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**Economic Commission for Latin America  
and the Caribbean  
Interamerican Development Bank**

**HURRICANES FRANCES AND JEANNE IN 2004:  
THEIR IMPACT IN THE COMMONWEALTH  
OF THE BAHAMAS**

(Preliminary version)

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## I. INTRODUCTION

The Economic Commission for Latin America and the Caribbean (ECLAC) has made this assessment at the request of the Government of the Commonwealth of the Bahamas and with the financial and technical support of the Inter American Development Bank (IDB), in order to provide the necessary quantitative assessment to determine the country's needs in the light of its request for access to the Bank's Immediate Response Facility.

The assessment was made following the standard ECLAC methodology for the socioeconomic and environmental assessment of disasters (ECLAC, 2004), subject to the availability of information. The mission comprised two ECLAC officials: Ricardo Zapata-Marti, Focal Point for Disaster Assessment as coordinator, and Oliver Paddison, economic affairs officer at the Subregional Headquarters for the Caribbean, who undertook the macroeconomic analysis. On behalf of the IDB, Iwan P. Sewberath Misser assumed coordination. Officials from the bank's country office involved were Jorge E. Torres (social sectors), Colin Forsythe (infrastructure and utilities), and Graham Williams (economic analysis).

This report provides a brief description of the event, on the basis of the meteorological data provided by the Government and information from the Miami based National Hurricane Centre of the United States, and describes summarily the population affected and emergency relief operations. It proceeds to describe the direct damage and indirect losses on a sector-by-sector basis and the report is organized in three categories: social sectors (including housing, health, education and social services); infrastructure (namely roads and works and utilities); and economic activities (namely agriculture, commerce and tourism). On the basis of these damages and losses and with the figures of expected performance provided by the Central Bank and the Ministry of Finance, an overall macroeconomic impact is presented, which leads to the relevant conclusion that the event exceeds the government's capacity to face the rehabilitation/restoration and, furthermore, the reconstruction investments needed on its own. Additional, external and private resources will be needed and the recourse to immediate relief and emergency facilities such as the one the IDB can offer are essential for the country not to be set back in its growth path.

### **a) Description of the event**

During the 2004 hurricane season which began 1 June 2004 the Caribbean basin was severely affected by a cluster of severe hurricanes that repeatedly battered the region and in some cases several major storms with hurricane level hit more than once the same territory or state. Such was the case of the state of Florida that was ravaged by four events and such was also the case of the Commonwealth of the Bahamas that experience in a month's period the impact of two successive hurricanes: Frances and Jeanne.

Given the different nature of the events and their trajectory, their effect on the different islands varied in intensity and type of damage caused. Nevertheless it all summed up to an

affectation that was unusually high, even in a territory that is yearly affected with varying degrees of severity. In brief, hurricane force winds with Frances first and torrential rains with Jeanne immediately after were experienced in Mayaguana, Long Island, San Salvador, Rum Cay, Cat Island, Eleuthera, New Providence, the Berry Islands, Abaco and Grand Bahama (see map in figure 1).

Figure 1

MAP OF THE BAHAMAS

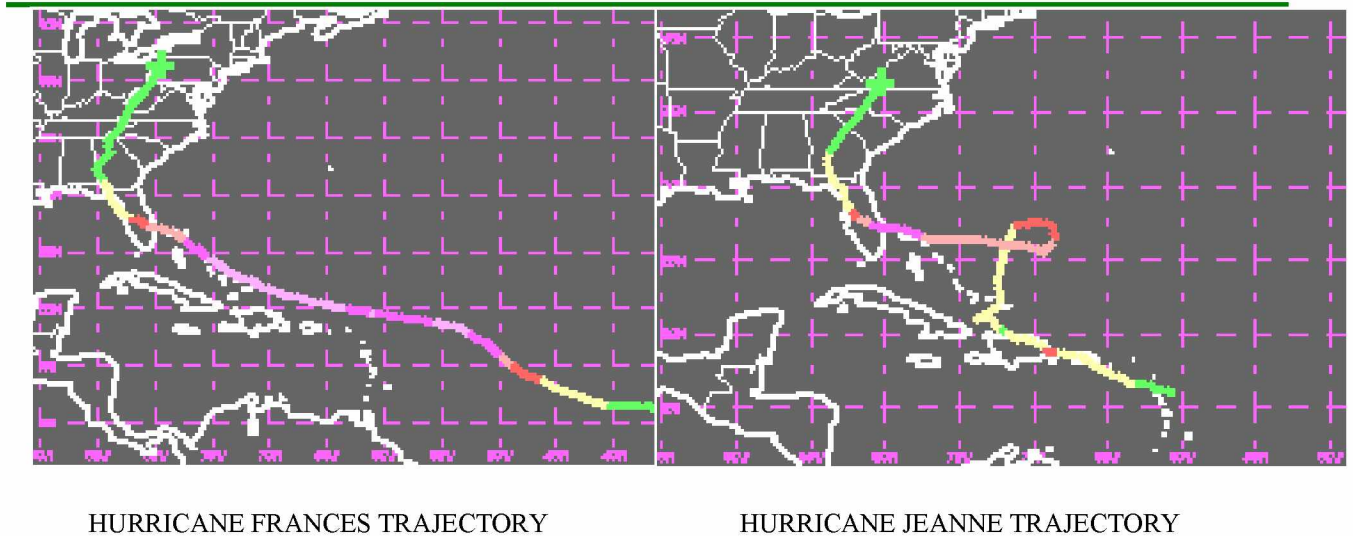


The Bahamian archipelago is intrinsically vulnerable, in addition to man-made conditions associated to its development pattern, given its conformation of a large number of small islands, cays and islets distant from each other amidst a vast expanse of water. In effect the nucleus and largest proportion of the Bahamian territory is its patrimonial sea.

Figure 2 shows the trajectories followed by both events, showing that the northern part of the Bahamian territory was the most affected one, particularly hit in both instances the islands of Abaco and Grand Bahama.

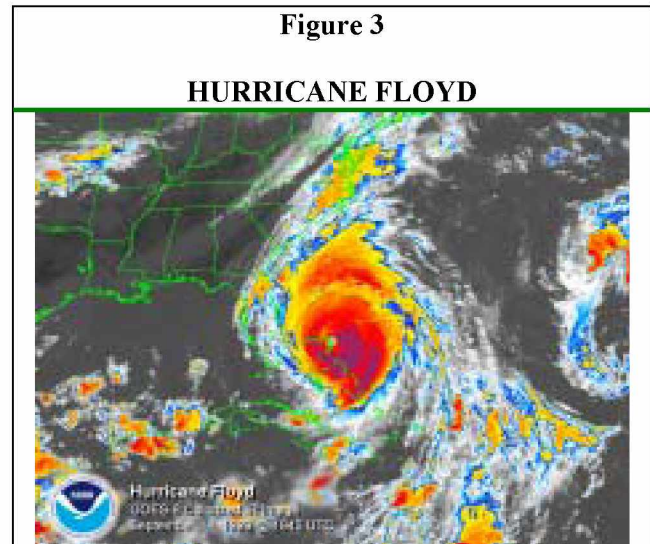
**Figure 2**

**HURRICANES FRANCES AND JEANNE TRAJECTORIES**



Source: [www.met.fsu.edu](http://www.met.fsu.edu). Tracking chart and images here are courtesy of Dan Victor of the Unisys Corporation.

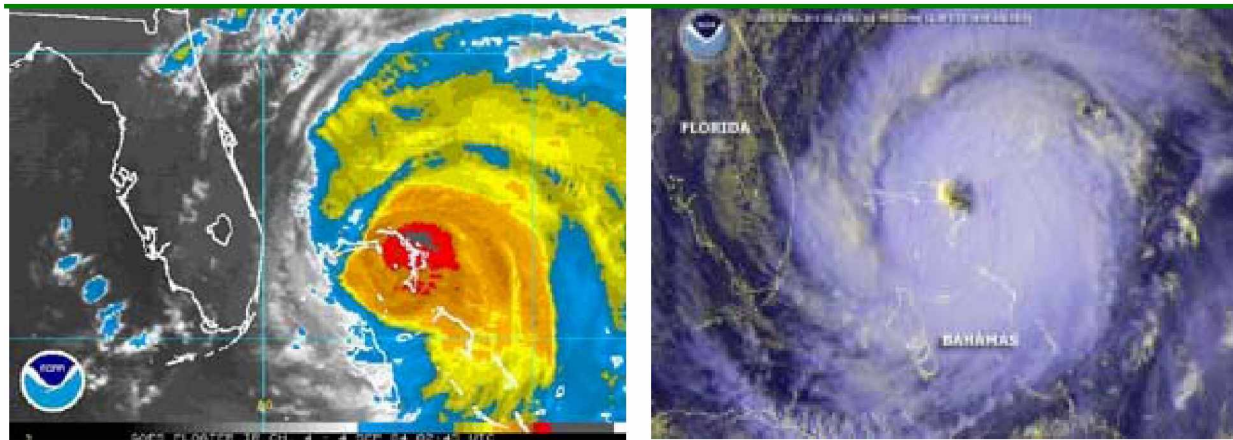
Given the size of both phenomena in fact all of the Bahamian territory was covered by them at some point in time and thus no island was spared from suffering some level of damage, either associated with storm surges, very high wind forces or persistent high levels of rainfall. The previous similar level of hurricane to hit the archipelago had been Hurricane Floyd in 1999 (see figure 3). Ensuing damage included in some instances associated flooding that persisted for several days, cutting in effect communications and impeding accessing with necessary aid in the immediate aftermath. See figures 4.



Hurricane Frances, an open water type storm, was the sixth one named and the fourth hurricane of the 2004 season in the Atlantic. Historically it was the first since 1886 to impact the entire Bahamian archipelago.<sup>1</sup> Because of its slow motion and very large eye (roughly 140 km in diameter) the centre of circulation remained over the northwestern part of the territory for an extended period of time (from 2 to 5 September). The storm had developed in late August: at 11 p.m. Tuesday 24 August already satellite images indicated that a tropical depression had formed from a strong tropical wave in the Eastern Atlantic, some 1,400 km. West-southwest of Cape Verde, moving west at 28 km per hour. The next day, at 5 p.m. it was upgraded to tropical storm status and given a name, being further upgraded on 26 August at 5 p.m. It rapidly reached the category 3 level in the Saffir-Simpson scale the next day and progressed to 4 in a 24-hour period. Although it fluctuated over the next few days it reached a peak wind force of 240 km per hour on September 2 at 2 a.m. and with that force passed directly over the island of San Salvador and very near to Cat Island already in the Bahamian archipelago.

**Figure 4**

**EXTENT AND COVERAGE OF HURRICANES FLOYD, FRANCES AND JEANNE OVER THE BAHAMAS**



Sept. 3, 2004 - At 11 p.m. EDT, the centre of Hurricane Frances was located near latitude 26.1 north, longitude 77.8 west or about 70 miles east-southeast of Freeport, Grand Bahama Island.

Sept. 20, 2004 - At 500 p.m. EDT, Jeanne strengthened back into a while slowly moving north. During the next four days, Jeanne would make a clockwise loop over the Atlantic ocean, northeast of the Bahamas.

Source: [www.noaanews.noaa.gov](http://www.noaanews.noaa.gov)

<sup>1</sup> According to the Bahamas Department of Meteorology report.

Table 1 shows the meteorological statistics for Frances from 30 August to 5 September.

Table 1

METEOROLOGICAL STATISTICS OF FRANCES ON ITS PASSAGE IN THE BAHAMAS

Date/time	Lat °N	Long °N	Intensity	Pressure (mb)	Location
8/30/2004 17:00	19.5	60	207.5	948	1430 km ESE of Mayaguana
8/31/2004 17:00	20.5	65.9	232.4	939	797 km E of Inagua
9/1/2004 5:00	21.2	68.5	232.4	935	473 km ESE of Mayaguana
02 Sep 2 am to 2 pm	22.7	72.5	240.7	937	58 km northeast of Mayaguana
9/2/2004 23:00	24.5	75.4	207.5	948	42 km ESE of Arthur's Town, Cat Island
9/3/2004 20:00	25.9	77.5	174.3	960	149 ESE of Freeport, Grand Bahama
05 Sep noon	27.7	81.2	174.3	-	266 km northwest of West End, Grand Bahama

Source: Bahamas Meteorological office.

Recovery had not even begun when Hurricane Jeanne, the 10<sup>th</sup> named tropical cyclone of the 2004 season, hit the Bahamas 25 September. After developing from a tropical depression 116 km east-southeast of Guadeloupe on the evening of Monday 13 September and having reached Puerto Rico on the 15<sup>th</sup> with 116 km per hour winds, Jeanne moved across that island with extreme amounts of rain only to gain force as the sixth hurricane of the season before hitting the eastern tip of Hispaniola on September 16. It moved slowly across the northern tier of that island. In its passage it had serious consequences while weakening to a tropical storm, dumping over 30 cm of rain across portions of the Dominican Republic <sup>2</sup> and Haiti. In this last country over two thousand inhabitants of the city of Gonaives died from flooding and mudslides resulting from the heavy rains. At that point it seemed the storm would slowly fade away into the northeastern Atlantic as it weakened to a tropical storm on the 17<sup>th</sup>, becoming disorganized while slowly moving north. But on the 19<sup>th</sup> it strengthened again while making a clockwise loop over the Atlantic Ocean, northeast of the Bahamas and developing into a formidable hurricane again with maximum sustained winds of 160 km per hour. It blanketed the northern islands of the archipelago, particularly Abaco and Grand Bahama while completing its loop and moving to the Florida peninsula where it hit on 25 September with category 3 force again, moving onshore on the 26<sup>th</sup>.

<sup>2</sup> For a report on the impact in the Dominican Republic, see: LC/MEX/L.638, 29 October 2004.

Hurricane Jeanne made landfall in the Bahamas on Saturday, 25 September, damaging several hundred homes. Jeanne, a category 3 hurricane, struck the Bahamas just three weeks after Frances Flood waters rose to more than six feet in some areas and roofs were blown off houses. Hurricane Jeanne impacted the north-western Bahamas, including Abaco, Andros, Berry, Bimini, Eleuthera, Exuma, Grand Bahama and New Providence islands. It caused the most significant damage on the Grand Bahama and Abaco islands. Based on a survey from representatives of the Bahamas Red Cross Society and a disaster management delegate from the Pan American Disaster Response Unit, it became clear that damage from Hurricane Jeanne just added to that caused by Hurricane Frances. Almost all of the areas affected by Hurricane Jeanne are the same areas that were struck by Hurricane Frances, and many homes that were weakened by Frances have now been more seriously damaged by Jeanne, and those that had lost their roofing were soaked with the extraordinarily strong rains. All along the coast of Grand Bahama Island, homes have been flooded by the storm surge. Electricity services have been cut and water supplies are limited in many areas.

In 8 Mile Rock, the largest community on Grand Bahama Island, over 75 percent of the homes have suffered serious structural damage, with roofs partially or completely torn off. All shelters in 8 Mile Rock sustained structural damage and/or flooding. The eastern half of the island has been cut off by storm surges and reports indicate significant flooding of homes, particularly along the coastline. In the city of Freeport on Grand Bahama Island, the airport was flooded but was reopened the following day.

Communications were cut off with Abaco Island after Jeanne's eye passed directly over the island on Sunday, 26 September, bringing 115 mile per hour winds and heavy rains. Preliminary reports indicated that the most populated town of Marsh Harbour had been significantly flooded. Officials reported that about 700 people had taken refuge at an emergency shelter that was set up in a local school. The primarily Haitian settlements of Pigeon Pea and the Mud were completely submerged in four to five feet of water. Families in these areas are staying in shelters or with relatives. Cooper's Town and Dundas Town have also been greatly damaged.

#### **b) Population affected <sup>3</sup>**

The passage of both hurricanes, in spite of its strength, intensity and duration and the physical havoc it created, had minor consequences in terms of human lives. Two deaths occurred in the Bahamas, one in New Providence and the other in Freeport, Grand Bahama <sup>4</sup> as consequence of Hurricane Frances and more than 8,000 people in Grand Bahamas Island were affected. On the verge of September 25, when Hurricane Jeanne tracked directly over the islands of Abaco and Grand Bahama, the National Emergency Management Agency of the Bahamas (NEMA) reported that approximately 2,500 people were evacuated to emergency shelters; however, that number decreased immediately as water levels recede and families returned home. NEMA reported that no deaths or injuries related to Hurricane Jeanne had occurred.

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<sup>3</sup> See PAHO, "Hurricane Frances situation report: 06 Sep 2004", 7 Sept 2004, and IFRC, "Hurricane Jeanne appeal no. 23/04", 1 November 2004 ([www.reliefweb.org](http://www.reliefweb.org))

<sup>4</sup> In the first instance an 18 year old man was reportedly electrocuted when he tried to refuel a generator; and in Freeport the storm surge of 14 feet (4.3 mts) drowned a young man.



Near Marsh Harbour on Abaco, four to five foot water levels from Hurricane Jeanne damaged an estimated 90 percent of the Mudd and Pigeon Pea settlements, where the majority of the population is Haitian and Bahamian-Haitian. In addition, approximately one-third of the homes in the town of Sandy Point suffered water damage, and several homes



experienced extensive roof damage. Throughout the island the combined effect of both storms in such a short period of time is severe. Not only the economic effects of the disaster are still apparent, with many hotels, farms and other businesses damaged, but the psychological effect of the consecutive events has been quite devastating. Businesses slowly reopened but employment is not yet to pre-disaster levels.

The situation in Abaco remains particularly severe in the above mentioned settlements of Pigeon Pea, the Mud, and Sandy Banks. Many families are still unemployed or are working only part-time. Many roofs are still damaged and give limited protection from rainfall. Washing and bathing are done with brackish well-water. Bottled water must still be purchased for drinking.<sup>5</sup> In the North of the Island, Cooper's Town, Fox Town and Crown Haven are recovering. Streets have been cleaned, power and water has returned in most areas, and repairs are being made to homes and businesses. In these towns families have also been affected by the economic shock and incomes have been reduced. Fortunately, the situation is not as critical as in the Haitian settlements, as the standard of living was much higher prior to the disaster.

In addition to over three thousand houses affected by Frances, Hurricane Jeanne damaged approximately 800 houses and affected a total of 5,000 families on Abaco and Grand Bahama Island.

Over 3000 thousand houses were affected with different degrees of damage, most of them in Grand Bahama. At some point all of the population of Grand Bahama was left without electricity and water supply was severely affected for several days. Table 2 shows the proportion of primarily affected population.

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<sup>5</sup> ECHO is in the process of approving an emergency assistance for these settlements.

Table 2

## PRIMARILY AFFECTED POPULATION

<b>Deaths a/</b>	<b>2</b>
<b>People in shelters</b>	<b>2,400</b>
Secondarily affected population (in all regions)	13,500
Affected immigrant population in settlements (Abaco)	15,000
<b>Percentage of total population</b>	<b>9%</b>
<b>Tertiary affected population (as percentage of total population)</b>	<b>58%</b>

Source: ECLAC, on the basis of official information from the Reliefweb ([www.reliefweb](http://www.reliefweb)).

a/ Three injured were reported by the Ministry of Health.

### c) **Emergency relief**<sup>6</sup>

The response from the Bahamas Government was swift. The first news item on Frances was issued by the Bahamas Department of Meteorology at 6 a.m. August 25<sup>th</sup>. The first alert was issued five days later, at 6 a.m. on August 30<sup>th</sup>, covering the Turks and Caicos and the southeast Bahamas. Because of the slow movement of Frances over the northwest Bahamas warnings were discontinued in two stages, trying to maintain population aware of its passage and avoid casualties. A total of 21 news items and 45 alerts were issued during the storm's passage. After Jeanne the islands of Abaco and Grand Bahamas were declared disaster areas by Prime Minister the Right Honourable Perry G. Christie on September 27. Both islands, in the northern Bahamas, sustained substantial damage from Hurricanes Frances and Jeanne. The Government has appealed for regional and international assistance to provide immediate emergency relief to the residents of both islands and also for the reconstruction which is to follow.

At the outset, actually previous to the hurricanes arrival on the territories, NEMA established mechanisms to channel assistance, both provided by the Government and by private donors and international cooperation, including NGOs. A few days after the initiation of operations the SUMA<sup>7</sup> accounting system was put in place and both a central command and field distribution centres were established. According to the series of reports prepared by the Suma-trained officials, distribution has been efficient and demand driven in terms of identifying the needs at the community level and organizing distribution of consigned materials from the central warehouse in Grand Bahama to the different locations in the family of islands. In order to operate

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<sup>6</sup> Unless otherwise specified, dollar amounts are expressed in current Bahama dollars, which are equivalent to one US dollar.

<sup>7</sup> The Humanitarian Supply Management System (SUMA) was developed by the Pan-American Health Organization (PAHO/WHO) and has become the standard system to keep track of emergency and relief supplies after a disaster. Officials of the Bahamas had previously been trained in the system through the PAHO office in the country and were in a position to implement the system soon after the first hurricane hit the country.

the system at first, given the lack of electrical power in Freeport, Grand Bahama, immediately after the event, they resorted to using the manual version of SUMA and had to adapt it to their local needs and capabilities. Table 3 summarizes the consignments received till the 26<sup>th</sup> of October.



Table 3

CONSIGNMENTS OF EMERGENCY RELIEF ASSISTANCE  
RECEIVED IN THE BAHAMAS, BY ITEM (NEMA/SUMA)

(Bahamian dollars)

Water supplies	\$4,869.44
Food provisions	\$282,242.79
Construction materials	\$318,165.97
Stoves, fuel, etc.	\$492.00
Total cash donations	\$400.00
Other not included above	\$24,975.28
<b>TOTAL</b>	<b>\$606,170.20</b>

Source: SUMA.

These consignments are only a fraction of the assistance provided, which has been estimated in excess of 1,7 millions of dollars.

Government reactivated the Disaster Relief and Recovery Fund (Act of 1999 proclaimed after Hurricane Floyd). Deposits are to be applied only to emergency relief concerns and proceeds of the fund will not be used to repair or reinstate public infrastructure. As of 1 October 2004 the fund had received some 4,5 million of Bahamian dollars in donations and pledges.

In order to further assist in the recovery and reconstruction process Government has signed four orders of Exigency to allow the duty free importations of goods and construction materials that will be in effect till December 2004. Table 4 describes these orders, their duration and goods covered.

A detailed list of donors and contributing agencies and the materials received is not included in this report but is available from NEMA, and was made public by the Prime Minister in his report to Parliament of 6 October, 2004. That report provides a comprehensive description of the first assessment made after hurricane Frances and includes an addendum on Jeanne. Most of the damage described in it is of a direct nature (assets lost or damaged), referring extensively to the effects on housing and on public services and public infrastructure.

Table 4

COMMONWEALTH OF THE BAHAMAS DECLARATIONS OF EXIGENCY  
AFTER THE HURRICANES

No.	Duration	Coverage
1	3-10 September 2004	Replaced by orders 2 to 5
2	3 September - 31 December 2004	Grand Bahama, allows duty free import of batteries, building materials, clothing / footwear, disposable paper goods, plates, cups, forks, spoons, etc.; electrical materials; emergency communications equipment; foodstuffs including water; generators; household furniture, appliances and utensils; medical supplies; plumbing materials; storage containers for water, garbage, etc.; tools, chainsaws, etc.; water pumps and motor vehicles (in the latter based on the market value of the vehicle destroyed on the dates of the hurricanes).
3	3 September - 31 November 2004	Abaco and the Cays, San Salvador, Berry Islands, Rum Cay, Acklins, Crooked Island, Long Island, Cat Island, Mayaguana, Eleuthera, including Harbour Island, Spanish Well and Current Islands. Same goods as specified in the Schedule for Grand Bahama.
4	3 September - 31 December 2004	For application in islands not in orders 2 and 3. Application for importation of motor vehicles must be made to the Minister of Finance prior to the act and the exemption will be based on the market value of the vehicle destroyed on the date of the hurricane.
5	3 September - 31 December 2004	Grants exemption to hotels licensed under the Hotel Act and to tourist attractions, for goods which the Minister is satisfied are intended for the relief of such facilities that have suffered damage as a result of Hurricane Frances.

Source: Prime Minister's report to Parliament, 6 October 2004.

## II. SECTOR BY SECTOR IMPACT

### a) Social Sectors

The affected islands and settlements major damage was in housing, as is evident from the figures below. Health facilities and schools withstood damage but, in general, performed well during the emergency in the sense that basic health services were available with minor interruptions, and schools that were required for shelters performed this emergency requirement well.

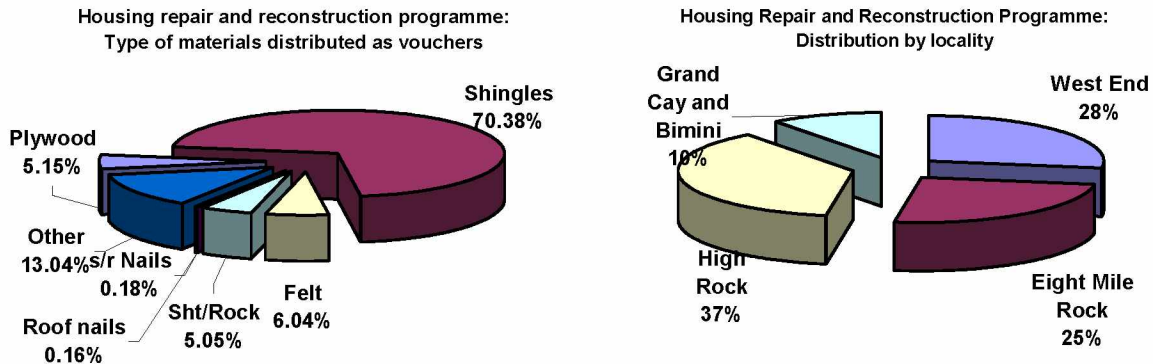


i) Housing. The severity of the winds and sea surges and the ensuing flooding aggravated by the rains caused substantive damage to houses near the shore lines as well as inland in the islands of Grand Bahama and Abaco in the northernmost of the Family Islands. More than the quality of construction or materials used it was the exposure in high-risk areas that led to damage.

As of October 6 government initiated a housing repair and reconstruction emergency programme consisting of vouchers for materials given to house owners. B\$ 1,4 million have been provided to 668 of the affected (See figure 5 for breakdown of vouchers by material and geographical location). Construction costs considered vary according to materials, size and type of construction.

Figure 5

### HOUSING REPAIR AND RECONSTRUCTION PROGRAMME OF THE BAHAMAS



Source: ECLAC, based on data from the Housing and Reconstruction Programme for Grand Bahama, Grand Cay and Bimini.

Global figures of damage for the entire Bahamas of houses affected, by type of damage and estimated replacement value, as well as estimated indirect losses, based on information available, appear in table 5. Besides structural damage and the need for different types of repairs, a significant portion of losses occurred in the furniture and appliances. The Hurricane Recovery Programme has defined three standard construction costs for timber houses that vary according to size (varying from 12 to 30 m<sup>2</sup>). Price estimates consider labour costs, demolition, site clearing, excavation, sand, rock and cracker dust, other material for foundation including blocks, concrete, cement, mesh, to be supplied by the Ministry of Housing to contractors. The estimated costs range from B\$15,144.30, for a one bedroom timber house to B\$38,656.31 for a three bedroom one in the same materials.

Table 5

## DIRECT DAMAGE AND INDIRECT LOSSES TO HOUSING

	Direct damage (thousands of B\$)		Indirect Losses (flows affected)	Total damage and losses (thousands of B\$)
	No.	Total replacement value	(thousands of B\$)	
TOTAL				71,919
DAMAGE TO ASSETS		71,744		
Houses affected	6,682	59,787		
- Destroyed	671	16,775		
- Recommended for major repairs	1,851	22,212		
- Recommended for minor repairs	4,160	20,800		
Houses affected covered by insurance (est.)		8,842		
Losses in furnishings and amenities		11,957		
LOSSES			175	
Rental assistance provided to displaced tenants or proprietors			175	

Source: ECLAC, based on official figures from the Ministry of Housing and National Insurance.

Government's actions to assist in the reconstruction process are basically two fold, on the one hand to assist homeowners a programme of government-guaranteed loans was made available,<sup>8</sup> and on the other four declarations of exigency were signed in order to allow the duty free importation of essential goods and construction materials. The declarations of exigency<sup>9</sup> will extend till the end of the year. The estimated import requirements for housing repairs and reconstruction have been put by this assessment in the amount of approximately 31.2 millions.

<sup>8</sup> Under the existing Emergency Relief Guarantee Fund Act of 1999 and the regulations made under that act, after Hurricane Floyd affected the islands.

<sup>9</sup> Under the Tariff Act 2003.

### Emergency Relief Guarantee Fund

It will provide for loans with the following terms:

Residential: (i) maximum loan amount B\$ 50,000; (ii) interest rate will not exceed the prime rate; and (iii) a repayment period of twenty years.

Businesses: (i) the maximum loan amount will not exceed the prime rate plus one per cent; and (iii) the loan must be repaid within ten years.

Adopted under the State of Exigency, it enables the Government to provide for a **Grant Program** for persons who are unable to qualify under the Emergency Loan Program. Persons wishing to avail themselves of benefits under this program have been asked to visit and make applications to the offices of the Department of Social Services in their respective communities. In order to decide whether or not a household is eligible, these offices conduct an assessment of the well-being and employment status of the effected household members. The **Grant Program** provides for; (i) Basic repairs to homes damaged by the hurricanes; (ii) food assistance; (iii) financial assistance to replace basic essential and/or household items destroyed by the hurricane; and (iv) rent assistance up to a maximum of B\$ 500 per month to qualified individuals and families for a period of up to six months.

Source: NEMA, Prime Minister's report to Parliament, 6 October 2004.

These loans' programme will be extended also to small business owners, fishermen, farmers and owners of small tourist resorts over the next few months in order to restart and re-launch their commercial enterprises. For those unable to qualify under this programme assessment teams will complete door-to-door assessments of damage and of the financial well being and employment of household members. Already as part of the emergency relief programme the number of children affected in the Grand Bahama, Grand Cay and Bimini areas has been established. It is assumed, for this assessment that the reconstruction process will proceed well into 2005.

*ii) Health.* Even before the hurricanes hit, the health disaster preparedness committees had been activated, since March. After the announcements of hurricanes warnings and watches, the Department of Public Health pre-positioned teams, the ministry of health and the three major hospitals activated command centres to coordinate the appropriate response, all operated in conjunction with NEMA. The Pan American Health Organization, through its local office, provided expert support. It all led to continuity of services during the hurricanes, the successful evacuation of patients from three islands and response to 17 ambulance calls. In spite of light shortages and water unreliable supply (namely in Grand Bahama) in the immediate aftermath, the public health sector<sup>10</sup> weathered fairly well.

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<sup>10</sup> The assessment mission could not ascertain damages and losses sustained by private clinics and non-governmental health providers.

Before the hurricanes the three major hospitals in the country<sup>11</sup> had increased — in the first quarter of the year — their bed complement to 1004 units. Bed occupancy in these facilities showed a high percentage and outpatient attendances satisfied the population needs both in specialty clinics, general practice ones and in community-based services. (See Figure 6).



From the public health point of view, the major threats to the population's health, beyond accidents and injuries which were minimal, is the increased risk of communicable disease outbreaks and compromised mental health. Health care teams were propositioned and rapid assessment instruments ensured a constant flow of information during the hurricanes.

The Department of Environmental health has provided support in clearing hurricane debris and mounted a vector control and food safety initiative. Larviciding has been carried out on all islands to control mosquito breeding. This programme is intended to monitor food contamination. Chlorine tablets were distributed for watersafety and addition equipment is deemed necessary to better manage debris. In Grand Bahama a fly problem was brought under control through the application of insecticide and better management of animal waste. Particular attention was given to Pindars Point, Homes Rock and West End. This concerted effort limited as far as possible conditions that would give rise to fly and rodent problems. Monitoring was made of the Mud and Pigeon Peas areas in Abaco. To facilitate the immediate removal of waste the \$10 fee required for the disposal of waste was suspended temporarily in New Providence.

To face the traumatic effect of the two consecutive major hurricanes since 1999, a mental health initiative was launched. The overwhelming effect on the population was reflected in the stunned attitude perceived immediately after, leading in many cases to suppress emotions and reactions. Mental health teams have collaborated with local health committees and professionals on the 12 Family Islands.

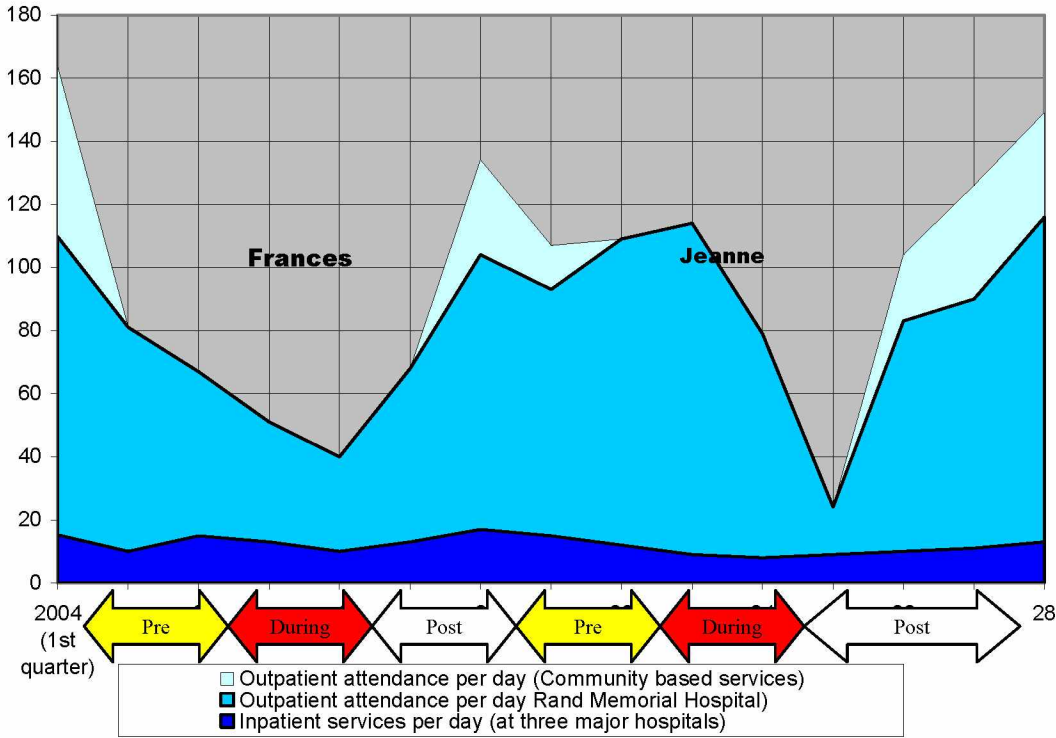
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<sup>11</sup> Princes Margaret and Rand Memorial hospitals (both 3d. level facilities) and Sandilands Rehabilitation Centre.



Figure 6

**BAHAMAS HEALTH SERVICES: INPATIENT AND OUTPATIENT ATTENDANCE DURING THE HURRICANES**



Source: ECLAC, based on information from the Ministry of Health.

The physical damage is detailed in table 6, based on the information provided by NEMA and the sector’s authorities.<sup>12</sup> These include damage to infrastructure, medicines, equipment and supplies. Part of the vaccine supply was lost due to the electricity shortages that, in the case of Grand Bahama, lasted for several days. The need for new equipment in the wake of the disaster include a waste shredder.

<sup>12</sup> The Ministry of Health, Department of Environmental Health Services, and the Public Hospitals Authority (PHA).

Table 6

DIRECT EFFECTS OF HURRICANES FRANCES AND JEANNE ON THE  
HEALTH SECTOR

	Thousands of B\$
Damage to assets	2,903
<u>Assets of the Department of Public Health</u>	<u>1,252</u>
- Clinics (New Providence and Family Islands)	496
- Equipment (Generators, computer, photocopier, etc.)	146
- Vaccines lost	5
Department of Environmental Health	
- Vector control equipment, ULV Machine	10
- Portable water testing equipment	31
- Vermeer Shredder	565
<u>Public Hospitals Authority</u>	<u>1,652</u>
- Princess Margaret Hospital	273
- <i>Infrastructural damages</i>	127
- <i>Drugs</i>	60
- <i>Medical supplies</i>	87
- Sandilands Rehabilitation Centre	143
- <i>Infrastructural damages</i>	94
- <i>Drugs</i>	19
- <i>Medical supplies</i>	30
- Grand Bahama Health Services	1,121
- <i>Infrastructural damages</i>	789
- <i>Drugs</i>	246
- <i>Medical supplies</i>	86
- Community Clinics (New Providence and Family Islands)	114
- <i>Drugs</i>	92
- <i>Medical supplies</i>	22

Source: ECLAC, based on data from the MOH and the PHA.

Table 7

INDIRECT IMPACT OF THE HURRICANES ON THE  
HEALTH SECTOR

	Thousands B\$
Additional expenditures due to disaster	2,249
- Emoluments, overtime and employment for cleaning	150
- Employment to assist in vector control	24
- Mobilization of health teams	21
- Support to environmental health control activities	544
- Mental health assistance	76
- Health and education public awareness	20
- Temporary repairs (not reconstruction) in Rand Memorial Hospital	68
- Temporary relocation of patients, extraordinary costs of surgery in emergency location	15
- Emergency electricity supply (including lease of generator)	14
Environmental programme	1,318

Source: ECLAC, based on data from the MOH and the PHA.

In summary, the composition of direct damage and indirect impact is the following:

Table 8

SUMMARY OF IMPACT ON THE HEALTH SECTOR

(Thousands)

	Direct damage	Indirect impact	Total	External component a/
Total	2,903	2,249	5,153	3,607
Damage to infrastructure and facilities	1,651			1,239
Drugs and medical supplies (including vaccines lost)	687			687
Special equipment for disposal of debris	565			565
Health and mental assistance campaigns		931		128
Environmental health programme		1,318		989

Source: ECLAC.

a/ In this case it refers to required imports of equipment, medicines, chemicals, etc.

Out of this experience, the sector has extracted some conclusions that bear mentioning:<sup>13</sup> In addition to the restoration of primary care services, emphasis will be put on the one hand on epidemiological surveillance, vector control, water quality monitoring, food inspections, and solid waste management; and, on the other, addressing mental health needs. To both ends public health education is key in order to foster re-incorporation to normal livelihoods. The continued coordination with the private health sector will facilitate the exchange of resources to ensure coverage of health needs of the entire population. A final point the hurricanes made evident is the appropriate communication to both identify damage and monitor response and follow-up actions. This critical area is seen as being in need of reinforcement both in terms of physical equipment that will function when “normal” systems fail, and of establishing clear communications protocols and procedures.

*iii) Education.* Of the 158 educational institutions in the Bahamas a significant number suffered damage, mostly of a minor nature so in less than a month after the hurricanes they were operating at the pre-school, primary and secondary levels. In fact the number of school days lost was minimal.



Exception must be made of less than ten establishments that by 6 October remained closed and were enduring substantive repairs. Even those used temporarily as shelters quickly came back into normal operation. In those cases that schools could not reopen, students are being taken to the nearest available facility and in some exceptional cases, churches and other community installations are being used to continue the school year.

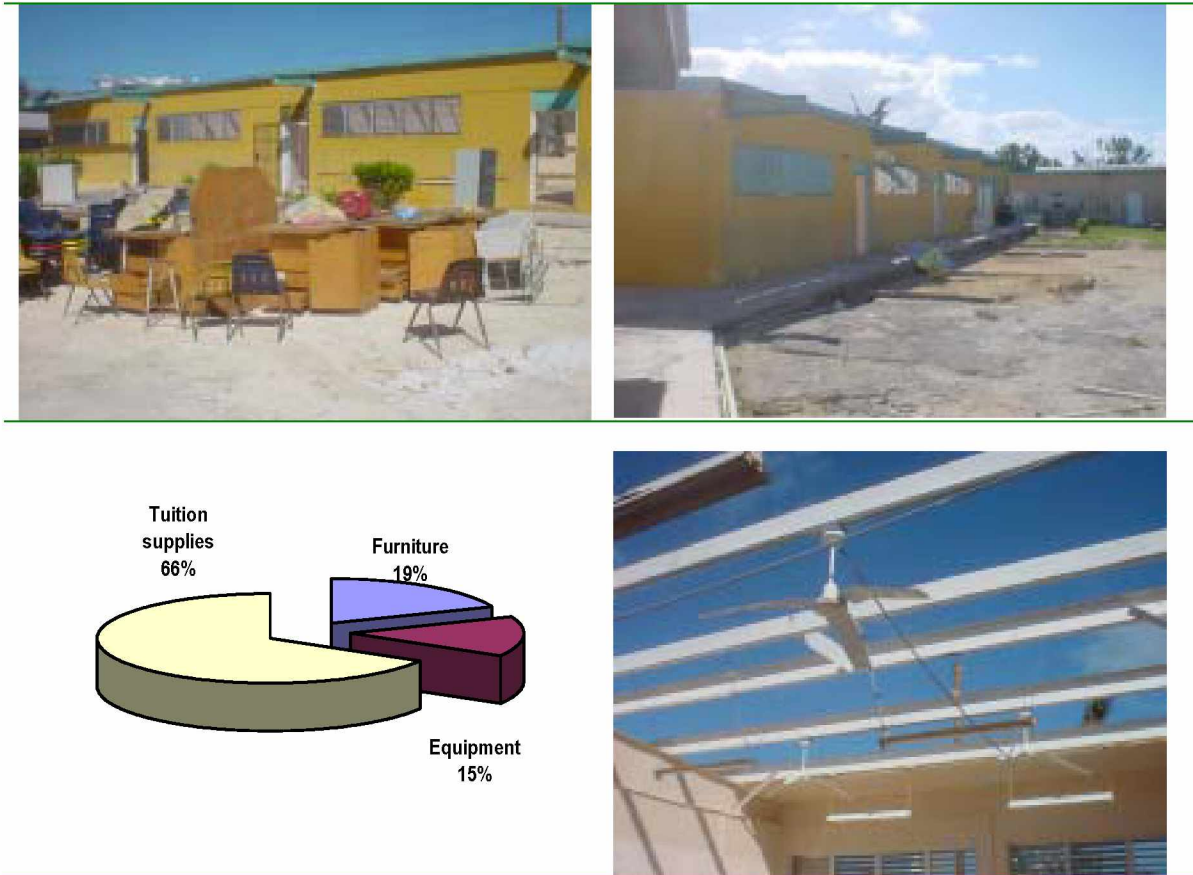
Education institutions suffered damage due to structural impact and losses in furniture, equipment and tuition supplies, as illustrated in Figure 7. Some sports facilities and installations of the Ministry of Youth Sports and Culture also suffered damage, as detailed in table 8, where all the direct damage to the sector is summarized.

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<sup>13</sup> MOH, PHA, *Post Hurricane Frances Rapid Health Needs Assessment*, Nassau, September 13, 2004.

Figure 7

## COMPOSITION OF DAMAGE TO EDUCATION INSTALLATIONS



Although the accounting of damage has not yet been completed by the government institutions, a amount of B\$ 11 million has already been earmarked, 95% of which for repairing or replacing school buildings. The distribution of those resources by island illustrates the severity of damage in the different territories (see figure 8).

The Ministry of Education has extracted already some lessons from the disaster that are summarized in the following:

- The Bahamas geographical location makes hurricane preparation an integral part of management and planning as well as of the education curriculum. As part of it the Ministry proposes a vulnerability assessment programme, preventive maintenance programmes, and a hurricane preparation and recovery plan.
- Given the use of schools as shelters more thought ought to be given to the type of location of these installations. Designated schools as shelters should be adequately equipped to provide reasonable accommodations.

- A plan developed to ensure that schools and their contents are secure would have avoided much of the reported losses.

- Schools should identify an use “secure rooms” to store valuable resources that could be damaged.

- A maintenance programme would lead to more resilient installations, as the experience showed that those schools with better physical conditions suffered less damage.

- A proper system for the assessment and quantification of damage would lead to a better definition of emerging needs, since experienced demonstrated that initial requests after the disaster had to be substantially revised.

Figure 8: Distribution of school repairs, by territory

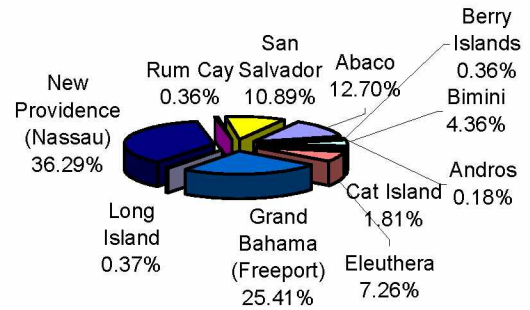


Table 9

DIRECT DAMAGE TO THE EDUCATION INFRASTRUCTURE

	(Thousands of B\$)
<b>Building repairs</b>	20,331
- Schools (all levels, from preschool to high school)	20,282
- Bahamas Technical and Vocational Institute	49
- College of the Bahamas	...
<b>Furniture</b>	141
- Schools (all levels, from preschool to high school)	103
- College of the Bahamas	38
<b>Equipment</b>	110
- Schools (all levels, from preschool to high school)	100
- Bahamas Technical and Vocational Institute	10
<b>Tuition supplies</b>	501
- Schools (all levels, from preschool to high school)	494
- Bahamas Technical and Vocational Institute	6
<b>Sports and recreation facilities</b>	716

Source: ECLAC, based on data from the Ministry of Education.  
 a) No information was available from the College of the Bahamas.

Summarizing the damage and impact to the education and sports sector is as follows:

	Direct Damage	Indirect impact	Total	External component (imports)
Total (thousands)	21,799	18	21,817	9,818

## b) Infrastructure

Given the wind force, the storm surges and sea swells brought by Frances and the slow moving heavy rainfall delivered by Jeanne, damage to infrastructure was substantial, in spite of the good quality infrastructure the Bahamas has. Some design problems and vulnerabilities not properly considered became evident, namely in the case of roads and some bridges and over-water passages.

*i) Transport and works.* Damages in the transport sector were substantial in Abaco, Grand Bahama and several of the Family Islands (see table 9). Docks for both commercial and artisanal fishermen and communication between settlements in the smaller islands, alongside roads and damage to seawalls are the most representative structures affected.



In Eleuthera — as in other islands — docks were destroyed as decks were blown away and foundations eroded. Coastal roads were particularly affected given their proximity to the sea and either were covered by sand pushed inland by the sea surges or eroded by water force. A particularly relevant case is the Glass-Window Bridge, which has suffered damages in the last three major hurricanes, and was again affected by the ocean surge which permanently poses a problem for this structure. Even though it was repaired and is considered safe and open for use as the vital link between communities in

the island, there are plans to change the design of this passage altogether by building a new route. Government is intent in accelerating pre-existing plans to build a new causeway to interconnect the islands on the shallow and more secure edges of the land.

Airports either flooded or were affected in their runways close to shore by sand deposits. Such is the case of Marsh Harbour airport terminal in Abaco and the domestic terminal of the Grand Bahama Freeport airport which due to the flooding that affected all the installations. The domestic one will require the demolition of the old structure, and the international one some repairs. Also considerable damage was suffered by the control tower. In the case of the Freeport terminal it was closed for international flights for a period of five days due to lack of electricity.







Severe flooding in urban streets also caused damage to the pavement and roads and, as the level of waters raised considerably, a large number of vehicles, automobiles and utility ones, were damaged or lost. In recognition of this government has authorized the duty free importation of replacement vehicles to the amount of the commercial value of the lost one.

Figure 9 shows the percentage of infrastructural damage suffered by the different islands in the Bahamas. The major impact on Grand Bahama is directly related to the severity and intensity of both hurricanes over that island and also to its higher level of infrastructural development of Freeport and commercial and industrial activities. It should be noted that, also, in this case, there was a higher coverage of insurance of property here.



Figure 9

**INFRASTRUCTURE DAMAGE, BY LOCATION**

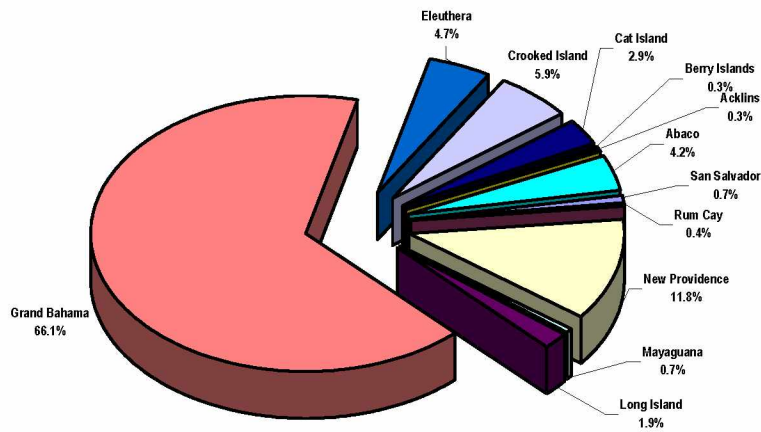


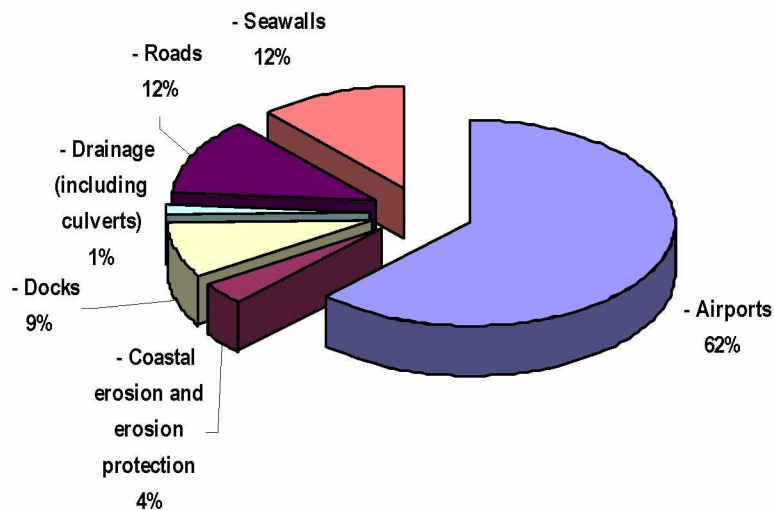
Figure 10, on the other hand, shows the type of infrastructure affected, in terms of the estimated cost of reconstruction or repairs. Notably damage to the Grand Bahama airport stands out, but equally significant is the damage to roads, sealls and docks, pointing out to the very high exposure and vulnerability of the shore line in the Bahamas.

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**Figure 10**

**INFRASTRUCTURE DAMAGE, BY SUBSECTOR**

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In sum, as seen in table 10, the very significant direct damage has indirect consequences that are as very relevant but have not been sufficiently quantified. This underscores the high value added that infrastructure has in terms of affecting economic activities. The external component in this case refers to imports of material and equipment to repair or rebuild the infrastructure as well as to external currency revenues generated of the non-operation of the export in terms of landing fees and visa collection.

Table 10

## SUMMARY OF DAMAGE TO TRANSPORT AND COASTAL INFRASTRUCTURE

	Direct Damage	Indirect Losses	Total	External component
Damage to infrastructure (to be rebuilt, repaired, strengthened)	44,448.10		47,842.90	28,891.27
- Airports	21,200.00			
- Coastal erosion and erosion protection	1,280.00			
- Docks	2,908.10			
- Drainage (including culverts)	500			
- Roads	4,060.00			
- Seawalls	4,000.00			
Losses		3,394.80		1,357.92
- Estimated cost of road operation and transport services in current circumstances		3,394.80		
- Loss of vehicles	10,500.00			

Source: ECLAC, on the basis of data from the Ministry of Works and Utilities.

ii) *Energy*. Although no information was directly provided by the Bahamas Electricity Company (BEC), an estimate of damage was made possible through other government reports. In spite of the storms, fuel imports and oil supply were not disrupted. Neither was the generation capacity impaired. Damages mainly affected the distribution grid. Downed power lines, fallen poles and relatively minor structural damage to a few power stations affected electricity supply in the Family Islands, sometimes causing damage or leading to incurred losses in other sectors, i.e. loss of vaccines in clinics.



In New Providence and Grand Bahama there was sufficient generated power available to meet demand, however as a result of the high winds brought by Frances, transmission and distribution lines were cut leading to prolonged blackouts in some parts of the islands. This was particularly severe in Grand Bahama and Abaco and, to a minor extent, in the other territories.

The impact was significantly reduced by the decision taken by BEC's management to turn off the electrical system in the majority of the Family Islands and selected areas of New Providence. The same had to be done in Grand Bahama by the Port Authority. This not only avoided accidents and the danger to the population associated with electric shocks, but



impeded damage to more lines if they had remained energized, thereby reducing the need for more materials, the workload of repair teams and a longer restoration process.

Availability of poles in stock reduced the waiting time for supplies. Nevertheless the arrival of Jeanne a few days later, while restoration work was in progress, caused a longer sustained period of inadequate supply and delay in the full restoration. This was true for BEC’s repairs in the Family Islands, as well as for the private electrical supply company in Grand Bahama that experienced a longer delay in restoring power since many of the poles that snapped under Frances were not replaced yet when Jeanne hit. Hurricane Jeanne had minimal impact on Eleuthera, Great Harbour Cay, Bimini and New Providence. There was substantial damage on Abaco, namely downed power lines and poles, damaged cables and switches.

Some 1300 poles were damaged (broken, upturned, blown over) and had to be replaced. Over 110 transformers had to be replaced and lines of wires replaced were substantial. In addition to the strength of the storm, in some instances the age of the poles, below standard quality of some of the older ones, as compared to the ones currently used, were contributing factors to the high number of cuts. The collapse of these electricity poles brought about cuts in telecommunications and cable television since their lines are frequently attached to the same poles. Regional and international cooperation consisting of teams coming from overseas was instrumental in reducing the time of recovery.<sup>14</sup>

Direct damage for BEC has been estimated in B\$ 800 thousand. No quantification of indirect losses associated to the repair crews work and sustenance (of the teams from overseas) and of loss of business was possible. In the case of the Grand Bahama, the Freeport private provider has estimated its losses in the vicinity of 8 million, with 2,300 poles down and lack of service for a period of over 6 weeks to over 18,700 customers.

On the basis of the available information the estimated damage and losses are thus:

Direct damage (BEC and GB Freeport)	2.8
Indirect losses (to be determined for BEC)	6.0
TOTAL	8.8

iv) Water and Sewerage. Information was provided by the Water and Sewerage Corporation, which provides this basic service to the whole of the territory, except for Grand Bahama. In all instances, the basic source of water, namely the well fields, were not compromised. Neither were the existing desalination plants that produce drinking water by reverse osmosis from the sea.



<sup>14</sup> Teams came from the United States (South Carolina), and other Caribbean countries such as Jamaica, Belize, the British Virgin Islands, and the Turks.

Nevertheless, the majority of residents throughout the Bahamas experienced loss of water supply due to electric power interruption. This, for the most part, lasted less than a week. Damage in the water supply chain was experienced in longer isolated areas and was for the most part limited to power outage that impeded water pumping and flooding in low-lying areas. There were also problems relating to the barging of water from Andros, preventing the WSC tankers from being able to off-load at Arawak Cay.

In Abaco, while flooding occurred in most wellfields, it was fresh water flooding and therefore the issue was a delay in re-commissioning the power station. In Grand Cay the main holding tank had extensive damage, as was the one on Moore's Island, although both are by now operational. In Treasure Cay there was some damage in the sewer lift stations.

In Eleuthera a stand-by generator had to be installed for the well field in Bogue to operate in order to give relief to the northern part of the island, in Spanish Wells to Windermere. Additionally, as the pipe is attached to the Glass-Window Bridge that is usually damaged by regular storms, again this time it was damaged. As pointed out in the transport section, the Glass-Window Bridge requires a more permanent solution that reduces its vulnerability and recurrent cuts.

In Bimini the underwater line from the North to the South of the island was damaged and a temporary connection was made.

In Nassau the water supply was seriously affected, requiring rationing of supply, as all production centres were without power. Thus damage was not extensive but expenses were increased in terms of labour costs for the operational requirements.

In Andros wellfield damages occurred as it flooded with seawater and could not be placed in operation till it was safe. Till 5 November the wellfield has not fully recovered in terms of quality (excessive salinity) but production is at near 95%. It remained at 40% for two weeks and less than 60% for another two to three.

In Grand Bahama due to the severe and prolonged power outage after Frances, the general water supply was reduced causing a great scarcity. Tankers had to be sent to Freeport in order to meet the basic requirements and drinking water was supplied by means of containers and bottles. Jeanne compounded the already compromised situation, leading to a very slow gradual restoration of power and, thus, to normal water supply. Thus, damages were estimated by the mission in 2.7 million of which 2.4 would be indirect losses.

Total direct damage and indirect losses associated with extraordinary expenses are shown in table 11. It must be noted that no account was made, as part of the indirect losses, of business loss due to the non-provision of the service by the WSC.

Table 11

## WATER AND SEWERAGE DAMAGE AND PARTIAL LOSSES

(Thousands)

	Direct damage	Indirect losses	Total
<b>Total</b>	540	2,775	3,315
<b>Family Islands</b>	<u>240</u>	<u>375</u>	<u>615</u>
Abaco and Moore Island tanks repairs	120		
Repair of sewer lift stations and infrastructure in Treasure Cay (Abaco)	50		
Repair to pipe in Glass-Window Bridge (Eleuthera)	10		
Stand-by generator for Bogue wellfield	5		
Repairs to Bimini underwater line	5		
Temporary connection to Bimini Sands RO and water purchases	20		
Labour costs in Bimini		15	
Labour costs in New Providence		150	
Rent of stand-by generators for sewerage systems in Nassau		10	
Charter for tankers in Arawak cay (to replace lack of wellfield supply in Andros Shipping)		200	
Restoring buoy in Morgan's Bluff	10		
Corrective action in Andros Wellfield	20		
<b>Grand Bahama</b>	<u>300</u>	<u>2,400</u>	<u>2,700</u>
Grand Bahama supply and distribution network repairs	300	400	
Grand Bahama loss of service		2,000	

Source: ECLAC estimate.

v) *Communications*. Lessons learned from Hurricanes Floyd and Michelle in the past led the Bahamas Telecommunication Corporation (BTC) to strengthen its network in locations like Eight Mile Rock, Bimini and Arthur Town. On this occasion negative impact was thus not as severe for most of the Family Islands. In Grand Bahama, though, the strength of the phenomenon led to relatively greater impact. BTC has reported that domestic and international connectivity was restored upwards of 95% within 24 hours of the passage of the hurricanes over any particular island.



The preventive investment made after Floyd and Michelle in replacing more than 28 towers at a cost of \$B15 million meant that the damage of over 37 million wasn't even higher. See Table 11. The islands of Inagua, Long Island, Crooked Island, Mayaguana, Abaco, Andros, and Moore Island never lost contact with the national network even though several major cables were severed or damaged as a result of Hurricane Frances. The ARCOS cable was cut between New Providence and

Florida but given this cable's characteristics<sup>15</sup> it did not affect internet and data transmission or BTCs international services on it. Connectivity was maintained throughout Frances via ARCOS and the country's international traffic was automatically routed to Florida via the Turks and Caicos, Dominican Republic and Central and Latin America.

The Bahamas II submarine cable (between New Providence, Grand Bahama and Florida) that connects Grand Bahama to New Providence and the country's link to the international communication grid was depowered briefly after the roof of the Eight Mile Rock station was compromised.

Table 12  
IMPACT ON TELECOMMUNICATIONS  
Per Islands (thousands)

Infrastructure damage (lines, poles, relay stations, etc.)	Frances	Jeanne
<u>Damage</u>	<u>18,414</u>	<u>14133</u>
Abaco	258	5,999
Berry Islands	16	35
Bimini	90	20
Cat Island	430	715
Eleuthera	0	200
Grand Bahama	17,500	6,359
Long Island	0	100
New Providence	0	600
Rum Cay	0	35
San Salvador	120	70
<u>Losses</u>		
Service costing	3,200	1,400
Grand Total	21,614	15,533

Source: ECLAC, on the basis of information provided by BTC.

BTC only provided information of the indirect costs incurred to maintain and restore service and has not estimated the loss of business due to the brief periods of deactivation or service interruption. According to the data presented, indirect losses only reflect partially the indirect costs since it does not include business losses. Thus the total costs which amounted to 37.2 million, are mostly damage and the 4.1 losses do not adequately reflect loss of business or income reduction.

<sup>15</sup> It is considered a self-healing ring.

### c) Productive sectors

i) *Agriculture*.<sup>16</sup> This sector's importance, as is the case in most of the Caribbean, is more in social terms than in its contribution to GDP. Nevertheless, agricultural (fruits, vegetables, ornamental plants), and fish and other crustacean represent more than a third of domestic exports.

The hurricanes caused damage to food crops, ornamentals and livestock in terms of actual production, infrastructure damage, loss of supplies and inputs, and livestock of poultry and small ruminants. In the instance of permanent crops damage was of varying degree depending on the location and severity either of the windstorms or the tidal wave-surges. Additionally processing facilities, namely for fish processing and export were also damaged and the ministry of agriculture's infrastructure also suffered a blow.



Agricultural crops. In the crops all the current crop was lost but only a fraction of the areas were affected by saltwater intrusion (namely in Abaco, Eleuthera and Grand Bahama) are expected to be out of production from nine to twelve months.



The pineapple crop, a fast growing activity enjoying a recovery suffered from severe wind damage in Eleuthera, requiring the provision of planting materials to accelerate the recovery of this crop.

The native corn crop (namely in Long Island and Cat Island) was lost in its entirety affecting the short term supply of native yellow corn grits.

Fruit crops throughout the Bahamas suffered losses associated to windstorm damage which destroyed most of the citrus fruits (grapefruits and oranges for exports being severely reduced this season) and the supply for local market will also be affected.

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<sup>16</sup> The only available information for this assessment was the Prime Minister's address to Parliament on 6 October 2004, except for the fisheries sector where the Department of Fisheries gave the mission some detailed assessment that was used to establish direct damage and losses. A similar exercise was not possible for crops, plantations, and livestock.



It has been recommended by the ministry and international organizations<sup>17</sup> that to minimize future potential natural disaster-associated crop losses that repanting of long-term crops should be done only in areas where there is no a history of localized flooding or storm surge.

Animal production was affected mostly in the poultry industry. Production losses were significant in Grand Bahama and Abaco broilers and eggs, with impact in inventories (both live and frozen), layers, stored eggs, and structural damage to farms, all associated to flooding ensuing storm surge. Small ruminants were lost in the Family Islands but no figure of losses was available at the time of the assessment.

While in depth analysis of farmer losses was in progress, the passage of Hurricane Jeanne interrupted the assessment in Cat Island, Eleuthera, Exuma and Long Island.

An immediate response in the provision of seeds, transplants and fertilizers is required to ensure the replanting of the vegetable crops lost. Also required is the provision of planting materials for pineapple and banana plants for their recovery. The Minister of Agriculture has proposed a mechanism of repayment to utilize the current stock in the Fish and Farm Store as relief supplies. Needs and supply availability have been identified for citrus plants and pineapples. Most banana growers will not require planting material to re-establish their crop since only those affected by salt water flooding will require stock for replanting. Additionally Government has offered assistance for land clearing and opening of feeder farm roads.

Direct assistance has been requested by farmers from the existing Stores on Credit Programme, alongside a similar mechanism as the one put in place after hurricane Floyd consisting of an income replacement stipend. There is an incomplete list of 1,215 farmers that have registered losses son there is no estimate of the amount of resources such stipend would require.



Food processing. In the food processing industry a request has been made by a major plant for the bulk import of fruit (namely citrus) for repacking and supply to the domestic market and replace their internal supply while farms recover.

Fisheries. Even though most damage suffered in the sector was reported due to boats being destroyed, sunk or severely affected, there were damages to seafood processing plants in a few of the islands.

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<sup>17</sup> FAO offered a national technical cooperation project (TCP) that would look at inputs as relief to farmers and, alongside the Caribbean Development Bank, were looking at a risk mitigation project with respect to agriculture, taking a similar pilot effort in Jamaica as a starting point. The Government intends to request a TCP on hurricane preparedness. This would be reinforced by the proposal being discussed since November 2003 for another one to restructure the public marketing system.

Additionally, due to the passage of both Hurricanes over month period and the continuing threat of other ones the remaining of the fleet was largely unable to return to its fishing grounds. Additionally lobster traps, fish pots and other gear were displaced by the changing sea currents, affecting also the lobster habitats. All these factors contributed to short-term losses of income and a slow recuperation later in the crawfish season.



Damage on fisheries, by island is illustrated by Figure 11.

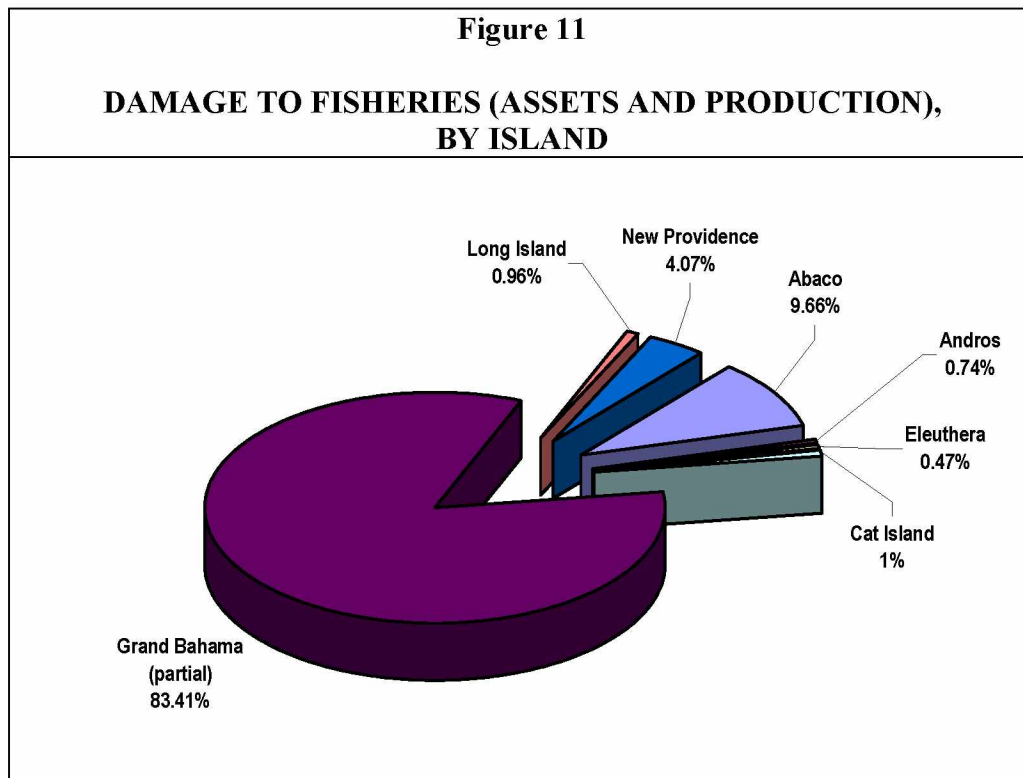


Table 13 summarizes the impact of both hurricanes in the agricultural sector in the Bahamas, as far as the availability of information allowed it.<sup>18</sup>

*ii) Industry and commerce.* No appropriate assessment was possible either on the drop of industrial processing activities linked to agricultural sector and of commercial activities for the

<sup>18</sup> A substantial margin of error is to be allowed in this case and no clear distinction between direct damage and indirect losses, possible underestimated, are to be allowed for.

domestic market. In the case of commercial activities linked to tourists and visitors (duty free shops, souvenirs, taxicabs, etc.) they are implicitly included in the effects estimated for tourism in general.

Table 13

## IMPACT ON THE AGRICULTURAL SECTOR

	Direct damage	Indirect losses	Total	External component
Agriculture and fisheries	10,651.2	34,348.8	45,000.0	15,750.0
Crops	3,928.7	900.0		
- Bananas (current crop and future production loss)	3,000.0	900.0		
- Pineapple	910.0	...		
- Native yellow corn	...	...		
- Citrus (oranges and grapefruits for local and export markets)	18.7	...		
Citrus trees	...	...		
Ornamental plants and protective structures	...	...		
Animal production		...		
- Poultry (inventories, installations and production)	4,150.0	...		
- Other ruminants (Cat Island, Exuma, Long Island, Eleuthera, Abaco)	...	...		
Fisheries	2,502.6	3,111.5	5,614.1	4,725.4
Assets lost	957.6			430.9
Processing facilities	1,449.6			652.3
Fishing vessels	736.3			331.3
Other (vendors, fishermen's installations, barges, etc.)	37.7			16.9
Fishing gear	69.0			31.1
Production	1,545.0			1,338.5
Loss of production (Crawfish, scalefish and conch meat, September to December)		3,111.5		2,955.9
Installations of the ministry of agriculture and fisheries	70.0			

Source: ECLAC estimates

*iii) Tourism.* Being this one of the main sectors of the Bahamian economy and its taxes contributing more than 10% of government tax revenue alone, any impact on this activity impinges heavily on the overall performance of the economy and the resources available to the state. With security concerns, especially regarding travel, being an important issue, The Bahamas have benefited from their close vicinity to the USA - a mere 90 miles: tourism has fully recovered from the downturn following the 9/11 events, with arrivals increasing by 5.3% in 2002 and 4.3% in 2003, and now standing 9.9% higher than the 2001 figure. In addition, arrivals are to potentially increase further, due to bright economic prospects for the US economy as well as a weaker US\$, which could attract non-US visitors.

Due to the untimely visit of Frances and Jeanne, this sector experienced some negative impact both in terms of direct damage to their infrastructure, landscaping and facilities and amenities, and in a drop in visitors. Arrivals in 2003 were up due the 5.4% increase in sea arrivals compared to a 1.9% increase in air arrivals, the sector that brings higher revenue per capita to the island. The first 8 months of 2004 were characterized by strong performance: at the end of August, overall air and sea arrivals were up by 16.4% compared to the same period in 2003, cruise arrivals were up by 22%. Grand Bahama had experienced exceptionally high growth, with air and sea arrivals up more than a third up (35%) and cruise arrivals almost doubled (93%).

Following hurricanes Frances and Jeanne three weeks later hurricanes, arrivals have however decreased significantly in the immediate aftermath. Whilst overall arrivals in Nassau and Paradise Island were 8% lower than in September 2003, arrivals in Grand Bahama and the Family Islands were down by 80%. Air arrivals to Grand Bahama were down by 90%, sea arrivals (including sea landed passengers and cruise arrivals) by 70%. Other islands saw significant decreases too: Nassau/Paradise Island were down by 35%, Abaco by 34%, Andros by 30%, Berry Islands by 27%, Bimini by 17%, Cat Cay by 18%, Eleuthera by 34%, Exuma by 10%, Long Island by 33%, and San Salvador by 93%. Cruise arrivals for the Bahamas for September 2004 (by first port of entry only) were down by 36% for the Bahamas. Overall, arrivals for The Bahamas as a whole were 40% lower in September 2004 than in September 2003.

Nevertheless, despite the hurricanes, overall visitor arrivals for the Bahamas for the year to date (January-September 2004) were 12% higher than the respective figure in 2003. This is driven by strong performance in the months prior to the hurricanes as well as the fact that traditionally September and October are relatively quiet months in terms of visitor arrivals. Whilst several hotels on the islands, especially on Grand Bahama, will not be open in time for the upcoming holiday season, the outlook for the remained of the year seems optimistic as recent indications point to a strong start of November 2004. It is therefore likely, given the strong performance at the start of 2004, that overall growth in the industry will be positive, despite the natural disasters.

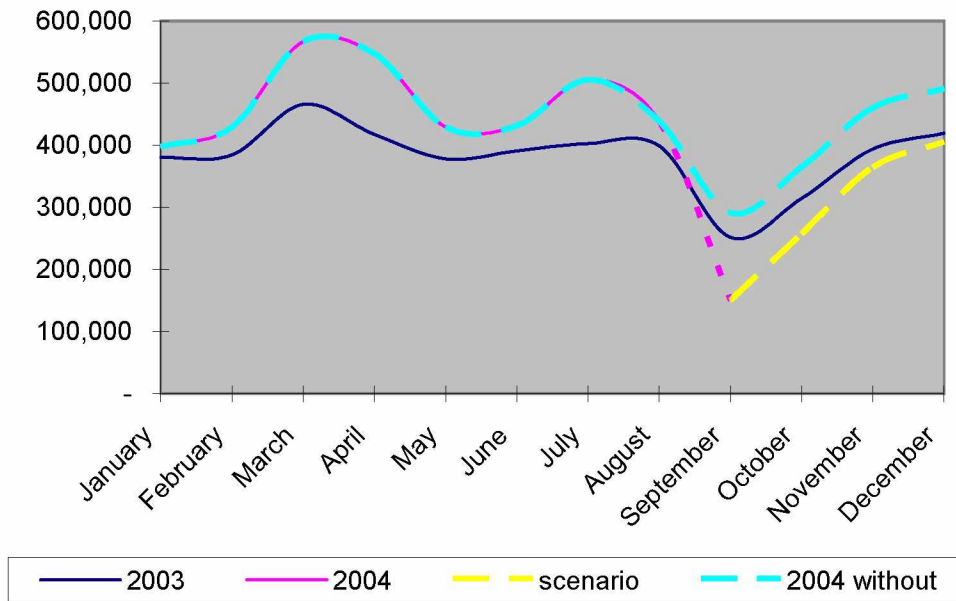
Figure 12 presents the actual number of air and sea arrivals for 2003 and for 2004 (inclusive of September 2004, the most recent data), the expected number of visitors given the hurricanes and a projected scenario of what arrivals are likely to have been, had the disasters not occurred. The two scenarios presented are based on the following assumption: scenario 1 assumes that tourism will recover in line with the rest of the economy, based on arrivals of the previous year. Scenario 2 takes the strong performance of the first 8 months into account. Thus, according to the scenarios, tourism could increase overall between 7.1% and 10.6% overall in 2004, compared to 2003, whilst tourism would likely have grown by 16.4% in absence of the hurricanes. Estimating the revenue loss due to the hurricanes, it will cost the Bahamas 250 million dollars at the end of the year. This was calculated using the estimated expenditures of tourist arrivals lost due to the hurricanes both of cruise ship visitors and air arrivals.

Figure 12

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**EXPECTED VARIATION IN TOURIST ARRIVALS DUE TO HURRICANES**


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Direct damage was mainly associated with roof damage that affected the inside structures, furnishings and hotel rooms that need repair, flooding in some low common and service areas and in their beaches, landscaping and grounds. Even though in general terms most of the most important and well known hotels survived unscathed, with only minor repairs, at least half a dozen hotels have had to close immediately after the hurricanes to undertake those repairs as necessary and be in prime condition for the high tourism season at the end of the year. Only a couple of them will remain closed during that period given the extent of the damage. Of the total hotel capacity in the archipelago (295 hotels with a capacity of 15,508 rooms, see table 14), highly concentrated in Paradise Island and Grand Bahama, less than 10% suffered damage. A gross estimate of those repairs, based on a sample of hotels in Grand Bahama and partial information for the rest of the Family Islands gives a direct loss of B\$ 28,3 million.

The indirect losses, considering both the reduced business due to the diminished visitors during the repairs period and the additional operational costs incurred in repairs, landscaping and refurbishing are substantial, as can be seen in Table 15, which summarizes the direct and indirect component. It must be borne in mind that the tourism sector is covered by insurance so, once the claims presented by them are settled a significant amount of these losses will be covered, some significant part of it through reinsurance, bringing an inflow of resources to the sector and the economy. Such payments, though, in many instances will come as reimbursements of expenses incurred, given the urgency of having the facilities in operational form by the beginning of December.

Table 14  
 NUMBER OF HOTELS IN THE BAHAMAS  
 2004

	Hotels	Hotel Rooms
Nassau	50	4,582
Paradise Island	14	3,941
Abaco	44	854
Acklins	6	37
Andros	29	377
Berry Islands	3	63
Bimini	9	181
Cat Island	15	162
Crooked Island	6	41
Eleuthera	31	270
Exuma	19	434
Harbour Island	15	218
Inagua	4	21
Long Island	15	144
Mayaguana	3	29
Rum Cay	0	-
San Salvador	2	306
Spanish Wells	1	19
Grand Bahama	29	3,829
TOTAL	295	15,508

\*Source: Hotel Licensing Department  
 Prepared by Research Department, Ministry of Tourism  
 All numbers are subject to revision.

Table 15

## BAHAMAS: TOTAL DIRECT AND INDIRECT IMPACT ON TOURISM

(Thousands)

	Direct damage	Indirect Losses (flows affected)	Total damage and losses	External impact (exports not made, imports required) a/
TOTAL	29,313.3	80,622.0	109,935.3	
DAMAGE TO ASSETS LOSSES	20,935.8			12,561.5
Variation in operational costs				
- Extraordinary costs	250.0			
- Variations in working hours and extra wages	800.0			
- Variation in sales and prices (in the case of tourism includes cancelled reservations)		80,622.0		150,000

Source: ECLAC estimates.

a/ Adjustment has been made in these losses to account for insurance payments that will be received, on an estimate made by the mission of claims and settlements.

**d) Environmental impact: clean up costs**

Although no proper environmental impact assessment was possible for the study, it became clear to a layman's view that major coastal erosion had occurred, namely in Grand Bahama and Abaco, given the strength and size of the sea swells. Movement of sand dunes and damage to beaches, which will need nourishing, particularly in the tourist-used beaches, was compounded by the deposit of debris, uprooted trees and substantial amount of solid waste brought about by the hurricanes. Just in the case of New Providence, by no means the most affected island,

clean up emergency work after Frances (for the duration of less than ten days) was estimated in 900 thousand dollars. Given the need to rent equipment and lease contractors to undertake this task as a matter of urgency in order to avoid sanitary hazards and environmental risks, as well as to restore landscape and the natural habitat of the islands, in as much as to open remaining partial blockage to roads, this task will be quite costly. On the basis of estimates for Freeport in the Grand Bahamas and the necessity of preparing appropriate dumping grounds, this remains the main environmental concern. A figure of no less than 21.6 million has been estimated by the mission.<sup>19</sup>




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<sup>19</sup> Estimated cost of daily clean up (based on New Providence from 9 to 24 Sept. 60,006.77  
 Estimated cleaning days necessary for Abaco, Grand Bahama and Family Islands 360  
 B\$ 21,602,436



### III. SUMMARY OF IMPACT

In summary, from the sector by sector analysis table 16 presents direct damage and indirect losses, as estimated by ECLAC on the basis of information available, of the impact that the Bahamas suffered as a consequence of the passage of hurricanes Frances and Jeanne.

Esteemed to be the most severe onslaught since Hurricane Floyd, this event had an uneven effect both on the different islands (see figure 13). Such a profile reflects both the uneven force the hurricanes had on the different territories, the vulnerability of the exposed infrastructures, and the value that each island brings to the national economy. Of the overall effect, indirect losses amount to 41% of the total, being the direct damage the remainder 59%. This all has an external impact, in terms of exports foregone, additional necessary imports and financial flows the commonwealth will receive (as emergency assistance, insurance payments, donations and contributions) and payments it will make (to repay credit contracted, if such is required for the reconstruction process).

Table 16

#### COMMONWEALTH OF THE BAHAMAS: SUMMARY OF DAMAGE AND LOSSES CAUSED BY HURRICANES FRANCES AND JEANNE

(B\$ millions)

	Direct damage	Indirect losses	Total	External component
	228.59	152.95	381.54	209.08
<u>Productive sectors</u>	<u>39.95</u>	<u>114.97</u>	<u>154.92</u>	<u>103.69</u>
Tourism	29.30	80.62	109.92	87.94
Agriculture	10.65	34.35	45.00	15.75
<u>Infrastructure</u>	<u>92.24</u>	<u>12.17</u>	<u>104.40</u>	<u>57.68</u>
Transport	44.45	3.39	47.84	30.25
Telecommunications	37.15		37.15	24.15
- Electricity	2.80	6.00	8.80	1.82
- Water and sewerage	0.54	2.78	3.32	0.35
Public buildings	7.30		7.30	3.29
<u>Social sectors</u>	<u>96.40</u>	<u>2.47</u>	<u>98.87</u>	<u>44.62</u>
Housing	71.70	0.20	71.90	31.20
Health	2.90	2.25	5.15	3.60
Education	21.80	0.02	21.82	9.82
<u>Emergency relief</u>		<u>1.75</u>	<u>1.75</u>	<u>-1.22</u>
<u>Clean up and waste disposal</u>		<u>21.60</u>	<u>21.60</u>	<u>4.32</u>

Source: ECLAC estimates.

Equally illustrative is to see the composition of damage by sectors (table 15) which warns on the burden the disaster has brought upon the productive activities of the country. As per the ECLAC estimate 41% of the damage is linked to productive activities, so reconstruction and recuperation are meant to bring back to production those sector most hurt. In spite of the very visible damage to infrastructure and in the visible social impacts, it is the returning to a fully productive economy that should take the lead as a priority in the aftermath of the hurricanes.

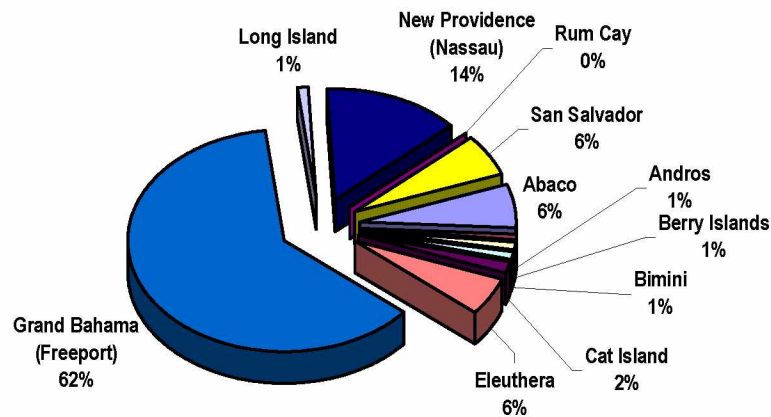
The profile of damage varies somewhat, though, if the individual sectors are singled out (see table 16). Under that perspective it is housing that takes the lead, followed by damage to infrastructure and the impact on tourism, given the indirect losses that even a brief interruption and minor direct damage to that sector can cause.

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**Figure 13**

**BAHAMAS: DAMAGE AND LOSSES, BY ISLAND**

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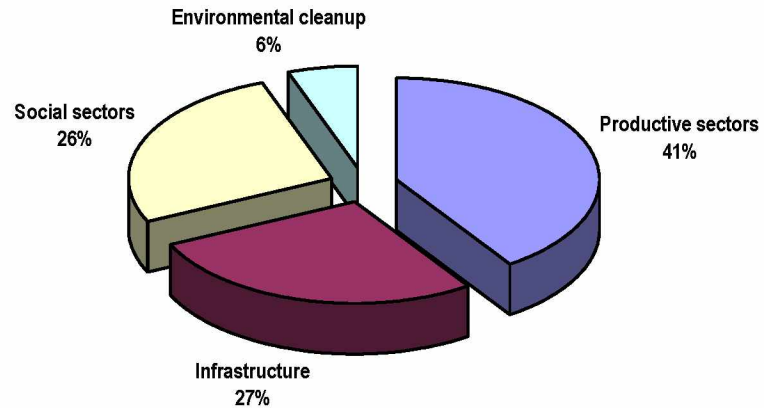
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**Figure 14**

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**COMPOSITION OF DAMAGE, BY SECTOR**

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To put the damage and losses in perspective it bears noting that it amounts to 7.3% of the Bahamas current GDP in 2003. In terms of the external burden, the effect in terms of exports and imports amounts to 9.3 of the same years merchandise trade (as expressed by the sum of total exports and imports).

#### IV. MACROECONOMIC IMPACT: THE PRE AND POST DISASTER SITUATION

This macroeconomic analysis is divided in three sections that deal with the macroeconomic performance of the Bahamian economy. In particular, the first section will describe the macroeconomic trends prevailing in 2003: the year prior to the disaster. The second section will describe the performance of the economy without the hurricanes, i.e. the economic situation that existed prior to the hurricanes and the performance that had been projected for the remainder of the year. Finally section four then describes how the disasters affected the economy and in how performance was degraded.

##### a) The pre-disaster situation

This section presents a description of the economic performance of the Bahamas prior to the hurricanes. It presents the performance of the real sectors of the economy during 2003 and the performance of monetary and fiscal policy. Regarding the latter, due to the fact that the fiscal year in the Bahamas commences on July 1st, running to June 30th of the following year, the fiscal performance presented here relates to the period July 1st 2003 to June 30th 2004. Which precise time-period is covered is pointed out respectively, as final figures for the entire fiscal year 2003/2004 (denoted henceforth FY2003) are unavailable at time of writing. Thus, whilst hurricanes Frances and Jeanne had no impact on FY2003, they will however have significantly affected the current fiscal year, FY2004, as they occurred at the end of its first quarter. Unfortunately, at time of writing, no data regarding the first quarter of FY2004 was available.

##### - Main economic trends

In spite of the sustained recovery of the tourism sector following the 9/11 events, economic activity increased only marginally by 0.2% in 2003, down from approx. 2.9% in 2002. This growth largely reflected an underperforming construction sector and a decline in the financial sector due to the implementation of strict regulatory changes on the sector's operations.

Consequently, this slowdown had a negative impact on tax revenues, leading to a fiscal deficit which remained at the level of the previous year despite intentions of the government to increase the tax effort on the basis of measures aimed at improving the administrative efficiency of the tax system. The deficit also reflected high public expenditures due to payments of interest on external debt, which itself increased following the launching of a US\$200 million bond issue in July 2003. The placement of the bond however had a positive effect on the capital and financial account of the balance of payments allowing it to compensate the current account deficit.

Thus, within a context of low growth the authorities decided to adopt a policy of continuity and did not change the orientation of the previous year's monetary policy stance. The reserve requirement remained at 50% and preserved a ceiling on the rate of growth of commercial

banking credit which was established, as a precautionary measure, following the 11 September 2001 events.

- Economic policy: Fiscal policy

During FY2003 the deficit is expected to have increased to 2.9% of GDP, placing the government off track to reduce the deficit from 3.5% of GDP in FY2002 to 2.2%. Whilst the government refrained from increasing existing taxes or introducing new ones, but rather aimed at strengthening tax administration and reducing tax evasion and fraud, increased revenue growth was unable to compensate for increased expenditure growth, leading to the increase in the deficit. Preliminary figures point to a deficit of \$85.6 million, which is comparable of that of the previous year.

Following a shortfall in FY2002, revenue in FY2003 will once again fall short of its budget. After 11 months of operation total tax and non-tax revenue was more than 17% short of the budget total annual budget. Poor performance was registered in all components apart from capital revenue, which was 36% higher than its budgeted amount. Thus, after 11 months of FY2003, taxes on international trade and transactions – the largest tax component – were 28% off the overall annual budget; departure taxes were short by 27% and property taxes by 43%, to name a few.

Overall, expenditure was budgeted to reach \$1088.6 million in FY2003, up from \$1046.7 million in FY2002. After the first eleven months of FY2003, total expenditure was 15.2% below its budget. However, interest payments and subsidies may well overshoot their budgeted amount, given current trends.

These developments have had a notable effect on the government's total debt position, which has been on an upward trend for the recent years and reached approx. \$2,370 million at the end of 2003, up 7.3% from 2002, of which \$293 million takes the form of external debt. External debt rose substantially due to the \$200 million bond issue of July 2003. Currently 77% of external debt takes the form of government securities, the rest is held in the form of loans. The government's debt service ratio increased from 13.8% in 2002 to 24.6% in 2003.

- Economic policy: Monetary policy

Since the events of 11 September 2001 the Central Bank has maintained a restrictive monetary stance in the form of quantitative limits to avoid unsustainable imbalances in its balance of payments and to lessen the pressure on the stock of international reserves. Hence, the ceiling on the growth of domestic credit has been maintained. The increase in international reserves due to the aforementioned bond issue and its potential effect on monetary aggregates and spending was partly neutralized by the re-financing operations of the public multilateral debt. Nonetheless, international reserves increased (29.7%) representing a cover ratio of non-oil imports equivalent to 16.5 months.

The growth in external net assets translated into an increase in the deposits of the commercial banking system which reflected an improved liquidity position. In this way free reserves expanded 12%. Nonetheless, due in part to the low level of economic activity, the

incipient liquidity did not result in an expansion of the credit to the private sector and in fact its rate of growth declined with respect to previous years. The sectors that benefited most are agriculture (17% in 2003) and fisheries which registered a threefold increase in its demand for loans. This situation, in conjunction, with the contraction in the supply of credit to the public sector (-22%) was reflected in the growth of the monetary aggregates (4.2% for M2 and M3).

Growth in the liquid liabilities of the commercial banking system was matched by the purchase of treasury bills which resulted in a decline in their corresponding rates of interest, which in turn lessened the burden of interest payments on the internal debt.

Evolution of the main economic variables

- Economic activity

Economic performance throughout 2003 was weak, with real GDP growth amounting to a marginal 0.2% due mainly to the underperformance of the construction sector and the limits imposed on the operations of the financial sector services through stricter regulations, even though tourism recovered registering an approximate rate of growth of 4.3%, with a total of 4.6 million tourists visiting the island.

Activity in the construction sector weakened during 2003 in terms of the number of permits granted as well as the average value of construction starts. Whilst the number of commercial building starts decreased by 27.9%, this was partly offset by the number of residential building starts, which increased by 16.9%. Underlying factors of this development were increased private foreign investment into the Bahamas as a second home market, as well as increased local mortgage lending. Overall, the number of permits issued in 2003 decreased by 0.3% compared to 2002, whilst the number of construction starts increased by 12.2%. However, the value of construction starts decreased by 6.9%.

The financial sector witnessed a continuation of changes to its regulatory framework meeting to meet international obligations to combat money laundering. Whilst total assets of the credit unions rose by 13.3% to \$150.1 million, performance of the Commercial Backing System (BISX) was mixed: although the volume of shares rose by 17.8%, the total value fell to \$7.4 million, representing a decrease by 50.6%. Nevertheless, total market capitalization remains high, standing at \$1.7 billion.

Tourism fully recovered from the downturn following the events of 11 September 2001. Arrivals increased by 4.3% in 2003, and now stand 9.9% higher than the 2001 figure. Arrivals are to potentially increase further, due to bright economic prospects for the United States economy as well as a weaker United States dollar, which could attract non-United States visitors. The surge in arrivals is explained by higher sea arrivals compared to a 1.9% increase in air arrivals, the sector that brings higher revenue per capita to the island.

Fisheries experienced strong growth in 2003, with exports increasing by 8.6% in volume terms, earning \$108.1m in earnings. However, the Bahamas is heavily reliant on the export of crawfish: not only did these contribute 97.7% of export earnings, moreover, exports of other species dropped by 31.7% over the year.

- Prices, wages and Employment

Inflation increased to 3.0% in 2003, up from 2.2% in 2002. Whilst items such as medical care and health as well as recreation, entertainment and services increased relatively strongly (a 9.8% and 9.8% increase, respectively, in 2003), food and beverages increased by only 0.5% and education by 1.1% (down from 12.9% in 2002).

Unemployment increased in 2003 by 1.7% to 10.8%, following its upward trend started in 2002 following the decade-low of 6.9% of 2001.

- Evolution of the external sector

The overall balance-of-payments outcome was almost twice as high at \$110.90 million as in 2002, with a capital and financial account surplus of \$222.3 million in 2003 that more than offset the current account deficit of \$538, taking into account errors and omissions.

The current account result is explained in part by a widening of the deficit in the merchandise balance and a decline in the services balance surplus. In turn, the imbalance in the merchandise balance responded to a contraction in exports notwithstanding the rise in fisheries exports (9%) and conch tails (10%). For their part, imports expanded as a result of the rise in non-oil purchases.

The reduction in the surplus on the services account is accounted for by the relatively higher increased spending by residents abroad eroding the positive effect of higher inflows from tourism. It should also be noted that the rise in net outflows corresponding to transport and insurance services was offset by the reductions in construction and government services. The income account diminished its deficit due to the lower level of financial flows associated with the repatriation of commercial bank profits. This is explained in turn by the stagnation in economic activity and by the implementation of more strict control procedures for off-shore banking activities.

The result of the capital and financial account is explained by the proceeds derived from the \$200 million bond issue which were partly offset by capital outflows associated with refinancing operations and which involved the public and financial sectors.

## **b) Anticipated performance prior to the disasters**

For 2004, the economy was forecast to grow by an estimated 3%, fueled by an increase in tourism: over the first 8 months of 2004 alone, overall air and sea arrivals had increased by 16.4% compared to the same period in 2003, cruise arrivals were up by 22%. In addition, the outlook for construction was positive, with the recently increased investment of more than US\$1billion due to Phase III of the Kerzner project. This led the authorities to be upbeat about the additional employment opportunities as well as the increase in tourism and resulting increase in trade as well as subsequent trade revenue.

- Fiscal Policy

Whilst the budget for FY2004 is available, there are no final figures available for FY2003, let alone any which would signal performance of the first quarter of FY2004 which ended on September 20th, just after the hurricane Jeanne struck. Thus, it is so far impossible to give rough, let alone precise, estimates of the effects of the disasters on the overall budget.

In its FY2004 budget presentation the government highlighted that it is targeting a fiscal deficit of 2.9% of GDP, pointing out however that increased expected revenue will enable higher expenditure. The government once again affirmed its commitment to strengthen tax collection rather than introduce new taxes, leaving the possibility open to 'review [at a later date] a wider range of fees and charges, which in some cases have not been charged in decades'. Yet, it is unlikely that this will happen before the next election in 2006. In addition, whilst a value added tax has been discussed for several years, no concrete plans have yet been made. The government is however keen to point out that it is not envisaging any kind of income taxation. Rather, due to the current low rate of taxes imposed – The Bahamas has one of the lowest tax burdens in the region – a number of options and different strategies seem viable.

The government also announced that it will create a venture capital fund in the 2004/2005 budget. Whilst full details are still to be announced, the ultimate aim will be for the government to take up small equity positions in new firms and hence provide the owners with start-up capital that is not in the form of debt. Once enterprises are flourishing, the idea is to resell the equity stake.

Vis-à-vis the outlook for FY2004, the government recently announced that it expects recurrent revenue to be 5% higher than the budgeted amount in FY2003, resulting in a full 14% higher figure than the realized figure for FY2003. This is due largely to increased economic performance; however the collection of stamp revenue is to be strengthened, with an expected amendment to the Stamp Act to close current loopholes. These measures are expected to contribute an estimated \$10 million to the government's coffers, as is the sale of the Radisson Hotel.

For FY2004, expenditure is budgeted to exceed that of FY2003 by 11%. Of this amount, some \$31 million are to be directed towards debt service and \$83 million for recurrent services. Recurrent expenditure is budgeted to reach \$1052 million, and capital revenue, excluding borrowings, should amount to \$11 million. Approximately 45% of the total budgeted recurrent expenditure for FY2004, amounting in total to \$954 million excluding debt service, is to be directed to the social sector, whilst approximately 20% is going to be directed toward national security. With an estimated \$100 million to be spent on economic services, such as tourism, agriculture, trade, etc., some \$65 million is budgeted for infrastructure

- Construction

Unfortunately, no figures on the number of permits issued or on construction starts and completions for 2004 are available at this time.



- Prices, wages and Employment

Annual inflation was as low as 0.12% over the year to June 2004, compared to 3.37% for the respective period in 2003, a particularly low rate; in fact, a large number of items in fact saw price decreases. Whilst housing remained constant, medical care and health increased marginally (0.6%), as did transport and communication (0.7%); this however followed strong increases in these items in 2003, where medical care and health as well as recreation, entertainment and services increased relatively strongly (a 9.8% and 9.8% increase, respectively, in 2003).

No new figures are available on unemployment, which stood at 10.8% at the end of 2003; however the strong growth in tourism suggests that it decreased during the first months of 2004.

- The External Sector

Following a significant entry for errors and omissions, the overall balance-of-payments outcome at the end of the first quarter of 2004 (latest data available) was almost more than 50% higher at \$109.1 million than the respective period in 2003. The capital and financial account ran a surplus of \$2.5 million was more than offset by a current account deficit of \$24.3 million.

The widening of the current account deficit – it was more than 250% higher than the respective figure for 2003, is largely due to a widening of the merchandise deficit, which slackened as increased imports – driven by domestic and tourism-sector demand– were larger than the \$8.8 million decrease in oil imports. This was however somewhat offset due to an increase of 15% in the surplus on services to \$334.4 million.

**c) Post-disaster macroeconomic assessment**

As a result of the two natural disasters, the growth estimate for the Bahamas needs to be revised. From a previously estimated rate of approx. 3% (real GDP growth), translating the above-mentioned damages results in an estimated decrease of real GDP growth to approximately 1.3%. Whilst this reduction is significant, the Bahamas will hence still witness positive growth for 2004 (See table 17).

Whilst the economy has suffered due to the effects on tourism – lost earnings alone amount to approximately \$80.6 million, the economy has benefited from strong tourism growth prior to the disasters and will also benefit from a rapid return of activity in this sector (despite the fact that activity in Grand Bahama will remain below par for several months until all hotels return to business). In addition, the economy will experience increased construction activities during the last quarter of 2004, which will carry over into 2005 and influence growth in 2005 too. Thus, growth in 2005 is likely to exceed 3%.

So far, the authorities have not made any revisions to the FY2004 budget. Although it is too early to quantify the effects on revenue and expenditure, it is likely that whereas revenue will to a large extent be unaffected, expenditure is likely to increase: although imports will increase substantially, the government has declared that a large number of items, largely related to

reconstruction imports and the replacement of destroyed assets, will be able to be imported duty free given until 31st December 2004 – a date that is most likely to be extended.

Expenditures are however likely to increase as the reconstruction of public utilities and in particular housing that will be provided to the lower-income groups must be paid for – either directly by the government, or financed through loans, which will have to be serviced. This being said, it seems unlikely that the 2.9% deficit that the budget FY2004 projects will be met, especially given recent experience with overshooting of previously announced targets.

Table 17

## THE BAHAMAS: MACROECONOMIC INDICATORS, 1994 - 2004

	2000	2001	2002	2003 /a	Pre-Hurricane 2004 a/	Post-Hurricane 2004 a/
	<i>Annual rates of growth b/</i>					
Gross domestic product (1991 prices)	5.0	-2.0	2.3	0.2	3.0	1.3
	<i>in Bahamian dollars</i>					
Gross domestic product per capita	16,205	15,997	16,218	16,691	17,192	17,415
	<i>Annual rates of growth b/</i>					
Real sector indicators (rates of growth)						
Tourist arrivals	15.2	-0.5	5.2	4.4	16.4	10.6
Value of construction starts	19.0	-8.0	55.0	-6.9	--	
Value of construction completions	-34.2	8.0	-5.9	-12.7	--	
Electricity generation (mwh)	6.9	3.9	5.6	-1.6	--	
Balance of payments	<i>Millions of Bahamian dollars</i>					
Current account balance	-471	-348	-339	-427	-24.3*	
Merchandise balance	-1,371	-1,151	-1,151	-1,204	-367*	
Exports fob	805	614	740	681	--	
Imports fob	2,176	1,765	1,776	1,885	--	
Services balance	1,029	951	980	902	334*	
Income balance	-173	-190	-211	-163	-24*	
Unilateral transfers	43	42	42	38	9*	
Financial and capital balance c/	410	318	400	538	133.4*	
Net foreign direct investment	250	101	169	145	--	
Financial capital d/	161	217	79	292	--	
Global balance	-61	-30	61	111	109*	
Variation in reserve assets e/	61	30	-61	-111	109*	
Other indicators of the external sector						
External debt (millions of Bahamian dollars)	368	346	311	349	--	
External debt (% of GDP)	7	7	6	7	--	
Prices						

/Continúa

Table 17 (Conclusion)

	2000	2001	2002	2003 /a	Pre-Hurricane 2004 a/	Post-Hurricane 2004 a/
Rate of change in the consumer price index (end of period)	1.0	2.9	2.2	3.0	2.8	
Weighted deposit real interest rate	2.2	2.2	2.1	1.0	1.0 a/	
Weighted lending real interest rate	9.9	9.3	9.1	8.1	8.0 a/	
Central government	<i>Millions of Bahamian dollars</i>					
Recurrent revenue (budget)	930	986	1023	1062	1176	
Current expenditure	846	836	954	969		
Capital account deficit (budget)	132	138	137	142	137	
GFS deficit	14	164	188	122	164	
	<i>Percentage of GDP</i>					
Overall balance with grants						
Overall balance without grants and net lending	0.4	-0.7	-2.6	-2.9	-3.5 a/	
Money and credit	<i>Millions of Bahamian dollars</i>					
Domestic credit	4,158.5	4,676.9	4,940.4	4746.18	5225.39+	
To the public sector	647.4	774.8	870.8	705.54	950.62+	
To the private sector	3,511.1	3,902.1	4069.6	4040.64	4274.77+	
Liquidity (M3)	3,464.6	3,624.6	3,742.7	3931.82	4374.39+	
Money supply and deposits in national currency (M2)	3,378.3	3,532.7	3,651.1	3,676.8	4100.56+	
Foreign currency deposits	86.3	91.8	91.6		--	

Source: ECLAC on the basis of official information.

a/ Preliminary figures.

b/ At constant 1991 prices.

c/ Includes errors and omissions.

d/ Includes the capital and financial balance minus net foreign direct investment and plus errors and omissions.

e/ The (-) sign indicates an increase in reserves.

\*: End Q1.

+: End 9/04.

## **V. RECOMMENDATIONS FOR A REHABILITATION STRATEGY, A DISASTER REDUCTION PROGRAMME AND A RISK MANAGEMENT AND RISK TRANSFER**

ECLAC estimates show that in the last three decades more than 150 million people have been affected by disasters in Latin America and the Caribbean, including more than 12 million direct victims and 108,000 deaths. Moreover, total damage –and this was not an exhaustive estimate for the whole region– amounted to more than 50,000 million measured at constant 1998 dollars, concentrated in the smallest and relatively less developed countries.

The use of ECLAC's assessments as an objective, accepted account of damages and losses has led to its growingly being considered the standard for the identification of a country's needs to face the post-disaster reconstruction process beyond the emergency and humanitarian phases. Furthermore, it is increasingly a means of establishing the link between sustainable development process and disasters. Visualization of disaster's negative impact on socioeconomic goals and sustainable and sound environmental processes is helping to further mainstream risk management in the face of natural events that recurrently have severe negative effects in the Sub region. More specifically, its use has led to research partnerships with the international financial institutions intended to discuss financial, fiscal and regulatory tools as a means to increase resilience in the face of existing and well known hazards. Disaster assessment studies done over the years in countries of different size and level of development provides elements for the discussion of the following conceptual framework: the reduction of exposure to hazards and the reduction of existing / increasing vulnerabilities is part of the anticyclical policies that governments pursue in order to smooth and accelerate their growth path instead of seeing their development process (as perceived for example in achieving the MDGs) further delayed, postponed or set back.

Mostly damage will require government investment to replace assets lost, including impact in the agricultural sector. In the case of duty free activities and tourism damage and losses will be covered by the private sector and will be compensated through existing insurance. In the Bahamas –as in most of the Caribbean-- hurricanes are a recurrent, almost “common” or yearly occurrence with several degrees of severity and damage in a widely spread territory of small magnitude separated by large expanses of the Caribbean sea. Communications affected by these events, discontinuity or lack of connectivity in the territory, high vulnerability and fragility of the territory and its environment call for a more systemic disaster prevention institutional and financial response.

The rehabilitation, restoration of pre disaster services and full scale reconstruction requires the assistance of external cooperation since losses exceed the government's budgeted available resources and its investment capacity. Thus this study confirms the need of the Commonwealth to have access to the IDB's disaster response facility. This facility will help government undertake the most immediate tasks without endangering the state's finance, monetary and external stance. Beyond this first component, the consequences of the two consecutive disasters confirm the need for a disaster management and risk reduction medium

term programme that will lead to higher resilience. The immediate facility resources should be oriented to actions that do not aim at only restoring the previous conditions of vulnerability and exposure but incorporate mitigation and risk management criteria.

1. The assessment exercise made also evident the need for the country to have better information collection, harmonization of information and training in damage assessment and needs assessment techniques. It is proposed that such training in the use of assessment tools be incorporated as part of the immediate response facility and that in the longer term a goal should be the development of appropriate risk reduction and transfer mechanisms in the framework of a national disaster management policy.

2. It is highly desirable that the government initiates a programme under the IDB's disaster prevention sector facility, including the appropriate training in methodologies that, firstly, rapidly express the needs assessment (such as DANA and others); and express total damage and losses and their implications (as is done by the ECLAC methodology) to determine changes in the country's macroeconomic stance, its capacity to mobilize, execute and absorb the resources for the reconstruction process. Part of this second set of actions or programme should be to enhance the country's response mechanism and emergency management, namely the National Emergency Management Office (NEMO).

3. A third, longer term objective, should be policy change at the national level and with full participation of the community in the main as well as in the family islands. Should policies would include appropriate proposals in terms of risk management, risk reduction and risk transfer mechanisms, including insurance and the possible marketing of specific catastrophic risk financial instruments and products the country may access or promote.

It is worth noting that with respect to development issues and longer-term considerations, the UNDAC report proposed the following areas as priority: <sup>20</sup>

- Follow on work to the Climate Change Project.
- Training needs for NEMA and the Met Service
- The need for an infrastructural/Physical planning update to include disaster mitigation strategies and Climate Change considerations.

The reduction of the vulnerability of the population through the strengthening of their resilience to future natural hazards has to be the aim of any reconstruction effort.

- Small grants, soft loan facilities or community micro-financing facilities will need to be urgently established where they don't exist and/or strengthened where they already exist to assist persons in the rural and coastal communities at rebuilding their livelihoods. Particular grants/lending facilities should be targeted to the fishery sector, farmers and the

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<sup>20</sup> For that purpose UNDP/UNDAC proposed a technical mission to discuss potential projects in the following areas should be arranged prior to the end of the year.

women of those communities who lost assets through damage to small shop holdings and home based enterprises, such as food preparation and backyard gardening;

- Projects that support the improved resilience of schools and health centers as they are used as shelters should be paired to access to education by the school age population will be essential such as school book, meals and uniform grants (including shoe grants) as many children walk to school in the rural areas;
- Model starter homes, built to standards which will resist the devastation of hurricane force winds, should be built as demonstration units for communities, many of whom will be involved in self help projects to rebuild their communities should be coupled to appropriate location and hazard mapping to avoid locating these in heavily exposed areas.
- Projects which support public health and sanitation education should be supported to reduce the burden on the health system and given the damage to health facilities improve existing ones and repair the damaged ones with higher standards.
- In the aftermath of a natural disaster, attention was paid to the psycho-social trauma of the affected population. Such support is required for all persons affected but particularly the most vulnerable: the women and children in the rural communities. It is also an opportune moment to introduce disaster prevention and mitigation education.

Priorities may be established on two criteria: one based on the importance of the damage incurred and the urgency of the task. Thus the following actions should take precedence in the programming an Immediate Response Facility:

- Completion of clean up, debris removal and waste disposal,
- Environmental sanitation, prioritizing water and sanitation to avoid health hazards,
- Education and health facilities infrastructure restoration to maintain health services, and
- Infrastructure rehabilitation that, given the nature of the islands' territories implies sea defenses, even though these ought to be taken at a later stage as part of a comprehensive disaster prevention facility.

The impact of the natural disaster on the economy should not further enhance the vulnerability of the country's economy. Thus they should lead in the medium to long term to appropriate institutional and policy changes that enhance resilience and risk management, reduction and transfer. Reconstruction investment must be appropriately programmed overtime and paired with external resources in the form of donations or concessionary loans.

Authorities are also aware that in smaller economies fiscal policy is tied to the external and foreign exchange constraint. It is important to articulate and coordinate fiscal aims with an external balance where export performance is coupled with appropriate financial flows and remittances. In this sense the prompt recovery of agriculture and the expected continuing

dynamism of mining and tourism are of paramount importance for creating a growth enabling macroeconomic context.