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Integration in practice

Integrating disaster risk reduction, climate change and environmental considerations in AusAID programs

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Cover: A Balinese boy is planting mangrove trees in Tanjung Benoa Beach, Bali, 9 December 2007, during Red Cross' climate change campaign in United Nation Climate Change Conference (UNCCC) event Photo: Obed Wewo/Indonesian Red Cross.

Director General foreword

Responding to climate change and managing the adverse impact of environmental degradation and disasters are growing global challenges. The acute vulnerability of developing countries arising from poverty, poor governance and dependence upon natural resources, places development policy at the centre of international negotiations on climate change and broader environmental issues.

In many developing countries people depend on their environment for food, water and income. If the environment is threatened by urbanisation, population growth or climate change, so are prospects for poverty reduction. Therefore there is an increasing need to ensure that AusAID integrates climate change and environmental issues into the aid program. To achieve this, we are strengthening the capacity of staff to design, implement and evaluate programs and policies to effectively take account of these issues. AusAID is also actively working to build awareness at the international level of the links between environment and development through engagement in international policy dialogue and negotiations, including the United Nations Framework Convention on Climate Change.

Climate change and increased natural disasters place considerable pressure on poor people's livelihoods and the hard-earned development gains of recent years. We live and work in the most disaster prone region in the world, a region vulnerable to tsunamis, earthquakes, floods, cyclones, volcanic eruptions and other hazards. In the last decade, over 80 per cent of people killed or affected by disasters have been from the Asia Pacific region. Climate change is expected to increase the frequency, severity and unpredictability of weather related events presenting an even greater threat. In this context, the integration of disaster risk reduction concerns into key sectors such as health, education and infrastructure will be critical. By working with partner countries, international donors and across several Australian government departments, Australia will support partner countries achieve a more sustainable future.

I hope this short document will be a useful resource for AusAID staff by providing practical guidance on when and how disaster risk reduction, climate change and environmental considerations can be effectively integrated into programs.

Peter Baxter
Director General, AusAID

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Examples of integration in AusAID programs

What is integration?

Integration means the management of disaster risk reduction, climate change impacts and environmental sustainability as part of development programs and policies. It requires development agencies to make these issues part of thinking and decision making processes to ensure the best long term outcomes are achieved. Integration is a prerequisite for an organisation that aspires to achieve sustainable development outcomes.

This short publication responds to calls from AusAID staff for simple, practical guidance on what integration of disaster risk reduction, climate change and the environment may mean for their programs. While there is general consensus that these issues are important for the long-term success and sustainability of development outcomes, understanding how these issues affect different sectors and how to manage their impacts can be challenging. While integration of environmental considerations has been AusAID policy since 1994, accounting for disaster risk reduction and climate change adds a new dimension.

When developing this publication a significant number of AusAID-funded programs and policies were identified that already demonstrate good practice in integration and a selection of these have been included here. In these examples staff have ensured that the development context has been analysed holistically and that appropriate due diligence measures have been followed. The examples and the accompanying sector guidance are intended to show that there are a range of practical actions that can be taken to manage the risk of disasters, the impact of climate change and ensure environmental sustainability.

Why consider disaster risk reduction, climate change and the environment?

Integrating disaster risk reduction, climate change and environmental considerations into development programs is cost effective in the long term, will result in more sustainable development outcomes and will aid progress towards the Millennium Development Goals (MDGs). Put simply, it is good development practice. The integration of these issues has been widely endorsed by Australia, other donors and the governments of developing countries.

The drivers for integration in AusAID include:

- The launch of *Investing in a Safer Future: a Disaster Risk Reduction policy for the Australian aid program* in 2009 and increased global awareness of the relationship between disasters and development outcomes.
- A review of AusAID's Environmental Management System and its obligations under the *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth) to avoid or ameliorate any negative impacts of aid activities and to refer activities with significant negative environmental impacts to the Minister for approval.
- Australia's commitment to the 2006 OECD Declaration on Integrating Climate Adaptation into Development Co-operation.
- Increasing recognition that development policies and programs need to consider the impacts of climate change to ensure they produce sustainable outcomes.
- The legislative requirements of development partners to consider and manage issues related to disasters, climate change and the environment.
- The first target of the environmental sustainability MDG, which is to integrate the principles of sustainable development into country policies and programs and to reverse the loss of environmental resources.

The ultimate objective of integration into AusAID programs is to promote and support developing countries' own efforts to better manage disasters, climate change and the environment to achieve sustainable development outcomes.

Considering the environment in UXO clearance operations

From 1964 to 1973 two million tons of bombs were dropped on Laos, making it the most heavily bombed country in the world on a per person basis. This large-scale contamination has resulted in more than 20 000 casualties related to unexploded ordnance (UXO) since 1974. For communities to use land safely, UXO clearance is a necessity. Although UXO clearance is a development priority, stakeholders in Laos have widely acknowledged that bomb disposal and detonation can have negative impacts on the environment.

The Government of Laos has developed **National Standards for UXO/Mine Action** with support from Australia. The standards require appropriate due diligence and no negative environmental impacts during clearance activities. There are procedures for environmental management that clearance organisations must comply with. According to the standards, land used for UXO clearance operations, including the surrounding environment, should not be damaged to the extent that it affects the lives of the local communities.

The chapter in the standards that is dedicated to environmental management helps to ensure that all clearance activities comply with existing relevant legislation. For instance, all activities must comply with the Laos Environmental Protection Law (1999). While consistent with Laos's environment policy, this initiative also complies with the Australian *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).

As a result of Australia's support, the quality of UXO operators and clearance operations in Laos comply with the national standards and are environmentally sound. It has also protected human life and the natural environment, upon which the livelihoods of the rural poor in Laos depend.

Above: Senior Explosive Ordnance Disposal Technicians (SEODT) moving a large bomb to a safer clearance site.
Photo: Stephanie Sparks (FSD)

How is AusAID approaching integration?

AusAID's approach to integration is to jointly consider disaster risk reduction, climate change impacts and environmental sustainability because these issues overlap significantly. All are united by the strong relationship between development and the context in which it occurs. This approach also recognises the shared factors that make populations vulnerable to environmental degradation, natural disasters and climate change—factors such as poverty, poor governance, rapid population growth, poor land use planning and limited livelihood options.

Thematic advisers and sections provide support and advice on formally addressing these issues in the designs, strategies, plans and reviews for specific aid activities. And, since mid-2009, an informal working group of staff has met regularly to develop and deliver tools, training and support to staff who manage AusAID's development and humanitarian programs.

The group recognises that the way AusAID is working is changing; greater attention is being given to non-traditional approaches to providing aid, such as sector-wide approaches, multi-donor trust funds and direct budget support. These modalities can require different approaches and tools for integrating disaster risk, climate change and environmental considerations. To ensure appropriate advice is available regardless of the modality, the working group is ensuring that there is consideration of these issues in key AusAID processes, including AusAID's program management system AidWorks, peer review and monitoring and evaluation processes and the development of country and regional strategies.

In recognition of the challenge of effectively integrating these issues across the entire aid program, the 2009 disaster risk reduction policy identified the bilateral aid programs for Indonesia and the Philippines as 'pilots' for integration. The aim is to integrate disaster risk reduction, climate change and environmental considerations in a meaningful way in a small number of programs and identify lessons from this process that can inform wider work on integration in the long term. To support this, two-day training packages have been developed and delivered to staff in Indonesia and the Philippines. The training was followed by detailed discussions with participants to identify practical steps to achieve integration in the programs. These were documented in 12 month action plans for each bilateral program.

Importantly, the goal of the training and action plans is to encourage integration where it makes sense. This means being flexible and focusing on highly climate-sensitive and/or hazard-sensitive sectors, programs and countries, and where AusAID's development activities could have significant impacts on the environment. In some countries or sectors, the integration of other issues such as disability, anti-corruption, HIV/AIDS or child protection may be more significant to poverty reduction and take priority.

Empowering communities by building their environmental awareness and capacities

Indonesia's **National Community Empowerment Program** (PNPM) provides grants to communities to undertake a wide range of activities that address community priorities. Australia is providing $215 million over five years (2009–2014) to support the program.

The program has also been used after disasters such as the Indian Ocean tsunami, the Yogyakarta earthquake and the West Sumatra earthquakes to support community-led recovery and reconstruction. It provided a social safety net by giving financial resources to households that had lost their assets and livelihoods. In this way, it helped them to avoid irreversible losses that can follow such disasters, which complemented larger efforts to protect livelihoods and rebuild housing and infrastructure.

Because AusAID recognises that many rural Indonesian communities derive their livelihoods and wellbeing directly or in part from their surrounding natural environment, it is also providing $4 million through the World Bank's PNPM Support Facility Trust Fund to the Green PNPM Pilot Project.

This project provides grants to support community investments in 'green' activities focused on natural resource management, conservation and renewable energy. It also funds technical assistance to increase the environmental awareness and capacities of participating communities so that they can make informed decisions about how to invest the funding they receive. By investing in practices that manage natural resources more sustainably, rural communities are more likely to achieve a stable and sustainable income base.

When should disaster risk reduction, climate change and the environment be considered?

Development programs are more likely to be effective if key issues that could have an impact on outcomes are considered as early as possible in the planning cycle. In developing countries where the incidence of natural disasters, the impact of climate change and the management of the natural environment strongly influence the rate of development progress; these issues need to be appropriately considered in initial programming and planning decisions.

AusAID's bilateral and regional programming is guided by country, regional or multi-country strategies. Each consists of a situation analysis, a statement of commitment and a delivery strategy. These strategies set out Australia's whole-of-government strategic position on providing official development assistance to particular countries or regions. They articulate the priorities for Australian aid and its specific objectives, why those priorities were identified, and how the objectives will be met. Integration into these processes is critical and there are some good early examples of this.

To inform the new Vietnam – Australia Statement of Commitment, Vietnam's development challenges and opportunities were analysed. The analysis noted the country's high level of vulnerability to the impacts of climate change and that these impacts would be felt most heavily by the poor. This finding was reaffirmed by AusAID's Climate Change and Environment Advisers. Their analysis significantly supported the integration of climate change and disaster risk reduction into the country strategy.

Australia is developing a new strategy with the Philippines to help manage natural disasters and climate change by building on the relatively modest current program. The Philippines is one of the most disaster prone countries in the world and has recorded 268 disaster events over the last three decades. The impacts of disaster are considerable, with an average of 1000 lives lost every year and extensive damage to agriculture, infrastructure and private sector investments that result in economic losses of up to 1 per cent of GDP each year. With at least 60 per cent of the total land area exposed to multiple hazards, approximately 74 per cent of the Filipino population is vulnerable to the negative impacts of natural disasters.

A new delivery strategy will focus on positioning Australian aid to support expanding investment in the sector by the Philippines Government and other international donors. It will consider how disasters and climate change affect development prospects in the Philippines and how the Australian aid program can engage on these issues. The analysis undertaken to inform the strategy will be integrated into the new overarching Philippines – Australia Development Assistance Strategy. At the program level, activities will consider the impact of climate change and natural disasters to ensure development is safeguarded from natural hazards, and does not create new forms of vulnerability.

How disaster risk reduction, climate change and the environment is integrated in policies, programs and related activities will vary by country and region. In some, these issues may be a strategic pillar but in others they may be a cross cutting theme. In hazard-prone countries, disasters will also need to be considered as a risk to the achievement of country strategy outcomes and objectives. In Pakistan for example, devastating floods in August 2010 caused wide-spread devastation and undermined achievement of development objectives. The new Pakistan – Australia country strategy will include a comprehensive analysis of disaster risk that will inform sectoral delivery strategies.

When country/regional strategies are being developed, thematic advisers or sections can provide advice on the likely impact of specific issues and an appropriate course of action to ensure overall development objectives will not be compromised. If possible, they can also identify opportunities to protect the environment and build resilience to disasters and climate change through the proposed activities.

Practical steps to integration

AusAID staff can take practical steps to ensure that disaster risk reduction, climate change and environmental issues are appropriately integrated in planning, concepts, designs, implementation and reviews of programs and individual activities.

Planning

> Assess whether the program will be delivered in an environmentally sensitive location (coastal zone, protected area or wetland), a climate-sensitive area (dryland area, flood- or drought-prone area) or a hazard-prone region (earthquake, tsunami, volcano or cyclonic region).

> Review partner government policies and legislation on the environment, disaster management and climate change. All countries where AusAID works have some form of legislation that requires the potential environmental impacts of certain types of project to be assessed. Disaster management legislation and climate change legislation are also becoming more common.

> Review recent reports and assessments done by other stakeholders on environmental issues in the country or region. The World Bank and the Asian Development Bank produce environmental analyses for most of the countries in which AusAID works. These are good starting points for gaining an understanding of the broad environmental context.

Concept

> Answer the environmental marker questions in AidWorks, which include disaster risk and climate change considerations. This will enable you to:
  - decide whether to include a technical specialist in the design stage of the program
  - identify whether there may be 'significant' impacts to be considered in the design
  - identify opportunities for increasing the sustainability of program outcomes.

Design

> Seek advice from thematic advisers or sections on concept notes and design documents and through policy and program peer reviews.

> Ensure that the terms of reference for developing a new strategy or program include requirements to:
  - consult with relevant thematic advisors or sections
  - conduct an analysis and risk assessment in terms of the environment, climate change and natural disasters
  - incorporate relevant natural environmental risks in the risk matrix
  - ensure that the design adheres to Australia's and partner governments' policies and laws on the environment, disaster management and climate change
  - determine and evaluate costs associated with addressing environmental issues, climate change and disaster risk reduction
  - include indicators to monitor outcomes in terms of reducing disaster risk, managing climate change impacts and ensuring environmental sustainability.

Implementation

> Use meetings with partner governments and key stakeholders to discuss whether and how disasters, climate change and the environment have been considered in the development program to date, and whether these issues should be considered now.

> Review and incorporate new information on, for example, the incidence of disasters, climate science and changes in environmental data.

Review

> Include indicators in the monitoring and evaluation framework that measure how the environment, disaster risk and climate change are being addressed by the program.

> Ask partners and key stakeholders whether/how disaster risk, climate change and the environment have been considered in the program to date, and whether this has been effective.

> Ensure that the sustainability question in the Quality at Implementation report adequately reflects new or emerging environmental, disaster risk and climate change considerations.

Practical guidance on integration by sector

Education

For many children, the greatest barriers to education are ill health, poor nutrition and competing demands on their time. The environment and climate change play a large role in these barriers: childhood illnesses are often caused by unhealthy living environments and low immunisation rates; mosquito-borne diseases spread due to exposure to stagnant water and the lack of preventive measures such as bed nets; and water-borne diseases spread in an absence of water management practices. These impacts directly reduce children's ability to attend school and, once there, to learn. Also, if families do not have access to safe water or essential household materials, children may spend their time collecting these rather than attending school. Further, hazards, such as earthquakes, monsoons, flooding, desertification and natural resource degradation can destroy family livelihoods, prevent children attending school or lead them to drop out early. Efforts to manage the impacts of disasters, climate change and environmental degradation are important to reduce disruptions to children's education.

Practical ways to integrate disaster risk reduction, climate change and environmental considerations into education programs

- Encourage authorities to include lessons on hygiene, safe water, waste management, school/kitchen gardens, safety during disasters and management of scarce resources in the school curriculum, and to provide teacher training on reducing disaster risk, sustainably managing the environment and adapting to climate change.
- Reference any environmental assessments in program documents and agreements.
- Promote hazard-resilient construction for new schools and consider how access to sanitation and safe water can be incorporated into the design to support good health outcomes for children.
- Encourage the introduction of features in school buildings that allow their use as emergency shelters.
- Work with national stakeholders at a policy level to integrate the principles, values and practices of sustainable development into all aspects of education in line with the United Nations Decade of Education for Sustainable Development (2005–14).
- Ensure that the benefits of sourcing materials locally (which facilitates local construction and ongoing maintenance) are weighed against the environmental impacts (such as erosion from the removal of local trees).

Students at a Muhammadiyah elementary school in Indonesia are taught about volcanic hazards and disaster preparedness using education materials developed by Muhammadiyah with the support of the Australian Government. Photo: Muhammadiyah, Yogyakarta

Reducing disaster risk through effective design, training and supervision

The **Australia – Indonesia Basic Education Program**, which ran from August 2006 to June 2010, included an infrastructure component as well as technical assistance. The infrastructure component aimed to increase equitable access to basic education by building 2000 junior secondary schools (1500 general and 500 Islamic) in poorer and more remote districts of Indonesia, using a community-based model. This meant that local communities played a key role in managing the construction via locally nominated school and madrasah (Islamic school) construction committees.

The Ministry of National Education in Indonesia has guidelines for school construction. Special attention was paid to ensuring that all school designs complied with these building standards. All school construction committees were trained to construct schools to specification and were provided engineering oversight.

The effectiveness of designs, training and supervision was demonstrated in the 2009 West Java earthquake. The Australian Government had supported the construction of 139 schools in the area affected by the earthquake, and all of these schools withstood the shock with little to no damage.

Infrastructure

Infrastructure such as health facilities, schools, roads, communication networks and energy and water supply systems are crucial to promoting social and economic development. However, poorly designed infrastructure can undermine the livelihoods and health of those living in poverty—the very people it is meant to benefit. For example, hydropower and irrigation facilities can lead to flooding and water pollution. This adversely affects the health of local communities, adds unnecessary costs to the public health sector and limits poor people's ability to engage in economic activity.

Infrastructure can also be negatively affected by the natural environment. Its effectiveness can be undermined by environmental degradation, natural disasters and climate change as a result of dramatic changes (increased intensity, frequency, seasonal shift and range of climatic events) or gradual changes (changes to seasonal or annual patterns of temperature, rainfall, solar radiation and sea level).

Considering climate change when developing infrastructure


before


after


after

Between 2007 and 2010 four of the Nauru Secondary School's double-storey teaching blocks were totally reconstructed and three of its existing buildings were refurbished. It was the largest infrastructure project in Nauru in 18 years.

During AusAID's concept peer review process, the Infrastructure Adviser raised the need to account for climate change in the project's design. Climate change was considered along with other key cross-cutting issues such as gender and disability.

Climate change as well as broader environmental and climatic concerns were assessed as part of an environmental impact assessment undertaken to inform project design. The contractor then developed an environmental management plan, which included a climate change risk matrix.

As a result, the final school design included measures to reduce the vulnerability of the buildings to the projected impacts of climate change as well as natural disasters and to ensure it would not adversely affect the local environment. The building materials were chosen to withstand changes in solar radiation, low-energy lights and fans were installed, windows were selected to resist winds of a category-4 cyclone and the external wall structures were reinforced through block work.

Left: The Nauru Secondary School prior to and after reconstruction
Photos: Reeves International

Practical ways to integrate disaster risk reduction, climate change and environmental considerations into infrastructure programs

- Undertake an environmental impact assessment as part of the project's design process if directly supporting the building of infrastructure. This is a legal requirement of the Australian *Environment Protection and Biodiversity Conservation Act 1999* (Cwlth).
- Ensure that local environmental laws are adequately addressed in capacity-building and technical assistance programs in the infrastructure sector. Ensure capacity is built not only for environmental management, but also for disaster risk reduction and climate change screening.
- Introduce disaster risk and climate change assessments for the construction of new roads, bridges and other major infrastructure to inform decision making on siting, materials and construction techniques.
- Ensure that building codes and laws are complied with and enforced to avoid potential disasters resulting from, for example, building collapses, flooding and pollution.
- Avoid locating new infrastructure in areas with high risk of forest fires, flooding or storm surges. In the planning process, use current hazard maps, climate forecasts and other available data.
- Encourage departments responsible for infrastructure to use and exchange information with mapping and hazard agencies.
- Include natural air circulation and insulation in building designs to increase energy efficiency and reduce building costs in the long term.
- Consider climate change projections when setting the sizes of sewage systems, drains and stormwater systems.

Climate proofing transport infrastructure

Vanuatu is made up of a large number of islands regularly affected by cyclones, storms, heavy rains and flooding. It is anticipated that climate change will exacerbate these challenges; climate scenario models show the possibility of more intense cyclones, heavier rainfall and larger storm surges. Infrastructure in Vanuatu is extremely vulnerable to these events, with roads becoming less trafficable and more bridges being washed away.

In response to these challenges and the critical economic and social value of coastal roads, which act as a lifeline for vulnerable communities, Australia has provided $3 million to the Government of Vanuatu to help improve planning, construction, and maintenance of priority national road links on the islands of Ambae, Tanna and Malekula. The **Vanuatu Road Improvement Project** will build on the Australian-supported Vanuatu Transport Sector Support Program. Planned works include realigning sections of highly vulnerable roads, upgrading river and stream crossings, raising roads in low lying areas, upgrading drainage infrastructure and improving erosion protection, all to increase the resilience of key coastal roads.

Above: Australian High Commissioner Pablo Kang, AusAID Counsellor Nick Cumpston and Vanuatu Public Works Department Director Willie Watson inspect a vulnerable section of the Lenakel Town Road on Tanna Island, Vanuatu. Rehabilitation and reinforcement of this section and others affected by increasingly severe weather events will be addressed with support from Australia. Photo: Peter Kelly, Transport Sector Coordinator

Managing environmental impacts in the delivery and maintenance of roads

Provincial roads in the Philippines link production areas to markets and regional centres and provide people with access to hospitals and schools. Unfortunately, most of these roads are not regularly maintained and are degraded and require rehabilitation.

In 2009, the Australian Government committed $100 million over five years to help build the capacity of up to 10 Philippines Provincial Governments to design, contract, rehabilitate and maintain priority provincial roads in the Visayas and Mindanao islands.

During the design of this **Provincial Road Management Facility**, AusAID and the Philippines Department of the Interior and Local Government managed potential environment, climate change and disaster impacts for the project by:

- Consulting with relevant agencies and then conducting a review of Australian and Philippines environment requirements for road rehabilitation and maintenance, finding that the Philippines environment policies and guidelines are sufficient to meet Australian requirements.
- Commissioning an environmental impact assessment (EIA) and successfully securing an Environmental Compliance Certificate and Investment Coordination Committee approval of the project. A full EIA was not required for road rehabilitation and maintenance however given planned civil works and progressive identification of roads, a programmatic EIA was undertaken. The Philippines Department of Environment and Natural Resources acknowledged that this approach was innovative and this has subsequently contributed to the strengthening of the EIA system in the Philippines.
- Including the establishment of an Environmental Management System in the program design, consisting of an Environmental Management Plan and monitoring team per province.
- Utilising multi-hazard maps (developed through a multi-hazard mapping project also supported by AusAID) to identify and plan for rehabilitation and maintenance.
- Considering the potential impacts of disasters and climate change in the design of roads to be rehabilitated.

Health

The fundamental requirements for good health include clean air, safe drinking water, sufficient nutritious food and secure shelter—making the environment a key determinant of health. Climate change also has the potential to affect all of these requirements; it may lead to higher levels of air pollutants, increase the transmission of diseases through unsafe water and contaminated food, compromise agricultural production and increase the incidence of extreme weather events.

In the event of a natural disaster, the immediate impact on health through loss of life and injury is obvious. However, disasters can also have significant long term health impacts resulting from damage to hospitals and clinics. These include the spread of communicable disease, interruptions to public health programs and loss of laboratory support and diagnostic capabilities. In 2010 Pakistan suffered from unprecedented monsoon flooding that affected over 20 million people. Millions of people required treatment for water borne illnesses, skin diseases and malaria, however early estimates reported that in four flood affected provinces over 500 health facilities had been damaged or destroyed. In order for health facilities to protect the lives of patients and staff they must be physically resilient to disaster events and be able to remain operational and continue providing vital health services.

Practical ways to integrate disaster risk reduction, climate change and environmental considerations into health programs

- Promote action to prevent the spread of malaria and dengue through improved environmental management, urban planning, and assessment of the impacts of infrastructure.
- Look for opportunities to improve indoor air quality through the use of alternative fuels or improved stoves to improve health, particularly among women.
- Engage in dialogue with other donors and governments on the fundamental importance of the environment in the health sector.
- Support studies that examine the likely impact of climate change on the disease profile of a country or region and the changes that will be necessary for the health system to manage this impact.
- Promote hazard-resilient methods and materials for the construction and rehabilitation of hospitals, clinics and medical centres.
- Promote the use of available handbooks and management tools that provide practical guidance to hospital managers for assessing the vulnerabilities of health facilities and processes to disaster events and for putting contingency plans in place.

Developing a strategy for delivering health support—a process for ensuring inclusion and sustainability

In early 2010 the Vanuatu bilateral aid program set about developing a guide for AusAID's engagement with and financing for the health sector in Vanuatu to 2015. The process used by the Vanuatu Post to develop the delivery strategy involved early dialogue with the government, which identified that disaster risk reduction, climate change and environmental issues, as well as gender and disability, were important considerations in the overall approach to support.

AusAID staff in Vanuatu drew on thorough analysis of Vanuatu's health sector and, with support from staff in the Climate Change and Environment Branch, found that the main threats to sustainable health outcomes include the impacts of climate change on people's health, such as increases in the incidence of malaria, dengue and diarrhea. Vanuatu was also identified as being in one of the most disaster-prone areas in the world.[1]

It was considered essential to the sustainability of health outcomes that the support provided to the health sector incorporated an understanding of where health threats would come from, and would result in new infrastructure able to withstand multiple hazards.

The simple and consultative process used to develop the delivery strategy produced a clear framework for providing support to the health sector in Vanuatu and effectively integrated disaster risk reduction, climate change and environmental considerations as well as gender and disability considerations. The strategy describes how AusAID will fulfill its health commitments outlined in the Vanuatu-Australia Partnership for Development while ensuring the long-term sustainability of health outcomes.

1 'Vanuatu ranks as one of the countries with the highest exposure to multiple hazards, according to the World Bank's Natural Disaster Hotspot study. Vanuatu is geographically located in the "ring of fire" and the "cyclone belt" of the Pacific. Almost 81% of its landmass and 76% of its population is vulnerable to two or more hazards including volcanic eruptions, cyclones, earthquakes, droughts, tsunamis, storm surge, coastal and river flooding and landslides. For this reason, Vanuatu has a UN Least Developed Country (LDC) status despite a per capita GDP above the LDC threshold.' (Disaster risk management programs for priority countries—East Asia and Pacific: Vanuatu, viewed 1 September 1020, ‹http://gfdrr.org/ctrydrmnotes/Summary_Vanuatu.pdf›, p. 81)

Water and sanitation

The environment and climate change are crucial factors in the viability of water supply and sanitation facilities. Surface water quantity and quality depend on rainfall, land use and environmental processes within catchments, while groundwater quantity and quality depend on sufficient water recharge and protection from pollution. Good waste management and sanitation practices are essential for protecting the environment from pollution and therefore not undermining poor people's livelihoods. The World Health Organisation states that improved environmental management practices could prevent up to 94% of deaths from diarrhoeal disease.

With climate change, drought-affected areas are likely to become more widely distributed affecting water availability. The frequency of very heavy precipitation is likely to increase in some areas leading to greater flood risks. Floods can adversely affect sanitation facilities by causing overflows and greater health risks from water-borne diseases.

Practical ways to integrate disaster risk reduction, climate change and environmental considerations into water and sanitation programs

- Include climate forecasts, water resource assessments and current natural hazard profiles in the designs of new programs through, for example, water safety planning.
- Increase the capacity and the number of water storage units such as dams and individual rainwater tanks.
- Consider alternative water supply options (for example, multiple sources and recycled water systems) and conservation measures (for example, restrictions on water use).
- Use mesh and specific filters to minimise the potential of stationary water, including household water storages, becoming breeding areas for mosquitoes.
- Design efficient irrigation, drainage and stormwater systems that take account of climate change projections.
- Engage in dialogue with other donors and partner governments on the importance of the environment in water and sanitation activities.
- Support small water and sanitation enterprises to enable the decentralisation of service delivery to improve the sustainability of access to water and sanitation and local livelihoods.
- Promote the use of systemic environment impact assessments before detailed plans of services are prepared.
- Support the monitoring of stream flows and groundwater reservoirs (including during flooding and drought), early warning systems, meteorological reports and community-based risk mapping, which promote good water resource management.
- Ensure that water and sanitation infrastructure is resilient to climatic and non-climatic hazards and will remain functional during and after a hazardous event. Ensure that water sources are safe from contamination caused by natural hazards such as floods and cyclones.

Adapting to climate change by securing rural water supplies

Improving the water supply system of Bavu village is part of the Australian Government's project **Climate Change Adaptation in Rural Communities of Fiji**, implemented by the University of the South Pacific. The original funding of F$500 000 was focused on helping villages around Fiji to adapt to the impacts of climate change on their water resources and coastal areas.

Bavu village has experienced low rainfall since 1970, which has limited the availability of fresh water. During the dry season, Bavu residents used to travel up to three kilometres to the nearest service station to buy water.

Bavu village now has two sources of water as a result of guttering being installed on houses to collect rainwater and the provision of a new pump, which provides water from a communal bore. Water supply and storage in all parts of Bavu were improved by the provision of taps, underground water pipes and new water tanks. The project also helped to establish a committee to manage all aspects of the community's water supply, to ensure that the benefits brought about by the project are sustained.

Because of the success of this project a second phase was developed and further funding of F$649 000 was provided in June 2010 through Australia's International Climate Change Adaptation Initiative. This funding will extend the project's benefits to a further six communities.

A child in Gamei Jaya Village, Papua, washes his face with clean water. The village is now able to access clean water through a $3.7 million project funded by Australia that focuses on health, disaster management and clean water and sanitation. Australia provided the support following an earthquake that struck the region in 2004, killing over 130 people, injuring hundreds and leaving over 1,000 residents homeless. Photo: Dian Lestariningsih

Agriculture and food security

A third of the world's land surface is used for agriculture and depends directly on the wider environment for its existence and sustainability. Poor environmental practices in agriculture can damage the environment and affect food security. For instance, farming can remove forests and other habitats to gain agricultural land, degrade soil quality and pollute soil and local water sources. In turn, environmental degradation can damage agricultural land, reduce yields, reduce the availability of water supplies and degrade fisheries.

Climate change also has the potential to undermine food security. Changes to weather patterns can result in an increase in floods or droughts, damage crops and reduce yields. In South Asia climate change impacts could reduce yields by up to 40 per cent by the year 2050 according to studies by the International Food Policy Research Institute. This can lead to an increase in food prices, undermining the gains made worldwide to reduce malnutrition. Further, when natural disasters such as typhoons and floods strike, agricultural fields and food stores can be destroyed which can seriously disrupt or threaten food security and people's livelihoods.

Practical ways to integrate disaster risk reduction, climate change and environmental considerations into agriculture and food security programs

- Incorporate climate change projections into agricultural research and programs.
- Draw on local knowledge and research to understand the local environment and agricultural practices, and use research to identify mechanisms to minimise environmental damage or to adapt to or mitigate climate change.
- Build or retrofit the infrastructure needed to access markets for food and crops (including transport infrastructure) to ensure it is not destroyed by a natural disaster.
- Promote contingency planning and programs that can enable communities to cope with natural disasters. This might involve better crop planning and greater crop diversification based on meteorological monitoring and forecasting.
- Encourage and support a greater diversity of livelihoods to build resilience to climate change and disasters.
- Support insurance, credit schemes and social protection measures to compensate for crop damage and loss to livelihoods in the event of natural disasters.
- Encourage better networks and greater communication between weather and disaster departments, food security agencies and safety net programs to ensure timely assistance can be provided where required.
- Incorporate contingency plans and budgets into programs to manage climate and disaster shocks.
- Increase poor people's access to financial services—savings, insurance, loans and money transfers. Access to finance will help rural people to improve their livelihoods and invest in needed technologies to address environmental and climate change challenges.

Considering climate change when designing a partnership

AusAID is working in partnership with Australia's Commonwealth Scientific and Industrial Research Organisation (CSIRO) to implement the new **Africa Food Security Initiative Pillar I**. CSIRO has partnered with two African regional institutions to improve animal health and the nutritional quality of food through capacity-building and research activities.

Food production and food security rely heavily on a healthy environment to ensure sustainable agricultural production. Because climate change is expected to significantly reduce food security in Africa through factors such as increasing waterborne and animal diseases, lower crop yields and more severe natural disasters, it was important to explore these factors during the design phase of the partnership. AusAID's Quality at Entry review process highlighted the potential of this partnership to build an understanding of how the future impacts of climate change might be effectively managed in Africa. The review also emphasised the need for environmental and climate change analyses to be undertaken at the project level.

To ensure that climate change was considered in the design of the partnership, CSIRO worked in close collaboration with its partners to include climate change adaptation objectives that aligned with the strategic plans of the implementing institutions. As a result of this ongoing dialogue, climate change adaptation is now an important element of the design. Projects developed under the partnership will specifically address issues of climate change. This will involve farmers, agribusiness and policymakers in analysing the potential for changes in both input and output markets as a result of climate change.

Humanitarian action—disaster response and recovery

Natural disasters can devastate lives, livelihoods and economies. In the aftermath of these events there is often unparalleled commitment from governments and communities to take steps to ensure such devastation never happens again. This commitment provides a 'window of opportunity' in which humanitarian and development actors can go beyond simply rebuilding, to building back better. This means examining the structural, social and environmental factors, including climate change, that increase people's vulnerability to disasters and taking steps to address them through the recovery and reconstruction effort.

Practical ways to integrate disaster risk reduction, climate change and environmental considerations into response and recovery programs

> Ensure implementing partners such as the United Nations, non-government organisations and the World Bank address disaster risk reduction and environmental considerations in proposals for emergency response and recovery programs, and that these are outlined in contract specifications for all such programs.

> Ensure needs assessments identify the environmental impacts of the disaster, and recommend how to minimise the environmental impacts of recovery and reconstruction activities and reduce future environmental risks.

> Promote the use of rapid environmental assessments before implementing recovery and reconstruction programs.

> Ensure damaged infrastructure and housing are rebuilt to withstand likely natural hazards using available hazard and exposure data and climatic predictions.

> Apply a multi-hazard approach to all recovery and reconstruction efforts so that the full range of potential disasters are considered, not only the most recent.

> Allow implementing partners sufficient time to deliver emergency response activities as well as flexibility to include longer term programs that will build community resilience to future disasters.

> Use existing social welfare mechanisms to provide timely cash and non-cash support to those affected by a disaster.

> Ensure that future disaster recovery budgets allow for reducing disaster risk and managing the environment.

> Include environmental and disaster risk reduction specialists in disaster management teams to help with the siting, planning and management of disaster relief and recovery efforts.

Left: A photo taken during the filming of a technical video on how to reinforce masonry to make buildings safer. Photo: IDEP Foundation. Right: Builders and construction workers are learning new techniques for building earthquake resilient houses. Photo: IDEP Foundation.

Reducing risk by building back better after a disaster

The September 2009 earthquake off West Sumatra caused an estimated 250 000 families to lose all or part of their homes and livelihoods. The 7.6 magnitude quake killed more than 2000 people and injured almost 3000 others. In Padang City multi-storey buildings crumbled, and in rural areas such as Padang Pariaman and Agam entire villages were flattened.

Australia quickly launched a major emergency response led by AusAID and the Australian Defence Force. Australian assistance was also provided to key partners including Muhammadiyah, Nahdlatul Ulama, the Indonesian Red Cross and Australian non-government organisations. The Australia-Indonesia Facility for Disaster Reduction mobilised an international engineering team to survey damaged buildings, to investigate why some buildings had withstood the shaking while others had collapsed and to feed its findings into the Indonesian Government's damage and loss assessment. The survey found poor building standards had resulted in building failure and houses built from unreinforced masonry were 10 times more likely to completely collapse than much safer confined masonry houses.

In response to these findings, the Facility launched the **Build Back Better Campaign**. The campaign promoted the confined masonry housing designs officially adopted by the West Sumatra Public Works Department and used the slogan *Bukan gempanya tapi bangunannya!* (It's not the earthquakes, but the buildings!). With the help of famous Indonesian artist Jajang C Noer, who was born in West Sumatra, the first phase of the campaign focused on raising awareness of the issues with television, radio and newspaper advertisements, television and radio talk-back shows, posters and billboards. The first phase also included the production of a technical video for community and village builders on how to implement simple design and quality changes to make their new homes more resilient to earthquakes.

The Build Back Better Campaign is now in its second phase and is focusing on more community engagement with outdoor film nights in the worst affected villages, community and university events, training of government community facilitators responsible for monitoring the dispersal of reconstruction funding and the development of a new training video that looks at repairing and retrofitting non-engineered houses. The videos have an easy-to-understand drama format and include community-based disaster risk reduction messages. At the national level, campaign materials have been redesigned and edited to have a more general national focus and an online campaign has been developed.

A community mural painted in West Sumatra, Indonesia, to promote reducing disaster risk after a devastating earthquake shook the region on 30 September 2009. It was as part of the Build Back Better campaign facilitated by the Australia – Indonesia Facility for Disaster Reduction. Photo: IDEP Foundation.

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