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Vanuatu Investment in **Disaster Risk Management**



April 2011

Samantha Cook
Disaster Reduction Programme

ECONOMIC REPORT (PR21)

DISCLAIMER

Published by: Applied Geoscience and Technology Division (SOPAC) 2011

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Layout by: Sailesh Kumar Sen
SOPAC Secretariat

Printed by: Quality Print Limited
Suva
Fiji

Available from: Applied Geoscience and Technology Division (SOPAC)
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Important Notice

This report has been produced with the financial assistance jointly provided through the AusAID NAP Facility and the ACP-EU Natural Disaster Facility.

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Our Mission

The mission of the SPC is “to help Pacific island people position themselves to respond effectively to the challenges they face and make informed decisions about their future and the future they wish to leave for the generations that follow.

Our Goal

The goal of the Applied Geoscience and Technology Division is to apply geoscience and technology to realise new opportunities for improving the livelihoods of Pacific communities.

Contents

will update this numbering later

Acronyms

COFOG	Classifications of the Functions of Government
CPI	Consumer Price Index
DM	Disaster Management
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EM-DAT	International Disaster Database
GDP	Gross Domestic Product
HFA	Hyogo Framework for Action
IPCC	International Panel for Climate Change
LHS	Left Hand Side
NAP	National Action Plan
NBV	National Bank of Vanuatu
NDMO	National Disaster Management Office
NPP	New Policy Proposal
MFEM	Ministry of Finance and Economic Management
PDRMPN	Pacific Disaster Risk Management Partnership Network
RBV	Reserve Bank of Vanuatu
RFA	Regional Framework for Action
RHS	Right Hand Side
SOPAC	Applied Geoscience and Technology Division, Secretariat of the Pacific Community
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
VAT	Value Added Tax
VSO	Vanuatu Statistics Office
VVAL	Vanuatu Volcano Alert Level

Prologue

Image courtesy of Samantha Cook

The tsunami that hit Samoa, American Samoa and Tonga in late September 2009 gave a distressing reminder that the Pacific is one of the most natural disaster prone regions of the world. Since 1950 natural disasters have affected approximately 2.5 million[1] people in the region, causing 1,975[2] reported deaths in the region. This has cost the Pacific Island Countries (PICs) around $1.6 billion (in nominal terms) in associated damage costs (EM-DAT, 2010).

The Intergovernmental Panel on Climate Change (IPCC) Fourth Assessment Report has emphasised that if the planet's surface temperature increases by 2°C above pre-industrial levels, a catastrophic collapse of ecosystems becomes possible with unforseen, non-linear impacts on poverty and disaster risk. The IPCC has also confirmed that the geographic distribution, frequency and intensity of these hazards are already being significantly altered by climate change. This has strong implications for the Pacific. For example, a rise in the mean sea level of 1 metre at the upper range of estimates for the next hundred years will have drastic consequences for many coastal communities (Dow and Downing, 2007).

Evidence of rising sea levels has already emerged in the Pacific after 2,000 inhabitants were forced to relocate after their homes were washed away by high tides and storm surges. Rising seas also forced the inhabitants of Tégua, Vanuatu, to abandon their island in December 2005 (Dow and Downing, 2007).

With the climate trend models for the Pacific indicating increased extreme weather conditions and increased climate variability (IPCC, 2007), PICs have little choice but to develop comprehensive risk management plans for the hazards that they will face.

The objective of this report is to present a high level desk based assessment of the potential economic costs of a disaster and to identify the level of investment in Disaster Risk Management (DRM). This will be used to draw attention to the benefits of investing in Disaster Risk Reduction (DRR) versus the cost of a disaster.

[1] excluding Papua New Guinea and the Overseas Countries and Territories. SPC Pocket Handbook 2010.

[2] excluding Papua New Guinea and the Overseas Countries and Territories, EM-DAT 2010.

Defining
Disaster Risk Management

Image courtesy of Samantha Cook

To ascertain the level of investment in Disaster Risk Management (DRM) as a whole it is important to understand exactly what is comprised underneath the heading of DRM itself.

A disaster does not stem from a country's lack of capacity to respond to a hazard but rather from its inability to cope with any resulting damage. For example, the occurrence of a cyclone is not a disaster in itself, it is merely a hazard. It is a country's (or a community's) lack of resources to be able to deal with the effects of the hazard that will turn the event in to a disaster. If a cyclone hits a country but that country is able to cope with the after effects of the cyclone then no disaster has occurred.

Disaster Risk Management describes;

"The systematic process of using administrative directives, organizations, and operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impacts of hazards and the possibility of disaster." (UNISDR)

An important component of DRM is Disaster Risk Reduction which is;

"The concept and practice of reducing disaster risks through systematic efforts to analyse and manage the causal factors of disasters, including through reduced exposure to Hazards, lessened vulnerability of people and property, wise management of land and the environment, and improved preparedness for adverse events." (UNISDR)

The other integral component of DRM is Disaster Management (DM) which according to The Asia Foundation and United States Agency for International Development is the component which involves the planning, leading and controlling of activities related to the management of disasters in any of its phases and stages.

Regional Context

Image courtesy of Samantha Cook

The Hyogo Framework for Action (HFA) was adopted in 2005 with an expected outcome of "The substantial reduction of disaster losses, in lives and the social, economic and environmental assets of communities and countries." In the Pacific, the HFA formed the basis for the development of the Pacific Disaster Risk Reduction and Disaster Management Framework for Action (Regional Framework for Action or RFA). In 2005 at the 36th Pacific Islands Forum the leaders of the Pacific Island Countries endorsed a coordinated approach on an 'all hazards' basis would significantly improve the capacity of the Pacific island nations to reduce their vulnerabilities and to better manage disasters when they occurred. The ultimate goal is to see "DRR and Disaster Management (DM) policies mainstreamed in to national policies, planning processes and decision making at all levels". The RFA outlines the major policy imperatives needed in the region to support the management of disaster. Additionally, the Pacific Plan, which is the overarching strategic development policy document for the Pacific region, emphasizes the need for improved disaster risk management practices and policies to enhance sustainable development.

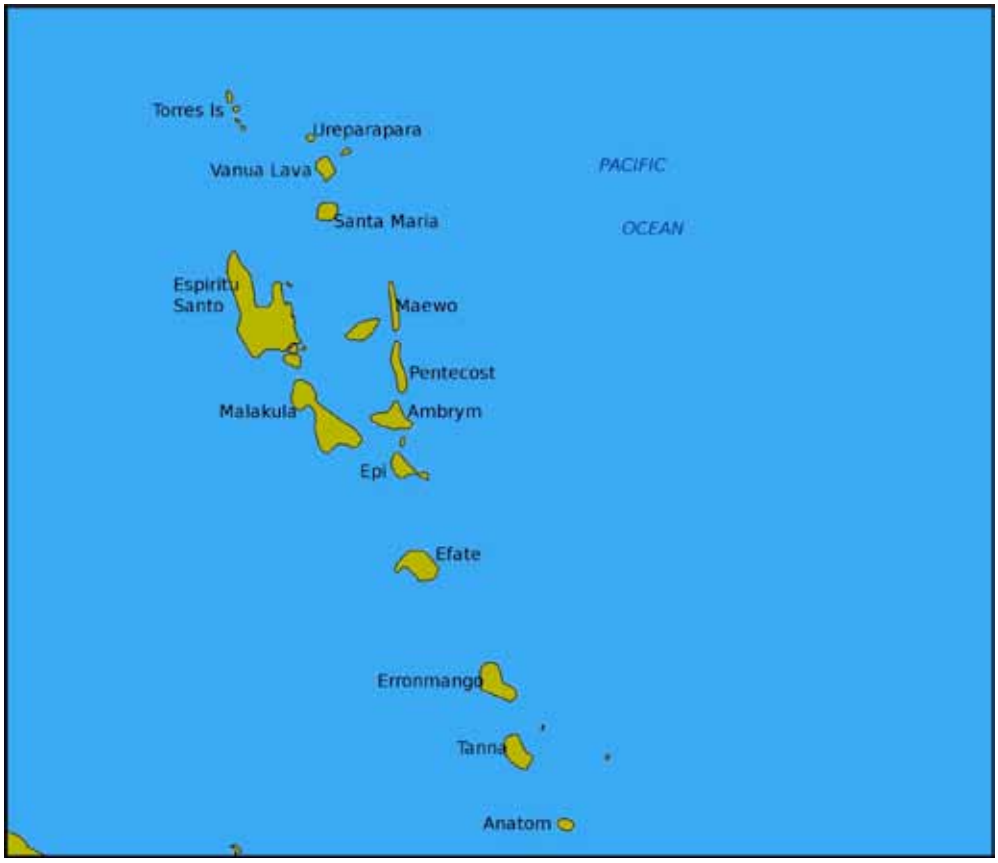
In 2006 the Pacific Disaster Risk Management Partnership Network (PDRMPN) was established to support capacity building in DRM in PICs. The Partnership assists the development of National Action Plans (NAPs) for Disaster Risk Management consistent with the RFA and other linked regional and international policy instruments for DRM and climate change adaptation. NAPs are the vehicle through which PICs actively pursue the mainstreaming of disaster risk and climate risk considerations into their national and sectoral planning processes and budgets. This ensures that the relevant measures are introduced to reduce the potential impact of future disasters to their national economies. NAPs have been developed for, Vanuatu (2006), Republic of Marshall Islands (2007), Cook Islands (2008), Palau (2009) and Tonga (2010). There are also discussions underway to establish NAPs in Palau and Tuvalu at present. Major donors such as the European Union and AusAID are providing dedicated funding through organisations like SOPAC to support the development and implementation of NAPs.

Country Context



Image courtesy of Samantha Cook

The location of Vanuatu in the 'Pacific ring of fire' means that it is exposed to a greater range of hazards compared to most other PICs. It is exposed to both hydro-meteorological and geo-physical hazards. Hydro-meteorological hazards include tropical cyclones, floods and droughts whereas geo-physical hazards include volcanoes, earthquakes, tsunamis and landslides. Climate change is likely to increase the frequency of some of these events.



Source: SOPAC Division, Secretariat of the Pacific Community

Vanuatu has a population of approximately 240,000 people estimated to be growing at a rate of 2.4 per cent in 2008. The population is spread across 80 inhabited islands forming six provinces, Shefa, Torba, Malampa, Penema, Tafea and Sanma. Approximately 75 per cent of the population are living in the rural areas of Vanuatu where 93 per cent of hazards have occurred in the past 25 years.

[3] This term is used to describe the events featured in DesInventar where "an event is different from a disaster. An event may trigger multiple disasters as well as affecting different geographical units. This means that the statistics which DesInventar records, differ from statistics which use the traditional definition of disaster, but only insofar as the number of registers, not with respect to the effects and damages."

Methodology



Image courtesy of Samantha Cook

There are commonly three sources of funding for DRM investments; National Government funding, Provincial Council Expenditure and Donor funding. In Vanuatu, it was only possible to focus on one of these, National Government funding. The remaining two areas were not visible due to current reporting practices to the Government.

The broader economic analysis was conducted by doing a desk review involving data collection for the statistical analysis.

National Government Funding

To capture data on the level of investment in DRM the annual budget allocation (commonly known as an appropriation) from the National budget to the National Disaster Management Office (NDMO) was analysed. In addition to this, any supplementary funds (those funds which are released due to unforseen events to cover additional costs) that may have been released in response to a disaster were also analysed. Given the predominance of recurrent expenditures (those which occur every year such as salaries and wages) in the NDMO budget appropriation it was not felt necessary to analyse the difference between appropriation and expenditure.

The primary source of information for identifying expenditure in DRM was the national budget documentation from 2005 onwards. The focus of this paper is therefore driven by the appropriations from the central Government to the National Disaster Management Office (NDMO).

It was not possible to identify appropriations or expenditures at the sectoral level as the Budget is a high level document and does not drill down to the level of detail required for such analysis. Examples of indirect expenditures at the sectoral level would include the integration of disaster awareness in to the school curriculum. This does not mean such initiatives do not exist but merely that they are difficult to track with the current financial management systems present in Vanuatu.

Donor Funding

It is recognised that donors will invest in several DRM measures in a country at any one time. However, unless the money goes through the Ministry of Finance and Economic Management (MFEM), it becomes very difficult to attain detailed figures. For example, community based DRM measures funded directly by donors are almost impossible to track as the outcomes are often not communicated to those who are not directly

involved.

This reinforces the point that in most instances the costs of mainstreaming DRM in a project, whether Government or donor funded, can therefore not be explicitly observed. This makes progress in this area very difficult to track. As a result, the analysis in this paper is limited to appropriations and post event expenditures in DRM.

Desk Review

To facilitate the general economic analysis and the statistical analysis involving the calculation of losses data was collected from the Vanuatu Statistics Office, the Reserve Bank of Vanuatu and the Ministry of Finance and Economic Management The desk review also involved reviewing several key papers on DRM in Vanuatu.

Image courtesy of Federica Gerber

Past Events and Their Costs

Image courtesy of Christina Shaw

During this 25 year period Vanuatu was subject to 52 hazardous events (DesInventar). Chart 1 shows the breakdown of disaster by type. The majority of hazards, 48 per cent, were cyclones closely followed by volcanic activity which accounted for a further 40 per cent of hazards. Earthquakes and gales accounted for the remaining 12 per cent with an even 6 per cent each (DesInventar).

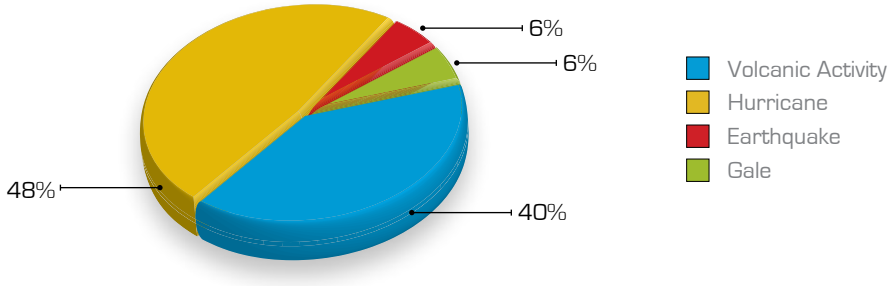


Chart 1: Hazard events by type

Source: DesInventar

The majority of these hazardous events (44 per cent) occurred in the Malampa province. This was followed by Torba province which experienced 19 per cent of the disasters. Both of these provinces have very active volcanoes which account for the high number of hazards experienced. Interestingly Sanma province, where the second largest economic centre, Luganville, is located, experienced only 2 per cent of the nation's hazardous events. In contrast Shefa province, where the capital and main economic centre Port Vila is located, experienced 10 per cent of the nation's hazardous events. Looking at the urban centres of Luganville and Port Vila alone they experienced only 4 disasters between them and only one in Luganville.

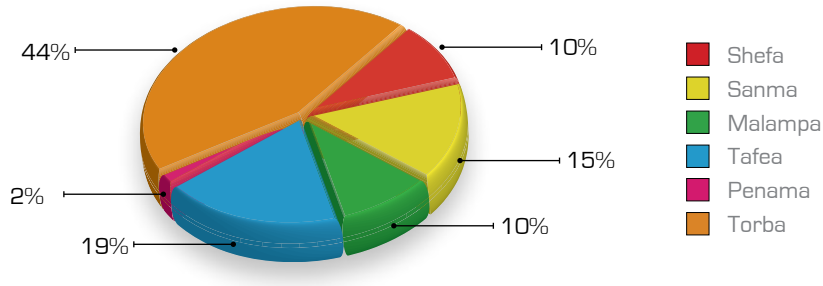


Chart 2: Percentage of events in each Province

Source: DesInventar

The chart below depicts the percentage of disasters on the Right Hand Side (RHS) alongside the number of people in each province on the Left Hand Side (LHS). From this it can be seen that 54 per cent of the hazardous events of the past 25 years occurred in the provinces inhabited by 83 per cent of the total population. This figure excludes Torba province which experienced around 44 per cent of total disasters but accounts for only a small part (3 per cent) of the population.

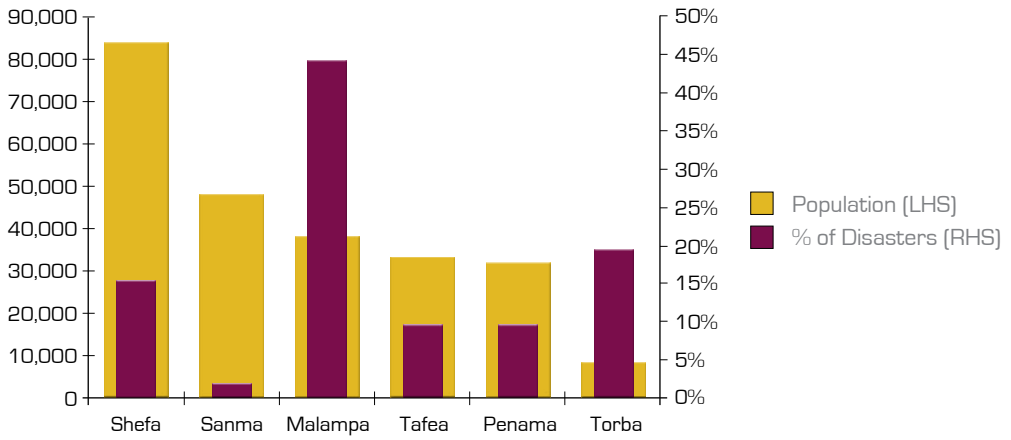


Chart 3: Population (LHS) vs. Percentage of disasters (RHS)

Source: 2006 Census & DesInventar

The spread of the population across 80 islands means that some parts of the country are difficult and costly to access. This is an important point as it poses logistical problems in response to any disaster event.

There has been an element of urban drift over the years as some of the population has moved from the rural areas to seek employment in the economic centres of Port Vila and Luganville. This has created settlements in the urban and peri-urban areas surrounding the centres. These settlements are generally of poor build quality and will be at high risk of destruction should a disaster event hit either one of the urban centres. The majority of service based industries which account for approximately 73 per cent of Gross Domestic Product (GDP) are located in Port Vila and Luganville. A disaster event occurring in either of these urban capitals could be potentially crippling for the population and the economy. The fact that a major disaster has not hit either of these areas could go some way to explaining the relatively low budget allocation from central Government.

In the past few years the Government of Vanuatu has released several supplementary budgets for disaster purposes. For example, following Cyclone Gene in 2008 a supplementary of VT20 million was released to help the people of Futuna cope with the damages. Another supplementary was released in 2009 for just over VT110 million in response to several disasters. However, in addition to the supplementaries donor funds were provided but in these instances, unfortunately not tracked. As a result, the total response effort in monetary terms is not attainable.

In comparison, a contingency plan has been costed at VT540 million for Gaua Island. This island in the north of Vanuatu has been experiencing increasingly high levels of volcanic activity and as a result a contingency plan has been put in place should the Vanuatu Volcano Alert Level (VVAL) increase to level 3. This would warrant the whole island of 2,700 people relocating to pick up points for evacuation at level 4. It is assumed that there is quick progression between levels 3 and 4 since there are no safe areas on the island. This emphasises the importance of quick and easy access to funds.

Resulting Budget Allocation

Image courtesy of Federica Gerber

In the past six years the budget allocation for the National Disaster Management Office (NDMO) has almost tripled from an allocation of around VT11 million in 2005 to VT 32 million in 2010 (see chart 4). This is equivalent to only 0.16 per cent of total expenditure. This is largely driven by the almost 100 per cent increase in the recurrent budget allocation[4] received in 2010 (see chart 5). This increase was the direct result of a successful New Policy Proposal (NPP) drafted in 2009 following the attendance of NDMO officials at NPP training given by the Ministry of Finance and Economic Management (MFEM).

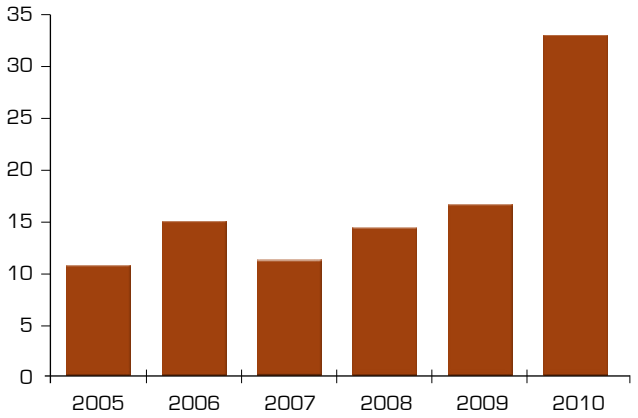


Chart 6: NDMO Annual Budget, Millions of Vatu

Source: Ministry of Finance and Economic Management, Vanuatu

The increase from the budget allocation in 2009 of VT 25 million in the recurrent budget allocation for 2010 relates to the two NPPs that were drafted to help enable the implementation of the National Action Plan for Disaster Risk Management (NAP) 2006-2016. The first NPP relates to the entire NAP recognising it as a cross-cutting (rather than sectoral) issue and as a result the proposal is geared towards the implementation of the NAP. The second NPP is more specific and relates to Theme 4 (Planning for effective preparedness, Response and Recovery) with a focus on increasing the capacity of the NDMO through the recruitment of new staff. While this had been agreed by the Treasury and additional recurrent budget provided, a backlog of work at the Public Service Commission delayed the new structure of the NDMO and the recruitment of new staff.

In addition to the budget allocation for NDMO the Government of Vanuatu has established a VT 25 million provision for natural disasters. This provision is managed by MFEM and can be released when necessary in the wake of an event. This demonstrates the Government's commitment to disaster management efforts. However, little has been done in the area of risk reduction.

[4] Recurrent budget covers your core expenditures such as staff costs, office equipment and repair and maintenance etc.

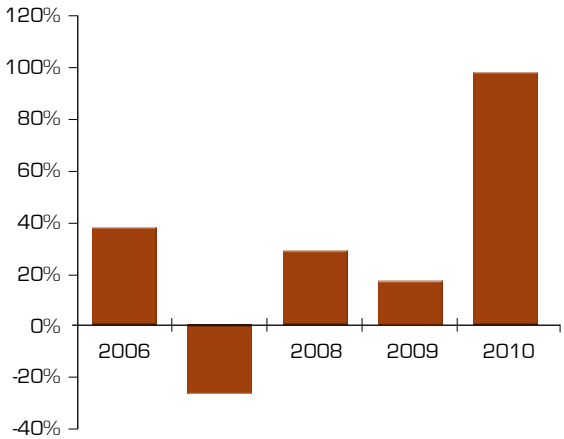


Chart 7: Annual Growth in NDMO Budget Allocation

Source: Ministry of Finance and Economic Management, Vanuatu

Generally, it was noted from several discussions in country that there is a lack of understanding across Government regarding the definition of Disaster Risk Management (DRM). Investment in risk reduction measures were not recognised as part of DRM efforts. Only the more traditional disaster management efforts such as response, relief, mitigation, and recovery work were recognised. As a result, it became apparent that the full extent of investment in DRM is not visible in the annual budgets at the sectoral level.

Going forward, with the introduction of Classification of the Functions of Government (COFOG) classifications, expenditure in DRM should become more transparent. It is also hoped that with the increase in the recurrent budget allocation for the NDMO that investment in risk reduction efforts will improve.

Image courtesy of Samantha Cook

Current Economic Climate

Image courtesy of Samantha Cook

Vanuatu has experienced strong economic growth since 2003 with growth in Gross Domestic Product (GDP) averaging almost 6 per cent per annum over the past seven years (see chart 4).

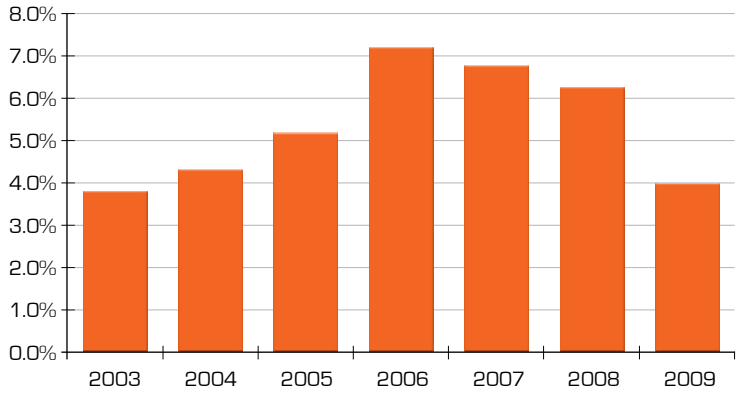


Chart 4: GDP Growth

Source: Vanuatu National Statistics Office

This strong growth was driven by a growing tourism industry, increased construction activity, and other service based industries. This has been helped by sound economic policies and effective fiscal management.

The services sector accounts for almost three quarters of GDP and is largely driven by tourism. It even appears as though the tourism industry benefitted from the global financial crisis as the main tourist markets of Australia and New Zealand chose short haul vacations in the Pacific as over long haul vacations to other areas of the world. In addition, visitor arrivals were also boosted as tourists changed their destination to Vanuatu following the floods in Fiji and the political upheaval in Thailand. This resulted in high tourism arrival and associated increased expenditure.

Frequent balance of payments surpluses have helped to maintain healthy balances in foreign exchange reserves which are currently running at 6 months of import cover in September 2010 (Reserve Bank of Vanuatu, 2010). Foreign exchange reserves are an area that is hit hard during the time of a disaster as countries will have to import more goods to aid the recovery process. There would be serious domestic shortages if a country like Vanuatu – a net-importer is unable to finance their import bill post disaster.

Similarly, inflation in Vanuatu is largely driven by the prices of imports. Prior to the global financial crisis annual inflation, as measured by the Consumer Price Index (CPI), had increased to 5.8 per cent driven by the high oil price and increasing world price of rice and wheat. Consequently, after the financial crisis struck, inflation has returned to the more manageable level of 2.8 per cent annual growth in 2009 (see chart 5).

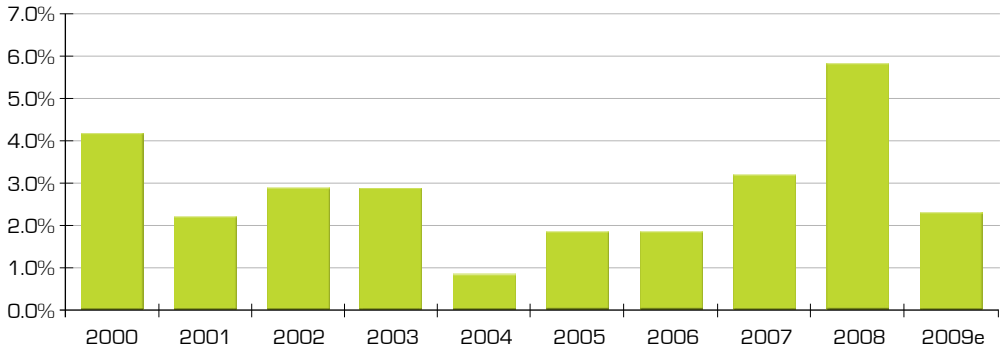


Chart 5: Year end inflation, annual CPI

Source: Vanuatu National Statistics Office

This decline was helped by the deregulation of the Telecommunications market and more recently, a reduction in the cost of education.

Since 2001, institutions such as the Credit Corporation, Vanwoods and the National Bank of Vanuatu (NBV), have been offering micro-finance products to low income earners. The biggest challenge for this industry is determined by the geography of Vanuatu itself. Currently, the microfinance provision is largely focused in and around Port Vila, the main economic hub of Vanuatu. The NBV and Vanwoods are the only institutions offering microfinance opportunities outside Efate but this provision is still limited.

With the exception of NBV, a registered bank, microfinance providers are currently unregulated and as a result have no reporting obligations. This makes it difficult to establish an accurate picture of the size of the market and whether it is operating successfully. Moreover it makes it difficult to understand the nature of the products being provided. Currently, Vanuatu does not have access to micro insurance or to an employment guarantee scheme. In order to help with mainstreaming efforts in DRM, micro-credit providers should aim to encourage their customers to consider risk in their funding proposals. Furthermore, related to DRR aligned poverty reduction, there are no welfare policies or programmes on offer in Vanuatu at present.

While the economy of Vanuatu is sound at present, as with any economy there are risks to the downside, especially post disaster. For example, Vanuatu has a narrow revenue base driven by business licenses, turnover tax, Value Added Tax (VAT) and import duty. All of which would be expected to decline following a major disaster. The fact that there are several duty and revenue exemptions in place restricts potential growth in national revenue. This means that when a particular area of revenue falls it is difficult to compensate for this loss from the other revenue categories.

As is the case in most developing countries more than half of the recurrent budget is allocated to the public sector wage bill. This reduces but restricts the level of funds which can be allocated to DRR expenditures. An increase in the latter would improve development opportunities going forward.

Potential Losses

Image courtesy of Samantha Cook

It is critical for Governments to consider indirect losses to the economy as well as the direct damages resulting from disasters. Currently across the Pacific, only direct damages are assessed and little is done to try and estimate the economic losses resulting from a given hazard which can often be of greater cost to the community.

The United Nations Economic Commission for Latin America and the Caribbean (UNECLAC) have developed a Damage and Loss Assessment (DALA) methodology define direct damage as that which refers to damage to property that occurs as a direct result of the natural disaster. In some cases of damage, the damaged asset must be demolished before re-construction work can commence. The demolition is also considered to be a part of direct damage.

Indirect losses come from the loss of production flows of goods or services and income that result from a natural disaster. Indirect damage includes the increased cost of provision of goods and services that result from the disaster. The added cost of operation is reflected in higher fuel bills for automobiles, greater transportation and maintenance costs and the loss of rental incomes accruing to landowners who suffered loss. Consequently, indirect damage may be measurable for some time after the disaster. Indirect effects should be added to direct damage to obtain the total cost of the disaster.

Consider the example of a hotel that has been damaged or even destroyed as a result of a hazardous event. First, the damage should be assessed and reconstruction costs to return the hotel to its pre-disaster condition should be estimated. Second, economic losses would arise from the closure of the hotel as the result of a hazardous event. The hotel would be closed during the rebuild phase, incurring economic losses from lost revenue as well as the foregone wages for the staff who cannot return to work during the rebuild phase. Additionally, the hotel would possibly incur the cost of making alternative housing arrangements for staff that normally live on-site. Such losses would then pose a secondary tier of indirect effects to the Government through foregone tax revenue while the staff and the business are no longer liable for income[5] and corporate tax, respectively. The rebuild could also pose inflationary problems for the economy as when the hotel re-opens the expense of the rebuild will undoubtedly be passed on to the consumer.

[5] It should be noted that there is no income tax in Vanuatu at present.

Demonstrating Losses



Image courtesy of Samantha Cook

In terms of economic growth losses incurred may continue for some time after the event which could extend the recovery period of the economy in trying to return to its steady state of growth. Such losses are generally difficult to quantify and there are some elements that should not be quantified at all, perhaps for ethical reasons, such as the value of a human life. The motivation behind attempting to quantify risk is so that it can be mapped in the hope that investment can be made to lessen potential risks in the future.

For example, the lightning bolt in Chart 8 represents a time when a disaster has occurred. There are three scenarios in which the economy could move forward;

1. it could continue along its current growth path growing at a rate of 5.5 per cent per annum,
2. there may be a reduction in the rate of growth, or;
3. it could be that the economy remains static at the current levels of GDP.

Scenario 2 suggests the possibility that after the occurrence of a hazardous event the economy begin a downward spiral as production levels begin to fall as a result of the damage incurred. The decline shown in Chart 8 is equivalent to 5 per cent decline in GDP per annum. Not only would this take some time to rectify but it would also mean that the economic recovery will be starting from a much lower point. For example, if the economy contracted by 5 per cent in one year it would reach point A in Chart 8. This means that for the economy to return to its pre-disaster growth of 5.5 per cent per annum, a gap of 23 per cent of current GDP would need to filled, in order for the economy to reach point B. This is equivalent to approximately VT15 billion based on GDP levels in Vanuatu in 2008.

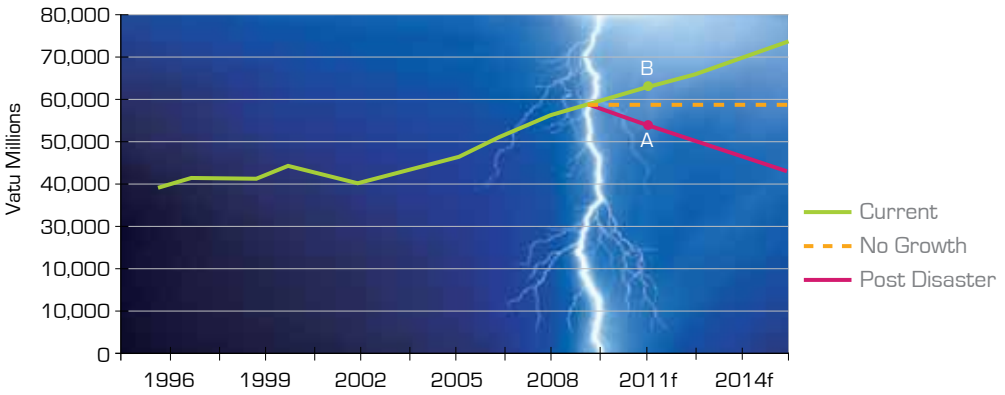


Chart 8: GDP Growth

Source: Reserve Bank of Vanuatu & SOPAC

In scenario 3 if the economy remained static and continued on the current growth path a gap of almost VT7 billion would need to be filled, equivalent to 11 per cent of current GDP forecasts.

To illustrate potential losses consider a situation where an earthquake results in a reduction of the number of businesses and formal employment (see Table 1). The numbers shown demonstrate losses to employment and registered businesses at the conservative levels of one, two and five per cent. These levels were chosen for illustrative purposes only, as it was not possible to ascertain these impacts from past events. It is possible that the losses resulting from a natural disaster could be higher than demonstrated.

Table 1: Business and Job losses

	1%	2%	5%
Employment	275	550	1,376
Number of Businesses	41	82	204

Source: Vanuatu Statistics Office & SOPAC

If 5 per cent of businesses were lost or unable to operate post-disaster then this would equate to 204 businesses and approximately 1,300 people being rendered unemployed.

To obtain estimates on foregone wages as a result of the disaster, the numbers generated in Table 1 were multiplied by the urban, rural, average and minimum wage detailed in the 2006 Household Expenditure and Income Survey. For example, if employment declines by 5 per cent 1,300 jobs would be lost. If this number is multiplied by the average annual wage of VT487,200, this would indicate losses of VT670 million. However, if the hazardous event hit the capital city Port Vila, where most people earn the higher urban wage, lost wages are more likely to be in the region of VT750 million.

Table 2: Potential losses to wages (VT)

	1%	2%	5%
Urban Wage	149,928,960	299,857,920	749,644,800
Rural Wage	108,648,960	217,297,920	543,244,800
Avg. Wage	134,077,440	268,154,880	670,387,200
Min. Wage	85,862,400	171,724,800	429,312,000

Source: Vanuatu Statistics Office & SOPAC

The loss of wages will in turn have an impact on Government tax receipts. Revenues from Value Added Tax (VAT), business licenses and turnover tax will decline as businesses remain closed and there is lower unemployment. Table 3 focuses on these three taxes as this is where the largest declines are expected to occur. It is important to note that Vanuatu does not currently levy income tax.

Table 3: Foregone Tax Revenue (VT)

	1%	2%	5%
Business License	2,667,045	5,334,091	13,335,227
Turnover Tax	2,490,445	4,980,890	12,452,225
VAT	43,660,000	87,320,000	218,300,000
Sub-Total	48,817,490	97,634,981	244,087,452

Source: Vanuatu Statistics Office & SOPAC

The amount of foregone tax was calculated by taking the number of businesses destroyed (see Table 1) and applying the business tax to this number. Turnover tax and VAT were calculated at the five per cent level of the 2009 revenues. It is important to note that the decline in VAT returns is likely to be higher than demonstrated in Table 3 as individuals hold on to cash as they are unsure when they will receive their next wage. This is also known as the savings ratio.

The sub-total for foregone taxes at the five per cent level is almost VT245 million comprised of approximately VT 14million lost from business licenses, VT12.5 million lost from turnover tax and VT218 million lost in VAT.

These indirect costs must be added to the direct costs such as damage to buildings and cash crops in order to obtain a more accurate reflection of the total damage and losses that have occurred.

Table 4: Estimated losses (VT millions)

	1%	2%	5%
Total	183	366	914
% of GDP	0.3%	0.6%	1.6%

Source: Vanuatu Statistics Office & SOPAC

To obtain the total losses depicted in Table 4 the average wage was used and added to the sub-total in Table 3.

Table 4 demonstrates that a disaster which destroys 5 per cent of registered businesses may cost the economy the equivalent of 1.6 per cent of GDP. These figures only include registered businesses and subsequent effects from the losses of such businesses. It is worth remembering there are many businesses operating that are not in possession of licenses, either because their revenue is too low to incur a license fee or because they are informal operations.

It can be seen that substantial losses can be generated post-disaster. At this point it should be noted that such losses must be added to the estimated damage cost to obtain an accurate reflection of the disaster impact.

Benefits of Investing in **Disaster Risk Reduction**

Image courtesy of Samantha Cook

The costs of disaster can be reduced by investing in DRR measures such as the implementation of building codes and early warning systems. For example, in the Cayman Islands following Hurricanes Gilbert and Mitch both in 1998 the preparedness and community resilience was improved. The Government made changes in the rules and governance of hurricane risk accompanied by changes in the early warning systems. As a result the economic and ecological impacts of hurricane Ivan in 2004 were reduced (Adger et al 2005).

According to the World Bank and the US Geological Survey, if $40 billion had been invested in DRR type measures such as ensuring adequate design of buildings, then $280 billion of economic losses worldwide from natural disasters would have been avoided in the 1990s (World Bank 2006).

It is estimated that the $3.15 billion expenditure on flood control measures in China over a forty year period helped to avoid losses in the region of $12 billion (World Bank, 2004).

Investments in DRR would help to reduce the direct costs for reconstruction and recovery to the Government of Vanuatu such as the VT104 million that was appropriated in 2009 in response to several disasters. Investing in risk reduction would also help reduce those losses which are larger and more difficult to measure and have greater impacts on development of the country such as the loss of employment or foregone tax revenue in terms of corporate tax, duty and VAT to be paid to the Government.

It is important that risk reduction projects in Vanuatu continue in order to reduce the damage and losses from future disasters. This is why it is recommended that the existing disaster fund of VT25 million be expanded for both risk reduction and disaster management purposes

Summary

The objective of this report was to present a high level, desk based assessment of the level of investment in Disaster Risk Management (DRM). Potential costs from a hypothetical disaster were calculated to demonstrate that disasters are an issue for economic development consequently investments in disaster risk reduction should be encouraged.

The low budget allocation appropriated to the NDMO predominately covers recurrent costs such as staffing and leaves little spare budget to engage in any project work for either response or risk reduction. However, there is a disaster fund of VT25 million in place to help with disaster response.

Currently no distinction is made between rural and urban in DRM policy or budget allocation. This is an area of concern given the fact that the majority of the population live in the rural areas.

Considerations

It is recommended that Vanuatu try to address the existing gaps in DRM policies and budget provisions. There are a variety of options presented but further investigation should be done to establish what will work for Vanuatu. Some areas for consideration are;

- Consider the use of financial tools to establish a DRR fund to coexist with the Disaster Relief fund,
- Introduce risk assessment in to the budgetary/planning process,
- Consider the use of micro credit, particularly at the provincial level to ensure building standards are in use,
- Increase the use of NAP to request/guide donors to expenditure areas with the greatest need,
- Establish good baseline data to help facilitate post disaster assessments,
- Increase knowledge at the community level and encourage provincial councils to enable better tracking of their expenditures in this area.
- Adapt the COFOG to more accurately determine the actual levels of DRM investment within the National budget.

Conclusion

While Vanuatu has taken some significant steps, such as the establishment of a Disaster Relief fund of VT25 million, there is still more that could be done to assist with preparedness and to make future development less susceptible to disasters.

In the past disaster costs have exceed the annual allocations for DRM expenditures allocated from central Government. It is hoped that with the introduction of COFOG classifications that DRM expenditures will become more transparent. If risk considerations are embedded in to the budgetary and planning processes the costs of future disasters will be reduced. Consequently, this will enable economic development to stabilise as the recovery period post disaster is shortened.

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