



Strengthening of Disaster Preparedness and Emergency Response Capacity in Belize

United Nations Development Programme

Country: Belize

Project Document

UNDAF Outcome(s):	By 2011, national frameworks and capacities in place enhancing the ability to adequately address adaptation to and mitigation of the impact of disasters as well as the comprehensive, equitable, sustainable and effective management of the nation's natural resources
Expected CP Outcome(s):	Reduced vulnerability of poor and excluded populations to impact of disasters
Expected CPAP Output(s):	<ol style="list-style-type: none">1. By 2009, capacity of state actors and communities to implement effective risk reduction and response measures has increased.2. National disaster management authority strengthened to fully integrate and implement hazard mitigation policies and strategies.
Implementing partner:	Ministry of Public Utilities, Transport, Communications and National Emergency Management
Responsible Parties:	NEMO, MED, CCCCC, MNRE, MHDST, UNICEF

Narrative

Belize, due to its topography and geographic location is highly susceptible to natural disasters. Post Hurricane Mitch, the Government of Belize realized the need for planning and coordination within the national response to disasters. The Government of Belize established through law the National Emergency Management Organization. NEMO has since been operating through its technical Operational Committee and its effectiveness has been impacted by weaknesses within the disaster management structure.

The Proposed initiative is meant to support the national structure for emergency management, addressing those gaps in its processes identified by recent assessments. The project will work particularly at developing national capacities for assessment, planning, mainstreaming of risk reduction into national development planning, early warning and the transformation of emergency management into a people centric process in which planning and response can be decentralized to community levels.

Programme Period:	2007-2011
CPAP Programme Component:	Crisis Prevention and recovery: Natural Disaster Reduction (Service Line 4.5)
Project Title:	Strengthening of Disaster Preparedness and Emergency Response Capacity in Belize
Atlas Award ID:	00056493
Start Date:	April 2009
End Date :	March 2012
PAC Meeting Date:	17/02/2009

Estimated annualized budget:	Y1: \$308,450
	Y2: \$415,325
	Y3: \$258,700
Total resources required	\$982,475
Total allocated resources:	\$982,475
• Regular	\$982,475
Unfunded budget:	0
In-kind Contributions	
• GOV In- Kind and Initiatives	GOV Executed \$107,800
• OTHER	\$308,500

Agreed by (Implementing Partner): *R. B. K. [Signature]* 12th March, 2009

Agreed by UNDP *[Signature]* 17 March/2009

<p>community and women's group in localized contingency planning</p> <p>- Increase effectiveness of decentralized organizational units</p>	<p>District.</p> <ul style="list-style-type: none"> - 15 state and non state actors trained in hazard/ risk modelling - Hazard evaluation and mapping undertaken by MET Department. -Community volunteer early hazard detection group active in at least 3 communities <p>Targets (year 3)</p> <ul style="list-style-type: none"> -By the end of project year 3 the project expects to record increases in budgetary allocations directed to risk management within development sectors - Early warning unit developed within the Met Department - Community volunteer early hazard detection groups activity expand to include 3 more communities 	<p>assessments for early recovery and response, and coordination of relief materials during times of crisis</p> <ul style="list-style-type: none"> ▪ Action 1.2.2 Develop and conduct training on integrating gender analysis into Emergency Management Committees at district and village levels; ▪ Action 1.2.3 Community based contingency planning with built- in mechanisms to ensure adequate representation of women at community levels ▪ <i>Action 1.2.4</i> Multi-hazard preparedness and mitigation plans developed for Corozal, Stann Creek and Belize Districts. ▪ Action 1.2.5 Local level DEMO centres equipped to support effective communication and coordination <p>Activity Result 1.3 National Capacities for early warning strengthened</p> <ul style="list-style-type: none"> ▪ Action 1.3.1 National counterparts trained in hazard/ risk modelling ▪ Action 1.3.2 Support the deployment of remote weather stations in four high risk areas ▪ Action 1.3.3 Support the development of early warning protocols ensuring that early warning systems are integrates into decision making processes and Emergency management systems ▪ Action 1.3.4 Support NEMO's effort to engage community organizations (particularly women's and youth groups) in early detection of hazards ▪ Action 1.3.5 Support a national awareness campaign sensitizing communities about the national structure for early warning. 	<p><i>NEMO/ Met Department (International Consultant)</i></p>	<p>Travel 3,500)</p> <ul style="list-style-type: none"> ▪ Stocktaking Exercise (NC- 15 days @250/day=\$3,750) ▪ Expert Facilitator Role of Women (NC- 5days @250/ day= \$1,250) <p>Training/ Workshops:</p> <ul style="list-style-type: none"> ▪ Risk Modelling Venue:\$1,500 Materials:\$500 ▪ Community Monitoring Venue:\$3,000 Materials \$1,500 Travel \$1,500 ▪ Land use and links to community vulnerability Venue \$3,000, Materials\$2,000 Travel\$2,500 ▪ Training EMC's Materials \$1,500 Travel \$2,000 ▪ District Level Contingency planning Process Materials \$3,250 ▪ Simulation Exercise Material \$1,000 Travel \$2,500 Communication \$750 ▪ National Forum on Gender and Vulnerability (Venue \$5,500, Material \$2,500 Travel \$2,500) ▪ SNAP Workshops (Venue \$4,500 Material \$1,500 ▪ Training DEMO (Material \$750 Travel \$1,000) ▪ Community Contingency Planning (4 sessions @500/ session= \$2,000) (travel 250 Material 250) ▪ Training on role of Women in Emergency Management Venue \$1,000, Materials \$500 <p>Contractual Services:</p> <ul style="list-style-type: none"> ▪ Community VA and Contingency Planning (7,500 x4 communities= \$30,000) ▪ Printing of information
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				<p>materials \$7,000</p> <ul style="list-style-type: none"> ▪ Printing Gender study \$5,000 <p>Equipment and Software:</p> <ul style="list-style-type: none"> ▪ Computers for DEMO and CEMO offices (7@ \$1,500/computer= \$10,500) ▪ Risk Modelling Software (\$12,000/package) ▪ Base radios for DEMO offices (7@ \$875/radio=\$6,125) ▪ Remote Weather Stations (4@\$3,750/unit= \$15,000)
<p>Output 2 / Component 2: National disaster management authority strengthened to fully integrate and implement hazard mitigation policies and strategies.</p> <p>Baseline: The National Emergency Management Organization (NEMO), responsible for national emergency systems, has indicated that the national emergency response capacity is inadequate to respond to a major emergency/disaster situations. NEMO's operational focus on storm-related impacts has also left the country vulnerable to other high-risk situations, including flood and drought.</p> <p>Indicators:</p> <ul style="list-style-type: none"> - Presence of systemic inventory of disasters and losses - # of individuals trained in risk management/ damage assessment - Organization and coordination of emergency operations - Supply of equipment and tools 	<p>Targets (year 1)</p> <ul style="list-style-type: none"> - DesInventar Data based established and populated by end of year 1 -15 individuals including 5 NGO representatives trained in the interpretation of LIDAR imagery -2 sector reporting tools developed by end of year 1 (Housing and Relief Supplies) -DANA trained in use of Social sector impact indicators -National Hazard Profile Finalized by end of year1 <p>Targets (year 2)</p> <ul style="list-style-type: none"> - DesInventar data base adopted to function as national repository of Disaster information (NDLDO) - 20 individuals representing DEMO nodes and LIC hub trained in systemic collection, documentation and analysis of information within the (NDLDO) - LIDAR System developed and piloted by end of Yr 2 -3 sector reporting tools developed by mid year2 (Agriculture, Education and Health) -DANA and Sector Tools incorporate humanitarian/ Social Sector indicators -NEMO adoption of Consolidated national Disaster plan with supporting protocols by end of year 2 	<p>Activity Result 2.1 National Disaster Management Framework/ Structure strengthened</p> <ul style="list-style-type: none"> ▪ Action 2.1.1 Estimation of national risk distribution through the conducting of a multi hazard risk assessment ▪ Action 2.1.2 Consolidation of existing disaster management plans into a comprehensive National Disaster Preparedness and Management Plan ▪ Action 2.1.3 Development of policies and protocols supporting plan implementation ▪ Action 2.1.4 Strengthen national networking ad response capacities <p>Activity Result 2.2 Functionaries at a national level capable of sustaining the disaster management programme</p> <ul style="list-style-type: none"> ▪ Action 2.2.1 LIDAR technology piloted in Belize and used in the development of Coastal and Flood plain Hazard maps ▪ Action 2.2.2 Training of national counterparts within the LIC, Meteorology Department and NGO sector in the interpretation and use of LIDAR imagery in Mapping ▪ Action 2.2.3 Establishment and Population of national database on hazards, vulnerabilities and Risks in Belize using DESINVENTAR adopted technology ▪ Action 2.2.4 Allow for connectivity of database enhancing disaster related information exchange among national and international communities, researchers and other interesting organizations. ▪ Action 2.2.5 Improve national capacities for post disaster assessment, analysis and reporting 	<p>NEMO/ DANA (Consultants)</p> <p>NEMO/ DANA/ UNDP/ CCCCC (Consultants)</p>	<p>Consultancies:</p> <p>Develop national Hazard profile/ Multi-Hazard risk Assessment (30 days @ 1000/day= 30,000 Travel- 2,000 , National participation= 12,000</p> <ul style="list-style-type: none"> • Human issues paper -Disaster trends and national Development (NC- 20 days @300/day= 6,000 ▪ Review and consolidation of national disaster management plan / Policies and protocols supporting Plan (IC- 25 days@500/day= 12,500 Travel 2,500 NC- 30days@250/day=\$7,500) - Development of SOP manual (NC- 15 days @300/day= \$4,500) ▪ Population of DesInventar/ Disaster Loss Observatory (NC- 30days@150/day= \$4,500) ▪ Facilitation DANA training (IC- 10days@500/day=\$5,000 Travel \$2,500) ▪ Compilation National Resource inventory (NC 10 days@250/day=\$2,500) ▪ LIDAR Image Interpretation (IC- 10 days@500/day= \$5,000 Travel (\$2,500) ▪ National Application of DesInventar (IC-5 day s@\$500= \$2,500 Travel

	<p>Targets (year 3)</p> <ul style="list-style-type: none"> - Hazards maps developed for 5 vulnerable regions - Assessment training manual developed and promulgated through NEMOP network - Capacity building Action plan in place by end of year 3 - Issues paper (Disaster Trends and National Development) 		<p>\$2,000)</p> <ul style="list-style-type: none"> ▪ National Adoption of Disaster Loss Observatory (IC- 7 days @500/ day= \$3,500 Travel \$2,000) ▪ Sector Reporting Guidelines (IC- 15 days@500/day= \$7,500 Travel \$2,500) ▪ Development of Assessment Training Manual (NC- 20 days @ 250/day= \$5,000) ▪ Capacity Building Action plan (NC- 20days@250/day= \$5,000) <p>Contractual Services:</p> <ul style="list-style-type: none"> ▪ Technology development contract CCCCC \$150,000) ▪ DATA base connectivity (\$7,500) ▪ Over Flights (LIDAR mapping) \$15,000 ▪ Printing Training Manual (\$5,000) ▪ Map Production/ printing (\$5,000) <p>Training/ Workshops:</p> <ul style="list-style-type: none"> ▪ LIDAR application Materials \$2,500 ▪ DANA/NEMO (Social analysis) Materials \$1,000 Travel \$1,000 ▪ DANA Workshop NDLD (2,500) ▪ Training Data collection, documentation, analysis (\$5,000) ▪ Importance of Disaggregated data (Venue 1,600 Material 1,000) ▪ Validation Sessions (DMP,SOP) (Materials \$1,500 Travel \$750) Materials\$2,000 Travel\$1,000 ▪ Introduction to DesInventar Materials \$1,500
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				<p>Equipment and Software:</p> <ul style="list-style-type: none"> Computers and server for DesInventar (2 computers @2,500= \$5,000 one server system @ \$4,000) Computer for NEMO/ DevInfo (1 @ \$2500/computer= \$2,500) DANA Field Kits (20 Kits @750/ kit= \$15,000)
<p>Output 3 / Component 3: National and International partnerships in the area of risk and risk management are fully functional.</p> <p>Baseline: The National Emergency Management Organization (NEMO), responsible for national emergency systems, has indicated that the national emergency response capacity is inadequate to respond to a major emergency/disaster situations. NEMO's operational focus on storm-related impacts has also left the country vulnerable to other high-risk situations, including flood and drought.</p> <p>Indicators:</p> <ul style="list-style-type: none"> Increase coordination in response Increased of resources for institutional strengthening Extent of resource mobilization by UN agencies 	<p>Target (year 1)</p> <ul style="list-style-type: none"> UNETT members trained Interagency Contingency plan drafted <p>Target (year2)</p> <ul style="list-style-type: none"> IASC formalized and have met at least twice within the hurricane season Resource mobilization strategy developed through participatory approach <p>Target (year 3)</p> <ul style="list-style-type: none"> IASC meet at least 4 times 	<p>Activity Result 3.1 UN mechanism for preparedness and response are fully functional</p> <ul style="list-style-type: none"> Action 3.1.1 Support to national UNETE structure Action 3.1.2 Resource Mobilization strategy for earl response and early recovery developed Action 3.1 3 Interagency Contingency plan drafted and synchronized with national development efforts <p>Activity Result 3.2 National Network of participating partners maintained</p> <ul style="list-style-type: none"> Action 3.2.1 Develop and facilitate a national platform for networking of proposed partners Action 3.2.2 Expand capacity of UNICEF supported DEVINFO database 	<p>UNDP (Consultants)</p> <p>UNETE/ UNICEF</p>	<p>Consultancies:</p> <ul style="list-style-type: none"> Programme Associate DRR 36 Months@1500/month=\$54,000 Gender Specialist (36 months @ 2,500/ month =\$90,000) Contingency Plan Development (IC- 35days@500/day=\$17,500 Travel \$3,000) Develop framework structure for IASC (IC- 15days@\$500=\$7,500 Travel \$2,500) Resource mobilization strategy (IC- days@\$750/day=\$22,500 Travel \$3,000) 30 <p>Training/ Workshops:</p> <ul style="list-style-type: none"> UNETT (IC- 5 days@\$500/ day= \$2,500 Travel \$2,500) Support for IASC meetings (6 meetings @250/meeting=\$1,500) <p>Equipment and Software:</p> <ul style="list-style-type: none"> Field Laptops (2toughbooks@\$2,500=\$5,000)

Indicative Outputs, Activities and Quarterly Work Plan

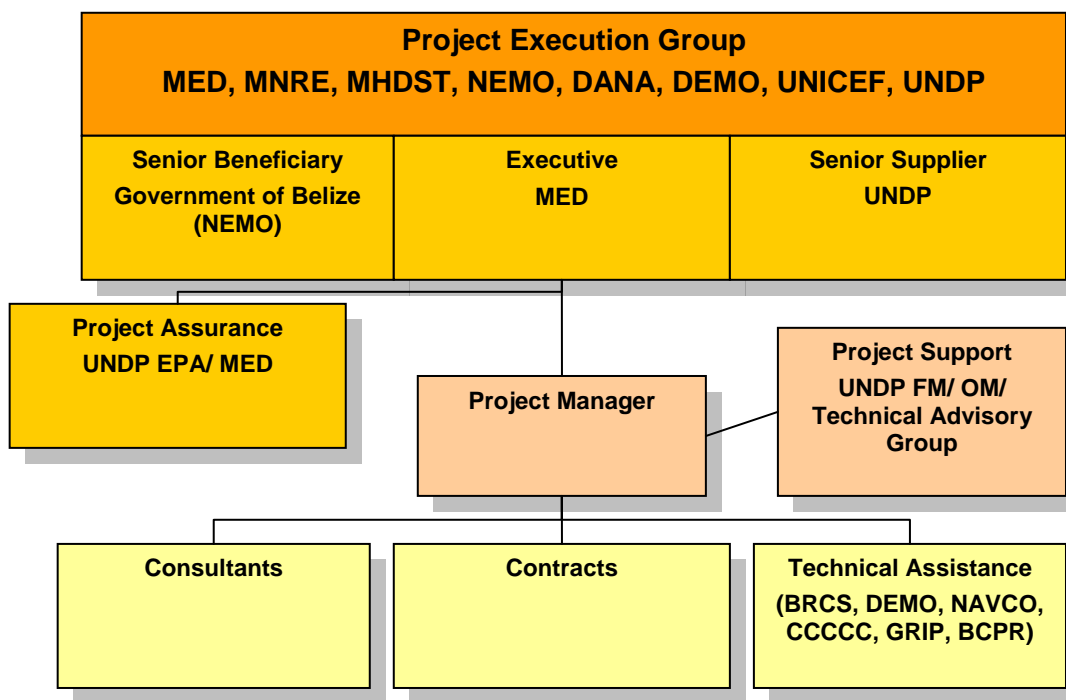
Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Activity Result 1.1 National Guidelines formulated allowing for the mainstreaming disaster reduction in development planning	Hosting of training workshops in disaster risk reduction targeting specific sectors, national and local government, civil society organizations (inclusive of women's group) on the need to mainstream disaster risk management in planning												
	Introduction of stakeholder groups and policy makers to the SNAP initiative												
	Development of Green Paper												
	Conduct national workshops to enable government and its implementing partners to work together to identify priority activities for SNAP												
	Recruitment of international consultant to guide the preparation of the SNAP												
	Presentation of SNAP through a national forum												
Activity Result 1.2 Capacity built for decentralized planning and effective disaster risk reduction	Development of simplified information docket/ training packages to support Emergency Management Committees												
	Consultants conduct training of disaster committees for district, municipalities and village levels												
	Support of local level coordination centers												
	Using community vulnerability assessment tool developed under MACCC project, select 4 potentially high risk communities to involve in local risk management pilot												
	Local exercise carried out to determine specific vulnerabilities within four pilot communities with primary focus on women and vulnerable populations (Supported by the Belize Red Cross VCA methodology)												
	Training of community stakeholders, including women representatives, on the process of development of village based natural disaster contingency plans and the identification of roles and capacities for its implementation												
	Community training meetings with local women's group/ community members within 4 pilot communities on the role of women in emergency response and early recovery												
	<i>Gender sensitive Community Contingency Plans developed based on major threats specific to the 4 pilot communities</i>												
	Best Practice Guidance manual for community contingency planning produced and disseminated through NEMO network for use in other communities.												
	Mobilisation of technical expertise to support the NEMO through the contingency planning process												
	NEMO Secretariat support the development of district level contingency plan covering major disaster threats												

Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Contingency Plans harmonized with national policy and strategy												
	Simulation exercise to test Contingency plans												
	Identification and procurement of communication equipment enabling the effective communication stream between NEMO and allow local DEMO's to interact with the NDLD0 hosted in the MNRE												
	Training of DEMO's on national coordination structure and protocols.												
	Training of DEMO to effectively collect and input assessment data into national system												
Activity Result 1.3 National Capacities for early warning strengthened	Identify and procure software for risk modelling including flood and storm surge modelling												
	Collection and analysis of data on disaster management experience at institutional, national and district levels to quantify vulnerabilities and capacities. Secure trainer for modelling practical workshop												
	Deployment of 3 remote weather stations												
	Train community members in the monitoring of community specific risk												
	Hire national consultant to guide the development of early warning protocols												
	Develop easily understandable information to be utilized by NEMO trainer in the sensitization of communities on early warning.												
	Hosting of community awareness building workshops on the topic of land use and its link to population vulnerabilities.												
Indicative Activity 2.1: National Disaster Management Framework/ Structure Strengthened	Collection and analysis of data on disaster management experience at institutional, national and district levels to quantify vulnerabilities and capacities.												
	Review current arrangements for disaster management												
	Develop national hazard profile (Multi hazard Risk Assessment)												
	Consolidate national response plans into a Comprehensive National Disaster Preparedness Plan												
	Revise the existing NEMO standard operations procedure manual (SOP) providing clear guidance to the activation and support of the National Disaster Preparedness Plan												
	Propose operating protocols based on the risks, capacities and resources necessary to effect the execution of the national plan												
	Determine gaps in capacity needs for effectively executing national plans												
Develop recommendations on the structure and staffing of disaster management institutions at different levels													

Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Prepare capacity building action plan with cost estimates for meeting ongoing and future requirements.												
	Host validation exercises with national stakeholder groups												
	Identify national partners with capacities to contribute to the implementation of the proposed plan												
	Develop and manage national platform for networking of proposed partners (Activity linked with the formalization of a National Interagency Standing Committee chaired by the United Nations System in Belize)												
	Expand original capacity of the UNICEF supported DEVINFO database to accommodate the recording of disaggregated data												
	Conduct awareness seminar on the importance of disaggregated data in disaster planning												
	Conduct national inventory of available national and local resources and capacities to cope with potential risks												
	Resource depots projected on planning maps by the LIC to facilitate easy decision making												
	Support the maintenance of a data manager within the NEMO secretariat (It is the intent of this proposal to provide seed funds for the hiring of a data manager to provide technical support for NEMO data management. This position will be formalized by the Government of Belize who will take on the responsibility of supporting the position over the life of the project.).												
Indicative Activity 2.2: Functionaries at a national level capable of sustaining the disaster management programme	Fabrication of LIDAR technology through the assistance of the Caribbean Climate Change Center												
	Support LIDAR mounted flights over the Northern and central shoreline of Belize (Corozal Town to Placencia Village), along the Belize and North Stann Creek Rivers, and the Belize District Cayes (San Pedro and Caye Caulker)												
	Develop national capacities (state and non-state) for LIDAR image interpretation and use in mapping and risk/hazard modeling												
	Organize stakeholders workshop to introduce DESINVENTAR methodology and the concept of NDLDO												
	Transfer of technology and adopt existing DESINVENTAR tool to conform to national needs, reflecting data collected through national damage assessment tools and to satisfy the requirements for the use of the database as the hub of the NDLDO												
	National level database and inventory established as the basis for preparedness planning and disaster data analysis.												
	Develop local capacities in the maintenance of DESINVENTAR database and use of the querying tool in information management												
	Develop Local Capacities for the systemic, collection, documentation and analysis and interpretation of data												

Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Development of sectoral reporting guidelines and report templates ensuring incorporation of social sector impact indicators covering gender, health and education issues												
	Support the development of initial human development issues paper (Disaster trends and national Development)												
	Strengthen capacity of DANA and other functionaries through training meant to familiarize entities of the importance of the humanitarian approach to disaster assessment and planning and methodologies utilized to strengthen social analysis in national assessment processes.												
	Training of DANA team leaders in utilization of assessment tools and analysis of collected data												
	Equipping of DANA teams with field kits to support rapid deployment of teams into disaster areas												
	Development of assessment training manuals to be used in the training and orientation of Disaster Assessment Teams [DAT] at district and community levels resulting in a more robust system of data collection, supporting the national DANA mandate.												
Indicative Activity 3.1: UN Mechanism for Preparedness and response are fully functional	Maintain a UNDP Programme Associate for Disaster Risk Reduction; this individual will provide management support and oversight to the Project management team within the Government of Belize as well as function to support UNETT.												
	Maintain Specialist Advisor on Gender issues												
	Training of UNETE members and Agency essential staff to effectively perform CCC essential functions (Threat tracking, threat analysis, SitRep development, Development of CERF,FLASH appeals)												
	Procurement of equipment and materials to support UNETT's primary responsibilities in information management and coordination.												
	Source regional expertise to assist in the development of the resource mobilization strategy and the interagency contingency plan. OCHA's assistance in UN contingency planning												
	Host stakeholder awareness building forum introducing concept of IASC												
	Formation of national IASC with the assistance of the Regional Bureau and OCHA												
	Support quarterly discussion/ planning forums												

I. MANAGEMENT ARRANGEMENTS



This AWP will be nationally executed (NEX-modality) and is an integral part of the UNDP Country Programme Action Plan (CPAP) 2007 – 2011 signed between the Government of Belize and UNDP in December 2006. The signing of the UNDP CPAP 2007-2011 constitutes a legal endorsement by the Government of Belize of the fact that the signing of this AWP by UNDP and Ministry of Public Utilities, Transport, Communications and National Emergency Management establishes a legal agreement between both parties for the implementation of this AWP by NEMO, who acts as the Executing Agency.

To ensure UNDP's accountability for programming activities and use of resources, while fostering national ownership, appropriate management arrangements and oversight of UNDP programming activities will be established. The management structure will respond to project's needs in terms of direction, management, control and communication. As the project is cross-functional and involves various stakeholders, its structure will be flexible in order to adjust to ongoing changes in the context. The UNDP Project Management structure consists of roles and responsibilities that bring together the various interests and skills involved in, and required by, the project.

UNDP will act as the Implementing Agency/ Senior Supplier for this project. As the Executive, UNDP brings to the table a wealth of experience working with governments in the arena of reform, and is well-positioned to assist in both capacity building and institutional strengthening. As always, the UNDP Country Office and RBLAC (Panama) will be answerable as the agency responsible for transparent practices, appropriate conduct and professional auditing. Staff and consultants will be contracted according to the established rules and regulations of the United Nations and all financial transactions and agreements will similarly follow the same rules and regulations.

The Ministry of Public Utilities, Transport, Communications and National Emergency Management, National Emergency Management Organization is proposed as the Executing Agency for the project. A

Project Director from within the NEMO will be assigned to provide general project oversight (part of GoB co-financing). NEMO will work to establish a Project Management Unit (PMU) responsible for the day-to-day management of project activities, which will be supported by the staff and network of experts within the NEMO, MED and UNDP. The Executing Agency will subcontract specific components of the project to specialized government departments, research institutions, as well as NGOs.

Government Cooperating Agency: The Government Cooperating Agency is the governmental unit directly responsible for the government's participation in each UNDP-assisted project. In the case of the initiative Strengthening Disaster Preparedness and Emergency Response Capacity in Belize, the Government Cooperating Agency is represented by the Ministry of Economic Development. A representative of the MED will perform the role and functions of the Senior Beneficiary in the Project Board.

Implementing Partner: The NEMO serves as the Implementing Partner/ Executing Agency (EA). The EA is responsible and accountable for managing the different components of project according to the approved work plan, including the daily monitoring of project interventions. The EA may contract service providers to assist in successfully delivering of project outputs.

Project Execution Group/ Project Board: The Project Execution Group/ Project Board is the group responsible for making by consensus, management decisions for the project when guidance is required by the Project Manager. Responsibilities of the PEG/PB include making recommendations for UNDP/Implementing Partner approval of project plans and revisions. In order to ensure UNDP's ultimate accountability, the PEG/PB decisions should be made in accordance to standards that shall ensure management for development results, best value money, fairness, integrity, transparency and effective international competition.

In case a consensus cannot be reached within the Board, final decision shall rest with the UNDP Programme Officer. In addition, the PEG/PB plays a critical role in UNDP commissioned project evaluations by quality assuring the evaluation process and products, and using evaluations for performance improvement, accountability and learning. This group is consulted by the Project Manager for decisions when Project Manager's tolerances (normally in terms of time and budget) have been exceeded (flexibility). Based on the approved annual work plan (AWP), the PEG/PB may review and approve project quarterly plans when required and authorizes any major deviation from these agreed quarterly plans. It is the authority that signs off the completion of each quarterly plan as well as authorizes the start of the next quarterly plan. It ensures that required resources are committed and arbitrates on any conflicts within the project or negotiates a solution to any problems between the projects and external bodies. In addition, it approves the appointment and responsibilities of the Project Manager and any delegation of its Project Assurance responsibilities.

This group contains three roles:

1. Executive: individual representing the project ownership to chair the group.
2. Senior Supplier: individual or group representing the interests of the parties concerned which provide funding and/or technical expertise to the project. The Senior Supplier's primary function within the Project Board is to provide guidance regarding the technical feasibility of the project.
3. Senior Beneficiary: individual or group of individuals representing the interests of those who will ultimately benefit from the project. The Senior Beneficiary's primary function within the Board is to ensure the realization of project results from the perspective of project beneficiaries.

The project will engage a steering committee as the PEG/PB for this project, which will consist of senior directors from MED, MNRE, MHDST, NEMO, DANA, DEMO, UNICEF, , as well as a representative from UNDP and a non-state stakeholder as observer¹.

Project Assurance: Project Assurance is the responsibility of each Project Board member; however the role can be delegated. The project assurance role supports the Project Board by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management

¹The non-state stakeholder will be selected on the basis of consultations from the non-state stakeholder community.

milestones are managed and completed. Project Assurance has to be independent of the Project Manager; therefore, the Project Board cannot delegate any of its assurance responsibilities to the Project Manager. The UNDP Programme Officer typically holds the Project Assurance role.

Project Manager: The Project Manager has the authority to run the project on a day-to-day basis on behalf of the Implementing Partner within the constraints/ tolerances laid down by the Board. The Project Manager is responsible for day-to-day management and decision-making for the project. The Project Manager's prime responsibility is to ensure that the project produces the results (outputs) specified in the project document-, to the required standard of quality and within the specified constraints of time and cost. A Project Manager will be hired using project funds; this individual is different from the Implementing Partner's representative aka the Project Director.

Project Support: The Project Support role provides project administration, management and technical support to the Project Manager as required by the needs of the individual project or Project Manager. UNDP EPA/ Finance/ Operations Managers will provide technical, financial, administration and management support to the Project Manager as required by the needs of the project or Project Manager. Additional support roles will be undertaken by UNDP Regional Bureau (RBLAC), UNDP BCPR, UNDP GRIP, BCPR Geneva (Gender Support Unit).

Proper acknowledgement should be made to UNDP for providing funding and support, the UNDP logo is to appear on all relevant project publications, project hardware, among other items. Any citation on publications regarding projects funded by UNDP should also accord proper acknowledgment to UNDP.

II. MONITORING FRAMEWORK AND EVALUATION

In accordance with the programming policies and procedures outlined in the UNDP Programme and Operations Policies and Procedures, the project will be monitored through the following:

Within the annual cycle

- On a quarterly basis, a quality assessment shall record progress towards the completion of key results, based on quality criteria and methods captured in the Quality Management table below. The project will provide Quarterly Stage Plans and End Stage Reports to facilitate this process
- An Issue Log shall be activated in Atlas and updated by the Project Manager to facilitate tracking and resolution of potential problems or requests for change.
- Based on the initial risk analysis submitted (see annex 1), a risk log shall be activated in Atlas and regularly updated by reviewing the external environment that may affect the project implementation.
- Based on the above information recorded in Atlas, a Quarterly Progress Reports (QPR) shall be submitted by the Project Manager to the Project Board through Project Assurance, using the standard report format available in the Executive Snapshot.
- A project Lesson-learned log shall be activated and regularly updated to ensure on-going learning and adaptation within the organization, and to facilitate the preparation of the Lessons-learned Report at the end of the project
- A Monitoring Schedule Plan shall be developed during the inception period of project execution and activated in Atlas and updated to track key management actions/events
- A project initiation workshop will be conducted with the full project team, Project Director, relevant government counterparts, non state partners, the UNDP-CO as appropriate. The fundamental objective of the initiation workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan on the basis of the project's log-frame matrix. This will include reviewing the log frame (indicators, means of verification, assumptions), imparting additional detail as needed, and on the basis of this exercise, finalize the Annual Operational Plan (AOP) with precise and measurable performance (process and output) indicators, and in a manner consistent with the expected outcomes for the project.

Additionally, the purpose of the initiation workshop will be to: (i) introduce project staff to the UNDP expanded team which will support the project during its implementation, namely the CO and responsible Project Management Unit (PMU) staff; (ii) detail the roles, support services and complementary responsibilities of UNDP-CO and PMU staff with respect to the project team; (iii) provide a detailed overview of UNDP-GEF reporting and monitoring and evaluation (M&E) requirements, with particular emphasis on the combined Annual Project Reports - Annual Project Implementation Reviews (APR/PIRs), Project Execution Group (PEG) meetings, as well as mid-term and final evaluations. The initiation workshop will also provide an opportunity to inform the project team on UNDP project-related budgetary planning, budget reviews, and mandatory budget re-phasing.

Annually

- Annual Monitoring will occur through the Annual Project Review meeting. This is the highest policy-level meeting of the parties directly involved in the implementation of a project. The project will be subject to PEG/PB meetings on a quarterly basis. The first such meeting will be held within the first three months following the initiation workshop. For each year-end meeting of the PEG/PB, the PMU will prepare harmonized Annual Project Report / Project Implementation Reviews (APR/PIR) and submit it to UNDP-CO, the UNDP Regional Bureau, and all PEG/PB members at least two weeks prior to the meeting for review and comments.

- **Annual Review Report.** An Annual Review Report shall be prepared by the Project Manager and shared with the Project Board and the Outcome Board. As minimum requirement, the Annual Review Report shall consist of the Atlas standard format for the QPR covering the whole year with updated information for each above element of the QPR as well as a summary of results achieved against pre-defined annual targets at the output level.
- **Annual Project Review.** Based on the above report, an annual project review shall be conducted during the fourth quarter of the year or soon after, to assess the performance of the project and appraise the Annual Operational Plan (AOP) for the following year. In the last year, this review will be a final assessment. This review is driven by the Project Board and may involve other stakeholders as required. It shall focus on the extent to which progress is being made towards outputs, and that these remain aligned to appropriate outcomes.

Evaluations

- An independent mid-term evaluation (MTE) will be undertaken at the end of the second year of project implementation. The MTE will determine progress being made towards the achievement of outcomes and will identify corrective actions, as needed. The MTE will focus on: a) the cost-effectiveness, efficiency and timeliness of project implementation and performance; b) highlight issues requiring decisions and actions; and c) present initial lessons learned about project design, implementation and management. Findings of this review will be incorporated as recommendations for enhanced implementation during the final half of the project's term. The organization, terms of reference and timing of the mid-term evaluation will be decided after consultation between UNDP and MNRE. The Terms of Reference for this MTE will be prepared by the UNDP-CO based on guidance from the UNDP Regional Bureau.
- An independent final evaluation will take place three months prior to the terminal tripartite review meeting, and will focus on the same issues as the mid-term evaluation. The final evaluation will also look at project outcomes and their sustainability. The final evaluation should also provide recommendations for follow-up activities, as appropriate. The terms of reference for the final evaluation will be prepared by the UNDP-CO based on guidance from the UNDP-Regional Bureau.

Type of M&E activity	Lead responsible party in bold	Budget	Time frame
Inception Report	PO, PMU	None	At project start-up
Annual Progress Report (APR) for Tripartite Reviews	NEMO, UNDP Country Office, Executing Agency, PMU	None	By June each year
Tripartite meeting and report (TPR)	NEMO, UNDP Country Office, Project Team,	(\$500 x3 yrs) \$1,500	Annually , upon receipt of APR
Final External Evaluation	UNDP Country Office, NEMO, project Team	\$20,000	During last 4 months of project execution,
Terminal Report	UNDP Country Office, NEMO, Project Team	\$1,500	At least one month before the end of the project
Audit	UNDP Country Office, Project Team	(\$2,500 x3 yrs) \$7,500	Annually
Visits to field sites	UNDP Country Office, NEMO	(\$500 x 3 yrs) \$1,500	Annually
Lessons learnt	UNDP Country Office, Project Team, NEMO	(\$1,500 x 3 yrs) \$4,500	Annually
TOTAL COST		\$36,500	

Quality Management for Project Activity Results

To be completed during the project Inception Period. Replicate the table for each activity result of the AOP to provide information on monitoring actions based on quality criteria.

OUTPUT 1:		
Activity Result 1 (Atlas Activity ID)	<i>Short title to be used for Atlas Activity ID</i>	Start Date: End Date:
Purpose	<i>What is the purpose of the activity?</i>	
Description	<i>Planned actions to produce the activity result.</i>	
Quality Criteria <i>how/with what indicators the quality of the activity result will be measured?</i>	Quality Method <i>Means of verification. what method will be used to determine if quality criteria has been met?</i>	Date of Assessment <i>When will the assessment of quality be performed?</i>

III. LEGAL CONTEXT

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document".

ANNEX 1: RISK ANALYSIS

Identifier	Description	Category	Impact	Probability	Proximity	Counter-measures
Actions Associated with Production Systems (Growing):						
1	Community groups not receptive to proposed interventions	Social	high	low	Immediate to short term	The project suggests a truly participatory approach aimed at building capacities of communities allowing their full engagement in the project delivery. It is hoped that facilitating active participation will improve community “buy-in” to the suggested processes.
2	Insufficient support of reform activities by Government of Belize.	Political	high	medium	Short to medium term	Integral to the advance of this project is sufficient political buy-in and political will to incorporate desired changes within the national planning framework. The project will engage in an extensive awareness building exercise among decision/ policy makers ensuring their understanding of the process and to build acceptance to proposed changes. This process will be ongoing throughout the process.
3	Insufficient acknowledgment of gender roles in deliveries.	Institutional/ Social	high	medium	Medium to long term	The proposed approach on engendering deliverables is one not commonly considered within the national context. The project has built within its activities specialized interventions aimed at increasing stakeholders consideration of gender issues. TORs will be developed explicitly stating the need for consideration and delivery will be vetted to ensure inclusion of issues related to gender and vulnerable populations.
5	Inadequate supporting capacities	Institutional	high	high	Medium to long term	The Project allows for the development and strengthening of national support systems through the provision of a unique project management unit meant to complement existing capacities by filling capacity gaps existing in NEMO. The project also supports the fortification of NEMO structures through proposed intervention and builds the national partner support network.

6	Sustainability of proposed interventions	Economic	high	medium	Medium to long term	Project interventions have been developed closely with the principal beneficiary group and were ensured to complement ongoing efforts in the area of disaster risk management. It was ensured that interventions fit within a national agenda agreed to be forwarded by the Government of Belize.
7	Project disruption due to natural disasters	Environmental	medium	medium	Medium to long term	Unexpected disaster cannot be excluded as a potential risk to the timely delivery of project. These events however can be managed for by including in project's implementation plans, plans for early reinstatement of project after such events.
8	Staff turnover in project or within partner agency	Institutional	medium	medium	Immediate to short term	Disruptions within the PMU and within staff complements attached to the project can result in a lag in execution as new individuals are brought into the process. In the event of loss of PMU staff the UNDP CO will take on direct management of the project allowing continuity in project actions. Partner agencies will be asked to have alternates briefed in project allowing for smooth transition in the event of staff changes of key participating personnel.

United Nations Development Programme



Jessica

25 January 2009

Dear Ms. Faieta,

I am pleased to inform you that the BCPR Project Appraisal Committee (BPAC) approved the allocation of a total amount of USD982,475 in support of the "Strengthening of Disaster Preparedness and Emergency Response capacity in Belize" project. Funding will be made available from the Disaster Risk Reduction category of Trac 1.1.3 (Atlas Fund code: 04170; Donor code 00012).

In accordance with our resource management guidelines, you are kindly requested to submit a signed project document, including the Annual Work Plan (AWP), within the next ninety (90) days. BCPR will then establish the authorized spending limit (ASL) in Atlas accordingly. Please ensure that electronic copies of the signed project document, as well as quarterly progress reports, are uploaded into Atlas.

If a signed project document is not received within 90 days, funds will revert back to the original Fund.

Please don't hesitate to contact your BCPR regional team (bcpr.lamerica@undp.org), led by Mr. Luis Francisco Thais, for any additional support you might require. We look forward to working with you and your team in supporting your office on crisis prevention and recovery.

Yours sincerely,

A handwritten signature in blue ink, appearing to read 'Sudha Srivastava', is written over a horizontal line.

Sudha Srivastava
Chief

Programme and Operations Support Cluster
Bureau for Crisis Prevention and Recovery

Ms. Jessica Faieta
UN Resident Coordinator
UNDP Resident Representative
EL Salvador

cc: Kristine Blokhuis
BCPR Latin America and the Caribbean
Nazim Khizar



**United Nations Development Programme
BELIZE**

Proposal Document

Project Title	Strengthening of Disaster Preparedness and Emergency Response Capacity in Belize
UNDAF Outcome 3	By 2011, national frameworks and capacities in place enhancing the ability to adequately address adaptation to and mitigation of the impact of disasters as well as the comprehensive, equitable, sustainable and effective management of the nation’s natural resources.
Expected CPAP Outcome	Reduced vulnerability of poor and excluded populations to impact of disasters
Expected Outputs	<ol style="list-style-type: none">1. By 2009, capacity of state actors and communities to implement effective risk reduction and response measures has increased.2. National disaster management authority strengthened to fully integrate and implement hazard mitigation policies and strategies.
Implementing Partner:	National Emergency Management Organization
Responsible Parties:	NEMO, MED, CCCCC, MNRE

Brief Description

Belize, due to its topography and geographic location is highly susceptible to natural disasters. Post Hurricane Mitch, the Government of Belize realized the need for planning and coordination within the national response to disasters. The Government of Belize established through law the National Emergency Management Organization. NEMO has since been operating through its technical Operational Committee and its effectiveness has been impacted by weaknesses within the disaster management structure.

The Proposed initiative is meant to support the national structure for emergency management, addressing those gaps in its processes identified by recent assessments. The project will work particularly at developing national capacities for assessment, planning, mainstreaming of risk reduction into national development planning, early warning and the transformation of emergency management into a people centric process in which planning and response can be decentralized to community levels.

Programme Period:	2007 - 2011
Key Result Area (Strategic Plan):	3.1. Enhancing conflict and disaster risk management capabilities
Atlas Award ID:	_____
Start date:	January 2009
End Date	December 2011

2009 AWP budget:	US\$ 308450
Total resources required	US\$ 982,475
Total allocated resources:	
• Regular	_____
• Other:	
○ BCPR	US\$ 982,475
○ Donor	0
○ Donor	0
○ Government	0
Unfunded budget:	0
In-kind Contributions	USD \$107 800

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Acronyms

AWP	Annual Work Plan
BCPR	Bureau of Crisis Prevention and Recovery
CBO	Community Based Organization
CCCCC	Caribbean Community Climate Change Center
CDB	Caribbean Development Bank
CDERA	Caribbean Disaster Emergency Response Agency
CEO	Chief Executive Officer
CPAP	Country Programme Action Plan
DANA	Damage and Needs Assessment
DEMO	District Emergency Management Organization
DMT	Disaster Management Team
DRR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
EOC	Emergency Operations Center
EPO	Environmental Programme Officer
GIS	Geographical Information System
GOB	Government of Belize
GRIP	Global Risk Identification Program
IASC	Inter-Agency Standing Committee
ISS	Implementation Support Services
LIC	Land Information Center
LIDAR	Light Detection and Ranging
MACC	Mainstreaming Adaptation to Climate Change
M & E	Monitoring and Evaluation
MED	Ministry of Economic Development
MNRE	Ministry of Natural Resources and Environment
MSP	Medium Sized Project
NDLDO	National Disaster Loss Data Observatory
NEMO	National Emergency Management Organization
NEX	National Execution
NGO	Non- Governmental organization
OCHA	Office for the Coordination of Humanitarian Affairs
PEG	Project Execution Group
PM	Project Manager
PMU	Project Management Unit
SBAA	Standard Basic Assistance Agreement
SIDS	Small Island Development States
SNAP	Strategic National Action Plan
UN	United Nations
UNDAF	United Nations Development Assistance Framework
UNDMT	United Nations Disaster Management Team
UNDP CO	United Nations Development Programme Country Office
UNETE	United Nations Emergency Technical Team
UNICEF	United Nations Children Fund
UNISDR	United Nations International Strategy for Disaster Reduction
UNV	United Nations Volunteer
VCA	Vulnerability and Capacity Assessment
VEMO	Village Emergency Management Organization

SECTION I: Elaboration of the Narrative

PART I: SITUATION ANALYSIS

1.0 Background

Belize is located on the Central American mainland, forming part of the Yucatan Peninsula and lying between 15°45' and 18°30' north latitude, and 87°30' and 89°15' west longitude. It is bounded on the north, west and south by Mexico and Guatemala respectively and on the east by the Caribbean Sea. The total land area is 22,960 square kilometres or (8,867 square miles) of which 95 % is mainland and 5 % distributed among more than 1,060 islands. Total national territory, including the territorial sea is 46,620 square kilometres (approximately 18,000 square miles). Approximately 69 % of the country remains under natural vegetation cover with 39.1% of its terrestrial area is protected forest (much of it incorporated into the Mesoamerican Biological Corridor) and almost the entire length of its coastline is sheltered by the Mesoamerican Barrier Reef. This reef is the second largest barrier reef in the world and was designated by UNESCO as a world heritage site.

The country's total land mass is divided into six (6) administrative districts, namely Corozal and Orange Walk (North), Belize (East and Central) and Cayo (West and Central) and Stann Creek and Toledo (South). Most of the northern half and much of the southern third of the country, along with the entire coastal area and all the islands, are flat and low-lying. The central and western parts of the country are dominated by the Maya Mountains rising to 1,124m above sea level (3688 ft) at its highest point.

Belize enjoys a subtropical climate characterized by marked wet and dry seasons separated by a cool transitional period and temperatures ranging from 21 to 32 degrees Celsius. The annual mean humidity is 81.1%, with rainfall varying from 1,588 mm to 4,290 mm with greatest rainfall occurring over the southern region. Like the rest of its Caribbean neighbours, it lies within the hurricane belt. The Belizean climate is influenced by three large global/ regional climatic systems inclusive of the Atlantic Ocean Climatic System, the Pacific Ocean Climatic system and also periodically by changes in the North American weather systems.

Belize is highly susceptible to tropical storms and hurricanes and is affected, on the average, once every two years by these weather events. The effects of these hazards have resulted in loss of life and destruction of property which are exacerbated by poverty and poor housing. While the hurricane season for this hemisphere is June to November, Belize is most vulnerable between September and October. The 20th Century has seen a consistent, large-scale warming of both land and ocean surface temperature. This is producing sea level rise. Climate change and sea level rise are expected to make Belize even more vulnerable to natural disasters.

Climate Change/ Population Vulnerability- Changes within the climate and related consequences such as increase intensity and frequency in storm events and projected sea-level rise threaten much of Belize's low lying territories. The past events of coral bleaching and mortality are symptomatic of the impacts of climatic events on biodiversity and ecosystem function. Equally as disturbing is the potential impact of climate change on Belize's developmental sectors. The vast majority of infrastructure and settlements are located on the coastal plains and on low-lying Cayes of the country. The Mid Year population estimates of 2007 indicate a national population size of 311,500. Belize's long, low-lying coastline accommodates approximately 45% of this total population in densely populated urban areas such as Belize City (approximately 20.5% of total population) These coastal urban centres represents some of the country's most vulnerable to storm events as they lie approximately one to two feet below sea level. Projected sea level rises and extreme weather events are expected to jeopardize the country's coastal tourism, fisheries and aquaculture industries, agriculture base as well as undermine availability of water resources.

Table 1:**Mid-Year Population Estimates by District and Sex: 2007**

	Total	%	Male	%	Female	%
Country Total	311,500	100.0	154,700	100.0	156,800	100.0
Urban	159,000	51.0	76,700	49.6	82,300	52.5
Rural	152,500	49.0	78,000	50.4	74,500	47.5
Corozal	36,300	11.7	18,100	11.7	18,200	11.6
Corozal Town	9,100	2.9	4,300	2.8	4,800	3.1
Corozal Rural	27,200	8.7	13,800	8.9	13,400	8.5
Orange Walk	47,100	15.1	24,000	15.5	23,100	14.7
Orange Walk Town	16,000	5.1	8,000	5.2	8,000	5.1
Orange Walk Rural	31,100	10.0	16,000	10.3	15,100	9.6
Belize	93,200	29.9	45,300	29.3	47,900	30.5
Belize City	63,700	20.5	30,300	19.6	33,400	21.3
San Pedro Town	10,400	3.3	5,300	3.4	5,100	3.3
Belize Rural	19,100	6.1	9,700	6.3	9,400	6.0
Cayo	73,400	23.6	36,400	23.5	37,000	23.6
San Ignacio/Santa Elena	18,300	5.9	8,800	5.7	9,500	6.1
Benque Viejo	8,200	2.6	4,000	2.6	4,200	2.7
Belmopan	16,400	5.3	8,000	5.2	8,400	5.4
Cayo Rural	30,500	9.8	15,600	10.1	14,900	9.5
Stann Creek	32,200	10.3	16,400	10.6	15,800	10.1
Dangriga	11,600	3.7	5,500	3.6	6,100	3.9
Stann Creek Rural	20,600	6.6	10,900	7.0	9,700	6.2
Toledo	29,300	9.4	14,500	9.4	14,800	9.4
Punta Gorda	5,300	1.7	2,500	1.6	2,800	1.8
Toledo Rural	24,000	7.7	12,000	7.8	12,000	7.7

Source: Statistical Institute of Belize

Table 2:**Mid-Year Population Estimates by Age Group and Sex: 2007**

	Total	%	Male	%	Female	%
Total	311,500	100.0	154,700	100.0	156,800	100.0
0 - 4	37,300	12.0	18,500	12.0	18,800	12.0
5 - 9	42,200	13.5	21,400	13.8	20,800	13.3
10 - 14	41,800	13.4	21,300	13.8	20,500	13.1
15 - 19	35,300	11.3	17,900	11.6	17,400	11.1
20 - 24	25,000	8.0	12,300	8.0	12,700	8.1
25 - 29	21,600	6.9	10,000	6.5	11,600	7.4
30 - 34	20,900	6.7	9,700	6.3	11,200	7.1
35 - 39	19,200	6.2	9,100	5.9	10,100	6.4
40 - 44	16,600	5.3	8,100	5.2	8,500	5.4
45 - 49	13,000	4.2	6,600	4.3	6,400	4.1
50 - 54	10,200	3.3	5,200	3.4	5,000	3.2
55 - 59	7,100	2.3	3,600	2.3	3,500	2.2
60 - 64	6,000	1.9	3,100	2.0	2,900	1.8
65 - 69	5,100	1.6	2,700	1.7	2,400	1.5
70 - 74	4,000	1.3	2,100	1.4	1,900	1.2
75 - 79	2,900	0.9	1,500	1.0	1,400	0.9
80 - 84	1,600	0.5	800	0.5	800	0.5
85+	1,700	0.5	800	0.5	900	0.6

Source: Statistical Institute of Belize

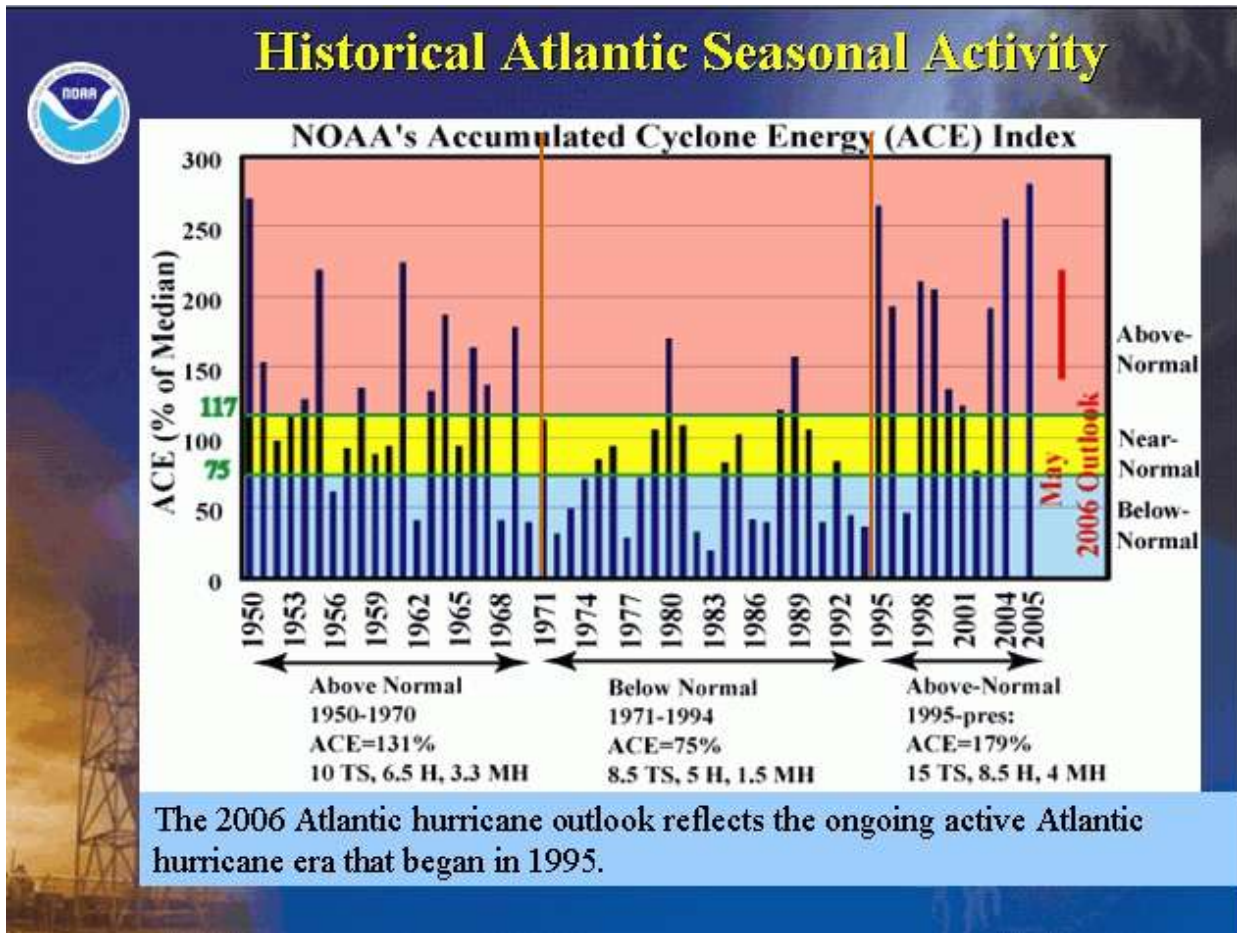
As is the case in most emergency and disaster situations, Belizean women and children are particularly vulnerable both during and after disaster events and as such should be included in national and local planning processes. As indicated in the tables above women constitute 52.5% of the nation's urban population and 47.5% of the rural population. The second table indicates that as much as 38.4% of the national population fall below the age of fifteen years. Further analysis of the population data underscores that as much as 27 per cent of households in the country of Belize are headed by women. Vulnerability among members of these households increases as the income potential is less than that of male headed households and incidence of poverty is greater. The assessment following Hurricane Dean of 2007 indicated less resilience among female headed households to disasters and showed that this was compounded by limited opportunities for recovery because women more often form part of the informal workforce (official statistics show that only 30 per cent of women are economically active, however great numbers of women are not recorded in these statistics), and rely on income generating activities such as sale of home grown agricultural produce. For this primary reason it can be said that the impacts of natural disasters on women and children is disproportionately high and it underscores the need for the consideration of gender issues in national planning and risk management processes.

Like so many of its Caribbean neighbours, Belize lies within the Atlantic hurricane belt. Hurricane records for the Caribbean dating back to 1871 indicate that Belize has been struck over 50 times by major storm systems with a return period of approximately three years. The country's vulnerability increases from south to north. A Storm Hazard Assessment prepared by the Caribbean Disaster Mitigation Project showed that the return period for Punta Gorda (extreme south) was 5.73 years, this return period falls to 3.7 years at San Pedro, Ambergris Caye (extreme north).

The frequency and intensity of tropical storms affecting the region has been reported as increasing with projections for further increases as water temperatures of the Caribbean continue to rise. While the hurricane season for this hemisphere is June to November, historically Belize has been most vulnerable between September and October. Effects of these hazards have resulted in loss of life and destruction of property

which are exacerbated by poverty and poor housing. Hurricanes striking Belize have resulted in major infrastructural and economic damage on each occasion.

Figure1:



Floods and Land Degradation – Recent preliminary survey of land degradation in Belize indicated that almost a third of the roughly 1 million acres of agricultural land in Belize occurs on land classified as marginal or unsuitable for agricultural activity. More than a third of all agricultural land in Belize is on acidic soils particularly sensitive to land degradation. Almost a tenth of agricultural activity occurs on steep slopes prone to erosion. This event is common in Central and southern Belize. In total approximately 4% of all agricultural land is located in areas at extreme risk of erosion, should there be sufficient rainfall such as those associated with storm events.

The acceleration of land degradation due to the absence of effective watershed management, the removal of coastal wetland systems which traditionally served as basins for excess water resources, and the conversion of forested area into pasture lands is also resulting in the intensification of the impacts of flood events and increases the vulnerabilities of local populations. This was clearly demonstrated in the June 2008 floods of the Stann Creek District which resulted in seven deaths. It was the finding of the initial damage assessments that areas of land slides coincided directly with those areas of steep slopes cleared for pineapple and subsistence farming and that areas reporting greatest loss of agricultural crops were those areas where the riparian buffer was removed to accommodate crops. These floods, similar to floods in the past isolated many of the impacted communities.

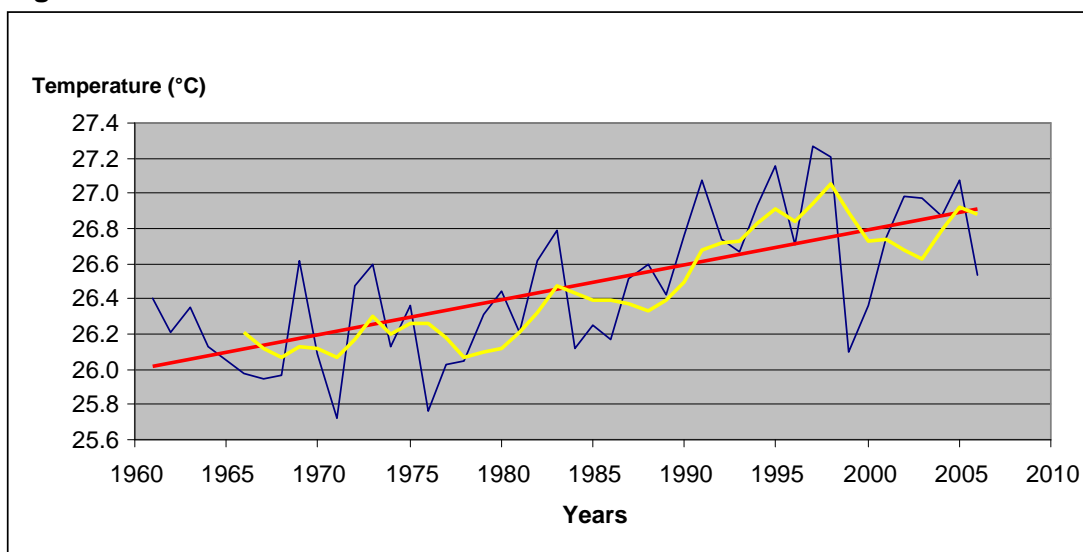
Droughts and Fires - Periodic droughts are localized in certain regions within the country particularly within communities of the west and north of the country. These are particularly severe during El Nino episodes, where dry seasons are extended. In the recent past this has resulted in severe water shortages within small inland communities. Periods of extensive dries are associated with large outbreaks of forest fires within our coastal savannahs and pine forested areas. These fires pose significant threat to biodiversity and serve to

accelerate the incidence of soil erosion. Some 33% of Belize’s agricultural lands are found in very drought-prone areas.

When both land degradation and drought are combined into a spatial model of risk, it is indicated that almost 40 percent of the country’s landmass is at risk. In terms of the raw human impact of such phenomena, it is estimated that at least fifty-five communities representing at least 18,000 people are directly affected by drought-prone lands.

The trend in average temperatures from the 1960s through 2005 for Philip Goldson International Airport is presented below. As is seen the ten warmest years in this period are (in descending order): 1997, 1998, 1995, 1991, 2005, 2002, 2003, 1994, 2004 and 1983. Five of these occurred in the 1990s and four since 2000 (Gonguez, 2008). Based on this trend, it is expected that drought related hazards will intensify in the future.

Figure2:



Oil Spill – The potential for large scale impacts on the coastal resources of Belize caused by oil spills have also increased with the discovery of petroleum and the development of a coastal depot in Southern Belize. This with compounded with increased tanker traffic makes it difficult to ignore this treat in Belize’s hazard planning.

Table 3: Notable Natural Disasters Impacting Belize: 1903-2007

EVENT	DATE
Hurricane (un-named)	10/09/31
Hurricane Janet	28/09/55
Hurricane Hattie	31/10/61
Hurricane Carmen	02/09/74
Hurricane Fifi	19/09/74
Drought	1975
Hurricane Greta	18/09/78
Flood Event	December 1979
Flood Event	20/05/80
Extreme Temperature	1990
Flood Event	20/05/90
Flood Event	October 1995

Hurricane Mitch	26/10/98
Hurricane Keith	30/09/00
Tropical Storm Chantal	21/08/01
Hurricane Iris	08/10/01
Hurricane Wilma	2005 (no significant damage from Wilma)
Hurricane Dean	21/08/07
Flood Event- Belmopan area	19th June 2002 (22.83ins rainfall recorded at Hummingbird Hershey) resulted in flooding in Belmopan area. Western and Hummingbird Highway submerged.
Flood Event- Belmopan area	23-24th Jan 2006, flooding of Western Highway affected Bridge approached to Belmopan. James Busline washed off road.
Flood Event- Stann Creek District	Extreme rainfall event (18.6ins in Pomona and Melinda) 21-25 May 2006 resulted in localized flooding of coastal roads (May 25 2006).
Flood Event- Belize City	29 AUG 2007- intense rainfall event August 2007 rainfall was the highest rainfall total (21.68 ins) on record for August.
Intense thunderstorm as a result of strong tropical wave	22nd August 2002 intense thunderstorm activity damaged aircrafts at San Pedro Ambergris Caye.
Extreme Temperature	2003-2005, 2007 2003- intense heat wave (April and May): 50,000 chickens died 1 BDF soldier died from heat related complications. 2007: 3 major forest fires in 2007 three major forest fires burned in the Mountain Pine Ridge, resulting in some 20,000 acres of natural, regenerating pine trees destroyed. 20,000 chickens died in 2007.

* Sources: Adopted from data originating from EM-Dat: The OFDA/CRED International Disaster Database and the National Meteorological Services Belize

2.0 National Policy on Disaster Management

The policy framework relating to disaster management in Belize is fragmented, as sectors have developed numerous policies suited to their own needs, while no overarching policy has been put in place as a more comprehensive measure. As a number of sectoral policies do exist, the new National Policy on Disaster Management would use these as its foundation.

The most comprehensive attempt to date is Belize's National Hazard Mitigation Policy, which was prepared through a concerted effort by the Government of Belize, the Caribbean Disaster Emergency Response Agency (CDERA) and the Caribbean Development Bank (CDB). The main purpose of the policy is to provide an integrated approach to hazard risk management and sustainable development, at national, sectoral and community levels. The policy is seen as an important benchmark for stakeholder cooperation and forms

the national platform for addressing hazard reduction issues within a broader national development framework.

The management of hazard mitigation for Belize is informed by five guiding principles:

- i. The value of vulnerability assessment and reduction
- ii. The importance of an integrated approach to hazard risk management and development planning,
- iii. The requirement for community mobilization and public education,
- iv. The need for protection of the environment, and
- v. The need for good governance

It recognizes the country's vulnerability to a variety of hazard events that can result in significant impacts to the country's natural resources base which drives the country's social and economic development.

The main goals of the policy are:

“To enhance sustainable social and economic development and environmental management through the integration of hazard risk reduction into national development processes.”

and

“To build the capacity of national institutions to more effectively implement programmes and projects to reduce vulnerability of the nation and people to natural and technological hazards.”

While the Hazard Mitigation Policy has been a valuable addition to the larger framework, it remains true that there is little evidence of mainstreaming of mitigation efforts across sectors. Hence there is a need for a more overarching policy to take all sectors into account.

3.0 Institutional Framework and Host Country Strategy

The National Emergency Management Organization was established in February 1999 responding to a recognized national need for greater coordination and efficiency in the management of and response to disasters. The small appointed staff of NEMO is responsible for emergency management countrywide as well as the coordination of all international assistance in the event of a disaster.

The NEMO secretariat is also responsible for the development, refinement and testing of all emergency plans as well as ensuring the existence of national capacities to execute said plans.

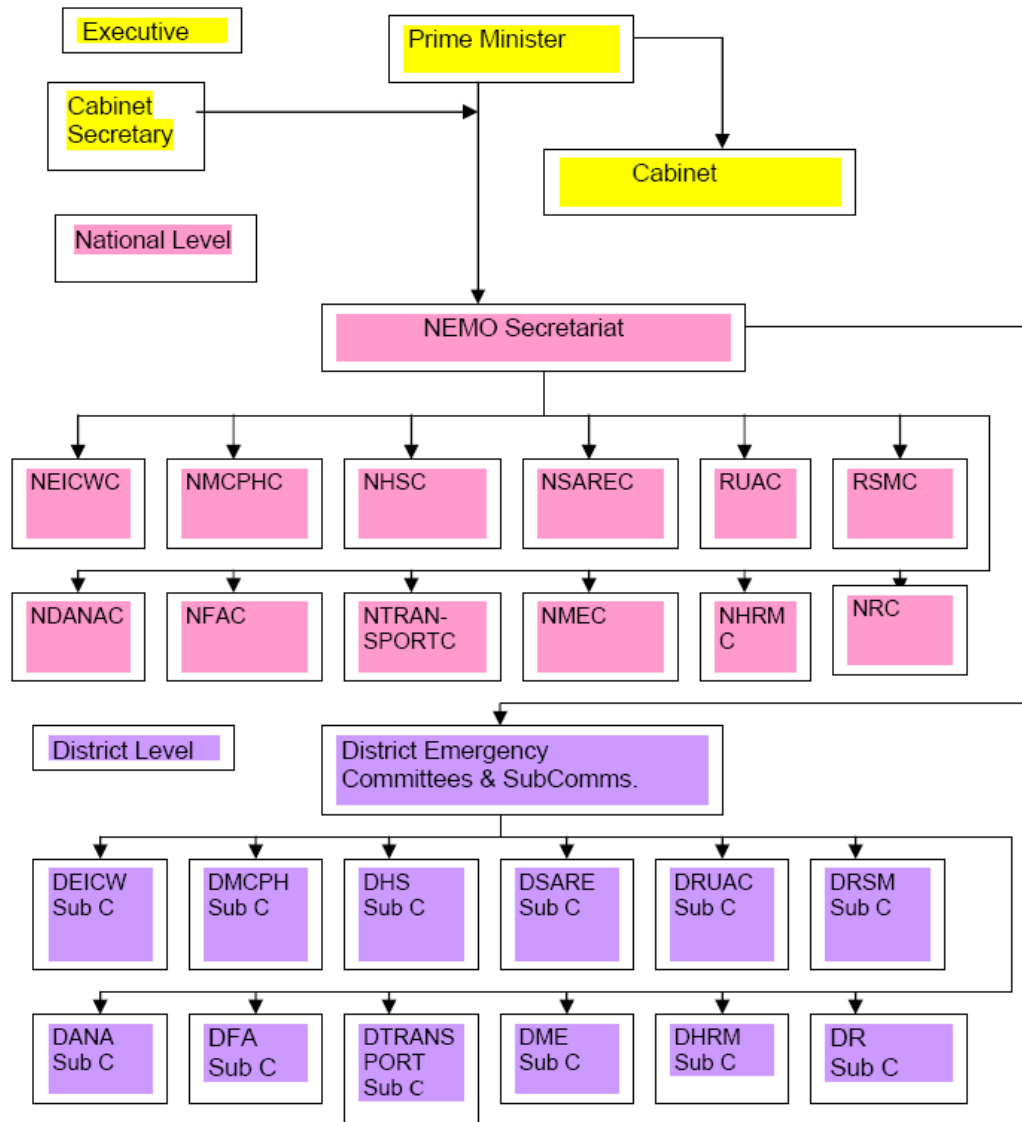
The NEMO comprises the Cabinet, with the Prime Minister as the Chairperson, the Cabinet Secretary, as Secretary, the NEMO Secretariat and the 13 Operational Committees (chaired by Permanent Secretaries). These committees truly become active in times of alert and emergencies, leaving a gap in the NEMO structure in times of non-emergencies. The following committees are designated to manage specific areas of an emergency as their name implies and are represented in the NEMO structure through the participation of the Chief Executive Officers of the Ministries with the specific mandates. These committees support emergency management responses through the activation of pre-prepared action plans approved by NEMO. There is a need for a restructuring exercise resulting in key committees being mandated to appoint Liaison Officers to the NEMO Secretariat. This individual will be expected to participate in NEMO readiness exercises in non-emergency, non crisis times.

The thirteen Operational Committees are as follows:

1. ***Education, Information, Communication Warning Committee*** has responsibility for the education of Belizeans about disasters and national contingency plans. During an emergency this committee functions to provide Belizeans with accurate and updated information in a timely and efficient manner. This committee is chaired by the Secretary to the Cabinet.
2. ***Search, Rescue and Evacuation Committee*** is responsible for the protection of impacted population. The committee coordinates alerting and warning arrangements as well as manages the mechanism for evacuation and the safe transport of the population. The Search, Rescue and Evacuation Committee operate through the Ministry of National Security.

3. ***Restoration of Utilities and Access Committee*** works with utility providers to ensure that utilities and services are restored and maintained within the shortest time possible. This committee is chaired by the Ministry of Home Affairs.
4. ***Transport Committee*** coordinates air, land, and sea transportation for the various committees of NEMO so as to assist them in the execution of their OFFICIAL activities. The Committee is chaired by the Commissioner of Transport and supported through the Ministry of public Utilities, transport, Communication and National Emergency Management. .
5. ***Housing and Shelter Committee's*** primary responsibility is to identify appropriate shelters for residents. This committee hosted by the ministry of Housing also has responsibility to liaise with the Human resource committee to ensure shelters are adequately staffed.
6. ***Medical Care and Public Health Committee*** has the mandate to ensure the continuity of health services in the most efficient ways during periods of emergency. The committee functions through the Ministry of Health with the support of their partners including the Pan American Health Organization.
7. ***Relief and Supplies Management Committee*** is managed through the Ministry of Human Development. The Committee is responsible for ensuring that, in the event of a disaster, adequate food and other relief supplies and psychosocial services are available for the affected population. The Committee is also responsible for receiving, distributing and accounting for all relief supplies used in an event, whether acquired locally or donated from abroad. This committee also supports the DANA in assessing the needs of the impacted population.
8. ***Damage Assessment and Needs Analysis Committee*** has responsibility for conducting damage assessment exercises and prepare relevant reports on damages resulting from the event. This committee is chaired by the CEO of the Ministry of Natural Resources and Environment and supported primarily by MNRE staff.
9. ***Foreign Assistance Committee*** is managed through the Ministry of Foreign Affairs who is mandated with the implementation of a national response plan meant to present activities at the local and international level to respond to the event of a disaster in Belize. The Chief Executive Officer of the Ministry of Foreign Affairs acts as the Chairman of the Committee with general authority for plan activation and deactivation. The committee works to coordinate assistance, and regulate the transportation of supplies and transfer of funds from abroad.
10. ***Human Resources Management Committee*** has responsibility to allocate adequate personnel to serve as responders. This Committee is chaired by the CEO of the Ministry of Public Service who draws on the capacities of members of the Public Service including police and defense force personnel.
11. ***Recovery Committee*** is chaired and supported through the ministry of Economic Development. The Committee is activated after a disaster and serves to prioritize and allocate resources necessary for recovery.
12. ***The Environment Committee's*** main function id to assess damages to the environment caused by disaster. The Environment committee functions out of the Department of Environment, Ministry of Natural Resources and Environment.
13. ***Mitigation and Infrastructure Work Committee*** has responsibility to inspect and repair shelters as well as to assist in planning for disaster reduction. This committee sorts priorities for reconstruction after a disaster. The committee operates through the Ministry Of Works.

Belize Hazard Management Structure -NEMO



KEY:

DANAC – Damage Assessment and Needs Analysis Committee
 EICWC-Information, Communication and Warning Committee
 FAC – Foreign Assistance Committee
 HRMC – Human Resource Management Committee
 HSC – Housing and Shelter Committee
 MCPHC – Medical Care and Public Health Committee
 MEC – Mitigation and Environment Committee
 NEMO – NEMO Secretariat

To carry out their work, NEMO facilitates the setting up of district emergency committees which are chaired by senior ministers representing the districts. These teams work alongside the Belize Red Cross, the Belize Teachers Union, the Belize Defense Force, and the Police to ensure coordination and rapid response in times of disaster. NEMO Staff must increase whereby sufficient Senior Staff must be available to oversee and support the chair for the above stated committees. The full terms of reference of the various operational committees of NEMO can be found in Annex 2 of this Document.

The NEMO management structure has proven to be effective for smaller scale emergency situations, however it is believed that insufficient capacity exists nationally to deal with worst case scenarios such as a category 5 hurricane on the coast degrading to a category 2 or 3 hurricane inland. Present plans would have

difficulty coping with such a situation and may have to be upgraded to take this into account. NEMO's original placement under the Office of the Prime Minister provided the organization with the "clout" necessary to drive the required coordination and response, with the change of the hosting arrangements for NEMO the need now exists for the re-ranking of the National Emergency Coordinator within the public sector system allowing this individual greater authority to effectively execute NEMO's mandate.

Functionaries of NEMO have identified a need for a revision of the current legislative framework to truly represent current responsibilities of NEMO and actions and decisions taken for past operations. There also exist a need to reform regulations meant to support the NEMO structure as present functionality is highly dependent on the full participation of several ministerial departments and sectors, however roles, responsibilities and obligations to the system are not clearly articulated and mandated.

4.0 Supporting Legal Framework

In the year 2000, the *Disaster Preparedness and Response ACT* (Chapter 145 Laws of Belize) was brought into force nationally. This is the main enabling legislation providing for disaster management in Belize. Under this ACT a National Emergency Management Organization (NEMO) with responsibility for the coordination of national preparedness and response was created.

Apart from the Disaster preparedness and Response Act, the issue of disaster management is also reflected within several other pieces of national legislation that combined supports hazard mitigation.

The Environmental Protection Act (Chapter 328 Laws of Belize) represents one of the most significant advances in the environmental laws of Belize. Enacted in 1992, the Environmental Protection Act provides the Government of Belize established the Department of Environment which holds the mandate to address modern environmental problems including the prevention and control of pollution as well as to examine and evaluate and if necessary carry out environmental impact assessments and risk analysis to mitigate against harmful effects of any

proposed action on the environment. The prescribe EIA also considers impacts of natural or anthropogenic hazards to the proposed development. The Act became effective on the 6th January 1993 by Statutory Instrument 157 of 1993. Various regulations have been prepared under the Act including Pollution Regulations and Hazardous Waste Regulations.

Forest Fire Protection Act (Chapter 212 Laws of Belize) requires the development of forest fire protection plans for those areas declared to be forest protection areas. The plan when developed includes prescriptions for the prevention of forest or bush fires and the extinguishing of such fires.

The Harbors and Merchant Shipping Act

Under the Merchant Shipping Act 1989, rules are established to ensure that Belizean cargo vessels operating outside the territorial waters of Belize are properly equipped and operated. Regulation 26 requires that every tanker of 150 gross register tons and above comply with the International Convention for the Prevention of Pollution of the Sea by Oil. The Act also makes a person guilty of an offense if he throws, or permits to be thrown into the harbor any explosive substance, crude fuel, or lubricating oil.

The Land Utilization Act (Chapter 188 Laws of Belize) requires the approval of the Government of Belize for the subdivision of any parcel of land in Belize. Section 19- 1 of the Act empowers the Government to develop regulations guiding land utilization including regulations for the demarcation of specific areas as "Special Development Areas" and to stipulate the types of development that will be permitted within these areas. This Act effectively provides government with the opportunity to regulate, promote, create and approve land development applications and, special development areas within which hazard mitigation measures can be incorporated.

The Draft Planning Bill developed to control of the building process in Belize suggests provisions to address the need to improve building standards and the construction of buildings, especially of low-income

houses, to resist severe weather events such as hurricanes. The Bill provides for the review of building plans and the inspection of construction to be carried out by private building professionals and inspectors employed by the Authorities.

Parallel activities proposed to support of the drafted Bill includes the registration of building professionals, artisans and builders, the training of building professionals and builders in hazard mitigation, training of builders in the management of construction activities, and training of building inspectors in the techniques of their craft.

5.0 Socioeconomic Conditions

Belize's Human Development Ranking based on its Human Development Index (HDI) is now increases after a period of steady decline. UNDP's 2007/2008 Human Development Report recorded a national HDI index of 0.778 resulting in the country being ranked 80 out of a listed 177. Belize is considered a country of medium development and recent rise in its HDI is due primarily to increases in the country's life expectancy index and some improvement is reflected in the income index. Even with this said poverty levels remain relatively high in pocketed areas with most significant instances of poverty and indigence being reported within the southern district of Toledo and in urban pockets within the Belize District.

According to 2001 estimates, measured by daily caloric intake, 33.5% of Belize's total population is poor and 10.8% are indigent². Disaggregated by districts, poverty levels are highest in the Toledo, Orange Walk and Stann Creek Districts, in that order, whilst indigence is most prevalent in the Toledo, Orange Walk and Corozal Districts. Rural poverty levels measured 44.2% compared to 23.7% urban poverty and rural indigence was estimated at 12.7% vis-à-vis 3.3% in the urban sector.

As was pointed out previously, the return period of storm events raises sharply as one move northward. The northern region has also experienced crop losses due to severe heat and inconsistent rainfall in the last three years. National employment statistics of 2007 suggests that 20.1% of the labour force was employed in the primary sector indicating the importance of agriculture to Belize national livelihood base. Disaggregating of this data indicates that much of these employment positions were associated with Belize's minimum wage requirements and workers were classified primarily as non skilled workers.³ The data also indicated that among women the unemployment rate was 13.1% as opposed to the 5.8% among males.

Despite the clear indicators of social conditions which exacerbate the vulnerability of women standard practices have inadvertently excluded many women from the formal and informal processes following a disaster. Women within vulnerable communities are less frequently represented as decision makers for their communities on an elected basis, and, perhaps more importantly, are effectively excluded from decision making and resource allocation processes because they are often less visible in the public life of the community. This is made evident in the fact that, the greater burden of women heads of households, who typically work 14 to 18 hours a day while caring for the same size families as male heads of households, are often not available to participate in informal meetings and negotiations around allocation of relief and assistance following a disaster. In short, additional efforts must be made to ensure that women benefit equally from the relief provided.

6.0 Complementary Processes

The BCPR-MSP's objective of *"assisting the country of Belize in the strengthening of its framework for disaster co-ordination as well as the strengthening of national capacities allowing for effective disaster preparedness and emergency response"* is being directly supported by several nationally executed projects that are being executed in collaboration with the NEMO. NEMO's central role in the below stated initiative allows for the identification of synergies within the projects and the reduction of overlaps among project deliveries. This is very important when considering limitations within the national system and the present limits to donor access. NEMO works to ensure that all projects serve national priorities and work towards the attainment of the national goal.

² Poverty Assessment Report, 2001. Central Statistical Office.

³ CSO.

USAID/OFFPA: Belize is currently benefiting from the USAID OFDA regional preparedness programme. The initiative focuses on the training of trainers as a means of transferring knowledge to local instructors ensuring a multiplication of project impact. Training areas offered to Belizean stakeholders include introductory damage assessment and shelter management. USAID is also teaming with the Ministry of Education in the developing of a school safety programmes.

The Caribbean Disaster Emergency Response Agency (CDERA): CDERA through its piloted Caribbean Hazard Mitigation Capacity Building Programme (CHAMP) is assisting Belize in the development of national capacities allowing for the reduction of national vulnerabilities to the effects of natural hazard. Under this project the national and local governments will work with engineers and local contractors in the development of adequate building codes and will provide training in hurricane resistant buildings.

International Federation of Red Cross (IFRC): The local Red Cross Society is assisting the IFRC in the rolling out of its ProVention Consortium Project in Belize. Under this initiative, Red Cross volunteers target vulnerable communities and work to increase community coping mechanism by building resilience. The methodology for community Vulnerability and Capacity Assessments (VCA) promoted by the project has already been piloted in three Belizean Communities. This tool is expected to be employed in the community contingency planning exercises described under the BCPR MSP. It should also be noted that the Belize RED Cross is a recipient of a UNDP/GEF Small Grant which will allow for contingency planning utilizing this methodology in three Northern villages.

Japan International Cooperation Agency (JICA): JICA is assisting the government of Belize in the preparation for natural disasters, particularly flooding. The three year initiative will target flooding within Belize's largest watershed, the Belize River Watershed. The JICA funded initiative is the first step in the establishment of an early warning system for communities along the Mopan and Belize Rivers.

Belize Electricity Company Limited (BECOL): BECOL has developed a sister initiative to the JICA project in which it will support the improvement of the early warning system along the Macal River. The Macal River plays host to BECOLS three hydroelectric generating facilities and it a tributary of the Belize River.

PART II: STRATEGY

1.0 Project Rationale and Objectives

The primary objective of the proposed initiative is *“To assist the country of Belize in the strengthening of its framework for disaster co-ordination as well as the strengthening of national capacities allowing for effective disaster preparedness, risk reduction and emergency response”*. The project focuses on strengthening both human resources and government structures, and technical instruments for proper disaster planning and management in the country. Activities supporting outcome delivery are consistent with the priorities for action as identified under the Hyogo Framework.

Over a period of three years UNDP Belize will work, alongside national partners involved in the disaster management process in the realization of project deliverables. These partners include the Ministry of Economic Development (MED), the National Emergency Management Organization (NEMO), the Belize Red Cross, the Caribbean Community Climate Change Center (CCCCC) and the NEMO Damage Assessment and Needs Analysis Committee. Vital to the success of the proposed initiative is the process of consultation, national and local ownership backed up by the provision of essential technical assistance and hardware resources to facilitate assessment, analysis, planning and communication.

The Hyogo Framework for Action specifically challenges states to foster a ‘holistic’ approach to disaster risk reduction. The proposed initiative responds to several components of this comprehensive approach including the integration of a gender perspective into disaster risk management and plans, the empowerment of communities and local authorities to manage and reduce disaster risk, and investment in risk assessment and early warning systems. The submitted proposal provides support primarily the realization of Hyogo strategic priority five (5) which urges countries to, “Strengthen disaster preparedness for effective response at all levels”, as well as supporting initial steps taken towards the realization of the remaining four (4) strategic priorities.

Over the years there has been the building of consensus that *“gender matters in disasters”*. Belize however, like most developing countries, is not yet advanced in the inclusion of Gender- based analysis to inform its emergency management. As the gender dimensions of hazards and disasters are not well understood existing national disaster management frameworks and disaster response plans do not adequately reflect gender perspectives, which inhibits national efforts towards holistic planning. In an effort to ensure adequate inclusion of the specific needs of women and children in the identification of national vulnerabilities and to allow for the true mainstreaming of gender in national disaster planning and response efforts, the project proposes the strengthening of national authorities, with responsibility for the gender mandate, to effectively advocate for continued gender mainstreaming and to serve as national ‘gender champions’ in the performance of their roles within the NEMO structure. The project provides a window to jump start national discussions by contracting the development of a national issues paper investigating the differing vulnerabilities of men and women to disasters within the Belizean context.

In response to the national need for holistic planning the project firstly proposes the collation, revision, updating and possible consolidation of existing sectoral disaster management plans into a comprehensive National Disaster Management Plan. This plan will be informed by information compiled and generated through the in country implementation of the Global Risk Identification Programme’s (GRIP), Risk Assessment Package. The GRIP Risk Assessment Package allows national entities to improve their capacities for Disaster Risk Reduction by facilitating access to improved risk information.

Complementing the process of assessing and consolidating existing plans within one comprehensive national plan, will be the strengthening of the existing disaster management framework particularly allowing for the decentralized approach which supports the NEMO methodology as well as support national efforts to mainstream risk management in national development planning. The Project will work to enhance the institutional and functional capacities of central and local government counterparts as well as civil society organization.

Although the proposed NEMO framework calls for a decentralized approach to disaster risk management, recent disasters have clearly revealed deficiencies in local capacities to effectively participate in the process. In the context of disaster risk management and community resilience, the proposed intervention emphasizes decreasing vulnerabilities of communities by increasing capacities of local risk identification, planning and assessment teams. It factors capability as a key method of increasing resilience across vulnerable groups. The project aims at building coping mechanisms allowing communities to effectively deal with adverse situations as are encountered in the aftermath of disaster events.

Hyogo priority action 3 elaborates the need for collection, compilation and dissemination of relevant information on hazards, vulnerabilities and capacities. Information management within the NEMO structure has been identified as a principal barrier to effective planning and response. Under the proposed intervention several steps will be undertaken to strengthen national processes involved in information generation and management. The project through its support of the DEVINFO and DESINVENTAR databases contribute to the identification, assessment and monitoring of disaster risk and enhancement of early warning (Hyogo priority 2). The adopting of components of the GRIP Risk Assessment Package increases the functionality/ usefulness of the information being compiled and managed through project efforts. Local capacity development facilitated through the GRIP approach enhances the sustainability of actions by institutionalizing information management functions.

Notable is the transfer of LIDAR technology to be used in addressing a long standing sub-regional concern of the Small Island Developing States of the Caribbean of inadequate available maps for coastal development, hazard and mitigation planning. At present, Belize, like most of its Caribbean counterparts, utilizes maps of 10 meter contours rather than the required 0.5 or 1 Meter interval contour maps required for true determination of storm surge and coastal vulnerabilities. This action will be undertaken in conjunction with the Caribbean Community Climate Change Center.

Responding to national limitations resulting from the existence of a limited pool of capacities for effective disaster risk management and response, the project will undertake activities aimed at strengthening networks among disaster experts, managers, and planners. Key to this is the building of capacities within the UN System in Belize to effectively participate in the prevention, preparation for, and response to national emergency situations, and to adequately effect their roles in ensuring strategic coordination and communication among key humanitarian actors through national interagency standing committees.

2.0 Goals and Outcomes:

The proposed initiative responds directly to the global strategic goals identified under the Hyogo framework:

- a) *The more effective integration of disaster risk considerations into sustainable development policies, planning and programming at all levels, with a special emphasis on disaster prevention, mitigation, preparedness and vulnerability reduction;*
- b) *The development and strengthening of institutions, mechanisms and capacities at all levels, in particular at the community level, that can systematically contribute to building resilience to hazards;*
- c) *The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes in the reconstruction of affected communities.*

Attainment of project outcomes will contribute to the building of resilience of Belize to the effects of hazards.

The overall national goal to which deliverables under this initiative is expected to contribute is, ***“The reduction of the impact of disasters on Belize’s vulnerable populations through the improvement of national emergency preparedness and emergency response capacities at all levels within the national disaster management framework”***. The indicators of achievement of this goal include:

- a. **Disaster risk considerations mainstreamed into development**
- b. **Improved response time to national emergencies**
- c. **More timely delivery of humanitarian assistance by the United Nations system in country**
- d. **Capacity and institutional actions taken to reduce vulnerabilities and losses, prepare for crisis and recover efficiently from disasters**

Project outputs will contribute to the realization of Belize UNDAF Outcome 3: “By 2011, national frameworks and capacities are in place enhancing the ability to adequately address adaptation to and mitigation of the impact of disasters as well as the comprehensive, equitable, sustainable and effective management of the nation’s natural resources.” Proposed project outcomes directly coincide with country programme outputs articulated within the CPAP 2007 – 2011:

Output 1: Increased capacity of state actors and communities to implement effective risk reduction and response measures has increased.

Output 2: National disaster management authority strengthened to fully integrate and implement hazard mitigation policies and strategies.

Output 3: National and international partnerships in the area of disaster & risk management networks are fully functional.

3.0 Project Approach:

Component 1/ CPAP Output 1:

Increased capacity of state actors and communities to implement effective risk reduction and response measures has increased.

Indicative Activity 1.1: National Guidelines formulated allowing for the mainstreaming Disaster reduction in Development

The National Disaster Mitigation Policy, although in existence have not been advanced significantly within the national agenda. The proposed activity addresses a national need to forward the principles of mainstreaming disaster reduction into development planning as a means of mitigating risks and minimizing their impacts on national development as identified under Hyogo Priority One, “Ensure that disaster risk reduction is a national and a local priority with a strong institutional basis for implementation”. Globally it is recognized that development strategies and programmes need to be managed to avoid or minimize the negative impacts of natural hazards. The modeling of hazard risks in macroeconomic projections and estimating changes in real per capita income have shown that disasters and catastrophes can slow or stall countries’ poverty reduction efforts.

The proposed intervention suggests the formulation of a Strategic National Action Plan (SNAP) meant to guide the process of mainstreaming disaster reduction into development plans, policies and projects by the Government of Belize, as well as providing for the establishment of National Platforms to guide and monitor its implementation. As it is recognized that there is a national need to draw attention to the consideration of gender in disaster planning, a national issues paper on gender and vulnerability will be developed as a precursor to the SNAP. The SNAP is also expected to required capacity building and public awareness and education activities to ensure its acceptance and advancement.

Elements of this exercise will be guided by international standards and guidelines developed under the UN/ISDR Global Initiatives, the Hyogo Framework and UNDP’s “Global Mainstreaming Initiative for Disaster Risk Reduction”.

Related Actions

- 1.1.1 Sensitization of policy makers promoting the need for disaster risk reduction and reorient both disaster management and development sectors
- 1.1.2 Development of a green paper on the “Differing vulnerabilities of men and women to disasters in Belize”
- 1.1.3 Development of a Strategic National Action Plan (SNAP) for Disaster Risk Reduction, including concrete strategies for harnessing women’s strengths in disaster preparedness, and including needs of vulnerable populations of both sexes.

Work Breakdown Structure

- Hosting of training workshops in disaster risk reduction targeting specific sectors, national and local government, civil society organizations (including women’s group) on the need to mainstream disaster risk management in planning
- Introduction of stakeholder groups and policy makers to the SNAP initiative
- Development of Green Paper
- Conduct national workshops to enable government and its implementing partners to work together to identify priority activities for SNAP
- Recruitment of international consultant to guide the preparation of the SNAP
- Presentation of SNAP through a national forum

Indicative Activity 1.2: Capacity built for decentralized planning and effective disaster risk reduction

This Activity builds on the proposal for community empowerment for disaster risk management and responds to Hyogo Priority Five: Strengthening preparedness for response at all levels. The involvement of

vulnerable social groups is considered as paramount in this process and a strong emphasis will be placed on addressing the special vulnerabilities of women in general and in female headed household in particular. The activity is expected to create local capacities to assume responsibility in disaster/ risk management and promotes self reliance within communities. All activities will be conducted in a gender sensitive manner by directly seeking involvement of formal and informal women's group and organizations at the local level. The activity also recognizes the need for communal processes being directly linked to and supporting of national efforts. The government must be positioned to play a supportive role to communities, providing information, organizing and strengthening community emergency management organizations, and in providing technical assistance and physical inputs. The development of local plans and their periodic review and rehearsal are integral.

Related Actions

- 1.2.1 Emergency Management Committees at districts, and village levels trained in accurate warning, shelter management (including training on different needs of men and women), damage assessment for early response and recovery and the coordination of relief material during times of crisis.
- 1.2.2 Develop and conduct training on integrating gender analysis into Emergency Management Committees at district and village levels;
- 1.2.3 Community based contingency planning with built- in mechanisms to ensure adequate representation of women at community levels
- 1.2.4 Multi-hazard preparedness and mitigation plans developed for Corozal, Stann Creek and Belize Districts.
- 1.2.5 Local level DEMO centres equipped to support effective communication and coordination

Work Breakdown Structure

1.2.1

- Development of simplified information docket/ training packages to support Emergency Management Committees
- Consultants conduct training of disaster committees for district, municipalities and village levels

1.2.2

- Seek assistance of UNDP bureaus to identify appropriate consultant to train EMC's on the integration of gender analysis in local planning and response

1.2.3

- Support of local level coordination centers
- Local exercise carried out to determine specific vulnerabilities within four pilot communities with primary focus on women and vulnerable populations (Supported by the Belize Red Cross VCA methodology)
- Training of community stakeholders, including women representatives, on the process of development of village based natural disaster contingency plans and the identification of roles and capacities for its implementation
- Community training meetings with local women's group/ community members within 4 pilot communities on the role of women in emergency response and early recovery
- *Gender sensitive Community Contingency Plans developed based on major threats specific to the 4 pilot communities*
- Best Practice Guidance manual for community contingency planning produced and disseminated through NEMO network for use in other communities.

1.2.3

-
- Mobilisation of technical expertise to support the NEMO through the contingency planning process
 - NEMO Secretariat support the development of district level contingency plan covering major disaster threats, with support from UNETE
 - Contingency Plans harmonized with national policy and strategy
 - Simulation exercise to test Contingency plans

1.2.4

-
- Identification and procurement of communication equipment enabling the effective communication stream between NEMO and district level Emergency Response Centers and to allow local DEMO's to

Interact with the National Disaster Loss Observatory hosted in the Ministry of Natural Resources and Environment.

- Training of DEMO's on national coordination structure and protocols.

Indicative Activity 1.3: National Capacities for Early Warning strengthened.

An effective early warning system is important for the reduction of losses due to natural disasters. Studies have indicated such a system does not have to be “*high-tech*”, however it is important that this system be people centered. Nationally there exists somewhat of a structure for early warning as it relates to storm events. Belize utilizes a flag and siren system for warning communities of the impending danger. This system however is highly dependent on the ability of NEMO to provide accurate information to community leaders on a timely basis. NEMO's ability to adequately warn communities of flood situations is impeded by the absence of monitoring gauges on our major water ways.

Under this activity it is UNDP's intent to support the development of capacities in the Met Department, the organization responsible for the gathering and analysis of real time data and the provision of accurate information to NEMO for their use. The project also intends to work through NEMO to reinforce communities' awareness of national early warning protocols and to engage these communities in the participation in early detection of hazards.

Related Actions

- 1.3.1 National Counterparts trained in hazard Risk Modeling
- 1.3.2 Support the deployment of 3 remote weather stations in high risk areas (flood warning)
- 1.3.3 Support the development of early warning protocols ensuring that early warning systems are integrates into decision making processes and Emergency management systems
- 1.3.4 Support NEMO's effort to engage community organizations (particularly women's and youth groups) in early detection of hazards
- 1.3.5 Support a national awareness campaign sensitizing communities about the national structure for early warning.

Work Breakdown Structure

- Identify and procure software for risk modelling including flood and storm surge modelling
- Secure trainer for modelling practical workshop
- Deployment of 3 remote weather stations
- Train community members in the monitoring of community specific risk
- Hire national consultant to guide the development of early warning protocols
- Develop easily understandable information to be utilized by NEMO trainer in the sensitization of communities on early warning.
- Hosting of community awareness building workshops on the topic of land use and its link to population vulnerabilities.

Component 2/ CPAP Output 2:

Natural Disaster Management Authority strengthened to fully integrate and implement hazard mitigation policies and strategies.

Indicative Activity 2.1: National Disaster Management Framework/ Structure Strengthened

The primary purpose of this output is to assist the Government of Belize with the creation of an effective coordinating body for disaster preparedness and emergency response. Achieving this objective requires the strengthening of national frameworks and plans to reflect the national desire for comprehensive planning. The 2006 UK Joint CIMIC Report cautions of the complexity of existing sector plans most of which reflect duplications. The recommendation coming out of this exercise focuses on the need to coordinate plans among agencies and the possible condensation of plans to aid usability. The proposed intervention addresses this barrier to increased national efficiency through the assessment of existing plans and their modification to ensure complementarily and possible consolidation into a comprehensive National Disaster Preparedness

and Management Plan. As a precursor to this national planning exercise, the project will support national efforts to conduct a national Multi-hazard Risk Assessment. This assessment is also expected to inform the SNAP being proposed under Indicative Activity 1.1 of this project. These results will also contribute to the development of contingency plans proposed under Indicative Activity 1.2. It is also envisioned that national capacities will be developed to ensure continuity of the risk identification process.

The need for stocktaking related to capacities and resources is necessary as at present little is documented and shared regarding what exists within the governmental and civil society mechanisms, international community (within and outside the country) and private enterprise that are relevant for responding to, preparing for and recovering from disasters. Support will be provided through the proposed programme to expand and maintain a web enabled resource inventory for mobilization of resources and volunteers for emergency.

UNICEF, as its contribution to the ongoing reform process meant to strengthen the NEMO, is undertaking an exercise to develop a database for the NEMO secretariat utilizing DEVINFO technology. The project proposes the expansion of this database to also include an indication of the status of resource availability as well as displaying a list of volunteers with specific skill set, who can be utilized by the state agencies during emergencies. UNICEF's expansion of the national database will also provide fields specifically for the input of disaggregated data facilitating the tracking and consideration of vulnerable groups including women and children in the determination of national responses to disasters.

As a means of strengthening the national NEMO secretariat, the project proposes the hiring of a data manager for the continuous upkeep of the database in non emergency times as well as will provide for the effective management of data streams as is necessary in emergency situations.

Related Actions

2.1.1 Estimation of national risk distribution through the conducting of a multi-hazard risk assessment

2.1.2 Consolidation of existing disaster management plans into a comprehensive National Disaster Preparedness and Management Plan

2.1.3 Development of policies and protocols supporting national plan implementation

2.1.4 Strengthening of national networking and response capacities

Work Breakdown Structure:

2.1.1

- Through GRIP identify capacities for conducting national Multi-hazard Risk Reduction
- Host validation exercises
- Develop local capacities to perform work updating the assessment periodically 9capacity building will be reinforced through the embedding of nationals on the team carrying our initial assessments.

2.1.3 & 2.1.3

- Collection and analysis of data on disaster management experience at institutional, national and district levels to quantify vulnerabilities and capacities.
- Review current arrangements for disaster management
- Develop national hazard profile.
- Consolidate national response plans into a Comprehensive National Disaster Preparedness Plan
- Revise the existing NEMO standard operations procedure manual (SOP) providing clear guidance to the activation and support of the National Disaster Preparedness Plan
- Propose operating protocols based on the risks, capacities and resources necessary to effect the execution of the national plan
- Determine gaps in capacity needs for effectively executing national plans
- Develop recommendations on the structure and staffing of disaster management institutions at different levels
- Prepare capacity building action plan with cost estimates for meeting ongoing and future requirements.

- Host validation exercises with national stakeholder groups

2.1.4

- Identify national partners with capacities to contribute to the implementation of the proposed plan
- Develop and manage national platform for networking of proposed partners (Activity linked with the formalization of a National Interagency Standing Committee chaired by the United Nations System in Belize)
- Expand original capacity of the UNICEF supported DEVINFO database to accommodate the recording of disaggregated data
- Conduct awareness seminar on the importance of disaggregated data in disaster planning
- Conduct national inventory of available national and local resources and capacities to cope with potential risks
- Resource depots projected on planning maps by the LIC to facilitate easy decision making
- Support the maintenance of a data manager within the NEMO secretariat (It is the intent of this proposal to provide seed funds for the hiring of a data manager to provide technical support for NEMO data management. This position will be formalized by the Government of Belize who will take on the responsibility of supporting the position over the life of the project.).

Indicative Activity 2.2: Functionaries at a national level capable of sustaining the disaster management programme

The primary purpose of this output is to increase the levels of national preparedness to plan for and mitigate hazards. Belize, like most other Caribbean SIDS, is incapable of proper hazard and risk mapping due to the unavailability of appropriate datasets, i.e. appropriately scaled maps. Existing maps display 10m rather than the required 0.5 m or 1m interval for proper mapping of storm surge on the coast and hazard mapping of flood regions. This project proposes the development of LIDAR technology with the assistance of the Caribbean Community Climate Change Center. The climate change center is co-sponsoring the production of the technology as it is their intent to, once developed, to roll out the use of the technology to benefit other Caribbean small island states. This activity addresses Hyogo's stated mandate for the transfer of knowledge, technology and experiences as a means of enhancing disaster risk reduction capabilities in developing countries.

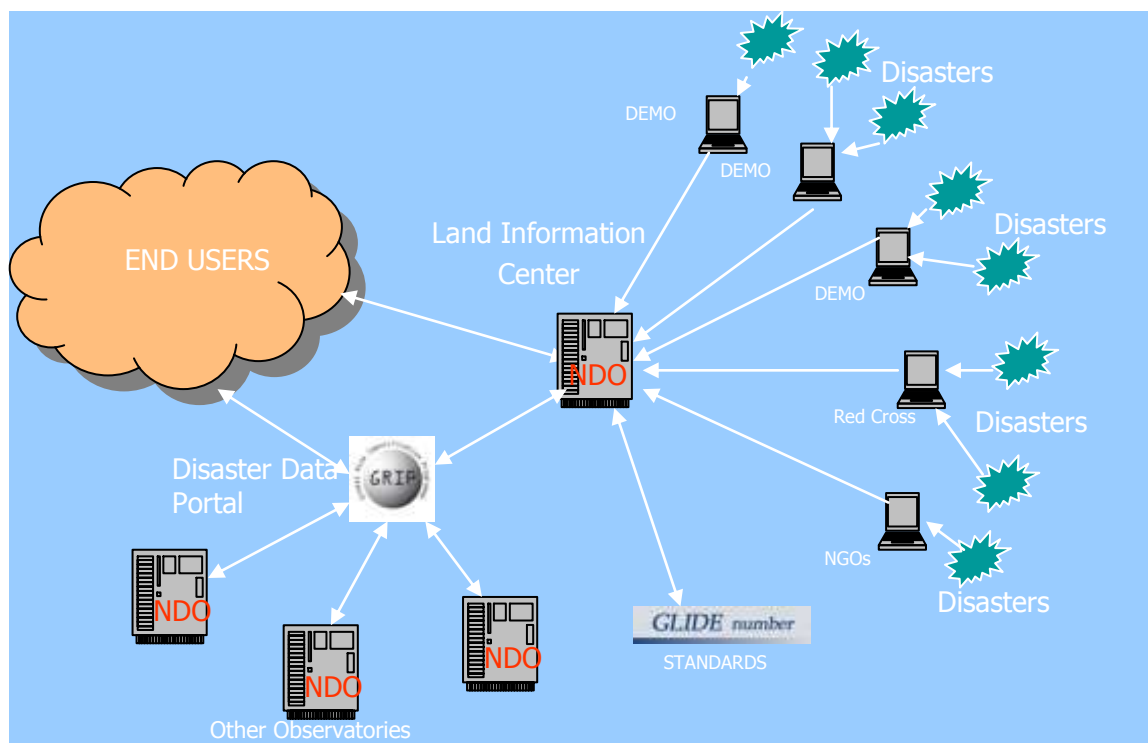
The system when designed will map shallow waters, shoreline and topography simultaneously, integrating land and water measurements in the same data set. The technology allows for speedy survey missions, and also allows surveys over sensitive environmental coastal zones or inland water ways. The maps and data sets collected under this activity will serve as the base in local flood/ disaster/ risk modeling which is an integral component for the improvement of the country's early warning capabilities. (LIDAR Technology elaborated in Annex 2 of the document).

The activity also seeks to develop technical and coordination capacities within those institutions supporting the NEMO structure as are defined within the Disaster Preparedness and Response Act. The NEMO model for disaster risk management depends on varying capacities within a broad cross section of stakeholder institutions. Operational committees, mimicking UN Cluster Groups, work to support the national emergency response. The success of this approach is dependent primarily on the capabilities within these supporting committees to effectively perform their contributing task.

The Damage and Needs Assessment Committee (DANA) housed within the Ministry of Natural Resources and Environment is integral to the NEMO process as this committee is tasked with the conducting of the timely assessment and the provision of credible data necessary to inform immediate humanitarian response and to guide early recovery efforts. This project proposes several interventions to build the capacity of the DANA and support efficiency in their data collection.

One such intervention is the adoption of the UNDP developed DESINVENTAR methodology and software tools as a means of managing disaster information for planning and response. The DesInventar methodology will also allow the government to retain historical data about the impact of disasters. This information will be used to support national early warning efforts in the determination of future risks based on past trends and recorded vulnerabilities of specific national development sectors. This tool is particularly relevant for use in Belize as it targets small and medium disasters which are more common within the Belizean setting.

DesInventar will be managed within the Land Information Center (LIC) of the Ministry of Natural Resources and Environment which currently possess capacities necessary for its management. (DesInventar Methodology elaborated in Annex 3 of the document). It is the intent of this project to utilize the once established DESINVENTAR database as the central hub in the establishment of National Disaster Loss Data Observatories. The Disaster Loss Data Observatories as proposed by the GRIP, complements DESINVENTAR's function of maintaining historical disaster loss data as a means to forward planning through trend determination and scenario building. This activity is also directly linked with the capacity development of DEMO's provided for within indicative Activity 1.2. It is hoped that with the enhancement of DEMO's, these district organizations can function as input nodes into the disaster observatory.



The DANA teams will also be provided with training necessary to build awareness of the importance of the humanitarian approach to damage assessment and to strengthen the social analysis component in rapid assessments. These concepts will be formalized and reflected within DANA assessment and reporting tools and in the sector reporting tools which informs DANA's final detail report. NEMO/DANA will be provided the hardware resources to facilitate assessment, analysis, and communication.

Related Actions:

- 2.2.1 LIDAR technology piloted in Belize and used in the development of coastal and flood plain hazard maps
- 2.2.2 Training of national counterparts within the LIC, Meteorology Department and NGO sector in the interpretation and use of LIDAR imagery in mapping
- 2.2.3 Establishment and population of national database on hazards, vulnerabilities and risks in Belize using DesInventar adopted technology.
- 2.2.4 Allow for connectivity of database enhancing disaster related information exchange among national and international communities, researchers and other interested organizations.
- 2.2.5 Improve national capacities for post disaster assessment, analysis and reporting

Work Breakdown Structure:

2.2.1 & 2.2.2

- Fabrication of LIDAR technology through the assistance of the Caribbean Climate Change Center
- Support LIDAR mounted flights over the Northern and central shoreline of Belize (Corozal Town to Placencia Village), along the Belize and North Stann Creek Rivers, and the Belize District Cayes (San Pedro and Caye Caulker)

- Develop national capacities (state and non-state) for LIDAR image interpretation and use in mapping and risk/hazard modeling

2.2.3

- Organize stakeholders' workshop to introduce DESINVENTAR methodology and the concept of National Disaster Loss Data Observatories (NDLDO).
- Transfer of technology and adopt existing DESINVENTAR tool conform to national needs, reflecting data collected through national damage assessment tools and to satisfied the requirements for the use of the database as the hub of the National Disaster Loss Data Observatory.
- National level database and inventory established as the basis for preparedness planning and disaster data analysis.
- Support consultancy for the initial population of national database with relevant impact data including loss data from past disasters.
- Develop local capacities for the systemic collection, documentation, analysis and interpretation of data about losses caused by natural hazards.
- Develop local capacities in the maintenance of DESINVENTAR database and use of the querying tool in information management.
- Support the development of an initial human development issues paper generated by information generated through the utilization of DESINVENTAR/ NLDLO technologies on the interaction between disaster events and sustained losses resulting in development set backs

2.3.4

- Development of sectoral reporting guidelines and report templates ensuring incorporation of social sector impact indicators covering gender, health and education issues
- Strengthen capacity of DANA and other functionaries through training meant to familiarize entities of the importance of the humanitarian approach to disaster assessment and planning and methodologies utilized to strengthen social analysis in national assessment processes.
- Training of DANA team leaders in utilization of assessment tools and analysis of collected data
- Equipping of DANA teams with field kits to support rapid deployment of teams into disaster areas
- Development of assessment training manuals to be used in the training and orientation of Disaster Assessment Teams [DAT] at district and community levels resulting in a more robust system of data collection, supporting the national DANA mandate.

Component 3/ CPAP Output 3:

National and International partnerships in the area of risk and risk management are fully functional.

Indicative Activity 3.1: UN Mechanism for Preparedness and response are fully functional

A functional National United Nations Disaster Management Team (UNDMT) and Emergency Technical Team (UNETT) is essential for the supplementing and supporting of national planning and response efforts. Belize as a country has limited in country large donor and international NGO presence. This has an effect in the timeliness and subsequent effectiveness to the mobilization of international support in response to disasters. The small contingent of UN agencies in country have in the past over extended its existing limited capacities in responding to disasters and emergencies as well as in the provision of technical support to the government during non-emergency times. The development of an interagency contingency plan will ensure that national and international mechanisms for coordinating relief operations are complementary.

Past emergency events provides a strong justification for the participation of local NGOs, CBOs, the private sector organizations in the national disaster management and response process. This activity will support UN mechanisms aimed at fostering this multi stakeholder involvement and their coordinated actions increasing the overall country response effectiveness. One such mechanism is the development of a platform for stakeholders' dialogue and coordination through the implementation of a national IASC. The result of this action is expected to be a minimization of duplication of efforts and ensuring maximum impacts gained from the targeted direction of relief.

The limited existence of donor agencies and large international NGO partners in Belize as well as small budgets of national UN agencies, means that opportunities for rapid UN response, particularly as it relates to

securing support for the country post disaster, is limited and presents some hardships for the UN Belize Country Team. To mediate this, it is recommended that investments be made to develop a resource mobilization strategy for the UNDMT. This mobilization strategy will preposition the UNDMT, increasing its effectiveness to respond to national needs.

In order to institute a holistic approach to DRR, gender mainstreaming must be institutionalized through concrete steps. The project will support a Special Advisor on Gender Issues as a means to mainstream a gender perspective into the proposed initiative and future development programmes of the UNDP. This specialist is also expected to liaise closely with government counterparts and project beneficiaries in an effort to build national capacities for addressing gender concern in disaster risk management and development planning..

Related Actions:

- 3.1.1 Support to UNETT structure
- 3.1.2 Resource mobilization strategy for early response and recovery developed
- 3.1.3 Interagency Contingency Plan drafted and synchronized with national Development efforts
- 3.1.4 Formalization and facilitation of national IASC meant to provide a national networking and coordination platform for disaster management and response partners

Work Breakdown Structure:

3.1.1

- The project will provide support for maintaining a UNDP Programme Associate for Disaster Risk Reduction; this individual will provide management support and oversight to the Project management team within the Government of Belize as well as function to support UNETT.
- Training of UNETE members and Agency essential staff to effectively perform CCC essential functions (Threat tracking, threat analysis, SitRep development, Development of CERF,FLASH appeals)
- Procurement of equipment and materials to support UNETT's primary responsibilities in information management and coordination.

3.1.2 & 3.1.3

- Source regional expertise to assist in the development of the resource mobilization strategy and the interagency contingency plan
- OCHA's assistance in UN contingency planning

3.1.4

- Host stakeholder awareness building forum introducing concept of IASC
- Formation of national IASC with the assistance of the Regional Bureau and OCHA
- Support quarterly discussion/ planning forums

PART III : MANAGEMENT ARRANGEMENTS

The Project will be executed utilizing NEX modality. *The National Emergency Management Organization within the Ministry of Public Utilities, Transport, Communications and National Emergency Management will execute the proposed initiative in line with National Execution [NEX] guidelines.* The proposed interventions involves partnerships at different levels and with a large cross section of stakeholders, including central government ministries and departments, local government entities, non-governmental organizations, community groups and various UN agencies. The proposal has a national focus with priority actions taken in those areas of the country with greatest vulnerabilities such as coastal cayes and municipalities with large populations.

As a component of the project refers to the strengthening of UN capacities to be able to effectively respond to the Government of Belize, it is proposed that the Ministry delegates execution authority to the UNDP-Belize Resident Representative for the administration and management of Project Component 3.

1.0 Institutional arrangements

Coordination at the National level: UNDP will partner with the National Emergency Management Organization (NEMO) of the Ministry of Public Utilities, Transport, Communications and National Emergency Management. UNDP will work closely with, and draw on the expertise of the Ministry of Economic Development (MED), NEMO Damage Assessment and Needs Analysis Committee, chaired by the Ministry of Natural Resources and the Environment, the Caribbean Community Climate Change Center (CCCCC) and community and non-governmental groups in the realization of project deliverables.

A three person project management unit will be established within NEMO with support from the Government of Belize and the project. Essential roles within the PMU include Project Officer, Finance Officer and Data Manager. These posts will be originally supported by the project but are expected to be formalized by the Government of Belize with the government assuming financial responsibility for the support of the positions by the end of the project.

A DRR Programme Associate will be recruited to oversee the delivery of UN related outputs and will assist the project management unit established within NEMO in ensuring timely implementation of activities. This individual will serve as specialist advisor to both the UN system and NEMO PMU. This individual will also serve to ensure linkages between international and local inputs. As the project developers have identified the need for additional support to the project ensuring that all proposed results reflect gender considerations, the project is also expected to recruit a gender specialist who will work directly with the project executing agency and with primary stakeholders of the project and beneficiary groups identified to advance the projects gender agenda. The role of this individual will also include the creation of greater gender awareness and sensitivity among disaster management functionaries.

Oversight of the project will be achieved through the establishment of a Project Execution Group chaired by the National Coordinator of NEMO. The PEG will provide overall guidance to the programme and will be responsible to review the progress of the programme through quarterly scheduled meetings.

2.0 Implementation Arrangements:

UNDP through its office in Belize will serve as the Implementing Agency. The proposed Medium Size Project will utilize Direct Request Payment modality for funds disbursement to ensure greater financial accountability and transparency. If the PMU requires execution services support from the CO that are outside the purview of implementation services provided by UNDP, standard ISS fees will be charged to the MSP.

UNDP-Belize will act to ensure that all implementation activities comply with policies outlined in UNDP's Programming and Financial manuals. The Government of Belize will retain the rights to set rates for associated project activities such as mileage, consultancy fees, etc. as it relates to project staff contracted by

the Government of Belize. Proposed government fee structures are to adhere to the premises guiding UNDP standard operations.

In accordance with standard UNDP procedures, all resources and equipment gained through project support remain the property of UNDP until project closure when a decision will be taken as to how to dispose of these resources.

Project Execution Group/ Project Board: The Project Execution Group/ Project Board is the group responsible for making by consensus, management decisions for a project when guidance is required by the Project Manager, including recommendation for UNDP/Implementing Partner approval of project plans and revisions, final decision shall rest with the UNDP Programme Manager. The PEG/PB is to be consulted by the Project Manager for decisions when Project Manager's tolerances (normally in terms of time and budget) have been exceeded (flexibility).

Based on the approved annual work plan (AWP), the Project Board may review and approve project quarterly plans when required and authorizes any major deviation from these agreed quarterly plans. Proposed PEG members for the submitted MSP includes representation from NEMO, Ministry of Economic Development, Ministry of Natural Resources and Environment (DANA), the Caribbean Community Climate Change Center, Belize Red Cross Society, UNDP CO, and UNETT.

Project Assurance: Project Assurance is the responsibility of each PEG member. This role supports the project implementation by carrying out objective and independent project oversight and monitoring functions. This role ensures appropriate project management milestones are managed and completed. Project Assurance is independent of the Project Manager. The assigned UNDP Programme Officer will hold primary responsibility for Project Assurance.

Project Manager/ Officer: The project will support a Project Officer, who has the authority to run the project on a day-to-day basis on behalf of UNDP and the Government of Belize. The Project Manager's prime responsibility is to ensure that the project produces the results (outputs) specified in the project document, to the required standard of quality and within the specified constraints of time and cost. A Project Officer will be hired initially using project funds and will be based within the NEMO secretariat, The Government of Belize is expected to formalize the post and take financial responsibility of the post over the life of the project.

Gender Specialist: The UNDP Gender specialist will be working to ensure implementation of the BCPR risk reduction project in a gender-sensitive manner, and promote the development of greater gender awareness and gender sensitivity among relevant ministries in Belize, particularly as it relates to emergency management and risk reduction. The Specialist will facilitate training for government staff as a means of ensuring their integration of gender components in practical action plans, addressing practical implementation issues with a gender lens, and providing effective liaison between UNDP and the Ministries.

Project Support: The Project Support role provides project administration, management and technical support to the Project Manager as required by the needs of the individual project or Project Manager. UNDP Finance/ Operations Managers will provide financial, administration and management support to the Project Manager as required by the needs of the project or Project Manager. Additional support roles will be undertaken by the host institution, and the Project Assistant being supported by the project.

BCPR/ OCHA is also expected to provide technical guidance in the development of national contingency plans and in the strengthening of the UN network for response.

PART IV: MONITORING AND EVALUATION PLAN AND BUDGET

The following section outlines the principle components of monitoring and evaluation. The project's monitoring and evaluation approach will be discussed during the project's initiation report so as to fine-tune indicators and means of verification, as well as an explanation and full definition of project staff M&E responsibilities.

Project monitoring and evaluation is the responsibility of the project team and the UNDP Country Office (UNDP-CO). The Logical Framework Matrix provides performance and impact indicators for project implementation along with their corresponding means of verification providing a basis on which the project's Monitoring and Evaluation system will be designed in the initial inception phase.

A project initiation workshop will be conducted with the full project team, Project Director, relevant government counterparts, partners, the UNDP-CO. The fundamental objective of the initiation workshop will be to assist the project team to understand and take ownership of the project's goals and objectives, as well as finalize preparation of the project's first annual work plan. This will include the establishment of verifiable indicators to be used in monitoring project progress and impact. Final result will be a comprehensive Annual Operational Plan (AOP) with precise and measurable performance (process and output) indicators, and in a manner consistent with the expected outcomes for the project.

Day to day monitoring of implementation progress will be the responsibility of the Project Manager based on the project's Annual Work plan and its indicators. The Project Manager will inform the Project Director and UNDP-CO of any delays or difficulties faced during implementation so that the appropriate support or corrective measures can be adopted in a timely and remedial fashion.

Periodic monitoring of implementation progress will be undertaken by the UNDP-CO through meetings with the project stakeholders and. This will allow parties to take stock and to troubleshoot any problems pertaining to the project in a timely fashion to ensure smooth implementation of project activities. The UNDP CO representative will also perform field-monitoring visits at least once per quarter.

Evaluation: To complement and enhance UNDP programme monitoring, it UNDP will conduct joint annual internal evaluations with representatives of the main stakeholder groups. Such a team effort will strengthen partnerships and allow for a transparent and fair review of activities. Findings will be used to revise the project's logical framework and preparation of annual work plans, led by the project manager. A final, external evaluation will be held in the final four months of the programme.

Financial oversight will be provided by the UNDP administrative and financial staff. The project will be subject to UNDP financial auditing policies and procedures.

Risk Management: Both the Project and UNDP CO is expected to develop and regularly update a project risk log allowing for adaptive management of project and allowing for mitigation planning meant at minimizing project implementation delays, circumvent barriers to successful delivery and ensuring maximum realized project benefits for investments.

Audits The Government of Belize will provide the UNDP Resident Representative with certified periodic financial statements, and with an annual audit of the financial statements relating to the status of UNDP funds according to the established procedures set out in the Programming and Finance manuals. The Audit will be conducted by a commercial auditor engaged by the Government. The project foresees an audit to be conducted at the end of the project by a recognized national firm.

Adaptive Management Lessons learnt will be continuously extracted from the MSP Project. Lessons will be disseminated by the project. Among the mechanisms to be used will be inter-Agency MoUs, incorporation into Annual Operational Plans and through capacity development and training initiatives. As well, there will

be the sharing of information between projects, stakeholders and policy representatives as an effective measure of mainstreaming. The lessons learnt from the MSP through evaluations will be incorporated into implementation of the MSP. In addition to the monitoring, evaluation and feedback mechanisms already identified, the Project Execution Group will review progress on a quarterly basis, identifying lessons learnt and discuss project progress with the involvement of wider stakeholder audience as necessary. The ideas and lessons learnt will be incorporated into the management of the project and further implementation process by the Project Execution Group with adjustments to the Work Plan as required.

Type of M&E activity	Lead responsible party in bold	Budget	Time frame
Inception Report	PO, PMU	None	At project start-up
Annual Progress Report (APR) for Tripartite Reviews	NEMO, UNDP Country Office, Executing Agency, PMU	None	By June each year
Tripartite meeting and report (TPR)	NEMO, UNDP Country Office, Project Team,	(\$500 x3 yrs) \$1,500	Annually , upon receipt of APR
Final External Evaluation	UNDP Country Office, NEMO, project Team	\$20,000	During last 4 months of project execution,
Terminal Report	UNDP Country Office, NEMO, Project Team	\$1,500	At least one month before the end of the project
Audit	UNDP Country Office, Project Team	(\$2,500 x3 yrs) \$7,500	Annually
Visits to field sites	UNDP Country Office, NEMO	(\$500 x 3 yrs) \$1,500	Annually
Lessons learnt	UNDP Country Office, Project Team, NEMO	(\$1,500 x 3 yrs) \$4,500	Annually
TOTAL COST		\$36,500	

PART V: LEGAL CONTEXT

This document together with the CPAP signed by the Government and UNDP which is incorporated by reference constitute together a Project Document as referred to in the SBAA and all CPAP provisions apply to this document.

Consistent with the Article III of the Standard Basic Assistance Agreement, the responsibility for the safety and security of the implementing partner and its personnel and property, and of UNDP's property in the implementing partner's custody, rests with the implementing partner.

The implementing partner shall:

- a) put in place an appropriate security plan and maintain the security plan, taking into account the security situation in the country where the project is being carried;
- b) assume all risks and liabilities related to the implementing partner's security, and the full implementation of the security plan.

UNDP reserves the right to verify whether such a plan is in place, and to suggest modifications to the plan when necessary. Failure to maintain and implement an appropriate security plan as required hereunder shall be deemed a breach of this agreement.

The implementing partner agrees to undertake all reasonable efforts to ensure that none of the UNDP funds received pursuant to the Project Document are used to provide support to individuals or entities associated with terrorism and that the recipients of any amounts provided by UNDP hereunder do not appear on the list maintained by the Security Council Committee established pursuant to resolution 1267 (1999). The list can be accessed via <http://www.un.org/Docs/sc/committees/1267/1267ListEng.htm>. This provision must be included in all sub-contracts or sub-agreements entered into under this Project Document".

PART VI: RESULTS AND RESOURCES FRAMEWORK

Intended Outcome as stated in the Country Programme Results and Resource Framework:

2.2 Reduced Vulnerability of poor and excluded populations to the impact of disasters.

Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets:

- % GDP-loss due to natural disasters
- Human loss due to disasters
- % Dwellings and development infrastructure in disaster-prone areas

Applicable Strategic Plan Service Line:

Crisis prevention and recovery **Service Line 4.5 Natural disaster reduction**

Partnership Strategy

Project title and ID (ATLAS Award ID):

INTENDED OUTPUTS	OUTPUT TARGETS FOR (YEARS)	INDICATIVE ACTIVITIES	RESPONSIBLE PARTIES	INPUTS
<p>Output 1/ Component 1: Increased capacity of state actors and communities to implement effective risk reduction and response measures.</p> <p>Baseline: Although envisioned as a decentralized process the reality of DRR in Belize is that entities tasked with actions associated to DRR district and local levels have very limited capacities to adequately perform mandated functions. This is compounded by the lack of a national culture to consider risk in its planning and development processes.</p> <p>Indicators:</p> <ul style="list-style-type: none"> - Extent to which risk 	<p>Targets (year 1)</p> <ul style="list-style-type: none"> -Risk management training within 4 communities (50% participation by women and young people) - Members of 8 DEMOs and CEMOs trained in Contingency planning and disaster and needs assessment -Issue of gender influences on population vulnerability brought to the forefront by end of year 1 <p>Targets (year 2)</p> <ul style="list-style-type: none"> -By end of year 2 project expects that national planning document, - Vision 2030 and other national planning 	<p>Activity Result 1.1 National Guidelines formulated allowing for the mainstreaming disaster reduction in development planning</p> <ul style="list-style-type: none"> ▪ Action 1.1.1 Sensitization of policy makers on the need for disaster risk management in development planning. ▪ Action 1.1.2 Development of a green paper on the, ‘Differing vulnerabilities of men and women to disasters in Belize’, and feeding of findings into the National Action Plan for Disaster Risk Reduction ▪ Action 1.1.3 Development of a strategic National Action plan for Disaster Risk Reduction sensitive to the needs of women and vulnerable populations. <p>Activity Result 1.2 Capacity built for decentralized planning and effective disaster risk reduction</p>	<p><i>Ministry of Economic Development</i> <i>(International/ National Consultants)</i></p> <p style="text-align: right;"><i>NEMO/ DANA/ Belize</i></p>	<p>Consultancies:</p> <ul style="list-style-type: none"> ▪ Facilitation of SNAP sessions (NC- 15days@250/day=\$3,750) ▪ Preparation of SNAP document (IC- 20days@500/day= \$10,000 Travel 3,500) ▪ Green Paper: Gender influences on Population Vulnerability (NC- 30days@750/day=\$22,500) ▪ Design info docket for EMC and Community Monitoring (NC- 22 days@250/day= \$5,500) ▪ Compilation of Best practice in Community Contingency planning (NC-15day @250/day= \$3,750) ▪ Expert facilitator District Level Contingency planning (25 days@250/day= \$6,250) ▪ Development Early warning Protocols (IC- 15 days@500/day= \$7,500 Travel 3,500)

				<ul style="list-style-type: none"> ▪ Printing Gender study \$5,000 <p>Equipment and Software:</p> <ul style="list-style-type: none"> ▪ Computers for DEMO and CEMO offices (7 @ \$1,500/computer= \$10,500) ▪ Risk Modeling Software (\$12,000/package) ▪ Base radios for DEMO offices (7 @ \$875/radio=\$6,125) ▪ Remote Weather Stations (4 @ \$3,750/unit= \$15,000)
<p>Output 2 / Component 2: National disaster management authority strengthened to fully integrate and implement hazard mitigation policies and strategies.</p> <p>Baseline: The National Emergency Management Organization (NEMO), responsible for national emergency systems, has indicated that the national emergency response capacity is inadequate to respond to a major emergency/disaster situations. NEMO's operational focus on storm-related impacts has also left the country vulnerable to other high-risk situations, including flood and drought.</p> <p>Indicators:</p> <ul style="list-style-type: none"> - Presence of systemic inventory of disasters and losses - # of individuals trained in risk management/ damage assessment - Organization and 	<p>Targets (year 1)</p> <ul style="list-style-type: none"> - DesInventar Data based established and populated by end of year 1 -15 individuals including 5 NGO representatives trained in the interpretation of LIDAR imagery -2 sector reporting tools developed by end of year 1 (Housing and Relief Supplies) -DANA trained in use of Social sector impact indicators -National Hazard Profile Finalized by end of year1 <p>Targets (year 2)</p> <ul style="list-style-type: none"> - DesInventar data base adopted to function as national repository of Disaster information (NDLDO) - 20 individuals representing DEMO nodes and LIC hub trained in systemic collection, documentation and analysis of information within the (NDLDO) - LIDAR System developed and piloted by end of Yr 2 -3 sector reporting tools 	<p>Activity Result 2.1 National Disaster Management Framework/ Structure strengthened</p> <ul style="list-style-type: none"> ▪ Action 2.1.1 Estimation of national risk distribution through the conducting of a multi hazard risk assessment ▪ Action 2.1.2 Consolidation of existing disaster management plans into a comprehensive National Disaster Preparedness and Management Plan ▪ Action 2.1.3 Development of policies and protocols supporting plan implementation ▪ Action 2.1.4 Strengthen national networking ad response capacities <p>Activity Result 2.2 Functionaries at a national level capable of sustaining the disaster management programme</p> <ul style="list-style-type: none"> ▪ Action 2.2.1 LIDAR technology piloted in Belize and used in the development of Coastal and Flood plain Hazard maps ▪ Action 2.2.2 Training of national counterparts within the LIC, Meteorology Department and NGO sector in the interpretation and use of LIDAR imagery in Mapping ▪ Action 2.2.3 Establishment and Population of national database on hazards, vulnerabilities and Risks in 	<p>NEMO/ DANA (Consultants)</p> <p>NEMO/ DANA/ UNDP/ CCCCC (Consultants)</p>	<p>Consultancies:</p> <p>Develop national Hazard profile/ Multi-Hazard risk Assessment (30 days @ 1000/day= 30,000 Travel- 2,000 , National participation= 12,000</p> <ul style="list-style-type: none"> • Human issues paper -Disaster trends and national Development (NC- 20 days @300/day= 6,000 ▪ Review and consolidation of national disaster management plan / Policies and protocols supporting Plan (IC- 25 days@500/day= 12,500 Travel 2,500 NC- 30days@250/day=\$7,500) - Development of SOP manual (NC- 15 days @300/day= \$4,500) ▪ Population of DesInventar/ Disaster Loss Observatory (NC- 30days@150/day= \$4,500) ▪ Facilitation DANA training (IC- 10days@500/day=\$5,000 Travel \$2,500) ▪ Compilation National Resource inventory (NC 10 days @250/day=\$2,500) ▪ LIDAR Image Interpretation (IC- 10 days@500/day= \$5,000 Travel (\$2,500) ▪ National Application of DesInventar (IC-5 day s@ \$500= \$2,500 Travel \$2,000)

<p>coordination of emergency operations</p> <ul style="list-style-type: none"> - Supply of equipment and tools 	<p>developed by mid year2 (Agriculture, Education and Health)</p> <ul style="list-style-type: none"> -DANA and Sector Tools incorporate humanitarian/ Social Sector indicators -NEMO adoption of Consolidated national Disaster plan with supporting protocols by end of year 2 <p>Targets (year 3)</p> <ul style="list-style-type: none"> - Hazards maps developed for 5 vulnerable regions - Assessment training manual developed and promulgated through NEMOP network - Capacity building Action plan in place by end of year 3 - Issues paper (Disaster Trends and National Development) 	<p>belize using DESINVENTAR adopted technology</p> <ul style="list-style-type: none"> ▪ Action 2.2.4 Allow for connectivity of database enhancing disaster related information exchange among national and international communities, researchers and other interesting organizations. ▪ Action 2.2.5 Improve national capacities for post disaster assessment, analysis and reporting 	<ul style="list-style-type: none"> ▪ National Adoption of Disaster Loss Observatory (IC- 7 days @500/ day= \$3,500 Travel \$2,000) ▪ Sector Reporting Guidelines (IC- 15 days@500/day= \$7,500 Travel \$2,500) ▪ Development of Assessment Training Manual (NC- 20 days @ 250/day= \$5,000) ▪ Capacity Building Action plan (NC- 20days@250/day= \$5,000) <p>Contractual Services:</p> <ul style="list-style-type: none"> ▪ Technology development contract CCCCC \$150,000) ▪ DATA base connectivity (\$7,500) ▪ Over Flights (LIDAR mapping) \$15,000 ▪ Printing Training Manual (\$5,000) ▪ Map Production/ printing (\$5,000) <p>Training/ Workshops:</p> <ul style="list-style-type: none"> ▪ LIDAR application Materials \$2,500 ▪ DANA/NEMO (Social analysis) Materials \$1,000 Travel \$1,000 ▪ DANA Workshop NDLD0 (2,500) ▪ Training Data collection, documentation, analysis (\$5,000) ▪ Importance of Disaggregated data (Venue 1,600 Material 1,000) ▪ Validation Sessions (DMP,SOP) (Materials \$1,500 Travel \$750) Materials\$2,000 Travel\$1,000 ▪ Introduction to DesInventar Materials \$1,500
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Indicative Outputs, Activities and Quarterly Work Plan

Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
Activity Result 1.1 National Guidelines formulated allowing for the mainstreaming disaster reduction in development planning	Hosting of training workshops in disaster risk reduction targeting specific sectors, national and local government, civil society organizations (inclusive of women's group) on the need to mainstream disaster risk management in planning												
	Introduction of stakeholder groups and policy makers to the SNAP initiative												
	Development of Green Paper												
	Conduct national workshops to enable government and its implementing partners to work together to identify priority activities for SNAP												
	Recruitment of international consultant to guide the preparation of the SNAP												
	Presentation of SNAP through a national forum												
Activity Result 1.2 Capacity built for decentralized planning and effective disaster risk reduction	Development of simplified information docket/ training packages to support Emergency Management Committees												
	Consultants conduct training of disaster committees for district, municipalities and village levels												
	Support of local level coordination centers												
	Using community vulnerability assessment tool developed under MACCC project, select 4 potentially high risk communities to involve in local risk management pilot												
	Local exercise carried out to determine specific vulnerabilities within four pilot communities with primary focus on women and vulnerable populations (Supported by the Belize Red Cross VCA methodology)												
	Training of community stakeholders, including women representatives, on the process of development of village based natural disaster contingency plans and the identification of roles and capacities for its implementation												
	Community training meetings with local women's group/ community members within 4 pilot communities on the role of women in emergency response and early recovery												
	<i>Gender sensitive Community Contingency Plans developed based on major threats specific to the 4 pilot communities</i>												

	Best Practice Guidance manual for community contingency planning produced and disseminated through NEMO network for use in other communities.												
	Mobilisation of technical expertise to support the NEMO through the contingency planning process												
	NEMO Secretariat support the development of district level contingency plan covering major disaster threats												
Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Contingency Plans harmonized with national policy and strategy												
	Simulation exercise to test Contingency plans												
	Identification and procurement of communication equipment enabling the effective communication stream between NEMO and allow local DEMO's to interact with the NDLDO hosted in the MNRE												
	Training of DEMO's on national coordination structure and protocols.												
	Training of DEMO to effectively collect and input assessment data into national system												
Activity Result 1.3 National Capacities for early warning strengthened	Identify and procure software for risk modelling including flood and storm surge modelling												
	Collection and analysis of data on disaster management experience at institutional, national and district levels to quantify vulnerabilities and capacities. Secure trainer for modelling practical workshop												
	Deployment of 3 remote weather stations												
	Train community members in the monitoring of community specific risk												
	Hire national consultant to guide the development of early warning protocols												
	Develop easily understandable information to be utilized by NEMO trainer in the sensitization of communities on early warning.												
	Hosting of community awareness building workshops on the topic of land use and its link to population vulnerabilities.												

Indicative Activity 2.1: National Disaster Management Framework/ Structure Strengthened	Collection and analysis of data on disaster management experience at institutional, national and district levels to quantify vulnerabilities and capacities.												
	Review current arrangements for disaster management												
	Develop national hazard profile (Multi hazard Risk Assessment)												
	Consolidate national response plans into a Comprehensive National Disaster Preparedness Plan												
	Revise the existing NEMO standard operations procedure manual (SOP) providing clear guidance to the activation and support of the National Disaster Preparedness Plan												
	Propose operating protocols based on the risks, capacities and resources necessary to effect the execution of the national plan												
	Determine gaps in capacity needs for effectively executing national plans												
	Develop recommendations on the structure and staffing of disaster management institutions at different levels												
Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Prepare capacity building action plan with cost estimates for meeting ongoing and future requirements.												
	Host validation exercises with national stakeholder groups												
	Identify national partners with capacities to contribute to the implementation of the proposed plan												
	Develop and manage national platform for networking of proposed partners (Activity linked with the formalization of a National Interagency Standing Committee chaired by the United Nations System in Belize)												
	Expand original capacity of the UNICEF supported DEVINFO database to accommodate the recording of disaggregated data												
	Conduct awareness seminar on the importance of disaggregated data in disaster planning												
	Conduct national inventory of available national and local resources and capacities to cope with potential risks												
	Resource depots projected on planning maps by the LIC to facilitate easy decision making												

	Support the maintenance of a data manager within the NEMO secretariat (It is the intent of this proposal to provide seed funds for the hiring of a data manager to provide technical support for NEMO data management. This position will be formalized by the Government of Belize who will take on the responsibility of supporting the position over the life of the project.).												
Indicative Activity 2.2: Functionaries at a national level capable of sustaining the disaster management programme	Fabrication of LIDAR technology through the assistance of the Caribbean Climate Change Center												
	Support LIDAR mounted flights over the Northern and central shoreline of Belize (Corozal Town to Placencia Village), along the Belize and North Stann Creek Rivers, and the Belize District Cayes (San Pedro and Caye Caulker)												
	Develop national capacities (state and non-state) for LIDAR image interpretation and use in mapping and risk/hazard modeling												
	Organize stakeholders workshop to introduce DESINVENTAR methodology and the concept of NDLD0												
	Transfer of technology and adopt existing DESINVENTAR tool to conform to national needs, reflecting data collected through national damage assessment tools and to satisfy the requirements for the use of the database as the hub of the NDLD0												
	National level database and inventory established as the basis for preparedness planning and disaster data analysis.												
	Develop local capacities in the maintenance of DESINVENTAR database and use of the querying tool in information management												
	Develop Local Capacities for the systemic, collection, documentation and analysis and interpretation of data												
Activity Result	Work Breakdown Structure	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12
	Development of sectoral reporting guidelines and report templates ensuring incorporation of social sector impact indicators covering gender, health and education issues												
	Support the development of initial human development issues paper (Disaster trends and national Development)												
	Strengthen capacity of DANA and other functionaries through training meant to familiarize entities of the importance of the humanitarian approach to disaster assessment and planning and methodologies utilized to strengthen social analysis in national assessment												

	processes.												
	Training of DANA team leaders in utilization of assessment tools and analysis of collected data												
	Equipping of DANA teams with field kits to support rapid deployment of teams into disaster areas												
	Development of assessment training manuals to be used in the training and orientation of Disaster Assessment Teams [DAT] at district and community levels resulting in a more robust system of data collection, supporting the national DANA mandate.												
Indicative Activity 3.1: UN Mechanism for Preparedness and response are fully functional	Maintain a UNDP Programme Associate for Disaster Risk Reduction; this individual will provide management support and oversight to the Project management team within the Government of Belize as well as function to support UNETT.												
	Maintain Specialist Advisor on Gender issues												
	Training of UNETE members and Agency essential staff to effectively perform CCC essential functions (Threat tracking, threat analysis, SitRep development, Development of CERF,FLASH appeals)												
	Procurement of equipment and materials to support UNETT's primary responsibilities in information management and coordination.												
	Source regional expertise to assist in the development of the resource mobilization strategy and the interagency contingency plan. OCHA's assistance in UN contingency planning												
	Host stakeholder awareness building forum introducing concept of IASC												
	Formation of national IASC with the assistance of the Regional Bureau and OCHA												
	Support quarterly discussion/ planning forums												

MSP Outcome Co-financing

OUTCOMES	ALLOCATIONS	
	GOV In- Kind and GOV Executed initiatives	OTHER
<i>Output 1/ Component 1: Increased capacity of state actors and communities to implement effective risk reduction and response measures.</i>	<ul style="list-style-type: none"> ▪ \$28,800 (NEMO Training Officer, facilitation of community training events) 	<ul style="list-style-type: none"> ▪ \$50,000 (UNDP/SGP: Contingency planning 4 communities) ▪ \$7,500 (UNDP SLM Project) ▪ \$10,000 (BECOL- Early Warning Systems) ▪ \$25,000 (JICA- Early Warning System)
Sub-total	\$28,800	\$92,500.00
<i>Output 2 / Component 2: National disaster management authority strengthened to fully integrate and implement hazard mitigation policies and strategies.</i>	<ul style="list-style-type: none"> ▪ \$28,000 (LIC Staff, Hazard mapping, DesInventar database management, Production of resource maps) 	<ul style="list-style-type: none"> ▪ \$25,000 (UNICEF- NEMO support/ DevInfo) ▪ \$15,000 (USAID- DANA training, shelter management training) ▪ \$150,000 (TA Caribbean Community Climate Change Center)
Sub Total	\$28,000	\$190,000
<i>Output 3 / Component 3: National and International partnerships in the area of risk and risk management are fully functional.</i>		<ul style="list-style-type: none"> ▪ \$24,000 UNETT Support
Sub Total	0	\$24,000
3.0 Adaptive Management	<ul style="list-style-type: none"> ▪ \$51,000 (GOB support of NEMO and PMU) 	
Sub-Total	\$51,000	
TOTALS	\$107,800	\$306,500

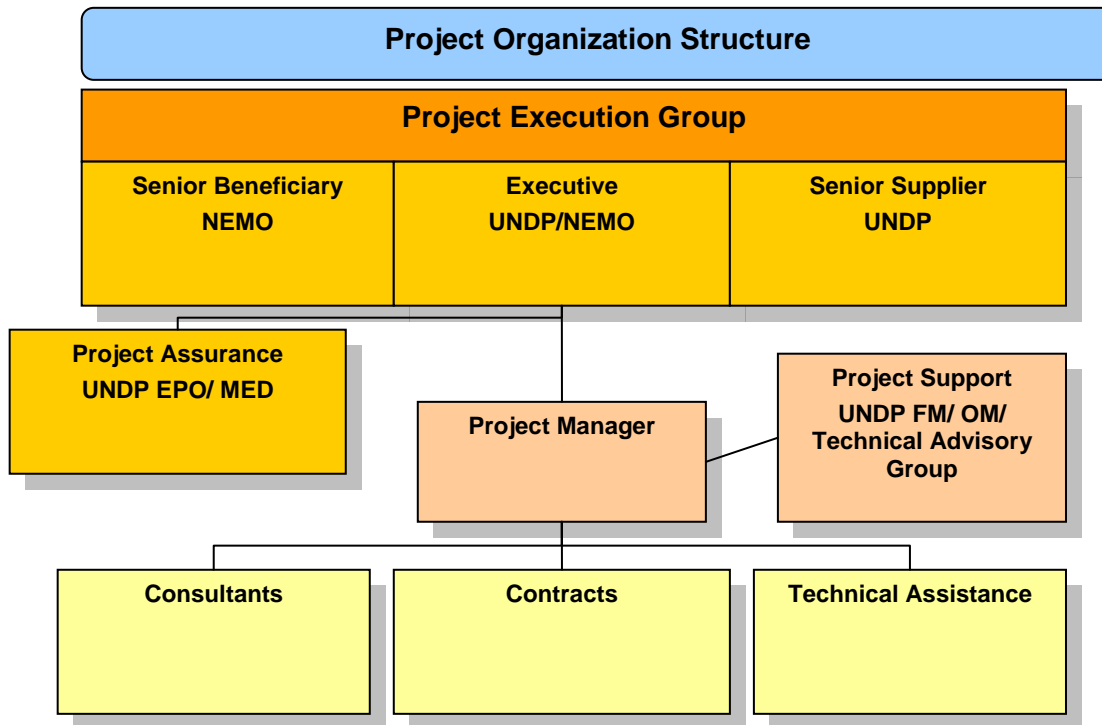


Project Risks

Identifier	Description	Category	Impact	Probability	Proximity	Counter-measures
Actions Associated with Production Systems (Growing):						
1	Community groups not receptive to proposed interventions	Social	high	low	Immediate to short term	The project suggests a truly participatory approach aimed at building capacities of communities allowing their full engagement in the project delivery. It is hoped that facilitating active participation will improve community “buy-in” to the suggested processes.
2	Insufficient support of reform activities by Government of Belize.	Political	high	medium	Short to medium term	Integral to the advance of this project is sufficient political buy-in and political will to incorporate desired changes within the national planning framework. The project will engage in an extensive awareness building exercise among decision/ policy makers ensuring their understanding of the process and to build acceptance to proposed changes. This process will be ongoing throughout the process.
3	Insufficient acknowledgement of gender roles in deliveries.	Institutional/ Social	high	medium	Medium to long term	The proposed approach on engendering deliverables is one not commonly considered within the national context. The project has built within its activities specialized interventions aimed at increasing stakeholders consideration of gender issues. TORs will be developed explicitly stating the need for consideration and delivery will be vetted to ensure inclusion of issues related to gender and vulnerable populations.
5	Inadequate supporting capacities	Institutional	high	high	Medium to long term	The Project allows for the development and strengthening of national support systems through the provision of a unique project management unit meant to complement existing capacities by filling capacity gaps existing in NEMO. The project also supports the fortification of NEMO structures through proposed intervention and builds the national partner support network.

6	Sustainability of proposed interventions	Economic	high	medium	Medium to long term	Project interventions have been developed closely with the principal beneficiary group and were ensured to complement ongoing efforts in the area of disaster risk management. It was ensured that interventions fit within a national agenda agreed to be forwarded by the Government of Belize.
7	Project disruption due to natural disasters	Environmental	medium	medium	Medium to long term	Unexpected disaster cannot be excluded as a potential risk to the timely delivery of project. These events however can be managed for by including in project's implementation plans, plans for early reinstatement of project after such events.
8	Staff turnover in project or within partner agency	Institutional	medium	medium	Immediate to short term	Disruptions within the PMU and within staff complements attached to the project can result in a lag in execution as new individuals are brought into the process. In the event of loss of PMU staff the UNDP CO will take on direct management of the project allowing continuity in project actions. Partner agencies will be asked to have alternates briefed in project allowing for smooth transition in the event of staff changes of key participating personnel.

ANNEX I: PROJECT ORGANIZATIONAL STRUCTURE



ANNEX 2: NEMO NATIONAL OPERATIONAL COMMITTEES TERMS OF REFERENCE (TOR)

1. EDUCATION, INFORMATION, COMMUNICATIONS AND WARNING COMMITTEE (EICWC)

Terms of Reference:

(1) Education:

To use all available media and teaching institutions to educate the Belizean public about potential disasters and contingency plans in order to lessen the impact of emergencies and disasters.

(2) Communication:

- (a) To disseminate accurate and updated information to the public in a timely and efficient manner.
- (b) To assist the members of the other National Operational Committees with their communication needs for the proper execution of their activities.
- (c) To establish internal and external Telecommunications Network within the Emergency Management Agencies.

(3) Warning:

- (a) To ensure that the national Emergency Warning System is operational and effective.
- (b) To obtain and collate information about all disasters, whether actual or imminent, and to ensure that such information is passed on to the Chairpersons of NEMO in all Districts.
- (c) To disseminate all NEMO decisions to the Public.

Members:

Secretary to the Cabinet-Chairperson
Press Officer, NEMO or Press Officer, GOB Press Office
Director of Telecommunications
Chief Meteorologist
Representative, Belize Red Cross
Representative, Belize City Council
National Security Coordinator
Communications Officer, Belize Defence Force
Communications Officer, Belize Police
Communications Officer, Belize Coast Guard
Director of Civil Aviation (Attendance only if requested)
Representative, Belize Ports Authority (Attendance only if requested)
CEO, Belize Airports Authority (Attendance only if requested)
CEO, Fisheries Department (Attendance only if requested)

2. RELIEF AND SUPPLIES MANAGEMENT COMMITTEE (RSMC)

Terms of Reference:

- (1) To devise an emergency plan for the efficient and timely distribution of food, water, medicine and materials to those areas that have been affected by the disaster.
- (2) Ensure that an adequate supply of food and water is stored or earmarked countrywide in safe places and is available for immediate use.
- (3) Prepare and maintain a standing needs list of basic food items including medicines, and materials for immediate order through the UN partners and from abroad if necessary.
- (4) Take responsibility for the receipt, storage and distribution of all relief supplies entering the country by land, air or sea.

Members:

CEO, Ministry of Human Development-Chairperson
Senior representative, Ministry of Agriculture and Fisheries
Senior Representative, Belize Red Cross Society
Senior representative, Belize Port Authority
Representative, Ministry of Education
Representative, Belize Defence Force
Representative, Belize City Council
Representative, Salvation Army
Director, Human Development
General Manager, Belize Marketing Board
Warehouse Managers, NEM Department

3. SEARCH, RESCUE AND EVACUATION COMMITTEE (SAREC)

Terms of Reference:

- (1) To devise a contingency plan for Search, Rescue and Evacuation including training for all search and rescue teams according to international standards
- (2) To identify priorities and allocate the resources necessary for Search, Rescue, Evacuation
- (3) To assist with Initial Clearance
- (4) To collect and collate all reports of missing persons

Members:

Chief Executive Officer, Ministry of National Security – Chairperson
Engineer, Ministry of Works
Representative, Belize National Fire Service
Senior Representative, Transport Department

Representative, Belize Police Department
Representative, Belize Defence Force
Representative, Belize National Coast Guard
Representative, BATSUB
Representative, Belize Airport Port Authority
Representative, Belize Port Authority
Representative, Environmental Health

4. TRANSPORT COMMITTEE

Terms of Reference:

- (1) To coordinate air land and sea transportation for the various committees of NEMO so as to assist them in the execution of their OFFICIAL activities utilizing the respective agency expertise
- (3) To provide transport for the distribution of relief supplies during ALL stages of the emergency.
- (4) To ensure roads and transportation routes are serviceable, liaise with the relevant committees
- (5) To ensure an adequate supply of fuel for emergency transportation and evacuation of people from the coastal communities, liaise with the SARE committee
- (6) To create and maintain a “Reserve Pool” of GOB vehicles for emergency use.
- (7) To ensure the revision and update of the Transport Committee Plan as is necessary.
- (8) To commandeer any serviceable vehicle during an emergency if cooperation attempts prior to the emergency were not fruitful

Members:

Commissioner of Transport - Chairperson
Inspector of Works, Mechanical Section, Ministry of Works
Mechanical Workshop Manager, Ministry of Works
Representative, Forestry Department
Representative, Belize Defence Force
Representative, Fisheries Department
Representative, Belize City Council
Representative, Police Department

5. ENVIRONMENT COMMITTEE (ENVIROC)

Terms of Reference:

- (1) To develop strategies that would tend to protect the environment during disasters.
- (2) To make recommendations for the recovery of the ecology and habitats to their natural state.
- (3) To assess and evaluate the impact of all disasters on the environment.

- (4) To review environmental impact studies report, mitigation strategies, and irreversible changes to development proposals.

Members:

Chief Environmental Officer-Chairperson
Representative, Oil Importer (ESSO)
Representative, Belize Audubon Society
Representative, Belize Association of Conservation NGO's
Representative, Belize Defence Force
Environmental Scientist
Representative, Meteorology Department
Representative, Geology Department
Representative, All Town Councils

6. HUMAN RESOURCES MANAGEMENT COMMITTEE (HRMC)

Terms of Reference:

- (1) To allocate sufficient personnel to serve as responders during an emergency
- (2) To maintain a database of trained prepared Public Servants who may fulfill specific duties during an emergency
- (3) Ensure all Public Servants are aware of their roles during an emergency

Members:

Chief Executive Officers, Ministry of the Public Service
Representative, Ministry of Human Development
Representative, Belize Defence Force
Representative, Belize Police Department
Representative, Ministry of Labour
Representative, Ministry of Health
Representative, Ministry of Education
Representative, National Fire Service
Representative, Belize National Teacher's Union

7. FOREIGN ASSISTANCE COMMITTEE (FAC)

Terms of Reference:

- (1) To update all Foreign Missions and Governments on any disaster that may require external assistance

- (2) To make short, medium and long term requests for assistance from foreign governments, agencies and organizations
- (3) To answer queries from abroad on the whereabouts of Belizean relatives and foreigners
- (4) To co-opt the relevant government agency that can support the execution of your responsibility at the district level

Members:

Chief Executive Officer, Ministry of Foreign Affairs-Chairperson
 National Emergency Coordinator
 Representative, Ministry of Economic Development
 Representative, Belize Tourist Board
 Representative UNDP
 Representative, Immigration Department
 Director General, Belize Red Cross Society
 Mayor, Belize City

8. DAMAGE ASSESSMENT AND NEEDS ANALYSIS COMMITTEE (DANAC)

Terms of Reference:

- (1) To attend and conduct DANA training at the national and district levels in order to develop DANA Teams capable of collecting and reporting DANA information;
- (2) To establish in partnership with NEMO, the relevant GOs and NGOs a Database of populace; cultivation; fishing; infrastructure; facilities; businesses etc., required for comparative analysis before and after a disaster;
- (3) To coordinate the human, material and financial resources needed to rapidly assess the damage caused by the disaster;
- (4) To establish the National Damage Assessment Collection and Collation Centre in the NEMO Headquarters to support the National Foreign Assistance and Relief Management Committees, regional and international coordination mechanisms;
- (5) To standardize, review and upgrade the DANA Collection and Collation Form;
- (6) To conduct Initial Situation Assessment (ISA), Initial Damage Assessment and Detail Sectoral Assessment (DSA) to meet the emergency needs and the international partners' relief requirements, and
- (7) To manage and disseminate damage assessment information for effective coordination of assistance from the National Operational Committees and international partners for the short and medium terms.

Members:

Chief Executive Officer, Ministry of Natural Resources-Chairperson
 CEO, Development Finance Corporation

Representative, Ministry of Economic Development
Deputy Financial Secretary
Senior Engineer, Ministry of Works
Representative, Central Bank of Belize
Representative, Belize City Council
Representative, Belize Defence Force
Representative, Belize Police Department
Representative, Ministry of Agriculture and Fisheries
Representative, Statistics Institute of Belize
Representative, Ministry of Tourism
Representative, Belize Posts Authority
Representative, Belize Airports Authority
Representative, Forestry Department
Representative, Belize Coast Guard
Senior Public Health Inspector

9. HOUSING AND SHELTER COMMITTEE (HASC)

Terms of Reference:

- (1) To devise a plan in identifying buildings for shelter in all types of disasters.
- (2) To identify and collate all sources of government and non-government resources available for shelter repair and to ensure that adequate building supplies are available.
- (3) To maintain an updated list of emergency shelters and shelter wardens.
- (4) To provide shelters, including medical supplies, food, etc. during an emergency and shelters for the homeless following a hurricane strike.
- (5) To liaise with school administrators before the occurrence of a hurricane to ensure cooperation.
- (6) To ensure that public buildings and facilities are properly secured during a hurricane
- (7) To liaise with the relevant committee(s) to ensure all buildings used as a shelter is adequate

Members:

CEO, Ministry of Housing - Chairperson
Senior representative, Ministry of Health
Senior representative, Ministry of the Public Service
Senior representative, Ministry of Human Development
Representative, Belize Defence Force
Representative, Belize Police Department
Representative, National Fire Service
Representative, Belize Salvation Army
Representative, Belize Red Cross Society
Representative, United Nations Children Fund
Representative, Ministry of Works
Representative, Town / City Councils

10. RESTORATION OF UTILITIES AND ACCESS COMMITTEE (RUAC)

Terms of Reference:

- (1) To design a plan of action, that will allow each utility company to respond to water, fuel, telecommunications and electrical power needs as indicated by emergency conditions.
- (2) To ensure that the aforementioned utilities and services are restored and maintained within the shortest possible time frame following the passing and or impact of a threat.
- (3) To ensure that utility companies identify critical equipment and machinery that will be required for the restoration of their operations and the fastest means to bring them into the country

Members:

Chief Executive Officer, Ministry of Home Affairs and Public Utilities-Chairperson
Director General, Public Utilities Commission
Representative, CEO-Belize Water Services
Representative, CEO-Belize Electricity Limited
Representative, Chief Operations Officer-Belize Telecommunications Ltd.
Representative, Ministry of Natural Resources and the Environment
Representative, ESSO

11. MEDICAL CARE AND PUBLIC HEALTH COMMITTEE (MCPHC)

Terms of Reference:

- (1) To ensure that an adequate supply of emergency medical supplies are available.
- (2) To have in place a plan for the effective distribution of medical supplies wherever they may become necessary.
- (3) To make provisions for the establishment of emergency hospital units at designated areas.
- (4) To ensure that adequate resources are available for the transportaion of those in need of immediate medical attention.
- (5) To identify an effective method for dispatching medical teams to accident or disaster sites.
- (6) To make adequate provisions for the disposal of the dead.
- (7) To develop a program that would prevent the outbreak of diseases that are related to disaster conditions.

Members:

Chief Executive Officer, Ministry of Health-Chairperson
Director of Health Services
Director of Environmental Health
Hospitals Administrator
Principal Nursing Officer

Supplies Officer
Representative, Belize Red Cross
PAHO/WHO Representative
Representative, Veterinary Officer
Representative, Belize Medical and Dental Association

12. MITIGATION AND INFRASTRUCTURE WORK

Terms of Reference:

- (1) To conduct Shelter Inspection of all public and private buildings that can be used as a Shelter in each District
- (2) To repair all Shelters as prioritized by the Cabinet of Belize and the Ministry of National Emergency Management
- (3) To guide the implementation of Land Use Management programmes as means of averting disasters.
- (4) To enforce development standards and regulation mechanisms.
- (5) To develop settlement policies and regulations through disaster reduction zoning
- (6) To develop structural mitigation methods
- (7) To facilitate mandatory hazard disclosure/notification and community awareness/extension programs
- (8) To sort priorities for reconstruction in times following a disaster.
- (9) To conduct route clearance ensuring the lines of communication i.e. roads and transportation routes are usable as required

Members:

Chief Executive Officer, Ministry of Works-Chairperson
Commissioner of Transport
Representative, Department of Forestry
Representative, Belize Defence Force
Representative, Belize City Council
Representative, Ministry of Public Utilities
Representative, Belize Water Services
Representative, Belize Electricity Limited
Representative, Chief Operations Officer-Belize Telecommunications Ltd.
Representative, Ministry of Natural Resources and the Environment
Representative, ESSO
Representative, Association of Engineers

13. **RECOVERY COMMITTEE (REC)**

Terms of Reference:

- (1) To identify the priorities and allocate resources necessary for recovery following an emergency.
- (2) Develop work programs for reconstitution and reconstruction of affected communities.
- (3) To liaise closely with the Mitigation and Infrastructure Works Committee

Members:

Financial Secretary-Chairperson
CEO, Ministry of Economic Development
Representative, Ministry of Works
Representative, Ministry of Home Affairs
Representative, Ministry of Health
Representative, Ministry of National Security
Representative, Ministry of Housing
Representative, Belize City Council
Representative, Ministry of Natural Resources

ANNEX 3: LIDAR SYSTEM

The Design and Fabrication of a LIDAR Bathymetric System for Topographic Mapping of Coastal Waters in the Caribbean

Background

One of the greatest threats facing coastal development in the Caribbean is that of storm surge accentuated in recent times by more intense hurricanes and sea level rise. It is incumbent on countries therefore to develop suitable inundation maps for their coastline through a comprehensive study utilizing available storm surge models. This information can then be used in planning future development along the coast and also in planning disaster mitigation measures. However the application of these models is severely limited by the unavailability of the appropriate data. The data requirements necessary for the study of storm surge hazards include the knowledge of the hurricane history of the study area, as well as reliable bathymetric and topographic data. Bathymetry from the shoreline to the 100m contour and topography from the MSL landward to the +5m land contour are required as necessary inputs into the storm surge models. Presently bathymetry is available in most Caribbean countries in map or electronic formats. In most cases these charts are based on old mapping carried out by the British Admiralty and/or US navy charters. Very often also there is little or no bathymetric detail in the zone from 3m water depth up to the shore line, a detail that is essential for accurate storm surge modeling.

For topography the contour interval usually found is of the order of 10m rather than the required 0.5 m or 1m interval for proper mapping of storm surge on the coast. The proposed use of LIDAR technology will allow the region to address this data problem.

Today it is possible to use airborne laser scanning technology to survey both land and coastal waters in a single approach, employing a technique known as Airborne LIDAR Bathymetry (ALB) or Airborne LIDAR Hydrography (ALH) which uses state-of-the-art LIDAR technology to measure seabed depths and topographic features rapidly and accurately. The Centre has the in-house capacity to specify and design the LIDAR system and therefore would require only the fabrication and testing by an outside organization.

Brief overview of the LIDAR System

The system is comprised of four components – a) a frequency doubled YAG laser Unit, b) an Optical Delivery/Receiver Unit, c) A Control Unit and d) a Processing Unit. Figure 1 is a schematic block diagram showing the links between the various units

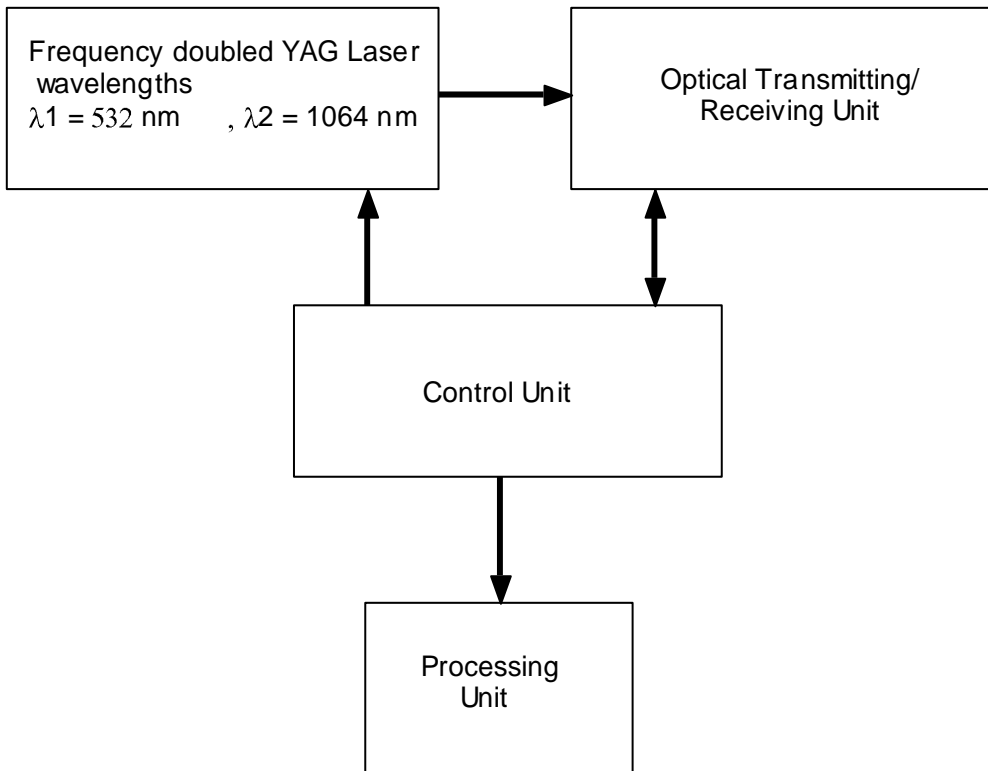


Figure 1 Schematic block diagram of the LIDAR system

Basic operation principle of the LIDAR system

Shown in figure 2 is a schematic of the monitoring platform. The LIDAR is mounted on a light aircraft. The green laser pulses (532 nm) are reflected from bottom whilst the Near-IR (1064 nm) laser pulses reflected from water surface. The bottom topographic profile is determined from the difference in time between the signals received from the IR and green laser pulses. Using this technique the airborne laser bathymeter system can survey over large areas, far exceeding the capabilities and efficiency of traditional survey methods at IHO Order 1 accuracy or better. The system can be designed to have the unique capability to map shallow waters, shoreline and topography simultaneously, integrating land and water measurements in the same data set. The technology allows for speedy survey missions and project turn around time, and also allow surveys over sensitive environmental coastal zones or inland water ways.

AIRBORNE LIDAR HYDROGRAPHY (BATHYMETRY)

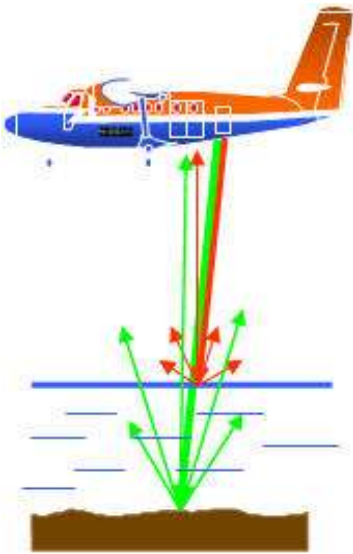


Figure 2 Schematic of aircraft mounted LIDAR system

ANNEX 3: DESINVENTAR METHODOLOGY

DesInventar: a methodology to build Disaster Inventories as part of the Risk Mitigation Process

ABSTRACT

This document describes the “DesInventar” methodology and software tools as well as some of the results of applying it in Latin America and other countries. The DesInventar methodology proposes the use of historical data about the impact of disasters, collected in a systematic and homogeneous manner in the process of identifying hazards and vulnerabilities and thus risks on specific regions. Data is collected following a set of standards and is time-stamped and geo-referenced to a minimal geographic area unit of resolution.

A special emphasis is made in the accounting of small and medium disasters, which uncover in many cases hazards and vulnerabilities that could be hidden otherwise. Small and medium disasters data analysis is key for risk analysis at the community level.

The software can be used along with other tools to perform different types of temporal and geographical analysis of this data producing both quantitative and qualitative results. These results are presented in form of tabular data, charts and maps. There is also an Internet-based version of the tool, which allows multiple users to update and query the databases remotely and simultaneously.

Both the methodology and software have been extensively tested and used in Latin America and the Caribbean to build their disaster inventories. Many national emergency agencies in this region of the world have used and are using DesInventar as an input to their Risk Analysis, Risk mitigation, the formulation of Early Warning systems, as well as a day by day tool to follow up the success or evolution of their preparedness and mitigation plans along time, and even in many disaster situations as in the cases of El Niño disaster in Perú, hurricane Mitch in Honduras, and Armenia (Colombia) and El Salvador earthquakes.

Objectives

The DesInventar Project objective is to create disaster inventories in regions and countries of Latin America and the Caribbean, and if possible in Asia and Africa and then have the capacity to analyze and represent hazards, vulnerabilities, and risks in terms of space and time, both retrospectively and prospectively.

The final purpose of this capacity is its application in risk management, whose activities go from mitigation to post-disaster attention and recovery.

Qualitative and quantitative evaluation of vulnerability and risk growth requires a sound base of documents and records including past and present disasters. Even in developed countries it’s now being recognized the importance and need of collecting systematic and homogeneous data about Disasters. Recently, the Natural Hazards Caucus delivered a report to the United States Congress called *A National Priority: Building Resilience*³. The report focuses on how Congress can help reduce the country’s vulnerability to hazardous events, and outlines specific areas that need the attention of legislators. These include:

- Developing a continually updated database of losses from natural disasters;
- Obtaining data on the cost-effectiveness of mitigation;
- Improving early warning and emergency response;
- Fostering long-term recovery by improving coordination across government and other agencies;
- Focusing on disaster prevention as well as response; and

- Increasing the reliability of critical infrastructure.

It is really surprising that the first two items on this list address the problem of gathering information about disasters and its effects, in all phases of the risk mitigation activities, even on top of activities that have been traditionally given highest priority, like early warning systems, or increasing infrastructure reliability.

LA RED researchers and member institutions have been working on these hypothesis for a long period of time, not only to provide tools and information for researchers all over the globe, but also as an empirical base of information useful for internal projects and research, and in particular to prove several working hypothesis, such the now widely recognized as a fact that the aggregated impact of medium and small disasters equals or exceeds by far the impact of so-called large disasters.

As a contribution to this common objective, LA RED began its project DesInventar whose products are represented in a methodology, a set of software tools and national databases for (initially) eight countries.

The DesInventar methodology proposes the use of historical data about the impact of disasters, collected in a systematic and homogeneous manner in the process of identifying hazards and vulnerabilities and thus risks on specific regions.

The basic criteria guiding DesInventar are:

- All inventories must use the same variables to measure the effects and the same homogeneous and basic classification of events;
- The information compiled and processed must be entered in a scale of time and at a geo-referenced spatial level;
- The inventories should be analyzed with system tools, which is a basic requirement in comparative research and to support decision-making processes related to mitigation actions and risk management as a whole.

Data is collected following a set of standards and is time-stamped and geo-referenced to a minimal resolution geographic unit.

As part of the project deliveries there is also an instrument that allows visualizing, in space and time, the phenomena that have been registered using charts and maps.

DESINVENTAR METHODOLOGY

A brief summary of DesInventar Methodology ⁴ is presented here. The methodology is strongly based on a set of definitions and classifications, and the concept of a space subdivided in multiple levels of zonings, but above all it proposes:

- Disaggregating and geo-referencing of data that will later permit the analysis of the data at the minimum level of geographic resolution.
- The collection and use of data about small and medium disasters.

The methodology also discusses a series of suitable sources of information that can be used to gather the inventory information.

Basic Definitions

The core of the Methodology is contained in the definitions of “Event” and “Disaster”. These are not established to contradict or redefine much widespread definitions but to serve as the basis for the systematic work of collecting and storing the information about disasters in an orderly fashion.

“Event” is defined as any social-natural phenomena that can be considered as a threat to life, properties and infrastructure.

“Disaster” is defined as the set of adverse effects caused by social-natural and natural phenomena on human life, properties and infrastructure (an “Event”) within a specific geographic unit during a given period of time.

As important as the definition itself of “Event” and “Disaster” are formal classifications of them. In particular there is a great deal of confusion when dealing with events as the boundaries that separate one class of events from other sometimes very similar ones are very nebulous lines. A good example is the set of atmospheric (or meteorological) events: a formal classification with very clear parameters must be put in place to differentiate “Storm” from “Gale” or “Strong Winds”. In many cases the same atmospheric phenomena must be classified differently depending on the place and time (i.e. Hurricanes that turn into tropical storms).

The aim in classifying events (and effects and is stated below) is again making data about disasters the homogeneous and comparable.

DesInventar documentation clearly gives criteria and encourages (but doesn’t limit) the use of a classification that proposes the following set of events:

ACCIDENT	HAILSTORM
ALLUVION	HEAT WAVE
AVALANCHE	LANDSLIDE
BIOLOGICAL DISASTER	LEAK
COASTLINE EROSION	LIQUEFACTION
DROUGHT	PANIC
EARTHQUAKE	PLAGUE
ELECTRIC STORM	POLLUTION
EPIDEMIC	RAINS
VOLCANIC ERUPTION	SEDIMENTATION
EXPLOSION	SNOWSTORM
FAILURE	SPATE
FIRE	STORM
FLOOD	WIND storm
FOREST FIRE	STRUCTURE
FROST	SURGE
	TSUNAMI

A good deal of effort is made during the training phases to make trainees familiar with this classification.

The team of researchers that formulated and refined the Methodology did also invest a significant amount of time discussing the effects of disasters. The goal of these discussions was to reach an agreement on which effects should be tracked by the system, its definition, measuring units and other problems associated with quantitative and qualitative measures and representation of these effects.

The effects section of the “Datacard”, the record that is taken of each disaster, reflects the result of the discussion:

The effects collected are categorized as “**robust**” and “**fuzzy**” variables. Robust variables, such as number of deaths, missing, injured and houses destroyed or affected are collected when possible -which is not always the case-. In order to keep track of disasters which effects are not accurately measured or not measured at all, a set of parallel fuzzy variables is collected. These variables indicate that the disaster had a specific effect without attempting to quantify it. The goal with these variables is to prevent total loss of information when data is missing or known to be unreliable.

Is important to note that several decisions were made by the research team when limiting the number of effect variables to be gathered. The reader should keep in mind that one of the goals of the inventories is to get information about disasters that happened in the past, and in such cases the availability of detailed effects information is in doubt. Based on this assumption, the team opted to keep the number of variables low so that, in one hand, success could be predicted in the actual historical research and in the other hand the results could provide enough information to work with when determining vulnerabilities, discovering patterns or validating risk models obtained by other means.

The set of chosen effects address the definition of Disaster in the core of the methodology: effects of human life (dead, missing, injured, evacuated, relocated and directly or indirectly affected persons), properties (destroyed and affected houses as well as effects on crops and domestic animals) and on the infrastructure (transportation, communications, utilities, etc.).

However, this last set of effects on infrastructure is extremely difficult to model and in consequence measure in a generic and homogeneous way, and a decision was made to keep these effects only as ‘fuzzy’ variables. It can be added that accurate figures and representation of the damages in infrastructure will be exceedingly difficult to get and possibly very unreliable in an historical research.

The concept of minimal resolution geographic unit

One of the cornerstones of the methodology is the concept of geo-referencing the information in the inventory. When a project is started in a given region of study one of the first steps is to select a division (zoning) that will allow researches to perform analysis and reach to the desired conclusions at a convenient level of detail.

It is a well known fact that relief organizations, emergency management agencies and media tend to aggregate the information of disaster losses with several different purposes that go from allocating budget and resources to support the relief operation to just obtain sensational data for news headlines.

However, the analytical objectives of the information gathered for disaster inventories require fully disaggregated data for each of the geographical units in the selected zoning system. Unfortunately large and medium disaster information is very often not available in its disaggregated form. Small disasters, due to its nature are easily geo-referenced, as they normally do not transcend the borders of the geographical units where they occur in.

Disaggregating data is a difficult task, which has tremendous implications on the work and the later usability of the information. On one hand, utilizing data about disasters gathered at highest geographic resolution (that is, with the smallest possible sizes of geographic units) will lead to a finer detail in analysis and results, but in the other hand it will raise dramatically the level of effort and difficulty when disaggregating data.

One of major lessons learned from the work done so far in the project is that *the challenge of disaggregating the data is definitely the major difficulty that an inventory research faces.*

To ease some of the burden of disaggregating data, and to allow the users to get results at different levels of detail, DesInventar considers the space as hierarchically divided into several levels of divisions. At each level of the hierarchy each geographic unit is conformed by several units at the next level of detail.

For national level databases the project normally considers a first level of geography to be equivalent to province, and a second level typically assimilated to municipalities. Adherence to the political-administrative division is recommended, as other statistical data needed in the risk analysis process is likely to be produced for that specific division. Disaster management agencies also are organized in most cases around the standard administrative division.

Researchers face the problem of disaggregating data very frequently and there are many instances where the problem *has simply no solution*, especially when going back in time many years and in cases where the original files are not available anymore. The methodology suggests several workarounds, some of them controversial or with severe implications in the usability of the data during the analysis phase.

The alternatives for the researchers are:

- **Assigning all of the damages to one geographic unit.** This will naturally alter the results of the analysis at the minimal geographic unit level because the target geographic unit will show damages (and thus vulnerabilities and risk) higher than the real and the rest of affected units will show less. However, results obtained for less detailed levels of geographic resolution may still be accurate, on one hand, and the integrity of the data stored in the database as a mirror image of the original source data files will be preserved. Normally, the datacard is loaded with comments that allow analysts to quickly discover the issue, and the researcher is encouraged to judge which is the most suitable geographic unit to receive the damages (which should be the one that received major losses) and to fill in any case one datacard per geographic unit, with comments and links to the datacard with all the effects and if possible with fuzzy variables set for all cases where the information is reliable and disaggregated.
- **Assigning the damages to a less detailed geographic resolution unit.** Losses are assigned to the parent geographical unit if it covers all the affected minimal units. In this case instead of a distortion introduced at the minimum level for high losses for one unit and a lower losses distortion for the rest of the units, a distortion of less losses is introduced for *all* minimal units. However, analysis at higher level is not altered. Again, the researcher is encouraged to create one datacard per unit with comments and links to the “master” datacard and if possible with fuzzy variables set for all cases where the information is reliable and disaggregated. Note that there will be one extra datacard in the system, the one created for the parent unit, but apart from this, original information integrity is preserved.
- **Provide estimates of damages on each unit:** a very controversial alternative that can be applied in some situations under the careful judgment of the researcher. Extreme caution should be exercised

when estimating as it may introduce noise in the analysis process. Comments are to be included in all of the datacard warning the analysts of this situation and the fact that the original information obtained from the source is not “mirrored” in the database.

In any case, the final decision is the researcher’s call. There is no generic solution to this problem and solutions have to be sought on a case-by-case base.

The problem of information sources (and its relation to small/medium disasters)

Disaggregating data is not the only challenge to be faced by data collectors. Another major challenge arises when trying to conciliate multiple data sources report dissimilar figures when describing the effects of the same event.

Common sources of information for disaster data can be classified in three main groups:

- ***Information files created and maintained by emergency management agencies and relief or aid organizations.*** These sources of information often contain only information about events that required intervention from part of the organization, which usually are medium to large size disasters. Those agencies tend not to record disasters that the communities can cope with, and leave unregistered many small and medium disasters. However, information coming from these sources is normally reliable when available.
- ***Academic and Scientific files, maintained by research institutions*** that are frequently interested in a specific kind of event, and more focused in the event itself than in the impact of events on communities. Examples of these are databases maintained by seismological and meteorological research centers.
- ***Media releases, specifically written media (newspapers).*** *Despite the resistance that this source awakes in many ‘scientific’ researchers, LA RED’s experience building disaster databases in over 16 countries and many regional instances over almost a decade of work has shown the usefulness and this information source.*

There are several facts that cannot be ignored and turn the media information an inevitably requirement for DesInventar methodology inventories:

- a) *Especially small disasters are NOT registered by any other source of information. The use of media releases becomes mandatory if a comprehensive database is to be built covering disasters at all scales.*
- b) *Media is self-controlling in nature: whereas there may be under or overestimation in damages in press releases, the abundance of this type of sources permit the researcher to compare between multiple visions coming from different newspapers and even between editions or articles within the same source.*
- c) *Media is in many cases the source of information that feed the first two groups, or at least is one of the inputs used to create their files.*
- d) *Most newspapers keep very organized and publicly accessible archives as opposed to other sources whose information may be restricted, difficult to access or disorganized and mixed with an overwhelming amount of operative data.*
- e) *Information on newspapers can be obtained for many years backwards, even for periods in regions and countries where no other formal sources of information on disaster effects or even agencies in charge of emergencies were put in place.*
- f) *Natives can easily qualify newspapers reliability. Reputation of a newspaper is a measure that enormously helps when making decisions about the information to be integrated in the inventory.*
- g) *There is some continuity in the quality and comprehensiveness of each media source, especially in this considered as ‘serious’.*

LA RED has conducted formal research of the above subject, with very interesting results showing that inventories made entirely based on media sources can be extremely comprehensive, and at least equally reliable than inventories made from more 'conservative' sources.

However, it's important to concede that information in the databases is only as reliable as its source. The International Federation of Red Cross and Red Crescent Societies acknowledges that "...most reporting sources have vested interests, and figures may be affected by socio-political considerations." Petak and Atkisson state that "...media exaggerations of disaster impacts on a community apparently increase as a function of distance from the disaster site.". Our own experience in Latin America suggests that coverage of the media decrease as a function of the distance from the disaster site (9).

To be solved: The multiple event paradigm.

One of the subjects that have been topic of many discussions within LA RED is the issue of the multiplicity of events (also known as chained events) that can be involved in one disaster.

Consider the following scenario: during an El Niño episode, heavy rains erode and wet a hill terrain in which a landslide occur triggered by an earthquake, with effects over a community.

What should be the event associated with the disaster, the landslide or the earthquake, the heavy rains, or El Niño?. The current state of the methodology suggest the last event in the chain, in this case landslide, to be registered as the event causing the disaster and encourages the researcher to use his/her judgment choosing a second event as the primary 'Cause' (this is the name used in the data card for that second associated event).

The fact that not all chained events are being currently recorded, with the corresponding loss of analytical power, is seen by some members of the team as a problem to be solved. See below the list of issues to be considered in the near future in the project.

A methodological hole: long duration disasters

An especial note on long durations disasters, such as droughts and floods: while the current methodology proposes clear guidelines on how to report and include data regarding long-duration events, and the data model contains probably enough variables to store the data relevant for this types of events, there is a sense of lack of formal approach to the problem of representation of these typologies in the current model and analytical toolset of the system.

One example is the set of temporal analysis nowadays carried by the system. A long duration event is shown as occurring only once in the continuum of time, normally at the median date of the event, with all effects concentrated in that median date. Some has suggested that the methodology and data model should consider the time aggregation along time problem with the same type of approach than the aggregation (and disaggregation) in space.

What should be done when a geographical unit is subdivided?

For political, economic, cultural, etc. reasons, the tendency of countries is to create new political-administrative units, segregated from one or more preexisting ones. It is recommended that if the exact localization of the effects of a disaster is not known, to assign them to the preexisting unit. This is valid for the registration of historical events. In the case of current or recent subdivisions (i. e., of the last 10 years), it is recommended upgrading the geographical base of DesInventar with new names and codes. In the ideal case of having data and detailed cartography of periods in which there have been sensitive or important changes in the political-administrative division, treating them separately would be ideal. For this purpose two databases can be created ("two countries"), one for each period. Anyway, we recommend the users to be very attentive when carrying out the database analyses for the different periods of each country.

The toolbox

The software components that today comprise the system respond to the historical development of the project, which in turn reflect the progressive understanding of the problem and the continuously increasing needs created by the use and analysis of the data.

DesInventar Module

The first module developed for the project is the portion of the software in charge of the database management, allowing users to add, edit and delete disaster datacards from the database. Although this development goes back to as early as 1994, newer and improved functions were added during several years after.

Being the first module, it inherited the name of the project and is in itself a complete system with the basic tools to create and maintain an inventory, as well as very basic tools for analysis.

It contains all the necessary options to setup an environment complying with the methodology requirements: definition of the geography, maintenance of the events and causes catalogues and creation of the extended datacard.

In order to leverage existing information in electronic format that is valuable for the inventories, DesInventar allows its user to import data from other sources, including DBase, Excel, Text and MS Access formats. It also includes the basic intelligent tools for querying and printing the database.

Whilst LA RED wants to keep this software free for most users it still exercises some control of who gets it. Although it has never been sold there is a consensus among the members of LA RED that a few commercial users of the software (insurance companies, for examples) should “make a contribution” to the project. However, any academic, research, governmental or NGO institution can get a license to use DesInventar with no cost. This differs with the policy with the Query tool and databases, which are plainly and simply in the public domain.

DesConsultar, the Query and Analysis Tool

DesConsultar is a DesInventar complementary product. It’s development was (and still is...) driven by the increasing needs of the groups of researchers using the data in Latin America.

It doesn't have database handling capabilities (for adding and editing data), but implements a set of advanced tools for querying, displaying, and analyzing the data base, including capabilities of graphic and cartographic presentation of results that answer to the need of spatial and temporal analysis of disaster data.

DesConsultar and the databases are at the under the public domain under a GPL type license and available at www.desinventar.org.

DesImportar

DesImportar is a small tool for importing and editing maps into DesConsultar, which uses it’s own digital format to store maps.

It imports maps from the most popular formats: GIS formats like Arc/Info shapefiles, MapInfo, Idrisi and the Latin American Promap GIS formats. Other formats, like DXF (from AutoCad/AutoDesk), and Ascii formats are very popular, but not supported as they would require editing capabilities in order to

incorporate codes and topological information, which are not developed or even planned for.

Applications to Risk Mitigation processes.

LA RED has developed this instrument to provide the different actors involved in disaster mitigation and prevention (researchers, research institutions, governments and national emergency and disaster planning and attention systems, regional and local prevention entities, search and rescue agencies, international and bilateral agencies, organized communities and mass media) with a product suitable to compile, process, analyze and represent disasters in a homogeneous manner.

The design and structure of DesInventar, conceived in a flexible and adaptable manner, makes it applicable to institutional political-administrative, planning, management or operation units, from national, down to local solution levels. By local level we mean, for instance, a city represented in neighborhoods or blocks.

We are also sure that DesInventar can be used on other contexts, not only to track down the behavior of Natural/Social disasters but for any kind of disaster, including the so called Society-Society conflicts, endemics and epidemics, etc.

Members of LA RED had also used DesInventar to visualize damages to vital networks (case of the water system of Cali) and we know of commercial users that are starting to look at our data, especially from the insurance sector.

The inventory itself can be applied in many ways as part of a Risk Mitigation process. A few of the possible applications of the inventory (and tools) are enumerated below. However there is little theoretical and practical research made these fields, or at least is not easy to find in today's literature likely because the concept of disaster inventories containing small and medium disasters is relatively new, and probably the only ones available are the ones generated within the DesInventar project.

The application of DesInventar type of datasets is still limited to a relatively small group of researchers and institutions, and one of the goals of LA RED is to encourage research and practical applications of both the software and the data outside of LA RED.

- **A tool to determine vulnerabilities.**

A systematic inventory of disasters can provide valuable information regarding vulnerabilities of a given population: the occurrence of exaggerated or over-the-average impact on communities caused by events of relatively low magnitude clearly indicates high vulnerability to such types of events.

Disaster inventories can, using a deductive approach, throw light over this issue in a much shorter time and with much less effort and technology.

- **As essential raw material needed to validate (and possibly generate) Risks Maps.**

There is an enormous volume of theoretical and practical knowledge regarding the nature and behavior of hazards, as well as methodologies and instruments to generate Risk Maps, including artifacts coming from multitude of disciplines like geology, meteorology, biology, sociology, etc.

As commonly stated in literature, disaster risk is a product of hazard, vulnerability and exposure. Particularly in the developed world, **inductive approaches** have been used to determine disaster risk using an overlay of detailed multi-hazard maps, and the level of exposure (population density, infrastructure etc.) to vulnerable elements. These approaches are very useful and rigorous. However, in most situations, this can be very expensive and time consuming ⁷.

Those approaches also require higher levels of technology, financial resources and highly trained personnel that is difficult to get in the so called third world.⁸

Despite the fact that all these methodologies work based on models of reality, and the strong knowledge that models are that, just models and can not comprehend the full extend of reality, it can be seen that disaster inventories, which reflect the true reality of the impact of disasters in regions, have been recurrently ignored by the developers and users of those tools and methodologies. Examples of this fact are countless.

We at LA RED can't conceive nowadays that a Risk Map can be generated without an underlying disaster inventory to support and validate its conclusions. We also believe that communities can't afford to have no memory, above all when dealing with disasters, where human life, vital infrastructure, the economy and other aspects are jeopardized.

Comparing a Risk Map with a Disaster Inventory Map is a straightforward method of validation. Recurrent occurrence of disasters in areas categorized as low risk is at least a warning on the validity of such Risk Map.

- **Disaster Inventories as tools to follow-up Risk Mitigation Plans.**

Systematic data capture about disasters, before and after the application of mitigation measures may result in valuable information of the effectiveness of the implemented plans, in both qualitative and quantitative forms.

Even if there is no real way or units to measure this effectiveness, the inventory can serve as thermometer of the change, giving at least approximations to several measures that could be assimilated as effectiveness:

- Reduced incidence of disasters. While large disasters occurrence vary dramatically, small and medium disasters are proved to occur following more regular space-time distributions. The effectiveness of a mitigation plan could be confirmed if this distribution of occurrence of small and medium disaster is consistently lower after the implementation of the plan.
- Reduced Impact: Mitigation plans could be seen as effective even in the case of a sustained level of occurrence of disasters, if the average damage induced by small and medium disasters is consistently lower.

- **Recognition of Trends and Patterns**

The study of the historical and spatial behavior of disasters can help understand their nature, causes and thus be a great aid in the process of preventing disasters and mitigating risks.

DesInventar tools help discovering several classes of trends and patterns:

- Spatial patterns by means of thematic maps showing the occurrence and/or effects over a region, and charts comparing the impact in different regions along time.
- Temporal patterns and trends with the aid of various types of time-oriented charts, including seasonal and multi-period occasional charts.
- Statistics generated by aggregations of effects by different fields of information

- **Inventories are strategic tools to negotiate policies, norms and funding of initiatives.**

A disaster inventory can be a formidable tool in hands of local authorities, which can present unquestionable proof of the magnitude of disasters in its communities, proofs that can be used to force the adoption of policies, and legislations oriented to implement risk mitigation and disaster prevention initiatives.

It can also provide the figures of losses and damages that are needed to prove that investing in mitigation and prevention is profitable, in both direct and indirect costs.

From this practical point of view, the existence of the inventory can be seen as a reduction in the institutional vulnerability of a community, not only giving local authorities a tool to use in the risk mitigation process but a strategic instrument to deal with central governments and funding institutions.

These organizations, both at the national and international levels, are demanding more and more exigent requirements to justify investments, and the data itself along with the results of the analyses performed with an inventory can provide the capability to support proposals and/or funding decisions.

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