

In addition to predicted warmer ocean temperatures, the region will be affected by a global rise in sea level of 3–16 centimetres by 2030 and 7–50 centimetres by 2070 (CSIRO 2006). If this occurs, the effects will be locally amplified by an increase in the strength and reach of tropical cyclones and storm surges.

The Asia-Pacific region already experiences frequent floods, droughts, tropical cyclones and other climate-related natural disasters. Projected climate trends mean that over time these events are likely to become more severe and their impacts more extensive. A gradual rise in the sea level is expected to exacerbate inundation, storm surges and coastal erosion, with low-lying small islands (eg Tuvalu and Kiribati) densely populated coastal deltas (eg the Asian megadeltas including the Mekong and the delta regions of Bangladesh) being particularly vulnerable (IPCC WG II 2007b). Severe sea encroachment would threaten coastal agriculture and freshwater resources and could result in large numbers of people migrating within and across borders.

‘Many millions of people are projected to be flooded every year due to sea-level rise by the 2080s. Those densely-populated and low-lying areas where adaptive capacity is relatively low, and which already face other challenges such as tropical storms or local coastal subsidence, are especially at risk.’

IPCC WG II (2007b, p. 7)

Worldwide, climate change is expected to result over time in an increase in deaths from malnutrition, heat stress and vector-borne diseases. The Asia-Pacific region includes some of the more vulnerable areas. Endemic morbidity and mortality due to diarrhoeal disease associated with floods and droughts and vector-borne diseases are predicted to rise in many areas of tropical Asia. In South Asia, increases in sea water temperatures could exacerbate the spread and toxicity of cholera (IPCC WG I 2001).

Global warming will have a marked impact on biodiversity and the functions of natural ecosystems. The resilience of many ecosystems will be threatened

this century by an extreme combination of climate change and associated disturbances compounding other pressures including urbanisation, land use change, pollution and resource depletion (IPCC WG II 2007b). Mass extinctions are likely, even at conservative temperature increases. Ecosystems in restricted ranges, including coral reefs and mountain systems, are particularly vulnerable.

Climate change is projected to impinge on sustainable development of most developing countries of Asia as it compounds the pressures on natural resources and the environment associated with urbanisation, industrialisation and economic development.

IPCC WG II (2007b, p. 8)

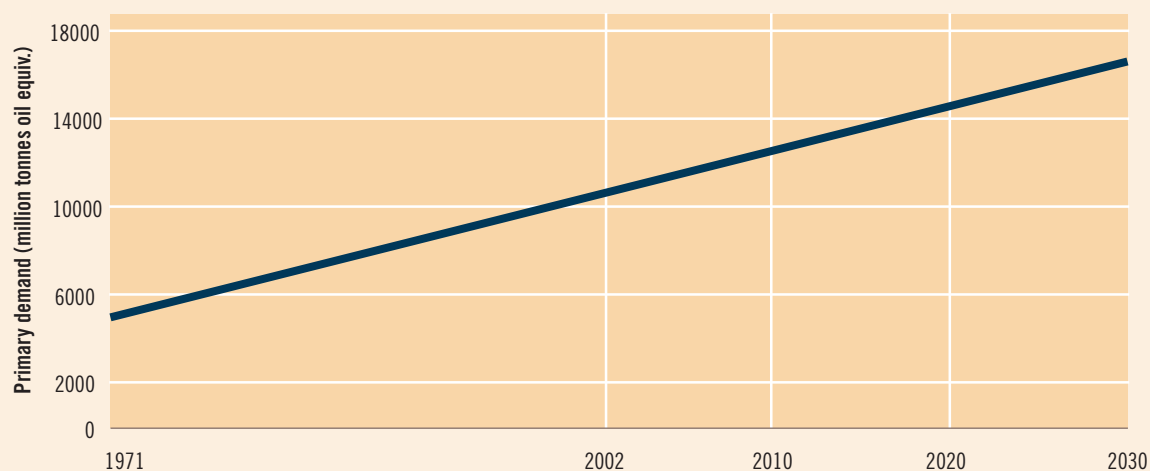
Under these scenarios, widespread shocks to local livelihoods and national economies in the region are probable. Key resource sectors would be directly affected, including agriculture, fisheries, tourism and forestry. Additional costs could be expected to stem from severe natural disasters, sea-level abatement measures and other climate-proofing infrastructure, and increased demands on health systems.

COPING WITH CLIMATE CHANGE

Coping with climate change will involve a mix of strategies, including mitigation, adaptation, technological development and research (IPCC WG II 2007b, p. 19). ‘For developing countries, availability of resources and building adaptive capacity are particularly important’ (IPCC WG II 2007b, p. 17).

Climate change challenges are geographically specific and responses must be tailored to local situations and vulnerabilities. The Pacific islands are minor contributors to global climate change but will be seriously affected by its impacts. The key climate change challenges in the Pacific lie in applying better knowledge of trends and vulnerabilities to build adaptive capacities and resilience (eg predicting and preparing for sea-level rise and natural disasters).

FIGURE 2: GLOBAL ENERGY DEMAND



Source: International Energy Agency (2006).

Challenges in improving access to affordable clean, efficient energy for development also need to be addressed because there is an important link between this and social stability and environmental health. For example, replacing certain uses of biomass fuels with clean energy technologies could reduce indoor pollution and associated respiratory, lung and other health problems.

‘The world is facing twin energy-related threats: that of not having adequate and secure supplies of energy at affordable prices and that of environmental harm caused by consuming too much of it.’

International Energy Agency (2006, p. 1)

In Asia the long-term challenge is to move to using cleaner energy. The emissions per person in Asia are lower than those in developed countries but demand for energy is soaring as the major economies industrialise and living standards improve. Energy exports to APEC economies are projected to increase by 90 per cent from 2000 to 2020, driven by economic growth, industrialisation and urbanisation, primarily in China and India (APEC 2007). The challenges in managing this massive demand are significant and have serious implications for long-term climate scenarios.

In the more immediate future, the key challenges in Asia lie in mitigating emissions from conventional fuel combustion and other sources (including deforestation), improving energy efficiency, promoting clean energy technologies and renewable sources, and building adaptive capacities and resilience in vulnerable cities and in coastal and rural communities.

There are major governance issues in relation to adapting to climate change and mitigating emissions in the region. Slowing deforestation and improving energy efficiency, for example, will require strong policy and institutional responses by governments. These challenges demand international cooperation and private sector engagement (International Energy Agency 2006).

Capacity building and leadership at local levels will also be needed to enable local adaptations of technology and adoption of clean energy sources. With the right skills and incentives, communities can adopt cleaner energy, which will have multiple benefits for health, the environment and the sustainable development of community resources.

TRENDS IN WATER RESOURCES

Local climates, rainfall and water resources vary significantly across the Asia-Pacific region. The region includes wet-dry tropical conditions marked

by long dry seasons, equatorial climates influenced by the annual monsoons, small island climates moderated by ocean weather, and low rainfall, highly variable continental conditions.

Trends in rainfall and runoff associated with climate change also range widely. The equatorial areas are expected to experience an overall upward trend in average rainfall and increased flooding (IPCC WG II 2007b). Equatorial climates and monsoonal influences are expanding, forcing subtropical systems into higher latitudes. Outside these equatorial influences, the mid-latitude and high-latitude countries are already detecting local and more general reductions in average rainfall, increased variability, and reduced runoff, river flow and groundwater recharge. The average annual runoff and water availability in some already stressed mid-latitude areas and dry tropics is projected to decrease by 10–30 per cent by mid-century (IPCC WG II 2007b).

Many countries in South-East Asia and the Pacific do not experience water scarcity overall but seasonal shortages do occur and demand for water is rising. In some countries, water is seasonally abundant but not widely accessible. In others, annual dry periods are frequently compounded by more prolonged drought (eg eastern Indonesia and the wet-dry tropics generally).

Serious water shortages are already apparent in China and South Asia and are expected to worsen with climate change. The glaciers that play a crucial role in regulating water supply to the Ganges, Indus, Brahmaputra, Mekong, Thanlwin, Yangtze and Yellow rivers are reported to be retreating at an annual rate of 10–15 metres. The expected decrease in average flows in these snow-fed rivers together with more frequent extreme, erosive floods would have a major impact on hydropower generation, urban water supplies and the availability of water for agriculture. Glacial lake outburst flows are also a growing threat to many Himalayan communities.

The lower reaches of the Yellow River, which feeds China's most important farming region ran dry for 226 days in 1997, and between 1991 and 1996 the water table beneath the North China Plain fell by an average of 1.5 metres a year (4th World Water

Forum 2006a). To combat this, China commenced its largest ever construction project – a scheme to channel vast volumes of water from the Yangtze River to replenish the stressed Yellow River. In India the Ganges River is severely depleted, placing the Sundarban wetlands and mangrove forests of Bangladesh at risk.

Problems of availability and security of supply are exacerbated by poor water quality. Industrial, household and agricultural effluents are significant sources of water pollution, especially in the densely populated and highly urbanised areas of Asia. Most of the major Asian rivers are severely polluted.

Agriculture is the largest water user in the region. Industries and households are among the lowest water users but are the highest contributors to direct water pollution. Sediment and effluents from runoff and erosion of agricultural land are also significant pollutants. Sediment is the most widespread water pollutant and, because it is generated from a very wide area, it is also the most difficult to address.

Groundwater sources are an important freshwater resource throughout the region. In the wet-dry tropics of Asia, rural communities depend on groundwater during the dry season. In the Pacific islands there is heavy reliance on thin lenses of fresh groundwater, which are highly susceptible to overextraction and contamination by salt water intrusion and the leaching of wastes (Asian Development Bank 2004). Natural contamination (heavy metals) is also a problem in some areas.

MANAGING WATER BETTER

The World Water Forum in 2006 estimated that 678 million people living in Asia are without safe drinking water and more than 1.9 billion people in the Asia-Pacific region are living without access to adequate sanitation (4th World Water Forum 2006b). Death and disease rates linked to unsafe water in Asia are among the world's highest.

Vulnerabilities to water-related natural disasters are particularly high in the coastal communities of the Pacific and Asia, given the high concentration of people and their dependence on coastal resources. Deaths, disease and displacement attributed to floods, droughts, storm surges and tropical cyclones

are rising and the available evidence suggests that these impacts will increase with climate change.

The wide range in climatic conditions and rainfall seasonality and totals in the Asia-Pacific region present different water-related challenges that demand tailored management responses. However, Asia-Pacific delegates to the 2006 World Water Forum identified a set of important challenges that are common across the region (4th World Water Forum 2006b). These are:

- > investing in water supply and sanitation infrastructure and in the capacities of institutions and communities to manage these systems
- > protecting and restoring river basins and aquifers as the fundamental providers of freshwater resources through integrated water resources management, and
- > reducing vulnerabilities to water-related natural disasters.

Providing secure and safe water supplies to all communities, controlling pollution of water resources and reducing extractions from rivers and groundwater sources to sustainable levels that protect water supply assets and preserve aquatic ecosystems are significant challenges throughout Asia and in some areas of the Pacific. Many billions of dollars need to be invested in improving water supplies and sanitation in the region as a whole to meet water-related Millennium Development Goals (UN Millennium Project 2005).

Investment in infrastructure alone is not enough. Infrastructure development must be based on better planning and allocation frameworks that promote equity, sustainability and economic efficiency, and be accompanied by capacity building in management and maintenance of the systems.

These water-related challenges are closely linked with water governance at all levels of government and within communities. Institutional frameworks at national and catchment levels in the region do not adequately address the development of water and related land resources in an integrated manner. The management of water resources tends to be

fragmented among many agencies with unclear roles and responsibilities. Key weaknesses include gaps in knowledge about water resources, inequitable distribution of water, weak enabling conditions for sustainable management, underdeveloped service delivery capacities and infrastructure, a lack of mechanisms and incentives for private sector engagement, low levels of participation by stakeholders, particularly women, and undervalued water resources in all markets (4th World Water Forum 2006b).

In many parts of the region, policies and plans for controlling important sources of water pollution from concentrated industrial and urban areas are weakened by inadequate capacity to implement them. Polluter-pays policies and regulations to reduce effluent inflows to water sources are generally well developed but are poorly enforced. Infrastructure for managing both urban and community-level sanitation and solid waste is underdeveloped. Policies and practices to prevent contamination of groundwater tend to be less advanced than for surface water sources. Arrangements and networks for identifying and monitoring contamination are generally lacking or poorly implemented.

The links between water management and climate change pose additional challenges. In future, water planning and allocation will need to draw on and take account of better knowledge about climate-driven trends in water resources. It must also operate within and manage a range of uncertainties. These stem from the pervading difficulties in predicting and acting on climate trends, particularly at local and catchment levels, including the possibility that impacts will significantly worsen in some areas.

TRENDS IN ENVIRONMENTAL GOVERNANCE

The countries of the Asia-Pacific region are at different stages in developing their environment policies and management frameworks. In many, environment policy and institutions are maturing but there is much to be done to achieve a balance between environmental outcomes and the imperatives of economic growth that can deliver the dual benefits of sustainable development

and poverty reduction. As a consequence, long-term economic growth is directly undermined by resource depletion, and gains in living standards are placed at risk. Furthermore, the adverse outcomes of weak environmental governance diminish the rights of individuals and communities to a healthy environment.

Most countries have enacted laws to govern development and manage environmental degradation, but many do not have sufficiently strong enabling regulations or institutions to bring about effective enforcement or implementation. Likewise, international environment agreements are widely ratified by Asia-Pacific nations but there is limited capacity to implement them.

Environment agencies in the region tend to be poorly resourced and sit low in the hierarchy of government when it comes to national priorities. They commonly lack the authority, capacity and credibility to influence other sectors and discharge their mandates. Institutional capacities are further taxed as countries in the region increasingly decentralise administrative responsibilities for resource development and for environmental management to local levels. It is important that the agencies at these levels of government are adequately resourced and have the range of skills required for effective environmental management.

MANAGING THE ENVIRONMENT BETTER

Strong institutions are essential for effective environmental management. Building institutional capacities in environmental governance is a key challenge throughout the region. These capacities include sound technical and analytical skills that enable governments to fully take account of the mutually reinforcing links between poverty, environmental degradation and health. A capacity for analysing key economic, social and environmental links is also imperative, particularly in the rapidly developing economies of the region.

Implementing measures to encourage and compel improved environmental management is another key challenge. Introducing legislation without providing good administration and enforcement is not sufficient to halt and reverse the decline in environmental assets affected by development. Robust, holistic responses are needed, involving a range of mechanisms such as knowledge and awareness, gender-sensitive participatory planning, negotiation, incentives, legislation and regulation, stewardship and public–private partnerships.

Corruption is also a major problem, particularly with respect to illegal logging, illegal harvesting of wildlife and illegal/unregulated fishing. Australia recently released *Tackling corruption for growth and development*, a policy for Australian development assistance on anti-corruption (AusAID 2007b). This policy outlines ways in which Australia will work with developing countries to combat corruption, including the corrupt use of aid money. The policy together with lessons from environment and water sector projects can frame and support future environmental governance initiatives. Programs to improve the rule of law, promote public sector reform, and strengthen civil society are of particular importance for environmental reform.

Principles for environment-related aid

PRINCIPLES FOR ENVIRONMENT-RELATED AID DRAW ON AUSTRALIA'S LENGTHY ENGAGEMENT, EXPERIENCE AND LESSONS LEARNED IN THE ASIA-PACIFIC REGION.

The Australian Government recognises the complex interplay between environment and development interests in the Asia-Pacific region. It has given a clear commitment to strengthen support for partner countries to achieve higher standards of environmental management and move onto more sustainable pathways to development.

The following nine principles will guide the programming of resources for environment-related aid (table 2):

- > Target aid to have maximum possible impact
- > Build environmental management capacities
- > Mainstream environmental governance across all development sectors
- > Promote integrated approaches
- > Build effective partnerships with nations, multilateral and regional organisations and other donors in environmental management initiatives
- > Build effective partnerships with all stakeholders
- > Build knowledge but accept uncertainty
- > Achieve best practice environmental management in all aid activities
- > Build on lessons learned.



ABOVE: Forestry research station, Sapa, northern Vietnam. PHOTO: Bruce Bailey

TABLE 2: GUIDING PRINCIPLES FOR PROGRAMMING RESOURCES FOR ENVIRONMENT-RELATED AID IN THE ASIA-PACIFIC REGION AND THE LESSONS FROM WHICH THEY ARE DRAWN

PRINCIPLES	LESSONS
<p>Target aid to have maximum possible impact</p> <p>The environmental threats in the region are serious and escalating. The investment required to comprehensively address them is massive. Australia's limited resources must be targeted to the needs of partner countries and to the challenges that we understand and can best support.</p>	<p>Lessons from around the region indicate that fewer, larger, well-executed activities that build links with other successful initiatives will enhance the effectiveness of aid for the environment.</p>
<p>Build environmental management capacities</p> <p>Environment institutions and resource management agencies need to be strong and highly skilled and have a mandate and political support that enable them to implement good environmental governance at all levels of government and across the development sectors.</p>	<p>Environment institutions in the region are maturing but they lack resources and influence. Devolution of governance to local levels presents additional capacity challenges. To make a difference in the long term, aid activities must help governments build strong environmental capacities across the relevant development sectors and foster widespread support for environment initiatives.</p>
<p>Mainstream environmental governance across all development sectors</p> <p>Environmental challenges demand a consistent approach to achieving better outcomes for the environment and people.</p>	<p>Our experience in the region indicates that environment policy is much more effective if it is applied consistently across the key development sectors including natural resources, infrastructure, planning, finance, health and education.</p>
<p>Promote integrated approaches</p> <p>Environmental challenges demand an integrated response from all levels of government. Policy making must be responsive to local needs and be aware of locally specific issues and solutions.</p>	<p>The aid program has been successful in community-based approaches that focus on building capacities in local agencies. However, these need to be strongly linked to policy making so that locally derived models of good environmental management can be adapted and extended more broadly.</p>
<p>Build effective partnerships with nations, multilateral and regional organisations and other donors in environmental management initiatives</p> <p>The environmental threats confronting Asia and the Pacific do not respect borders. They demand a collective response from governments, nationally and in partnerships around the region. Australia is an important partner in developing and enabling international environment agreements. Australia will continue to support implementation of these agreements in the region based on the specific needs of partner countries.</p>	<p>Many countries in the region have signed regional and international environment agreements. The aid program can contribute significantly to supporting these agreements and their outcomes in the region by fostering collaboration and helping partners to implement them.</p> <p>Other agencies and donors have been active in addressing environmental challenges in the region for many years. Australia will seek to work with successful initiatives and build new partnerships to achieve mutual goals.</p>
<p>Build effective partnerships with all stakeholders</p> <p>Governments cannot solve environmental challenges alone. They must partner with industry, non-government agencies, civil society, communities and research institutions to build resilience and find and implement solutions.</p> <p>Activity under the strategy will be guided by the overarching principles of the aid program – promote gender equality, work in partnerships and untie aid.</p>	<p>'Best practice' environmental management involves partnerships and negotiation between all stakeholders. The aid program can help to broker partnerships and develop participatory approaches to solving environmental challenges – locally, nationally and internationally.</p> <p>In all our partnerships, we should promote equal participation by women and men and ensure that our initiatives reflect their different roles and needs.</p>

PRINCIPLES	LESSONS
<p>Build knowledge but accept uncertainty</p> <p>There are many information gaps in the region, both technical and in understanding local capacities and vulnerabilities. It is important that these gaps are addressed but the key environmental challenges are so urgent that action cannot be delayed.</p>	<p>The aid program has supported activities to build knowledge about environmental challenges in the region for over 30 years. This work is informing the development of solutions and adaptive responses to key challenges. The aid program can help to catalyse action by ensuring that available knowledge is collated and accessible to counties in the region.</p>
<p>Achieve best practice environmental management in all aid activities</p> <p>Australia's national environment legislation applies across the aid program. It is important that we have strong mechanisms that provide Australian standards in assessment, management and monitoring of all aid activity. This should be extended to partnerships with multilateral and regional organisations and other donors, and to the activities of Australian companies working in developing countries.</p>	<p>Ensuring appropriate levels of environmental assessment and management of all aid activities, including those implemented largely through partnerships with other agencies, has proven challenging in itself. The environmental management guidelines for the aid program are regularly reviewed and the environmental outcomes of aid activities are also monitored. As the aid program grows, it is important that these safeguards are strong, comprehensive, effective and well resourced.</p>
<p>Build on lessons learned</p> <p>The aid program has worked in the region for many years. It is imperative that lessons relating to environmental management and outcomes are captured and documented through a well-designed monitoring and evaluation framework.</p>	<p>The aid program's commitment to ensuring the effectiveness of programs and activities is stronger than ever. The environment strategy outcomes will be assessed under a specific monitoring and evaluation framework and as part of a regular environment sector review.</p>



ABOVE: A typical community forest, Shangri La. This was a partnership in community forestry between Nepal and Australia, 1966–2006. PHOTO: AusAID

Strategic directions

AUSTRALIA WILL RESPOND TO KEY ENVIRONMENTAL CHALLENGES THROUGH ACTIONS UNDER THE THREE THEMES OF CLIMATE CHANGE, WATER AND ENVIRONMENTAL GOVERNANCE.

The aid program's strategic responses to the key environmental challenges in the region fall within the three broad themes of climate change, water and environmental governance and are summarised in table 3. The responses are based on an analysis of the challenges, Australia's current role in the region and the lessons learned through the aid program.

Australia has had a long involvement in addressing some of these challenges, including water and waste management, and sustainable forest management. Other challenges have emerged more recently or have grown in urgency and become global in extent. Climate change and energy-related challenges are among these. The strategic responses encompass both longstanding and emerging challenges.

The focus of Australia's current environmental assistance varies within the region. In Asia, Australia

has traditionally focused on the management of natural resources, particularly water. Community-based water and sanitation initiatives are broadly supported throughout the region. In the Pacific, the aid program has supported regional programs related to water, climate and sea-level monitoring, climate prediction, and vulnerability and adaptation, as well as the management of natural resources and waste.

The aid program will continue to support these areas while incorporating initiatives to mitigate climate change (through energy and forest management measures), extend and deepen climate change adaptation (particularly in the Pacific) and improve environmental governance through stronger partnerships between Australian and national or regional institutions in the Asia-Pacific region.



ABOVE: Local boys enjoying a play in the sea, Kiribati. PHOTO: Lorrie Graham

TABLE 3: A SUMMARY OF THE STRATEGY'S OBJECTIVES, DESIRED OUTCOMES AND PLANNED ACTIONS

THEME: CLIMATE CHANGE	
<p>KNOWLEDGE AND ADAPTIVE RESPONSES TO CLIMATE CHANGE</p> <ul style="list-style-type: none"> > Climate change is predicted to have wide-ranging impacts in the Asia-Pacific region but these will vary markedly. Further analysis is needed to determine locally specific vulnerabilities and responses. > Policy makers will need to deal with uncertainty and cannot delay action. <p>Objective 1: To build knowledge of regional climate systems and support adaptive planning and adaptive measures.</p> <p>Outcomes</p> <ul style="list-style-type: none"> > An improved knowledge base is informing appropriate adaptive responses to climate change in vulnerable areas and communities of the region. > Adaptive capacities and responses are improving. 	<p>Actions</p> <p>Continued, new or expanded support for:</p> <ul style="list-style-type: none"> > monitoring sea-level and climate, including regional scenario analysis and risk analysis to inform policy responses in the Pacific > understanding regional climate systems, including support for improving the communication of results to policy makers and planners > integrating climate change vulnerability analysis and planning for disaster preparedness and mitigation programs in Asia and the Pacific > expanding existing disaster preparedness, including for tropical cyclone warning systems in the Pacific > improving analysis of the vulnerability of water resources, agriculture, forests, fisheries and biodiversity in key geographic zones to climate change, and developing appropriate policy and technical responses > developing adaptive planning and adaptive measures in the Pacific > increasing awareness and gender-sensitive education programs to build community resilience in the Pacific and elsewhere > developing new livelihoods programs that involve both men and women, and initiatives to build the resilience of natural ecosystems and the communities they sustain > integrating climate change vulnerability analysis and adaptive planning into all aid projects, and > participating in multilateral initiatives to support adaptation to climate change in the region.
<p>ENERGY</p> <ul style="list-style-type: none"> > The Asia-Pacific region depends largely on conventional fossil fuel technologies to meet its current energy needs, resulting in high and unsustainable greenhouse gas emissions. > Emissions must be reduced in significant emitting countries to avoid dangerous global climate change impacts. <p>Objective 2: To reduce greenhouse gas emissions in significant emitting countries through energy efficiency and clean energy technologies.</p> <p>Outcomes</p> <ul style="list-style-type: none"> > Policy frameworks for energy efficiency, renewable energy and advanced energy technologies are being strengthened. > Energy efficiency is increasing and the development, use and transfer of cleaner energy technologies are growing. 	<p>Actions</p> <p>Continued, new or expanded support for:</p> <ul style="list-style-type: none"> > implementing climate change mitigative measures through the Global Environment Facility > developing capacities in energy policy and introducing energy efficiency planning and management through regional partnerships > developing and implementing energy efficiency measures > removing institutional barriers to the adoption of renewable energy sources in the Pacific > building awareness of efficient and affordable clean energy, including renewable sources, and building community capacities (involving both men and women) to adopt clean energy technology > initiating strategic activities to complement large-scale energy and infrastructure projects where these activities can leverage mitigative outcomes, and > integrating energy efficiency and clean energy strategies into all relevant aid activities
<p>FOREST MANAGEMENT</p> <ul style="list-style-type: none"> > Approximately 20 per cent of global emissions are credited to deforestation. > Reducing deforestation and supporting reforestation are likely to be highly cost-effective mitigation measures. <p>Objective 3: To reduce greenhouse gas emissions through reforestation and avoided deforestation.</p> <p>Outcomes</p> <ul style="list-style-type: none"> > Greenhouse gas emissions are reduced through reforestation and lower rates of deforestation in the region. > Sustainable forest management systems are supporting the livelihoods of forest communities. > Governance arrangements for forest management are improving. 	<p>Actions</p> <p>The Australian Government's \$200 million Global Initiative on Forests and Climate (mostly aid) will support projects in selected developing countries (particularly in South-East Asia and the Pacific) to:</p> <ul style="list-style-type: none"> > assist in building technical capacity to assess and monitor forest resources, and to develop national forest management plans > support effective governance arrangements, including regulatory and law enforcement arrangements to protect forests by, for example, preventing illegal logging > promote the sustainable use of forest resources and diversification of the economic base of forest-dependent communities > support practical research into the drivers of deforestation > encourage reforestation of degraded forest areas, and > support pilot approaches to providing incentives to countries and communities to encourage their sustainable use of forests and reduce the destruction of forests.

THEME: WATER	
<p>SAFE WATER AND SANITATION</p> <ul style="list-style-type: none"> > Pollution inflows to rivers, wetlands and aquifers have reduced water quality to levels that threaten the health of people, plants and animals dependent on the resource. > Many communities do not have access to safe and reliable water sources. <p>Objective 4: To improve access to safe water and sanitation.</p> <p>Outcomes</p> <ul style="list-style-type: none"> > Pollution of domestic water supplies is declining as a result of improved waste management and sanitation. > Access to safe water and sanitation systems is improving. 	<p>Actions</p> <p>Continued, new or expanded support for:</p> <ul style="list-style-type: none"> > investing in partnerships for better water, sanitation and waste management policy and infrastructure > investing in related infrastructure for safely re-using water, and technology for treating water > investing in measures to improve water-use efficiency, particularly in agriculture, to complement investments in infrastructure > building capacities to maintain water supply and sanitation facilities > developing water safety plans to reduce the risk of water-related diseases > developing community-led total sanitation schemes, and > developing initiatives that address key sources of pollution.
<p>INTEGRATED WATER RESOURCES MANAGEMENT</p> <ul style="list-style-type: none"> > Demands on fresh water supplies from domestic, agricultural and industrial users are escalating and many water sources, both surface and groundwater, are over-allocated and ecologically stressed. > Climate change will exacerbate water shortages, flooding and drought in many areas of the region and could impact adversely on water quality, habitat and biodiversity. <p>Objective 5: To strengthen integrated water resources management, particularly through planning and allocation processes.</p> <p>Outcomes</p> <ul style="list-style-type: none"> > The knowledge base for determining water balances and sustainable yields for key water sources and aquatic biodiversity is improving. > Institutional capacities and regulatory frameworks for integrated planning and management of water resources are being strengthened. > Management of water, land and other environmental assets is becoming more integrated and participatory. > Adaptive responses to the impacts of climate change on water resources are improving. 	<p>Actions</p> <p>Continued, new or expanded support for:</p> <ul style="list-style-type: none"> > developing initiatives for integrated management of key river basins and aquifers, taking account of climate change > monitoring, modelling (hydrologically) and assessing water resources, including aquifers, to underpin policy and planning > building human resource and institutional capacities in water management, including policy, regulatory frameworks, negotiated planning schemes, risk management approaches, community participation and stakeholder engagement, measurement and monitoring systems, environmental flow allocation and water trading > implementing the Pacific Regional Action Plan on Sustainable Water Management > establishing links with rural development strategies to support improved land management practices that reduce water pollution and protect water yield and quality, and > reducing or eliminating land-based activities that pollute rivers, wetlands, coast and marine ecosystems.
<p>ENVIRONMENTAL MANAGEMENT CAPACITIES</p> <ul style="list-style-type: none"> > A lack of institutional capacity undermines sound policy setting for environmental management. > Devolution of management responsibilities requires capacity building at local levels of government. <p>Objective 6: To strengthen institutional capacities for environmental management.</p> <p>Outcome</p> <ul style="list-style-type: none"> > Capacities in environment policy development and management are being strengthened. 	<p>Actions</p> <p>Continued, new or expanded support for:</p> <ul style="list-style-type: none"> > developing initiatives to address critical knowledge gaps and strengthen environmental planning, assessment, monitoring and reporting > building technical capacities in environmental management across the resource management, energy and infrastructure sectors, including capacities to monitor and analyse trends > strengthening technical capacities through gender-equitable scholarships, work placements, links between education and research institutions, and exchanges that address critical knowledge and skills gaps > building institutional capacities needed for devolution of responsibilities for natural resource and environmental management > increasing regional dialogue and action on environment policy and management practices > increasing the networks of terrestrial and marine protected areas, and > implementing multilateral environment agreements in the region.

THEME: ENVIRONMENTAL GOVERNANCE

ENABLING MECHANISMS FOR ENVIRONMENTAL MANAGEMENT

- > Even where good environmental management legislation exists, poorly developed regulatory frameworks and weak enforcement regimes limit their value.
- > Regulatory mechanisms alone will not halt and reverse the decline in key environmental assets in the region. A holistic, partnership approach is needed.

Objective 7: To improve enabling mechanisms for environmental management.

Outcome

- > Implementation frameworks for managing natural resources and the environment are more effective.

Actions

Continued, new or expanded support for:

- > mainstreaming environmental management into the coordinating (planning and finance) functions in partner governments
- > developing initiatives that promote better coordination, engagement and participation across ministries, and with industries, civil society, men and women, and communities
- > developing frameworks that integrate a range of locally relevant enabling mechanisms for environmental management
- > developing regulatory frameworks, administrative guidelines, and capacities to implement and enforce existing legislation for forestry, land tenure, coastal zones, catchment management, waste management/pollution control, pest and disease control, wetlands and protected areas management
- > introducing innovative and effective incentive mechanisms tailored to local needs, including linking payments for ecosystem services to natural resource management
- > improving environmental governance to protect vulnerable assets, including coasts, marine ecosystems, wetlands, forests and rivers
- > promoting good environmental governance in partnerships to implement regional and national initiatives, and
- > ensuring that Australian environmental standards are met in the planning, assessment and management of all aid activities.

Respond to climate change

'ALL THE WORK WE ARE DOING ON OTHER ENVIRONMENTAL PROBLEMS WILL BE IRRELEVANT IF WE DON'T RESTORE THE BALANCE OF THE CLIMATE SYSTEM.'

Ian Lowe (Australian Climate Group 2004, p. 22)

OBJECTIVE 1 TO BUILD KNOWLEDGE OF REGIONAL CLIMATE SYSTEMS AND SUPPORT ADAPTIVE PLANNING AND ADAPTIVE MEASURES

Australia currently supports a range of activities to improve understanding of climate change impacts and planning for adaptation in the Pacific. These activities will continue to be supported but the role of the aid program in helping governments and communities to adapt to climate change will also become increasingly important. The aid program will:

- > support activities to build an accurate information base for developing targeted and effective adaptive measures
- > emphasise the importance of determining locally specific threats and vulnerabilities so that responses can be tailored appropriately, and
- > assist developing countries and communities, especially in the Pacific islands, to manage and respond to the threats and impacts identified.

'A wide array of adaptation options is available, but more extensive adaptation than is currently occurring is required to reduce vulnerability to future climate change. There are barriers, limits and costs, but these are not fully understood.'

IPCC WG II (2007b, p. 17)

A sound information base is needed to underpin the development of suitable adaptive responses in disaster preparedness, health, agriculture, water resources and coastal management. Many gaps in knowledge remain and further analysis is needed in some areas to determine local vulnerabilities and to tailor responses. But the unpredictable nature of climate change means that planners and policy makers must continue to deal with uncertainty and cannot delay action.

SOUTH PACIFIC SEA-LEVEL CLIMATE MONITORING PROJECT

The climate monitoring project began in 1991 as an Australian response to concerns raised by Pacific island countries about climate change and rising sea levels. Its goal is to build a long-term record of sea levels and temperatures across the region. This information will help build understanding and adaptive responses. Monitoring stations have been installed in 12 partner countries. By 2007 Australia had contributed \$32 million.

Work began on analysing and reporting the likely impacts of climate change on coastal zones (especially mangrove areas, beaches and coral reefs), water in low coral atolls, agriculture and health in the Pacific islands in 1989 (Pernetta and Hughes 1990). At a macro level, the most vulnerable locations and communities are reasonably well identified. The scale of likely impacts is not well understood and updated analysis using current modelling and predictions will be needed to inform



ABOVE: *Delivering electricity to remote villages in northern Vietnam.* PHOTO: *Bruce Bailey*

planning and responses, especially in relation to disaster preparedness. Disaster preparedness has always been important for Pacific island countries and will be of increasing significance, given the predicted trends of more extreme climatic conditions and increased climate variability together with the vulnerability of the largely coastal communities to more intense tropical cyclones, storm surges and coastal inundation (Bettencourt et al. 2006).

OUTCOMES

- > An improved knowledge base is informing appropriate adaptive responses to climate change in vulnerable areas and communities of the region.
- > Adaptive capacities and responses are improving.

ACTIONS

Continued, new or expanded support for:

- > monitoring sea-level and climate, including regional scenario analysis and risk analysis to inform policy responses in the Pacific
- > understanding regional climate systems, including support for improving the communication of results to policy makers and planners

- > integrating climate change vulnerability analysis and planning for disaster preparedness and mitigation programs in Asia and the Pacific
- > expanding existing disaster preparedness, including for tropical cyclone warning systems in the Pacific
- > improving analysis of the vulnerability of water resources, agriculture, forests, fisheries and biodiversity in key geographic zones to climate change, and developing appropriate policy and technical responses
- > developing adaptive planning and adaptive measures in the Pacific (eg through national adaptation plans of action to analyse the impacts of climate change and identify immediate adaptation needs)
- > increasing awareness and gender-sensitive education programs to build community resilience in the Pacific and elsewhere (eg through the Pacific Islands Framework for Action on Climate Change 2006–2015, which sets regional priorities on climate change and aims to help build awareness and resilience)
- > developing new livelihoods programs that involve both men and women, and initiatives to build the resilience of natural ecosystems and the communities they sustain

- > integrating climate change vulnerability analysis and adaptive planning into all aid projects, and
- > participating in multilateral initiatives to support adaptation to climate change in the region.

STRATEGIC PARTNERSHIPS

Understanding and adapting to climate change requires a sound knowledge base and effective institutions with capacities in strategic decision-making, resource allocation, and risk management (CSIRO 2006). To help build knowledge and capacities in the region, the aid program will expand its research collaboration with other Australian government organisations (eg Bureau of Meteorology, universities, CSIRO and cooperative research centres). This may include providing additional or extended training, work placements and exchanges within national meteorological services in partner countries and targeting aid scholarships in areas such as climatology and risk management at Australian institutions.

LARGER DEVELOPMENT RESEARCH PROGRAM

The white paper on Australian aid outlined an initiative to boost and diversify Australia's development research investment. This initiative is a major pillar of AusAID's expanded research investment. For example, the 2007 AusAID Development Research Grant Funding Round will include a focus on environment, forestry and climate change. The research initiative will also foster long-term partnerships between research institutions in Australia and partner countries in the Asia-Pacific region, and include the commissioning of research.

In its current rural development and environment programs, Australia will continue to provide assistance to build the capacity of communities in partner countries to manage climate change vulnerabilities through better planning, integrated risk management strategies and improved disaster preparedness.

OBJECTIVE 2 TO REDUCE GREENHOUSE GAS EMISSIONS IN SIGNIFICANT EMITTING COUNTRIES THROUGH ENERGY EFFICIENCY AND CLEAN ENERGY TECHNOLOGIES

'Unmitigated climate change would, in the long term, be likely to exceed the capacity of natural, managed and human systems to adapt.'

IPCC WG II (2007b, p. 19)

The aid program will focus its support for energy efficiency and clean energy technologies in the Asian countries where emissions are significant. Australian support will:

- > target energy policy, capacities and initiatives at national level, and
- > seek partnerships with rural communities in building capacities to develop and adapt sustainable clean energy technology that can deliver multiple benefits (eg improved health through reduced pollution).

Non-fossil fuel energy sources, including renewable energy technologies and nuclear power, will become an increasingly important part of the energy mix in the Asia-Pacific region. In the short to medium term, strategies to enhance energy efficiency and promote greater care in energy use can be successfully implemented and will offer developing countries greater energy security.

On the demand side, low energy appliances, building design and transport efficiencies offer substantial potential for saving energy. On the more difficult supply side, enhancing energy efficiency will involve national commitments to clean energy technology (Asia Pacific Energy Research Centre 2006) and local conversion to more efficient heating and cooking fuels.

There are opportunities to concurrently deliver economic development and greenhouse gas mitigation in areas where low emissions technology can be cost effective but are presently impeded by institutional and capacity factors. As well as using energy efficiency measures in domestic applications, renewable energy technology could be used in rural areas, where it is widely available and relatively cheap. In larger economies, a broader range of institutional challenges could be addressed, including capacity building in relation to monitoring as well as options for concurrently addressing domestic environmental and health problems (eg air quality) and greenhouse gas emissions.

OUTCOMES

- > Policy frameworks for energy efficiency, renewable energy and advanced energy technologies are being strengthened.
- > Energy efficiency is increasing and the development, use and transfer of cleaner energy technologies are growing.



ABOVE: *Buada Lagoon, Nauru.* PHOTO: *Lorrie Graham*

ACTIONS

Continued, new or expanded support for:

- > implementing climate change mitigative measures through the Global Environment Facility
- > developing capacities in energy policy and introducing energy efficiency planning and management through regional partnerships
- > developing and implementing energy efficiency measures (eg appliances, building codes, energy audits)
- > removing institutional barriers to the adoption of renewable energy sources in the Pacific
- > building awareness of efficient and affordable clean energy, including renewable sources, and building community capacities (involving both men and women) to adopt clean energy technology
- > initiating strategic activities to complement large-scale energy and infrastructure projects where these activities can leverage mitigative outcomes (eg enhancing the demonstration opportunities under the Asia-Pacific Partnership on Clean Development and Climate (APP), providing specific design expertise, undertaking energy audits, implementing emissions reduction technology and building renewable infrastructure), and
- > integrating energy efficiency and clean energy strategies into all relevant aid activities.

STRATEGIC PARTNERSHIPS

Australia has strengths in energy policy, markets and institutions, and is well placed to complement the energy policy and infrastructure programs of other donors, particularly the multilateral development banks, through support for the mitigative aspects of their energy development programs. At the multilateral level Australia continues to support the Global Environment Facility in its work on climate change mitigation and is engaged in other major initiatives (eg the APP and climate change partnerships).

THE ASIA-PACIFIC PARTNERSHIP ON CLEAN DEVELOPMENT AND CLIMATE

The Asia-Pacific Partnership on Clean Development and Climate brings together Australia, China, India, Japan, the Republic of Korea and the United States of America to address the challenges of climate change, energy security and air pollution in a way that encourages economic development and reduces poverty.

Under the partnership, Australia has pledged \$100 million over five years from 2006 to promote clean development through initiatives on (among others) cleaner fossil energy, renewable energy and distributed generation. In November 2006 the Prime Minister announced the first tranche of Australian government funding for APP projects of \$60 million.

CLIMATE CHANGE PARTNERSHIPS

Australia will invest \$32.5 million in 2007–08 for joint initiatives with the World Bank, the Asian Development Bank and other international organisations to support climate change adaptation and mitigation, in particular to improve water resources and energy management. The central elements of the initiatives are new adaptive measures in Asia targeting freshwater catchment areas of regional significance, new mitigative work in Asia promoting better management of energy, and support through the United Nations Framework Convention on Climate Change's Least Developed Countries Fund for developing countries to assess and adapt to the impacts of climate change.

In the future the aid program could seek opportunities to leverage mitigative outcomes from large-scale energy and infrastructure projects of multilateral development banks. The emphasis would be on identifying where Australia could have the biggest impact through co-financing arrangements, which might result in Australia strategically funding appropriate technical assistance, analytical support and policy advocacy. Measures could include providing specific design expertise, energy audits and emissions reduction technology (eg through the Australian Infrastructure for Growth Initiative).

OBJECTIVE 3 TO REDUCE GREENHOUSE GAS EMISSIONS THROUGH REFORESTATION AND AVOIDED DEFORESTATION

Energy is the major but not the sole contributor to greenhouse gas emissions. Approximately 20 per cent of global emissions result from deforestation (Australian Greenhouse Office 2007). Around half of these occur in Asia, with Indonesia being by far the largest source country. Reducing deforestation and encouraging reforestation are highly cost-effective abatement measures. The Australian Greenhouse Office (2007) estimates that halving global deforestation would reduce total emissions by 10 per cent, or around 3 billion tonnes of carbon dioxide equivalent.

The aid program will provide increased support for sustainable forestry management in countries where deforestation is a key issue (eg Indonesia, the Philippines, Cambodia, Lao PDR, Papua New Guinea and Solomon Islands). Sustainable management of forests has the potential to provide long-term livelihoods for forest-dependent communities (WWF/World Bank Global Forest Alliance 2006) and deliver benefits for global climate.

Reducing deforestation has a range of additional benefits that are in themselves substantial. Forest habitats support around two-thirds of all species on earth and deforestation of tropical rainforests alone is estimated to account for the loss of up to 100 species every day (Australian Greenhouse Office 2007). The loss of forests contributes to localised flooding, soil erosion, costly sedimentation and landslides, and can severely reduce land productivity.

OUTCOMES

- > Greenhouse gas emissions are reduced through reforestation and lower rates of deforestation in the region.
- > Sustainable forest management systems are supporting the livelihoods of forest communities.
- > Governance arrangements for forest management are improving.

ACTIONS

In March 2007 the Australian Government launched its Global Initiative on Forests and Climate to reduce greenhouse gas emissions resulting from deforestation. This \$200 million (mostly aid) initiative will support projects in selected developing countries (particularly in South-East Asia and the Pacific) to:

- > assist in building technical capacity to assess and monitor forest resources, and to develop national forest management plans
- > support effective governance arrangements, including regulatory and law enforcement arrangements to protect forests by, for example, preventing illegal logging
- > promote the sustainable use of forest resources and diversification of the economic base of forest-dependent communities
- > support practical research into the drivers of deforestation
- > encourage reforestation of degraded forest areas, and
- > support pilot approaches to providing incentives to countries and communities to encourage their sustainable use of forests and reduce the destruction of forests.

STRATEGIC PARTNERSHIPS

Initiatives in sustainable forest management will build on existing Australian programs or in some cases involve making investments in successful programs supported by other donors. The World Bank's Global Forest Alliance (World Bank 2007) offers opportunities for partnerships in sustainable forest management and the Global Environment Facility is revising its forest strategy to focus more on sustainable forest use than on conservation strategies. The International Tropical Timber Organisation is a key player in the region and has been engaged in the aid program in the past.

GLOBAL INITIATIVE ON FORESTS AND CLIMATE

The Australian Government through its Global Initiative on Forests and Climate (\$200 million over five years from 2007) is playing a lead role internationally in stimulating discussion on incentive schemes to discourage deforestation and encourage reforestation, and in supporting the development of pilot initiatives in partnership with governments, other donors, non-government organisations and the private sector.

At the same time, Australia has committed to a major expansion of enabling programs in countries in the Asia-Pacific region, particularly in Indonesia. These programs will partner with governments and forest communities to build sustainable community-based forest management systems and address barriers, particularly corruption, to good forest governance.

The initiative will also work with research organisations to advance global understanding of the drivers of deforestation and the ways that these can be managed through better forest governance.

To complement the Global Initiative on Forests and Climate, Australia will establish a position for a timber officer in the Secretariat of the Convention in International Trade in Endangered Species of Wild Fauna and Flora (CITES), to further promote sustainable forest practices.

Corruption is a particular problem in the forest sector. It is evident in illegal logging, transfer pricing and illegal trading of forest products and is a key barrier to achieving sustainable forestry management in the region. These problems have at times led to donors withdrawing assistance. More recently, however, it has been recognised that the need for action on deforestation is urgent and that, even where corruption is a barrier, good outcomes can often be achieved by working directly with communities and civil society organisations.

Australia, through the Department of Agriculture, Fisheries and Forestry, is currently engaged in developing a strategy to eliminate the trade of illegally sourced timber products in Australia. The department is also the Australian contact point for the World Bank's Forest Law Enforcement and Governance Initiative and is closely involved in the initiative's East Asia ministerial process for addressing forest law enforcement and governance issues in the region.

Manage water resources

‘MEETING THE TARGETS FOR WATER SUPPLY AND SANITATION IS CENTRAL TO THE ACHIEVEMENT OF ALL MILLENNIUM DEVELOPMENT GOALS ... IT IS ALSO WIDELY RECOGNISED THAT PUBLIC PARTICIPATION AND THE BROADENING OF STAKEHOLDER INVOLVEMENT IN WATER MANAGEMENT IS ESSENTIAL.’

4th Water Forum (2006b, p. 3)

OBJECTIVE 4 TO IMPROVE ACCESS TO SAFE WATER AND SANITATION

Australia has worked with countries in the Asia-Pacific region over many years to help deliver secure and safe water through an extensive portfolio of water and sanitation projects. In response to requests from governments in the region and drawing on knowledge and experience in the water sector, these projects focus on:

- > providing access to safe water sources (water supply and sanitation systems)
- > improving water quality and sanitation, particularly in rural communities, and
- > building the capacities of water agencies and rural communities to identify, assess and monitor safe water resources, and maintain sanitation systems and waste treatment infrastructure.

Identifying and delivering safe, reliable water supplies and protecting those supplies from pollution are key elements of water safety systems (4th World Water Forum 2006b). Together, these activities necessitate a holistic approach to water management that manages sources of contamination (eg solid waste management, waste treatment and effective sanitation systems) and takes account of land management and other activities that could pollute supplies.

OUTCOMES

- > Pollution of domestic water supplies is declining as a result of improved waste management and sanitation.
- > Access to safe water and sanitation systems is improving.

ACTIONS

Continued, new or expanded support for:

- > investing in partnerships for better water, sanitation and waste management policy and infrastructure (with particular emphasis on gender-sensitive community-managed water and sanitation systems and ‘best practice’ solid waste management systems), guided by Australia’s *Safe water guide* (AusAID 2005)
- > investing in related infrastructure for safely re-using water, and technology for treating water (eg microfiltration)
- > investing in measures to improve water-use efficiency, particularly in agriculture, to complement investments in infrastructure
- > building capacities to maintain water supply and sanitation facilities
- > developing water safety plans to reduce the risk of water-related diseases

- > developing community-led total sanitation schemes, and
- > developing initiatives that address key sources of pollution.

INFRASTRUCTURE FOR GROWTH INITIATIVE

The objective of the Infrastructure for Growth Initiative (\$505.8 million over four years from 2007) is to support increased economic growth in Asia and the Pacific. Countries in the Asia-Pacific region require more funding and better policies to address the infrastructure challenges they face. The initiative will help to meet both requirements. It will assist partner governments to:

- > improve their infrastructure policies, by providing Australian and international expertise in areas such as public–private partnerships, regulatory reform, improved governance and anti-corruption, management and maintenance regimes, regional integration, and environmental and gender impacts, and
- > finance high-priority infrastructure projects through the multilateral development banks and bilaterally if there are strong economic and social benefits and if national government, private and development bank finance is not available.

The initiative seeks to enhance the impact of Australia’s aid program through partnerships with the multilateral development banks, particularly in the water and energy sectors. New infrastructure will need to be assessed for environmental impacts, and planning, construction and maintenance will need to meet best practice environmental standards. Climate change may also require a review of engineering standards. For example, more frequent intense natural disasters will necessitate higher standards in structural design.

STRATEGIC PARTNERSHIPS

The aid program will increasingly work in close partnership with other key donors in its support for water initiatives in the countries of the Mekong Basin and the Pacific. In the Pacific, Australia is working with the Pacific Islands Applied Geoscience Commission and the World Health Organization to develop water safety plans that reduce the risk of water-related diseases. In Asia a large proportion of Australia’s recent investments in water and sanitation has been in South and South-East Asia, especially in Vietnam, East Timor, Indonesia, India and Bangladesh, and there is a strong emphasis on working with regional organisations, other donors and multilateral agencies.

The Australian Government will continue to build partnerships with regional organisations, other bilateral donors and multilateral agencies in providing safe water supplies and adequate sanitation. The Infrastructure for Growth Initiative announced in the white paper of Australia’s overseas aid program includes a substantial expansion of Australian support for water and sanitation services in the Asia–Pacific region.

PERSISTENT ORGANIC POLLUTANTS IN PACIFIC ISLAND COUNTRIES

The objective of the persistent organic pollutants project is to remove the threat posed by dangerous chemicals listed under the Basel Convention (and regional Waigani Agreement). Australia has contributed \$6.5 million to the second phase of the project (2002–07). In this phase, transformer oil contaminated with polychlorinated biphenyls, contaminated transformers, associated contaminated soil and stockpiled organochloride pesticides have been collected in participating countries and repackaged securely for transport to Australia for safe destruction.

OBJECTIVE 5 TO STRENGTHEN INTEGRATED WATER RESOURCES MANAGEMENT, PARTICULARLY THROUGH PLANNING AND ALLOCATION PROCESSES

The sustainable management of water resources in shared river basins demands an integrated approach to planning, and equitable shares of basin resources. However, many countries and major basins of the Asia-Pacific region lack appropriate institutional frameworks to address the development of water and related land resources in an integrated manner, and water resources management tends to be fragmented among multiple agencies.

‘... holistic approaches to rural and urban development can contribute to the goal of water augmentation and should be given greater value throughout the planning process. The protection of freshwater ecosystems should not be seen as an extra burden but as an opportunity to enhance water quality, biodiversity and quality of life.’

4th World Water Forum (2006b, p. 9)

Australia’s aid program will support activities to increase integrated management of water resources, including:

- > science-based, participatory water management planning
- > frameworks for regulation and negotiation, and
- > equitable allocation systems that promote fair and efficient water use through markets, complementary allocation measures and support for river basin organisations.

Integrated approaches seek to meet social, economic and environmental needs in the allocation and use of water resources. To be effective, integrated management of water resources involves participation of the range of legitimate stakeholders including governments, non-government organisations, communities (both men and women),

irrigators and other rural water users, urban domestic users, fisheries, industrial, hydropower and transport industries, river and wetland managers, and recreation and tourism industries. To balance competing demands and maintain the health of rivers, wetlands and groundwater, integrated planning needs to account for environmental (resource-protective) water flows and ecosystem requirements. It must also ensure that, overall, water is used efficiently and managed as a basic right for human consumption.

Water shortages in low and middle latitude areas will be exacerbated by the impacts of climate change, including changed rainfall and evaporation patterns, altered river flows, more extreme weather conditions and rising sea levels. Future water management plans will need to include adaptive responses to climate change.

OUTCOMES

- > The knowledge base for determining water balances and sustainable yields for key water sources and aquatic biodiversity is improving.
- > Institutional capacities and regulatory frameworks for integrated planning and management of water resources are being strengthened.
- > Management of water, land and other environmental assets is becoming more integrated and participatory.
- > Adaptive responses to the impacts of climate change on water resources are improving.

ACTIONS

Continued, new or expanded support for:

- > developing initiatives for integrated management of key river basins and aquifers, taking account of climate change
- > monitoring, modelling (hydrologically) and assessing water resources, including aquifers, to underpin policy and planning



ABOVE: Eritiama Boraia pulls a bucket of water from a well in the village Banraeaba in Tarawa, Kiribati.
PHOTO: Lorrie Graham

- > building human resource and institutional capacities in water management, including policy, regulatory frameworks, negotiated planning schemes, risk management approaches, community participation and stakeholder engagement, measurement and monitoring systems, environmental flow allocation and water trading
- > implementing the Pacific Regional Action Plan on Sustainable Water Management (South Pacific Applied Geoscience Commission 2003)
- > establishing links with rural development strategies to support improved land management practices that reduce water pollution and protect water yield and quality, and
- > reducing or eliminating land-based activities that pollute rivers, wetlands, coast and marine ecosystems.

STRATEGIC PARTNERSHIPS

Australia has a long history of developing and implementing integrated management for water basins and catchments. The national and state governments recently reached a collaborative agreement on a comprehensive set of consistent principles for integrated water resources management through the National Water Initiative. The initiative sets environmental outcomes and security of supply as the cornerstones of water resources planning and allocation across the nation. Australian experience in the Murray–Darling Basin indicates that:

- > specific frameworks for integrated management need to be cast in overarching policies that guide planning and water allocation, and
- > mechanisms for water allocation must take account of water value/price so that water resources are used rationally and conservatively.

The aid program’s initiatives in water management include a strong focus on good governance. For example, the Australia–China Environment Development Program will build cooperation between Australian and Chinese institutions in developing water policy and building governance. Water governance will continue to be a key priority for assistance in water resources management.

AUSTRALIA–CHINA ENVIRONMENT DEVELOPMENT PROGRAM

The goal of the Australia–China Environment Development Program (2006–11) is to support China’s policies for a better environment. The program provides a flexible and responsive mechanism through which Australia provides assistance to support strategic engagement between Australian and Chinese institutions. Assistance will be provided in the form of small-scale initiatives facilitating policy dialogue and building capacity. Water policy and governance is a key priority for this \$25 million program.

Australia will seek other opportunities to support components of larger projects on integrated water resources management in the Asia-Pacific region, and will encourage the development of integrated management principles and institutional arrangements for water resources more broadly. In line with current directions, Australia will focus on strengthening overall frameworks for managing water resources in an integrated way by strategically targeting activities to leverage better environmental management processes and outcomes.

WATER ENTITLEMENTS AND TRADING PROJECT

Australia is supporting the development of a water entitlements and trading (WET) framework for the Ministry of Water Resources in China. This involves the introduction of economic policy instruments that promote efficiency in water markets by creating tradable assets. The project is managed jointly by AusAID and the Department of the Environment and Water Resources. The second phase of the project (\$2.1 million for 2007–08) provides high-level policy and technical assistance to further develop the original WET framework established in 2006 under the first phase. The second phase also has a strong capacity-building focus – both at the national level and the provincial level – to implement the WET framework in China.

Improve environmental governance

THE ENVIRONMENTAL THREATS CONFRONTING THE ASIA-PACIFIC REGION DEMAND A STRONG RESPONSE FROM GOVERNMENTS, NATIONALLY AND IN PARTNERSHIPS ACROSS THE REGION.

OBJECTIVE 6 TO STRENGTHEN INSTITUTIONAL CAPACITIES IN ENVIRONMENTAL MANAGEMENT

Experience in developed countries shows that long-term gains in environmental outcomes are best achieved through a combination of strong environment institutions, evidenced-based policy, engagement of civil society, public–private partnerships and widely agreed, devolved, integrated environmental management frameworks that apply consistently across all sectors of development. Environment policy needs to be based on a firm understanding of the underlying science, the socioeconomic challenges and the drivers of change.

OUTCOME

- > Capacities in environment policy development and management are being strengthened.

ACTIONS

Continued, new or expanded support for:

- > developing initiatives to address critical knowledge gaps and strengthen environmental planning, assessment, monitoring and reporting
- > building technical capacities in environmental management across the resource management, energy and infrastructure sectors, including capacities to monitor and analyse trends

- > strengthening technical capacities through gender-equitable scholarships, work placements, links between education and research institutions, and exchanges that address critical knowledge and skills gaps
- > building institutional capacities needed for devolution of responsibilities for natural resource and environmental management
- > increasing regional dialogue and action on environment policy and management practices (eg through regional workshops, research collaboration, regional partnerships across industries, ministries and committees and through international financing facilities such as the Global Environment Facility)
- > increasing the networks of terrestrial and marine protected areas, and
- > implementing multilateral environment agreements in the region.

STRATEGIC PARTNERSHIPS

Over the past decade Australia has greatly increased cooperation with partners in the Asia-Pacific region on governance, institutional capacities and judicial and legislative issues, especially in the Pacific. Governance is also a key focus in countries where the need for development assistance on the whole is diminishing (eg China). Australia will build on this experience to respond to specific challenges in environmental governance. Government-to-government dialogue and links

between environment institutions, as supported in China under the Australia–China Environment Development Program and elsewhere under the Public Sector Linkages Program, can help to identify specific priorities for collaboration in this area.

Australia will seek opportunities to engage with partner governments across the spectrum of capacities required for good environmental governance. Research collaboration, scholarships and work placements or exchanges with regional and Australian institutions could target specific areas of capacity building and knowledge gaps, covering policy development, environmental assessment, planning and monitoring, natural resource management, and environmental law.

Australian experience in intergovernmental agreements and partnerships in environmental management across administrative borders provides opportunities to assist in building cross-border responses to environmental issues (eg the Australian partnership agreements for the Natural Heritage Trust, the National Action Plan for Salinity and Water Management and the National Water Initiative). Within the region, Australia has the opportunity to build and promote good environmental governance by supporting partner governments in broad engagement and regional dialogue in environment policy and management practices. This could be supported through regional workshops, research collaboration, partnerships with the private sector, and assistance in accessing international financing facilities (eg the Global Environment Facility).

Australia channels most of its funding in support of international environmental initiatives through the Global Environment Facility. Australia will work collaboratively to improve the presence and effectiveness of the facility in our region (and its complementarity with the Australian aid program) through a number of approaches that aim to improve both the operational structures of the facility and the capacity of partner country governments to interact with it. This will include:

- > active participation in the facility’s council meetings (eg through input to the current reform agenda and the ongoing work program)
- > continued engagement in the decision-making forums of the environmental conventions associated with the facility, and

- > working to address the capacity issues associated with the introduction of the facility’s projects, particularly in the Pacific region.

SUPPORT FOR THE GLOBAL ENVIRONMENT FACILITY

The Global Environment Facility is an international financial mechanism with 178 member countries that addresses global environmental issues while supporting national sustainable development initiatives. The facility supports projects in developing countries related to biodiversity, climate change, international waters, land degradation, the ozone layer and persistent organic pollutants. Since its inception in 1991, the Global Environment Facility has provided support to developing countries and countries with economies in transition, providing US\$6.8 billion in grants and leveraging, and US\$24 billion in co-financing for over 1900 projects in more than 160 countries. Through its Small Grants Program the facility has also made more than 7000 small grants (of up to \$50 000 each) directly to non-government and community organisations.

The Australian Government considers the Global Environment Facility to be the primary multilateral mechanism for funding environmental projects in developing countries. We have provided over \$240 million in financial support from 1991 to 2007, including \$60 million towards the fourth replenishment of the facility’s Trust Fund in 2006. Australia has also pledged financial support to other funds managed by the Global Environment Facility – for example, \$7.5 million to the Least Developed Countries Fund in June 2007 to support least developed countries in assessing and adapting to the impacts of climate change.

Australia is well positioned to ensure that the particular needs of Pacific island countries are reflected within the facility’s funding framework wherever possible. More broadly, ongoing participation in the facility’s council will ensure that the priorities of the Australian aid program are accommodated in key decisions within the facility.

OBJECTIVE 7 TO IMPROVE ENABLING MECHANISMS FOR ENVIRONMENTAL MANAGEMENT

Once sound policies are in place, the mechanisms for achieving environmental outcomes will vary, depending on the nature of the development–environment interactions, but they must take account of both public and private benefits when it comes to establishing partnerships and sharing the costs.

Regulatory mechanisms, opportunities for negotiated outcomes, incentives for environmental stewardship, best-practice management systems, strong disincentives to corruption and free-riding, and initiatives to encourage awareness of environmental issues are all important tools in environmental management. The most successful management frameworks integrate different mechanisms that together build capacities for change, seek mutually beneficial outcomes and include measures that specifically target environmental objectives.

Environmental governance ensures that:

- > decisions are made at appropriate levels*
- > everyone has access to information, participation and legal redress in matters relating to the environment*
- > environmental considerations are integrated into all decision-making processes*

UNDP (2005)

OUTCOME

- > Implementation frameworks for managing natural resources and the environment are more effective.

ACTIONS

Continued, new or expanded support for:

- > mainstreaming environmental management into the coordinating (planning and finance) functions in partner governments
- > developing initiatives that promote better coordination, engagement and participation across ministries, and with industries, civil society, men and women, and communities
- > developing frameworks that integrate a range of locally relevant enabling mechanisms for environmental management
- > developing regulatory frameworks, administrative guidelines, and capacities to implement and enforce existing legislation for forestry, land tenure, coastal zones, catchment management, waste management/pollution control, pest and disease control, wetlands and protected areas management
- > introducing innovative and effective incentive mechanisms tailored to local needs, including linking payments for ecosystem services to natural resource management
- > improving environmental governance to protect vulnerable assets, including coasts, marine ecosystems, wetlands, forests and rivers
- > promoting good environmental governance in partnerships to implement regional and national initiatives, and
- > ensuring that Australian environmental standards are met in the planning, assessment and management of all aid activities.

STRATEGIC PARTNERSHIPS

In common with other countries around the world, Australia has had to tackle the challenges of engaging with industry and enforcing environmental standards consistently, while continuing to encourage growth and development. This history means that Australian agencies offer significant expertise in environment policy and regulatory frameworks and have provided advice and assistance throughout the Asia-Pacific region on a range of environmental management matters.



TOP: Mountainous environment near Sapa in northern Vietnam. PHOTO: Bruce Bailey

For example, the Department of the Environment and Water Resources supports climate change responses in the region through the Australian Greenhouse Office (eg the Australia–China Climate Change Partnership) and is engaged in developing water management policy in China (the Water Entitlements and Trading Initiative). The Department of Agriculture, Fisheries and Forestry (2006) is involved in initiatives to combat illegal logging internationally.

BETTER GOVERNANCE AND LEADERSHIP IN THE ASIA-PACIFIC REGION

A better governance and leadership initiative will see Australia investing \$41 million over two years from 2007 to focus on the region's next generation of leaders and build community demand for improved government performance. This initial two-year program will form the basis of a long-term approach to promoting better governance and leadership. It will include the Pacific Leadership Program and new investments in civic education and government accountability.

Australia will seek other opportunities to engage with partner governments in the region in initiatives to support the implementation and enforcement of existing policy and legislation (including frameworks for managing forests, land, coastal zones, water resources, wastes, pollution, pests and diseases). The aid program may also address specific priority issues related to regulatory frameworks. For example, poorly defined or disputed property and access rights have been identified as key constraints to sound resource allocation and management. Secure property rights that provide financial assets are also fundamental to the initiation and ongoing development of rural enterprises. Land as a financial asset is particularly important in Pacific island countries where approximately 80–90 per cent of land is held under customary tenure (AusAID 2006b). The aid program is funding the Pacific Land Program, a white paper initiative to help partner governments strengthen land systems within the framework of customary tenure.

Implementing the strategy

A RANGE OF INITIATIVES WILL BE DEVELOPED UNDER THE STRATEGY TO ADDRESS ENVIRONMENTAL CHALLENGES. SOME WILL BE DELIVERED THROUGH SPECIFIC PARTNERSHIPS AND OTHERS WILL BE WITHIN SECTORAL AND COUNTRY PROGRAMS.

TARGET ENVIRONMENT-RELATED AID

Targeted environment initiatives under the three themes will be programmed after consultations with partner countries in the region.

The interrelated nature of development means that many initiatives in country programs have implications for the environment. For example, the Infrastructure for Growth Initiative provides for a substantial increase in support for water and sanitation in the region. Links with other sectoral strategies, including water, rural development, infrastructure and fisheries, will be developed through actions to enhance awareness of environmental issues and leverage potential environmental outcomes.

Actions addressing the challenges in environmental governance will affect development across key resource sectors in the medium term, as national and regional environmental management frameworks strengthen. These actions also aim to raise the profile of the environment and environmental management in partner country requests for assistance and, therefore, in country programs.

In implementing the strategy, agencies such as AusAID will place a high priority on working collaboratively with both government and non-government partners that have relevant specialist expertise. The Australian Centre for International Agricultural Research, academic and research institutes, cooperative research centres and state government agencies, for example, are valuable repositories of knowledge and practical experience in environmental management.

Australia's private sector and non-government organisations also are expected to be key partners in program implementation.

ACIAR AND THE ENVIRONMENT: SUPPORT FOR AGRICULTURAL AND FORESTRY SUSTAINABILITY RESEARCH

The Australian Centre for International Agricultural Research (ACIAR) is a statutory authority within the Australian aid program. ACIAR encourages Australia's agricultural scientists to use their skills for the benefit of developing countries and Australia. Collaborative R&D programs with developing countries have a central role in assisting farmers, foresters, fishers, their communities and policy makers in the development and communication of science-based strategies for better management of water, land, forestry and fisheries resources and adaptation to and/or mitigation of climate change.

In general, ACIAR's programs focus on either reducing the negative impacts of agricultural production on the environment or developing environmentally sustainable agricultural production in hostile environments. From 2000 to 2007, ACIAR invested more than \$70 million in environment-related aid and, through co-funding, managed a total investment of \$120 million. Areas emphasised include climate change, sustainable management of forestry and fisheries resources and of land and water resources, and policy research underpinning natural resource management.



ABOVE: A student from Hoi Primary School in rural Tonga tends a vegetable patch as part of the school's compost competition.
PHOTO: AusAID

SUPPORT MULTILATERAL ENVIRONMENT AGREEMENTS AND GLOBAL PROGRAMS

Environmental challenges cut across administrative borders and some require global solutions (eg climate change, pollution of the atmosphere and oceans, and loss of biodiversity). The Australian Government plays an important role in developing international environment policy and is a signatory to various multilateral agreements that seek regional/global solutions to these challenges.

Commonly, developing countries are party to international environment agreements but do not have the necessary legislation, regulations and/or capacities to implement them comprehensively. As well as helping to meet Australia's own regional responsibilities under international agreements, the aid program will continue to support initiatives that assist partner countries in the region to meet theirs. Many of the actions proposed under this strategy will contribute to this through capacity building and other investments.

SUPPORT REGIONAL ORGANISATIONS

The Australian Government will continue to develop partnerships with regional organisations. In the Pacific it has partnerships with the Forum Fisheries Agency, Pacific Islands Applied Geoscience Commission, the Secretariat of the Pacific Community and the Pacific Regional Environment Program. Australia also supports the Mekong River Commission and other regional environment-related initiatives through its own Pacific, South Asia and East Asia regional programs and partnerships with the World Bank (eg Water and Sanitation Program) and the Asian Development Bank (eg Water Partnership Facility).

The aid program's approach to building partnerships with regional organisations is increasingly based on funding through its regional programs. These aim to improve intraregional cooperation on issues affecting economic management and service delivery in Asia and the Pacific.

INCORPORATE ENVIRONMENTAL 'BEST PRACTICE' IN THE AID PROGRAM

Environmental safeguards are built into the aid program. The Australian Government's administration of aid must comply with the legislative and regulatory requirements of the *Environment Protection and Biodiversity Conservation Act 1999* and related regulations by applying appropriate levels of assessment and management to all aid activities. Accordingly, AusAID's environmental management guidelines provide for the assessment of activities and for managing and mitigating potential environmental impacts (AusAID 2003a). The guidelines also require that partners in delivery of the aid program implement the assessments and measures needed to manage the environment.

The changing context of the aid program means that the guidelines are regularly reviewed. As the program grows over the next decade, the processes of environmental assessment and management of aid activities to secure good outcomes for the environment across the spectrum need to be appropriately resourced. These processes must be responsive to changes in the types of initiatives supported and in the mechanisms for delivery.

The growing emphasis on delivering initiatives through partnerships with other agencies, including multilateral, regional organisations and other donors, must be accompanied by measures to ensure that Australia's environmental standards are met consistently, especially where there are clear implications for the environment in all its facets and where there are potential positive environment outcomes that can be enhanced through good planning and implementation. These measures could include greater engagement in the planning, design and monitoring of initiatives that involve Australian funding, and using Australian financing to leverage good environmental outcomes from larger development projects.

This strategy will support environmental best practice in the aid program by:

- > regularly reviewing and continuously improving the AusAID environmental management guidelines
- > applying principles and guidelines for country and sectoral programming to leverage good environmental outcomes
- > supporting assessments of the climate change implications of aid program activities, and
- > supporting partner countries in developing and implementing good environmental assessment and management frameworks that apply across all sectors, including aid flows.

Learning from outcomes and adapting management

ACTIVITIES TO ADDRESS ENVIRONMENTAL CHALLENGES THROUGH THE AID PROGRAM WILL BE MONITORED AND EVALUATED SO THAT WE KNOW WHEN WE HAVE ACHIEVED THE OBJECTIVES OF THE STRATEGY AND WHEN TO CHANGE DIRECTION.

Monitoring and evaluating activities under the strategy requires an understanding of each link in the causal chain that leads to improved environmental outcomes. The chain begins with ‘inputs’, which aim to influence ‘outputs’ and ultimately environmental ‘outcomes’. These links will be detailed more comprehensively in the monitoring and evaluation framework, which will be formulated when the program of activities is developed. Indicators of success against the outcomes of the strategies will be determined at activity level when activities are designed.

The framework will encompass:

- > effectively tracking results across inputs, outputs and outcomes against reference baselines (wherever possible)
- > regularly reviewing priorities in the strategy, and
- > regularly reporting on the state of the environment sector.

TRACK ENVIRONMENTAL OUTCOMES

While the ultimate goal of the environment strategy is to achieve sustainable economic growth and reduced poverty as a result of improved environmental management, gathering and verifying performance data of adequate quality to determine the strategy’s success are particularly difficult tasks. Using performance indicators that are generally accepted, such as those established under the Global

Environment Facility’s focal area strategies, can contribute to data quality, and harmonising and aligning reporting requirements can improve the dissemination of results.

TRACK ACTIVITY AND PROGRAM OUTPUTS

By tracking the institutional outputs of activities and programs it is possible to aggregate the results to test the effectiveness of the strategy using a set of indicators for the primary outcomes (table 4). The high-level indicators of change and success highlight the ways in which we hope to influence outcomes.

TRACK AUSTRALIAN GOVERNMENT INPUTS

Tracking the trends in inputs – financial and non-financial – and how environmental objectives are being mainstreamed within the broader aid program can be useful in exploring high-level links between policy and environmental outcomes. Important questions to answer include:

- > How have the objectives and actions been reflected in country program strategies?
- > Have the objectives and actions been reflected in activity documentation?
- > Have the objectives and actions been reflected in the terms of reference for evaluations, and what did the evaluations find?

TABLE 4: HIGH-LEVEL INDICATORS FOR THE PRIMARY OUTCOMES AND MEASURES OF EFFECTIVENESS

OUTCOME	EXPECTED POSITIVE CHANGE
OBJECTIVE 1: TO BUILD KNOWLEDGE OF REGIONAL CLIMATE SYSTEMS AND SUPPORT ADAPTIVE PLANNING AND ADAPTIVE MEASURES	
> An improved knowledge base is informing appropriate adaptive responses to climate change in vulnerable areas and communities of the region.	<ul style="list-style-type: none"> > Certainties in predictions increase. > Local vulnerabilities and adaptive capacities are better understood.
> Adaptive capacities and responses are improving.	<ul style="list-style-type: none"> > New knowledge is incorporated in policy responses to climate change, and climate change information is integrated into all government planning. > Plans to build resilience and adapt to the impacts of climate change are prepared and implemented.
OBJECTIVE 2: TO REDUCE GREENHOUSE GAS EMISSIONS IN SIGNIFICANT EMITTING COUNTRIES THROUGH ENERGY EFFICIENCY AND CLEAN ENERGY TECHNOLOGIES	
> Policy frameworks for energy efficiency, renewable energy and advanced energy technologies are being strengthened.	<ul style="list-style-type: none"> > Energy efficiency measures are adopted in national policy. > Access to clean, affordable energy is enhanced. > Institutional barriers to clean energy are removed. > Capacities of men and women in rural communities to adopt clean energy technologies are improved.
> Energy efficiency is increasing and the development, use and transfer of cleaner energy technologies are growing.	<ul style="list-style-type: none"> > Energy efficiency and clean energy technology policies are developed.
OBJECTIVE 3: TO REDUCE GREENHOUSE GAS EMISSIONS THROUGH REFORESTATION AND AVOIDED DEFORESTATION	
> Greenhouse gas emissions are reduced through reforestation and lower rates of deforestation in the region.	<ul style="list-style-type: none"> > National carbon accounting policies and systems are established. > Rates of afforestation and reforestation of natural forests increase. > Rates of deforestation decline.
> Sustainable forest management systems are supporting the livelihoods of forest communities.	<ul style="list-style-type: none"> > Community-based sustainable forest management systems are developed and implemented, resulting in improvements in livelihoods of men and women in forest communities. > Biodiversity, natural assets and natural heritage are conserved and contribute to sustainable livelihoods.
> Governance arrangements for forest management are improving.	<ul style="list-style-type: none"> > Capacities and policy frameworks for forest management are stronger.
OBJECTIVE 4: TO IMPROVE ACCESS TO SAFE WATER AND SANITATION	
> Pollution of domestic water supplies is declining as a result of improved waste management and sanitation.	<ul style="list-style-type: none"> > Prevention of pollution (including land-based pollution) and treatment of wastes improve. > Environmental assets (including rivers, wetlands and aquifers) are better protected from pollution.

OUTCOME	EXPECTED POSITIVE CHANGE
<ul style="list-style-type: none"> > Access to safe water and sanitation systems is improving. 	<ul style="list-style-type: none"> > More communities have improved access to reliable, safe water and to sanitation services.
OBJECTIVE 5: TO STRENGTHEN INTEGRATED WATER RESOURCES MANAGEMENT, PARTICULARLY THROUGH PLANNING AND ALLOCATION PROCESSES	
<ul style="list-style-type: none"> > The knowledge base for determining water balances and sustainable yields for key water sources and aquatic biodiversity is improving. 	<ul style="list-style-type: none"> > Scientifically based estimates of sustainable yields that take account of environmental requirements and projected climate change impacts are determined for key water resources, both surface and groundwater.
<ul style="list-style-type: none"> > Institutional capacities and regulatory frameworks for integrated planning and management of water resources are being strengthened. 	<ul style="list-style-type: none"> > Water allocation plans take full account of projected climate change impacts on rainfall and water yields. > Climate-proofing measures (including water-use efficiency and recycling) are adopted.
<ul style="list-style-type: none"> > Management of water, land and other environmental assets is becoming more integrated and participatory. 	<ul style="list-style-type: none"> > Capacities for integrated water management are stronger. > Links between water management agencies are improved across major river basins and between levels of government.
<ul style="list-style-type: none"> > Adaptive responses to the impacts of climate change on water resources are improving. 	<ul style="list-style-type: none"> > Approaches to planning that require multi-agency participation are developed (eg risk management approaches) and implemented. > Integrated management plans are developed for key river basins and islands that link management of water, land and other environmental assets, involve partnerships of all stakeholders, and result in sustainable equitable water allocations.
OBJECTIVE 6: TO STRENGTHEN INSTITUTIONAL CAPACITIES FOR ENVIRONMENTAL MANAGEMENT	
<ul style="list-style-type: none"> > Capacities in environment policy development and management are being strengthened. 	<ul style="list-style-type: none"> > The capacities of environment agencies are stronger and their influence across all development sectors is greater. > Sound, evidence-based policies for environmental management are developed. > Key environmental assets (including land, water, biodiversity, coasts, estuaries, marine ecosystems and fisheries) are better protected.
OBJECTIVE 7: TO IMPROVE ENABLING MECHANISMS FOR ENVIRONMENTAL MANAGEMENT	
<ul style="list-style-type: none"> > Implementation frameworks for managing natural resources and the environment are becoming more effective. 	<ul style="list-style-type: none"> > Environmental management policies are enabled and implemented through a range of locally specific mechanisms (including regulations, incentives, education, public-private partnerships and stewardship). > Environment indicators (eg natural forest cover) are included in national accounts and socioeconomic planning.

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ABOVE: *Tabaa Tevea and her baby, Jane, walk in the forest, South Tarawa, Kiribati. PHOTO: Lorrie Graham*

