

**Commonwealth of the Bahamas
“The Bahamas”
NATIONAL HURRICANE RESPONSE 2004
REPORT ON FINDINGS**

Prepared for:



United Nations Development Program

Prepared by:

**Eleanor B. Jones
Disaster Management Consultant
c/o Environmental Solutions Ltd.
20 West Kings House Road
Kingston 10, Jamaica W.I.**

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1.0 The Report

This report presents a summary of lessons learnt regarding the national hurricane response capacity within the Bahamas during the 2004 Hurricane season. The events are described and a matrix presents the findings by category of disaster management requirements. Strengths and weaknesses are suggested.

2.0 The Hurricane Events

The Bahamas were directly hit by two hurricanes in 2004. Hurricane Frances sat over the island chain from Sept 2-5, 2004, and became the only hurricane to affect the entire chain since 1866. For 109 hours the islands were affected by a Category 4 hurricane, with maximum sustained winds of about 145 mph, and which fluctuated in strength and speed during the period. Slow forward movement on the final days caused the most significant damage.

The islands of Inagua, Ragged Cay and Long Cay in the south were not affected, and the most serious impact was felt on Abaco, Eleuthera, Grand Bahama, San Salvador, and Cat Island. Grand Bahama had catastrophic impact. Storm surge 12-15 feet was experienced on Abaco and Grand Bahama, and flooding from seawater caused damage to personal property, water supply, housing and infrastructure. East End, West End, and Grand Cay were devastated.

For the Bahamas a whole 83,000 persons (27.4% of the population) were directly affected and were at risk of health impairments. There were 2 deaths,

several injuries, 2000 homeless, as well as direct damage to housing and properties.

Three weeks later Hurricane Jeanne approached the Southern Bahamas as a tropical depression, moved easterly into the Atlantic and then looped back as a Category 3 hurricane to hammer the northern Bahamas particularly Abaco and Grand Bahama from September 25-26, 2004. Abaco, Andros, Berry, Bimini, Eleuthera, Exuma, Grand Bahama and New Providence were all affected, but Abaco and Grand Bahama were the most serious.

3.0 Terms of Reference for the Assessment

Objective

To produce a document outlining the response of the Government of the Bahamas, national agencies, the donor community including international NGOs and the relevant UNCT to natural hazards during 2004 with recommendations to build national capacity and develop a regional strategy to reduce future vulnerability.

Scope of Work

Under the guidance of the UNDP Resident Representative in Jamaica the consultant will carry out the following activities:

Assess the response by the Bahamas to the natural disasters of 2004. The analysis should examine national responses of the government agencies and regional bodies and national and international NGOs, as well as the coordination of their responses. Communication and linkages among all/ out islands, pre and post the event are important. Additionally, the role and response of foreign donors and the UN agencies as well as UNDAC should be characterized. The

ability to carry out rapid assessments of damage is also important. The document should focus on national response and capacity, including existing disaster policies, plans, procedures, legislative framework for administering the disaster management programme and institutional and organizational arrangements, liaison with external donors and role played by UNDAC teams, UNDP and the UNCT. The document should include a section on lessons learned.

- Develop recommendations for future responses by the UN, governments and NGOs.
- Describe possible regional opportunities for joint approaches to follow-up on the recommendations.
- Identify training needs to implement recommendations at the regional, and national government, private sector and NGO levels.
- Identify best practices and lessons learned.

Output

Document outlining the national response to the disasters experienced in 2004 with recommendations, lessons learned, indications of opportunity for regional approaches to follow-up and capacity building.

4.0 General Comments

4.1 Geographical Context of the Disaster

The Commonwealth of the Bahamas is a multi-island, archipelagic state with varying population concentrations and economic activity among the islands. The term “family islands” is applied to the islands outside of New Providence/Paradise islands and Grand Bahama on which Freeport is located.

Inter-island communication is by sea for most inhabitants and this poses a challenge for border security and for communication during periods of high seas.

Issues of geography relate to timely and efficient inter-island communication for preparedness and response, and the need to duplicate administrative structures for disaster management, which in turn place financial and human resource pressures on the government. Three international airports, for example, require safety and security standards as well as disaster management for each facility. Increasing illegal immigration poses considerable strain on infrastructure, and poor quality housing increases the vulnerability of several settlements on all islands within the archipelago.

Understatement of population numbers in several settlements poses a difficulty for shelter, evacuation and relief planning. In addition, undocumented and uncontrolled growth leads to substandard dwellings and lack of appropriate infrastructure, further exacerbating vulnerability and risk.

4.2 Economy

Tourism is the mainstay of the Bahamas with significant investments in villa/condominium, boating, hotels, tourism attractions and support services. Contingency planning is needed to handle the host as well as visitor population on several islands. New Providence Island on which Nassau is located and the adjacent Paradise Island accommodates significant tourism investment in hotels, condominiums, and the grand Atlantis conglomerate of accommodation, attractions and support facilities. Private investments abound on the smaller islands. Shelter, evacuation, mutual aid agreements, boat shelter, and early warning systems are some of the salient disaster management imperatives required in this tourism-based economy.

The emphasis on real estate development has also led to inadequate attention to planning requirements particularly as related to coastal areas and floodways. Damage from storm surge and rainfall events are therefore inevitable in some of these areas.

The financial sector with off-shore banking is also significant and has implications for business continuity planning in a global context.

4.3 Institutional capacity

The Disaster Management Unit is situated in the Office of the Prime Minister, and there are no trained persons in the several aspects of Comprehensive Disaster Management. A fully staffed disaster office with a full-time disaster coordinator and trained personnel is needed. Training of persons in key agencies on all islands is also essential. The Government's disaster management programme has been linked to the urban renewal initiative in Nassau. While this is a useful approach, it is limited in that a system with particular attention to a fully developed preparedness and response programme as well as prevention and mitigation is urgently needed for the country as a whole, and for the larger, more populous islands in particular.

Replication of the community development model devised by The Ministry of Health and Environmental Services could be a useful approach to strengthening the disaster management capability throughout the Bahamas. The Health Emergency Plan was activated days before hurricane landfall and staff deployed with emergency supplies to all the islands to be present in a state of readiness.

Strengthening of the volunteer network would enhance the human resource capacity on all islands. The Red Cross at present has a strong program, but volunteerism for the Red Cross and other agencies needs to be strengthened.

Training programs should be widened and communication equipment provided to assist trained persons to deliver their mandates.

The Bahamas Defence Force and the Police Department have rendered effective logistical support, but their role and function need to be institutionalized through the appropriate legislation.

The Draft National Disaster Plan sets out the Basic Plan, Emergency Support functions for the key response and support agencies, The Recovery Function and Standard Operating Procedures for the National Emergency Operations Centre. This Plan needs to be finalized and made operational at the earliest.

4.4 Legislative Framework

The National Emergency Management Agency (NEMA) has been mandated to submit the draft Disaster Legislation to Cabinet for approval. The legislation as presented was based on the CDERA Model. Further refinement may be carried out a later date through the appropriate amendments, but it is imperative that the legislation be promulgated at the earliest possible date. The relevant regulations should also be drafted and enacted. There is at present no legislative construct to guide development and implementation of disaster plans to include procedures before, during and after an event. The lack of legislation stymied island and agency disaster planning as well as the power to enforce risk reduction mechanisms such as timely evacuation planning.

4.5 Planning and Development Control

Developments are taking place in vulnerable areas on several islands, including New Providence, and in addition flood conditions are being produced by poorly

sited structures and subdivisions. Destruction of environmental assets is also aggravating flood conditions. Enforcement of land use standards is an important mitigation measure and given the low-lying topography of the islands it is important that drainage be carefully executed and managed. A Stormwater Drainage Program is currently being implemented for New Providence and it is anticipated that flooding should be alleviated.

4.6 Disaster Plans and Organisational Arrangements

Hurricane is the focus for the disaster programme in the Bahamas, and there is urgent need to expand the range of issues to be included in a CDM programme. Hazard specific information needs to be developed and disseminated. Disaster planning is needed in all agencies as well as at the national level. A multi hazard/multi-sectoral /multi-island public information strategy should be developed, as well as mechanisms for interagency and inter-island communication. Each island needs a functional disaster plan.

The mission to consider GOB's access to the IDB Disaster Prevention Facility outlined in addition to the four areas outlined for attention – communications, legal and institutional framework, local preparedness, enhancement of shelters – the need for risk mapping, natural event monitoring, merging of GIS data, and climate modeling, legal regulations, institutional strengthening of NEMA, organisation of local risk management units, response protocols for local agencies, and assessment and retrofitting of shelters.

4.7 Community infrastructure

Given the geography of the Bahamas described above, developed community capacity to handle disasters will help to reduce loss and dislocation. Most

communities seem unaware of vulnerabilities and risk and the role that they can play to reduce loss and dislocation. Housing, sanitation, water supply, drainage are growing areas of concern, but improvements must take account of hazard vulnerability reduction. Illegal immigration is a major problem for the Bahamas and in addition to increasing population numbers, the location of immigrants and true density of some settlements are not always well-known, thus creating a problem for preparedness and response strategies.

4.8 Hazard Vulnerability

The Bahamas face the natural weather – related hazards common to the rest of the Caribbean, but the topography exacerbates storm surge risk, storm run-off challenges and the propensity for ponding. The GOB has instituted a Geographic Information Centre, and the Centre will be working closely with NEMA and the Cabinet Office to complete hazard mapping and development of a database on vulnerability and risk throughout the Bahamas.

Integrated Coastal Zone Management Program is being developed and appears to have the benefit of interagency and stakeholder discussions initiative.

4.9 Awareness among Citizens, Policy-Makers

Citizens and policy-makers are generally unaware of the many issues related to disasters, and the CDM concept is alien. A massive but targeted public education campaign is essential.

4.10 Scientific Data

Hazard vulnerability assessment is a priority and this should inform the planning and management of the country's assets and infrastructure, as well as private investments.

A program to retrieve and assemble studies already undertaken should be implemented in parallel with current data collection. Policy and procedures to enforce adherence to standards and codes should be initiated.

Development of an Integrated Coastal Zone Management Programme is underway. Each island is to be included in the program which will include considerations of physical development and natural hazard risk reduction, policy and data sharing protocols through digital connectivity among agencies, coastal area mapping, geographical information and modeling, clear development guidelines, management through public-private partnerships, environmental management, and mechanisms for financial management .

4.11 Food Security

Significant losses to the agricultural sector were incurred on several islands. Food crops and livestock as well as related infrastructure were all affected by wind, and/or storm surge. Production of broiler meat and eggs was concentrated on the badly hit islands of Grand Bahama and Abaco. Recovery and restoration should be guided by hazard assessments so as not to reconstruct in vulnerable areas.

4.12 Summary Lessons Learnt

1. Possibility of more than one event in a single hurricane season
2. Significant multi-island impact

3. Economic Link with Florida an important consideration in airlift, cruise traffic, access to emergency supplies. Hurricane impact on Florida stymied rapid response
4. Vulnerability and risk mapping are both needed to inform vulnerability and disaster reduction strategy and plans
5. The Emergency Operations Centre in Nassau is inadequate to meet the needs for Incident Command
6. Some sectors established their individual Command Centres – Health, Police, Electrical company, although officers provided as part of the National EOC. In addition Freeport, Grand Bahama in the process of constructing “state of the art command facility”.
7. Post-trauma counseling programme effective. Private sector led initiatives linked with Ministry of Health programs – BATEI on Grand Bahama very good programme – focus on “rebuilding lives” in addition to “rebuilding homes”.
8. Legislation is urgently required to enable mobilization of support facilities e.g. Police emergency operations facilities adequate, but needed directive to mobilize for national service.
9. Legislation required to strengthen power to issue and enforce evacuation orders
10. Search and rescue operations essential – extreme flooding and surge on Grand Bahama. Significant role played by Defence Force and Police, but high risk in some instances
11. Plan looks good on paper, but scheduled simulation exercises essential for optimal operation. Inability to adequately mobilize in many instances.
12. Communication systems inadequate to handle inter-island communications
13. Communication systems inadequate to handle inter- and intra-agency communication needs
14. Support services established their own system – Police, Port, Electrical Utility, Health

15. Damage assessment training required to assess and capture immediate and post event conditions
16. UNDAC team provided effective interventions in response and relief.
17. Resilience of the essence given the archipelagic nature of the territory.
18. Shelters inadequate – several had to be evacuated due to structural failure. Facilities were also inadequate.
19. Building code modification is needed to provide for increased elevation of ground floors
20. Hurricanes Floyd and Michelle provided some lessons particularly with respect to wind velocity requirements in the building code, but institutional capacity, communications systems, disaster plans, National Emergency Operations Centre, and data management are still wanting.

5.0 Opportunities for Regional Collaboration

- Several funded programs are currently being administered by the Caribbean Disaster and Emergency Response Agency (CDERA) and the relevant agencies (NEMA et al) of the Government of the Bahamas (GOB) should pursue opportunities to participate in these programs. The Caribbean Development Bank administers the Disaster Mitigation Facility, and should be approached to assist capacity building and risk reduction initiatives in the Bahamas. Programs funded through the relevant United Nations agencies should also be explored. Among the key initiatives are:
 - Hazard Assessment and Mapping
 - Vulnerability Assessment – geographical areas and critical infrastructure
 - Disaster Mitigation Training
 - Community Disaster planning – building community resilience
 - Emergency Operations/Command Centre training
 - Shelter Management Training

- Institutional Strengthening Programs for Disaster Risk Reduction through Comprehensive Disaster Management
- Damage Assessment
- Business Continuity Planning

Component	LESSONS LEARNT			Family Islands
	Issue /Action	Success	Challenges/Weaknesses	
Finances and Policy	Funding for immediate response relief, and reconstruction	Government budgetary contingency fund - \$ available for immediate relief GOB responsive to needs	Demands on GOB exceed allocated funds especially for housing.	
	No international flash appeal	Housing Recovery Programme - goal to assist within shortest possible time replacement and repair of permanent dwellings. Criteria established included owner occupied, no insurance and weekly income below established threshold. Options – materials only, materials and labor, rental units to accommodate needy and addition to homes to accommodate elderly relatives.	Limited if any consideration of vulnerability reduction. Likelihood of reconstruction of risk as opportunities and procedures for guiding reconstruction not in place.	

		Emergency Relief Loans Program – Gov't guaranteed loans disbursed through commercial banks – residential or business needs	
	6 month Moratorium on Customs duties for repair and restoration – March 31, 2005 deadline.	Facilitated imports of reconstruction materials and furnishings for business and personal needs. No international appeal for relief funds	Low response – inability to qualify – jobless following hurricane and/or lack of required financials. Loss of revenue for GOB.

<p>Risk Reduction</p>	<p>UNECLAC assessment recommended support from the IDB funded Disaster Prevention Facility</p> <p>Integrated coastal Zone Management Program being designed.</p>	<p>Gov't through Prime Minister identified four critical areas; Communication systems Legal and institutional framework, Local preparedness Enhancement of shelters</p> <p>NEMA to be lead agency</p> <p>Includes mapping, environmental protection and other disaster reduction considerations.</p>		
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<p>Grand Bahama</p>	<p>Private sector Freeport Ltd responsible for city of Freeport – infrastructure, social services, port, airport, utilities</p> <p>Domestic Air Terminal Lost</p> <p>Several hotels reopened but one major out of business</p>	<p>Decision-making facilitated by private enterprise approach. Inadequacies recognized. Emergency operations Command center being built. Hurricane relief supplies distribute.</p> <p>Temporary facility established – new terminal and control tower being planned.</p>	<p>Lack of maintenance exacerbated losses.</p> <p>No restoration and rehabilitation procedures in place – double strike further delayed process . Disaster Plan being developed for each of critical infrastructure</p> <p>Over 1200 jobs lost – major economic impact on island</p> <p>New major resort development planned – Joint venture between Grand Bahama Development co, Discovery Bay and Marriott chain. Vulnerability and disaster considerations necessary.</p>	
<p>Damage and Reconstruction</p>	<p>Devastating Losses in Grand Bahama</p>	<p>Buoyant spirit of Grand Bahama /Freeport Ltd . Construction stimulated – repairs and new developments</p>	<p>No mention of disaster risk reduction in development or restoration plans</p>	

Institutional	Need structure, establishment and resources for Disaster Management Agency. Institutional strengthening essential. Structure required on each island with links into the National Organisation	Leadership action by Hotel Association, Health, Bahamas Defence Force, Police Dept, Business entities (Bahamas Telecom) Strong logistical support by Bahamas Defence Force and Police during the event	National Disaster Office not adequately set up or staffed. No equipped and adequately located Emergency command/Emergency Operations Centre Each Agency of gov't, private enterprise and each island need disaster plan which includes all phases of the Disaster cycle.	
Warning and alerting by the Meteorological Service	Active hurricane season – erratic paths of hurricanes. Alert for Frances, Ivan, Jeanne – struck by Frances and Jeanne Jeanne turned back after initial alert lifted	Sept 2 - Hurricane Warning - 80 mi SE of San Salvador Equipment now in place – Doppler Radar.		
Public Information, including mechanisms for dissemination and content of messages	Need to build a disaster culture. On-going dissemination of targeted information required.	Population and policy makers now receptive to building resilience. Prime Minister understands issues and seeking to make a difference.		

<p>Media Management and Liaison</p>	<p>Media has major role to play</p>		<p>Not yet sufficiently engaged. Needs to be guided and directed toward building a full program.</p> <p>Power supply and communications equipment down.</p>	
<p>Communications – emergency communications including cellular phones</p>	<p>Effective communication essential especially in multi island context Ham radios have been effective in the past.</p> <p>Satellite phones can be useful if improper working conditions.</p> <p>A crisis communications strategy and operating procedures essential .</p>		<p>Non-functional communications facilities – lack of power supply, uncharged batteries, etc.</p> <p>Inter-island communication generally non-existent during and immediately after event.</p>	

Transportation	<p>Movement of vehicles essential for immediate response. Response Plan to be strengthened.</p> <p>Need assigned appropriate vehicles for emergency team travel post-event.</p>	Private sector involved	Heavy equipment had to be utilized for Rescue operations during event - lives at risk mainly due to non-adherence for evacuation at appropriate time.	
Supplies management	System for Receipt, storage and distribution essential to effective relief and reconstruction		System non-existent on some islands – Volunteer /NGO involvement. Catholic Archdiocese and Red Cross played major role.	
Activation and Management of National Emergency Operation Centre -	Adequately equipped center needed	<p>NEOC functioned in spite of inadequacies</p> <p>Command centers activated for key support groups – linked with NEOC</p> <p>Freeport to build well-equipped Command centre</p>		
Shelters and Shelter	Purpose-built centers	Red Cross developed system and built	Red Cross need structured integration with NEMA and other	

Management	Multi-purpose centers	<p>capacity. Lessons learnt and replicated from Hurricane Floyd 1999.</p> <p>Shelter Management and Response Team (SMART)</p> <p>First Aid Stat. Team (FAST)</p> <p>Volunteers kept involved throughout year so good response when needed.</p> <p>Good working relationship with hurricane committee</p>	<p>key agencies. Expertise should be utilized in most appropriate way.</p> <p>Shelters poor – several had to be abandoned</p>	
Health and Medical Care		Excellent responsive Emergency Plan	Need improved communication – VHF, HAM	
Environmental Health		Monitoring and management of post-disaster health risks. No major incidents reported.	Water supply contaminated by saline flooding	

Economic Impact	<p>Ability to restore and rehabilitate public and private revenue streams essential to disaster recovery</p> <p>Business Continuity planning</p> <p>Insurance inflows</p> <p>Inflows of relief materials and donations</p>	<p>Cruise ships able to enter with visitors during hotel closures</p>	<p>Largest single employer – Oasis Hotel – closed following hurricane. Not likely to reopen. Significant job loss.</p>	
Utilities and Infrastructure Telecommunications Electricity				
Water	<p>Emergency water plan essential.</p> <p>Coordinate with electricity supplier to</p>	<p>Cruise ships brought in water when resumed visits.</p>	<p>Salinization of well fields from storm surge.</p> <p>Wash out of lines.</p>	

	establish priority for key installations		Barging of water to New Providence etc. hampered by rough seas Slow restoration of water	
Welfare Assessment	Large scale impact requires rigorous systems to minimise inaccurate reporting and unwarranted benefits Psychosocial assessment integral to individual welfare	Post event trauma handling program implemented in Grand Bahama. Initiated by Bahamas Telephone Co. for workers and extended through collaboration with Ministry of Health.	Operations Manual needed by Social Services– compatible with National Plan	
Damage Assessment	Rapid assessment and data capture important to effective response and disaster reduction	OFDA trained trainers in several agencies to build teams for standardized approach	Inadequate number of trained persons	
Recovery and Reconstruction	Emphasis on individual welfare should be complemented with Business Continuity planning, Risk Reduction initiatives and Risk transfer considerations	Recovery and Reconstruction Focal Point established	Focal point not sufficiently integral to NEMA and National Disaster Plan	

Food Security				
Coastal Zone Planning				