SITUATION ANALYSIS FOR STRENGTHENING
DISASTER INFORMATION MANAGEMENT
SYSTEMS IN FIJI

BASELINE DATA PREPAREDNESS &
ASSESSMENT METHODOLOGIES

Report for the Fiji Government and Pacific Disaster Risk
Management Partnership

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1 BACKGROUND

1.1 The formulation of this project

This project, a pilot for the Pacific region, aims to facilitate a partnership between the Fiji government and many other stakeholders that will strengthen pre- and post-disaster information management systems and thereby improve disaster response and reduce disaster risk in Fiji. The project aims to:

i. Provide multiple stakeholders in Fiji with relevant and timely and consistent baseline data for disaster preparedness and response as well as for risk reduction;

ii. Develop an agreed methodology and capacity for rapid multi-cluster needs assessment and in-depth cluster needs assessments following natural disasters, and

iii. Develop tools and procedures that guide the management of information during response operations and for the planning of disaster reduction measures.

Users of this information will include Fiji National Disaster Management Council as well as other disaster risk managers, humanitarian workers and national and local government agencies, as well as regional and international agencies. Including UN organizations, the Red Cross and other NGOs involved in humanitarian response, recovery, mitigation and/or risk reduction initiatives.

This report reviews the types and sources of data available in Fiji that are relevant to disaster risk management (DRM), as either baseline data or post-assessment data, and discusses data management issues that need to be resolved, in order for the National Disaster Management Office to fully carry out its mandated responsibilities.

1.2 Associated national and regional initiatives

The project builds on existing experience and practice and links with other initiatives, including the Pacific DRM Partnership, Pacific Disaster Net, the Pacific Cluster Approach. It incorporates the interests of a wide range of partners, including FRCS, IFRC, ISDR, SOPAC, OCHA, TAF/OFDA, UNDP, UNFPA and UNICEF, as well as their technical and financial contributions.

As part of both the 2000 Millennium Declaration and the Pacific Plan, the Fiji Government has committed to strengthen their national framework for more effective disaster management and augment their capacity to predict and respond to emergency situations, in line with the Pacific Disaster Risk Reduction and Disaster Management Framework for Action 2005-2015, which in turn is based on the Hyogo Framework for Action, as accepted international best practice.

As noted in the Mauritius Strategy for Small Island Developing States, Fiji is located in one of the most vulnerable regions of the world in terms of the intensity and frequency of natural and environmental disasters, and faces disproportionately high economic, social and environmental consequences when such events occur. National ownership and leadership in developing this capacity, and strong participation by all stakeholders are essential. Communities and public authorities need to be together involved in disaster risk management: prevention, mitigation, preparedness, response, rehabilitation and recovery. Given the level of vulnerability, external support is needed to develop programmes and institutional mechanisms.

It is against this background that the proposed Partnership for Strengthening Disaster Management Information Systems in Fiji has been identified. The central importance of information management to prepare for and respond to emergencies and to assess, track and evaluate emergency response is widely recognized. In 2006 UNDP, SOPAC, IFRC and UN-OCHA started the development of a web-based information portal for DRM. Pacific Disaster Net (www.pacificdisaster.net) was officially launched in 2008 and hosts various resources aimed at strengthening disaster risk reduction and disaster management capacity in the Pacific.

A regional meeting on the topic of information management for emergencies was organized in Suva in November 2007. Teams from seven Pacific island countries, UNICEF, UNOCHA, UNDP, SOPAC, TAF/OFDA and IFRC exchanged experiences, good practices, and existing as well as potential tools and systems for emergency information management. The meeting found that most Pacific island countries have invested well in disaster management planning and capacity building, but also identified major gaps. In Fiji, the critical gap was identified to be in the area of disaster information management. It was agreed that there was an urgent need to agree on a

1 Cook Islands, Fiji, Kiribati, Samoa, Solomon Islands, Tuvalu and Vanuatu. Teams consisted of representatives from National Disaster Management Offices, Statistics, Health, Education and Red Cross Societies.
common strategy for coordinated emergency preparedness and response and to develop common data standards, tools and methodologies.

In 2008, a second meeting explored ways to act on the recommendations and conclusions of the 2007 meeting. It was proposed that regional partners (UN-agencies, CROP-agencies, NGOs, Red Cross organizations and bilateral partners), work together with national partners in Fiji, as a pilot country, to strengthen disaster information management systems, with a focus on:

1. The collection of post-disaster information through rapid assessment methodologies for decision-making in humanitarian response,
2. The use of baseline information for both disaster preparedness and response as well as disaster risk reduction purposes and
3. Tools and procedures that guide the management of information during response operations and for the planning of disaster reduction measures.

Also in 2008, UN agencies adopted the humanitarian cluster approach for Pacific island countries. Other interested humanitarian organizations indicated their interest to strengthen information management for emergencies.

The common interest of the Fiji Government and development partners provides an important opportunity to review and collect available baseline data from a variety of data producers for both preparedness, as well as disaster risk reduction, ensuring a timely and widely available multi-sectoral baseline dataset and a common methodology for post-disaster assessments and data collection.

Technology is readily available now in Fiji that provides wide access to efficient tools such as electronic information indexes and comprehensive geographic databases. In order to make these resources serve the purpose of disaster management, critical data resources (such as census data, district overviews, GIS datasets with relevant information) which are spread over various agencies need to be drawn together and mechanisms established to update, manage and share information.

2 INFORMATION REQUIREMENTS FOR DRM

2.1 Categories and properties of data

Although the value of information in coordinating disaster responses is widely accepted, information management has often been an afterthought at times of humanitarian response. Too little attention has also been given to integrating information management activities into disaster preparedness and contingency planning and into coordinating this with broader national development plans.

Developing an effective dataset for DRM means getting the right data, not all the data. Disaster management can be usefully split into a series of phases that recognise the specific information needs at varying times.²

The two critical timeframes are:

- **Disaster response**: At the time of a disaster event, establishing a clear picture of needs and priorities from the outset of a relief operation is critical. This requires that responders and decision-makers can take immediate advantage of existing data, initiate common assessments, integrate data from multiple sources, establish priorities based on analysis and freely share information.
- **Baseline data**: Outside of disaster events, improved baseline information on hazards and vulnerability patterns and trends at all scales is required for disaster risk reduction planning, implementation and monitoring.

² The Assessments and Classifications in Emergencies (ACE) project in UNOCHA has developed a framework that describes these phases in more detail (see Annex III).
One of the most important qualities of data for DRM is its timeliness. There is no value at all in a database that has out-dated information. Indeed, bad data can waste resources or even be dangerous.

- The types of information that are fed into the database need to be categorised by their periodicity (ie the frequency in which they are produced), because this is relevant to their accuracy and the ways in which they can be used during an emergency.
- Institutional arrangements need to be made to regularly update each source of information, as new data become available.

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This diagram represents the types of data flow that could occur in a decade. The population census (central tall line) will occur once. Special national surveys or new satellite images may also occur once or twice in a decade. Administrative records from various ministries will come in several times a year. This explains why, for example, population records from Ministry of Health nursing stations are more likely to be up-to-date accurate for local areas than census records are. The regularity with which data is produced is therefore relevant to its accuracy and to collation arrangements.

In designing a DRM system for Fiji, important questions are:

- What is the most critical information for decision-makers, in government and for government, NGO and international organisations assisting the response;
- Where information should be held, e.g. by NDMO or another national institution;
- How key data owners can be brought into the DRM process, including coordination with departments such as Lands and Statistics that also maintain databases, so that data are shared and work is not duplicated;
Arrangements for data input and regular updating;
Establishment of agency roles and responsibilities in information management and operating procedures.

2.2 Data for post-disaster assessments

The information needed in the first weeks of an emergency comes from two main sources:

- Assessments or surveys of the immediate impact, which vary in their depth and extent according to the emergency phase (Figure 3). An accurate multi-sector overview is required within the first 72 hours to provide critical information for decision-making. More detailed sector specific information is collected after first life-saving needs have been dealt with. Also see annexed the “OCHA Assessment and Classification in Emergencies (ACE) Project: Proposed framework for assessment” which provides more details for each phase.

- Baseline data that are compiled from multiple sources, such as digital maps, population data, and key social infrastructure such as health clinics, schools and airfields. These data must be pre-positioned and readily accessible.

Disaster assessments or surveys are often conducted by various agencies but in order to save time and resources they need to be well coordinated and mechanisms established to collate and share information. In Fiji, this coordination and management responsibility rests with the National Disaster Management Office. This information is used by decision-makers, including the National Disaster Management Council, government departments, Red Cross Society, UN-agencies, bilateral donors and NGOs which need to know as soon as possible how a disaster event has impacted on the population and what response is required from the different departments and organisations with relevant expertise.

2.3 Baseline data

Baseline data has four purposes:

- To provide relevant and up-to-date background information to complement on-the-ground assessments of disaster events to help determine the needs;
- To provide information regarding the pre-disaster situation;
- To support longer term analysis of disaster risks and disaster preparedness activities;
- To support disaster management policy formulation and implementation.

Baseline data are compiled from a variety of national sources. The two main categories are:

i. National surveys or mapping exercises such as aerial photographs but nowadays more often geographic information systems (GIS), which are usually the responsibility of the Ministry of Lands;

ii. Administrative records (i.e. usual reporting systems) of government ministries, departments or corporations. Not all government agencies have this information gathering function, however.
There is an important distinction to be made between primary data producers and data collating agencies (Figure 4). Data collating agencies produce very little new data themselves but create information by drawing together data from many other agencies.

iii. Another potential source of information, which is not yet well developed for Fiji, is natural hazard analysis. Many studies have been conducted, such as flood risk areas and geological hazards, information held by the Department of Mineral Resources. The Meteorological Office also maintains detailed records of rainfall and extreme weather events (cyclones, droughts etc.). It would be useful if this information was compiled in a GIS format as hazard risk mapping.

3 INSTITUTIONAL SOURCES OF BASELINE DATA FOR DRM IN FIJI

3.1 Data producing and data collating agencies

In Fiji, the main primary data producers are the Ministries of Education; Health; Provincial Development and Multi-ethnic Affairs, Primary Industries and Sugar, Works, Transport and Public Utilities, Local Government, Housing and Environment; Women, Social Welfare and Housing; Lands; Industry, Tourism, Trade and Communications, Bureau of Statistics, Fiji Electricity Authority (FEA), Fiji Telecom and Fiji Red Cross Society.

The main national data collating agency is the Fiji Lands Information System (FLIS) Support Centre through its governing body the Fiji Land Information Council (FLIC).

The National Disaster Management Office (NDMO) has both a data collating role, through its need to access baseline data, and a data producing function through its responsibility for coordinating disaster assessments in the immediate post-disaster period. NDMO is currently under-equipped to perform either function adequately.

Figure 4: Fiji Government - Data producing and data collating agencies
The ministries and departments listed in the left-hand column routinely collect information of relevance through their administrative systems (e.g., Ministry of Health nursing station and other quarterly records.) The agencies on the right-hand side mostly collate information, although NDMO also has a data producing function in the post-disaster phase.

3.2 Data producing agencies

Listed below are the key government ministries, departments and national corporations that produce information that is relevant to DRM.

1. **Ministry of Education**: Collects relevant information for DRM through its administrative system on the size and distributions of teachers, schools, students, types of schools (primary, secondary, tertiary, vocational, boarding or day school), water sources and availability, number of teacher’s living quarters, etc. Schools also report if they have insurance policy against fire and other natural hazards, and does it have occupation health and safety policy (OHS). (This OHS issue should also lead to the occasional drills being carried out to prepare for any emergency that may occur.) This information is provided to the Ministry of Education on a bi-annual basis from each school in the country. It is available on request, from the Ministry of Education through its School Information Management System (SIMS). The database is updated from reports sent by head of schools to the ministry at the beginning and end of the school year. Schools selected by the NDMO as evacuation centres in the event of disasters are checked to ensure that it meets certain minimum standards especially that they are resistant to cyclones, are not flood prone and have proper amenities (toilets and water). The location of all schools in Fiji has been incorporated into FLIS.

2. **Ministry of Health**: Collects relevant information for DRM through its administrative system on numbers and distribution of doctors and nurses, hospitals, health centres and nursing stations, carrying capacity of hospitals (number of beds available and capacity to handle outpatients) and data on environmental and public health. Each nursing station maintains a regular head-count of the population residing in the villages and settlements it serves, including births and deaths (which operates entirely separately to the population census). The Ministry also maintains detailed records of causes of morbidity (illness) and mortality, including child immunization (EPI) etc. This information is routinely available on request from the Ministry. The location of all hospitals and health centres has been incorporated into FLIS.

3. **Ministry of Provincial Development and Multi-Ethnic Affairs**: Collects relevant information for DRM through its administrative system on population by villages and settlements, districts and provinces. It maintains village profiles with information on the types and number of houses, water systems (pipe, tank, wells), sanitation (flush or pit toilet), electricity supply and road access, and population records by villages, districts and provinces, broken down by gender.

The Ministry’s Rural Housing Scheme ensures that all houses built under the scheme are cyclone resistant and it has detailed costing of rural houses including transportation of materials.

The ministry is surveying economic opportunities by village, through a programme entitled: “Towards a Healthy Fiji” which is exclusively for Indigenous Fijian villagers. A comprehensive data collection system has been developed and turaga ni koras have been trained to conduct the survey. Separate to this is another project implemented by “Think Pacific” (an NGO) that is conducting surveys on the “economic analysis of villages” in the Lomaiviti Province, one-off activities that again involve only Indigenous Fijian villagers. It is not clear what the data will be used for, how it can be accessed, who the users will be, or whether it will be updated. Other information available from the ministry are locations/boundaries of Tikinas (Old and New), Provinces, Villages & Settlements; these are incorporated into FLIS.

4. **Ministry of Works, Transport and Public Utilities**: The ministry has extensive roles and responsibilities with separate divisions for civil aviation, land and sea (shipping) transport, national roads and related infrastructure (bridges, wharfs, airstrips), maritime safety, all government owned buildings, energy and meteorological service. It is an important service provider and has its own IT Division. Information relevant for DRM includes types and conditions of roads, the availability and locations of transport and status of public utilities. These data are regularly updated by the various departments within the ministry. Data that are available in GIS are also incorporated into FLIS. These are major road, minor roads and tracks, bridges, tramlines, and fire hydrants. The NDMO relies heavily on the ministry to provide needed logistics when carrying out assessments during the early phases of disaster. The ministry is often a first responder when disasters occur by mobilizing equipment and machineries and human resources to clear roads and airports and provide ships to enable mobilization of assessment teams and delivery of
emergency relief items. A very important service provider and information source is the meteorological department on weather forecast and early warnings for tropical cyclones, records of tropical cyclones, floods, storm surges and climate change data. The department is the Regional Specialised Meteorological Centre for tropical cyclones and provides marine forecast and warning services for international waters of tropical South West Pacific.

5. **Ministry of Local Government, Urban Development, Housing and Environment**: The 2007 population census reported that 61% of the people now live in urban areas and forecasted to continue to increase. This demographic change has significant implication on disaster impact, emergency response and recovery planning. It also means that the delivery of a unit of assistance to isolated rural/island communities is more costly per person. The ministry has four departments:

i. **Department of Local Government**: There are 12 municipalities in Fiji. Each town council is responsible for the welfare of its rate payers and all those that live on the fringe of the town and cities. They maintains records on rate payers, including numbers, names and addresses, types of dwelling (resident, business, single or multi-storey), layout/plans of the city with roads, bridges, public utilities and amenities, critical facilities (hospital, fire stations, government buildings, etc), planning and development (sub-division and allocation of land for houses), sewerage, sanitation and garbage disposal. Not all town councils have developed their own disaster preparedness and response plans. The capital city of Suva with its critical facilities and main port of entry for almost all imports, seat of government with foreign representations, regional and international organisations does not have its own disaster preparedness plan and standard operation procedure. The use of GIS is not yet adopted as a tool to help municipalities in their management and planning.

ii. **Department of Town and Country Planning**: Its main task is to oversee and approve or amend planning schemes in rural, peri-urban and town areas that do not have approved town planning schemes. It therefore has information on land subdivision, rezoning, sizes of land, land boundaries and their locations, foreshore reclamation and subdivision. Reviewing and vetting all applications land development for housing with other related factors such as engineering, transport, schools, utilities, amenities, etc for new town plans is a major task. The department is setting up its own information management system through the E-Government programme with ITC. It has established its own GIS unit. With FLIS, it has Urban Zone Maps.

iii. **Department of Housing and Squatter Settlement**: Informal housing or squatter settlements are usually homes for very disadvantaged people and located in disaster vulnerable areas. The department maintains information on types, location, income levels, numbers of people per household, type of utilities and amenities available in the locality, from the periodic surveys it conducts. Because it is not collected routinely, the information may not be up-to-date or accurate.

iv. **Department of Environment**: The department is responsible for monitoring and assessing environment impacts, conducting environment awareness programmes, gathering data on the state of the environment and implementing policies that enhance sustainable development with minimum environmental impact and reduce disaster risks. The department has its own IT section and maintains databases on waste permits, environmental impact assessments (EIA), ozone depleting substances (ODS), Convention Against Transport of Endangered Species (CITES), and bio-safety risks.

6. **Ministry of Women, Social Welfare and Housing**: The ministry provides social policy advice on the standards and quality of housing for middle to low income earners and squatters. It also coordinates the delivery of social services and development programmes to women and to disadvantaged families and vulnerable groups, especially children and juveniles at risk. The ministry keeps information on these issues through its administrative records and occasional surveys, for example, numbers and location of low income people including squatters, types of housing including latrine facilities, level of income of households, numbers per household, numbers of disabled people and types of disability, register and functions of women’s organisations in the country, numbers and locations of micro-enterprises owned by women. Because much of it is not collected routinely, the information may not be up-to-date or accurate.

The Poverty Monitoring Unit conducts regular socio-economic surveys in squatter settlements. All squatter settlements on government-owned lands have been incorporated into the FLIS database; other
information is available on request from the ministry. Again, because much of it is not collected routinely, the information may not be up-to-date or accurate.

7. **Ministry of Primary Industries and Sugar**: Each sector of the ministry (agriculture, forestry, fisheries and sugar) separately collects relevant data for DRM. The ministry produces reports on a quarterly and annual basis. It also carries out a national agricultural census. This should be every 10 years, but the last was conducted in 1991 and one is planned this year, 2009, 18 years later.

i. **Department of Agriculture**: The ministry collects information through its administrative records on crops and livestock production, disaggregated by types of crops and livestock, the areas of production and spatial distribution down to village and farmer levels, including estimated production (in tonnes) and value (in dollars). The ministry also keeps statistical data on imports and exports of agricultural commodities and food items, these are available from the ministry on request. After disasters, it assesses losses by number of households and/or farmers and crop areas affected and percentage of losses. The ministry has the entire land use information of the country in GIS format, including agricultural soil maps, and these data are incorporated into FLIS.

The farm questionnaire for the 2009 agricultural census is very detailed; the main fields are:

- **General Characteristics of farms and farmers**: Name and address of the farm and farmer, types of farming enterprise, farm legal status (private or government), types of farming (crops, livestock, mixed), ethnicity, age and gender.
- **Information on farm households**: number and name of each household member on the farm, sex and age and level of education, types of tasks each one undertakes, list of crops/livestock on the farm e.g. temporary/short-term crops, permanent crops, livestock types, aquaculture and floriculture.
- **Total land areas of farms**: area of land under each enterprise on the farm, land tenure type.
- **Temporary/permanent crops**: crop name and age, production in kilograms/tonnes, crop sales income.
- **Sugar cane**: area under sugar cane, variety, age, production
- **Livestock**: types (dairy, beef, poultry, sheep, goat, pigs, horse), age and sex of livestock, production figures.
- **Farm machinery and equipment**: types and quantity

ii. **Department of Forestry**: The Forestry Department collects data relevant for DRM including production figures (national log production in cu.ms and dollar value), forest areas of the major forest types (mainly mahogany, pines, indigenous trees and other exotics), numbers, types and locations of sawmills in operation, forest products export and import statistics including foreign exchange earnings and expenditures and pine chip production. In its national forest inventory (NFI) the forestry department classify forests into three types, namely Natural, Mangrove and Plantation Forests. The ministry uses its own GIS as a management and monitoring tool among other uses.

iii. **Department of Fisheries**: The Fisheries Department is responsible for offshore and inshore fishing industry for the Fiji and natural or man-made disasters (e.g. inshore oil spills). It maintains records on total fish production (catches and processed/canned) and exports figures, types of fish, the numbers, size and capacity of licensed fishing boats, and fisheries facilities such as its own fleet for surveillance, fisheries jetties, ice plants in outer islands and villager, aquaculture and research facilities.

iv. **The Fiji Sugar Industry**: A description of Fiji sugar industry data systems is provided in Annex B of Ganna (Padma Narsey Lal, 2008). Data systems with relevant information are:

- **Lands Department** have spatial information on individual farm boundaries on Crown and Crown Freehold.
- **NLTB and NLC dataset** has demographic information on each Fijian land owning unit the spatial information is maintained by the Lands Department.
• Fiji Sugar Corporation Production Data contains detailed location of cane farmers by sector, districts, and mill area; and also details of the cane production of each farmer.

• The Sugar Industry Tribunal Data has data on ethnicity of farmers, land tenure type, and type of lease, expiry date of lease and rental amount.

• Farm Economic Data is based on an economic survey in 2003-2004.

• FSC Milling Process and Milling Information records mill performance and other related mill operations.

8. Ministry of Lands: Relevant information for DRM is mostly with the Seismology Section of the ministry. It deals directly with data for earthquakes and tsunami hazards. It maintains records on: (i) Shallow focus Earthquakes (depth < 33km); (ii) Fiji Earthquake Epicenter Map for the last 120 years; and (iii) Map of Spectral Peak Ground Acceleration Earthquake Factors for Fiji

Data on Fiji is kept by SOPAC on behalf of MRD on (i) High Resolution (5m Grid) Near-shore Bathymetric map for the South-western coasts of Viti Levu (up to Momi Bay) and (ii) Digital Elevation Data for Suva. The MRD houses the Map Server, a computer system for sharing information.

9. Ministry of Industry, Tourism, Trade and Communications: Within this ministry, the department of tourism is an important contributor to the economy. It collects important information on numbers, location, types and carrying capacity of hotels and other related facilities (backpackers, boarding houses, home stays). It has numbers of visitor arrival by country of origin. Also information on numbers of beds and rooms available by area; numbers, types and locations of new hotel projects and tourism earnings. The safety of tourist is the responsibility of each hotel operators. Some hotels have their own emergency preparedness and evacuation plans but there is no coordinated database on these.

10. Bureau of Statistics: The national census, conducted once a decade, collects relevant information about population by age, ethnicity, educational attainment, material Used for Construction of Housing Outer Walls, Condition of Housing Outer Walls, Water Supply, Electricity Supply, Toilet types, Land tenure. This information is available through the Bureau (although special tables may have to be run, besides what the Bureau publishes) and incorporated into FLIS. The Bureau also conducts occasional other national surveys (such as Household Income and Expenditure Surveys) but these data are harder to access and use and are not available on a regular basis.

11. Fiji Electricity Authority (FEA): The FEA has a very comprehensive disaster management and response plan with its own standard operation procedures (SOPs) and response teams that are strategically located and can be mobilised quickly in an emergency. FEA monitors the condition of the power grid from its Disaster Control Centre in Vuda Point, Western Division and there are two Disaster Control Centres in Suva Headquarters and the other in Kinoya Station. It has its own GIS that maps out the networks of power line, power poles and pylons, transformers, power stations and other FEA facilities. The monitoring system is sophisticated to the extent that a fallen power pole can be immediately detected through its computerised system. FEA’s rapid response mechanism is highly efficient and effective because of its comprehensive database and highly functional information management and monitoring system.

12. Telecom Fiji: Telecom Fiji Ltd (TFL) has a comprehensive database on all its facilities that includes all the transmission lines, facilities (telephone exchange and transmission towers), routing systems used in the country, alternate routing system used in the event of failures. TFL has its electronic controls and monitoring system that works 24/7. It has its own SOPs, EOC with communications support, conducts disaster awareness activities and has a roster of staff who are on call 24/7. In addition to the normal telephone and radio (VHF/HF) system TFL also have Iridium Satellite phones for use in emergency and a mobile VSAT unit that can be positioned at the disaster sites for on-site video conferencing and other communications use.

13. Fiji Red Cross Society (FRC): The Fiji Red Cross Society aims to respond to disasters as rapidly and effectively as possible, by mobilizing its resources (people, money and other assets) and using its network in a coordinated manner so that the initial effects are countered and the needs of the affected communities are met, including rescue from immediate danger, stabilization of the physical and
emotional condition of survivors, recovery of the dead, and restoration of essential services such as water and power.

The FRC has 15 branches throughout the country. It is a credible source of community information down to the village and individual levels. Government agencies and international donors often rely on FRC for information as well as delivery of assistance on their behalf.

3.3 Data Collating Agencies

1. The Fiji Land Information System Support Centre (FLIS). FLIS is administratively under the Mapping and Land Information Division of the Department of Lands and Survey. FLIS is a specialist technical agency that regularly and routinely compiles all official data in Fiji that has a spatial distributional aspect (it is mappable), and makes this information available through its GIS system, as maps. It is the Secretariat for FLIC whose members come from a wide range of government agencies, as discussed further below, namely all government agencies that regard land as the common denominator in their daily work. It is a coordinated system for storing and providing 'core' information about land in Fiji. This system is very valuable tool for DRM as it provides a critical link between information that other government ministries have in their databases, when given the authority to do so. FLIS assisted the Fiji Police and FSC to set up their own GIS, and could similarly assist NDMO to input and store DRM data. The extensive list of data-fields kept by FLIS is attached in Annex 8.1. Other responsibilities of FLIS are to:

- Provide and maintain quality land and geographic information to assist and improve decision making and promote the sustainable use and management of land, sea resources and Government limited assets,
- Ensure that the fundamental land information datasets (database systems) are provided, maintained, kept up-to-date, and secured from disasters,
- Develop policies and standards to support the maintenance and management of the FLIC Member agencies Database systems, Land Information Systems [LIS] and Geographical Information Systems [GIS],
- Maximise community access to land and geographic information with due regards to issues of privacy, confidentiality, liability and national security,
- Support the FLIS training program to ensure that the management and development of FLIS projects whether in Land Information System (LIS), Geographic Information System (GIS), Remote Sensing (RS), and related technologies are in the hands of local personnel with little reliance on overseas expertise

FLIS is managed by the Fiji Land Information Council (FLIC), chaired by the Permanent Secretary for Lands and Mineral Resources. The council consists of the heads of key government and non government organisations (see Figure 5 below). The council reports to Cabinet through the Minister for Fijian Affairs and Provincial Development. The Council is serviced by the FLIS Support Centre, which manages day-to-day operations, the computer networks, supports individual Land Information Systems and provides technical expertise and staff training to departments. The membership of FLIC includes the Chief Executive Officers of Lands and Mineral Resources [Chairman]; Fijian Affairs & Regional Dev. [Deputy Chairman]; Agriculture, Sugar & Land Resettlement; Finance & National Planning; Local Government & Housing; Fisheries & Forests; Public Service Commission; Works & Energy; Justice; PM’s Office; Tourism; Information; and Telecom Fiji Limited; and the General Managers of the Native Land Trust Board and Fiji Pine Limited. Associate Members of FLIC include the Manager, ITC; Government Statistician; Director of Lands & Survey Department; Director Mineral Resources; Assistant Director Mapping & Land Information; Principal Technical Officer (LIS) and Senior Technical Officer – Policy (FLIS) [Secretary].
2. The National Disaster Management Office (NDMO) is now part of the Ministry of Home Affairs and serves as the Secretariat to the National Disaster Management Council (NDMC). This move away from a more community and development-focused ministry, namely the Ministry of Provincial Development and Multi-ethnic Affairs has weakened its role to be able to influence more disaster risk reduction activities. However, an advantage with the present ministry it is located with, there could be sharper focus and quick on emergency response because of possible support from the Military and Police for their greater logistics capability.

NDMO is the official custodian of information system for DRM and has responsibilities for its management which it cannot at present act upon. Although information management is a core function of the NDMO, at present there is no effective data management system in place.

NDMO maintains records on the types, location and carrying capacity of all officially approved evacuation centres for Fiji, and keeps a contact list of key government agencies, town/city councils, foreign missions, UN agencies and NGOs. It maintains records of NDMO resources and logistical assets (ships, aircraft, vehicles, etc) and collates data collected from the Meteorological Office and Marine Shipping. It has records of past disaster events collected from damage and needs assessments but these are not catalogued and were not evident during a visit to the office in August 2009, when the Director reported that they had no information at all.

The main functions of NDMO as stipulated by the NDMC and Fiji’s National Disaster Management Plan (NDMP) are to:

- Implement the DRM policies as prescribed by the NDMC and Cabinet.
- Advise the Permanent Secretary of the Ministry of Home Affairs, NDMC and other related bodies on disaster related matters
- Initiate formulation of policies for the development of disaster management organisation and activities
- Arrange meetings of the NDMC and its Committees and Sub-Committees, provide secretariat support and initiate follow-up action
- Deal with disaster-related issues at the national level
- Initiate and coordinate the preparation of rehabilitation plans after natural disasters
- Review disaster preparedness arrangements and carry out post disaster reviews

NDMO has specific data management tasks in regard to Mitigation & Preparedness, namely to:

- Prepare and maintain baseline data for disaster management purposes at the national level;
- Prepare formats and provide guidance to Divisions and Districts in the preparation of baseline data at the Division and district levels;
- Establish a simple but effective DM database.

Its other responsibilities in regard to mitigation and preparedness are to (i) maintain liaison with International Agencies and disaster-related projects in Fiji; (ii) maintain liaison with DSLOs within the Fiji Government; (iii) coordinate pre-disaster activities undertaken by relevant Ministries, Departments, organisations, institutions and agencies including local governments; (iv) provide guidance to Divisions, Districts and Agencies in the preparation of their respective disaster plans; (iv) take adequate preparatory measures to ensure that the NEOC can be activated at all times without delays; (v) provide guidance to Divisions and Districts to set up their Emergency Operation Centres (EOC); (vi) formulate, implement and monitor disaster preparedness programmes; (vii) ensure that the National Disaster Plan and other supporting plans at the Division and District levels including SOPs are updated and viable; (viii) initiate public education and awareness programmes; (ix) issue cyclone preparedness instructions to agencies before the onset of the Cyclone Season; (x) organise a annual Disaster Awareness Week in cooperation with other government agencies, private sector and NGOs; (xi) formulate, plan and organise relevant in-country training programme; (xii) identify overseas DM training programmes and organise participation for deserving officials; (xiii) arrange with international agencies to provide support for in-country DM training; (xiv) formulate and organise disaster simulation exercises; and (xv) visit at least annually all Agencies, Districts and Divisions to review disaster management arrangements and provide guidance and recommendations for improvements and report findings to the NDMC.

NDMO has specific data management tasks in regard to Emergency Operations and Rehabilitation, namely to ensure that disaster information and data are properly collated, assessed and disseminated where appropriate. Its other responsibilities in regard to Emergency Operations & Rehabilitation are to (i) organise and manage the NEOC during emergency operations, including the provision of equipment, staffing, reporting, etc.; (ii) provide secretariat support to the emergency committee of the NDMC and initiate follow-up actions where appropriate; (iii) advise the National Controller on emergency operation-related matters; (iv) conduct a review of each emergency operation and submit a report to NDMC; (v) conduct a post-disaster review within six months after a disaster and implement debriefing recommendations after NDMC approval; and (vi) coordinate the preparation of rehabilitation programme as required by the NDMC.

This is a very large range of tasks and responsibilities for a relatively small and weakly-resourced government agency. It is not surprising, perhaps, that the more technical aspects of its data management responsibilities have been overlooked.

3.4 Regional and international agencies

- SOPAC is the main regional organisation with a technical capacity for disaster risk management. It maintains a plethora of information on DRM and provides direct support to all its member countries. A full picture of its role in DRM is available on www.sopac.org. It is the host for number of websites, in particular the Pacific Disaster Net (www.pacificdisaster.net). SOPAC does not itself conduct initial rapid assessment for immediate needs but complements these assessments with in-depth surveys of economic losses for recovery planning.
• **International agencies:** Many regional and international agencies (Bilaterals, Multi-laterals, NGOs, UN agencies and Church organisations) are based in Fiji and provide humanitarian assistance if requested. Of the UN agencies, UNOCHA is the principal disaster management coordinator. It has a large database of DRM information through its relief website. One of its tasks is to provide information of a disaster through daily situation reports to all of its partners in the region and internationally. It obtains damage and needs data through governments and partners at the national levels. UNICEF integrates emergency preparedness and response planning and management into all its programme components and maintains links with National Disaster Management Offices, United Nations and regional agencies. UNFPA’s interest is in protecting the reproductive health of communities in crisis and supports various data collection activities, including censuses to provide detailed information for planning and rapid health assessments to allow for appropriate, effective and efficient relief. UNDP assists countries to strengthen their capacity to prevent and manage crises through its Bureau for Crisis Prevention and Recovery (BCPR). WHO has assisted in the development of a database for the Ministry of Health including the production of an emergency preparedness plan. WHO also keeps an extensive range of data on causes of morbidity and mortality that are relevant to DRM. Other active development partners in DRM are ADB, World Bank, European Union, AusAID, NZAID, Japanese Government and other bilateral agencies. Generally, these international agencies use or assist the use of national DRM data, rather than produce it.

4 POST- DISASTER ASSESSMENT SURVEYS

4.1 **The responsibilities of NDMO**

The main purposes for post-disaster surveys and assessments are to identify:

- The extent of the impact of the disaster and the damage caused,
- Emergency relief needs and priorities, and
- Relief and recovery needs and priorities for operations.

The specific responsibilities and roles of NDMO in regard to emergency operations and rehabilitation were outlined above, in particular to advise the National Controller on emergency operation-related matters; conduct a review of each emergency operation and submit a report to NDMC; conduct a post-disaster review within six months; and coordinate the preparation of rehabilitation programme as required by the NDMC. This gives NDMO a critical role in post-disaster assessments, but this is not to say this is a role they must do alone. Rather, they need to expand their capacity to coordinate the work of various agencies, provide for collation, analysis and appropriate dissemination of these data, and provide a repository for all related information.

Fiji’s National Disaster Management Plan (1995) provides for three assessment phases (see Figure 6 below):

i. Emergency Phase Assessments that include: i). Initial damage and relief needs assessment report (within 48hrs); ii). Relief needs assessment report (within a week); and iii). Damage assessment and outstanding relief needs report (after the emergency phase, which can be within 2 weeks of the disaster).

ii. Rehabilitation phase assessment.

iii. Post-disaster review

The Fiji NDMO initial assessment form focuses more on damage assessment of housing, infrastructure and lifelines rather than humanitarian needs. During the past four years there has been some training in the divisions and districts have been conducted to build capacity for initial damage assessment, particularly through engagement with District Officers, Provincial Administrators, Turaga-ni-koro, and Advisory Councillors.
4.2 Current data management problems

One of the main damage and needs assessment issues for Fiji, as expressed by a number of informants of this study, is how to achieve a **common format for disaster assessments**. However, this is one issue only and will not work without a more comprehensive information management system in place, that includes compilation, analysis, dissemination, as well as training and technical capacity building. (See summary of report on damage and needs assessment by R.S. Stephenson (1995), produced for the South Pacific Disaster Reduction Programme (SPDRP) in Annex 8.3). Improvement to the current situation however can certainly be made. To guide this process, several assessment forms are attached under Annex 8.2. for reference.

While NDMO has overall responsibility, guided by the NDM Act and NDM Plan, many agencies conduct separate post-disaster surveys, using different or incompatible formats. Ideally, there should only be one control centre with one coordination team and one source of credible and timely information. However, different organisations are involved in assessments because their particular information needs are not met by the government assessment team or were not included in the survey forms. These organisations often have their own survey forms that meet their own specific needs. In a worst case scenario where no formal and organised system for assessment exists, or is poorly managed, there can be unreliable news or unverified reports trickling in, reports made by ill-informed or unskilled people, sometimes conflicting or incomplete, which results in poor decisions being made about relief assistance. Sometimes a parade of assessment teams visits a single affected community to satisfy need for information that guides organisation’s specific response operations. This compartmentalised thinking causes duplications, gaps and a need for ad-hoc coordination. This has sometimes been the experience in Fiji.

In Fiji, as in many other Pacific island countries, the mobilization of assessment teams to affected communities in remote locations is often impressive. The lack of an agreed strategy for data collection and assessment methodology however reduces their effectiveness. Often the objective and scope of assessments is not properly defined or appropriate to the information needs at different times following an event. Assessors are often not properly trained, briefed and/or prepared with the right forms, instructions, and resources. This may lead either to the collection of too little information (e.g. not all minimum required information per cluster) or too much information (e.g. detailed information from each household in the affected community), which takes too long to

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3 Stephenson, R. S. 1995. Summary and recommendations of the review and analysis of requirements for disaster management information systems in the South Pacific region. Suva: SPDRP, UNDP and UNDHA
process for effective analysis and decision-making, as the situation on the ground has changed by the time the analysis becomes available. The considerable task of data collection, data cleaning, data processing, analysis and publication is often only tackled as an afterthought, leading to further substantial delays in the availability of post-disaster information.

Another problem at present is that there is no common compilation of data or system to share information, particularly at the EOC operations level. There is a need to define the people who should be in the operations room and ensure that they are trained to interpret and act on the information received. There needs to be technical capacity to input the data immediately so the information is not lost or mixed up as other papers are received. This capacity should exist within the NDMO or be provided by other ministries, or international organisations such as the UNDAC team, or mobilise the humanitarian inter-agency cluster.

As well as agreeing on a common survey format to be used for field assessments, there needs to be agreement on the composition of the team and how the assessment should be conducted. Stakeholders generally agree that community participation in the initial or rapid assessment process is crucial, as also reflected in the Fiji Disaster Management Plan and Act. In practice however it has proved difficult, if not impossible, to have true participation of the community in the first phase following a disaster, when the situation is often chaotic, time is precious and there is a need for rapid information. The notice of community participation has therefore often led to tokenism, with external teams and decision-makers determining the conduct of, as well as the decisions following from, the initial assessments. In Fiji, moves to involve the community in the assessment of their own damage and needs has often been plagued with the issue of credibility because it can be biased towards more relief than needed and village politics can also be a factor. Turaga-ni-koros are sometimes identified as appropriate people to conduct the first survey of local damage and needs. If this is to be implemented, there should also be a system established for non-ethnic Fijians as well as ethnic Fijians who do not live in villages.

4.3 The choice of a centrally driven or decentralised system

The choice between centralised or decentralised data collecting system is a function of size, the number of levels of administration, and the political context. Other contributing factors are the distance (isolatedness), communications availability, transport resources and capability, extent of preparedness at the local level and confidence placed on local staff by national staff.

A centralised data assessment system (used by a number of countries in the region) uses survey teams drawn from centrally based agencies. A number of small teams from national government ministries collect information assisted by local officials and others. They also do most of the detailed planning on how to respond. In this case the local officials and community leaders are not active participants. They assist and guide, because of their local knowledge and experience. This adds some credibility because of local knowledge being used.

Fiji uses a decentralised system of assessment where the survey is carried out at all levels of administration. The detailed local assessments are the responsibility of District officers. Reporting is quite complex. Generally reports are collated at each administrative level, summarised and passed on to the NEOC. Because the survey team includes other agencies, the latter have the responsibility to report back to their national and divisional headquarters.

Opportunities to have an efficient decentralised system, reporting back to a data collating centre, have improved with new technology, including mobile phones and GPS. In order for the data management system to work efficiently, however, other tools that need to be developed include Standard Operating Procedures and guidelines, comprehensive assessment forms, data processing programmes, information management systems, data visualisation products, and training in data handling, communications technology, and disaster assessment procedures.

4.4 Other assessment methodologies

There are various on-going initiatives around the world to develop standardized rapid or initial needs assessment methodologies in key humanitarian sectors, as also mapped out by UNOCHA for the IASC. For instance, SPHERE standards include initial needs assessment checklists for the sectors it covers (Water, Sanitation and Hygiene

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4 Meheux, K. 2008. An Evaluation of Participatory Damage Assessment Policy and Practice in Fiji (Summary Report)
5 “Mapping of Key Emergency Needs Assessment and Analysis Initiatives”, ACE Project
(WASH), Food & Nutrition, Shelter & Non-Food Items (NFI), and Health). Global humanitarian clusters (Health, Nutrition and WASH) produced a standardized tri-cluster assessment tool. Likewise there are relevant regional initiatives to produce an initial rapid assessment tool such as REDLAC’s methodology for Rapid Humanitarian Assessment which involved different actors including UN, regional and non-governmental organizations. Another initiative is the Emergency Capacity Building Project (ECB), a collaborative effort of seven humanitarian agencies that are jointly tackling common problems in emergency response and preparedness.

Besides these inter-agency initiatives, various humanitarian agencies use their initial assessment tools and methodology as well. For example, UNICEF, IFRC, WFP, UNDAC and UNHCR have their own emergency handbooks which contain guidance and forms on how to conduct initial assessment and what information should be collected. Furthermore, various types of rapid assessment forms are prepared for particular disasters which are tailored to the specific disaster and local context.

Experience shows that (standardized) tools need to be tested and revised in order to tailor them to local context and specific events, when the event occurs and the tool is used. Good dissemination plans need to be formulated so that all stakeholders can and will use it. Furthermore, the importance of a timely multi-cluster rapid needs assessment has become more prominent under the global humanitarian reform, where also (access to) funding mechanisms for disaster relief (e.g. CERF, through Flash and Consolidated Appeals) are linked to life saving activities, which stress the urgent need for information.

In the Pacific, different agencies use different types of initial, or rapid, assessment forms as the basis for rapid assessments. For example, the IFRC Pacific Delegation and the Fiji Red Cross Society assessment forms include an overview on affected population, causalities/illness, types of support needed (NFI, food, health, water etc) and situation assessment in key areas such as WASH, health, food, cooking capacity, power/fuel, accessibility, security as well as available coping mechanisms. The information sought corresponds with regular Red Cross relief operations.

The Asia Foundation’s (TAF/OFDA) Initial Damage Assessment (IDA) methodology also focuses on housing, infrastructure and lifeline damages. Since 2004, Pacific island countries have received training in IDA and assistance to develop an initial damage assessment process. TAF/OFDA has been working for over twelve years supporting disaster management training for the Pacific.

5 AVAILABLE DATA COLLECTION AND MANAGEMENT METHODS AND TOOLS

5.1 Communications technology in Fiji

- Communications technology has improved to the point where it is now possible to be able to send data immediately from almost anywhere in Fiji to a data centre. The wide availability of mobile telephones makes it easier to send messages back to the EOC with relevant information from almost any location, although not in the centre of the islands where mountain peaks disrupt aerial coverage.

- Geographic Information Systems (GIS) have put a powerful new analytical and reporting tool in the hands of ministries and other organizations, as well as FLIS. Various training programs in operating GIS have been conducted by organizations such as the SPC. The GIS Unit of the Bureau of Statistics produced the Fiji Atlas and the Urban Atlas based on the 1996 Census of Population and Housing (not yet updated to the 2007 census). Systems are not yet operating well in other government agencies. The potential exists for more productive use of administrative data but these systems need to be better linked into coordinated national reporting systems, such as FLIS or possibly the NDMO.

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6 www.sphereproject.org
8 www.ecbproject.org
12 Central Emergency Response Fund
• The availability of GPS technology and hand-held data collectors makes it possible for an area to be quickly surveyed, households identified by a GPS code (see Annex 8.2 for an example of a sample form), and all data about each household collated from separate surveys that use these codes. This technology was used in the recent Fiji national census, and has been used by SOPAC elsewhere in the Pacific for community studies.

• Remote sensing capabilities available at SOPAC are at a high international standard, allowing immediate imagery even through cloud-cover. Images of flood damage were quickly made available to NDMO by SOPAC following the extensive floods in Nadi in January 2009.

5.2 Data management and processing tools

A variety of applicable software can be downloaded from the internet. The variety of tools now available needs to be investigated to select those most appropriate for the NDMO to use. Those that are well supported and in widespread use now include:

1. **DevInfo**
   This is a powerful database system used to compile and disseminate data on human development. The software package has evolved from a decade of innovations in database systems that support informed decision making and promote the use of data to advocate for human development. The DevInfo project is an inter-agency initiative managed by UNICEF on behalf of the United Nations (UN) system. As of January 2009, DevInfo has country adaptations for 120 different countries. DevInfo is planned to host the baseline data with a set of standard fields following the MDG definitions and additional new fields hosting regional specific and country specific details. In Fiji it is set up within UNDP PC as PacificInfo for the region (waiting for further data population) and as FijiInfo with country specific information within the Government.

   EmergencyInfo is a powerful decision support system, based on DevInfo database technology that helps people to respond better in emergency situations. It combines the advanced data access and presentation features of DevInfo with new data capture technologies. EmergencyInfo helps to bridge information gaps within the first 72 hours of an emergency and provide support for rapid data collection, situation assessment, standard monitoring reports and disaster preparedness. For rapid data collection, EmergencyInfo uses hand held computers—PDAs—to quickly capture data from multiple affected areas and multiple sources on the scope of an emergency. This facilitates the conversion of raw numbers into meaningful and ready-to-use information. The data is captured in XML format on PDA memory sticks and can be transferred by plugging the PDA into a desktop computer or by sending the data by e-mail. EmergencyInfo combines baseline data from DevInfo and Assessment forms or questionnaires to collect information and supporting data transfer online. As mentioned on the website - EmergencyInfo will support the use of PDA’s (or other handheld devices) for assessments.

   GRIP is a multi-stakeholder initiative that directly aligns with the Hyogo Framework for Action (HFA)’s Priority Area 2: risk identification, assessment and monitoring. Although hosted by UNDP, GRIP’s structure, is inherently multi-stakeholder, as it is a set of harmonized activities contributing to commonly-agreed-upon objectives. Dozens of organizations have been involved in its preparation, design and implementation. GRIP’s programme design reflects the information and support needs identified by the risk identification community. As one of the key thematic platforms for the implementation of the Hyogo Framework of Action (HFA) by the International Strategy for Disaster Reduction (ISDR) system, the programme was officially launched in 2007 at the 1st session of the Global Platform for Disaster Risk Reduction and has been adopted by the ISDR system to support worldwide activities to identify and monitor disaster risk. Its goal is to reduce disaster losses to ensure sustainability worldwide.

DesInventar has recently been set up to host the National Disaster Observatory in Vanuatu as the first but very successful implementation in the region besides other numerous successful implementations in other countries outside our region. According to the PDN Coordinator, it will host detailed event data -
historical and new events and providing a profound base for research and analysis, supported by different tools and applications (maps, graphs, etc.).

The purpose of a National Disaster Observatory is to systematically collect and analyze information on disasters and their associated losses and create an evidence-base to support the formulation or revision of national disaster risk reduction strategies, action plans or programmes, and contingency plans.

Note that all the systems are Free Open Source Software (FOSS), developed within the UN and follow a range of standards, including metadata and exchange. Advice by database experts is that no one of the three systems is intended to be used alone for DIMS. There may be others available that is suitable for DIMS for Fiji. However, together all three systems could support the planned improvements and the detailed information management process.

4. **Pacific Disaster Net:** ([http://www.pacificdisaster.net](http://www.pacificdisaster.net)) The Pacific Disaster Net is the - Virtual Centre of Excellence - for Disaster Risk Management in the Pacific Region. The Web Portal and Database System is designed to be the largest and most comprehensive information resource for DRM in Pacific island countries. It is a living collection and growing DRM information resource for actors and stakeholders to research and collaborate and improve Information and Knowledge Management. It also supports National Action Planning, Decision Making and provides in-country information for distribution within the region. It is available online and will be available offline as frequently updated DVD distribution. The Pacific Disaster Net hosts material relating from various sources like Countries, Bodies, Organizations and Agencies at regional, national and international level, relating to: Governance, Risk Assessment, Early Warning and Monitoring, Disaster Risk Management, Training and Tools. The formats include up-to-date and real-time information like : Alerts with notification, Events, Calendar, Contacts, Forum & Message board, Publications, Reports, Data inventories, Maps, Links, Audio / Visual files, Wiki (information about PDN), and others. The portal will provide a valuable resource to all Disaster Risk Management partners working in the Pacific region including government agencies, regional bodies, non-government organisations and international agencies. A crucial challenge during its development was multiple access entries with a range of retrieval and display options. Inexperienced and expert users will access their information and documents without difficulty and within a range of formats.

Information from the portal can be viewed, downloaded, sent by email and even exported into other formats. For interactive use there are different levels of access to a variety of issues. A Country page provides filtered, dynamic and fixed data and information with Events, Contacts, Links and Basic facts - available per country, organization etc.

### 6 DRM DATA MANAGEMENT ISSUES

1. **The capacity of NDMO to meet its responsibilities** NDMO remains under-resourced to carry out many of its responsibilities, particularly in data management. Overall, they have two linked responsibilities: (a) to coordinate post-disaster assessments and (b) act as a central point for baseline data relating to DRM. At present they do neither of these tasks well. Nor do they maintain a record of past disaster events, or any coordinated archive of previous post-disaster assessments.

   This is not the first time that the issue of NDMO’s capacity for data management has been discussed. In the mid 1990s, under the South Pacific Disaster Reduction Programme (SPDRP) a regional consultancy report (R. Stephenson, 1995 – summary report attached as Annex 8.4) raised many of the issues discussed today and proposed solutions that were presented to NDMO. This is a long time ago now, but it is still productive to discuss what issues prevented action then or since, as a way to help design the way forward.

2. **Duplication of baseline databases without good coordination** Many Fiji government agencies have established databases or GIS systems. The Fiji MDG Report, 2004, noted that the establishment of computerized data management systems that draw upon ministry administrative records had helped to provide useful data but these systems were not being fully utilized. Ministry annual reports have
changed little in their content over the last decade or so and other data from the systems is difficult to access. A whole range of new research bodies have been created within government, but the basic problem of data creation and collection had not been solved. It recommended that the creation of new research bodies within government should not divert resources from the primary job of creating information and ensuring its regular flow to policy analysis.

This raises the question of what functions NDMO should develop that will not duplicate the capacity and functions of FLIS, and how FLIS can support NDMO in maintaining and accessing baseline data and coordinating with other key ministries.

3. Coordinating post-disaster assessments. There are many practical issues that go beyond getting a common assessment form. Stephenson’s 1995 report give a succinct description of the broader needs of NDMO in coordinating and managing post-disaster assessments, sharing information, ensuring that this information is later available for disaster management and risk reduction work and policy formulation.

4. Selecting appropriate methodologies for Fiji. There are many types of survey form or baseline data collection matrices, some of which have been developed specifically for Fiji and others which introduce methods used elsewhere in the world. Choices have to be made or else NDMO will become stymied by the need to collect an enormous range of data. The objective is to have a database that will get the right data, not all the data.

5. Selecting a strong driver for the DIMS Project. The Fiji Government will be the direct beneficiary, and NDMO will remain the focal point and must be strengthened. Outlined below under Section 7 is a proposed partnership to guide this process, and this arrangement needs the agreement and support of all partners.

7 THE PROPOSED PARTNERSHIP FOR INFORMATION MANAGEMENT FOR EMERGENCIES

A proposed partnership of all national and international agencies in Fiji with expertise and interests in DRM will build on existing structures, resources, practices and experiences, while addressing the gaps and weaknesses as identified in November 2007, in order to achieve the objectives. This partnership will as an initiative of the Pacific DRM Partnership Network will provide periodic reports and updates.

Activities and priorities will be defined and overseen by an Information Management Working Group (IMWG) that will establish and supervise three Sub-Working Groups (SWGs) focusing on specific technical activities (Figure 7). The IMWG will be chaired jointly by the National Disaster Management Office as representative of the Fiji government and UNOCHA as representative of the international organisations, with membership drawn from a broad range of national, regional and international actors under this proposed partnership including the Fiji Red Cross Society, the International Federation of Red Cross and Red Crescent Societies (IFRC), Oxfam, Save the Children, the Pacific Islands Applied Geoscience Commission (SOPAC), The Asia Foundation (TAF/OFDA), the United Nations Population Fund (UNFPA), the United Nations Children’s Fund (UNICEF), the United Nations Development Program (UNDP), the United Nations International Strategy for Disaster Reduction (UNISDR) and World Vision International. It would be useful if technical staff of the Secretariat for the Pacific Community (SPC) and for Fiji the NDMO, the Ministries of Health, Agriculture and Education, and Departments of Lands and Statistics will join the partnership.
The IMWG will undertake some work directly but most activities will be carried out by Sub-Working Groups established for a finite period to address specific issues. The IMWG will develop terms of reference for each SWG, define its members and supervise its work. Three SWGs will be established initially to work on a) Data preparedness; b) Rapid needs assessment and, c) IM tools and systems. Membership of the SWGs will be solicited among national and international partners with appropriate technical and thematic expertise.

The IMWG will develop a detailed work-plan for each activity in due course, but focus is likely to be in on four main areas:

- Coordination: communication mechanisms, information sharing, networking and partnerships between sectors and stakeholders, leadership, roles and responsibilities for both data preparedness and initial assessment.
- Data availability and management: minimal baseline data, mechanisms for continuous updating of baseline data, standardized forms, data integration/interface and management, links between secondary data/baseline data and data collected from affected areas following emergencies.
- Organizational set-up: information management for emergencies, organisational and communication networks extending into the community, Early Warning and Early Action systems, Human resources/technical expertise, response planning, funding.
- Tools: Standard Operating Procedures, guidelines, assessment forms, data processing programmes, information management systems and tools, data visualisation products, trainings, communication equipment and procedures.

Partners will support the work of the IMWG and SWGs with technical advice and expertise, funding and other resources where possible for facilitation, coordination, workshops, capacity development, exercises and reviews. Where partners already have resources available for similar purposes, or are appealing for donor funding for a similar purpose, this will be done in a spirit of partnership. It is expected that partners will support each others capacity development and resource mobilization for the purpose of strengthening information management for emergencies.

8. ANNEXES

8.1 Baseline data

FLIS GIS data fields:

- Coastlines
- Administrative Boundaries
  - Tikinas (Old)
  - Tikinas (New)
  - Provinces
  - Divisions
Urban Boundaries
• Peri – Urban Boundaries
Villages & Settlements
Places and Community Names
Major Road
Minor Roads and Tracks
Bridges
Tramlines
Rivers
Major Creeks
Minor Creeks
Contours (20m) and Spot Heights
Vegetation
Street Addresses
Surveyed Property Boundaries
Trigs
Reefs Exposed and Submerged

Other Department/Organisation Data at FLIS
• Enumeration Area Boundaries – BOS
• Fire Hydrants – NFA
• Police Stations and Posts
• Schools
• Hospitals and Health Centres
• Sugar Cane Farms & Sectors
• Native Land Commission Maps
• Pine Forests
• PWD Roads
• Forests
• PWD Water Pipes and Reservoirs
• Squatter Settlements
• Town and Country Planning – Urban Zone Maps
• Agricultural Soil Maps
• Election Boundaries and Polling Stations

8.2 Post-disaster assessment forms
A number of damage assessment and baseline data gathering forms are provided below for reference and adaptation for use to enhance existing form if applicable. These are mixed and not necessarily emphasise any specific sector. Interesting to note the difference in the forms (see below) used by three divisions (Northern, Western and Central) during the January 2009 Flood in Fiji.

1. South Pacific Disaster Reduction Programme (SPDRP, 1999)

<table>
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<td>Population</td>
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<td>Village/settlement details</td>
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<tr>
<td>Health sector details</td>
</tr>
<tr>
<td>Agricultural sector details</td>
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<tr>
<td>Educational facility details</td>
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<td>Transportation network details</td>
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<tr>
<td>Plant and equipment</td>
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<tr>
<td>Commercial sector</td>
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</tr>
<tr>
<td>• sea</td>
</tr>
<tr>
<td>• roads/bridges</td>
</tr>
<tr>
<td>• location of central economic sectors or high risk sectors</td>
</tr>
<tr>
<td>Category</td>
</tr>
<tr>
<td>--------------------------------</td>
</tr>
</tbody>
</table>
| Critical government stockpiles | • food  
• fuel  
• energy  
• building material  
• relief materials  
• pharmaceuticals |
| Social system                  |                                                                       |
| Lifelines                      | • water  
• power  
• sewage  
• waste |
| Communication                  | • broadcasting  
• radio - HF  
Telephone (lad/mobile/satellite) |
| Critical facilities            | • government buildings                                               |
| Manpower                       | • critical persons in emergency phase                                |
| Shelter and evacuation facilities | • Location  
• capacity                                                  |
2. OCHA Regional Office for Asia and the Pacific: Minimum Common Operational Datasets (DRAFT)

<table>
<thead>
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<th>Default source</th>
<th>Minimum Fields (in additional to spatial coordinates)</th>
</tr>
</thead>
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<td></td>
</tr>
<tr>
<td>1.1. Admin 0 (national)</td>
<td>GAUL</td>
<td>Pcode, Name</td>
</tr>
<tr>
<td>1.2. Admin 1 (province or equivalent)</td>
<td>GAUL</td>
<td>Pcode, Name, Population</td>
</tr>
<tr>
<td>1.3. Admin 2 (district or equivalent)</td>
<td>GAUL</td>
<td>Pcode, Name, Parent unit, Population</td>
</tr>
<tr>
<td>1.4. Admin 3</td>
<td>GAUL</td>
<td>Pcode, Name, Parent unit, Population</td>
</tr>
<tr>
<td>1.5. Admin 4</td>
<td>None</td>
<td>Pcode, Name, Parent unit, Population</td>
</tr>
<tr>
<td>1.6. Admin 9 (Community)</td>
<td>None</td>
<td>Pcode, Name, Parent unit, Population</td>
</tr>
</tbody>
</table>

| **2. POPULATED PLACES** | | |
| 2.1. Community (points) | Global Discovery | Pcode, Name, Parent unit, Class (provincial capital, etc.), Population |
| 2.2. Built-up areas (polygon) | Global Discovery | - |

| **3. SOCIAL INFRASTRUCTURE** | | |
| 3.1. Primary schools | None | Pcode, Name, Parent unit (community), Class (Primary, etc.), Capacity (Classrooms), Capacity (Students) |
| 3.2. Health facilities | None | Pcode, Name, Parent unit (community), Class (Hospital, etc.), Capacity (Inpatients) |

| **4. TRANSPORTATION** | | |
| 4.1. Roads | Global Discovery | Class (highway, secondary, etc.) |
| 4.2. Railways | Global Discovery | Class (dual, single, etc.) |
| 4.3. Airports & Helipads | Global Discovery | Name, Class (civilian, military), Class (airport, helipad), Capacity (runway length) |
| 4.4. Seaports | Global Discovery | Name, Capacity (max. vessel size), Capacity (channel depth), Capacity (lift capacity) |

| **5. TOPOGRAPHIC** | | |
| 5.1. Coastline | UNCS | - |
| 5.2. Digital elevation (90m) | SRTM90 | - |
| 5.3. Major rivers | Global Discovery | Class (perennial, etc.) |
| 5.4. Water bodies | Global Discovery | Name |

GAUL: Global Administrative Unit Layer, published by FAO
UNCS: United Nations Cartographic Section
SRTM: Shuttle Radar Topographic Mission (SRTM90 refers to the version of the data with a nominal resolution of 90 meters)
### 3. OCHA Assessment & Classification in Emergencies (ACE) Project: Proposed framework for assessments, linked to response planning, following a major sudden-onset crisis (draft with some changed proposed by 'common needs assessment' workshop, January 2009)

<table>
<thead>
<tr>
<th>GOAL</th>
<th>Preparedness</th>
<th>Saving and sustaining lives</th>
<th>Saving livelihoods and re-establishing essential services</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PHASE 0</strong></td>
<td><strong>Before</strong></td>
<td><strong>PHASE 1</strong></td>
<td><strong>PHASE 2</strong></td>
</tr>
<tr>
<td>ASSESSMENT PURPOSE</td>
<td>Establish procedures &amp; responsibilities for assessments; Prepare tools</td>
<td>Estimate scale &amp; severity of the impact of the event and locate affected populations to inform: (i) initial response decisions, and (ii) focus of phase-2 assessment</td>
<td>Initial assessment to: (i) inform planning of humanitarian response, and (ii) define focus for follow-on assessments</td>
</tr>
<tr>
<td>ASSESSMENT TYPE</td>
<td><strong>J</strong>oint <strong>C</strong>ontingency <strong>P</strong>lanning <strong>P</strong>rocess</td>
<td><strong>P</strong>reliminary <strong>S</strong>cenario <strong>D</strong>efinition</td>
<td><strong>J</strong>oint, Multi-sectoral <strong>I</strong>nitial <strong>R</strong>apid <strong>A</strong>ssessment</td>
</tr>
<tr>
<td>METHODOLOGY</td>
<td><strong>J</strong>oint contingency planning process (secondary data)</td>
<td>Pre-crisis information, initial reports from the field, media reports, flyovers &amp; satellite imagery, 1-yr quick visits, if possible</td>
<td>Community level discussions, purposive sampling, key informants</td>
</tr>
<tr>
<td>OUTPUTS</td>
<td>Contingency plan for assessments</td>
<td>Red flag preliminary working scenario</td>
<td>Initial report/situation analysis and planning scenario</td>
</tr>
<tr>
<td>INFORMATION DATA INDICATORS</td>
<td>Baseline data; common p-codes</td>
<td>Minimal core set, p-codes for new sites</td>
<td>Expanded core set (while maintaining core set)</td>
</tr>
</tbody>
</table>

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8.3 Principles of humanitarian information management and exchange in emergencies. Taken from “Operational Guidance on Responsibilities of Cluster/Sector Leads & OCHA in Information Management”, IASC 2007

What are the principles of humanitarian information management and exchange in emergencies?

The following operational principles should be used to guide IM and information exchange activities in emergencies:

- **Accessibility.** Humanitarian information and data should be made accessible to all humanitarian actors by applying easy-to-use formats and by translating information into common or local languages. Information and data for humanitarian purposes should be made widely available through a variety of online and offline distribution channels, including the media.

- **Inclusiveness.** Information management and exchange should be based on collaboration, partnership and sharing with a high degree of participation and ownership by multiple stakeholders, including national and local governments and, especially, affected communities whose information needs should equally be taken into account.

- **Interoperability.** All sharable data and information should be made available in formats that can be easily retrieved, shared and used by humanitarian organizations.

- **Accountability.** Information providers should be responsible to their partners and stakeholders for the content they publish and disseminate.

- **Verifiability.** Information should be accurate, consistent and based on sound methodologies, validated by external sources and analyzed within the proper contextual framework.

- **Relevance.** Information should be practical, flexible, responsive and driven by operational needs in support of decision-making throughout all phases of a crisis. Data that is not relevant should not be collected.

- **Impartiality.** Information managers should consult a variety of sources when collecting and analyzing information so as to provide varied and balanced perspectives for addressing problems and recommending solutions.

- **Humanity.** Information should never be used to distort, to mislead or to cause harm to affected or at-risk populations and should respect the dignity of victims.

- **Timeliness.** Humanitarian information should be collected, analyzed and disseminated efficiently and must be kept current.

- **Sustainability.** Humanitarian information and data should be preserved, cataloged and archived, so that it can be retrieved for future use, such as for preparedness, analysis, lessons learned and evaluation. The use of Open Source Software should be promoted to further enhance access to information by all stakeholders in a sustainable way. When possible, post-emergency data should be transitioned to relevant recovery actors and host governments and training provided on its use.

- **Reliability.** Users must be able to evaluate the reliability and credibility of data and information by knowing its source and method of collection. Collection methods should adhere to global standards where they exist to support and reinforce credibility. Reliability is a prerequisite for ensuring validity and verifiability.

- **Reciprocity.** Information exchange should be a beneficial twoway process between the affected communities and the humanitarian community, including affected governments.

- **Confidentiality.** The processing of any personal data shall not be done without the prior explicit description of its purpose and will only be done for that purpose, and after prior informed consent of the

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Updated with reviewed and amended principles from Global Symposium +5 on Information for Humanitarian Action, FINAL REPORT, 22 - 26 October 2007, Palais des Nations, Geneva, Note: principles were updated from the original 2007 version available at http://www.reliefweb.int/symposium/docs/symposium5_final_report.pdf
individual concerned. Sufficient safeguards must be put in place to protect personal data against loss, unauthorized processing and other misuse. If sensitive information is publicly disclosed, the sources of such information will not be released when there is a reasonable risk that doing so will affect the security or integrity of these sources.

_Endorsed by the IASC Task Team on the Cluster Approach_

_Geneva, 17 October 2007_

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15 Processing is, among others, collection, recording, organization, storage, alteration, consultation, use, disclosure, erasure.

16 Personal data is information relating to an identified or identifiable person.

17 “Informed” includes the source being aware that providing information will not ensure that they will be protected by the organization.
1. **Summary and Recommendations Report, R.S. Stephenson. 1995:**
2. **McRAM in separate files**
   (Sent in separate PDF file)