APPENDIX XI
METHODOLOGICAL APPENDIX

This brief methodological appendix contains tables with examples of the type of information that the sector specialist must collect both in field research and from government authorities, chambers of commerce and professional associations.

Table 1

BASIC CENSUS INFORMATION FOR EACH OF THE NON-AGRICULTURAL SECTORS
Year:_____

Items	National	In the affected area	Share (%)
1. Number of establishments			
Large			
Medium-sized			
Small			
2. Personnel employed			
Large			
Medium-sized			
Small			
3. Fixed assets			
Large			
Medium-sized			
Small			
4. Value added			
Large			
Medium-sized			
Small			
5. Other items of interest			

Note: Criteria used to define large, medium-sized, and small establishments must be spelled out, as they may vary from country to country.

Table 2

ESTIMATE OF THE DIRECT DAMAGE TO BUILDINGS AND FACILITIES IN THE MANUFACTURING SECTORS AT REPLACEMENT COST VALUES
(With the same characteristics in their original design)

Size/Type of enterprise/ number of establishments	Surface area affected in m^2	Average cost per m^2 constructed	Total value
Total (230)			
Large (30)			
Sugar refineries (10)			
Shipyards (10)			
Man-made fibers (10)			
Food (10)			
Medium-sized (80)			
Severely damaged (50) (a)			
With minor damage (30) (a)			
Small (120)			
Severely damaged (90) (a)			
With minor damage (30) (a)			

As an example, it was estimated that the average surface area per establishment is 1,400 m^2 for medium-sized and 500 m^2 for small establishments.

Note: Figures between parentheses for the number of establishments and average surface areas for medium-sized and small establishments, as well as the specific breakdown by branches, are given only as examples and refer to the work carried out in Venezuela. The sector specialist must obtain actual figures for each case under consideration. This same estimate can be carried out using depreciated values for the condition buildings and installations were in when the disaster occurred or using reconstruction costs, including vulnerability mitigation components for buildings and facilities. The choice of estimate will depend on the specific purpose of the assessment.

Table 3

ESTIMATE OF DIRECT DAMAGE TO FIXED ASSETS AND STOCK IN THE MANUFACTURING SECTOR AT REPLACEMENT COSTS

Enterprises/number of establishments	Buildings and facilities	Machinery and equipment	Furniture and vehicles	Stock	Total
Total					
Large					
Sugar refineries					
Shipyards					
Petrochemicals					
Others					
Medium-sized					
Major damage					
Minor damage					
Small					
Major damage					
Minor damage					

Note: The breakdown by branch is presented only as an example; it refers to work carried out in Venezuela. The sector specialist must obtain real figures for each case. Damage to stocks should be determined at the replacement value prevailing under pre-disaster conditions. Depending on the aim or purpose of the assessment, damage to other assets can be estimated at their pre-disaster depreciated value; at replacement costs, with the same characteristics as their original design; or at replacement cost, including vulnerability-reduction components, in the case of buildings and facilities. The incorporation of technological advances should be considered in the case of machinery and equipment.

Table 4

ESTIMATE OF PRODUCTION CHAINS BY SECTOR AND ENTERPRISES LOCATED IN THE AFFECTED AREA
(In local monetary units)

Branch/enterprises	Source of raw materials and inputs				Destination of final goods			
	(a)	(b)	(c)	Total	(a)	(b)	(c)	Total
Food								
Large								
Medium-sized								
Small								
Textiles								
Large								
Medium-sized								
Small								
Cement								
Large								
Medium-sized								
Small								
Other branches								
Enterprise 1								
Enterprise 2								

(a) Same area; (b) Rest of country; (c) Import/Export

Note: Information on production chains is collected to determine the indirect effects of a disaster on the main sectors or main enterprises located in the affected area. In other words, an interruption in the supply of raw materials and inputs will undoubtedly affect production flows of certain sectors or enterprises for a given time. Production chains or interrelationships can be estimated on the level of a branch or representative enterprises, as illustrated here.

Table 5

LIST OF BASIC INFORMATION REQUIRED FOR THE ASSESSMENT
(Information usually provided by governments a few days after a disaster happens)

FEATURES OF THE NATURAL PHENOMENON THAT CAUSED THE DISASTER:

- Date of occurrence
- Duration of the phenomenon
- Definition of the phenomenon and degree of intensity
- Other characteristics of the natural phenomenon

AVAILABLE SOURCES OF INFORMATION:

- Census
- Redatam
- Periodic assessments by ministries, planning offices
- Other sources of information (including Internet)

Table 6

AFFECTED STATES OR PROVINCES AND DEGREE OF DAMAGE TO NON-AGRICULTURAL PRODUCTIVE SECTOR STABLISHMENTS
(In the currency of the affected country)

Name of the state or province/size of establishments	Degree of damage		
	Severe damage (Total loss)	Medium damage (Partial loss)	Slight damage (Minor loss)
State or province 1			
Large			
Medium-sized			
Small			
State or province 2			
Large			
Medium-sized			
Small			

Note: The government or the municipality of the affected country or area, in collaboration with competent authorities (chambers, professional associations, trade associations, etc.), should prepare this basic information to enable the sector specialist to make rapid progress in field research.

III. TOURISM

A. INTRODUCTION

1. General considerations

In most of the countries in the region, tourism is a sector that is not very well defined and whose activities are often included under other sectors in national accounts. However, in Mexico, Central America, and the Caribbean, which are frequently affected by disasters, tourism is a significant sector of the economy because of the foreign currency earnings and employment it generates. We have thus included a separate section on tourism in the Handbook.

Tourism activities may be grouped together under the following headings:

- Coastal tourism, typical of most of the islands and seafront areas in the Caribbean, Mexico, and Central America, although also found in South American countries;
- Tourism based on natural and historic heritage, commonly found in Mexico, America Central and South America;
- Marine tourism, including yachting, diving, touring on relatively small sail or motor-powered vessels, sport fishing and the like;
- Cruise tourism, traditionally very popular in the Caribbean but also extending to South and Central America in recent years;
- Winter tourism;
- Business travel;
- Family trips to visit friends and relatives; and
- Restaurant operations and activities.

Impact assessment can be dealt with similarly for all tourism activities except for cruise tourism, which generally does not require installations other than port facilities for their operation.

In contrast to business travel, which takes place year round, tourism in the region is essentially seasonal as international tourists seek a break from the cold weather prevailing in their countries of origin. Therefore, typical tourism seasons are different for countries in the northern and southern hemispheres.

Another characteristic of tourism is that damage to infrastructure or operations caused by disasters has repercussions on other sectors. Services such as restaurants and taxis that cater to visitors are also affected. The tourist industry attends to the needs of visitors either in their country of origin (domestic tourism) or in other countries (international inbound/outbound tourism). In general terms, domestic and inbound tourism are normally more affected by a disaster, although residents of the affected country who are planning to travel abroad (outbound tourism) may also be affected.

In general, international inbound tourism has increased markedly in Latin America and the Caribbean in recent years in tandem with the industry's sustained growth worldwide. Caribbean economies depend to a high degree on tourism, while Central American economies have experienced tourism growth greater than 5% a year in recent years. Moreover, both the World Tourism Organization and the World Travel and Tourism Council foresee growth rates for the sector of 5% in the Caribbean and between 2% and 10% for the rest of the region.

International inbound tourism generates sizable foreign currency earnings, domestic and foreign investment, male and female employment and tax revenues. The sector is also linked to a wide variety of production chains for both local and imported goods and services, including ground, marine, and air transportation; communications and informatics; financial and business services; commerce; construction; and productive services in general. The sector can also lead to significant imports of goods and services not produced locally. In short, the impact of a disaster on the sector has ramifications for other sectors.

Tourism must be sustainable over time, meaning it needs a range of attitudes, behaviors, strategies, plans, laws and regulations in response to economic, social and environmental needs. A comprehensive tourism policy is required to enable an improvement in the country's economic opportunities, which benefit communities and enterprises, and to contribute to personal, social and economic growth for men and women.

2. Tourism and vulnerability

Throughout the region, tourism facilities have sprung up in many destinations without proper planning for ecological and vulnerability concerns. The resulting facilities are often located in hazardous areas due to the absence of environmental management and natural resource land-use regulation, as well as a lack of adequate construction standards or regulatory compliance in hotel infrastructure and related human settlements. To a large degree, tourism depends on the preservation of the environment and of cultural, social, and historical heritage. Therefore, the effects of disasters can be aggravated if the aspects mentioned above are not strictly addressed.

It is well known that in some areas or regions –such as the Caribbean or Central America– the tourism developments most frequented by international vacationers are highly exposed to natural phenomena with significant hazard risk. The best tourism destinations in the region are frequented by tropical storms and hurricanes, as well as floods and earthquakes. Although vulnerability varies from one country to another, the fragile nature of the land and marine ecosystems in the region is obvious, as is the lack of suitable environmental management, disaster-aware land-use planning and building standards.

Other long-lasting natural phenomena, such as droughts and prolonged eruptions of volcanic ash, can indirectly affect tourism through the national supply chain –farming and agribusiness, or even access to water for human consumption– or by reducing the comfort foreign tourists experience. When supplies are stressed, the industry may suffer from resentment among a local population denied basic services while foreigners receive privileged treatment.

The sector is also exposed to another type of vulnerability related to the volatility of demand. News of a real or potential disaster can prompt immediate cancellation of reservations by foreign tourists and diminish future tourism flows and income for a long time.

3. Sources of information

The tourism sector specialist can use various domestic and international sources to obtain reliable information both on the pre-disaster situation and on the damage caused by the action of the underlying phenomenon.

Domestic information sources includen the following :

- Recent censuses or surveys on tourism spending and stays;
- National statistics offices;
- Information provided by national tourism sector authorities;
- Hotel and tourism associations;
- Tour operators;
- Central banks;
- Port and airport authorities; and
- Insurance companies.

Useful international sources include, among others, the following:

- Central American Tourism Integration Secretariat;
- Caribbean Hotel Association;
- Caribbean Tourism Association;
- International reinsurance companies; and
- World Tourism Organization.

Reviews of the information published by these international bodies and field visits to the aforementioned local institutions will allow the specialist to gather information on the situation both before and after the event.

B. ESTIMATION OF DAMAGE AND LOSSES

As in other sectors, it is necessary to estimate direct damage to assets and indirect losses in economic flows derived from tourism. Afterwards, it will be necessary to calculate the impact on the main macroeconomic variables (e.g., gross domestic product, foreign accounts and public finances), employment and the differential effect on women.

1. Direct damages

As a first step in estimating the direct damage to the sector, it is necessary to establish the baseline. This refers to tourism-specific assets that are not included in any other sector, and it requires detailed information on items such as the number and capacity characteristics of several types of stablishments:

- Hotels, by category;
- Guest houses or family-run establishments;
- Cultural and historical attractions;
- Docks and jetties;
- Vessels or transportation vehicles;
- Winter tourism facilities; and
- Restaurants.

The tourism specialist may use such data as a basis for comparison when assessing direct damage to the infrastructure and equipment of the sector. The area affected by a disaster may be superimposed on this baseline as the first step in damage assessment.

Estimating direct damage for the tourism sector is essentially the same as for the housing sector, and what was indicated in that chapter will not be repeated here. In the case of tourism facilities, equipment might include water collection and purification works, wastewater collection and treatment plants, electricity generators and large-scale air conditioners. Likewise, any damage to the sector's transportation infrastructure and equipment should be included –docks, leisure vessels and other works– so the tourism specialist must work closely with the transport and communications specialist to make his/her work easier and to avoid double accounting. Moreover, the tourism specialist must make estimates –once again, in close cooperation with the environmental specialist– on the impact on natural resources that make up the tourism environment, such as erosion or silting of beaches. Undoubtedly, these estimates will be specific to the sector in some cases, whereas in other cases cooperation with other sector specialists will be essential.

It should be noted that beach erosion is common in the case of tropical storms and hurricanes in the Caribbean and Central America. Nature tends to return the beaches to their pre-disaster condition, but the process may be a lengthy one.[1]

2. Indirect losses

As in the case of direct damage, the tourism specialist must obtain basic information on the pre-disaster conditions for making comparisons against the post-disaster situation.

In this regard, the specialist should obtain the following information for each of the categories of establishments or recreation and tourism transportation equipment noted above:

- Number of rooms, listed by capacity;
- The occupancy rate of each type of room and changes over time (the demand curve);
- Number of restaurants and their capacity;
- Capacity of vessels and average occupancy during the tourism season;
- Employment –by type of job or trade and by se – needed to operate each type of establishment; and
- Volumes of inputs of all types –food, drinks, etc.– that must be imported for the operation of each type of establishment and vessel.

1 Hurricanes Luis and Marilyn significantly damaged the beaches of Anguilla in 1995. A later visit to the island in 1996 revealed that the sand had almost returned to normal thanks to the action of the tides.

The tourism specialist must estimate, in close consultation with the owners of establishments or trade associations, the time needed for a return to pre-disaster conditions. Such a projection, in conjunction with occupancy and demand-curve data, makes it possible to estimate the loss of income the industry is likely to suffer (i.e., the main indirect losses).

The tourism specialist must also consider other types of indirect damage, including the possible cancellation of reservations from abroad and the possible cost of a promotional campaign to once more attract tourists.

The cleaning of beaches damaged by tides, floods or winds, and of paths used in ecotourism must also be counted as indirect damage.

It is necessary to calculate the extent of probable tourism occupancy reduction resulting from damage to other related sectors, such as access roads, water and sanitation systems, power availability and communications systems.

Any decrease in tourism activity also implies a diminished demand for related services such as the use of restaurants, nightclubs and taxis.

One last type of indirect damage that must be taken into account by the tourism and other sector specialists is the increase in insurance premiums that companies often charge in the wake of a disaster in anticipation of a possible recurrence of such extreme natural phenomena. The increased premiums could lower the income and operational profitability of tourism establishments.

In the case of cruise tourism –so popular and common in the Caribbean– certain additional estimates must be carried out. Since cruise liners schedule their ports of call well in advance, it is possible to estimate the income each of those tourism sites would have been likely to post had the disaster not occurred. Any natural event that damages port infrastructure, natural resources or commerce in a tourism destination can cause immediate cancellations by cruise ships. Interviews with national authorities, businessmen in the sector and representatives of the cruise lines can allow the analyst to project how long it will be before the ships are likely to return, thereby making it possible to calculate the corresponding (indirect) loss in income.

3. Macroeconomic effects

We have already noted that officials in many countries in the region register tourism as part of accounts for other sectors; tourism satellite accounts are not yet common practice or might not be sufficiently updated or broken down by activity or region. In addition, the heterogeneous nature of tourism means that many of its components fall within the sphere of other sectors, such as infrastructure, communications, commerce and the like. Despite such potential obstacles, and in light of the economic weight of tourism in the Caribbean and increasingly in Central America, Mexico and elsewhere in the region, it is necessary to conduct a separate assessment of tourism's macroeconomic impact.

Such an analysis must include calculations of how a disaster's impact on the sector would affect economic output, external accounts, and public finances, with proper attention given to the effects on public and private investment, employment and women.

a) Effects on economic activity

Forecasts of how tourism would have performed in the year in question, had there been no interruption in activities due to the disaster, are normally available in national planning offices, central banks or sector agencies.

The tourism specialist should compare this information with estimates on decreases in income as estimated in the section on indirect losses, and then estimate a new economic output (contribution to GDP) for the tourism sector after the disaster. Special care must be exercised to ensure that these estimates do not lead to double accounting should other specialists include tourism activities in their sectors. (In the cases of small Caribbean economies in which income from tourism is high, potential duplications are unlikely).

It should also be noted that tropical storms and hurricanes that cause damage to the sector in the Caribbean usually occur during the low tourism season. Therefore, indirect losses due to drops in occupancy rates and the subsequent effect on GDP are not necessarily significant, unless the reconstruction period for damaged infrastructure is very long.

b) Effects on the external sector

International inbound tourism has a special impact on the external sector. If the relative weight of tourism in the economic activity of the affected country is significant, any drop in tourism activities due to a disaster will imply major reductions in foreign-currency revenue (from the export of services). The tourism sector specialist should estimate such decreases in revenue from abroad.

Another heading that the tourism specialist should take into consideration is the possible availability of insurance or reinsurance policies on goods destroyed or damaged in the tourism sector since they can generate an unforeseen inflow of foreign currency. In addition, the rehabilitation and reconstruction of hotel and restaurant infrastructure, and the replacement of their equipment and machinery, might require significant imports, especially if they are not produced in the affected country. Once again, the tourism specialist must make the corresponding estimates.

These calculations should be delivered to the macroeconomics specialist so that he/she can combine them with those of other sectors and determine the overall effect of the disaster on the external sector of the affected country.

c) Effects on public finances

Although the current trend in the region is for tourism sector infrastructure to be privately owned a disaster can have major effects on the finances of an affected state.

Indeed, the natural phenomenon may directly affect transportation, port and airport infrastructure (which is normally publicly owned), further diminishing tourism income. However, such estimates of damage to infrastructure are usually taken into consideration in the respective sectors.

The main negative effects on public finances caused in the tourism sector stem from the drop in revenue from taxes and fees paid by , which the country will not collect during a certain period. This loss of state revenue can be estimated on the basis of the drop in hotel demand or occupancy previously estimated as indirect losses.

In addition, the state might be forced to make unplanned outlays to overcome problems in the tourism sector, such as beach and forest path cleaning work, special benefit payments to persons who lose their employment in the sector and so forth.

The tourism specialist must make these estimates and provide them to the macroeconomics specialist who, after ensuring that there is no duplication with the information from other sectors, will use them to obtain the total impact of the disaster on public-sector finances.

d) Effects on investments

The impact on public or private investment may vary depending on the magnitude of total damage relative to the size of the economy of the affected country or region.

The occurrence of a disaster and the subsequent rehabilitation and reconstruction may produce several effects. First, uncertainty as to the likelihood of hazard prevention and mitigation works may discourage investment decisions and inflows. Second, public and private investment programmes may be modified and increased to meet the needs of rehabilitation and reconstruction. Third, the need to replace lost assets may take precedence over projects previously designed to overcome long-standing social shortcomings; the resulting programme postponements and cancellations imply a social cost.

Although these observations are valid for all sectors, the tourism specialist must provide the macroeconomist with all information that can be obtained in this regard, so that he/she may get a clear overview of possible changes in the behavior of the economy of the affected country.

4. Effects on employment

When tourism activities are reduced, there is a corresponding decrease in the employment and income of men and women working in the sector. A relationship exists between the income generated in the sector and the number of various types of employees with their different income levels. Therefore, it is possible to estimate job losses in the sector based on the estimates of industry activity and income during and beyond the rehabilitation and reconstruction stage. This loss can be partially compensated by the use of tourism sector workers in cleaning and infrastructure recovery tasks, since both employers and employees wish to ensure that the same labor force will be available once the emergency is behind them and normal tourism activities resume. The tourism specialist should make these estimates in close cooperation with the employment specialist.

In very small economies, the labor force available in the construction sector may be insufficient to quickly carry out the reconstruction that hotels require. In such cases, labor, machinery and equipment have been imported from abroad, and these will not necessarily return to their countries of origin after reconstruction is completed, possibly aggravating pre-existing employment problems. The tourism specialist must be aware of this type of potential dilemma and quickly report it to the macroeconomics and employment specialists.

5. The differential impact on women

As in other sectors, women's share of tourism is affected by disasters. Tourism facilities and services affected by a disaster may be owned by women; other women might temporarily lose their employment in the industry.

In this regard, the tourism specialist must co-operate closely with the gender and employment specialists to determine three key points:

- Women's share of sector ownership;
- Women's share in the sector's labor force; and
- The possibility of including women in rehabilitation and reconstruction tasks.

The required information may be obtained from censuses, recent household surveys, chambers of tourism statistics and so on. The results of this analysis must be delivered by the tourism specialist both to the macroeconomist and to the gender specialist, who will be responsible for adding the figures from all sectors to determine the differential impact of the disaster on women at the national level.

6. Environmental impact

The methodology for assessing damage to environmental assets and flows in environmental goods and services is described in the chapter on the environment in Volume Four of this Handbook. A significant portion of the tourism industry is based on the environmental services of recreational opportunities and scenic beauty, both in the case of highly intervened environments (usually the case of sun and beach tourism) and the less intervened environment (usually the case of the tourism in protected areas, sometimes called ecotourism).

Therefore, damage assessment in the tourism sector and environmental damage assessment are closely related. In terms of quantification and valuation of damage, two different situations may occur (see the chapter on the environment).

a) Environmental damages usually included in tourism sector assessment

This heading refers to direct damages and indirect losses (loss of natural capital and changes in the flows of environmental goods and services) that are already accounted for in the tourism sector. Beach loss and degradation, lodging infrastructure damage and drops in revenues that occur during the restoration period are good examples of these losses. The environmental assessment tries to identify the share of these damages corresponding to the contribution of natural capital, isolated from contributions of human capital and other assets such as infrastructure and equipment. Estimation of this contribution can be made using the economic rent concept (the difference between market prices and production costs). However, it is not easy to estimate this contribution in the tourism sector, except in the cases of fees charged to enter protected areas and taxes used for environmental protection (e.g., additional airport or room taxes that are levied on foreign visitors in certain countries). To avoid double accounting, these estimates should be included in only one sector (either tourism or environment) in the damage overview.

b) Separate quantification and valuation

This case refers to the valuation of assets and environmental services related to tourism activities that are not accounted for in the tourism sector assessment. Examples include, the valuation of environmental changes in ecosystems relevant to the tourism sector such as forests, coral reefs or damage to emblematic species. These damages should be included in the damage overview, as they have not been considered in the damage assessment of the tourism sector.

APPENDIX XII
THE IMPACT OF HURRICANE KEITH ON BELIZE'S TOURISM SECTOR IN 2000

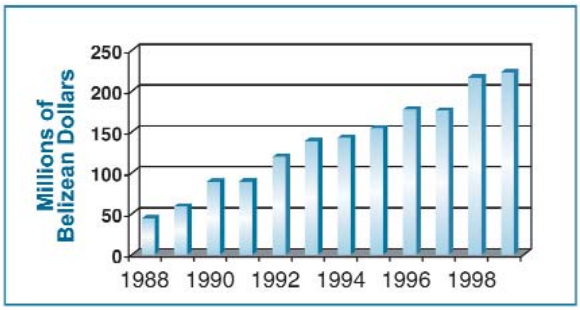
The following is ECLAC's estimate of the impact caused when Hurricane Keith passed through Belize in late 2000.[2]

General information

Hurricane Keith caused significant damage to tourism, which is the main sector in Belize's economic activity. According to the World Tourism Organization, in 1996 tourism accounted for 14.3% of GDP. It is also the country's leading exporter, generating income of 88 million US dollars in 1998, almost twice as much as sugar, which ranks second.

Figure 1

Tourist expenditure, 1998 - 1999



Tourism has developed at high growth rates in the last decade (see figure 1): Tourist arrivals have almost doubled, and tourism infrastructure and activities have been expanded significantly.[3] The tourism products on offer are linked to Belize's cultural and environmental heritage: tropical rain forests, biodiversity, historical buildings and marine life.[4] Seventy percent of tourists come from the United States and Canada, and 23% are from Europe.

In terms of income per hotel room, the most important areas are Ambergris Cay (43.1% of the total), the Belize District (23.6%) and the Cayo District (10.7%).[5] The high season for tourism runs from December to Easter.

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2 ECLAC, *Belize: Assessment of the Damage caused by Hurricane Keith, 2000: implications for Economic, Social and Environmental Development,* Mexico City and Port of Spain, November 2000.

3 Between 1990 and 1999, the number of hotels increased from 210 to 390, and the number of hotel rooms rose from 2,115 to 3,963.

4 According to a survey of visitors in 1997, marine attractions were their main reason for coming to Belize.

5 The Belize Tourism Board receives a 7% tax on income from each occupied hotel room.

Direct damages

The winds and high seas produced by Hurricane Keith devastated the cayes of northern Belize, especially Ambergris Caye, Caye Caulker and Caye Chapel. Most of the hotels (62 on Ambergris and 37 on Caulker) sustained differing degrees of damage to their infrastructure and equipment. Inland, however, the damage was less severe. The Mayan archaeological site in the Lamanai Nature Reserve was damaged by high winds, fallen trees and flooding, and fissures appeared in the main pyramid.

The northern cayes sustained the following damage:

- Total destruction of two hotels on Caye Caulker and one on Ambergris and structural damage to several thers;
- Damaged roofs on a large number of the hotels, which led to damage to their interiors, including ceilings and furniture;
- Damage to equipment (pumps, water heaters, washing machines, air conditioners);
- Damage to the landscape caused by the loss of trees and depositing of residues;
- Damage to gift shops and restaurants;
- Damage to the Caye Chapel golf course;
- Quays completely or partially destroyed;
- Jetties destroyed in Caye Chapel and Caye Caulker;
- Land lost from beach erosion (included under the heading of environmental damage and loss); and
- Loss of boats used for the tourist trade.

An assessment was made of the cost of replacing destroyed infrastructure and repairing that which was only damaged, as well as of replacing lost boats. It was based on official information supplied by Belizean authorities and local insurance companies.

The total amount of direct damage was estimated at 62 million US dollars. The following table contains a breakdown of estimated direct damage.

Table 1

ESTIMATE OF DIRECT DAMAGE TO THE TOURISM SECTOR CAUSED BY HURRICANE KEITH

Heading	Miles of USD
Country Total	**62,047.0**
Hotel buildings, including furniture, equipment, and golf course	42,000.0
Souvenir shops	5,000.0
Restaurants	5,600.0
Landscape	1,280.0
Quays and marinas	567.0
Piers and connected works	5,200.0
Tourist boats (140)	2,100.0

Source: ECLAC, based on official figures

Indirect losses

Indirect losses caused by the hurricane to Belize's tourism sector includes the following:

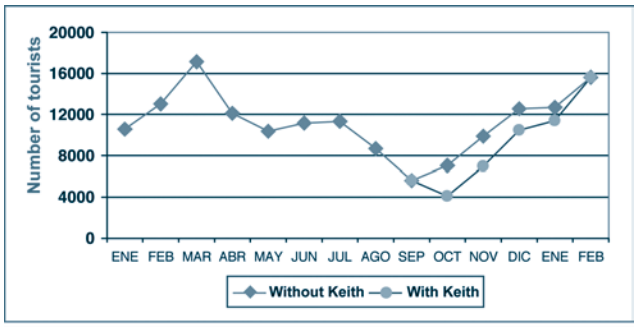
- Lower hotel occupancy (on Ambergris Caye and Caye Caulker);
- Lower tourist expenditure, including food and beverages, local transport and recreation;
- Lower revenues from country exit taxes;
- Unforeseen expenditure on promotion overseas to counteract the negative information about the effects of the hurricane published in the international press; and
- Cost incurred by some hotels to purchase emergency generators to make up for the lack of electricity after the hurricane.

Fortunately, there was no decline in cruise tourism, nor were hotel room rates lowered.

A study was made of possible tourist arrival behavior, bearing in mind both its seasonal nature and the trends detected in 1998 and 1999 in the wake of Hurricane Mitch. It was estimated that recovery would take four months, which was the projected period for the overseas promotional campaign to produce results. In other words, it was estimated that the country's tourism would return to its forecast levels by February 2001 (see figure 2).

Figure 2

ANALYSIS AND PROJECTION OF TOURIST ARRIVALS IN BELIZE BEFORE AND AFTER HURRICANE KEITH.



Existing data showing the relationship between the number of tourists arriving in the country and their expenditure on various related services were used to make an estimate of total indirect losses. On this basis, the total indirect damage to the sector was estimated at 18.15 million dollars (see the table 2).

Table 2

ESTIMATE OF INDIRECT DAMAGE CAUSED BY HURRICANE KEITH IN BELIZE
(Thousands of US dollars)

Heading	October	November	December	January	Total
Sector total					18,149.5
Decline in hotel occupancy	2,496.3	2,462.6	1,780.0	1,077.9	7,816.7
Decline in consumption of services					9,553.8
food	998.6	985.0	712.0	431.1	3,126.7
local transport	665.7	656.7	474.7	287.4	2,084.5
recreation	665.7	656.6	474.7	287.4	2,084.4
local purchases	443.8	437.8	316.5	191.6	389.7
other expenditure	277.3	273.6	197.8	119.8	868.5
Reduction in exit taxes					242.2
Additional energy cost					536.8

Source: ECLAC estimates based on official figures

The above estimates were made using information provided by the Belize Tourism Board, which indicates that on average a tourist remains in the country for 7.1 days and that room rates in 1999 in the damaged hotels on Ambergris Caye and Caye Caulker were 179.84 and 51.12 Belizean dollars, respectively. A survey of tourist spending made by the Tourist Board in 1997 showed that it was distributed as follows: lodging (45%), food and beverages (18%), local transport (12%), recreation (12%), purchases (8%) and other expenses (5%). With regard to exit taxes, account was taken of the fact that a tax of 20 US dollars is charged at the airport, while only 10 US dollars is charged at other points of exit. Finally, we took into account the fact that 20% of the hotels on Ambergris and Caulker invested an average of US 1 350 per room in emergency generators.

Total damage and losses

After adding indirect and direct damages together, it was estimated that total damage and losses caused by Hurricane Keith in Belize amounted to 80.2 million US dollars. Direct damage accounted for 77% of the total (62 million dollars) and indirect losses for the remaining 23% (18.2 million dollars).

Macroeconomic effects

Damages sustained by the tourism sector also had a significant effect on Belize's macroeconomic performance. Not only did the growth rate for the sector and for the economy in general decline, but there was also a negative effect on the balance of payments.

The tourism sector was responsible for a significant part of the one-percent decline in the growth forecast for the national economy as a whole in 2000. The cost of repairing the damage caused to the tourism infrastructure, together with the decline in the sector's income, reduced the balance of payments by 57.6 million US dollars. This figure consists of imports of non-domestically produced materials and equipment used for reconstruction, as well as foreign currency lost because the expected number of visitors failed to arrive.

Effects on employment and income and on women

The worst flooding caused by the hurricane occurred in the rural areas of the Orange Walk and Cayo districts, two of the areas in the country where poverty is greatest. Damage to tourism infrastructure and services, which can be measured in monetary terms and which in any case was largely insured against, had relatively less tragic consequences than that caused in these districts.

Between 25% and 38.5% of households in Orange Walk and Cayo are headed by women. Rates of female unemployment and fertility are high, especially for women younger than twenty-five. There seems to be a correlation between poverty in these areas and the high incidence of transmissible diseases.

It is estimated that 33% of Belize's population has an annual per capita income of less than 645 US dollars and that income in the rural areas amounts to only 42.5% of this figure. The continuous flow of refugees from neighboring countries to the south of Belize is increasing the number of inhabitants living below the poverty level, and the incidence of poverty is growing in the rural districts and among the most vulnerable groups of the population. Average lost income among the population in these depressed areas was estimated to have reached the sum of 239 US dollars per capita.

There is no doubt that the hurricane had a severe negative impact on the government's efforts to reduce poverty in the country. The strategy under execution before the disaster entailed reducing the fiscal deficit to less than 2% of GDP. Estimates show that the deficit will now reach 3%, which means that poverty reduction targets will be set back. Additionally, any attempt to keep to the targets set before the disaster would endanger the currency's exchange rate.