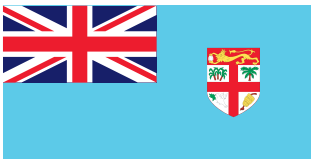
Fiji



Post-Disaster Needs Assessment

March 2013

Tropical Cyclone Evan, 17th December 2012

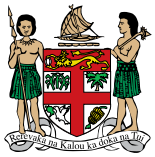
Government of Fiji






ACP-EU Natural Disaster Risk Reduction Program

An initiative of the African, Caribbean and Pacific Group, funded by the European Union and managed by GFDRR



DISCLAIMER

Estimates are based on official Government of Fiji data.

Published by: Applied Geoscience and Technology Division, Secretariat of the Pacific Community (SPC-SOPAC) 2013

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Cover photo: www.facebook.com/bulatime

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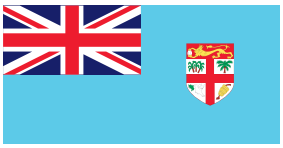


Fiji

Post-Disaster Needs Assessment

Tropical Cyclone Evan, 17th December 2012

Government of Fiji

March 2013

Contents

Foreword

On 17th December 2012 Tropical Cyclone Evan struck Fiji causing widespread destruction to property and infrastructure, disrupted economic activity bringing sorrow to tens of thousands of fellow citizens. Many lost their livelihoods, their shelter and their belongings. They endured great misery to weather the cyclone, to ensure the safety of their dear ones, and secure or recover their possessions. They also displayed great resilience in the face of adversity, and great determination to take stock of damage, get back on their feet, and build back better.

Fortunately, no lives were lost. We can say that Government's investment to increase disaster preparedness and mitigation measures to pre-position and distribute relief material efficiently, and to coordinate response effectively with local and international partners has been a worthwhile investment. We, in Government, are intent on building on these achievements and on deploying additional efficiency and effectiveness tools to help us assess the impact of national disasters and prioritize rehabilitation activities.

At the same time, we recognize that each disaster is an opportunity to improve our collective skills and the way we collect, process, and interpret data to inform our response. We are certainly not new to conducting damage assessments in the aftermath of a disaster, when humanitarian concerns are at the top of the government's relief and response agenda. Initial assessments may, at times, be imperfect but they are absolutely instrumental to shape response and enable us to effectively engage with each other within government and with our partners.

Long term recovery and rehabilitation, however, often requires us to go back to the drawing board and take a fresh look at the impact of disaster in order to answer questions such as: What sectors of our economy were hit the hardest? What can we say authoritatively about cost of lost production in the manufacturing or agricultural sector, disruption to market trading, or loss of environmental assets? And just as importantly, if not more so, who among our citizens was hit the hardest, and whose resilience is compromised the most?

To address these questions we need a whole-of-government approach that assesses the effect of disasters at the sector level. With this objective in mind, we chose to pursue a post-disaster needs assessment (PDNA) – the first assessment of its kind in Fiji.

In the PDNA we have a credible, rigorous and globally recognized standard methodology. It enables us to take stock of physical damage to property, infrastructure, and productive assets as well as to account for losses resulting from the disruption of economic flows brought on by the disaster. This significant loss dimension often did not feature in previous assessments. Having a better understanding of both of these measures and how they affect each sector provides the Government with a stronger knowledge base to plan and budget.

Further, the PDNA looks to do justice to the human recovery aspect of the disaster and build a solid disaster risk management strategy into the plan to support recovery. Priority areas are set out in a comprehensive framework to inform the Government's budgeting priorities and to engage with donors and partners where necessary.

Finally, the capacity development component, whereby 60 members of Government staff received training, was influential in the choice to pursue a PDNA in Fiji. The tools and methodology will stay with us – with your respective Departments, in fact – so that they can be quickly brought to bear when needed in the future, as we institutionalize this instrument.

Inia Seruiratu
The Minister
Ministry of Agriculture, Fisheries and Forests
Ministry of Rural & Maritime Development and National Disaster Management

Acknowledgements

The Post-Disaster Needs Assessment (PDNA) is an extensive and labour-intensive exercise that could not have been made possible without the dedication and support of the various ministries and departments of the Government of Fiji in providing the time of their staff with their accompanying expertise. Their drive and dedication underpins this Government-led approach to disaster risk management and is a model for improved co-ordination while working together for a more resilient Fiji.

Special acknowledgement is extended to Mr Filipe Alifereti, Permanent Secretary for Rural & Maritime Development and National Disaster Management, and Mr Pita Wise, Permanent Secretary for Strategic Planning, National Development & Statistics, for their leadership, support and cooperation throughout the assessment.

The PDNA team is grateful for the technical and financial support from the Secretariat of the Pacific Community (SPC) SOPAC Division as the lead partner and the European Union – African, Caribbean and Pacific Secretariat, via the World Bank, Global Facility for Disaster Reduction and Recovery (GFDRR) who provided the overall guidance for the PDNA process. The PDNA greatly benefitted from the dedicated involvement and valuable contribution by the following persons: Dr Asha Kambon (Consultant, World Bank); Ms Rachel Cipryk (DRM Specialist, World Bank); Ms Samantha Cook (Consultant, SPC-SOPAC), Ms Dominique Blariaux (Consultant, FAO) Mr Ken Collis (NDMO); Mr David Smith (Deputy Head and Senior Economist, UNESCAP Pacific Office); Mr Bernardo Cocco (Early Recovery Adviser, UNDP); Ms Karen Bernard (Disaster Risk Reduction and Recovery Specialist, UNDP); Ms. Katalaine Duaibe and Ms Vilisi Veibataki (UN Women). A full list of the PDNA report writers and contributors is included in Annex 1. To all of these contributors the team would like to express their deepest gratitude and appreciation.

Acronyms and Abbreviations

ADB	Asian Development Bank
AusAID	Australian Agency for International Development
BOP	Balance of Payment
CFW	Cash For Work
CPI	Consumer Price Index
DaLA	Damage and Loss Assessment
DM	Disaster Management
DOE	Department of Environment
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
EC	European Commission
EM-DAT	International Disaster Database
EU	European Union
EUS	Employment and Unemployment Survey
F$	Fiji Dollar
FAO	Food and Agriculture Organization
FBOS	Fiji Bureau of Statistics
FEA	Fiji Electricity Authority
FNPF	Fiji National Provident Fund
FRA	Fiji Roads Authority
GDP	Gross Domestic Product
GFDRR	Global Facility for Disaster Reduction and Recovery
HAP	Humanitarian Action Plan
HART	Housing Assistance Relief Trust
HDI	Human Development Index
HFA	Hyogo Framework for Action
IDA	Initial Damage Assessment
IFRCC	International Federation of the Red Crescent and Cross
IMF	International Monetary Fund
IPCC	International Panel for Climate Change
JICA	Japan International Cooperation Agency
LHS	Left Hand Side
LTA	Land Transport Authority
MF	Ministry of Finance
MIT	Ministry of Industry & Trade
MLGHUDE	Ministry Local Government, Housing, Urban Development & Environment
MoA	Ministry of Agriculture
MoE	Ministry of Education
MoH	Ministry of Health
MoT	Ministry of Tourism
MRMDNDM	Ministry of Rural & Maritime Development & National Disaster Management
MSPNDS	Ministry of Strategic Planning, National Development & Statistics
MWSWPA	Ministry of Women, Social Welfare & Poverty Alleviation
MWTPU	Ministry of Works, Transport & Public Utilities
NAP	National Action Plan
NDMO	National Disaster Management Office
NDRRF	National Disaster Relief and Rehabilitation Fund
NGOs	Non-governmental Organizations
NPP	New Policy Proposal
OFDA	Office of United States Foreign Disaster Assistance
PAYE	Pay As You Earn
PDNA	Post-Disaster Needs Assessment
PDRMPN	Pacific Disaster Risk Management Partnership Network
RBF	Reserve Bank of Fiji
RFA	Regional Framework for Action
RHS	Right Hand Side
SIA	Social Impact Assessment
SLG	Standard Liability Group
SOPAC	Applied Geoscience and Technology Division, Secretariat of the Pacific Community
SPC	Secretariat of the Pacific Community
TA	Technical Assistance
TC	Tropical Cyclone
TFL	Telecom Fiji Limited
UN	United Nations
UNDP	United Nations Development Program
UNECLAC	United Nations Economic Commission for Latin America and the Caribbean
UNESCAP	United Nations Economic and Social Commission for Asia and the Pacific
USAID	United States Aid for International Development
USD	United States Dollar
USP	University of the South Pacific
VAT	Value Added Tax
WAF	Water Authority of Fiji
WASH	Water, Sanitation and Hygiene
WB	World Bank
WHO	World Health Organization

Currency and equivalents
Currency Unit = Fiji Dollar
F$1=USD0.5564
Fiscal Year
January 1st – December 31st

List of Tables

List of Figures

EXECUTIVE SUMMARY

Tropical Cyclone Evan (TC Evan) – a massive Category 4 cyclone that ravaged Northern Vanua Levu and Western Viti Levu on 16-17 December 2012 – is considered one of the worst to ever hit Fiji in recent history.

The cyclone left widespread destruction in its path – but luckily no deaths or major injuries to persons. Dwellings and their contents were damaged or destroyed, infrastructure was damaged and crops ruined. The livelihoods of many of those affected were significantly compromised and economic activity disrupted. The impact of Evan compounded the damage experienced by some of the same communities and businesses in the wake of the Western Floods of January and March 2012.

The emergency response was well coordinated and managed. Early warning advisories issued by the National Disaster Management Office of the Government were broadcast throughout the country. As a result many residents and tourists were relocated from the outer islands to the relative safety of Nadi. Generally, the public felt that they were well informed and able to make adequate preparations. More importantly, as a result of these communications no fatalities were reported.

The Government, through Cabinet Decision 465, endorsed the recommendation that a Humanitarian Action Plan (HAP) be prepared through the national cluster system – a coordination mechanism that brings together key government agencies, stakeholders and partners for each sector – focusing on urgent disaster response and immediate rehabilitation activities. In addition, the Government requested that a longer-term recovery framework be developed based on a Post-Disaster Needs Assessment (PDNA) methodology.

SUMMARY OF DAMAGE AND LOSS

The total economic value of the disaster effects caused by the TC Evan is estimated at around F$194.9 million (USD108.4 million) equivalent to approximately 2.6 percent of Fiji's Gross Domestic Product (GDP), thus demonstrating the scale of the cyclone.

Total damage from TC Evan, that is the value of the destruction or damage to physical assets existing in the affected areas, was estimated to be F$121.5 million. An additional F$73.4 million was identified as losses to the economic flows that are expected to occur over the short to medium term (see Table 1).

Table 1 – Summary of Cyclone Evan's total economic effect in Fiji.

TOTAL EFFECT					
Sectors	**Production Damage Value**	**Production Loss Value**	**Total Damage and Loss Effect**	**Total Damage And loss Effect (USD) 0.5564**	**Contribution to Total Damage and Loss**
Productive Sectors					
Agriculture	6,660,435.50	31,007,228	37,667,664	20,958,288	19.6
Forestry	6,254,000		6,254,000	3,479,726	3.3
Hotels & Restaurants	40,000,000	28,157,764	68,157,764	37,922,980	35.5
Commerce	834,371	4,634,856	5,469,227	3,043,078	2.8
Infrastructure Sector					
Transport	5,701,641	4,215,812	9,917,453	5,518,071	5.2
Communication	1,141,000	294,150	1,435,150	798,517	0.7
Electricity	4,300,000	1,455,673	5,755,673	3,202,456	3.0
Water	2,945,000	104,152	3,049,152	1,696,548	1.6
Government Building	421,493	20,000	441,493	245,647	0.2
Housing	46,879,095	3,138,364	50,017,459	27,829,714	26.1
Social Sector					
Health	504,537	359,463	863,999	480,729	0.5
Education	5,887,572	44,190	5,931,762	3,300,432	3.1
Total	**121,529,145**	**73,431,652**	**194,960,796**	**108,476,187**	

Source: Estimates based on official Government of Fiji data.

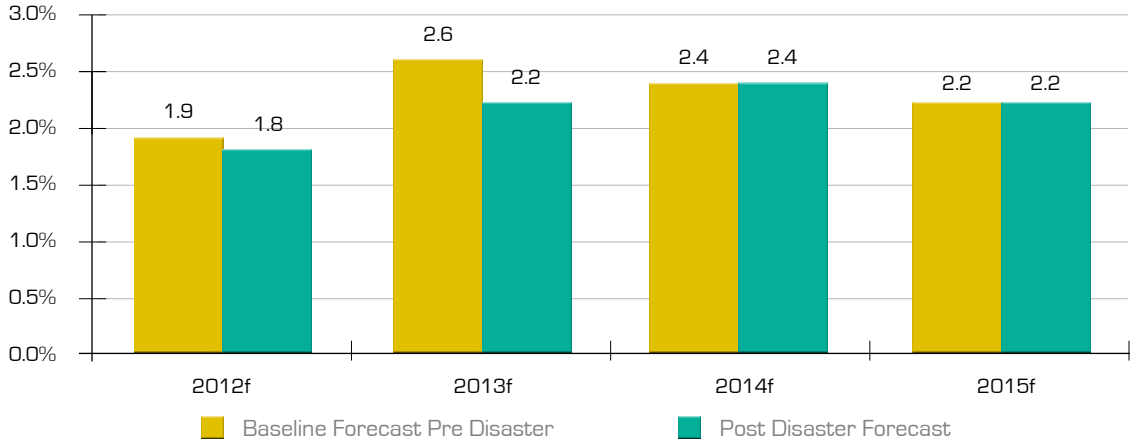
The assessment highlighted that while the productive sectors (agriculture, forestry, commerce, hotels and restaurants) recorded the second largest proportion of damage, and their economic loss accounted for 87 percent of the total loss. Infrastructure, which includes transport, electricity, communication, government building and housing suffered total damage of around F$58.4 million and a loss of about $9.2 million. Damage and loss to the social sectors for health and education was around F$6.4 million and F$0.4 million, respectively.

It is estimated that 83 percent of the combined damage and loss (or around F$160 million) is attributable to the private sector while the remaining 17 percent of damage and loss (or F$32.6 million) falls on the fiscal purse.

MACROECONOMIC IMPACT

Given that TC Evan struck Fiji only three weeks before the end of the year, the impact on GDP in 2012 was minimal as most economic activities/business production for the year had been completed. It is anticipated that the impact of TC Evan will be greater in 2013.

Figure 1: Post Disaster GDP Forecast 2012–2015.



Source: Estimates based on official Government of Fiji data.

Overall the impact of TC Evan in 2012 is expected to create a decline by 0.1 percentage point to the existing GDP forecast. This is due to expected declines in the agriculture sector production, lower revenues in the hotels and restaurants sector caused by lower visitor arrivals. These effects are coupled with an expected slowdown in the communications sector largely due to the high cost of repairs and a decline in revenue due to service interruption caused by power outages. The impact on sugar cane production is also expected to be felt in 2013, as at the time of TC Evan, the 2012 crushing season had already ended. In addition, since most of the non-cane crops affected in December 2012 were expected to be harvested in 2013, the negative impact on the agriculture sector is expected to have a greater effect in 2013.

The impact on exports at the national level is expected to be marginal, as most of the primary products are seasonal crops hence the impact of the damage is anticipated to occur in 2013. Produce for fruit and vegetable export sustained considerable damage and the impact is anticipated to be realized in the short- to medium-term.

The impact of TC Evan on Fiji's Balance of Payment (BOP) position in 2012 will have no effect on the trade deficit as the cyclone arrived just two weeks away from the year end. Nevertheless, some impact is expected in 2013 with an estimated increase of imports by 1.5 percent, driven by the expected decline in the export of sugar, dalo, coconut oil and yaqona.

SOCIAL IMPACT

Approximately 60 percent of the total population were affected in the post-disaster period. The Northern division recorded the highest percentage of affected population (52 percent) as a proportion of their total population, followed by the Western Division (38 percent) and the Central and Eastern divisions (23 percent).

Given the extent of damage sustained by each economic sector, total income loss for wage and salary earners was estimated to be around F$9.6 million for one day. This is based on the amount of foregone earnings from one day where workers remained at home after being officially informed. Employees in the agriculture sector have the highest expected income loss of F$5.3 million which accounts for 55.6 percent of the total income lost.

The health sector sustained minor damage and loss to health facilities in the Western and Northern Division. The total effect of TC Evan for the health sector was estimated to be approximately F$0.8 million. The brunt of the damage was experienced in the Western Division with 84.8 percent of total damage to health facilities, followed by the Northern Division which accounted for 12.4 percent and 2.2 percent of damage in the Central Division. The Eastern Division did not report any incidence of damage to health facilities. In terms of total loss, approximately F$0.3 million was recorded and F$1 million estimated for recovery and reconstruction needs for the sector. In the education sector, TC Evan damage to schools was estimated to be approximately F$5.9 million. This amount includes the economic loss incurred by the sector as well as the cost of ensuring the smooth resumption of the 2013 academic year.

A focused social impact assessment was conducted using qualitative research (focus group discussions, key informant interviews, and researcher observations, and rapid questionnaires for businesses) from eight affected sites in the Western Division. The research focused on key social issues related to livelihoods, social cohesion and traditional social safety nets, shelter, and access to social services. The key findings of this limited-scope assessment, which are covered in detail in Chapter 2, include:

- Food security and income earning opportunities are a key concern for two categories of sample populations:
  1) farm labourers; and
  2) residents of the Yasawa islands whose subsistence crops were devastated.
- While livelihoods have been heavily impacted in the Western Division, the majority of households are making good progress in recovery, assisted by the provision of basic food rations.
- Traditional safety nets remain intact, but have been stretched in affected areas and are unlikely to be providing the full support to poor affected households.
- Health services were unaffected, but access to education for some low-income affected households has been difficult (difficulty in paying school fees).

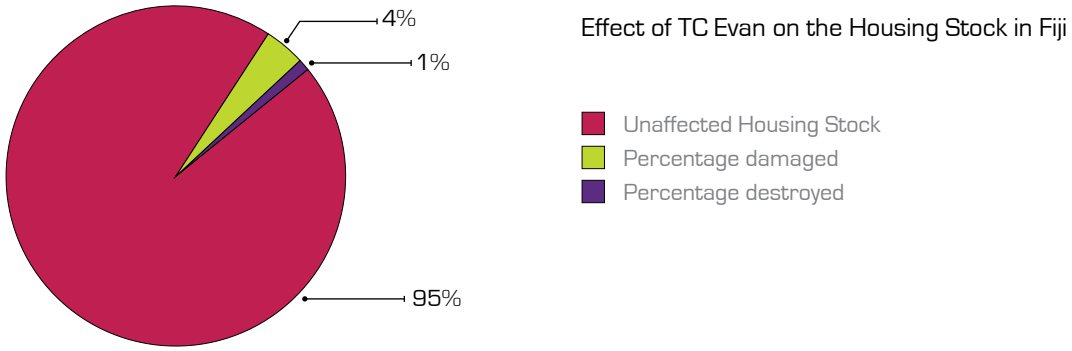
IMPACT ON INFRASTRUCTURE

Infrastructure development remains vital for Fiji's economic growth. The Government has invested significantly in infrastructure with budget allocation to the sector averaging around F$228 million for the last three years (2010 to 2012). In 2013, the Government has allocated F$483 million to the sector, almost 67 percent of the total capital budget. The majority of the funding allocated in 2013 is for the upgrade of roads and construction of jetties.

The total effect of TC Evan on the infrastructure sector is estimated to be approximately F$21 million. The highest levels of damage were recorded by the transport sub-sector, approximately F$10 million, followed by electricity sub-sector with F$6 million, water and sanitation sub-sector at F$3 million, and communications[1] sub-sector at F$1.4 million. In addition, damage to Government buildings was estimated to be approximately F$1.2 million.

TC Evan affected approximately 5 percent of the total housing stock in Fiji (Figure 2). The total number of houses affected was 8,497, of which 2,094 were totally destroyed and the balance of 6,403 suffered some degree of damage. The total value of damage and loss identified for the Housing Sector has been estimated at just over F$50 million. As well as the assessment for partially damaged and completely destroyed houses, this figure includes damage to household contents and associated costs due to estimated demolition and rental losses. Approximately 8 percent of this is attributable to publicly owned housing. The bulk of the damage and loss is thus attributable to privately owned housing, including commercial and private homes.

Figure 2: Proportion of the Total Housing Stock Affected.



Source: Estimates based on official Government of Fiji data.

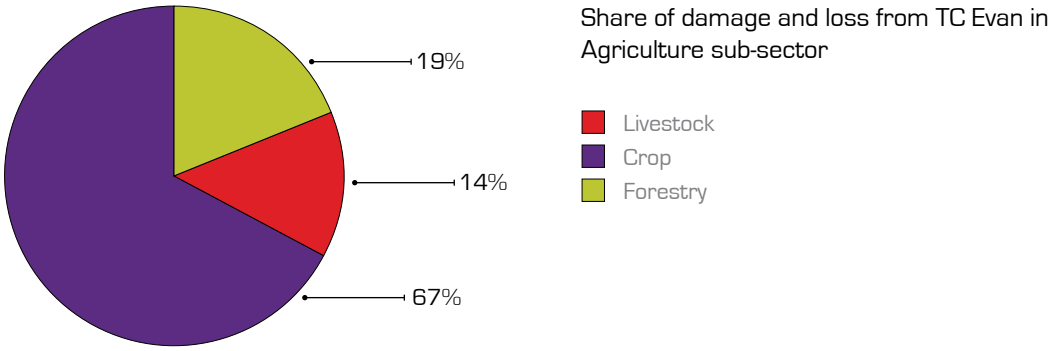
[1] Only Telecom Fiji Limited (TFL). Other telecommunication service providers such Vodafone and Digicel are not captured as part of this exercise.

IMPACT ON PRODUCTIVE SECTORS

In the agriculture sector, the division that experienced the highest proportion of damage and loss from TC Evan was the Western Division, which accounts for 60 percent of the total damage and loss, followed by Northern Division with 29 percent. The Central and Eastern divisions experienced a much lower proportion of total damage and loss with 8 and 3 percent, respectively.

Figure 3 shows that the sub-sector of agriculture most affected by TC Evan was crops (67 percent of Damage and Loss). In the livestock sub-sector, damage occurred mainly in the Western and Central divisions, accounting for 19 percent of total damage and loss. In the forestry sub-sector, the timber industry in the Western Division suffered from high winds damage to infrastructure and trees – accounting for the remaining 14 percent.

Figure 3: Proportion of Damage and Loss by Agriculture Sub-sector.



Source: Estimates based on official Government of Fiji data.

The total effect to the agriculture sector amounts to F$43.9 million of which F$12.9 million is damage and F$31.0 million is loss. Of the total effect, 86 percent is attributable to the private sector and 14 percent to the public sector.

The impact of TC Evan on the tourism industry was substantial with far reaching effects across a variety of sectors. While TC Evan caused some damage to infrastructure and the environment, the reaction of the national authorities through the Tourism Disaster Committee to mitigate and subdue any negative impact on future tourist arrivals effect is a key feature of the resilience within the tourism industry.

Most of the structural damage to hotels and resorts was minimized due to the high building standards. Insurance plays a vital role in this sector with most of the seriously affected hotels/resorts relying on those funds to repair or rebuild without relying on the Government for financial assistance.

The effect of TC Evan on the sector contribution to the growth of the economy is expected to be fair without substantial losses. It is expected that all hotels and resorts will be operating normally with visitor arrivals and tourism earnings back on track by the end of 2013.

The total effect on commerce is thought to be about F$5.46 million. It should be noted that for the purposes of this assessment the commercial sector is measured according to the level of wholesale and retail activities only, and excludes manufacturing and service activities. Total damage to the sector at the national level is estimated to be less than F$1 million. The loss to the commercial sector was estimated to be F$4.6 million based on the assumption that businesses were closed for seven days on average. Most commercial owners were reportedly able to restore their activities and restart their businesses anywhere from a day, to two weeks after the disaster.

CROSS CUTTING ISSUES

Disaster Risk Management

Looking back over a 40 year period Fiji has experienced tropical cyclone events almost every year or biennially. Fiji's disaster management arrangements are covered under the Natural Disaster Management Act 1998 and the National Disaster Management Plan 1995. A number of good practices came to light, which include the following:

- **Effective and timely deployment of DRM system.** Fiji was able to activate and mobilise the national and local structures for cyclone management in a timely and effective fashion. Consequently, no lives were lost, the cyclone warnings were communicated clearly to the entire population, and all people at risk were safely evacuated prior to landfall. Information management and information flows in general worked well during this event, among key players: Meteorology Office, DISMAC, Division and District Offices and communities.

- **Public-private partnerships for DRM.** Numerous private sector companies contributed in-kind or cash donations after TC Evan, including: Fiji Water, Value City, Yacht Partners Fiji, Colgate Palmolive, Digicel and many others. Fiji has been able to capitalize well on such opportunities for innovative partnerships with the private sector, which is a win-win situation, as it allows private companies to advertise their goodwill and thus retain and gain customers.
- **Concessions and incentives.** The government offers range of incentives and concessions to facilitate funding for repair and recovery. People and businesses which donate to the PM's relief fund receive a 200 percent tax rebate for their donations, if F$1000 or more. Duty free concessions are given to companies donating items and materials. Fees for dumping condemned food, cyclone debris and green waste at Naboro landfill were waived, to expedite post-disaster clean-up. Town rates (taxes) were waived for a 3-month period for the affected areas.

TC Evan exacerbated poverty in already poor and vulnerable communities. DRM activities at the sector level were identified and recommendations for DRM are detailed in Chapter 5.

Gender

The inclusion of gender considerations in any disaster-related policy, strategy and/or program is critical to ensuring that the different needs and interests of the most affected population are adequately addressed. Accordingly, post-disaster damage and loss assessments must be gender responsive and equitable. Central to such assessments is the disaggregation of data by age and sex, including wherever possible other diversities like ethnicities and disabilities, in order to clearly see trends or impacts across geographic regions, which in turn informs equitable recovery and reconstruction programs.

No fundamental gender issues became apparent during the assessment. The sectors in which gender differences were considered featured: agriculture, tourism and housing. During the baseline data collection phase, sectors were asked as much as possible to disaggregate their data by gender; however, this proved to be a challenge as the classifications vary across the sectors.

RECOVERY AND RECONSTRUCTION NEEDS

The total damage and loss from TC Evan of F$194.9 million can be attributed in the main to tourism, housing and agriculture (35.5, 26.1 and 19.6 percent, respectively). Recovery and reconstruction for these sectors will have to be managed so as to ensure that other affected sectors are not left unaddressed. The recovery and reconstruction framework seeks to ensure that recovery and reconstruction needs that have multi-sectoral implications (such as the restoration of transport infrastructure) are given significance, to secure a robust recovery.

Table 2 provides a summary of estimated costs for reconstruction and recovery. Total recovery and reconstruction costs are estimated at F$134.0 million, of which F$22.7 million is required for recovery costs and F$121.3 million for reconstruction from damages. The bulk of the costs are in tourism (32 percent), housing (25 percent) and infrastructure services (20 percent). Detailed tables for the recovery and reconstruction initiatives can be found in Chapter 6.

Table 2 – Summary of Recovery, Reconstruction and Disaster Risk Reduction Needs.

Sector	Sub Sector	Recovery (F$)	Reconstruction (F$)	Total (F$)
Housing		500,000	35,510,000	36,010,000
Health		654,377	433,507	1,087,884
Education		672,450	4,640,000	5,312,450
Agriculture	Crops	5,321,958	0	5,321,958
	Livestock	103,628	5,354,498	5,458,126
	Forestry	0	6,879,400	6,879,400
Tourism		2,400,000	44,000,000	46,400,000
Infrastructure	Road and Highways	4,705,229	2,892,994	7,598,223
	Airports & Ports	250,000	2034345	250,000
	Electricity	5,705,423	5,300,000	21,005,423
	Telecom	1,154,000	2,225,814	3,379,814
	Government Building	20,000	421,493	441,493
	Sanitation	100,000	0	100,000

	Water	125,000	3,642,500	3,767,500
Social Impact Assessment		999,016	0	999,016
Total		**22,711,080**	**111,300,206**	**144,011,286**

Source: Estimates Based on official Government Data.

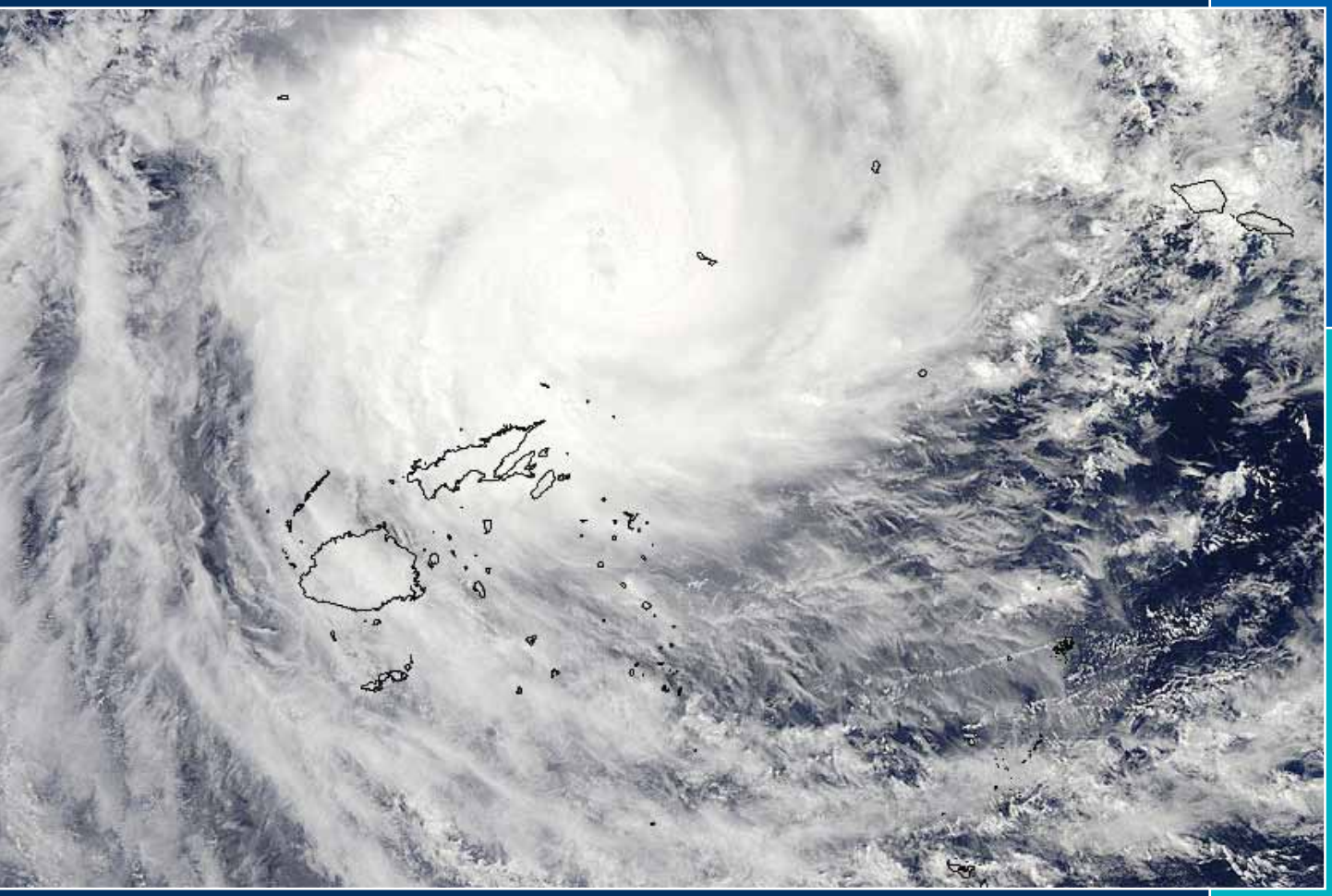
Note: No reconstruction and recovery needs in Commerce Sector.

WAY FORWARD

Overall, the PDNA has highlighted the following key findings that should inform further the Government's recovery and reconstruction strategy:

- The macroeconomic impact of TC Evan is limited. However, additional resources will be required to finance the reconstruction and recovery of the infrastructure, agriculture, housing and education sectors, given the significant damages and losses incurred.
- 17 percent of the total economic effect – or a cost of F$32.6 million as calculated by aggregating damages and loss in each affected sector – fell on the public sector, whose infrastructure, physical stock, and revenue flows were affected.
- The assessment highlighted the significant social impact borne by the population at large – particularly those whose livelihood depends heavily on subsistence agriculture and sale of produce. Recovery efforts must necessarily focus on these affected communities.
- The disaster has highlighted good disaster risk management practices in the way of effectiveness of response, relief, and early recovery operations. Together with the HAP, it has also identified areas for improvement.
- The reconstruction and recovery framework contained in the document provides a number of elements for the Government to consider. These proposed interventions need to be prioritized to identify what needs to be addressed in the short term to cushion the impact on the most effected sectors. To complement budgetary re-deployments to date in response to the event, Government should consider approaching development partners selectively to seek support on specific priority actions.

1.



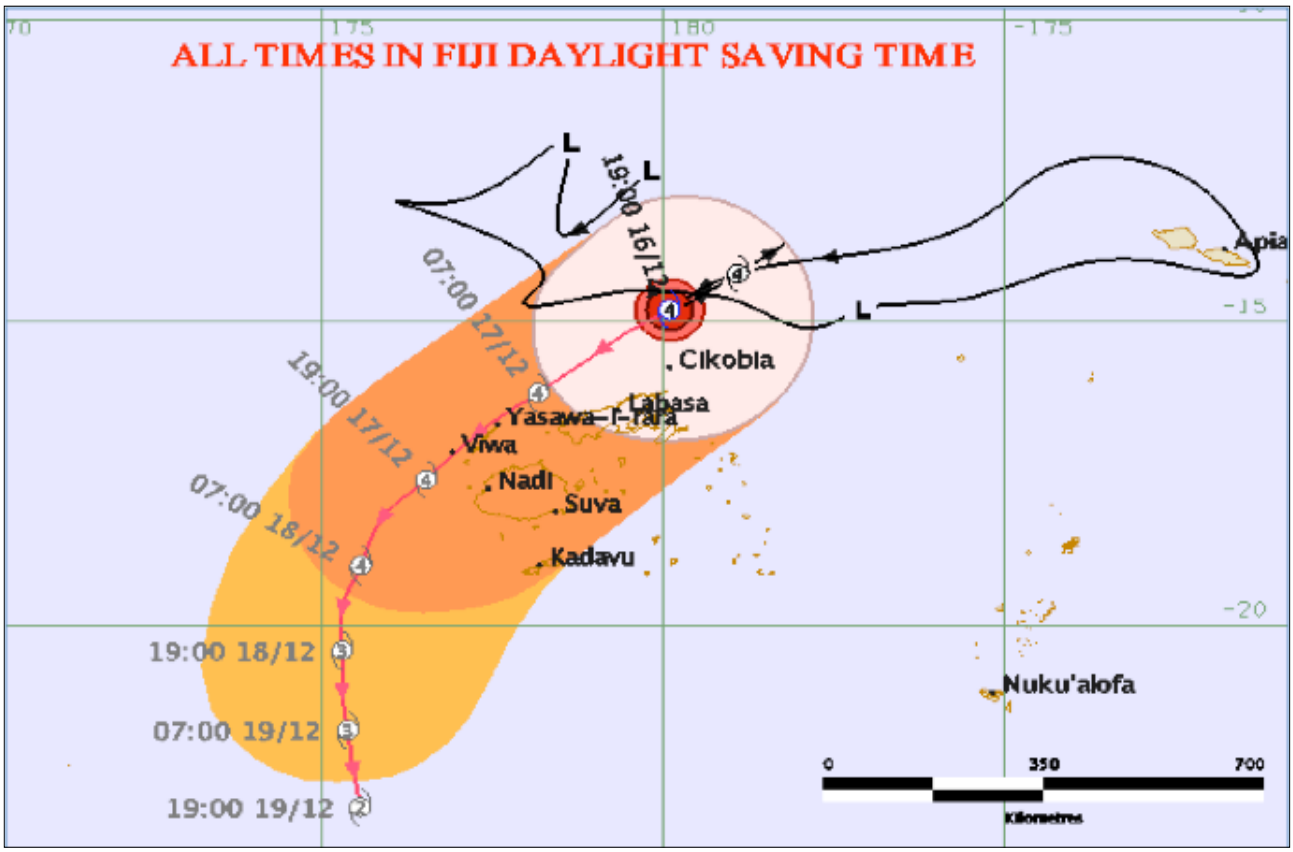
Aqua/MODIS 2012/351 Acquired: 12/16/2012 01:35 UTC, Tropical Cyclone Evan (04P) over the Fiji Islands

INTRODUCTION

1.1 OVERVIEW OF TROPICAL CYCLONE (TC) EVAN

On 17th December 2012 TC Evan had reached its peak intensity with wind speeds of 210 km/h (130 mph), equivalent to a category 4 cyclone, near the North West coast of Vanua Levu. The following day (18th December) the Regional Specialised Meteorological Centre (RSMC) in Nadi reported that TC Evan had weakened into a category 3 TC and was located near the west coast of Viti Levu (see Figure 4).

Figure 4: TC Evan Tracking Map.



Source: RMSC Nadi.

The Government had advance notice of the event and many tourists were relocated from the outer islands to the relative safety of Nadi. The effective communications meant that no fatalities were reported. The Initial Damage Assessment (IDA) from the Government estimated damage to be approximately F$75 million[2].

TC Evan was one of three significant weather events that affected Fiji in 2012, the other two being the severe flooding in the areas of Ra, Tavua, Ba, Lautoka, Nadi, Nadroga, Sigatoka, and Rewa in January 2012 and again in March 2012 the same areas were affected again but with greater intensity. The Government of Fiji estimated that damage from the 2012 floods was at approximately F$71 million. This suggests that Fiji experienced damage of F$146 million in 2012 alone.

1.2 SOCIO-ECONOMIC CONTEXT OF FIJI

Fiji has a land area of 18,273 square km comprising 332 islands of which 110 are populated by approximately 862,233[3] inhabitants. The majority of the population live on the two main islands of Viti Levu and Vanua Levu.

The basic structure of Fiji's economy has not changed significantly over the years. It remains dependent upon primary sectors and industries. Fiji has gone through a structural transformation, with the decline in the agricultural sector as a result of poor performance of the sugar industry and price of sugar overseas. The main drivers of the economy are the transport, storage and communication sectors, which account for 15 percent of GDP. Meanwhile the agriculture,

[2] Government of Fiji 2012, CP (12), Cabinet Memorandum: Report on the Tropical Cyclone Evan Relief Response, Rehabilitation and Recovery (For Discussion), December.

[3] Based on the 2012 projections of FBOS.

forestry and fisheries sector and the manufacturing and wholesale sectors account for 14 percent of GDP each. The retail sector accounts for 12.0 percent of GDP, and real estate and business services and financial intermediation around 9.0 and 8.0 percent, respectively. The hotels and restaurants sector contributed around 5.0 percent towards GDP.

In 2010, GDP per capita was estimated to be in the region of F$5,390 per person which places it at the mid-point for earnings when compared to other Pacific Island Countries and Territories (PICTs). This could be an indication of increasing poverty as a result of declines in the sugar and garment industries coupled with increasing prices for food and fuel from the global markets. In 2009, almost 53 percent of the population were living in urban areas (see Table 3) which may suggest the incidence of urban drift as people relocate to the urban areas in pursuit of higher wages.

Table 3 – Key Development Indicators for Fiji in 2010.

Key Development Indicators	
Population	862,233
Annual Growth Rate in the Population (percent)	0.5
Life Expectancy	65.75
Population in the Urban areas (percent)	52.90
GDP per capita (F$)	5,390
Human Development Index	0.688

Source: SPC, ADB and Reserve Bank of Fiji.

The Human Development Index (HDI) gives an indication of well-being by measuring three basic dimensions of human development: health, education and income. Fiji has a HDI of 0.688, ranking 100 out of 187 countries among those that provide data for its calculation. Comparatively, the HDI of East Asia and the Pacific as a region increased from 0.428 in 1980 to 0.671 today, placing Fiji above the regional average.

While poverty in Fiji has reduced from 39.8 percent in 2002-03 to 35.2 percent in 2008-09, there remains significant income inequalities. Rural poverty has increased and income distribution has deteriorated between 2002-03 and 2008-09 for Fiji in aggregate[4].

1.3 RESPONSE OF GOVERNMENT AND DEVELOPMENT PARTNERS

On the 15th December 2012 the National Emergency Operation Centre as well as the Divisional and District Operations Centres were activated and public advisories were issued to warn members of the approach of TC Evan. A state of Natural Disaster was declared for the Northern and Western divisions on the 18th December and was in effect for 22 days.

On the 20th December the Prime Minister, Commodore Frank Bainimarama, activated the Cyclone Housing Relief Assistance to assist with the immediate reconstruction of damaged houses.

During TC Evan approximately 14,000 people were accommodated in 242 evacuation centres in Northern, Western, Central and Eastern divisions (see Table 4). Within a month, this number declined to almost zero.

Table 4 – Summary of Evacuation Centres (EC) and Evacuees During and After TC Evan.

Division	16/12/12		17/12/12		20/12/12	
	# of EC	# of Evacuees	# of EC	# of Evacuees	# of EC	# of Evacuees
Northern	7	387	45	3,646	98	5,692
Western			44	1,993	98	5,707
Eastern			10	356	1	50
Central			38	2,021	45	2,590
Total	**7**	**387**	**137**	**8,016**	**242**	**14,039**

Source: DISMAC

[4] Fiji Bureau of Statistics, Poverty and Household Incomes in Fiji in 2008-09.

The Government of Fiji in collaboration with local and international partners distributed emergency relief supplies, including food rations, at an estimated cost of F$1.2 million.

The National Disaster Relief and Rehabilitation Fund (NDRRF), also referred to as the Prime Minister's Fund enables business in key sectors, development partners and members of the public to make contributions. On the 29th January 2013, an addition of F$0.5 million had been deposited into the Prime Minister's Fund from members of the public and development partners. To assist with the reconstruction efforts in the housing sector F$1 million was allocated from the Prime Minister's Fund to complement the F$4 million that was reallocated from the National Budget to assist this effort. In total the Government has reallocated F$7 million from the National Budget.

To encourage contributions from members of the public, the Fiji Revenue and Customs Authority, indicated that a 200 percent tax deduction was available for those who deposited cash contributions of F$1,000 and over to the Prime Minister's Fund. Duty-free concessions were also made for those donating items and materials.

Local authorities, to help facilitate the rebuilding, made the filing of re-building permits easier, waiving of fees related to disposal of debris and contaminated foods, and other town/municipal fees.

Approximately F$9 million was received from development partners, international organizations, local non-government organizations, businesses and individuals in the form of cash grants and aid-in-kind e.g. the provision of tarpaulins, water purification tablets, water containers, blankets, soap, vector disinfectants, tool/shelter kits, generators and food packs (see Table 5).

Table 5 – Summary of Foreign Aid Assistance From Development Partners.

Donor	In-Kind (F$)	Cash-Grant (F$)	Remarks
ADB		1,770,000	Funding will be channelled for improving DISMAC communication capabilities (US$1 million)
AusAID	4,847,599		This includes 2 shipments of relief items of F$958,230 logistics support of F$189,369 (A$100,000) for aerial survey and F$3.7 million committed by the Embassy for assistance in education, health and root crops.
NZAID	332,840	30,000	F$30,000 to support NDMO logistic operations
JICA	64,958		Aid in kind to NDMO
USAID		1,534,909	Donated to Fiji Red Cross (US$877,191)
British High Commission		270,971	Donated to Fiji Red Cross (EU$117,329)
Embassy of France	n/a		Items received by NDMO include: 8 motorized pumps; 3 generators; jerry can; wood saws; tents; and other materials. Other batch of items provided to FRC
UNDP		140,176	US$80,000 for development of Humanitarian Action Plan (HAP) for immediate term recovery planning
UNFPA	244,651		This includes items worth F$14,277.48 to Fiji Red Cross. Also, F$179,388.22 for media production of response and emergency and F$50,985.37 to MoH (wash kits, water tank, etc). Other donations include more WASH kits and units of Oral Rehydration Therapy packets
UNICEF	182,007		Aid in kind to NDMO
Embassy of Israel	8,000		This is the assistance from the Israeli Government through its Embassy in Canberra. Provided to Ministry of Health.
Total	**5,680,055**	**3,746,056**	

Source: DISMAC

As part of its response and recovery strategy, the Government, through Cabinet Decision 465, endorsed a Humanitarian Action Plan (HAP) through the national cluster system[5] focusing on immediate disaster response and rehabilitation activities for the three months following TC Evan.

In addition to the HAP, the Government of Fiji requested support from the World Bank and SPC-SOPAC to work with relevant line ministries to develop a Post Disaster Needs Assessment (PDNA) to support the Government in the development of a recovery framework, and in doing so ensure that the capacity for future post disaster damage and loss assessment within the Government was strengthened.

The Post Disaster Needs Assessment (PDNA) was conducted between 13th February and 8th March 2013.

[5] A coordination mechanism that brings together key government agencies, stakeholders and partners for each sector.

1.4 THE POST DISASTER NEEDS ASSESSMENT METHODOLOGY

The PDNA is a synthesis of the Damage and Loss Assessment (DaLA) and the human recovery needs assessment templates. The PDNA has gained universal acceptance as the template for assessing net disaster impact. It typically includes a recovery and reconstruction framework that guides the post-disaster recovery strategy. A unique aspect of the PDNA is that it is led and owned by the Government of the affected country and assisted by a multi-disciplinary, multi-agency team in this instance comprising the World Bank, GFDRR, certain UN agencies, the European Commission, the Secretariat of the Pacific Community and other relevant stakeholders.

The PDNA contains:

- Damage, loss, and macro-economic impacts on the affected economy.
- Impacts on livelihoods, incomes, and human development.
- Short, medium, and long-term recovery and reconstruction needs.
- Measures for mainstreaming disaster risk reduction in post-disaster recovery and reconstruction plans.

The core of the methodology, the DaLA, was developed by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC), based on its work in Central America in the early 1970's and the Caribbean in the eighties and nineties[6].

The Conceptual Framework

The core methodology for undertaking an assessment of the effects of a disaster or extreme event is a bottom-up approach, capturing the information about the effects of the event, sector by sector and aggregating this data to arrive at the total effect of the event on the society and the economy. The methodology makes use of the national accounting framework of a country for valuation of the damage and loss and the categorization of the effects.

The effects are described as damage (total or partial destruction of assets) and losses or the subsequent changes to the economic flows of income, as a result of the disaster.

In keeping with the standard definitions in use:

Damage is defined as total or partial destruction of physical assets existing in the affected area. Damage occurs during and immediately after the disaster and is measured in physical units (i.e. square meters of housing, kilometres of roads, etc.). Its monetary value is expressed in terms of replacement costs according to prices prevailing just before the event[7].

Losses are defined as changes in economic flows arising from the disaster. They occur until full economic recovery and reconstruction is achieved, in some cases lasting for several years. Typical losses include the decline in output in productive sectors (agriculture, livestock, fisheries, industry, commerce, tourism)[8].

The task of estimation of the damage and loss is one of the critical components of the assessment methodology. The second critical component is the impact analysis on the economy and the society, which is based largely on the estimate of losses. Its outcome can be used in planning for recovery and reconstruction. The value of damage is used as the basis for estimating reconstruction needs while the value of losses provides the means for estimating the financial needs for economic recovery.

It is important to note that damage and loss have a temporal dimension, damage occurring at the time or immediately after an event and losses occurring from the time of the event for a period that could continue anytime from months to years, when full recovery and reconstruction take place.

The ultimate goal of the assessment is to measure in monetary and social terms the impact of disasters on the society, economy and the environment of the affected country or region and to enable the quantification of the financial needs for economic recovery and reconstruction, with risk reduction.

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[6] The terminology of the Methodology has been changed over time to better reflect the intent of its use. More expansive explanations can be found in the detailed Handbook (Volume 1,2,3,4) published by ECLAC, the SIDS Manual, published by ECLAC/Caribbean Development Corporation Committee (CDCC) and the more recently published, Damage and Loss and Needs Assessment Guidance Notes (Volume 1,2,3) published by (GFDRR) the Global Facility for Disaster Reduction and Recovery, of the World Bank.

[7] Damage, Loss and Needs Assessment: Guidance Notes Volume 2 (2010). The International Bank for Reconstruction and Development/the World Bank. pg. 2.

[8] Ibid.

2.

MACROECONOMIC IMPACT

2.1 Summary of Total Effect

The total economic value of the disaster effects caused by the TC Evan is estimated at around F$194.9 million (US$108.4 million); equivalent to approximately 2.6 percent of Fiji's Gross Domestic Product (GDP), which shows the scale of the cyclone (Table 6).

Table 6 – Summary of Damage and Losses Due To TC Evan.

TOTAL EFFECT					
Sectors	Production Damage Value	Production Loss Value	Total Damage and Loss Effect	Total Damage And loss Effect (USD) 0.5564	Contribution to Total Damage and Loss
Productive Sectors					
Agriculture	6,660,435.50	31,007,228	37,667,664	20,958,288	19.6
Forestry	6,254,000.00		6,254,000	3,479,726	3.3
Hotels & Restaurants	40,000,000	28,157,764	68,157,764	37,922,980	35.5
Commerce	834,371	4,634,856	5,469,227	3,043,078	2.8
Infrastructure Sector					
Transport	5,701,641	4,215,812	9,917,453	5,518,071	5.2
Communication	1,141,000	294,150	1,435,150	798,517	0.7
Electricity	4,300,000	1,455,673	5,755,673	3,202,456	3.0
Water	2,945,000	104,152	3,049,152	1,696,548	1.6
Government Building	421,493	20,000	441,493	245,647	0.2
Housing	46,879,095	3,138,364	50,017,459	27,829,714	26.1
Social Sector					
Health	504,537	359,463	863,999	480,729	0.5
Education	5,887,572	44,190	5,931,762	3,300,432	3.1
Total	**121,529,145**	**73,431,652**	**194,960,796**	**108,476,187**	

Source: Estimates based on official Government of Fiji data.

Of the total cyclone effects, an estimated F$121.5 million corresponds to the value of the destruction or damage to physical assets existing in the affected areas, and an additional F$73.4 million represent losses in the economic flows that are expected to occur over the short to medium term due to the temporary absence of destroyed assets (Figure 5).

Figure 5: Total Damage and Loss Ratio.

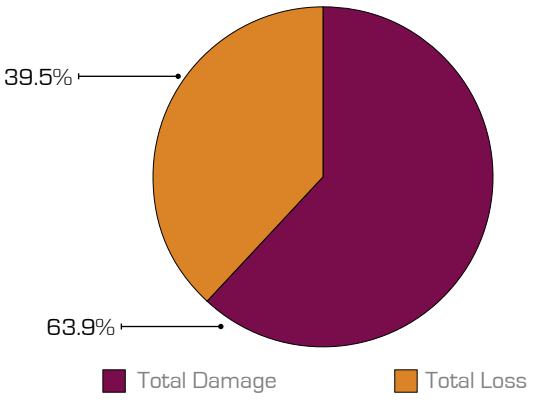
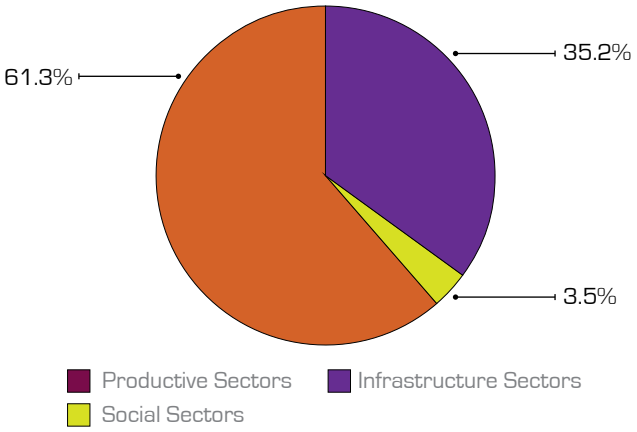


Figure 6: Total Damage and Loss by Sectors.



Source:Estimates based on official Government of Fiji data.

The disaster affected various economic sectors in different ways (Figure 6). The productive sectors (agriculture, forestry, commerce, hotels and restaurant) suffered the second largest volume of damages, but their economic losses accounted for 87.0 percent of the total losses. The infrastructure sectors which includes transport, electricity, communication, government building and housing suffered a total damage and loss of around F$61.3 million and loss of about F$9.2 million. Damages and loss to the social sectors for health and education hovered around F$6.4 million and F$0.4 million, respectively.

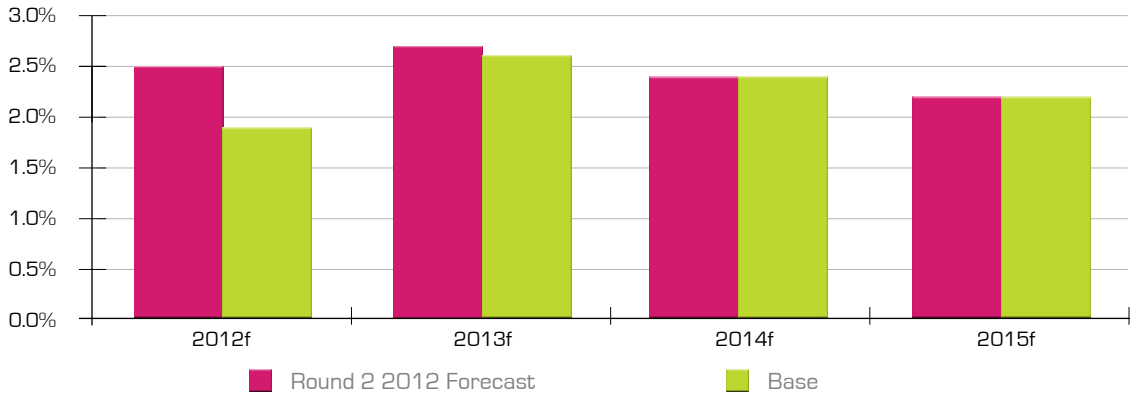
2.2 Pre-Disaster Economic Outlook

Gross Domestic Product (GDP)

During 2007 to 2011, the economy of Fiji grew by an average of 0.2 percent per annum. This relatively low growth rate was largely due to a series of external and internal shocks such as the global financial crisis, high food/fuel prices in 2008 and natural disasters. In October 2012, the Macroeconomic Committee forecast expected Fiji's GDP to grow by 2.5 percent in 2012. This growth was projected to be led by the manufacturing; financial intermediation; wholesale and retail; fishing, public administration and defense and the construction sectors. In 2013, the domestic economy is expected to expand by 2.7 percent led by the agriculture; manufacturing and financial intermediation sectors.

Before assessing the impact of TC Evan, the PDNA Macroeconomic team had to reconsider the October 2012 forecasts by the Macroeconomic Committee to come up with a baseline estimate for 2012 and 2013 taking into consideration data from key industries that was not available during the October 2012 round of forecasting.

Figure 7: Pre-Disaster GDP Forecast for 2012f – 2013f.



Source: Estimates based on official Government of Fiji data.

This was to ensure that the impact of TC Evan could be captured properly, based on the latest data, namely the decline in tourist arrivals and lower-than-expected cane and sugar production and gold extraction in 2012. This led to the adoption of baseline growth projections for GDP in 2012 and 2013 of 1.9 percent and 2.6 percent, respectively[9].

Trade

The trade deficit is expected to have increased by 3.6 percent and 4.2 percent, respectively, in 2011 and 2012. In 2012, exports and imports (excluding aircraft) are projected to grow by 5.4 percent and 4.8 percent, respectively. Exports comprise a few commodities, such as sugar that are vulnerable to adverse conditions in weather. In addition, Fiji is a net importer which means that it is susceptible to price increases in the global market place, particularly global food prices. Other export goods include timber, fish, fruit and vegetables, coconut oil, gold and mineral water.

In 2013, the trade deficit is expected to increase further by 9.1 percent, on account of the expected increase in imports (6.1 percent) mostly due to the import of aircraft planned to occur in 2013. In addition, it is expected that there will be lower than previously expected receipts from gold and timber products. Furthermore, re-exports of petroleum products to Tonga will cease from 2013 onwards as Tonga will import fuel directly from Singapore. On a positive note, fish exports are anticipated to increase in 2013.

Balance of Payments

Prior to TC Evan, Current Account deficit as a percent of GDP has shown overall improvement since 2007, from 12.3 percent to 5.6 percent of GDP in 2012. Import of goods, in particular mineral fuels continued to be the underlying reason behind the current account deficit throughout the period, even though it has been offset by the much improved performance in the services and secondary income account, of which tourism receipts from high visitor arrivals and remittances are the main contributors. This is despite visitor arrivals slowdown in the last quarter of 2012 as recorded by a 4.7 percent and 0.7 percent growth for the month of October and November compared to previous year.

[9] The baseline growth for 2012 and 2013 of 1.9 percent and 2.6 percent, respectively, is an estimate that has not been approved by the Macroeconomic Committee. The Macroeconomic Committee is the official body that carries out GDP, Trade and BOP forecast in Fiji.

2.3 POST DISASTER IMPACT

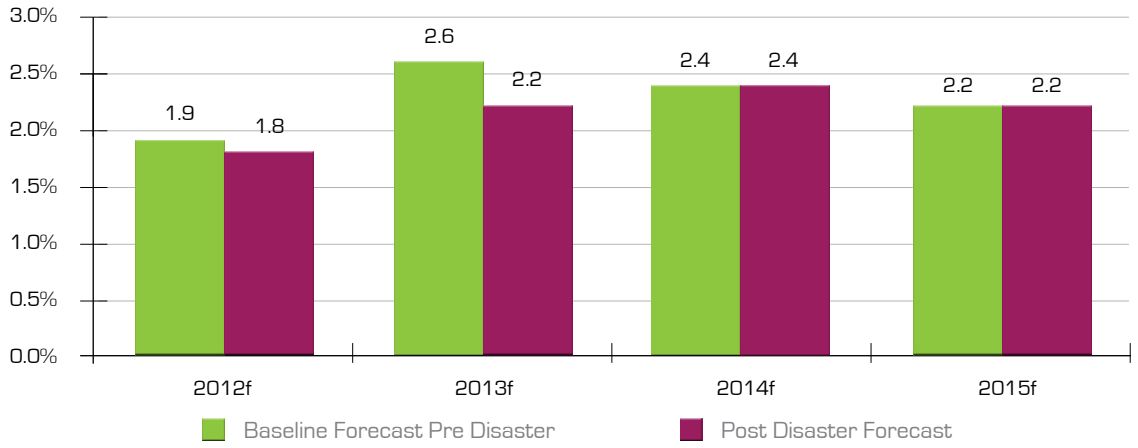
Gross Domestic Product

Following TC Evan, the losses incurred by various sectors were analyzed to establish their overall impact on GDP.

Given that TC Evan struck Fiji at the very end of 2012 when most economic activities/business production for the year had been completed, it is anticipated that the impact of TC Evan on GDP will be felt mainly in 2013.

Overall, the impact of TC Evan in 2012 is expected to decrease the existing GDP forecast by 0.1 percent. This is mainly due to three elements: (a) In the productive sectors – a projected decline in the production of coconuts in the agriculture sector and lower revenues in the hotels and restaurants sector caused by fewer visitor arrivals. (b) In the infrastructure sectors – a slowdown in the communications sector largely due to the high cost of repairs. (c) In the social sectors – a decline in revenue due to service interruption caused by power outages. With regards to sugar cane production, the impact of TC Evan is expected to be felt in 2013 only, as at the time of the cyclone the 2012 crushing season had already ended. In addition, since most of the non-cane crops affected in December 2012 were expected to be harvested in 2013 (assumed 80.0 percent of all damaged crop), the negative impact on the agriculture sector is expected to occur more in 2013.

Figure 8: Post Disaster GDP Forecast 2012f and 2015f.



Source: Estimates based on official Government of Fiji data.

Overall, in 2013, the expected effect of TC Evan is a 0.4 percentage point decline in GDP caused by the adverse impact on cane and non-cane crops. Those commodities expected to decline are sugar cane, coconuts, yaqona, taro, cassava, yams, vegetables and pawpaw. In addition, the manufacturing sector is expected to be impacted by lower sugar production. Nevertheless, given the reconstruction requirements across sectors the construction sector is expected to expand in 2013 (see Figure 8).

In the transport sub-sector, available data on losses from land, water and air transport caused by TC Evan showed a minimal impact on GDP.

While growth in the communication sub-sector is expected to decline, the full extent of the decline is not known due to data limitations[10]. That said, some portion of the decline in the communications sector may be offset by the increase in the volume of calls during the disaster period, as people try to contact their friends and family to establish if they were affected.

The information on the commerce sector showed a minimal impact on GDP, as the losses to stock in the commercial sector were minor according to the information received. Businesses were generally well-prepared as a result of the effective Early Warning Systems (EWS) provided by the Government ahead of the cyclone, which gave them ample time to prepare. The impact of TC Evan on the education, health and housing sectors on GDP is expected be seen in re-construction activity and will therefore be captured by higher activity in the construction sector in 2013.

Trade

The impact on exports is expected to be marginal, as most of the primary products are seasonal crops hence the impact of the damage is anticipated to occur in 2013. Produce for fruit and vegetable exports sustained considerable damage

[10] The assessment does not take into consideration damage and loss to the mobile service providers.

and the impact is anticipated to be realized in the short to medium term. Yaqona plantations sustained damage to the young and matured plants and the impact is anticipated to be realized in the medium term as the plant yields to maturity after four years. In addition, exports of coconut oil are expected to decline in the short term.

An increase in provisional imports is expected through higher imports for food, medicines and other essential goods in the short to medium term. In the short term, a higher food demand is expected due to the loss of locally grown produce. The import of construction materials is expected to increase in 2013 as reconstruction activity begins.

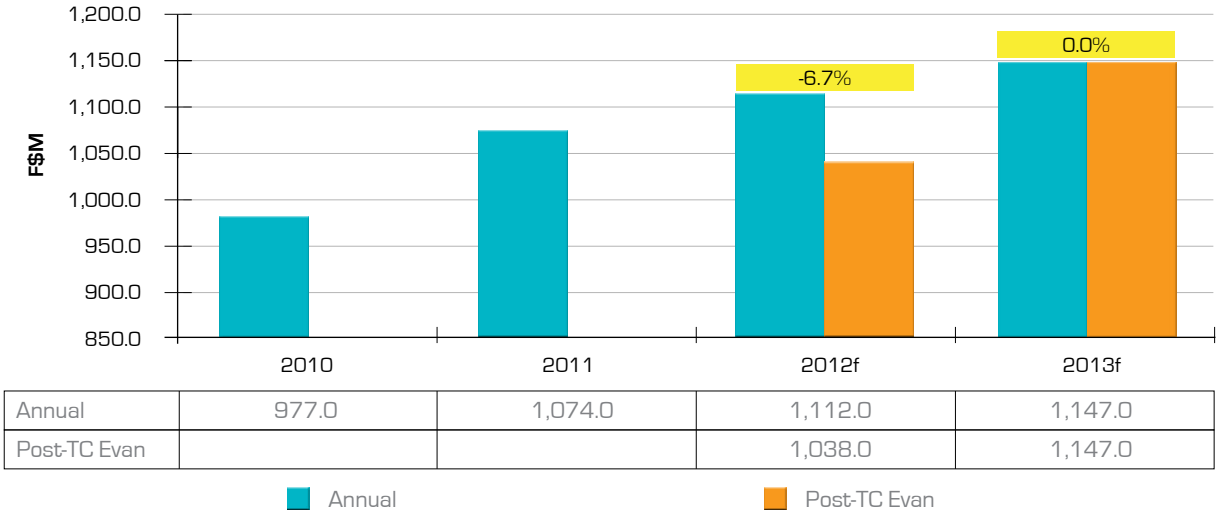
Balance of Payments

The impact of TC Evan on Fiji's Balance of Payment position in 2012 will have no effect on the trade deficit on goods as the cyclone arrived just two weeks before the year end, in addition to the already-ended sugar industry crushing season. The impact will definitely be felt in 2013 with an estimated increase of trade in goods deficit by 1.5 percent driven by the expected decline in exports from sugar, dalo, coconut oil and yaqona (see Table 7).

In addition, import of machineries, equipment and materials for reconstruction is expected to increase for the replacement of infrastructure in the housing, telecommunication and transport sectors. That said, no reliable information was received from Digicel, Vodafone and Fiji Airways for various reasons thus import figures for 2013 may be underestimated. The trade deficit as a percentage of GDP is now estimated to slightly increase in 2013 from 35.3 to 36.2 percent.

Imports on food are estimated to be minimal, as damage and losses sustained from this cyclone were mostly on infrastructure whereas stocks were not severely affected.

Figure 9: Tourism Earnings.



	2010	2011	2012f	2013f
Annual	977.0	1,074.0	1,112.0	1,147.0
Post-TC Evan			1,038.0	1,147.0

Source: Estimates based on official Government of Fiji data.

On the other hand, Fiji's Trade in Services balance is estimated to decline by 9.6 percent as a result of the reduction in tourism earnings. Earnings from tourism are estimated to decline by around 6.7 percent ($74.3 million) (see Figure 9), driven by the lower tourist arrivals due to the closure and delay of flights during and after the cyclone. Losses were also incurred from air transport passengers' fares with around F$20.8 million and freight with about $1.3 million. The tourism industry is expected to recover by the end of 2013.

Overall, Fiji's Current Account deficit for 2012 is estimated to worsen by 21.2 percent driven by the cyclone impact on tourism earnings and passenger fares. That said, the impact for 2013 is likely to be minimal as the tourism industry is expected to recover, despite some setback anticipated from the agriculture exports. Following TC Evan the Current Account deficit, as a percentage of GDP, has increased from 5.6 percent to 6.8 percent for 2012 and 20.9 percent to 21.6 percent for 2013.

Aid-in-kind and cash grants under Secondary Income has been increased by 2.6 percent following TC Evan. The Government has received around F$5.7 million worth of aid-in-kind and about F$4 million cash grants from donors and development partners.

Despite the reduction in visitor arrivals, the impact on foreign reserves is expected to be marginal, according to the Reserve Bank of Fiji. Foreign reserves for 2013 are expected to remain at F$1.5 billion.

Table 7 – Balance of Payments (BOP) F$ million.

	BOP Baseline (F$)		Estimated Losses/Gain (F$)		BOP Post- TC Evan Impact (F$)		Percent Change	
Year	2012 (f)	2013 (f)	2012	2013	2012	2013	2012	2013
Trade in Goods Balance	-1,493.8	-2,737.9	0.0	-39.9	-1,493.8	-2,777.8	0.0	1.5
Exports (FOB)	1,976.2	2,037.5	0.0	-39.9	1,976.2	1,997.6	0.0	-2.0
Imports (FOB)	3,470.0	4,775.4	0.0	0.0	3,470.0	4,775.4	0.0	0.0
Trade In Services Balance	999.9	1,004.2	-96.3	0.0	903.6	1,004.2	-9.6	0.0
Secondary Income Balance	379.8	379.8	9.7	0.0	389.5	379.8	2.6	0.0
Current Account Balance	-408.7	-1,617.1	-86.6	-39.9	-495.3	-1,657.0	21.2	2.5

Source: Macro Sub-Tech Committee.

Fiscal Impact

To date, the Ministry of Finance has reallocated F$7.0 million from the 2012 Budget to finance the identified rehabilitation requirements and the activation of appropriate Standard Liability Group (SLG)[11] accounts (see Table 8). Further rehabilitation requirements will be funded from the 2013 National Budget.

Table 8 – Summary of Rehabilitation Requirements.

Sector/Ministry/ Department	Rehabilitation requirements to be sourced from budgetary reallocation (F$ million)	Details
Agriculture (Non Sugar)	1.0	The funding is to support the rehabilitation and recovery of commercial crop and livestock farmers in the Western Division.
Local Government (Municipalities)	0.2	Funding is needed to support municipalities with the repairs of various sporting complex and other key council infrastructure.
Provincial Development (Rural Housing)	4.0[12]	To support the construction of completely destroyed houses identified under the new Disaster Rehabilitation Housing Policy.
Education	1.3	This is to complement AQEP assistance on the rehabilitation of all schools in Fiji.
Health	0	Rehab of health facilities is covered under the Ministry of Works rehab work program.
Works (Government Quarters)	0.5	This is to cover the repairs of government institutional quarters for police, correctional service, forestry, health and court house.
Total	**7.0**	

Source: DISMAC

2.4 AFFECTED POPULATION AND LABOUR FORCE

The total population enumerated in the 2007 census is around 837,271, with 71 percent of the total population engaged in the labour force (aged 15 years and above). Only 326,988 personnel were considered economically active from the total labour force with an unemployment rate of 8.6 percent. The 2010/11 Employment and Unemployment Survey (EUS) projections for 2012 showed an increase in total population of 862,233 personnel from the 2007 census with 41 percent of the population in the Central Division, 38 percent in the Western Division and 16 percent in the Northern and 5 percent in the Eastern Division.

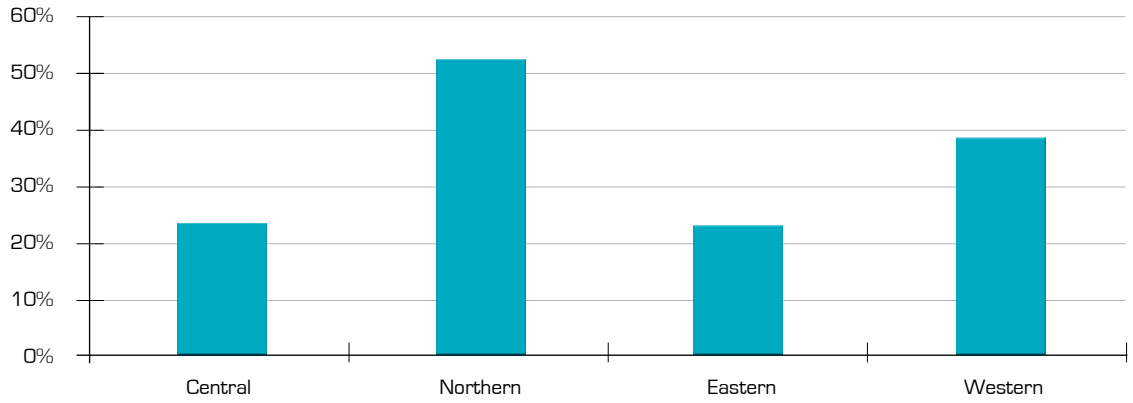
[11] This is appropriated to allow the various ministries to utilize the allocation in the 2013 fiscal (calendar) year.

[12] The F$4.0 million is to complement the F$1.0 million already set aside for Housing Rehabilitation for TC Evan from the Prime Minister's Trust Fund Account. Total allocation for housing rehabilitation will be F$5.0 million.

Affected Population

Approximately 60 percent of the total population were affected in the post-disaster period. The Northern Division recorded the highest percentage of population affected at around 52 percent of the population, followed by the Western Division at 38 percent and 23 percent for the Central and Eastern divisions (see Figure 10).

Figure 10: Proportion of Divisional Population Affected.



Source: Estimates based on official Government of Fiji data.

Affected Population by the Extent of Severity of Effect

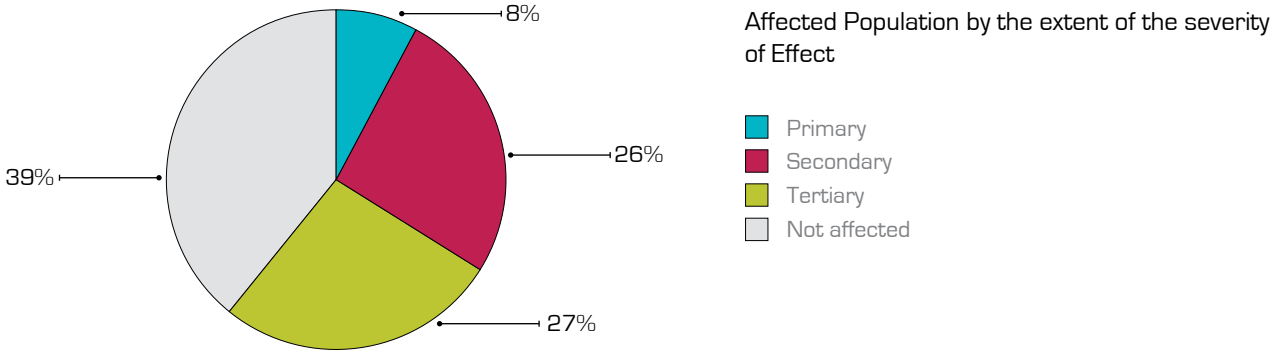
To determine the actual consequence of the cyclone to the population affected, assessments were undertaken into three main categories of impact and are clarified as follows:

(i) Primary Affected – includes those persons living in the affected areas whose assets have been destroyed; as well as dead and ill persons.

(ii) Secondary Affected – includes persons living in the affected area that have sustained losses in production and income.

(iii) Tertiary Affected – those persons living outside of the affected areas that are sustaining higher costs of services as a result of the cyclone (Transport, Water, Sanitation and Electricity). Note that each category of affected population will have different kinds of needs to achieve recovery and reconstruction after the disaster.

Figure 11: Primary, Secondary & Tertiary Affected Population.



Source: Estimates based on official Government of Fiji data.

The population in the Western Division was the most affected in terms of those that were primary and secondary affected. Major areas affected included dwelling houses, livelihoods and agriculture production. About 1.2 percent of those primarily affected experienced destruction to dwelling houses and 6.3 percent are farmers who lost their source of livelihoods. This has increased to 26 percent for those that are secondarily affected when taking into account the loss in agricultural production and personal income (see Figure 11).

Approximately 27 percent of the population was considered as tertiary affected. While the majority of the population that were primarily and secondarily affected were in the Western Division, the Northern Division recorded the highest percentage at 12.1 that were tertiary affected. These are the personnel that have sustained higher cost of services, products or who suffered inconveniences such as inability to get to work or prolonged power outage.

Impact of Disaster on Personal Income and Employment

Frequent or repeated disaster events hinder employment and personal income recovery. For the purpose of this report, the impact assessment on employment and personal income was conducted in the aftermath of TC Evan for the PDNA exercise. Preliminary results show minimal effects on the economy from TC Evan, creating only a 0.1 percent of loss to the overall GDP, for 2012. Correspondingly, employment was not largely affected as it is assumed that wage and salary earners were continuously remunerated during the post-disaster period but may have been affected in terms of income loss for personal recovery and reconstruction.

Pre-Disaster Situation

The labour market is driven by the main productive sectors and it also creates and generates employment for the majority of the population. The recent 2010/11 Employment and Unemployment Survey (EUS) shows that 46.4 percent of the total population were engaged in formal sector employment. Distribution by gender notes that about 63 percent of those employed were males and 37 percent were females. Females dominated employment in the fishing, education, health and the social sectors. Table 9 provides a summary on the employment statistics by sectors.

Table 9 – Employment by Economic Sectors.

Industry Group	Male	Female	Total
Agriculture & Forestry	104,343	53,431	157,774
Fishing	8,451	13,094	21,545
Mining	1,362	193	1,555
Quarrying	407	54	462
Manufacturing	20,003	17,695	37,697
Electricity, Gas & Water	2,665	182	2,847
Construction	15,322	444	15,766
Wholesale & Retail	22,809	17,271	40,080
Hotel & Restaurant	11,621	8,864	20,485
Transport Storage & Communication	20,260	2,667	22,928
Financial Intermediation	2,900	2,607	5,507
Real Estate, Renting & Business Activity	5,609	2,704	8,313
Public Administration & Defence	16,657	5,392	22,050
Education	7,485	8,386	15,871
Health & Social Worker	2,436	3,471	5,907
Other Community, Social & Personnel Services	5,259	3,980	9,239
Private Households as Employer	2,298	6,840	9,138
Extra-Territorial Organisation	599	894	1,493
TOTAL	**250,487**	**148,171**	**398,658**

Source: Employment & Unemployment Survey 2010–2011. Provisional Release Fiji Bureau of Statistics.

The agriculture and forestry sector accounts for approximately 40 percent of total employment in the productive sectors. This is followed by the Wholesale/Retail Trade and the Manufacturing sectors.

Post-Disaster Situation

Given the extent of damage sustained by each economic sector, total income loss for wage and salary earners is around F$9.6 million for one day. This is based on the amount of foregone earnings from one day where workers remained at home as advised by the authorities. It is also assumed that if the cyclone lasted for a week, total income loss would have been around F$48.1 million for all reprieved employees (Table 10).

Table 10 – Estimation of Disaster Impact on Income (F$).

	Agriculture/ Fisheries & Forestry	Electricity Gas & Water	Commerce (Wholesale/ Retail/Hotel & Restaurant	Transport, Storage & Communication	Social/ Service Sector	Total income Loss (1 Day)	Total income Loss (1 week)
GDP By Sectors	408,824,010	66,015,900	272,261,976	677,976,270	644,175,105	9,633,405	48,167,025
Post Disaster Losses (Production Losses)	408,759,726	66,015,900	269,879,342	677,701,649	644,175,105		
Ratio of Post Disaster Losses	1	1	1	1	1		
Total Employed	179,319	2,847	66,072	22,927	63,697		
Reduction in Employment	179,291	2,847	65,494	22,918	63,697		
Average Wages	29.91	33.58	26	31	27		
Income Loss (F$)	5,362,588	95,602	1,721,177	713,199	1,740,839		

Source: Estimates based on official Government of Fiji data.

Employees in the agriculture sector have the highest income loss of F$5.3 million which accounts for 55.6 percent of the total income lost. Most damage and loss in the agriculture sector was comprised of destroyed produce in the Western and Northern divisions. To address this, the Ministry of Agriculture distributed seedlings to farmers and those in the subsistence sector as a form of assistance. The Social and Services sector, which includes education, health and the social workers, experienced significant loss in income. Damage and loss in this sector accounted for 18 percent of foregone income. Overall, men engaged in the productive sectors have experienced a higher level of income loss than women. Approximately F$6 million, or 62 percent of total income lost, was attributed to males, the prime earner of the family.

Social Dimension

The future of employment in the subsistence sector depends on the recovery measures undertaken by government and other stakeholders to rebuild confidence for the community. In the short run, limited Cash-for-Work activities are being planned (as of writing) in collaboration with relevant international partners. The Government's initiative for the distribution of seedlings ensures that short-term crops are harvested to address daily livelihoods, while providing a source of income for the subsistence community.

2.5 Social Impact Assessment

Methodology

To highlight disaster impacts on communities, households and individuals, a Social Impact Assessment (SIA) was conducted using qualitative research (focus group discussions, key informant interviews, researcher observations and rapid questionnaires for businesses) from eight affected sites in the Western Division. The research focused on key social issues related to livelihoods, social cohesion and traditional social safety nets, shelter and access to social services. The outputs of the SIA provide recommendations for recovery and reconstruction related to restoring and strengthening social dimensions and the needs of communities and households.

Livelihoods and Livelihoods Impacts

"We go fishing and crabbing more, we have started eeling, which we didn't do and we have planted more with material that came from what we found in the mud just after the cyclone. We eat sparingly because we want to make sure we have enough for a few more days. We are doing the best we can with what we have."

Female, Tagitagi settlement, Tavua.

The three community groupings visited by the SIA field team lead subsistence livelihoods in remote locations. Firstly, livelihoods on Wayasewa and Waya islands in the Yasawa Group consist primarily of subsistence agriculture and fishing with some income supplementation from community tourism. The second group grew vegetables and pawpaw for export and local sale in the Sigatoka Valley and Sabeto areas. The third group lived on a mix of sugar cane and vegetables farming outside of Tavua, supplementing peri-urban farming with fishing. Although there is some variation

within these communities, average livelihoods characteristics in these areas are described below and the challenges they faced after TC Evan.

The impact of TC Evan on the livelihoods of residents in Wayasewa and Waya was significant. Respondents indicated that 80-95 percent of plantation crops were lost in the cyclone. Fishing has increased in importance as a source of food, though it has become more difficult as some residents lost nets, spears and boats in the storm. The cost of fuel has increased and income to pay for fuel has decreased. Income from community tourism sites was already lower than normal (down approximately 60 percent since July 2012; and December to February is low season), but the damage done during the cyclone exacerbated this even further, causing one resort visited to close fully for more than eight weeks for repairs and re-routing meagre resort profits towards damage repair rather than wages. In response, the community and staff worked together to clear debris and fix buildings, to the degree possible, working one week for pay, one week for free in rotation. This has severely impacted the only steady source of income for islanders, reducing all opportunities to sell small crafts and shells to tourists and fish and produce to the kitchens, as well as reducing the amount of regular staff wages that are injected into the community. One respondent said "Right now we will try to catch and sell fish to the resort if there are orders, but otherwise there is nothing." The combination of significantly reduced income, increased cost and opportunity to access mainland markets – which are difficult to access in normal times – as well as little to no plantation produce, inspire concern for the food security of affected residents in outer islands.

A less populous but important group of residents in these vegetable producing areas are farm labourers, who are an integral part of the farming community and considered to be among the poorest. This group is exclusively dependent on the availability of farm work for their livelihood and are from outside the area. They are paid both in cash and in kind from farm produce.

In the Sigatoka Valley and the Sabeto area, TC Evan damaged around 80 percent of crops[13]. Some farmers are now grappling with an import ban from New Zealand (major market for eggplant, one of their top export items). Farm labourers have seen a reduction in income, as farmers cannot afford to hire labourers due to limited cash flow and the cost of re-establishing their farms after TC Evan. One farmer mentioned that he gives food to his labourers – whom he has not hired recently – every day because they have no work and little to eat. In contrast, most farmers have some remaining home-grown produce to contribute to household food needs until vegetables are ready to harvest.

Food Security and Food Rations

"My husband and I have reduced our food intake , eating only two meals a day and our grandchildren eat three times a day"

Female, Tavua village, peri-urban.

Normal food sources have been heavily damaged in many affected areas, as consumption of home grown produce is common. Daily dietary requirements are provided by subsistence fishing and farming. At times this is supplemented by purchasing lower quality foods such as tinned fruit, bread and biscuits. Finally, households on the Yasawa islands are struggling, given the almost complete devastation to their subsistence farms, their very limited and costly access to markets, and minimal opportunities for alternative income earning opportunities.

For future reference, where appropriate and cost effective it may be worth considering the use of a cash transfer instead of food rations for post-disaster government assistance, in addition to or instead of food rations. Such assistance could be given through the existing social welfare schemes that have the required infrastructure for cash transfers. In developing an appropriate design for Fiji, a variety of mechanisms for targeting methods, appropriate cash transfer rates, monitoring and evaluation, etc. can be drawn upon from international best-practices.

Livelihoods Coping Strategies

"After the cyclone, I was only able to save around $100 and could not afford to pay for all my [three] children's school fees, as we had to spend a lot of money buying food instead of eating the cassava that my husband plants"

Female, Namara Village, Wayasewa Island, Yasawa Group.

Although a small number of respondents had considered taking a loan for post-cyclone recovery, many were reluctant to do so because of the perceived difficulties in fulfilling repayment obligations. The exceptions to this were households that had larger farms, and those that produced for export. The commerce sector assessment indicates that only 35 percent of businesses (including micro-enterprises and small vendors) were in debt because of TC Evan. Though loans were found to be uncommon, there was some indication that those with family overseas may receive remittances.

[13] According to the agriculture survey of this PDNA.

Social Cohesion and Safety Nets

"With us, when we face challenges like this it brings us together."
Male, Namara village, Wayasewa Island, Yasawa Group.

There was evidence of strong levels of social cohesion in the communities, particularly in supporting the most vulnerable member. Volunteers, comprised mostly of youth groups, were involved in cleanup activities and reconstruction, improving water flow at river banks. The vast majority of residents expressed that the disaster brought people together and community solidarity was strong.

The elderly, young children, pregnant women and disabled were widely considered to be the most vulnerable groups, but were cared for by families and communities during and after the disaster. This largely reflects the strong communal cohesion that ensures the safety and welfare of vulnerable groups in these close-knit communities. Many respondents noted that the vulnerable category also encompassed those who sustained severe property damage and livelihood losses; farm laborers were mentioned repeatedly as amongst the most vulnerable.

While no significant behavioral changes were observed in community relationships there are reports of psychological trauma as a result of the cyclone, though this area was not fully explored.

Government safety nets for the poorest in the aftermath of a disaster require some additional consideration and development. An adequate response plan should ensure assistance for the poorest and most vulnerable after a disaster, to prevent these households from falling further into poverty. In future disasters, cash-for-work activities could be considered as a means of providing income earning opportunities to households that are poor or at risk of falling into poverty, and who are able to work. Such programs should be simple, targeted and based on the experiences of current cash-for-work programs. Additionally, individuals and households currently benefitting from social welfare assistance could be considered for additional, temporary social welfare benefits to help them deal with the costs of disaster recovery.

Shelter and Access to Services

"There was roofing iron scattered all over the place, rolled up like pandanus leaves ready for weaving."
Female, Namara village, Wayasewa Island, Yasawa Group.

The social impact assessment confirmed the findings highlighted in the Housing Sector damage and loss section o this report. Many respondents highlighted their desire to rebuild their homes using more disaster-resilient construction materials, but this is largely subject to availability of financial support. A large proportion of respondents, particularly those in rural areas and on freehold land, expressed no intention of relocating. This may be due to a combination of factors including the costs involved, the cultural affiliation to their ancestral lands, and existing community cohesion. The lack of skills for employment was also mentioned as a limiting factor in considering alternative forms of livelihood. Consequently, respondents did not consider resettlement in the medium term, with the exception of a few households who resided near a riverbank that was prone to flood during heavy rainfall.

Education services were re-established in time for the start of the school year, with minimal disruption to services. Given the high number of schools which sustained damage, the government prioritized the rehabilitation of damaged schools to ensure all students would return by the scheduled start date. Respondents also indicated that segregated toilets and clean drinking water were available in the schools following the storm. Access to education for some struggling households was found to be a concern, as some parents were worried about paying school fees and other associated education costs, while struggling to pay for the reconstruction of their houses, reinvest in livelihoods and buy food.

Summary of Key findings

- Food security and income earning opportunities are a key concern for two groups: 1) farm labourers, who generally do not produce their own food and have little work in the immediate aftermath of the disaster; and 2) residents of the Yasawa islands, whose produce were devastated in the storm and have extremely limited access to income earning opportunities and markets to purchase food.
- Social cohesion was found to be strong in all areas visited. Community groups, specifically youths, worked together for days and weeks to clear debris, and rebuild homes and community assets. Traditional safety nets, though intact and functioning, have been stretched to capacity as whole communities struggle to recover.
- While livelihoods have been heavily impacted in the Western Division, the majority of households are making strong strides towards recovery, given the provision of basic food rations. Partial recovery is expected in three to four months time with the harvest of short-cycle crops, and full recovery is expected only when long-cycle crops can be harvested around September.

- Access to utilities and services was restored relatively quickly and left few lasting impacts on the majority of livelihoods and households. That said, access to education for some affected households has been impacted because of a reduction in food and income. Consequently, this has affected the ability of some parents to send some of their children back to school.
- In future, the provision of food rations may be considered for replacement by cash transfers by both development partners and government. Such transfers should benefit both the authorities and beneficiaries alike through lower administration costs; greater flexibility for affected households; and market support in affected areas through the cash spent.
- Poor and vulnerable households should be given special consideration for future disaster response planning. This could include targeted cash-for-work programs, or top ups to existing social welfare benefits.

Table 11 – Recovery Recommendations.

Activity	Value	Executing Agency	Comments
Additional food rations for the Yasawa islands	F$496,906	Ministry of Agriculture and HAP Food Security and Livelihoods Cluster	This is a two month top up to affected households in the Yasawa islands. Two months worth of food ration have already been planned[14]; this additional two is required to see residents through to June when food can be harvested. This is important for the Yasawa islanders where access to markets and additional livelihoods opportunities are limited.
Top up to Social Welfare budget to accommodate poor, affected households	F$502,110	Ministry of Social Welfare	This amount would provide a top up to the social welfare budget to include an additional 5,185 beneficiaries for 3-4 months for poor, affected households in the Western, Northern and Eastern divisions. For future planning, a separate budget line could be established to ensure that contingency funds are planned for and set aside, or to receive donor funds.
Explore cash transfers as post-disaster, rapid response mechanism	None	Ministry of Social Welfare and/or NDMO	Switching to cash transfers, rather than food ration distribution has a range of benefits for the government and beneficiaries. A system exists through the Social Welfare scheme to deliver such benefits. Through the current social protection reform, including this as an option for social welfare transfers should be explored. For consideration in the short term with implications in the medium to long term.
Explore options for supporting the poorest and most vulnerable affected households after future disasters	None	Ministry of Social Welfare, Ministry of Agriculture, Ministry of Labour, Industrial Relations and Employment	Cash for work can be used effectively as a post-disaster cleanup option that injects cash into the pockets of the most affected, those with fewer coping strategies or the poorest and most affected. Learning lessons from this experience can build capacity to implement immediately after a future disaster. Additional transfer to existing social welfare beneficiaries could also be considered. For consideration in the short term with implications in the medium to long term.
Total cost	**F$999,016**		

Source: Estimates based on official Government of Fiji data.

[14] The amount referenced here is part of a F$1.32 million proposal from ADRA to NZ Aid and ECHO. At the time of writing (4 March 2013) only the NZ Aid portion of funding had been approved, but indications were strong that the ECHO funding would come through in the next week. If this is not received then this will have to be taken into consideration in mobilizing funding for Yasawa islanders and other Western Division affected households.

3.

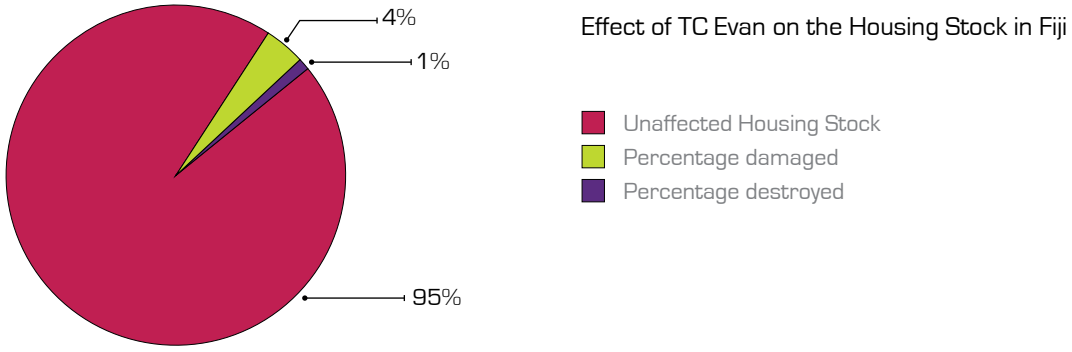
DAMAGE AND LOSS

3.1 HOUSING SECTOR

Summary

TC Evan affected approximately 5 percent of the housing stock in Fiji, see Figure 12. The total number of houses affected according to data provided by the NDMO was 8,497, of which 2,094 were totally destroyed while the remaining 6,403 suffered some degree of damage. The total value of damage and loss identified for the housing sector has been estimated at just over F$50 million. This includes assessment for partially damaged and completely destroyed houses, together with damage to household contents and associated costs due to estimated demolition and rental losses.

Figure 12: Effect of TC Evan on the Housing Stock.



Source: Estimates based on official Government of Fiji data.

The Government of Fiji is committed to ensuring improvement in the housing conditions of the people and regards this initiative as a "national development priority to provide equitable access to adequate, quality and affordable accommodation for all citizens". The key initiatives implemented since 2007 include the development of the National Housing Policy, integrated agriculture squatter resettlement, city wide upgrading project, and the continuation of on-going programs such as the squatter resettlement program and Housing Assistance and Relief Trust (HART) support initiative.

An important conclusion from the assessment has been the need to provide home owners with further training to ensure better understanding of basic techniques for strengthening houses to weather the effects of cyclones, such as for example strapping down the structure to withstand high winds.

There is an identified need for the provision of additional financial assistance for those who have sustained significant damages to their dwellings or who have lost their houses and are unable to access sufficient resources for repair or recovery.

Pre-Disaster Situation

The 2007 National Census data on housing shows that 93 percent or 173,457 of the total households surveyed had their homes situated on land with secure tenure. Of these, a total of 109,849 households are on freehold land, state land and iTaukei Lands Trust Board (TLTB) leased land. Village housing accounts for 29 percent of total households and is secure in terms of communal ownership.

Growth in squatter settlements in Fiji has remained a critical challenge for Government. The 2007 Census reports that around 7 percent of the households surveyed live in over two hundred (200) squatter settlements around the country. The Central Division has the highest concentration with 56 percent of the households living in squatter settlements, followed by the Western Division (34 percent), Northern Division (9 percent) and the Eastern Division (1 percent).

TC Evan has resulted in effects on three of the five divisions of the country and a total of seven provinces, as identified in Table 12. Housing in the districts within the seven affected provinces is reported as adequate in terms of structure and essential public utility services such as water and electricity. The three most common categories of construction materials of houses (98,540) in the affected provinces are 'Tin or corrugated iron' (36 percent), 'Concrete' (35 percent), and 'Wood' (26 percent).

Table 12 – Pre-Disaster Situation by Category of House Type, Division and Province.

	Western			Northern			Eastern	
Make	Ba	Nadroga/ Navosa	Ra	Bua	Macuata	Cakaudrove	Kadavu	Total
Concrete	23,041	5,362	1,520	169	2,262	1,438	642	**34,434**
Wood	7,696	1,443	967	898	7,970	5,394	875	**25,243**
Tin or iron	17,599	4,711	3,128	1,729	4,862	2,623	667	**35,319**
Bure materials	670	422	403	136	174	342	45	**2,192**
Makeshift material	291	115	88	30	90	133	5	**752**
Other materials	167	101	78	32	141	79	2	**600**
	49,464	**12,154**	**6,184**	**2,994**	**15,499**	**10,009**	**2,236**	**98,540**
Totals	**67,802**			**28,502**			**2,236**	**98,540**

Source: Fiji Bureau of Statistics, Population Census 2007.

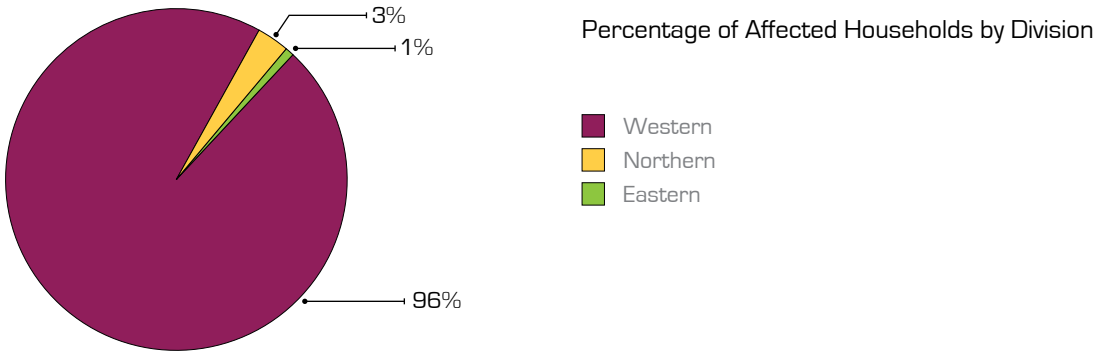
The data suggests that the majority of tin and corrugated iron roofing dwellings may have been constructed by the home owners themselves, especially those in the farming areas of Ba and Ra provinces. The purchase of housing insurance is not considered widely available to non-certified home builders.

Post-Disaster Situation

Data for the number of houses destroyed was provided by the NDMO on the basis of reports from the Commissioner Western and Commissioner Northern. This data is from the Initial Damage Assessment following the cyclone and indicates that a total of 8,497[15] houses (representing approximately 5 percent of the country's housing stock) were damaged, 2,094 houses were completely destroyed while 6,403 were partially damaged.

Figure 13 shows that the Western Division bore almost the full brunt of the cyclone, representing 96 percent of the total affected households.

Figure 13: Percentage of Affected Households by Division.



Source: Estimates based on official Government of Fiji data.

Damage to the housing sector was estimated in relation to the number of housing units that were either partially or completely destroyed and the value of replacing the household goods that were destroyed in the cyclone (see Table 13).

Table 13 – Summary of Damage and Loss in the Housing Sector.

Components of Assessment	Damage (F$)	Loss (F$)	Total Effect (F$)	Ownership by Sector	
				Private (F$)	Public (F$)
Value of Houses Totally Destroyed	28,716,389		28,716,389	26,762,197	1,954,192
Value of Houses Partially Damaged	11,035,342		11,035,342	10,284,371	750,971
Value of Contents of Households Destroyed and Damaged	7,127,364		7,127,364	6,642,336	485,027

[15] These estimates are based on data collected by the NDMO, relevant line ministries, and local/divisional authorities

Components of Assessment	Damage (F$)	Loss (F$)	Total Effect (F$)	Ownership by Sector	
				Private (F$)	Public (F$)
Value of demolition and removal of rubble		281,097	281,097	261,968	19,129
Rental Loss		2,857,267	2,857,267	2,000,846	856,421
Total	**46,879,095**	**3,138,364**	**50,017,458**	**45,951,718**	**4,065,740**

Source: Estimates based on official Government of Fiji data.

Estimations on the value of houses that were totally destroyed are based on the following information and assumptions:

- The distribution of the different types of dwellings within the affected provinces (information drawn from the most recent Population Census, as noted above).
- An estimate of the probability that dwellings with different construction materials would be totally destroyed by the cyclone (very low likelihood for concrete dwellings and very high for dwellings made of makeshift materials).
- Estimated average size of each type of dwelling together with an associated replacement cost per square metre[16].

The estimated cost of repair for partially damaged houses was based on advice received from the Western and Northern divisions regarding the average cost of repair identified from the assessment surveys[17].

It should be highlighted that the estimation of value for fully destroyed or partially destroyed housing was problematic, and points to the need to review the current methodology used for collecting data in the initial damage assessments, especially with regard to the effects of an event on houses and accompanying assets.

Social Dimension

The following social dimensions relating to the housing sector have been identified from the review of the social impact survey:

- The Western and Northern divisions account for a combined 43 percent of households living in squatter areas. Since 2007, this proportion may have significantly increased due to expiry of land leases, declining performance of the agriculture sector (in particular the sugar industry), shrinking informal sector employment, and rural to urban migration. The standard of living and quality of life for informal settlers is of considerable concern to Government.
- Many affected households have arranged their own repairs through voluntary involvement of family and local communities, instead of deferring the repair works until the arrival of some form of government or civil society assistance.
- Extensive damage was inflicted on housing constructed with tin or corrugated iron, bure, makeshift, and other materials.
- Many affected households are seeking additional advice on how to make their houses and communities stronger and more disaster resilient.
- Many communities would be eager to receive additional support in their disaster preparedness planning.
- Most people surveyed did not consider relocation of their house as a viable option for mitigation against disaster.
- A number of families have received financial assistance from friends and family overseas to assist in the completion of repair works.
- A number of affected households perceive that the cost of building and hardware materials has increased following the cyclone. As a result they have deferred repairs until the prices of building and hardware materials return to normal.

[16] Estimated replacement cost of dwellings, according to type of dwelling, varied from approximately $30 per square metre for makeshift materials, to $1100 per square metre for concrete construction.

[17] The average cost of repair per house, excluding Bure and Makeshift type houses, was estimated as approximately $1,700 based on data received from the Western and Northern divisions.

Recovery and Reconstruction

This section presents a number of interventions for recovery and reconstruction in the housing sector.

Recovery

Table 14 – Recovery Needs for the Housing Sector.

Sub-Program	Value (F$)	Executing Agency	Remarks
Initial Repairs to partially damaged houses			Traditionally, following a disaster people in Fiji help themselves with the assistance of family/community (either those at home or abroad with cash remittances) in arranging urgent repairs to houses/shelters. This method of self help and good traditions of strong social capital should be recognized and encouraged by the respective authorities/bodies.
Fiji National Provident Fund		FNPF	Qualifying homeowners are able to access up to $1000 from the Fiji National Provident Fund to assist recovery from the cyclone. The total that has been accessed to respond to the cyclone impacts at the time of the assessment has not yet been identified.
Fiji Building Code		MoH	The Fijian Building Code predominantly applys to permanent structures for purposes of insurance. The code is not applicable to less permanent structures that are most common in rural areas and villages as well as in squatter/informal settlements that make up the majority of the nation's residential units. The current review of the Building Code needs to be finalized as soon as possible to allow more relevant provisions to be applied.
Training for people in completing house repairs effectively	0.5 million	MLGHUDE/ MRMDNDM	"Tips to Build Back Safer" posters have recently been prepared to assist better understanding of basics for better repairs and strengthening of houses. This poster/ campaign needs to be implemented widely including provision of training in villages, communities and settlements. Implementation is required urgently as many people are currently in the process of carrying out their own repairs.
Provision of more resilient transitional shelters in informal areas		MLGHUDE	A design for construction of transitional shelters for informal settlements has been prepared by the Shelter Cluster* for implementation within the informal settlements. This design provides for a more robust, resilient, affordable transitional dwelling and wide adoption of the standard throughout the country (for both formal and informal areas) is recommended.

* Shelter Cluster, one of 8 national clusters established under the Fiji National DRM Arrangements, see Chapter 5.

Table 14 identifies a number of issues for recovery as a result of the completed housing assessments and review of the results from the recent social impact survey:

- A recommended priority intervention is the proposal for wide dissemination of the “build back safer” poster, together with training of local people to enable them to implement the messages in the poster.
- A further priority action is the need to respond to housing damage within the informal settlements. An important initiative recently implemented by the Government is the development of a Memorandum of Understanding that will allow a number of NGOs to carry out repairs and erection of transitional shelters within the informal areas.This will allow an effective shelter response for many of the nation’s most vulnerable people.
- A further critical need for improvement in the resilience of the housing sector is the revision and subsequent enforcement of a building code that can be effectively applied throughout the country.

Reconstruction

Table 15: Reconstruction Needs for the Housing Sector.

Sub-Program	Value (F$)	Executing Agency	Remarks
Repair of partially damaged houses to an improved standard of resilience	12.14 million	MLGHUDE/ MRMDNDM	F$5 million from Government has been made available to qualified applicants under the Disaster Rehabilitation Housing Assistance Policy. This funding is targeted for repairs to partially damaged houses as well as to completely destroyed houses. If the F$5 million was applied only to the repair of partially damaged houses, there would still be an outstanding value of F$7.14 million. This could potentially be allocated by Government over the next fiscal period to allow repair of all damages, but would still leave the replacement of completely damaged houses unfunded. To verify requirements for additional funding, a further assessment of the need for repairs should be completed, given that many households have already carried out their own repairs.

Sub-Program	Value (F$)	Executing Agency	Remarks
			Prioritization may be considered for groups in the more remote islands where there is a combination of increased cost for materials and potentially lower income earning opportunities.
Replacement of Completely Damaged Houses (Tin, Iron, Bure and Makeshift materials) to a more improved resilient standard	16.20 million	MLGHUDE/ MRMDNDM	Houses constructed of metal and bure or makeshift materials were most at risk of being destroyed by cyclone. Those people who lost their houses in this group have an increased need of housing assistance since they are generally lower income earners. Mechanisms for provision of financial assistance (both cash and in-kind) to these groups should be considered as a high priority. As noted above, completely damaged houses may also qualify for funding under the Government's Disaster Rehabilitation Policy.
Replacement of Completely Damaged Houses (Concrete and Wooden materials) to a more improved resilient standard	15.38 million	MLGHUDE/ MRMDNDM	Houses constructed of concrete and Ttimber materials were more resilient to cyclone damage. Some of the damage in this group may be funded through insurance coverage. For the remainder, consideration may be given to a low cost loan mechanisms. As noted above, completely damaged houses may also qualify for funding under the Government's Disaster Rehabilitation Policy.
Replacement of household contents destroyed and damaged	7.17 million		Some relief from the damage to personal household contents may have been provided through the emergency distribution of non-food items during the initial response. This would potentially represent only a small proportion of the overall loss, leaving a significant gap in replacement options. One measure could be to encourage families to utilize existing micro-credit facilities.

The values for repair of partially damaged houses and for replacement of completely destroyed houses as shown in Table 15 reflect the costs estimated for damage together with an allowance of an additional 10 percent for a "building back better" component.

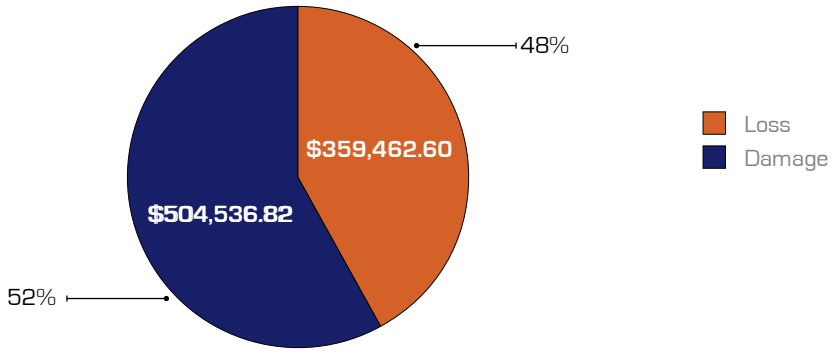
Government has introduced the 'Disaster Rehabilitation Housing Assistance Policy' to assist qualifying applicants in carrying out post-cyclone repairs and reconstruction. The policy benefits all Fijians who have sustained damage or lost their homes following the recent cyclone, provided their joint income does not exceed F$20,000. Assistance extends to homes located within village boundaries and recognized informal settlements around the country.

3.2 Health Sector

Summary

The health sector sustained minor damage and loss to health facilities in the Western and Northern divisions. The total effect of TC Evan on the health sector was estimated to be approximately F$0.8 million (see Figure 14). The brunt of the damage was experienced in the Western Division with 84.8 percent of total damage followed by the Northern Division with 12.4 percent and the Central Division with 2.2 percent.

Figure 14: Total Damage & Loss for the Health Sector.



Source: Estimates based on official Government of Fiji data.

The Eastern Division did not report any incidence of damage to health facilities. In terms of Loss, approximately F$0.3 million was recorded and F$1 million estimated for recovery and reconstruction needs.

Pre-Disaster Situation

There are approximately 212 health facilities in Fiji (see Table 16) comprising nursing stations, health centres, divisional hospitals and major hospitals distributed widely across all the four divisions. Most of the health facilities are located in the Western Division at around 29 percent, followed by the Eastern Division with 26 percent.

Table 16 – Total Health Facilities.

Divisions	Population	Nursing Station	Health Centre	Sub-Divisional Hospitals	Divisional Hospitals	Specialist Hospitals	Private Hospitals	Total by division
North	352,594	20	19	3	1	0	0	**43**
Western	140,015	29	25	6	1	0	1	**62**
Central	40,485	21	20	5	1	2	2	**51**
Eastern	329,140	35	15	6	0	0	0	**56**
Total	**862,233**	**105**	**179**	**20**	**3**	**2**	**3**	**212**

Source: Ministry of Health and FBOS.

The Ministry of Health via its existing health facilities provides service to around 862,233 people, with the majority in the Western Division comprising 40 percent of the total population. Around 39 percent of the population relies on health services in the Central Division, with 15 percent in the Northern Division and about 4 percent in the Eastern Division.

Post-Disaster Situation

Damage

The Western Division experienced the highest level of damage with an estimated cost of F$0.5 million, which is close to 58.4 percent of the total effect of the cyclone (see Table 17). Damage to health facilities hovered around F$0.3 million, which is approximately 68.3 percent of total damage. This includes minor damage to medical quarters, electrical infrastructure, furniture and equipment.

Table 17 – Impact of Disaster to the Health Sector.

Components of Assessment	Damage (F$)	Loss (F$)	Total Effect (F$)	Public
Value of Health Facilities with Minor Damages	118,900.00	-	118,900.00	**All Public**
Value of Health Facilities with Major Damages	225,636.82	-	225,636.82	
Value of Furniture and Equipment Damaged	160,000.00	-	160,000.00	
Value of Operational Costs	-	359,462.60	359,462.60	
Recovery and Reconstruction Needs	-	-	-	
Total	**504,536.82**	**359,462.60**	**863,999.42**	

Source: Estimates based on official Government of Fiji data.

Loss

Total loss accounted for 41.6 percent of the total effect of the disaster. The economic loss was mainly a result of higher operational costs during the post-disaster period as health services were fully engaged to address any possible outbreak of communicable disease or injuries sustained.

Social Dimension

During the height of the cyclone, health services were provided to evacuation centres to ensure there was adequate access to clean water and sanitation facilities. The health sector in partnership with other stakeholders provided direct health services to around 5,979 people sheltered in evacuation centres. Most of the health services were provided in the heavily-affected Western Division. In addition, community awareness programs were extended to all divisions

promoting key health messages relating to disease outbreak. The Ministry of Health activated its communicable disease surveillance program with specific focus on the three main communicable diseases: Leptospirosis, Typhoid and Dengue Fever. Three epidemic clusters were reported on Typhoid, requiring intense public health intervention. These epidemics were reported in the Ba sub-division, Tailevu Sub-Division and Lomaiviti Sub-Division. It should also be noted that these outbreaks can continue for up to six months after the event, which means that the health costs of TC Evan could be under reported.

Recommended Disaster Risk Reduction (DRR) and Preparedness Interventions

The following initiatives have been identified in consultation with the Ministry of Health as the way forward:

- Integration of emergency and disaster management into legislative frameworks, policies and plans.
- Risk assessments including hazard identification and vulnerability (population and health systems vulnerabilities) and capacity assessments in collaboration with the multi-sectoral NDMO authority.
- National capacity development programs for health emergency and disaster risk management with necessary resources.
- Health sector capacity to conduct risk awareness campaigns including health education, health promotion and social mobilization to reduce risks, and improve preparation and response to emergencies.
- Risk reduction and preparedness programs for epidemic/pandemic disease prevention and control, reproductive health, mass casualty management systems, nutrition, environmental health, mental health and other non-communicable diseases.
- Train more psycho-social workers, taking into account lessons learned about how best to deliver psycho-social assistance. Men and women process and manifest trauma in different ways, so it requires gender-differentiated psycho-social treatments. A training plan can be developed, linked to scenarios of different types and magnitudes of disasters, and the implications for the psycho-social assistance likely required in each scenario.

In addition, efforts are recommended to ensure establishment and systematic monitoring of consistent health and sanitation standards in evacuation centres, in the context of a comprehensive policy for certification and management of evacuation centres.

Recovery and Reconstruction Needs

The indicative costs that may be incurred by the health sector are the recovery and reconstruction needs with a total of F$1.08 million; about 24.1 percent of the total recovery and reconstruction needs for recovery actions such as the restocking of consumables and non-consumable items that were required within the period of TC Evan (see Table 18).

Table 18 – Identified Recovery Needs.

Sector	Sub-program of Activity	Value (F$)	Executing Agency	Comments
Health	Restock	337,000	Ministry of Health	To restock those drugs, health and lab consumables used during TC Evan
Health	Materials	46,500	Ministry of Health	Environmental Health Materials

Source: Estimates based on official Government of Fiji data.

Table 19 – Identified Reconstruction Needs.

Sector	Sub-program of Activity	Value (F$)	Executing Agency	Comments
Health	Infrastructure	433,500	Ministry of Health	Retrofitting of stock of health facilities in the Central Division and a senior citizens home
Health	Non-technical equipment	270,000	Ministry of Health	Purchase of generators for three key health facilities)

Source: Estimates based on official Government of Fiji data.

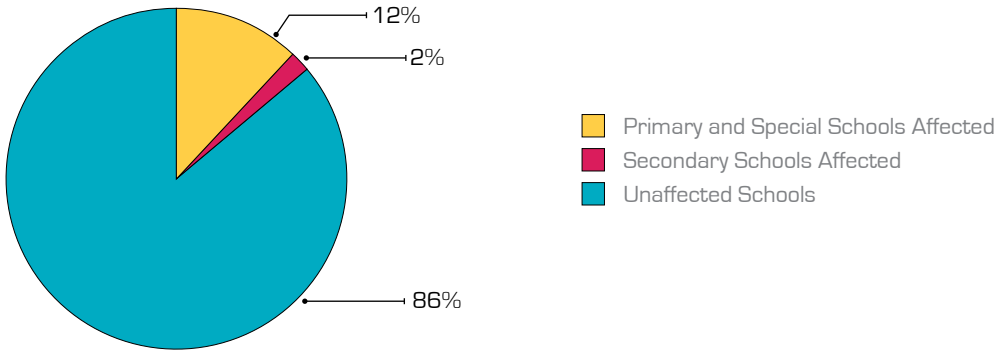
The costs of reconstruction are considerably higher than the recovery costs due to the necessary retrofitting requirements to key health facilities in the Central Division and the purchase of back-up generators for three (3) hospitals at a cost of F$270,000 (see Table 19). Such needs are considered a necessity during disasters as the health sector deals with life and death situations that should not be interrupted by technical breakdowns as a result of electricity.

3.3 EDUCATION SECTOR

Summary

The education sector is one of the priority sectors of Government in terms of resource allocation. The sector is allocated over F$250 million each year to ensure the provision of quality education in Fiji. Nevertheless, the sector is also vulnerable to natural disasters given the number of schools located in flood-prone areas. For TC Evan, damages to schools were estimated to be approximately F$5.9 million. This amount includes the economic loss incurred by the sector as well as the social protection cost to ensure the smooth resumption of the 2013 academic year.

Figure 15: Total Number of Schools Affected by TC Evan.



Source: Ministry of Education.

Pre-Disaster Situation

Access to basic education is the right of all Fijians and to support this key policy objective, education is free in Fiji up till secondary level. The education system in Fiji is made up of government schools, faith-based schools and private and community-owned schools. Approximately 99 percent of schools in Fiji are managed by civil society and non-government organizations while government provides teachers and the school curriculum.

The primary school system encompasses classes 1 to 8, attended by 6 to 13 year olds. The secondary school system covers Forms 3 to 7 and vocational studies, mostly attended by 14 to 20 year olds. Fiji is on target with Millennium Development Goal (MDG) 2 – "to achieve universal primary education" – having attained near-universal primary education through the involvement of 721 primary schools and 175 secondary schools throughout Fiji. In total 98 percent of the primary and secondary schools are community and village-based where government provides the necessary staffing as well as teaching and learning resources.

Table 20 – School Distribution in 2012.

School Types	Division				Total Number
	Central	Western	Northern	Eastern	
Primary Schools	199	245	162	115	**721**
Secondary School	69	57	36	13	**175**
Special Schools	7	7	2	1	**17**
Fiji Higher Education Commission	43	22	1	0	**66**
Totals	**318**	**331**	**201**	**129**	**976**

Source: Ministry of Education.

According to Table 20, the Western and Central divisions account for about 62 percent of the total primary schools, and 72 percent of secondary schools in Fiji. Likewise, special schools, vocational and tertiary training institutions are more heavily concentrated within these two divisions.

Post-Disaster Situation

Total damage and loss to the education sector is estimated at F$5.9 million. Table 21 provides a summary of the damage and loss by the four main sub-categories of schools. A total of 130 non-government schools were affected by TC Evan, of which, 43 schools suffered major structural damages and 87 schools required minor repairs. The majority of the damage in the education sector was to schools in the Western Division. Damage to primary and secondary schools infrastructure is estimated at F$4.4 million and F$1.5 million, respectively. The education sector encountered a loss of F$44,190, mainly on account of activities associated with the use of schools as evacuation centers, which entailed some cleanup costs and minor repairs.

Table 21 – Summary of Damage and Loss for the Education Sector.

Education Damage and Losses (F$)					
Sub-Sector Component	Disaster Effects			Ownership by Sector	
	Damage	Losses	Total	Public	Private
Primary Schools	4,285,072		4,285,072	4,285,072	n/a
Special Schools	65,000		65,000	65,000	n/a
Secondary Schools	1,537,500		1,537,500	1,537,500	n/a
Evacuation Centres		44,190	44,190	44,190	n/a
Total	**$5,887,572**	**$44,190**	**$5,931,762**	**$5,931,762**	**n/a**

Source: Estimates based on official Government of Fiji data.

The supply of temporary shelters was not included in the loss assessment as covered by assistance from donor partners. In addition, there were losses in the construction of temporary classrooms by the engineers of the Republic of Fiji Military Forces in the Yasawa Group and the Northern Division. The temporary classrooms are a short-term measure to ensure that resumption of classes in these worst affected areas is not disrupted. It is also to ensure that the actual construction of the replacement buildings is part of the 'build back better' concept. This requires better planning and mobilization of personnel to undertake such reconstruction efforts.

Determination of economic losses in the education sector could be complemented by many social costs which are not easily measured; such as the value of the loss in income from the transport sector given the current free bus fare initiative; the value of teaching hours foregone as a result of closure of schools; the value of school infrastructure damaged as a result of exposure to the natural elements; and most importantly the loss sustained by students and their families in terms of school accessories such as uniforms, bags and other materials that may have been damaged as a result of the cyclone. The impact of the event on the affected children's ability to concentrate fully on their education is often compounded by the loss of their parents' income generating opportunities.

The challenge for the education sector is to get the school infrastructure back into operation to ensure normalcy for the students and teachers for the remainder of the 2013 academic year.

Social Dimension

Although classes resumed as normal for the 2013 academic year, the impact of TC Evan on the affected population is significant. Learning was hindered as teachers were unavailable at the beginning of the school year due to damage to staff quarters. For students in the affected areas the psychological effect of losing their homes and belongings twice in a year is something that will affect their ability to get back to school and their ability to concentrate on their learning activities. Further to this is the loss to the income earning opportunities of the affected population who depend on the agriculture and tourism sectors in order to send their children to school. This threatens the household's ability to purchase school uniforms, school fees and school accessories. Food security is also an area of concern as food sources are affected putting more pressure on the already depleted financial resources in order to provide healthy meals.

Risk Management Issues

There are two major risk reduction measures recommended for the education sector.

In the short to mid-term, the 'building back better' approach should be generally practised to minimize the risk of sustaining similar damages to infrastructure in future disasters, particularly for schools in the cyclone path such as

Yasawa, Cikobia, and the Eastern Division. While rehabilitation repairs should be undertaken within the shortest period of time to ensure proper resumption of classes, careful monitoring of construction activities is necessary to ensure compliance with the National Building Code. Retrofitting is also suggested as a risk reduction measure so as to improve resilience in infrastructure.

In the longer term, the second key risk reduction measure suggested is the relocation of schools to safer areas. These include schools that suffered both major and minor damage as well as schools in areas vulnerable to landslide or flood. A primary school in the Western Division has been relocated at a cost of F$200,000 in order to minimize the risks associated with its present location and the management has approved and endorsed the proposed relocation. Given that education is a priority area, Government will always continue to take the lead role in the rehabilitation of schools. It therefore needs to be proactive in ensuring that its disaster mitigation and resilience strategies are adhered to by school management.

Recovery and Reconstruction Requirements

The total cost of damage incurred by TC Evan on the education sector is estimated to be F$5.8 million (see Table 22). Damage to primary schools was estimated at F$4.2 million, secondary schools F$1.5 million and an additional F$65,000 for the special schools.

Table 22 – Recovery Needs for the Education Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Primary and Special Schools	School in a Box Kit	552,450	Access to Quality Education (AusAID)	This fund assists affected students by providing them with a school in a box kit, uniforms and shoes. This is currently undertaken.
Secondary Schools				
Temporary Learning Space	Temporary Classrooms	120,000		UNICEF provided more than 50 tents for temporary classrooms awaiting the completion of building repairs. This has been undertaken.
Total		**672,450**		

Source: Estimates based on official Government of Fiji data.

In the aftermath of the cyclone, the Ministry of Education together with development partners has been working closely on its reconstruction programs in the education sector. In particular, as further highlighted in Table 23 , the following actions have taken place to ensure that education facilities are up and ready for the 2013 academic year:

- Government through its capital redeployment exercise allocated F$1.3 million to the reconstruction of affected schools.
- AusAID through its Access to Quality Education Program (AQEP) partnered with Government to provide F$1.34 million for both structural reconstruction and replacement of damaged text books in the 130 affected schools.
- AQEP's social protection initiative (F$0.55 million) targeted the severely affected student population in the Western and Northern divisions. Recipients of this fund were able to purchase uniforms and school kits. This assistance is critical as it expedites social reconstruction in affected communities.
- UNICEF donated temporary learning spaces at a cost of F$0.12 million for schools that encountered major infrastructural damages. This is critical to create a sense of normalcy for affected students and communities while awaiting the completion of the reconstruction programs.

There is also evidence that loss of personal income due to the cyclone threatens the ability of parents to support their children's educational needs (e.g. school fees and purchase of school uniforms). Therefore, income-supplementation recovery programs such as UNDP's planned 'cash for work' community driven emergency employment programs targeting low-income rural populations, play a role in addressing this concern. Government could also increase the fee subsidy allocated to students in the affected population.

While rehabilitation and reconstruction activities are being undertaken for damaged schools as a long-term mitigation strategy, all schools in Fiji need to be inspected for Category 4 Cyclone Resistance Requirements. This is to be part of the retrofitting program to ensure that all new and existing school construction projects by donors, faith-based organizations or communities are cyclone proof and can withstand a category 4 cyclone.

Table 23 – Reconstruction Needs for the Education Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Primary Schools	Redeployed from 2012 capital budget	1,300,000	Government	Government redeployed F$1.3 million from the 2012 budget to fund reconstruction in the education sector. Works have begun in the Western Division.
Special Schools				
Secondary Schools	Reconstruction Program	1,340,000	Access to Quality Education (AusAID)	Funded by AusAID through Access to Quality Education Program (AQEP). F$1.2 million from this allocation is for reconstruction and F$0.14 million for replacement of textbooks.
All Sub-Sectors	Retrofitting	2,000,000	Donor	This is to ensure that all schools in Fiji undergo engineering inspection and that cyclone retrofitting be undertaken where necessary.
Total		**F$4,640,000**		

Source: Estimates based on official Government of Fiji data.

In addition, the post-disaster review recommended that where schools doubled as evacuation centres, there should be an assessment of what has worked well or not, and the implications for students, teachers, families and evacuees. Relevant emergency response units should convene a discussion with key stakeholders on the impact of using schools as evacuation centres in the Fijian context, and debate alternatives.

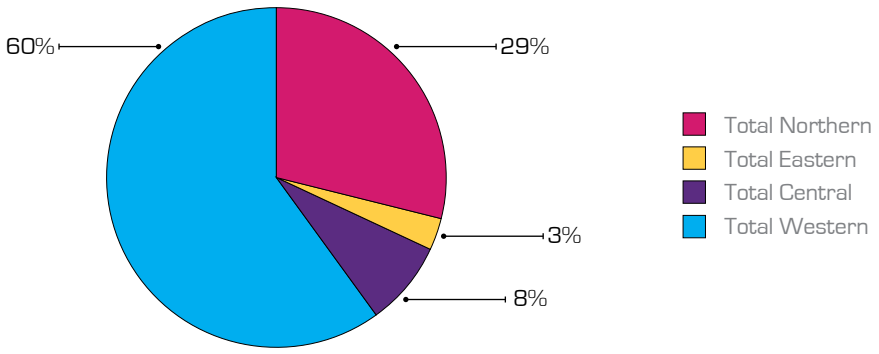
The Government continues to provide free education, free text book and free bus fare programs. This social safety net is currently adequate to ensure that all children in Fiji have access to free and quality education both in pre- and post-disaster situations. As part of the recovery program, to address one of the issues that emerged in the course of the social impact survey, it is highly recommended that Government prioritize coverage or waiving of school levies, transport costs and school supplies for low income students until full recovery is achieved, to lessen financial hardship on families and given that basic education is key to the society's advancement over the long term.

3.4 Agriculture

Summary of findings

In the agriculture sector, the division that experienced the highest proportion of damage and loss from TC Evan (see Figure 16) was the Western Division, which accounted for 60 percent of the total damage and loss, followed by the Northern Division with 29 percent. The Central and Eastern divisions experienced a much lower proportion of total damage and loss with 8 and 3 percent, respectively.

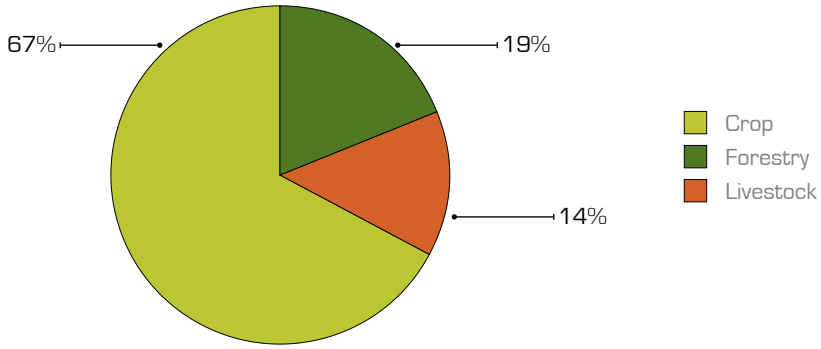
Figure 16: Percentage of Damage and Loss by Division – Agriculture Sector.



Source: Ministry of Agriculture.

Figure 17 demonstrates that the sub-sector most affected by TC Evan were crops, mainly in term of loss of income. Permanent crops such as coconut, yaqona, and banana were the most affected, followed by annual (cassava, dalo) and seasonal (vegetables) crops. In the livestock sub-sector, damage occurred mainly in the Western and Central divisions, with the loss of sheds and animals being more harmful to future income than losses in production (milk, eggs and meat). In the forestry sub-sector, the timber industry in the Western Division suffered from the high winds with damage to infrastructure and trees.

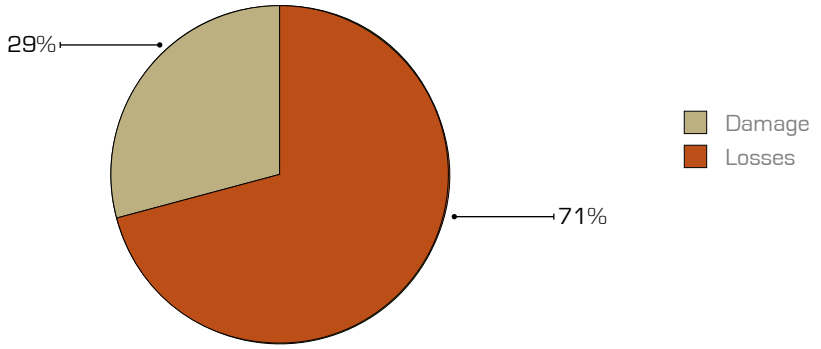
Figure 17: Share of Damage and Loss by Sub-Sector.



Source: Ministry of Agriculture.

The total damage and loss for the three sub-sectors consists of 67 percent attributable to crop, 19 percent to livestock and 14 percent for forestry. The total effect to the sector amounts to F$43.9 million of which F$12.9 million is damage and F$31.0 million is loss. Of the total effect, 86 percent accrues to the private sector and 14 percent to the public sector.

Figure 18: Share of Damages and Losses in Agriculture.



Source: Ministry of Agriculture.

The assessment highlighted that, with lost income and little access to credit, many small farmers will not be able to cope with the disaster. Immediate attention therefore needs to be given to facilitating access to good quality agro-inputs such as seeds and fertilizers, to support animal re-stocking and rehabilitation of the damaged infrastructure (livestock and forestry sub-sector).

Pre-disaster situation

Agriculture plays an important part in Fiji's overall development. It provides food and income security, promotes community development in rural areas, generates income to approximately 65 percent of the total population and creates foreign exchange earnings for the country. The agriculture sector contributes 13 percent of the GDP, of which 9 percent are for crops and livestock; 3 percent for fisheries and 1 percent for the forestry.

The sector is male dominated with the majority of farmers, 96.4 percent, being male while the remaining 3.6 percent are females[18]. The national agriculture economy is still dominated by the sugar industry, followed by smallholder subsistence farms.

The non-sugar agricultural sector, predominantly root crops (dalo, cassava, yams, sweet potato and yaqona) in addition to tropical fruits (pineapple, pawpaw and coconut), vegetables, spices, ginger, livestock (poultry, pigs, cattle) and wood (pine and mahogany) has shown a promising trend over the last few years.

According to the Department of Agriculture, crops are generally classified into three main categories: seasonal, annual and permanent. Seasonal crops are usually planted and harvested within one cropping season, such as vegetables and ginger. Annual crops can be cultivated and harvested all year around, such as yams, dalo and cassava. Permanent crops are planted and harvested over a period of time, for example papaya, coconut, cocoa and other fruit trees.

The crops situation in the pre-disaster period is summarized in Table 24, and represented in Figure 19.

[18] Source: National Agriculture Census 2009 Report.

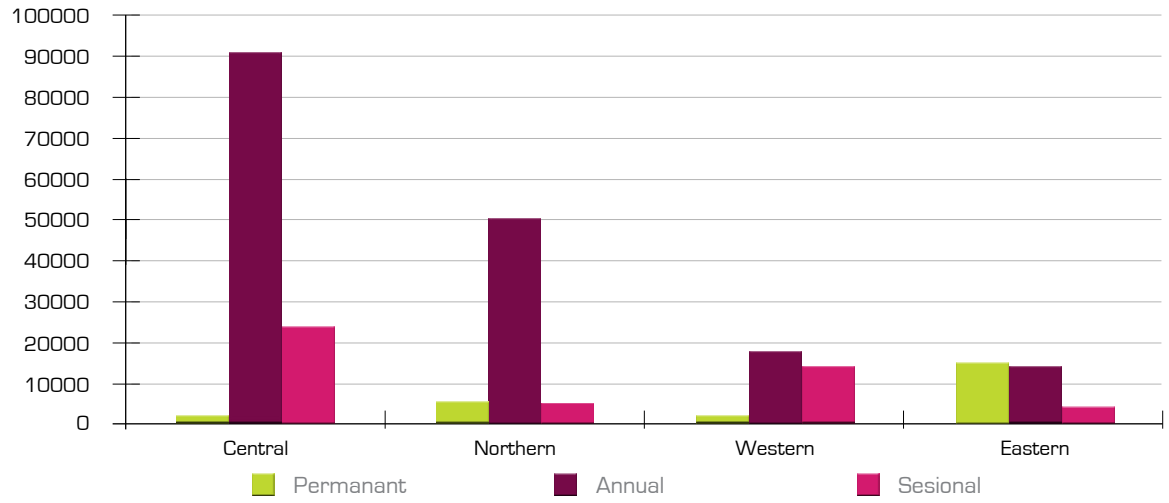
Table 24 – Pre-Disaster Annual Crop Production (2011) by Division and Crop Classification.

Area & production	Central		Northern		Western		Eastern		Grand Total	
	Ha	Tons	Ha	Tons	Ha	Tons	Ha	Tons	Ha	Tons
Permanent	276.60	1,916.10	4,111.73	5,505.44	283.56	1,716.90	196.90	14,615.70	4,869	23,754
Annual	9,262.90	90,370.35	7,016.27	49,937.23	2,000.90	17,374.45	1,418.40	13,821.90	19,698	171,504
Seasonal	3,665.60	23,092.50	571.73	4,510.35	1,795.50	13,583.18	467.63	3,808.80	6,500	44,995
TOTAL	13,205.10	115,378.95	11,699.73	59,953.02	4,079.96	32,674.53	2,082.93	32,246.40	31,068	240,253

Source: Ministry of Agriculture.

Figure 19 shows that annual crops contribute significantly to national production followed by seasonal crops. The majority of the annual and seasonal crops are grown in the Central Division, followed by Western Division for seasonal crops and Northern division for annual crops. This reflects the nature of the agriculture sector in Fiji as production is driven mainly by subsistence needs. Those crops with annual and seasonal production represent a food security strategy as they are mainly used for daily food consumption; however, these crops may be sold to markets as source of additional income to households.

Figure 19: Pre-Disaster Annual Production (2011) by Division.



Source : Ministry of Agriculture.

Livestock has a significant share in the socio-economic development in Fiji. For many smallholder farmers, livestock production remains an important source of both protein and income. Pigs and poultry are mainly commercial production and the farming of ruminant animals include cattle, sheep and goat. The majority of livestock is reared on unimproved, poorly managed pastures, fallow land, roadsides, crop residues, under coconut agro- forestry systems and often on a combination of these forage sources.

Livestock farming in Fiji is generating profit in two ways: (i) small-scale production utilizing the opportunity to sell product direct to the magiti (traditional/Eid) market and (ii) large-scale, often vertically integrated farming, almost exclusively in the poultry and pig industries. The government protects the industry by imposing 27 percent duty on imported poultry. The informal sector (backyard poultry) is estimated to comprise about 15 percent of total production, but plays an important role in rural areas where poultry is commonly kept by most farmers at semi-subsistence level. There are a total of 23,413 poultry farmers in Fiji of which 40 percent are in the Western Division and were affected by TC Evan.

Commercial livestock farming, particularly grazing systems are historically confined to wetter areas of main islands particularly in the Central Division in Viti Levu and the southeastern part of Vanua Levu in the north. There is also a considerable volume of livestock produced for domestic consumption in the cane belts, grazed within the existing cane lease areas. The poultry and pig industries are supported by locally available feed by-products (wheat bran, coconut meal, protein meals and molasses) and imported cereals. Compared to Northern and Western divisions where only informal dairy operates, in the Central Division the milk supply is operated by the sole manufacturer, Fiji Dairy Limited Company, working with a range of large and small farmers supplying milk at wholesale prices.

Table 25 presents pre-disaster livestock production in the four divisions, illustrating the importance of beef, pigs and poultry (broiler) meat production in the Western Division, and that of beef, poultry (layer), dairy and honey production in the Central Division.

Table 25 – Pre-Disaster Livestock Production.

		Unit	Western	Northern	Central	Eastern
Meat production						
	Beef	Kg	571,984.60	445,631.00	567,790.40	0,00
	Goat	Kg	5,054.40	47,250.00	1,087.00	0,00
	Sheep	Kg	54,531.00	55,459.00	1,974.00	0,00
	Poultry	Kg	3,291,924.00	434.00	67,200.00	0,00
	Pigs	Kg	304,068.00	29,100.00	245,639.80	13,177.80
Milk production		Litres	176,400.00	133,848.00	9,613,160.30	0,00
Eggs		Unit	306,000.00	19,026.00	7,700,000.00	0,00
Honey		Litres	95,457.00	11,633.40	21,009.00	8,652.00

Source: Ministry of Agriculture, annual data for 2011.

Forest area covers 956,860 ha, with 44 percent comprising primary forests, 38 percent of naturally regenerated forest and 18 percent of planted forest.

In the Western division, the forestry sector is composed of indigenous forests (223,140 ha), softwood (pine) plantations (30,298 ha) and hardwood plantations (6,000 ha).

Post-disaster situation

TC Evan had a negative impact on food security over the affected areas, resulting in a far-reaching reduction in the supply of root crops, vegetables, trees and fruits. In total 54,000 farmers were directly affected by the cyclone and a further 200,000 were indirectly affected.

The damage and loss was assessed and quantified for crops, livestock and forestry sub-sectors. The details are presented in Table 26. There were no reports of damage from TC Evan from the fishery and sugar sub-sectors. The end of December is the low season for the sugar sub-sector, as it coincides with the end of the harvest season, which resulted in minimal impact to this sector. TC Evan did have a minor impact on the fishery sub-sector with the destruction of a few boats and fishing gear.

Table 26 – Summary of Damage and Loss in the Agriculture Sector.

Sub-sector				Ownership	
	Damage (F$)	Losses (F$)	Total effects (F$)	Private (F$)	Public (F$)
Crops					
Components of damage	1,682,953			1,682,953	
Components of losses		27,562,860		27,560,460	2,400
Total crops			**29,245,813**	**29,243,413**	**2,400**
Livestock					
Components of damage	4,977,482			4,931,065	46,418
Components of losses		3,444,368		3,444,368	
Total livestock			**8,421,850**	**8, 375.433**	**46,418**
Forestry					
Components of damage	6,254,000				6,254,000
Components of losses					
Total Forestry			**6,254,000**		**6,254,000**
Total Agriculture	**12,914,435**	**31,007,228**	**43,921,664**	**37,618,846**	**6,302,818**

Source: Estimates based on official Government of Fiji data.

Damage

Crops

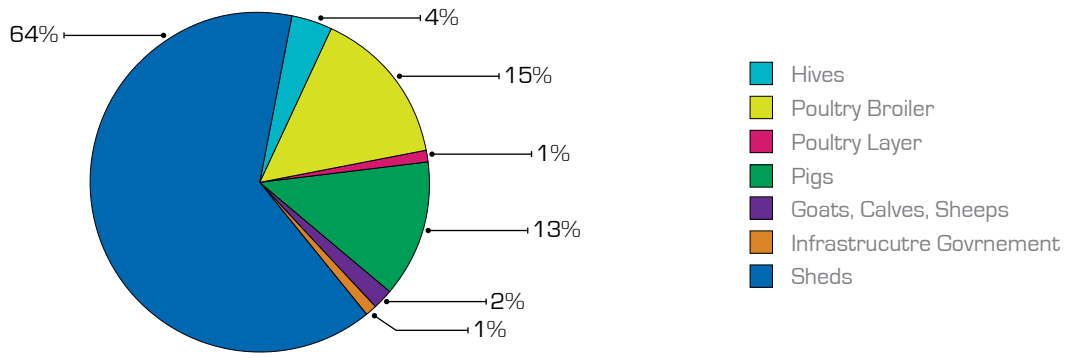
Damage to yaqona crops was evident in all four divisions. This important cash crop was totally destroyed during the floods and will need to be re-planted. All in all, the total damage to the crop sub-sector was assessed at F$1.7 million, as presented in Table 26.

Livestock

The estimated damage to the livestock sub-sector was F$8.4 million (Table 26). Damage occurred in the Western and Central divisions only. Reported damage to the livestock sub-sector was mainly to assets and equipment in livestock barns, poultry farms, hatcheries and animal shelters.

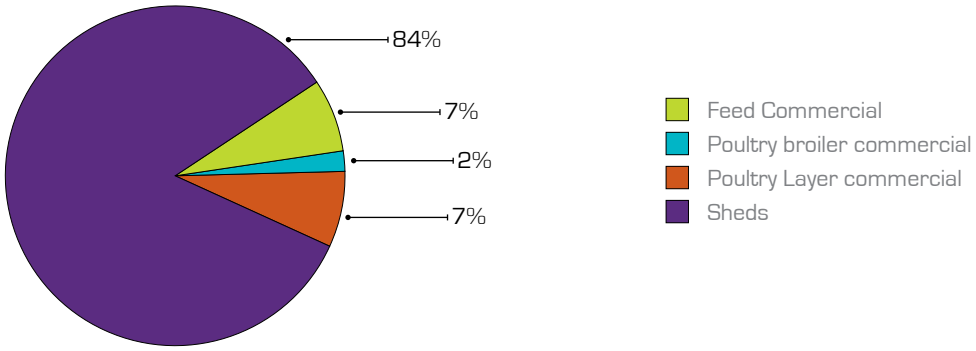
Many sheds for chickens and ducks were destroyed and/or lost during the cyclone. The apiculture sector was also badly hit by the cyclone, with 579 hives destroyed.

Figure 20: Distribution of Damage to Livestock Sub-sector in the Western Division.



Source: Estimates based on official Government of Fiji data.

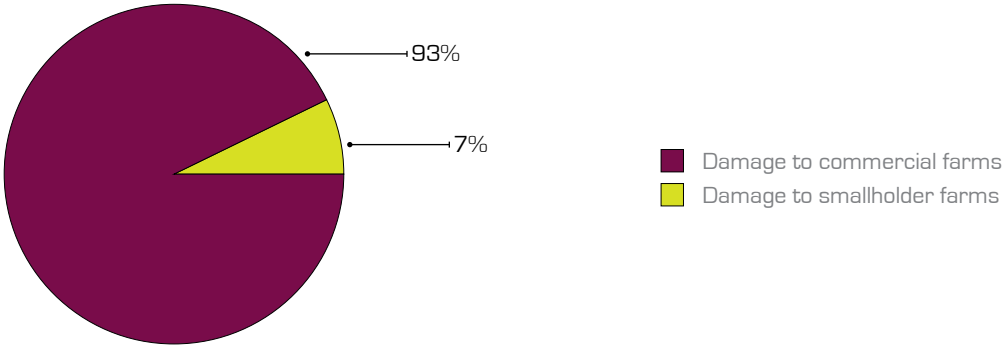
Figure 21: Distribution of Damage to Livestock Sub-sector in the Central Division.



Source: Estimates based on official Government of Fiji data.

93 percent of damages occurred to commercial farms, with 7 percent to smallholder farms (see Figure 22).

Figure 22: Distribution of Livestock Damage Cost Between Commercial and Smallholder Farmers.



Source: Estimates based on official Government of Fiji data.

Forestry

The estimated damage to the forestry sub-sector was F$6.3 million (refer Table 26) and occurred only in Ba Province in the Western Division. The bulk of the damages was to infrastructure (mainly to buildings), sheds and seedling nurseries. Some damage was reported in forest plantations to both mature and young standing trees.

Loss

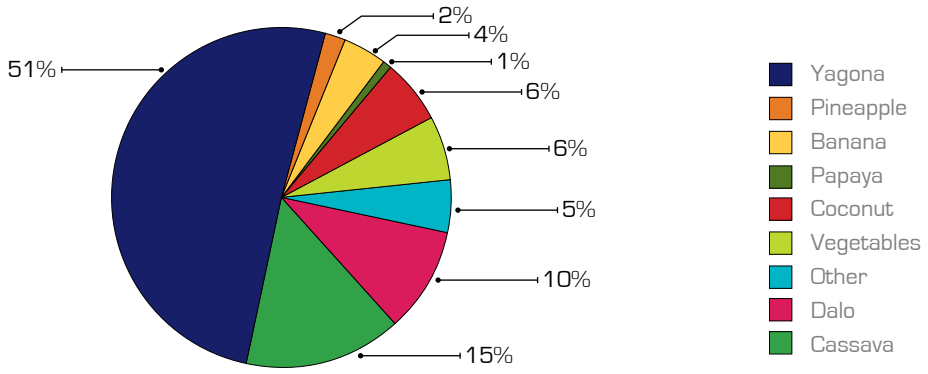
An estimation of loss was not part of the initial damage assessment. The loss in production and income in subsequent months and years following the cyclone has been assessed and estimated for all commodities and income generating activities that were impacted. The estimation of losses was calculated based on the necessary time needed to re-establish the lost crops and livestock and income generating activities to reach pre-disaster production levels.

Crop

The estimated loss to the crop sub-sector was F$27.6 million. Losses were experienced for major crops such as cassava, dalo, yaqona, assorted vegetables, sweet potatoes, eggplants, fruit (including bananas, papaya, pineapple) and coconuts. Crops were affected differently, depending on their growth stage at the time of the cyclone.

Figure 23 shows that in terms of economic loss yaqona accounted for 51 percent of total loss, followed by cassava (15 percent) and dalo (10 percent).

Figure 23: Distribution of Losses to the Crop Sub-sector.



Source: Estimates based on official Government of Fiji data.

The crops situation in the post-disaster period is summarized in Table 27.

Table 27 – Post-Disaster Crop Situation by Province and Crop Classification.

Area & production	Central		Northern		Western		Eastern		Grand Total	
	Ha damaged	Tons	Ha damaged	Tons	Ha damaged	Tons	Ha damaged	Tons	Ha damaged	Tons
Permanent	43.14	297.49	732.14	2,313.61	321.28	2,616.09	16.46	55.72	1,113.02	5,282.91
Annual	117.19	1,128.67	265.81	2,590.60	637.37	7,227.53	36.98	384.04	1,057.35	11,330.84
Seasonal	21.62	201.33	6.87	40.80	375.28	2,562.32	0.00	0.00	403.77	2,804.45
TOTAL	**181.95**	**1,627.49**	**1,004.82**	**4,945.01**	**1,333.92**	**12,405.93**	**53.44**	**439.76**	**2,574.14**	**19,418.19**

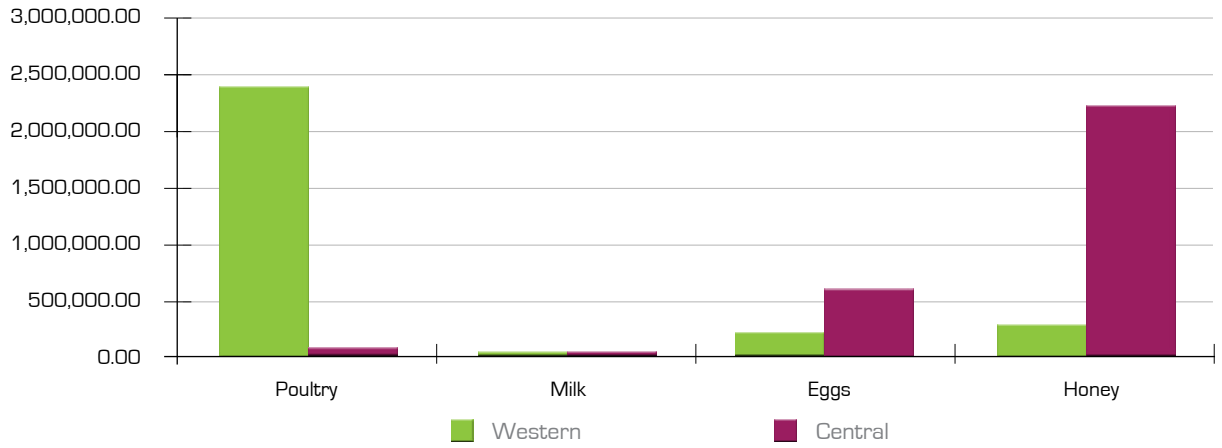
Source: Estimates based on official Government of Fiji data.

Due to TC Evan the production of permanent crops was reduced by 22 percent, annual crops by 7 percent and seasonal crops by 6 percent.

Livestock

The estimated loss to the livestock sub-sector was F$3.4 million. Loss in production occurred mainly in the poultry and apiculture sectors, only within the Western and Central divisions. In addition to their livestock, farmers reported losses to feedstock and vaccines. In some areas, milk production could not be transferred to the market due to damages to bridges and roads. Symptoms of animal diseases were also reported. Figure 24 illustrates the losses in production in the two divisions.

Figure 24: Losses in Livestock Production by Commodity.



Source: Estimates based on official Government of Fiji data.

Forestry

There was no reported loss to the forestry sub-sector.

Social Dimension

No fatalities and injuries to human life were recorded in the agriculture sector. Nevertheless, severe damage and loss to crops, livestock and fisheries has greatly impacted the health, education, economic, cultural and the normal daily lives of the affected population in the four (4) divisions. These effects were more severe in the Western and Central divisions.

TC Evan will impact people's daily lives through a reduced supply of root crops and leafy vegetables in the market. This shortage is expected to continue for the next four months. As 50 percent of Fijians live in urban areas they purchase their food from the local markets. Consequently, higher prices for root crops in the urban areas are expected to occur due to a shortage in supply.

Recovery and Reconstruction

Farmers affected by TC Evan need to be supported in order to facilitate a quicker recovery and re-establish their normal livelihoods. Tables 28 and 29 presents the different activities to be put in place in order to achieve this. Figures suggest that the sum of F$5.4 million may be required for recovery and F$12.2 million for reconstruction. The recommendations for recovery and reconstruction are presented in terms of short-, medium- and long-term needs. The tables also seek to identify where Government initiatives have already taken place and where Donor partner resources have been made available or may be necessary.

Table 28: Recovery Needs for the Agriculture Sector.

Recovery				
Crops	Activity	Estimated cost (F$)	Financial source	Remarks
	• Provision of seeds, seedlings, suckers, cuttings and other agricultural inputs for re-planting of crops	3,265,157.73	Fiji Government, International grants	Ministry of Agriculture (F$0.6 million) and donor communities already provided inputs; however, funding gaps still exists. Short term
	• Temporary provision of food ration to most affected population	1,200,000.00	Fiji Government, International grants	Cost already totally covered. Short term
	• Cash for work activities, community nurseries, community works to improve resilience against cyclones (drainage activities, wall trees to protect against high winds) combined with training on disaster risk reduction techniques (including traditional storage techniques)	456,800.00	International grants	To support the most vulnerable farmers, landless farm laborers, yaqona and coconut farmers most affected by TC Evan. Medium term. Activities to be linked to DRR, such as planting rows of trees as windbreaks, or planting types of grass and trees known to anchor soil to prevent erosion in areas such as riverbanks.

Recovery				
Crops	Activity	Estimated cost (F$)	Financial source	Remarks
	• Grant support to commercial farmer (chillies, eggplant, papaya)	400,000.00	Government	Agreement between Ministry of Agiculture and Fiji Crop and Livestock Council for compensation rate of F$4,000 per acre.
Total		**5,321,957.73**		
Livestock				
	• Supply food (sugar) for bees	11,588.00	Government and International	Medium term
	• Farm gate subsidies for milk losses	15,600.00	Government	Medium term
	• Supply poultry feed to smallholder	7,388.52	Government and International grant	Medium term
	• Supply drugs, feed, pasture seeds	53,600.00	Government	Already provided by the Ministry of Agriculture
	• Tax levy on imported premix feed for livestock commercial farms	15,451.20	Government	Government might provide support through tax reduction (3 percent/tonne) on importation of premix feed for the company. Medium term
Total		**103,627.72**		
Grand total		**5,425,585.45**		

Source: Estimates based on official Government of Fiji data.

Table 29 – Reconstruction Needs for the Agriculture Sector.

Reconstruction				
Crops	Activity	Estimated cost (F$)	Financial source	Comments
	• Replacement of yaqona crops	0		Farmers will use their material damaged by the cyclone. Therefore those famers will be helped with the provision of short and medium crops and with cash for work activities (recovery section)
Livestock				
	• Replacement of animal stock commercial	1,230,644.50	Government and Insurance	Medium term
	• Replacement of animal stock smallholder	180,644.00	Government	Covered 100 percent by Government. Short term
	• Rehabilitation of infrastructure for commercial farms using disaster resilient standards	3,605,602.00	Government and Insurance	F$100,000 already covered by Ministry of Agriculture. Short term
	• Rehabilitation of infrastructure for smallholder farms using disaster resilient standards	132,822.00	Government and International grants	F$70,000 already covered by Ministry of Agriculture.
	• Replacement of Hives	153,726.50	International grant	Medium term
	• Rehabilitation of Government structures	51,059.25	Government	Medium term
Total		**5,354,498.25**		
Forestry				
	• Rehabilitation of infrastructure	6,487,800.00	Government	Medium term
	• Re-planting of trees	374,000.00	Government	Medium term
	• Replacement of damaged inputs in the nursery	17,600	Government	Medium term
Total		**6,879,400.00**		
Grand Total		**12,233,898.25**		

Source: Estimates based on official Government of Fiji data.

3.5 TOURISM SECTOR

The impact of TC Evan on the tourism industry was substantial with far reaching effects across a variety of sectors. While TC Evan caused some damage to infrastructure and the environment, the reaction of the national authorities through the Tourism Disaster Committee, to mitigate and subdue any negative impact on future tourist arrivals effect is a key feature of the resilience within the tourism industry.

Most of the structural damage to hotels and resorts was minimized due to the high standards to which they were built. Insurance played a vital role in this sector with most of the seriously affected hotels/resorts relying on those funds to repair or rebuild without relying on the Government.

The effect of TC Evan on tourism is expected to be substantial. It is assumed that all hotels and resorts will resume normal operations, with visitor arrivals and tourism earnings back on trend by the end of 2013.

Pre-Disaster Situation

There are around 89 hotels, resorts and backpacker accommodation located throughout the country. The majority of which are located in the Yasawa islands, Mamanuca islands, and the Western Division of Viti Levu. As an internationally competitive tourist destination, the Fiji islands are renowned for its appeal as a tropical island getaway, and its abundance of natural resources.

The tourism sector is an important contributor to national development and growth. From 2008 to 2011, tourism earnings averaged F$938.4 million. Hotel receipts which include accommodation, sales of food, liquor, telephone, and other miscellaneous charges represent 65.3 percent of tourism earnings.

The major source markets for visitor arrivals are Australia (comprising 47.6 percent of all visitors) and New Zealand (16.1 percent), while the remaining 36.3 percent come from other markets[19]. The annual peak season for tourist arrivals is from April to September[20]. The majority of visitors to Fiji enter the country for vacation and recreational purposes (74.7 percent).

The tourism industry contributes F$2.57 million daily to the national economy. The daily expenditure per tourist is estimated to be around F$168.50. In terms of employment, the Employment and Unemployment Survey (EUS) 2010/11 reveals that 20,485 people were employed by hotels and restaurants.

Table 30 – Baseline Tourism Data.

	2011	2010	2009	2008
Visitor Arrivals (people)	675,050	631,868	542,186	585,031
Tourism Earnings (F$M)	1,074.0	976.7	848.9	853.8
Hotel Receipts (F$M)	756.2	648.5	517.7	528.4
Average Length of Stay (days)	9.4	9.6	9.8	9.5
Bed Occupancy Rate (percent)	43.5	41.7	36.1	38.0

Source: Fiji Bureau of Statistics, 2012.

Post-Disaster Situation

Although TC Evan passed through Fiji's main tourism belt (Western Viti Levu, Yasawa Islands and Mamanuca Islands), the loss effect was minimized since it struck during the off-peak season[21].

The preparedness and response to the disaster was very well coordinated by the Tourism Disaster Committee. Membership comprises the Permanent Secretary for Public Enterprise, Fiji Airways, Airports Fiji Limited, Fiji Hotels and Resorts Association, and Tourism Fiji. The main concern was how to negate the effects of the disaster. International media in major visitor source markets were regularly updated with positive news through press releases in various media outlets (print, radio and online).

[19] United States of America, Other Pacific Islands, Continental Europe, United Kingdom, Japan, Canada, China, South Korea, India, Hong Kong and Rest of Asia.

[20] Fiji International Visitor Survey 2009.

[21] October to March.

General damages sustained to hotel and resort operators include structural damage to buildings, internal building damage due to excessive water, and scattered foliage. Damage reports suggest that 34 percent (17) of hotels/resorts were affected by the natural disaster.

According to industry sources, insured damages ranged from F$25.0 to F$30.0 million. Given that this is a depreciated value, it is likely that replacement cost is somewhere around F$40.0 to F$50.0 million.

Table 31 – Damage and Loss for Tourism Sector (F$).

				Ownership	
	Damage	Loss	Total Effect	Public	Private
Damage to hotels (F$M)	40.0		40.0		40.0
Losses from hotel/resort closures (F$M)		23.39	23.39		23.39
Losses from boat transfers (F$M)		0.98	0.98		0.98
Loss of tourism earnings from airport closure (F$M)		3.79	3.79		3.79
TOTAL DAMAGE AND LOSS	**40.0**	**28.16**	**68.16**		**68.16**
Lost visitor arrivals from hotel closures and airport closure (persons)		6,562	6,562		

Source: Estimates based on official Government of Fiji data.

The prominent loss to this productive sector is the foregone revenue through the loss of earning capacity for the period when the majority of tourism activities were temporarily closed. Almost 41 percent of hotels and resorts were closed for less than a week and another 18 percent took less than a month to resume operations. It is important to note that most tourism operators especially those who operate in regions vulnerable to natural disasters, such as Fiji, have constructed their building structures to withstand such disasters.

In terms of the scale of damages, around 24 percent of affected hotels and resorts are expected to complete repairs and reconstruction work by mid 2013. Negotiations with insurance companies can delay reconstruction in some cases. It is a general requirement by insurance companies to have an engineer's report to validate that structures are built to disaster-resilience standards before an insurance policy is agreed upon.

Two hotels/resorts were unfortunate to have sustained extreme structural damages and have tentatively scheduled to reopen by end of 2013. The estimated cost for reconstruction works for both operators is around F$15.0 million.

The aggregate revenue foregone is estimated at F$23.39 million (all of which is borne by the private sector). This is taking into account the closure period of hotels and resorts and lost visitor expenditure. Overall, annual visitor arrivals declined by 14,460 between 2011 and 2012[22]. Comparing January to November statistics for the same years also showed a decline of 1.5 percent while the month-on-month comparison for December declined by 8.4 percent. The impact of TC Evan on visitor arrivals is estimated to be a 6.9 percent decline[23], which is mainly attributed to the 24-hour closure of Nadi Airport by Airports Fiji Limited (AFL) and temporary closure of some hotels. Consequently, an estimated F$3.79 million was lost due to declined visitor arrivals, cancelled flights and lower visitor spending. The Boat Transport Operators also incurred significant losses of F$980,000 through lost passenger bookings.

Social Dimension

The tourism sector employs around 20,485 people in the industry and no figure on the actual decline in employment resulting from TC Evan has been confirmed. It is assumed that any loss of employment would be temporary, subject to the recovery efforts of the operators. Given the vibrancy of the domestic tourism industry and the outlook for 2013, it is expected that tourism operators will be back to pre-disaster situation by the end of 2013.

The impact of any decline in employment is likely to cause temporary hardship for those whose livelihoods have been affected by TC Evan. Nevertheless, the resilience of the local people, the community, social networks and the supportive role of the hotel operators are likely to offset any long-term adverse impact on these communities.

[22] Annual Visitor Arrival Figures courtesy of FBOS; 2012: 660,590; 2011: 675,050.

[23] Excludes impact of 2012 Floods.

Recovery and Reconstruction Requirements

The effect of TC Evan on the tourism sector was not as severe as initially expected. Although, the structural damage to hotels and resorts was substantial in some cases, it could have been far worse if TC Evan had travelled at a slower speed. While the industry is susceptible to spontaneous and devastating externalities, most of the tourism operators were well insured.

The coordination by the emergency response services including the National Fire Authority facilitated the safety of hotel guests and tour operators with provision of emergency transport from Yasawa and Mamanuca and alternative accommodation around Nadi International Airport.

Table 32 – Recovery Needs for the Tourism Sector.

	Activity	F$M	Responsible Agency	Comments
Recovery	Refocusing marketing strategy	$2.4	Tourism Fiji, and individual hotels/ resorts and tourist operators	Especially to affected areas, Information campaigns abroad, use of Internet marketing, media interaction to support policies, price depression and product development and annual travel mart. Possibility of looking into reconstruction tourism (promotion). It is estimated that this will be carried out within a year.

Source: Estimates based on official Government of Fiji data.

The recovery aspect takes into account the intangible aspect of losses to the industry and linked industries. Based on discussions with various affected hotels, resorts, other industry stakeholders, the overall recovery aspect is geared towards regaining lost revenue. This is achievable through marketing strategies to entice visitors to return to affected areas (Western Division) by individual tourism operators. This is expected to be minimal but beyond normal annual expenditure on advertising.

Table 33 – Reconstruction Needs for the Tourism Sector.

	Activity	F$M	Responsible Agency	Comments
Reconstruction	Insurance claim for reconstruction	$44.0	Private Sector (tourism operators)	This comprises F$40.0 million (insurance cover) plus 10 percent for building back better. This is for under a year.

Source: Estimates based on official Government of Fiji data.

3.6 COMMERCE SECTOR

The effect of TC Evan on the commercial sector, which consists of manufacturing, wholesale and retail and service activities, was marginal compared to other sectors. It should be noted that for the purposes of this assessment the commercial sector is measured according to the level of wholesale and retail activities only, and excludes manufacturing and service activities. The wholesale and retail sector includes the sale of motor vehicles and associated parts; automotive fuel; groceries and fresh/frozen meats; pharmaceutical supplies; food and soft drinks; textiles and clothing; furniture; office supplies; electrical appliances; and hardware. According to the business register in the third quarter of 2012 (Q3 2012) there were around 9,934 business entities operating within Fiji. Approximately, 40.3 percent are situated in the Central Division, 40.2 percent in the Western Division, and 17.4 percent and 2.1 percent in the Northern and Eastern divisions, respectively (see Table 34).

Table 34 – Stock of Businesses by Division.

	Northern	Eastern	Central	Western	Total
Stock of Businesses	1725	210	4006	3993	9934
Percent of total stock	**17.36**	**2.11**	**40.33**	**40.20**	**100**

Source: FBOS Business Survey, Q3 2012.

The commercial sector accounted for approximately 12 percent of the country's GDP in 2011[24]. Prior to TC Evan expectations for growth within the wholesale and retail sub-sector were around 10.6 percent and 10.5 percent to GDP in 2012 and 2013, respectively (refer Table 35).

[24] Fiji Bureau of Statistics, Key Statistics, Dec. 2012 Fiji, p. 20

Table 35 – Sector Contribution to GDP.

Commerce Sector	Baseline	2012 effect of TC Evan	2013 Baseline	2013 effect of TC Evan
Wholesale & Retail (as percent of GDP)	10.6	10.6	10.5	10.5
Manufacturing (as percent of GDP)	14.3	14.3	14.6	14.5

Source: Estimates based on official Government of Fiji data.

Post- Disaster Situation

To help ascertain the effect of TC Evan on the commercial sector, the damage assessment data from the housing sector was used as a proxy to calculate potential damage to small enterprises. It was assumed that those businesses most likely to have experienced damage, would be Micro or Small-Medium Enterprises (SMEs) based out of small/modestly sized premises, which would be similar to that of the size of an average house. Consequently, it was established that there were 2,365 SMEs involved in wholesale/retail activities operating in the Western and Northern divisions (Table 36).

Table 36 – SMEs in the Northern and Western divisions.

Micro and Small/Medium retail	Micro	SM	Total
Northern	345	262	607
Western	762	996	1758
Total	**1,107**	**1,258**	**2,365**

Source: FBOS Business Survey, Q3 2012.

It was assumed that the number of SMEs in the commerce sector (2,365) represents 57 percent of the total number of affected businesses[25]. Consequently, the number of completely destroyed businesses was estimated to be 41 (or 1 percent of total businesses) and the total number of partially destroyed businesses is 166 (or 4 percent of total businesses).

TC Evan's total damage to the sector at the national level is estimated to be less than F$1 million. Damage to physical premises and assets are reportedly limited. Damage to inventories in the commercial sector was limited (except in the case of vendors of agricultural produce whose supply was greatly affected). According to interviews collected as part of the social impact assessment, commercial residents and street vendors were usually able to reduce the negative effect to their stock as they heeded government notices about the impending event and took preventive action. The loss to the commercial sector was estimated to be F$4.6 million based on the assumption that businesses were closed for seven days on average. Most commercial owners were reportedly able to restore their activities and restart their businesses anywhere from a day, to two weeks after the disaster (this was likely to be longer for those in the agricultural business). Consequently, the total effect on the sector is thought to be about F$5.46 million (see Table 37).

Table 37 – Summary of Damage and Loss for the Commerce Sector.

Size of Business	Damage (F$M)	Loss (F$M)	Total Effect (F$M)
Micro	0.21	1.19	1.40
Small – Medium	0.61	3.4	4.06
Total	**0.83**	**4.6**	**5.46**

Source: Estimates based on official Government of Fiji data.

Social Dimension

The quantitative analysis that was conducted on the commercial sector was complemented by the qualitative information collected as part of the Social Impact Assessment (SIA). In particular, feedback was received from market vendors, small shops, and family-run businesses catering to the community and to the tourist trade. Among the key qualitative findings are the following:

i. The commerce sector in Fiji was not disproportionately affected. While the cyclone forced many shop owners to stay shut for a few days (from 2 days to 2 weeks, according to respondents), both damage and loss were relatively contained.

[25] This figure was used in keeping with the proportion of the housing stock that was assumed to be damaged (see Chapter 3.1 for assumptions made for the housing assessment).

ii. There was no reported decline in employment. Some employers had to reduce the number of shift hours per employee as a temporary measure in the immediate aftermath, but the impact on the employment situation can be safely assumed to have been modest, mainly because many of the respondents are in fact family-run businesses that do not employ paid workers.

iii. The losses experienced by small businesses catering to the tourist market appear to have been incurred in connection with the days of forced closure and the diminished tourist flow. Sales may have dropped to 40 percent of normal value, but were back to near-normal levels within 6 weeks of the event, as the tourist trade resumed.

iv. Losses were more significant among small vendors of agricultural produce, particularly among producers/sellers. Some reported losing 50 to 75 percent of their weekly revenue due to the cyclone.

In addition to the social impact assessment, a dedicated rapid assessment five-question survey was conducted among 284 market vendors (micro-businesses) in Suva, Nausori, Lautoka, Ba, Tavua, Labasa and Savusavu. This survey, which was undertaken with the support of the Ministry of Agriculture, was aimed at establishing how the cyclone impacted market vendors and the extent of recovery. The key points of interest that emerged from this survey were:

- The majority (80 percent) of the survey sample indicated that TC Evan had affected their business through lost produce.
- Approximately 80 percent of respondents indicated they received outside assistance (in the form of family/community support; charitable donations; government assistance; savings; alternative employment, etc.).
- 65 percent of respondents noted that their financial position had worsened and they are now in debt.

Recovery and Reconstruction

To establish appropriate recovery and reconstruction activities further consultations for those most affected in the commerce sector, micro and small businesses (particularly those selling agricultural produce), are recommended. As a general observation, the assessment noted that as a DRM and a climate-change adaptation measure, consideration should be given to piloting an optional relocation program for small businesses in flood-prone commercial hubs such as Nadi and Ba to nearby higher land. Part of the cost could be paid by business owners, in partnership with a lead partner either from Government or from the development partner community.

3.7 INFRASTRUCTURE SECTOR

Infrastructure development is identified as a cross-cutting issue when looking at economic development holistically. It involves transportation linkages by land, sea and air and involves the provision of key utilities such as water, energy and telecommunications. In essence infrastructure provides the key lifelines for an economy to develop and grow and is a catalyst to attract local and foreign investment.

Government has invested significantly in infrastructure with a budget allocation of around F$228 million on average for the last three years (2010 to 2012). In 2013, Government has allocated F$483 million to the sector (almost 67 percent of the total capital budget). The majority of the funding allocated in 2013 is for the upgrading of roads and construction of jetties.

The total effect of TC Evan on the infrastructure sector as a whole is approximately F$21 million. The highest levels of damage were recorded by the transport sector with approximately F$10 million, followed by electricity with damage of F$6 million, water and sanitation at F$3 million, and communications[26] at F$1.4 million. In addition, damage to Government buildings was estimated to be approximately F$1.2 million.

Table 38 – Summary of Damage and Loss for the Infrastructure Sector

Sector	Sub-sector	Damage (F$)	Loss (F$)	Total Effect (F$)	Public (F$)	Private (F$)
Infrastructure	Government Buildings	1,089,689.88	69,554.67	1,159,244.55	1,159,244.55	-
	Airports	1,714,345.00	166,040.00	1,880,385.00	-	1,880,385.00
	Ports	320,000.00	100,000.00	420,000.00	-	420,000.00
	Road and Highways	3,667,296.02	3,871,268.61	7,538,564.63	7,538,564.63	-
	FEA	4,300,000.00	1,455,673.39	5,755,673.39	5,755,673.39	-

[26] Only Telecom Fiji Limited (TFL). Other telecommunication service providers such Vodafone and Digicel are not captured as part of this exercise.

Sector	Sub-sector	Damage (F$)	Loss (F$)	Total Effect (F$)	Public (F$)	Private (F$)
	Water	2,945,000.00	104,152.38	3,049,152.38	3,049,152.38	-
	Communication	1,141,000.00	294,150.00	1,435,150.00	1,435,150.00	-
		15,177,330.90	**6,060,839.05**	**21,238,169.94**	**18,937,784.94**	**2,300,385.00**

Source: Estimates based on official Government of Fiji data.

Transport

The transport sub-sector, which is guided by Government's development agenda, provides cost-efficient transport services that are safe and environmentally sustainable to enhance access to and link key economic sectors. Its contribution to GDP averaged around 4.3 percent over the last five years (2007-2011). Formal and informal employment within the sub-sector are mainly driven by the land transport industry.

Pre-disaster Situation

The Fiji Roads Authority (FRA) was established in 2012 to be responsible for all matters pertaining to construction, maintenance and development of roads in Fiji. A number of externally financed projects are underway including the upgrading of the Buca Bay Road and Nabouwalu/Dreketi Road in Vanua Levu; the Sawani/Serea Road; Valley Road; the upgrading of the Queens and the Kings highways; and Moto Road in Viti Levu. This is expected to provide critical market links for farmers and buyers and substantially reduce costs. The focus of Government is the maintenance of existing road networks through investment in effective and efficient management systems. Table 39 provides information on the road network for both urban and rural areas and the three main pavement types maintained by the FRA.

Table 39 – Fiji Road Network Statistics by Division.

Area	Pavement Type	Rural (km)	Urban (km)	Total (km)
Central/Eastern	Sealed	279.610	342.260	621.872
	Unsealed	654.770	28.751	683.521
	Unmaintained	244.200	0.000	244.200
	Total	**1,178.583**	**371.010**	**1,549.593**
Northern	Sealed	214.939	32.180	247.119
	Unsealed	1,243.837	6.489	1,250.326
	Unmaintained	1,709.000	0.000	1,709.000
	Total	**3,167.776**	**38.669**	**3,206.445**
Western	Sealed	419.863	194.872	614.735
	Unsealed	1,198.581	0.000	1,198.581
	Unmaintained	4,547.270	0.000	4,547.270
	Total	**6,165.714**	**194.872**	**6,360.586**
TOTAL NETWORK LENGTH (km)		**10,512.073**	**604.551**	**11,116.624**

Source: FRA.

There are two international airports in Fiji operated by Airports Fiji Limited (AFL) that facilitate both international and domestic flights. There are 12 airstrips which are under the auspices of Government via the Solicitor General's Office, and other private airstrips that are owned by hotels and resorts. Some island resorts use helicopters as well as seaplanes as the preferred mode of transport for their operations.

There are two main shipping ports in Fiji which are located in Suva and Lautoka, and roll-on-roll-off jetties which support domestic shipping services for the maritime islands. Services to these islands are provided both by private and domestic franchise services.

Post-Disaster Situation

The total damage and loss sustained by the transport sub-sector is estimated at approximately F$9.92 million. The largest effect was sustained by roads and highways, followed by airports, local ports and jetties. Table 40 provides a breakdown by sub-sectors.

Table 40 – Damage and Loss to the Transport Sub-Sector.

Number	Sub-Sectors	Value (F$M)
1	Road and Highways	7.6
2	Ports	0.42
3	Airports	1.8
Total	**-**	**9.9**

Source: Estimates based on official Government of Fiji data.

Table 41 shows the damages to roads and highways, with major damages sustained in the Central Division in areas such as Wailoa Road, Vunidawa Road, Sawanikula, Namosi, Nakavika roads and Naqali Bridge. Inundation of most of these areas caused gravel to wash out. A similar situation occurred in the Eastern Division. In the Western Division, damage was evident on the main Queens and Kings highways and community roads, whilst for the Northern Division, major roads affected were in Nabouwalu, Lutukina, Naduna and Buca Bay.

Table 41 – Damage and Loss to Roads and Highways.

Details	Damage (F$)	Loss (F$)	Total Effect (F$)
Estimated Damage/Loss in the Central Division (roads, highways, bridges)	1,065,740.00	54,650.00	1,120,390.00
Estimated Damage/Loss in the Eastern Division (roads, highways, bridges)	772,604.00	20,000.00	792,604.00
Estimated Damage/Loss in the Northern Division (roads, highways, bridges)	474,820.72	947,515.38	1,422,336.10
Estimated Damage/Loss in the Western Division (roads, highways, bridges)	1,054,131.30	-	1,054,131.30
Estimated Damage/Loss to Bus Transport	300,000.00	1,287,760.00	1,587,760.00
Estimated Loss to taxi transport	-	1,295,303.23	1,295,303.23
Total Damage and Loss	**3,667,296.02**	**3,605,228.61**	**7,272,524.63**

Source: Fiji Roads Authority (FRA).

Within four days of the event, closures to minor roads were cleared, and traffic was restored to a minimum of one lane. These closures did not affect the movement of people or goods (i.e. the road closures resulted in minor to zero losses for the road and highways, particularly in the Western Division).

Table 42 – Damage and Loss to Airports and Ports.

	Damage (F$)	Loss (F$)	Total Effect (F$)
Airports	1,714,345.00	166,040.00	1,880,385.00
Ports	320,000.00	100,000.00	420,000.00
Total	**2,034,345.00**	**266,040.00**	**2,300,385.00**

Source: Airports Fiji Limited (AFL), Fiji Ports Corporation Limited (FPCL), Consort Shipping Ltd and Goundar Shipping.

Structural damage to airports included the AFL dock and launching ramps; the roof of AFL operations building; aircraft (VH-DQQ C182); the arrival concourse; roads; signage; aerobridge; and damage to property. Economic loss to airports is estimated to be around F$0.17 million, attributed to cleanup costs, the purchase of new generators, hire of chainsaws and manpower, with extra costs for replacing some mahogany furniture. Additional losses were incurred as a result of the closure of Nadi Airport and disruption to services on the 17th to 18th of December 2012.

The ports sub-sector experienced damage to roofing, lighting and wires within the Ports Terminal. Consort Shipping also reported damage to one of their ferries at a cost of F$0.2 million, while Goundar Shipping recorded a loss of F$0.1 million due to disruption of services.

Social Dimension

The extent of damage and loss caused to the transport sub-sector may have had minimal impact on the overall economy; however, the social impact was significant. For example, difficulty was experienced by exporters who sought to transport crops to market. Many persons experienced the ill effects of not being able to undertake normal travel to fulfil their livelihoods.

Recovery and Reconstruction

Rehabilitation to roads and highways was carried out by the Fiji Roads Authority and its contractors throughout all the divisions. An additional F$2 million will be required for full restoration of roads in rural areas. It is suggested that $0.1 million be allocated for cash-for-work programs for future disasters.

Table 43: Recovery Needs for the Transport Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Roads and Highways	Restoration of minimum traffic flows through destroyed road sections	2,022,165.38	FRA	Due to minimum extent of damage, Government has not redeployed any budget allocation for rehabilitation needs. This has been fully met by FRA through its existing allocation
-	Cash for work schemes for clearing of debris	100,000	FRA/RFMF/ Municipalities	Can be sourced from within agency budget. F$0.2 million was allocated to municipalities for rehabilitation works
-	Continuation of 5 percent fiscal duty (reduced from 32 percent) of importing heavy vehicles and new special type vehicles. Existing taxi-meter rates will continue until 2015	4,402,963.23	Government (MWTPU), LTA	This is to support the bus and taxi industry to recover income losses. For future consideration, further decreases to fiscal duty can be made on a temporary basis for special cases such as disasters.
Airports	Temporary tax relief scheme	250,000	FRCA	This is to support Goundar Shipping, Airport Fiji, and Pacific Sun in recovering revenue lost. However, this will require further analysis.
Total		**4,955,228.61**		

Source: Airports Fiji Limited (AFL), Fiji Ports Corporation Limited (FPCL), Consort Shipping Ltd & Goundar Shipping,

To support the bus and taxi operators, it is recommended that Government continue to levy 5 percent fiscal duty for the import of heavy machinery and new special-type vehicles. In addition, some form of temporary tax relief could be developed to assist the airports and ferry ships to recover revenue lost after the cyclone. This scheme is subject to a thorough assessment by FRCA, taking into consideration government's fiscal position in the 2013 Budget.

Table 44 – Reconstruction Needs for the Transport Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Road and Highways	Rehabilitation costs to all roads that were closed or damaged	2,892,994.00	FRA	This will be met by FRA within its exiting budget allocation for 2013
Airports and Ports	Reconstruction costs to fix airport damages	2,034,345.00	AFL, FPCL	It is unknown yet as to how these costs will be met. It is assumed all (or at least 50%) of these costs will be covered by insurance.
Total		**4,927,339.00**		

Source: Airports Fiji Limited (AFL), Fiji Ports Corporation Limited (FPCL), Fiji Roads Authority (FRA).

It is estimated that reconstruction will cost about F$5 million, particularly to repair all roads, airports and ports to pre-disaster levels. This includes F$1 million to complement on-going rehabilitation and development, in particular for rural roads in the Northern and Western divisions. Reconstruction work for roads must adhere to agreed minimum international standards to ensure resilience to adverse weather conditions.

Electricity

Summary

The electricity sub-sector accounted for 1.09 percent of GDP in 2010 compared to 1.02 percent in 2009. Fiji, like any other country in the region, is heavily dependent on imported fuel to meet a major component of its energy demand. As such, Fiji is vulnerable to fluctuations in world crude oil prices. In the past few years, demand in Fiji has increased from around F$340 million in 2000 to F$1.13 billion in 2010.

Pre-disaster Situation

The provision of a regular energy supply is critical for any economy to function. The availability of reliable and cost effective energy is a necessary pre-requisite for attracting the private sector investment needed to create employment, alleviate poverty and increase exports. Although Fiji is highly dependent on diesel fuel to supply reliable power to meet the demand, it has installed and developed renewable energy sources from hydro, solar, biomass, biodiesel, biogas and wind to provide cheap and clean sources of energy for consumers.

The Fiji Electricity Authority (FEA) is the sole provider of electricity for the urban cities and towns while the Department of Energy has its Rural Electrification Program that covers the rural and remote areas. Table 45 shows the various sources of electricity, the number of units and the installed capacity.

Table 45 – Total Power Generation Supplied by FEA.

Power Generation Type	Name of plant	Number of units	Installed capacity, KW
Hydropower Plants			
	Monasavu Hydroelectric Scheme – Viti Levu	4	80,000
	Nadarivatu Hydroelectric Scheme – Viti Levu	2	20,000
	Wainikasou Hydro Scheme – Viti Levu	2	6,600
	Nagado Power Station – Viti Levu	1	2,800
	Wainiqeu Power Station, Vanua Levu	2	800
Total Hydropower Plant		**11**	**109,200**
Thermal Plants			
	Kinoya Power Station – Viti Levu	6	50,000
	Vuda Power Station – Viti Levu	4	22,000
	Sigatoka Power Station – Viti Levu	7	9,000
	Deuba Power Station – Viti Levu	3	4,000
	Nadi Power Station – Viti Levu	6	2,000
	Korovou Power Station – Viti Levu	1	800
	Levuka Power Station – Ovalau	5	2,000
	Labasa Power Station – Vanua Levu	6	12,000
	Savusavu Power Station – Vanua Levu	4	2,000
Total Thermal Plants		**42**	**103,800**
Other Plants			
	Butoni Wind Farm (Renewable)	36	10,000
Total Electricity Supply		**89**	**223,000**

Source: FEA.

The current average generation mix lies at 55 percent hydropower, 40 percent diesel and heavy fuel oil, 1 percent wind power, with the remaining 4 percent provided by Independent Power Producers (IPPs). The IPPs provide power through the Fiji Electricity Authority's (FEA) grid network on the two main islands and Ovalau. Imported petroleum for diesel back-up generators is used to supplement the renewable sources. The Department of Energy has also installed more than 600 diesel-based systems in various rural communities.

The amount of electricity generated and sold by FEA is projected to increase as a result of Government's Rural Electrification Program which, apart from the extension of the grid networks and diesel schemes, also encourages the utilization of solar home systems in rural communities.

Post-Disaster Situation

Table 46 – Damage and Loss to the Electricity Sub-Sector.

Detail	Damage (F$)	Loss (F$)	Total Effect (F$)
Damage sustained to distribution lines	4,100,000.00	-	4,100,000.00

Detail	Damage (F$)	Loss (F$)	Total Effect (F$)
Damages to Butoni Wind Farm (Renewable)	200,000.00	-	200,000.00
Loss in Income (lost pay by consumers) – 12.5 percent of electricity sales	-	1,455,673.39	1,455,673.39
Total Damage and Loss	**4,300,000.00**	**1,455,673.39**	**5,755,673.39**

Source: Fiji Electricity Authority (FEA) Estimates.

The FEA recorded damage of F$4.1 million to their distribution lines and F$0.2 million to the Butoni Wind Farm (Table 46). The former includes labour costs and back-up power supplied to certain divisions. The bulk of the damage was in the Western Division, particularly fallen power poles, broken power lines and aggravated damage to transformers. It took 4-5 weeks to fully restore power in the Western Division, 2 weeks in the Northern and 3-4 days in the Central/Eastern divisions. Power sharing in affected areas is usually conducted during cases of disaster or unexpected disruptions to FEA's power lines.

Sales of electricity in 2012 were 290,452 KWh with annual sales revenue of F$11.65 million. FEA has assumed that lost sales will be equivalent to 12.5 percent of total sales. Foregone revenues is estimated at F$1.46 million. The total effect on the electricity sub-sector is estimated at F$5.76 million.

Social Dimension

Power and energy is essential to the economy and maintains a comfortable standard of living for the population. Power disruptions to the affected areas had a knock-on effect on businesses and other commercial sectors, and caused a temporary impact to the livelihoods of affected communities. Any attempt to reconstruct the electrical infrastructure systems should follow international planning and design standards of a combination of relocation and/or undergrounding existing energy assets. The relocation or undergrounding of power lines will have a positive impact if they are built back better to become more resilient to natural hazards. Disaster-resilient electrical systems will assist the commerce sector by minimizing service disruptions and residents will be able to experience normalcy shortly after a disaster.

Recovery and Reconstruction Needs

Approximately F$2.2 million is needed for full recovery of current electricity networks so that it can return to pre-disaster levels or optimally exceed these. It is recommended that F$3.5 million be sourced from the rural electrification program (F$1 million from total allocation redeployed), and that the balance is sought from development partners to fund the construction of inter-connection schemes from nearby undamaged electrical systems. A detailed plan should be developed by FEA to support those areas that experience power disruption during disasters through the use of generators.

Table 47 – Recovery Needs for the Electricity Sub-Sector

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Electricity	Urgent rehabilitation works to restore minimum electricity supply	2,201,923.08	FEA	This can be undertaken on a medium- long-term basis.
	Scheme of interconnection to nearby undamaged electrical systems	3,500,000	FEA with international donor partners	Assessment needed to determine which areas is disaster prone and conduct work on interconnection so that power disruption is minimal during disasters.
	Operational Audit	3,500		Technical assistance to FEA
Total		**5,705,423.08**		

Source: Fiji Electricity Authority (FEA) Estimates.

In addition, approximately F$1 million is required to assist FEA in the reconstruction and replacement work using disaster resilient standards. A budget of F$10 million[27] is required and it is recommended that the financial assistance of donor and development partners be sought to develop a long-term solution to power blackouts through the relocation and under-grounding of power lines.

[27] This is a provisional figure for consideration in the medium-long term.

Table 48 – Reconstruction Needs for the Electricity Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Electricity	Reconstruction of damaged electrical systems and replacement of electrical equipment and machinery using disaster resilience standards	5,300,000	FEA	FEA had issued F$4.3 million for reconstruction and rehabilitation works. Extra F$1 million (unmet) budgeted to fully conduct reconstruction needs to areas affected around Fiji
	Relocation of selected electrical system components to ensure disaster resilience	10,000,000	FEA with international donor partner	A long-term solution is necessary so that electricity/ power is disaster resilient. FEA had proposed for relocation and under-grounding of power lines.
Total		**15,300,000**		

Source: Fiji Electricity Authority (FEA) Estimates.

Communications

Information and Communications Technology (ICT) is of crucial importance to Government in providing maximum public awareness of Government's plans, programs and policies. Such awareness contributes to an informed public, which ultimately impacts positively on social and economic development. The contribution of the telecommunications sector towards GDP is approximately 6 percent.

Pre-disaster Situation

The greater use of ICT is essential for social and economic development in Fiji. The development of the communications sub-sector is characterized by the increased usage of cellular phones, facilitated by the two operators Digicel (Fiji) Ltd and Vodafone (Fiji) Ltd. Landline telecommunication has significantly improved with Telecom Fiji Ltd (TFL) enjoying monopolistic rights as the sole provider. Those companies providing cellular networks have been able to diversify into other areas and become internet service providers. Table 49 shows the pre-disaster status of assets from TFL.

Table 49 – Land-Based Communication Infrastructure.

	NUMBER PER DIVISION			
Items	**Central-Eastern**	**Western**	**Northern**	**Total**
Buildings	39	40	18	97
Towers	22	26	16	64
Standby Generators	19	17	10	46
Furniture	1316	376	188	1888
Equipment – Fixed Wireless	41	40	20	101
Switches	21	22	10	53
Air Condition Units	245	70	35	350
Computers	1216	347	174	1737
Total	**2919**	**938**	**471**	**4336**

Source: Telecom Fiji Limited.

Mobile telecommunication continues to be the preferred mode of communication for most people in Fiji. Vodafone Fiji has approximately 350 stations Fiji-wide.

Access to traditional ICTs such as radio and television is high. Over 90 percent of households are estimated to have a radio, and over half the population has access to television. Internet usage is increasing and people are also becoming more exposed to ICT through their mobile phones and the use of text messaging. Electronic transactions in Fiji have also become widespread with financial institutions also preferring and encouraging the use of e-banking. ICTs have the potential not only to create new jobs through call centres and other related activities, but also to empower rural dwellers with information and provide low-cost tele-services.

The adoption of ICT is vital to improving productivity, especially in the public sector. Government intends to deliver as many online services as possible and make greater use of ICT in order to improve internal processes. Government is encouraging modernization of systems by supporting the development of the ICT sector. On this note, e-community learning centres are being established in rural areas to enable communities to access information, public services, and business products and services on the internet.

Post-Disaster Situation

TFL services were disrupted as a direct effect of electricity faults and blackouts. Major damage to telecommunication was estimated to be F$1.14 million and comprised costs for restoring services, infrastructure and equipment (Table 50). The most damage occurred in the Western Division, with an estimated restoration cost of F$0.92 million. Two critical TFL sites – the first in Nacula in the Yasawa Islands, and the other in Navau (between Ba and Lautoka) – were damaged. These two sites were critical as they serviced TFL's rural customers in these areas.

Table 50 – Damage and Loss to the Communication Sub-Sector.

Communications	Disaster Effect		Total Effect (F$)
	Damage (F$)	Loss (F$)	
Restoration costs for affected TFL networks (FEA power restorations)	52,200		52,200.00
Restoration costs for Customer System/Services Fault (FEA Power Outage)	86,300.00		86,300.00
Restoration costs for Western Division on Infrastructure & Equipment (tower mast, building, cable access network)	922,500.00		922,500.00
Restoration costs for e for Northern Division on Infrastructure & Equipment (tower mast, building, cable access network)	25,000.00		25,000.00
Restoration costs for Central/Eastern Division on Infrastructure & Equipment (tower mast, building, cable access network)	55,000.00		55,000.00
Estimated losses in revenue due to affected TFL networks (FEA power restorations)		87,460	87,460.00
Estimated losses in revenue for Customer System/Services Fault (FEA Power Outage)		47,510.00	47,510.00
Estimated losses in revenue for Western Division on Infrastructure & Equipment (tower mast, building, cable access network)		20,000.00	20,000.00
Estimated losses in revenue for Northern Division on Infrastructure & Equipment (tower mast, building, cable access network)		2,000.00	2,000.00
Estimated losses in revenue for Central/Eastern Division on Infrastructure & Equipment (tower mast, building, cable access network)		52,000.00	52,000.00
Estimated extra costs incurred for use of generators - Fuel costs		85,180.00	85,180.00
Totals	**1,141,000.00**	**294,150.00**	**$1,435,150.00**

Source: Telecom Fiji Limited.

The loss from the telecommunication sector was calculated from the loss in revenue from the four divisions. This foregone revenue is a result of the disruption to networks caused by electricity failures and reports of faults to customer services. The loss of F$208,970 comprised entirely of extra fuel costs for back-up generators. Extra fuel costs was valued at F$85,180 as a result of TC Evan in December 2012.

Social Dimension

Communication was a major issue during TC Evan; the National Emergency Operation Command Centre was unable to contact the Commissioner Western office for 48 hours. As a result, a team from the Central Division was deployed to the Western Division to provide relief assistance, and conduct assessment of the disaster.

During disaster, communication becomes even more critical to ordinary citizens when trying to find and contact their loved ones to reassure their safety. The damage to the communication sub-sector has been underestimated due to data limitations. Nevertheless, it is assumed that these companies would have gained from an increase in the number of people calling their friends/relatives in affected areas. Minor losses are expected from the free call time provided to users; however, this would be more than offset by the increased revenue collected from increased calls. There were no official reports of damage to communication towers from the two companies that would have sustained their losses.

Recovery and Reconstruction Needs

In order for the communications sector to fully recover, F$1.2 million is estimated to be needed to increase resilience. Out of this, approximately F$1.1 million is needed for immediate repair works to landline and internet connections (Table 51).

An "Emergency Communications Policy Framework" needs to be developed to inform how various channels of communications such as SMS notification, cell broadcasting, emergency radio-telephone systems and satellite phones deployment should be implemented and managed. This will include mapping and network design to allow an understanding of the measures for implementation of a comprehensive, resilient, robust communications system for effective management of disasters.

The development of a web-based information management system to allow improved disaster management communications at national, divisional and district levels for all ministries and agencies involved in preparedness, response and recovery should be encouraged. This system should also be designed to allow improved provision of community information in preparation and response to disasters.

Table 51 – Recovery Needs for the Communication Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency
Telecom	Urgent rehabilitation of telecommunication towers and equipment	1,141,000.00	TFL
	Develop policy and action plan to allow improved voice and data communications resilience for public works and utilities in response to natural disasters	5, 000	TFL and Ministry of Communications
	Development of a working paper for a web-based information management system to allow improved disaster management communications	5, 000	
	Completion of Terms of Reference for an operational audit of all key utility (water, electricity and communication) services.	3,000	MWTPU with donor assistance for technical assistance
Total		**1,154, 000.00**	

Source: Estimates based on Official Government of Fiji Data.

In the long term, approximately F$2.2 million is needed to fully rehabilitate communications landline using pre-disaster design and construction standards (Table 52). This would involve relocating towers and communication infrastructure for build back better in future disasters.

Table 52 – Reconstruction Needs for the Communication Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Telecom	Rehabilitation of communication systems using pre-disaster design and construction standards	2,200,000	TFL	Government is to assist TFL with $0.3 million in the reconstruction of their two critical sites in the Western Division

Source: Estimates based on Official Government of Fiji Data.

Government should consider assisting TFL to restore its two stations in Nacula (Yasawa) and Navau as they serve the majority of the rural customers in the area. Financial assistance will be in the tune of F$296,824.

Government Building Infrastructure

Summary

This section covers government-owned quarters and buildings that are managed jointly by the Ministry of Works and the Public Service Commission. These are regarded as government assets and form part of the infrastructure sector. The damage to the sub-sector totaled F$1.1 million while losses was approximately F$0.07 million from damage to government quarters, police stations, correctional facilities, government institutional quarters and court houses.

Pre-disaster Situation

Government buildings under infrastructure are police stations; court houses; Government quarters/houses; prisons; and ranger and forestry buildings.

Table 53 – Government Building Infrastructure[28].

Building Type	Eastern	Western	Northern	Central	Total
Judicial	4	9	4	3	20
Agriculture	12	23	18	70	123
Quarters	190	668	364	558	1780
Total	**206**	**700**	**386**	**631**	**1923**

Source: Ministry of Works, Transport and Public Utilities.

Based on the figures in Table 53, there are about 20 judicial buildings located around the four divisions with nine buildings located in the Western and four buildings in the Northern Division. There are approximately 123 agriculture institutional quarters in Fiji, with the Central Division having 70 buildings, followed by 23 in the West, 18 in the North and 12 in the Eastern Division. With regards to government pool and institutional quarters, there are about 668 in the Western, 558 in the Central, 364 in the Northern and 190 in the Eastern divisions. In total, there are about 1,780 quarters throughout the four divisions in Fiji.

Post-Disaster Situation

The Western Division was the worst affected. The Lautoka area recorded structural damage of F$0.98 million with fully/partly blown-off roof-tops, windows, electricity and wiring damage to the quarters and buildings. The Tavua area recorded damage valued at F$0.07 million, the Ba area of F$0.06 million and Nadi area of F$0.02 million. The total damage for government buildings was F$1.1 million and loss was valued at F$0.07 million. Loss was calculated under the assumption that 40 percent[29] of damage bills were labour costs and 15 percent of these were overtime payments to workers assisting in the reconstruction of these buildings.

Table 54 – Damage and Loss to Government Buildings

Government Building Infrastructure	Disaster Effect		Total (F$)
	Damage (F$)	Loss (F$)	
Reconstruction costs to building damaged by disaster	1,089,690	-	1,089,689.88
Estimated loss – from extra cost in providing labour (payment of overtime)	-	69,554.67	-
Total	**1,089,689.88**	**69,554.67**	**1,159,244.55**

Source: Ministry of Works, Transport and Public Utilities.

According to the Public Service Commission (PSC), government quarters were badly affected in the Western Division. A sum of F$168,197 was issued from PSC's Trade and Manufacturing Account (TMA) for the rehabilitation of 13 severely damaged quarters in Lautoka. Other minor repair work was conducted to other districts in the Western Division.

Social Dimension

The damages to Government buildings affected the normal operations of agencies during and after the disaster. Many public servants in the Western Division experienced damage to their government quarters and were left traumatized by the event. Some took 2– 4 days leave to conduct necessary maintenance to their homes and belongings and provide comfort to family members.

[28] This includes government buildings that are under the jurisdiction of the Ministry of Works and Public Service Commission. The latter mainly managing pool and institutional quarters.

[29] According to the Ministry of Works, 40 percent of damage costs were labour wage bills.

Recovery and Reconstruction Needs

A total of F$0.5 million is needed for full recovery and reconstruction to Government buildings. Any additional costs will be met by Government through Public Service Commission's Trade and Manufacturing Account and with collection from rents received from government quarters. The Government may wish to consider some level of insurance to the stock of its buildings to reduce the burden of risk in the future.

Table 55 – Recovery Needs for Government Building Infrastructure.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Government Buildings	Payment of overtime to workers	20,000	MWTPU	To complement amount already paid out, particularly to ongoing reconstruction works

Source: Ministry of Works, Transport and Public Utilities.

Table 56 – Reconstruction Needs for Government Building Infrastructure

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Government Buildings	Repair and reconstruction of government building damaged	421,493	PSC/MWTPU	About F$0.5 million has been allocated by Government in 2012 for repairs works to buildings for police, prison, forestry, health and court houses

Source: Ministry of Works, Transport and Public Utilities.

Water and Sanitation

The reliable supply of clean, safe piped-water and efficient sewerage services are crucial for inducing greater economic activity and commercial developments for both rural and urban areas. Fiji has an abundance of water resources however there are persistent problems with the supply of piped water. The Government is looking at options to increase its water sources in order to meet the growing demand due to increased urbanization. Approximately 75 percent of Fiji's population has access to piped water and 25 percent have access to sewerage facilities. Government recognizes the importance of water and sewerage services in the socio-economic development of the country and will ensure that inhabitants of the most densely populated areas have access to regular and safe piped water and an environmentally friendly sewerage system.

Pre-Disaster Situation

The Water Authority of Fiji (WAF) was established in 2010 as a Commercial Statutory Authority responsible for the provision of water supply and sewerage services. The Authority has over 140,000 customers and most of its water reticulation system covers only the urban cities and towns while rural villages have their own independent water source – most of which are untreated water. Tabulated below is a list of assets available and its quantity with WAF.

Table 57 – Water Supply Assets.

Assets	Central	Eastern	Western	Northern	Total
Water intakes	12	13	17	22	64
Treatment Plants	8	6	11	19	44
Reservoir	32	24	34	31	121
Distribution Networks (no.)	7	7	7	4	25
Water Pumps Station/Pump	17/72	–	17/39	14/23	48/134

Source: Water Authority of Fiji.

Sewerage services in Fiji cover only the urban centre, city and town boundaries. The WAF is currently undertaking projects on sewer connections for residential areas along the Suva/Nausori corridor. This is likely to increase the percentage of population connected to the sewerage reticulation. Tabulated below is the list of sewerage system assets.

Table 58 – Sewerage System Assets.

Sewerage	Central	Eastern	Western	Northern	Total
Sewerage Pumps/Pump Stations	98/218	Nil	58/122	16/32	172/372
Treatment Plants	6	Nil	4	1	11

Source: Water Authority of Fiji.

Post-Disaster Situation

In the Central and Eastern divisions, damage was recorded to the overhead wires at Colo-i-Suva that affects the Suva/Nausori Water Supply and its population. In the Northern Division, damage totalled around F$132,000 particularly to the Labasa water supply in which access roads to water sources were damaged. There were also damages to water supply fences and security lights and the sewerage offices and lights in Labasa. In Seaqaqa, river bank erosion damaged the water supply and security lights. The Vunimauca and Taveuni water supplies also sustained damages of F$50,000 and F$10,000 to the generator and borehole , respectively.

The Western Division recorded the highest level of damage to the main water systems estimated at approximately F$2.78 million. Total damage and loss to the water and sanitation sector totalled F$3.1 million, with loss valued at F$ 0.1 million and damage at F$2.95 million (Table 59). The loss was derived by calculating the estimated loss in income to WAF due to water disruptions in the areas affected.

Table 59 – Damage and Loss to Water and Sanitation Sub-Sector

Sewerage	Disaster Effect		Total Effect
	Damage (F$)	Loss (F$)	(F$)
Suva/Nausori Water Supply - damage to overhead wires at Colo-i-Suva	30,000.00	-	30,000.00
In the Northern Division – there were damage to the Labasa Water Supply; Labasa Sewerage; Seaqaqa Water Supply; Vunimauca Water Supply; Taveuni Water Supply	132,000.00		132,000.00
In the Western Division – there were damages to the Sigatoka Water Supply; Nadi reservoir fence; Lautoka regional office and buildings; Ba overhead wires; Tavua Depot buildings; Rakiraki Bituralagi WTP. Sewerage: Sigatoka fences and buildings; Nadi Navakai STP and CAAF 1SPS; Lautoka Natabua Pond Liner STP, buildings and Sewer Pump Stations; Ba fences, SPS electrical wiring and soil erosion.	2,783,000.00		2,783,000.00
Estimated loss in income		104,152.38	104,152.38
Total	**2,945,000.00**	**104,152.38**	**3,049,152.38**

Source: Water Authority of Fiji Initial Damage Assessment Report and Income and Expenditure Statement 2011.

Social Dimension

Continuous supply of clean water is critical during and after natural disasters for drinking and sanitation purposes. Without a secure supply of clean water, many sectors would be affected and this would result in the closure of schools, health facilities and business and also leads to outbreak of communicable diseases.

Recovery and Reconstruction Needs

Approximately F$125,000 is needed to purchase 50 water tanks and to strategically locate them in the remote island areas like the Yasawa Group and other disaster-prone areas in the Western Division aligning their location to evacuation centres (Table 60).

[30] Damage to overhead wires.

[31] The major damage was in the area of Sigatoka such as Keiyasi, Voua, Korotogo reservoirs and damage to fences and buildings at Olosara Sewerage Treatment Plant (STP), Kedrakulu Sewerage Pumping Station (SPS) and Lawaqa SPS. In Lautoka, there was damage to the regional office, water resource management building, Lautoka sewerage pump stations, buildings and fence and the Natabua Pond linear which sustained damage estimated at F$1 million. In Ba, there was damage to their office fence, SPS electrical wiring and their overhead wires between the generator and borehole. Tavua experienced damage to their depot buildings estimated at F$30,000 including damages to their Bituralagi Sewerage plant. In Nadi, damages is estimated at F$45,000 mainly for the Navakai STP and CAAF 1 SPS and their reservoir fence.

Table 60 – Recovery Needs for Water & Sanitation Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Sanitation	To enhance the capacity for Government and other partners in prepositioning of materials	100,000	WAF, UNICEF	From initial requirement of $250,000, approximately $150,000 has been met through HAP. The balance of $0.1 million is still unmet through supply of wash kits for affected communities
Water	Temporary provision of water by use of tanker trucks	125,000		For strategically pre-positioning of new water tanks in disaster prone areas and also evacuation centres
Total		**225,000**		

Source: Estimates based on official Government of Fiji Data.

Full rehabilitation needs would require F$3.2 million so that all water systems are restored and people receive clean and safe drinking water. To improve communication within the water and sanitation sub-sector, F$0.4 million is needed for the purchase of satellite phones. The WAF would also require technical assistance to conduct full operational audit to ensure improved disaster preparedness and response to minimize disruptions to water supply, particularly in rural areas.

Table 61 – Reconstruction Needs for Water and Sanitation Sub-Sector.

Sub-Sector	Programs of Activity	Value (F$)	Execution Agency	Comments
Water	Reconstruct water services	3,239,500	WAF	$0.3 million to be redeployed from 2013 budget to fulfil unmet needs. The rest is to be sourced from within WAF 2013 budget
Water	Purchase of satellite phones	400,000	WAF	This is to be located in strategic stations so that communication is not affected during disasters. This can also be used by other key utility sectors (FEA, Telecom)
	Operational audit to improve disaster preparedness	3,000		Conducted on all key public utilities
Total		**3,642,500**		

Source: Estimates based on official Government of Fiji Data.

4.

CROSS CUTTING ISSUES

4.1 GENDER

The inclusion of gender considerations in disaster-related policy, strategy and/or program is critical to ensuring that the different needs and interests of the most affected population are adequately addressed. Accordingly post-disaster damage and loss assessments must be gender responsive and equitable. Central to such assessments is the disaggregation of data by age and sex, including wherever possible other diversities like ethnicities and disabilities, in order to clearly see trends or impacts across geographic regions, which in turn informs equitable recovery and reconstruction programs.

As the human impact of TC Evan in Fiji was limited, this may help to explain why no fundamental gender issues became apparent during the assessment. The sectors in which gender differences were considered featured: agriculture, tourism and housing. During the baseline data collection phase, sectors were asked as much as possible to disaggregate their data by gender; however, this proved to be a challenge as the classifications vary across the sectors.

Overall Demographics of TC Evan impact

Fiji's population, according to the last census count, consists of 49 percent women and 51 percent men[32]. The geographical areas most affected by TC Evan in Fiji were the Northern and Western divisions, which account for 54 percent of the total population. Of the affected population, 27 percent were women while the other 28 percent were men, indicating that there is not much differentiation in the balance. Of the affected population, 27 percent were i-Taukei, 25 percent Indo-Fijian while the remaining 2 percent were from other ethnicities.

Overview of pre-existing vulnerabilities of women, men, boys and girls

More than two-thirds of Fiji's population live in poverty[33]. The majority of Fiji's poor are concentrated in the divisions most affected[34] by TC Evan – 54 percent in the Northern Division, 40 percent in the Western Division and the Central Division only at 23 percent. While there has been a decline in poverty in urban areas, the rural areas remain unchanged. Factors contributing to poverty levels range from geographic location, size of families, families with many children and elderly, and education level.

In general, the labour force remains dominated by men with a slightly higher concentration in waged salary, 64.9 percent compared to 61 percent for women. Women are concentrated in subsistence work (27.1 percent to 11.2 percent). In terms of self-employment (businesses), there is a difference of only 1 percent between men and women. Even though employment levels have increased since the last census, the unemployment rate has increased as well. The female unemployment rate has more than doubled. The unemployment rate remains highest among rural women, and subsistence workers are also most concentrated in the agricultural sector in rural areas.

Fiji has ratified international conventions promoting gender equality – most notably the Convention of Elimination of all forms of Discrimination against Women (CEDAW) – and has implemented the National Women's Action Plan 1998 – 2008. The National Disaster Management Plan (1995) also makes a provision to ascertain and address women's interests in disasters, instructing the relevant line Ministry (currently the Ministry of Women, Social Welfare and Poverty Alleviation), to "coordinate the involvement of Women's Groups in post-disaster works."[35]

Sectoral issues for gender analysis

Agriculture – The agriculture sector in Fiji is large and complex, and appears to be highly male dominated. 78 percent of all informal sector activity in Fiji involves agriculture, forestry and fishing and one third of those involved in such activities are women. Official statistics indicate that 96 percent of farmers are men, based on the official definition, which refers to farms of at least 50 square meters in size. While women comprise only 4 percent of farmers, they make up 19 percent of paid farm labourers and 29 percent of unpaid farm labourers (Rural Pacific Island Women and Agriculture). At the same time, the total number of people engaged in agriculture (including farmers and both paid and unpaid farm labourers) is by far the largest segment of the labour force, in terms of livelihoods and employment.

[32] Fiji Bureau of Statistics (2008). Census 2007 Results: Population Size, Growth, Structure and Distribution. Fiji, Suva. Retrieved at http://www.statsfiji.gov.fj/ on 21 Feb 2012.

[33] The World Bank (2011). Republic of Fiji – Poverty Trends, Profiles and Small Area Estimation (Poverty Maps) in Republic of Fiji (2003-2009).

[34] Ibid.

[35] NDMO, Fiji National Disaster Management Plan 1995, page III-9.

Since it is a predominant economic sector, and often the most heavily affected by cyclones, the substantial gender imbalance in this sector is of concern. Recovery programs focusing on the agricultural sector must be quite attentive to gender issues so as to benefit both men and women equally.

Housing – Housing classifies type of buildings as private or public, with no data collected on the disaggregation by sex of private ownership. Sex-disaggregated data would be essential to ensure that housing reconstruction programs would equally benefit both men and women.

Tourism – No disaggregated data was available on total numbers employed in the tourism industry so it was difficult to gauge if there were any gender-differentiated patterns in terms of lost income; however, the trade union covering the tourist sector commented informally that its membership is about half men and half women. Additional information would be useful regarding male and female employment patterns within the tourist sector, and average salaries per type of job, as this would enable a more accurate picture of the differential effect on men and women in the sector and how best to design and target a recovery program.

Recommendations for gender-responsive post-disaster assessments

Gender is a challenging cross-cutting issue for disaster risk management in Fiji. Some practical recommendations to facilitate a more thorough gender-differentiated impact analysis in future disasters include the following:

- Continue to explore gender differences routinely in national and/or social assessments and any information management system; ensuring that sex disaggregated data are collected in initial damage assessments following an event.
- Technical assistance should be provided to line ministries and the FBOS on how to gather and analyse sex and age disaggregated data (SADD). UN agencies and SPC can initially provide this expertise. Data collection should maintain a broad focus to include the subsistence and informal sectors, which have a higher concentration of women.
- Under the cluster system recently introduced in Fiji, the Safety and Protection Cluster focuses on women's vulnerabilities in a disaster context. This can be combined with an approach which also promotes women's empowerment, active involvement and skills development.
- Triangulation is the best approach to gather any evidence of increased gender-based violence in the aftermath of a major disaster. This means seeking data from several sources, including: social impact assessment and related focus group discussions, key informant interview, cases documented by women's NGOs, and police reports of domestic violence incidents.
- Given the traditional roles of men and women in Fiji, women usually shoulder the highest burden of unpaid work and household chores. Therefore, potential increased demands on women's time post disaster should be investigated, and time-use studies can be a methodology well-suited for this purpose.
- Over the medium term, consideration be given to develop a gender strategy or guidelines customized for Fiji on how to mainstream gender into national disaster risk management arrangements (response, recovery/ rehabilitation, mitigation and preparedness) including damage and loss assessments.

4.2 ENVIRONMENT

Over the years, damage and loss to the environment as a result of a natural hazard is often overlooked and under-reported as part of the total damage assessment conducted by Government. The difficulty is that the value of damage to the environment is considered as an intangible value. Also, losses are often captured in the sector in which they occur, for example, losses arising from damage to trees are captured within the forestry sub-sector under the agriculture sector. In addition, valuation of damage to the environment is sometimes seen as a cross-cutting issue and that the reporting responsibility falls with the line Ministry. For example, assessment of damages to beach fronts is the responsibility of hotel operators as the value of damage will be directly related to the replacement cost and the benefits that hoteliers accrue as a result of its use.

Following a disaster, line ministries tend to focus on damage to assets and the subsequent cost of damage is based on the replacement value; however, measuring damage to the environment and determining the replacement cost is difficult given the absence of proper baseline data. In addition, costing can be complicated by the fact that environmental hazards can be rehabilitated through natural processes. In some cases rehabilitation of the environment comes in the form of long-term mitigation projects such as the watershed management projects, dredging and coastal and shoreline protection projects. These projects are implemented to mitigate against future impacts on specific disasters.

The core activity of the Department of Environment is to enforce the Environment Management Act 2005 solely for the protection of the environment. Consequently, developments and developers are to comply with regulatory requirements that will protect the environment and also provide a platform to reduce risk from damage due to natural disasters. For example, the construction of resorts and hotels along the coastline and beaches should be compliant with the Constructional Environment Management Plan which clearly identifies the operational procedures to avoid erosion during natural disaster (e.g. storm surge). This reinforces the fact that the role of the Department of Environment should be more proactive than reactive. In this sense the Department of Environment encourages and stresses the need for integrated pre-development planning as it will reduce risks of damages to the environment by natural disasters. This has led several ministries and departments to conduct hazard and risk analysis to inform the design of mitigation strategies and embed the concept of building back better to protect against environment degradation caused by these natural occurrences.

In order to improve future post-disaster assessments, it is recommended that a mechanism is put in place to monitor environmental degradation. This will help to create a baseline which will inform any environmental impact assessments undertaken. In turn this will enable the value of damage and loss to the environment to be taken into consideration and consolidated with sectoral damages and loss assessments undertaken by Government.

5.

DISASTER RISK MANAGEMENT

Summary

Over the last forty years Fiji experienced tropical cyclone events almost every year or biennially. Fiji's disaster management arrangements are covered under the Natural Disaster Management Act 1998 and the National Disaster Management Plan 1995. Supporting hazards and agency plans complement these two national instruments that guide and direct action taken for disaster preparation, response and rehabilitation. The NDM Act and NDM Plan were prominent again at the operationalization of DRM arrangement during the TC Evan event. Special attention has been focused on community DRM arrangements as Fiji communities are more rural rather than urban based. Traditional early warning practices are still observed in Fiji to alert changing weather patterns and have been used to alert the community of an imminent cyclone event. TC Evan was no different.

TC Evan has had a negative impact on livelihoods of people affected particularly in exacerbating poverty in already poor and vulnerable communities. Despite these negativities, certain good practices were observed that augured well for existing DRM arrangements in the country. Short- to medium- and long-term recommendations for DRM are put forward for consideration in this PDNA findings.

Incidence of cyclones in Fiji – historically over last 40 years

Fiji is threatened by a range of natural hazards, including floods, droughts, cyclones, landslides, tsunami and earthquakes. The data in Table 62 suggests that cyclones are the most common recurring natural hazard in Fiji, with 32 cyclones recorded in a 40-year span (1972-2012). In contrast, the most recent significant tsunami occurred in Fiji in 1953. It should also be noted that floods in Fiji are increasing in frequency and intensity, with what was previously considered a 1-in-50-year magnitude flood occurring in 2009, with two further floods in 2012. Climate change is most likely a factor aggravating the greater frequency and severity of floods, and this may also be the case with cyclone incidence, as both of these hazards are considered extreme weather events.

Table 62 - Past Tropical Cyclones in Fiji 1972-2012.

Cyclone name	Year	Category of Cyclone	Number of deaths	Cost of Event F$ millions
Bebe	1972	3	18	
Lottie	1973	3	70	
Tina	1973	2	NR	
Fay	1978	2	NR	
Meli	1979	3	52	
Wally	1980	1	16	
Mark	1982	3	NR	
Oscar	1982	5		
Erick	1985	3	23	132.09
Nigel	1985	3	incl above	
Gavin	1985	4	7	
Hina	1985	3	3	
Martin	1986	3	2	
Rajah	1986	3	1	43.97
Rae	1990	2	3	91.95
Sina	1990	3	NR	35.45
Mike	1990	NR	NR	
Fran	1992	5		
Joni	1992	4		5.27
Kina	1993	3	23	324.83

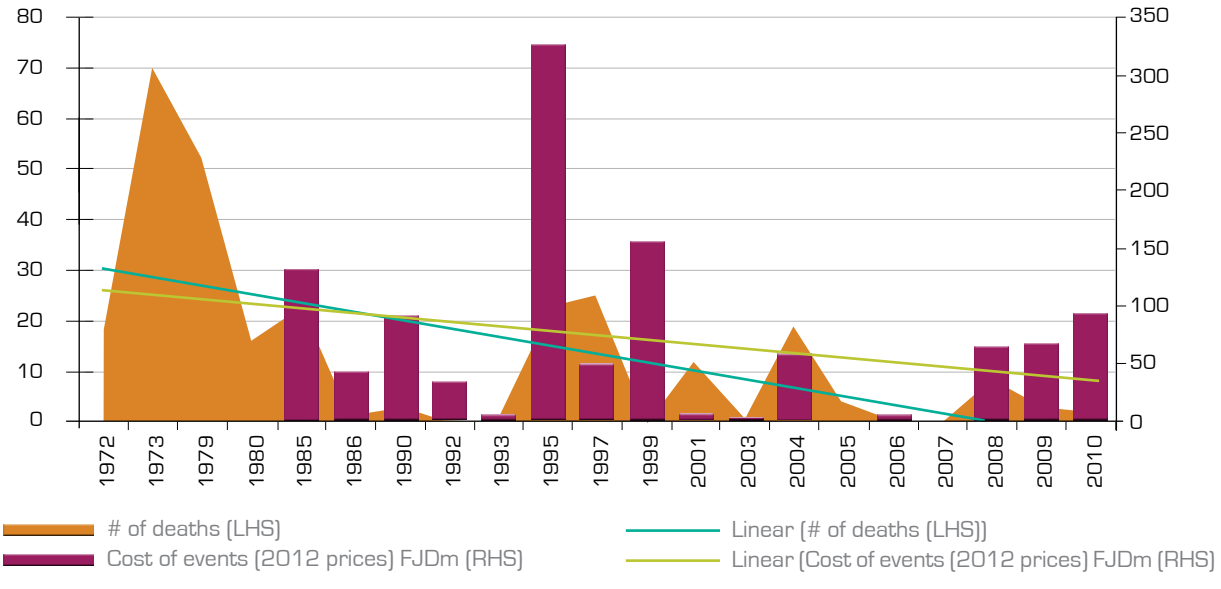
Cyclone name	Year	Category of Cyclone	Number of deaths	Cost of Event F$ millions
Thomas	1994	4	NR	
Gavin	1995	4	25	50.13
June	1997	2	0	156.00
Dani	1999	4	12	6.56
Paula	2001	4	1	2.80
Ami	2003	3	19	59.60
Jim	2006	3	4	0.03
Cliff	2008	3	0	6.10
Daman	2008	4	0	0.62
Gene	2008	3	8	65.25
Mick	2009	2	3	68.25
Tomas	2010	4	2	93.37
Evan	2012	4	0	
Total since 1972	**33**		**269**	**1,142.27**

Source: Robert Pole and Josefani Bola, Training Manual on Earthquake, Cyclone, Flood and Tsunami in Fiji (UNDESA/UNCRD/NDMO), page 3, Fiji NDMO, Summary of Major Disasters in Fiji 1985-March 2012 and www.fijitimesonline.com, 17 December 2012.

Of the cyclones that struck Fiji during this 40-year period, Table 62 shows that 33 percent were severe cyclones, classified as Category 4 or higher, posing a significant threat to lives and livelihoods. Fiji can therefore expect this trend to continue, and to experience severe cyclones on a frequent basis in the future. On a positive note, Fiji has accumulated substantial experience with cyclones, and this is reflected in the DRM arrangements for cyclone preparedness and management which are better developed than those for other hazards. Nevertheless, at the same time while the number of deaths caused in Fiji due to cyclones is relatively low (a total of 269 reported in 40 years), the damage and loss to the economy from repeated cyclone impacts are staggering and greatly undermine the country's development efforts.

The overarching objectives of a DRM system in any country are two-fold: to protect lives, and to protect property. The fact that the number of deaths caused by each cyclone in Fiji are fewer each year – and no deaths at all in the case of TC Evan – demonstrates that Fiji's DRM system for cyclones is becoming more effective over time. This assessment has found that Fiji is performing very well and improving over time with respect to the first objective; however, with regard to preventing damage to property, progress has been much slower. While apparently decreasing somewhat over time, the estimated damage per cyclone in Fiji is still quite significant, at an average of US$45 million, leaving aside any estimate of losses. Therefore this finding calls for redoubled efforts and consideration of better approaches in order to reduce these damages, and the myriad associated hardships they cause for the population.

Figure 25: Cost of Past Events (RHS) and Number of Fatalities (LHS) 1972-2010.



Source: Estimates based on official Government of Fiji data.

Fiji National DRM Arrangements

The Fiji Natural Disaster Management Act (1998) sets out the provisions for the performance by government and relevant agencies in relation to management of natural disasters and related activities. The Act provides the legislative basis for the Fiji National Disaster Management Plan (1995), which outlines in some detail the roles, responsibilities and procedures for the conduct of disaster preparedness and emergency operations.

Figure 16: National Disaster Management Structure.

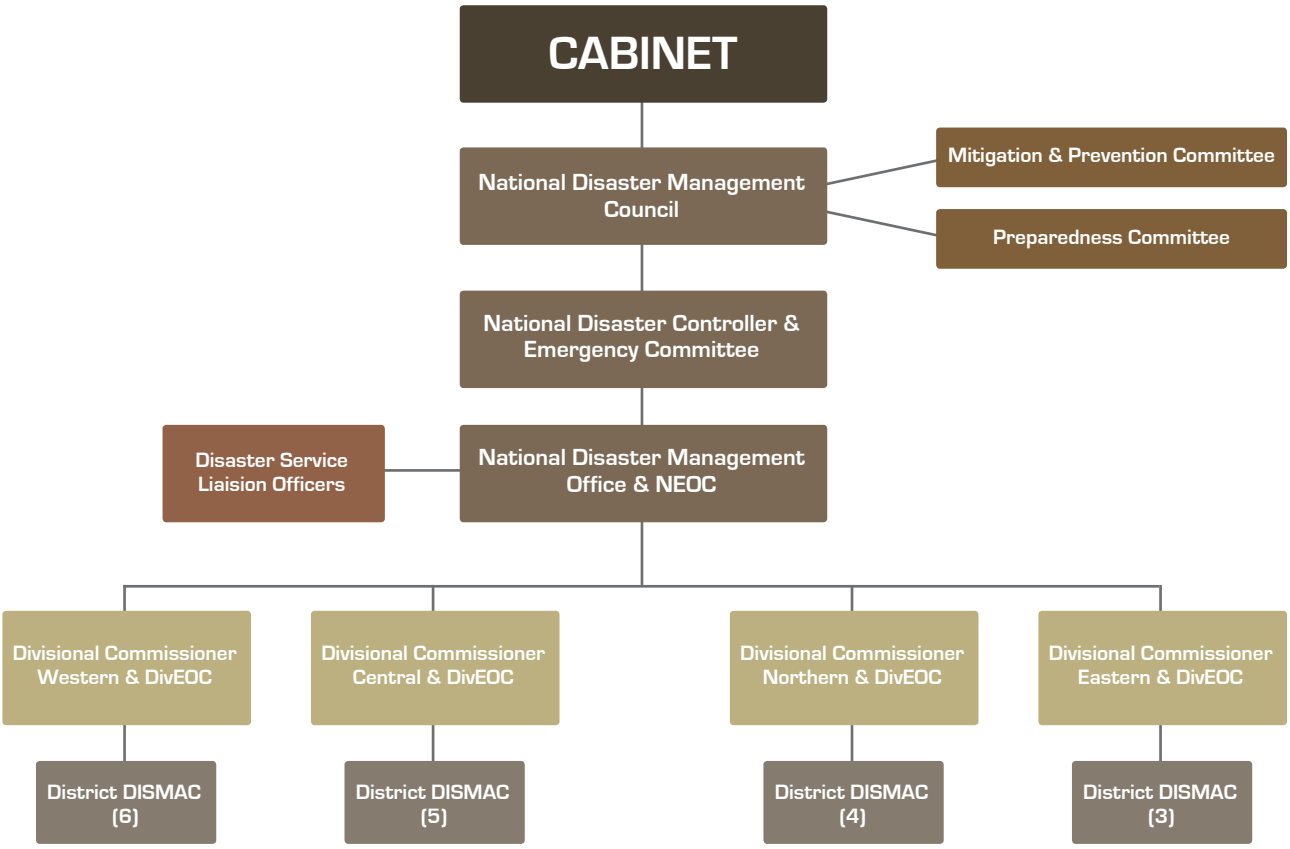


Figure 26 illustrates the National Disaster Management Structure defined by the 1998 Act and 1995 Plan that is adopted during emergency operations.

The National Disaster Management Council (NDMC or DISMAC), chaired by the Minister responsible for National Disaster Management, is the forum for formulation of disaster management policies. The permanent responsibility for national disaster management rests with the National Disaster Controller, who assumes wide powers on the formal declaration of a natural disaster under the Act.

The National Disaster Management Office (NDMO) implements NDMC policies and sets up the National Emergency Operations Centre (NEOC) during emergencies. The NDMO/NEOC is assisted by Disaster Service Liaison Officers (DSLOs) from Government agencies, as the main point of contact for liaison and coordination. At the division and district levels, the Commissioner and District Officer, respectively, are responsible for the emergency operation, in close coordination with the National Disaster Controller and NDMO/NEOC.

Fiji has a "Cyclone Support Plan" in effect since 1997, which is direct and concise, detailing procedures for key elements of preparedness, warnings, response and other practical aspects of cyclone management, as well as clear roles and lines of responsibility. Again, this demonstrates Fiji's capacity for effective DRM in addressing cyclones. It is worth noting that such plans have been drafted for tsunami and drought, but not yet approved or finalised. Cyclones are the only hazard in Fiji to date that is thoroughly addressed under such an operational plan.

The Government has also introduced a system of national disaster management clusters during the Cyclone Evan response, to complement the above DRM arrangements and facilitate improved coordination with national and international partners. Eight national clusters have been adopted: Health and Nutrition; Education; WASH; Shelter; Logistics; Public Works and Utilities; Safety and Protection; and Food Security and Livelihoods.

Community-focused DRM

The response to TC Evan highlighted once again the need to strengthen community-level efforts in DRM and especially the process of developing and implementing community DRM plans. A typical village DRM plan includes an analysis of the most common hazards in that village, with related vulnerabilities and capacities; designation of roles of each group in the community during disaster alert, warning and relief/recovery phases; and specifies chain of command and responsibilities. The plans also include a contact list, and indicate some longer term measures to reduce the various risks.

The social impact survey engaged a representative sample of 169 people in the cyclone-affected areas, including Tavua, Sabeto, Yasawa Group and Sigatoka. The survey revealed that, even though many of these villages do not have a formal plan in place, the villagers invariably know what they must do to prepare for an incoming cyclone. One explained, "I knew to do this because I have survived so many cyclones." Through the accumulated experience over years and decades of living through cyclones, local people were well aware that they had to put shutters on windows and doors, trim tree branches, and secure roofs with straps, sand bags or extra nails. They knew that they had to stay inside, or evacuate to safer location, and also to stockpile some food in the last days before the impact. This generalized culture of cyclone awareness and familiarity, based on traditional best practices and direct experience, is one critical factor which helps to explain why no people were killed during Cyclone Evan.

It was also encouraging to note that, even in remote island locations, the residents surveyed reported that they received the cyclone warning at least 3 days in advance. They received the warning most often by radio, but also sometimes by television, text message on a mobile phone, word of mouth or by a visit from the District Officer. This shows that the national system for issuance of cyclone warnings is working well, "to the last mile," as DRM practitioners always aspire to ensure.

It was also evident that communities rallied together for preparedness activities, cleanup and response, as well as the commendable active role of local youth in these community efforts. One example is Hanahana Village in Cuvu, Nadroga, where a village DISMAC team was formed by youths, and with access to a 4WD vehicle they were effective in evacuating victims of flooding and houses affected by the winds to Cuvu Secondary School throughout the night.

Traditional practices

Rural villages in Fiji still employ some traditional practices – such as blowing the conch shell (davui) or beating wooden drums (lali) – to issue disaster warnings, which is quite effective (L. Radio, pers. Comm., 21 February 2013). Some traditional elements are also used to secure buildings, such as tying coconut leaves on the roofs or windows for reinforcement. The social impact survey highlighted that the aspect in which traditional practices are most apparent is in reading natural warning signs. Many villagers shared that they knew of the cyclone's imminent arrival because they observed: extremely hot weather; sea birds flying inland; fruits such as breadfruit, mangoes and mandarins were unusually abundant (3 or 4 on one branch); fish catches tripling in size; crabs were scurrying inland; ants crawling everywhere; red sky in the evening; and other signs from the natural environment. The traditional knowledge maintained in this regard complements the warnings issued through the modern technical methods to put the population on alert and motivate their preparedness actions.

Impact on livelihoods

In Fiji, a strong cyclone can be expected to impact heavily on incomes in key sectors, in particular tourism and agriculture. Fiji has the largest tourism industry of any Pacific island country, with an estimated 24 percent of the population working in the sector i.e. if we take into account direct employment in hotels, supporting enterprises and businesses, and tourism-related construction projects [36]. Tourism has been growing steadily in Fiji over the last decade and further growth is planned, in particular to compensate for other sectors which are losing profitability and struggling to remain competitive, such as sugar and manufacturing [37]. Because of heavy reliance on coastal attractions, this sector is highly vulnerable to cyclones and their consequent storm surge, as well as disruptions that cyclones cause to land and sea transport.

While some of the largest hotels offer more protection to their staff in the event of disruption in their employment in the event of hotel closure following cyclone impact, continuing to pay salaries for at least a week or two, this policy is

[36] Regina Scheyvens and Matt Russell, Sharing the Riches of Tourism Summary Report – Fiji, March 2012.

[37] Ibid.

by no means widespread in Fiji. In the event of a major cyclone causing extended closure, this situation would have a devastating effect on family incomes. Informal and self-employed tourist-related businesses – such as people who charge for horseback rides along the beach, or who prepare snacks or handicrafts for direct sale to tourists – are in an even more precarious situation, in terms of income loss.

Good practices in cyclone DRM identified

In reviewing how Fiji's DRM arrangements functioned in the case of Cyclone Evan, a number of good practices came to light, which other Pacific island countries may wish to emulate. These include:

- Effective and timely deployment of DRM system. Fiji was able to activate and mobilise the national and local structures for cyclone management in a timely and effective fashion. Consequently, no lives were lost, the cyclone warnings were communicated clearly to the entire population, and all people at risk were safely evacuated prior to landfall. Information management and information flows in general worked well during this event, among key players: Meteorology Office, DISMAC, Division and District Offices and communities.
- Role of the Ministry of Strategic Planning. The coordination role undertaken by the Ministry of Strategic Planning National Development and Statistics (MSPNDS) is a positive outcome of the response/recovery planning effort. This augurs well for the future management of post-disaster recovery efforts, and for the mainstreaming of disaster and climate risk considerations within the context of national and sub-national development planning and budgetary systems. Also of note are the efforts that the Ministries of Provincial Development and Foreign Affairs will take as co-leads of the upcoming Joint DRM and Climate Change National Action Plan (JNAP) for Fiji. The JNAP will allow Fiji to improve strategic and operational guidance of DRM and Climate Change Adaptation which are closely linked.
- Physical verification of relief items. Following TC Evan, the Government carried out a physical verification of relief items for the first time ever. This consisted of personally viewing the relief items received and stored in warehouses, and checking whether these matched the DISMAC List. This measure was adopted to address past issues with difficulties in monitoring aid.
- Public-private partnerships for DRM. Numerous private sector companies contributed in-kind or cash donations after TC Evan, including: Fiji Water, Value City, Yacht Partners Fiji, Colgate Palmolive, Digicel and many others. Fiji has been able to capitalize well on such opportunities for innovative partnerships with the private sector, which is a win-win situation, as it allows private companies to advertise their goodwill and thus retain and gain customers.
- Concessions and incentives. Government offers a range of incentives and concessions to facilitate funding for repair and recovery. People and businesses that contributed $1000 or more to the Prime Minister's relief fund received a 200 percent tax rebate for their donations and duty free concessions are given to companies/individuals donating items and materials specifically for relief purposes. Fees for dumping condemned food, cyclone debris and green waste at Naboro landfill were waived, to expedite post-disaster clean-up. Town rates (taxes) were waived for a 3-month period for the affected areas.
- Prime Minister's Relief Fund. Over the years, a trust fund has been established to which private donors can contribute relatively small amounts, adding up to a significant amount that the government can spend immediately for disaster relief, at its discretion. This provides a flexible mechanism to access cash, as compared to undergoing the standard donor application processes to request support. A transparent breakdown of the amounts and sources of contributions to the PM's fund was provided in the government's Consolidated Report.
- Fast-tracking procedures. In order to speed up housing repair so that affected families could resume their normal lives, the Ministry through the municipalities stipulated that damaged properties could be rebuilt without resubmission of building development applications, minimizing the paperwork required. Moreover, all applications to rebuild housing were given priority, with a maximum turnaround time of 3 days. An allocation of F$1 million for housing repair was quickly released after TC Evan from the PM's relief fund.
- Community solidarity. The social impact survey documented time and again that communities joined forces for disaster preparedness and for clean-up and rebuilding. There were numerous reports of neighbours, and especially youth, mobilizing to evacuate the disabled or ill, working in groups to fix homes and sharing scarce food rations. This level of social capital is invaluable and must be recognized as a strong dimension of the DRM system in Fiji, complementing the national coordination efforts very effectively.

Issues of concern and recommendations

Following TC Evan, some issues of concern came to light, leading to the following recommendations. To improve DRM in Fiji, some of these can be implemented in the short term while other recommendations apply to the long term.

Short term – to implement within 6 months to 1 year

- **Evacuation centres.** Develop a national policy on criteria for selection of buildings to be used as evacuation centres (in practice these are often schools, churches or Government buildings which are co-opted temporarily), including construction standards and facilities required. The buildings which meet these criteria would then be certified by national authorities as official evacuation centres. This certification should be complemented by a set of standard operating procedures with guidelines and training on management and operation of these centres. In addition, model dedicated evacuation centres should be built in at least two key locations, to demonstrate optimal structure and conditions (IFRC and other partners are already proposing the latter).
- **Withdrawal of pension funds (FNPF).** Carefully consider the trade-off between access to immediate cash under the Natural Disaster Partial Withdrawal Scheme, and the future impoverishment that reduction or loss of pension payments will likely precipitate, for participants in this program.
- **Post-event reviews.** Be systematic in undertaking post-disaster debriefings (post-event reviews) led by NDMO/MSPNDS to identify lessons learned and adjust DRM system. If possible, the review reports should be shared with non-government development partners.
- **Coordination centralized in NDMO.** Need for NGOs and churches working at local levels to coordinate and report more systematically to NDMO on the details and locations of their disaster response and relief initiatives, so as to avoid duplication and to enable a comprehensive overview.
- **Disaster communications.** Government could support/subsidize local radio stations to purchase generators so that they are able to continue broadcasting throughout a cyclone. This would ensure continued communication to communities and households that have prepared themselves with battery-operated radios to get up-to-date information on what is happening during a natural hazard, and immediately after, if the restoration of electricity is delayed.
- **Initial damage assessment (IDA).** Training on how to conduct IDA was recently provided to NDMO staff, District Officers, local government officials, and Turaga ni koro in Fiji, however the IDA process and system still needs to be fine tuned so that this can be done easily and in a routine fashion. The on-line IDA system was not accessible following Cyclone Evan, due to electricity outages which lasted for days and/or weeks. A practical way forward would be to adopt existing tools in use elsewhere in the world to ensure ease and consistency of initial assessments. For example, the housing damage tally forms in use in Jamaica could be suitably customized to fit Fiji context and deployed when necessary. These are cost effective, practical ways to enhance capacity that can be implemented immediately.

Long term – to complete within 1 to 5 years

- **Traditional practices, including community solidarity.** These commendable traditions in Fiji can be further documented, acknowledged and perhaps promoted as part of the national identity, so that they can be further leveraged for improved DRM. These practices are necessary and should be considered to enhance and strengthen the modern technical approaches and official government-led assistance.
- **Fast tracking of reconstruction.** Any procedures to fast track reconstruction and rehabilitation of housing, schools or public infrastructure should take into account and promote the imperative to "build back better." Ultimately, there should be an emphasis on achieving compliance with the Building Code, which is currently not widespread in Fiji.
- **Promote affordable home insurance schemes** for Fiji home owners, in conjunction with progressive enforcement of building codes. The PDNA has pointed to the significant divide between the (usually insured) commercial sector and the housing sector, where most of the damage was sustained. This will require both the identification of suitable providers willing to work with homeowners as well as the identification of appropriate incentive schemes and public awareness activities. Insurance availability is intrinsically a function of the enforceability of building codes, whereby insurance companies do not work with homeowners whose property is not built to code.

- **Mobilization of local youth for DRM.** In light of the evidence of active involvement and enthusiasm from youth in preparedness and response under Cyclone Evan, consideration should be given to adopting a strategy to mobilize youth more deliberately for DRM. This can be a win-win approach, as it simultaneously addresses the issue of "idle youth" especially on the outer islands, capacity limitation of the national DRM structure to cover all villages and remote locations, can provide support for the Turaga ni Koro lead role in local DRM, and would upskill and thereby empower youth. In the event that youth are to be more systematically recruited and trained in DRM tasks, it is of course essential that male and female youths are given this opportunity in equal numbers.
- **Ensure that the Ministry of Strategic Planning is given the lead role in the mainstreaming of disaster and climate related risk within the national (and sub-national) development planning and budgetary system.** The Ministry of Strategic Planning is the centre of coordination for all development planning processes in Fiji and therefore plays a critical role in ensuring that hazard-related risk is formally embedded as a key consideration within this. Historically, all DRM institutional strengthening and capacity building has been 'centralized' in the ministry responsible for DRM (currently the Ministry of Rural & Maritime Development and National Disaster Management which relies heavily on the NDMO for this). That said, the NDMO's core role is in relation to disaster preparedness and response. It is not strategically placed to lead the effort of 'risk mainstreaming' in planning processes thus the need for overall coordination by the Ministry of Strategic Planning.
- **Strengthen interoperability between key response agencies.** The NDMO and other key response agencies like the Police and Fire Departments currently operate under the auspices of the NDM Act 1998 and NDM Plan 1995; however, in terms of operational coordination and more specifically incident management, each internalizes different systems. This merits a review to strengthen interoperability particularly for NDMO to focus its core functions on disaster preparedness and response.
- **Strengthening the development and use of risk information to inform DRM.** There is an abundance of data and information available to and within Fiji to improve efforts in relation to Disaster Risk Reduction and Disaster Management. Efforts need to be made to strengthen and consolidate these in some manner so that there is more effective use of the available 'risk information' to inform, for example, post-disaster assessments as well as proposed developments in potentially high risk areas. Regionally-led initiatives such as the Pacific Risk Information System (developed jointly by SPC (SOPAC), World Bank, Asian Development Bank and other partners) provide a very credible starting point for strengthening in this area.

6.

RECOVERY AND RECONSTRUCTION NEEDS

Summary

The total damage and loss for TC Evan is approximately F$194.9 million and are mostly attributed to effects on tourism, housing and agriculture (35.5, 26.1 and 19.6 percent of total damages and losses, respectively). Recovery and reconstruction efforts will focus on the most affected sectors initially, whilst also ensuring that other affected sectors will be looked after. This also takes into account that Government will require financial assistance to facilitate the recovery of the education sector, particularly for damages to educational facilities.

The following tables present the needs for recovery and reconstruction by sector, prioritized as short, medium or long term. The timeframes for these interventions are purely indicative, as institutional arrangements, financial support and other factors will influence timetables and length of involvement. Detailed recovery plans are presented in separate sector reports and should assist in establishing goals for recovery.

Table 63 provides a summary of estimated costs for reconstruction and recovery. Total recovery and reconstruction costs are estimated at F$134.0 million, of which F$22.7 million is required for recovery costs and F$111.3 million for reconstruction from damages. The bulk of the costs are in tourism (32 percent), housing (25 percent) and infrastructure services (20 percent).

Table 63 – Summary of Total Recovery and Reconstruction Needs.

Sector	Sub Sector	Recovery (F$)	Reconstruction (F$)	Total (F$)
Housing		500,000.00	35,510,000.00	36,010,000.00
Health		654,377.27	433,506.82	1,087,884.09
Education		672,450.00	4,640,000.00	5,312,450.00
Agriculture	Crops	5,321,957.73	0	5,321,957.73
	Livestock	103,627.72	5,354,498.25	5,458,125.97
	Forestry	0	6,879,400.00	6,879,400.00
Tourism		2,400,000.00	44,000,000.00	46,400,000.00
Infrastructure	Road and Highways	4,705,228.61	2,892,994.00	7,598,222.61
	Airports and Ports	250,000.00	2034345.00	250,000.00
	Electricity	5,705,423.08	5,300,000.00	11,005,423.08
	Telecom	1,154,000.00	2,225,813.78	3,379,813.78
	Government Buildings	20,000.00	421,493.00	441,493.00
	Sanitation	100,000.00	0	100,000.00
	Water	125,000.00	3,642,500.00	3,767,500.00
Social Impact Assessment		999,016.00	0	999,016.00
Total		**22,711,080.41**	**111,300,205.85**	**134,011,286.26***

Source: Estimates based on official Government of Fiji Data.

* There were no reconstruction and recovery needs for the Commerce Sector.

Timing and Sequencing of Recovery and Reconstruction Needs

Table 64 presents the recovery and reconstruction priorities of each sector in the short, medium and long term. The majority of the activities are meant for the short-medium term, with the objective to restore stability to livelihoods and services in the various sectors. The identification of priority and rehabilitation efforts will be implemented by relevant Government agencies and statutory bodies with assistance from development partners.

Table 64 – Total Recovery Needs.

Sector	Sub-Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
Housing		Initial repairs to partially damaged houses	WIP					Traditionally, people in Fiji have responded or helped themselves through family (in-kind or cash remittances) and community in arranging urgent repairs to houses/ shelters
								This method/tradition should be encouraged by the respective authorities/bodies.
		Fiji National Provident Fund	WIP	FNPF				Qualifying homeowners are able to access up to $1000 from the Fiji National Provident Fund to assist recovery from the cyclone. The total that has been accessed to respond to the cyclone impacts can not be ascertained.
		Fiji Building Code	NA	Ministry of Health	✓	✓	✓	The Fijian Building Code predominantly applies to permanent structures for purposes of insurance; however, the code can not be met by less permanent structures that are most common in rural areas and villages as well as in squatter or informal settlements that make up the majority of the nation's residential units.
								The current review of the Building Code needs to be finalized as soon as possible to allow more relevant provisions to be applied.
		Training for people in completing house repairs effectively	500,000	Ministry of Provincial Development and Disaster Management and Ministry of Local Government, Urban Development, Housing and Environment	✓	✓	✓	"Tips to Build Back Safer" posters have recently been prepared to assist better understanding of basics for improved repairs and strengthening of houses. This poster/campaign needs to be implemented widely including provision of training in villages, communities and settlements.
								Implementation is required urgently as many people are currently in the process of carrying out their own repairs.
		Provision of more resilient transitional shelters in informal areas	WIP	Ministry of Local Government, Urban Development, Housing and Environment	✓			A design for construction of transitional shelters for informal settlements has been prepared by the Shelter Cluster for implementation within the informal settlements. This design provides for a more robust, resilient, affordable dwelling and wide adoption of the standard throughout the country is recommended.
Health		Provision of Non-Technical Equipment	270,000	Ministry of Health		✓		These technical and non-technical items are essential to ensure the effective delivery of health service to the population of Fiji
		Provision of Drugs	75,018		✓			
		Provision of Consumables	40,963		✓			
		Provision of Lab Consumables	221,897			✓		
		Provision of Environmental Health Materials	46,500			✓		

Sector	Sub-Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
Edcucation	Primary and Special Schools	School in a Box Kit	552,450	Access to Quality Education (AusAID)	✓			This fund assists affected students by providing them with a school in a box kit, uniforms and shoes. This is currently undertaken.
	Secondary Schools				✓			
	Temporary Learning Space	Temporary Classrooms	120,000	MOE, UNICEF	✓			UNICEF provided more than 50 tents for temporary classrooms awaiting the completion of building repairs. This has been undertaken.
Agriculture	Crops	Provision of seeds, seedlings, suckers, cuttings and other agricultural inputs for re-planting of crops	3,265,158	Fiji Government, International grants	✓			Ministry of Agriculture (F$ 0,6M) and donor communities already provided inputs. However funding gaps still exists.
		Temporary provision of food ration to most affected population	1,200,000	Fiji Government, International grants	✓			Cost already totally covered.
		Cash for work activities, community nurseries, community works to improve resilience against cyclones (drainage activities, wall trees to protect against high winds) combined with training on disaster risk reduction techniques (including traditional storage techniques)	456,800	International grants		✓		To support to most vulnerable farmers, landless farm labour ,yaqona and coconut farmers most affected by TC Evan.
		Grant support to commercial farmers (chillies, eggplant, papaya)	400,000	Government				Agreement between Ministry of Agriculture and Fiji Crop and Livestock Council for compensation rate of $4000 per acre.
	Livestock	Supply food (sugar) for bees	11,588	Government and International grants		✓		
		Farm gate subsidies for milk losses	15,600	Government		✓		
		Supply poultry feed to smallholder	7,389	Government and International grants		✓		
		Supply drugs, feed, pasture seeds	53,600	Government				Already provided by the Ministry of Agriculture
		Tax levy on imported premix feed for livestock commercial farms	15,451	Government		✓		Governement to provide support through tax reduction (3 percent/T) on importation of premix feed for the company.
Tourism		Refocusing marketing strategy	2,400,000	Tourism Fiji, and individual Hotels/Resorts and Tourist Operators	✓			Especially to affected areas, information campaigns abroad, use of Internet marketing, media interaction to support policies, price depression and product development, and annual travel mart. Possibility of looking into reconstruction tourism (promotion).

Sector	Sub-Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
Infrastructure	Roads and Highways	Restoration of minimum traffic flows through destroyed road sections	2,022,165	FRA	✓			Due to minimum extent of damage, Government has not redeployed any budget allocation for rehabilitation needs. This has been met fully by FRA through its existing allocation
		Cash for work schemes for clearing of debris	100,000	FRA/RFMF/ Municipalities		✓		Can be sourced from within agency budget. F$0.2 million was allocated to municipalities for rehabilitation works.
		Continuation of 5 percent fiscal duty (reduced from 32 percent) of importing heavy vehicles and new special type vehicles. Also continue with the new increased taxi-meter rate until 2015	2,583,063	Government (MWTPU), LTA		✓		This is to support the bus and taxi industry to recover income losses. For future consideration, further decreases can be made to fiscal duty in special cases such as disaster but only for certain periods (temporary).
	Airports	Temporary tax relief scheme	250,000	FRCA	✓			This is to support Goundar Shipping, Airport Fiji, and Pacific Sun in recovering revenue lost post disaster. This will require further analysis.
	Electricity	Urgent rehabilitation works to restore minimum electricity supply	2,201,923	FEA		✓	✓	This can be medium- and long-term work for improving power system.
		Scheme of interconnection to nearby undamaged electrical systems	3,500,000	FEA with international donor partner		✓		Assessment needed to determine which areas is disaster prone and conduct work on interconnection so that power disruption is minimal during disasters.
		Operational Audit	3,500		✓			Technical assistance to FEA
	Telecom	Urgent rehabilitation of telecommunication towers & equipment	1,141,000	TFL	✓			Telecom
		Develop policy and action plan to allow improved resilience for public works and utilities in response to natural disasters	5,000	TFL and Ministry of Communications		✓		
		Development of a web-based information management system to allow improved disaster management communication	5,000			✓		
		Operational audit of all key utility (water, electricity and communication) services.	3,000	MWTPU with donor assistance for technical assistance	✓			

Sector	Sub-Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
	Government Building	Payment of overtime to workers	20,000	MWTPU	✓			To complement amount already paid out, particularly to ongoing reconstruction works.
	Sanitation	To enhance capacity for Government and other partners in prepositioning of materials	100,000	WAF, UNICEF	✓			From initial requirement of F$250,000, approximately F$150,000 has been met through HAP. The balance of F$0.1 million is still unmet for supply of WASH kits for affected communities.
	Water	Temporary provision of water by use of tanker trucks	125,000		✓			For strategically pre-positioning of new water tank in disaster prone areas and also evacuation centre.
Social Impact Assessment		Additional food rations for the Yasawa Islands	496,906	Ministry of Agriculture and HAP Food Security and Livelihoods Cluster	✓			This a two-month top up to affected households in the Yasawa Group. Two months worth of food ration have already been provided[1]; this additional two is required to see residents through to June when food can be harvested. This is important for the Yasawa islanders, as their access to markets and additional livelihood opportunities are scarce.
		Top up to Social Welfare budget to accommodate poor, affected households	502,110	Department of Social Welfare	✓			This top up to include an additional 5,185 beneficiaries for 3-4 months in support of the poor, affected households in the Western, Northern and Eastern divisions. For future planning, a separate budget line could be established to ensure that contingency funds are planned for and set aside, or to receive donor funds.
		Explore cash transfers as post-disaster, rapid response mechanism	NA	Department of Social Welfare and/or NDMO	✓	✓	✓	Switching to cash transfers, rather than food ration distribution has a range of benefits for the government and beneficiaries. An existing system exists through the Department of Social Welfare to deliver such benefits. Through the current social protection reform, including this as an option for social welfare transfers should be explored.
		Explore options for supporting the poorest and most vulnerable of affected households after disasters	NA	Department of Social Welfare, Ministry of Agriculture, Ministry of Labour, Industrial Relations and Employment	✓	✓	✓	Cash for work can be used effectively as a post-disaster clean up option that injects cash into the pockets of the most affected, those with fewer coping strategies or the poorest and most affected. Learning lessons from this experience can build capacity to implement immediately after a future disaster. Additional transfers to existing social welfare beneficiaries could also be considered.
Total			**22,711,080**					

Table 65 – Total Reconstruction Needs.

Sector	Sub Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
Housing		Repair of partially damaged houses to an improved standard of resilience	12,140,000.00	Ministry of Provincial Development and Disaster Management and Ministry of Local Government, Urban Development, Housing and Environment		✓		F$5 million from Government has been made available for repair and reconstruction to qualified applicants under the Disaster Rehabilitation Housing Assistance Policy.
								The outstanding value of F$7.14 million could potentially be allocated by Government over the next three-year period to allow repair of all damages.
								To verify the need for additional funding, a further assessment of the need for repair should be completed, given that many households have carried out their own repairs.
								Prioritization should be given to groups in the more remote islands where there is a combination of increased cost for materials and potentially lower income earning opportunities.
		Replacement of completely damaged houses (tin, iron, bure and makeshift materials) to a more improved resilient standard	16,200,000.00	Ministry of Provincial Development and Disaster Management and Ministry of Local Government, Urban Development, Housing and Environment		✓		Houses constructed of metal and bure or makeshift materials were most at risk of being destroyed by cyclone. Those people who lost their houses in this group have an increased need of housing assistance since they are generally lower income earners.
								Consideration towards provision of financial assistance (both cash and in-kind) to these groups should be considered as a high priority.
		Replacement of Completely Damaged houses (Concrete and Wooden Materials) to a more improved resilient standard		Ministry of Provincial Development and Disaster Management and Ministry of Local Government, Urban Development, Housing and Environment		✓	✓	Houses constructed of Concrete and Timber Materials were more resistant to cyclone damage.
								In general, the people who lost their houses in this group would be higher income earners. Some of the damage in this group would be funded through insurance coverage.
								For the remainder, consideration could be given to low-cost loans mechanisms.
		Replacement of household contents destroyed and damaged	7,170,000.00			✓		Some relief from the damage to personal household contents may have been provided through the emergency distribution of non-food Items during the initial response.
								That said, this would potentially represent only a small proportion of the overall loss, leaving a significant gap in replacement options.
								One measure could be to encourage families to utilize existing micro-credit facilities.
Health		Infrastructure Costs	433,506.82	Ministry of Health		✓		

Sector	Sub Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
Education	Primary Schools	Redeployed from 2012 capital budget	1,300,000.00	Government	✓			Government redeployed $1.3 million from the 2012 budget to fund reconstruction in the education sector. Works are on-going in the Western Division.
	Special Schools							
	Secondary Schools	Reconstruction Program	1,340,000.00	Access to Quality Education (AusAID)		✓	✓	Funded by AusAID through Access to Quality Education Program (AQEP). F$1.2 million from this allocation is for reconstruction and $0.14 million for replacement of textbooks.
	All Sub Sectors	Retrofitting	2,000,000.00	Donor			✓	This is to ensure that all schools in Fiji undergo engineering inspection and that cyclone retrofitting be undertaken where necessary.
Agriculture	Crop	Replacement of yaqona crops	0		✓		✓	Farmers will use their material damaged by the cyclone. Therefore those famers will be helped with the provision of short and medium crops and with cash for work activities (recovery section).
	Livestock	Replacement of animal stock commercial	1,230,644.50	Government and Insurance		✓	✓	
		Replacement of animal stock smallholder	180,644.00	Government	✓	✓		Covered 100 percent by Government.
		Rehabilitation of infrastructure for commercial farms using disaster resilient standards	3,605,602.00	Government and Insurance	✓	✓		F$100,000 already covered by Ministry of Agriculture.
		Rehabilitation of infrastructure for smallholder farms using disaster resilient standards	132,822.00	Government and International grants		✓		F$70,000 already covered by Ministry of Agriculture.
		Replacement of hives	153,726.50	International grants		✓		
		Rehabilitation of Government structures	51,059.25	Government		✓		
	Forestry	Rehabilitation of infrastructure	6,487,800.00	Government		✓		
		Re-planting of trees	374,000.00	Government		✓		
		Replacement of damaged inputs in nurseries	17,600	Government		✓		
Tourism		Insurance claim for reconstruction	44,000,000	Private Sector (Tourism Operators)	✓			This comprises F$40.0 million (insurance cover) plus 10 percent for building back better.

Sector	Sub Sector	Activity	F$	Responsible Agency	Short Term	Medium Term	Long Term	Comments
Infrastructure	Road and Highways	Rehabilitation costs to all roads that were closed and damaged	2,892,994.00	FRA	✓			This will be met by Fiji Roads Authority within its exiting budget allocation for 2013.
	Airports and Ports	Reconstruction costs to fix airport damages	2,034,345.00	AFL, FPCL	✓			It is unknown yet as to how these costs will be met. It is assumed all (or 50 percent) of these costs will be covered by insurance.
	Electricity	Reconstruction of damaged electrical systems and replacement of electrical equipment and machinery using disaster resilient standards	5,300,000.00	FEA	✓			FEA had issued F$4.3 million for reconstruction and rehabilitation works. Extra F$1 million (unmet) budgeted to fully conduct reconstruction needs to areas affected around Fiji.
		Relocation of selected electrical system component to ensure disaster resilience	10,000,000.00	FEA with International donor partner			✓	A long-term solution and is necessary so that electricity/ power is disaster resilient. FEA had proposed for relocation of power lines and going underground.
	Telecom	Rehabilitation of communication systems using pre-disaster design & construction standards	2,225,813.78	TFL	✓	✓		
	Government Building	Repair and reconstruction of government buildings damaged	421,493.00	PSC/MWTPU	✓			About F$0.5 million was allocated by Government in 2012 for repair works to police, prison, forestry, health facilities and court houses.
	Water	Reconstruct water services	3,239,500.00	WAF	✓			F$0.3 million to be redeployed from 2013 budget to fulfill unmet needs. The rest is to be sourced from within WAF 2013 budget.
	Water	Purchase of satellite phones	400,000.00	WAF		✓		This is to be located in strategic stations so that communication is not affected during disasters. This can also be used by other key utility sectors (FEA, Telecom)
		Operational audit to improve disaster preparedness	3,000.00		✓			Conducted to all key public utilities.
Total			**121,300,205.85**					

ANNEXES

Annex 2 to 10 are enclosed on CD

ANNEX 1

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Organizations

Fiji Hotels and Tourism Association
Various Individual Hotels/Resorts
Fiji Electricity Authority
Telecom Fiji Limited
Water Authority of Fiji
Fiji Roads Authority
Fiji Ports Corporation Limited
Civil Aviation Authority of Fiji
Air Operators
Fiji Taxi Association
Fiji Bus Operators

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