Section C7

The Manufacturing and Commercial Sectors

(The Manufacturing Sector)

Objectives

- To provide a general overview and evaluation of the effects of the damage to the manufacturing sector
- To formulate a general diagnosis of the sector which will enable the authorities to define priorities for the recovery of the sector

Introduction

Brief description of the main sections.

Illustration of the methodology of evaluation with a practical example.

References to the availability of data to carry out the evaluation. Data are available from the most recent industrial censuses, time series, periodic surveys, industrial associations, other sector associations such as chambers or association of small businesses, unions, and social security institutions.

Preliminaries. Direct and indirect damage and secondary effects

❖ Direct damage

Direct damage refers to the damage suffered by productive assets, infrastructure and inventories. By definition they are damages to stocks that occurred at the same time as the natural disasters. These stocks comprise: physical infrastructure, buildings, installations, machinery and equipment, means of transportation, damage to stocks of land.

Distinguish between 'private' and 'public' stocks damaged.

❖ Indirect damage

Indirect damage refers to the damage done to flows of goods and services and income. The damage results as a consequence of the interruption of production and distribution processes from the moment the disaster occurs. It can simply be defined as the sum of the value of income foregone due to the interruption of production and distribution as a consequence of the natural disaster and the increase in costs and expenditure to confront the damages of the disaster.

As a matter of convention, the time domain for the estimation period is five years.

Examples of indirect costs: losses in agricultural and industrial production due to land or factory destruction and damage; increasing transport costs (longer or alternative routes), lower incomes in service firms due to the interruption in the provision of those services.

Non quantifiable damage: Refers to intangible, social and/or psychological effects.

Secondary effects. The secondary effects. These are effects on macroeconomic aggregates. The aggregates include:

1. Economic growth (rate of change of GDP). Includes estimating the projection of growth for a year (semester, quarter depending the time of the year of the impact). The effects on economic growth can be estimated at a global and sectoral level.

2. Public Finance. The effects on the budget including the effects on taxes (revenue) and expenditures.

3. Inflation (rate of change in a price level).

4. Unemployment

5. Debt (includes external and internal debt). Estimations of debt ratios (total external debt to GDP) ands their implications.

6. Balance of payments. Includes the effects on:
    - imports and exports on goods and services.
    - foreign financial flows (foreign direct investment, portfolio flows).
    - official aid.
    - international reserves.

- The macroeconomic effects reflect the direct and indirect damages. Direct and indirect damages and macroeconomic aggregates constitute different and complementary ways to look at the same effects of natural disasters.

Common characteristics to manufacturing and trade

In both sectors value added is generated in establishments that are grouped into large, medium and small size.

For both sectors there are well-defined characteristics in the composition of different sized establishments and their contribution to production and employment.

Large establishments concentrate a larger part of the capital stock and have insurance to cover the risks of damage.

In some countries the relative importance of small establishments (number and value added) has declined over time.

Small establishments still account for an important share of labor participation.

Small establishments are more vulnerable to natural disasters but tend to recover more quickly.

Larger establishments require greater support for recovery following a natural disaster.

The geographical location of establishments has implications for disaster evaluation. Trade and manufacturing activities are located in cities. Trade is less polarized and is concentrated in medium-sized and small cities. The damage caused by a natural disaster is closely related to the urban nature of these establishments rather than to the event underlying the disaster.

Other issues to consider for disaster evaluation, which are not fully developed in the literature on the subject are: i) the type of economic linkages among sectors, and the specialization of manufacturing and trade establishments; ii) the relationship between damage evaluation in manufacturing and trade and gender; iii) damage evaluation in manufacturing and trade and the patterns and evolution of employment and income.

General aspects of the manufacturing sector

- The approach to disaster evaluation in the manufacturing sector follows the method of successive approximations.

    1. Starting point: collection of basic general information to provide a general picture of the area

    2. Calculation of the specifics of the damage

    3. Diagnosis of the situation permits the establishment of priorities for recovery activities and definition of reconstruction projects and programs.

- Data collection and sources of information

    Description of the main sources. Describe the main sources of information in the country.

The main sources of information include the industrial census, time series information) Central banks and ministries of finance), information in periodic publications, information from commerce or industrial chambers, micro and small enterprises groups, manufacturers groups, from trademark offices, from promotion offices.

Other sources of information include the information available in the Latin American Center for demography databases and internet searches.

- Description of the area affected and global damage. The description includes

  Estimation of establishments affected by the disaster.
  Industries to which the establishments belong.
  Employment creation in the establishments affected.
  Value added in the establishments affected
  Degree of interdependence of the establishments affected
  Informal survey to obtain a general picture of the magnitude and nature of the damage.

The specialist will combine the methodology described above with the data collected and the description of the area affected and global damage to arrive at a quantitative and qualitative estimate of the situation of industrial activity in the intermediate aftermath of the disaster. The following steps are to estimate the damage more accurately considering direct and indirect damage and the secondary effects.

Direct damage

The estimations of the direct damage in the manufacturing sector can be grouped into the following categories: buildings and installations, machinery and equipment, furniture and vehicles and inventories.

For each of these categories three types of direct damage should be considered

1. The estimation of the value of assets belonging to the manufacturing sector which were destroyed or damaged by the disaster. The assets should be valued at their pre-disaster condition.

2. The replacement costs of assets damages or destroyed. The replacement values can be obtained by using unit import prices or unit costs.

3. The cost of construction which should include vulnerability-reduction components. This increases the cost. The list of components should be defined jointly with the government.

- Buildings and installations

To estimate the damages or destruction to buildings and installations the sectoral specialist needs an information set that includes:

The surface area destroyed or damaged.
The age of the building.
Current value of a square meter of construction in industrial-type buildings.

These data are combined to yield replacement values for buildings and installations. As an example if the area affected is 20 000 square feet and the cost per square foot is 450 dollars, the replacement value is equal to 9 million dollars.

- Machinery and equipment

The information requirements include replacement prices. Information is provided on the basis of accounting records, which exclude accumulated depreciation and acquisition prices.
Examples:

- In the case of cargo, the value of lost cargo can be estimated by multiplying the average value per ton by the quantity of tons lost.

- Assume the unit cost of a truck is 50 000 dollars (V); L =10 (L is useful life of the truck), the rate of interest, r, is 10 per cent. Estimate the present value of the truck if the proportion of useful life still left to the truck (a) is equal to 0.

$C = V/(1+r)^{aL} + V/(1+r)^{aL+L} + V/(1+r)^{aL+2L}$…..= 84275.7

If the truck has half of its useful life (a=0.5), then C= 51067.97.

- Furniture and vehicles

The bulk of the damage is located in larger enterprises.

Updated values in the market for similar furniture and vehicles to those damaged should be obtained.

In some cases it has been observed that investment in furnishings and equipment and that in buildings and installations stand in a proportionate relationship to one another and that this ratio tends to decrease with the size of the establishment.

- Inventories

Inventories are defined as goods and some services that were produced or imported but have not yet been used for consumption, fixed capital formation or export.

Inventories include finished goods; goods in process; raw materials and other goods.

The inventory valuation of business inventories may be carried out at historic cost measures. Historic cost has several variations. The most common are FIFO (first in, first out), LIFO (last in, first out), WAC (weighted cost average). FIFO means that the withdrawals are valued at the earliest prices, and hence the stock of inventories is valued at old prices. FIFO results in lower values of withdrawals and higher values of inventories. Under FIFO the valuation of stocks and inventories is more stable and the inventory valuation calculations are more straightforward. The historic cost principle is modified to allow for declines in value (i.e., COMWIL valuation, i.e., “cost or market, whichever is less”).

Indirect damage

The damage suffered by manufacturing and industrial assets will have a negative effect on flow magnitudes mainly production and income. This results from the reduction and interruption of some activities due to the destruction and damage of assets.

Indirect damage also includes:

- The shortage of inputs caused by the disruption and interruption in communications and sales channels.
- Higher transportation costs
- Reduction in export potential
- Reduction in revenue and increase in expenditures

Part of the information requirements can be obtained from associations of industrialists, census information or industrial services.

- Example. Hurricaine Keith (Belize, 2000)

Table 24 shows the estimation of direct and indirect damages to agriculture from Hurricaine Keith (2000). Manufacturing comprises 13 per cent of GDP and commerce 21 per cent. The total damage was computed at 48830 BZ$ and 63 per cent was due to direct damage mostly crop production damages and loss of factories. Indirect damage was also concentrated in agroindustry commerce. Commercial activities suffered a decline in their regular businesses and stocks in losses and inventory.

Table 24
Belize
Summary of Damages in Industry and Commerce
Thousands of BZ$

	Total damage	Direct	Indirect	Impact on international trade
Total industry	48829.6	30659.6	15170.0	41165
Free trade zone	128	60	68	50
Timber processing	3205	2925	280	……
Agroindustry commerce	41115	26293	14822	41115
Loss of stock and inventory	1381.6	1381.6	……	……..

Source: Belize: Assessment of the Damage Caused by Hurricaine Keith, 2000 (LC/CAR/G.627; LC/MEX/G.4, November 2000).
Note: "…." denotes not available.

Secondary effects

The sectoral specialist must try to get an idea of the conditions that were prevailing in the sector under study and of its prospects. These data constitute the reference material to provide an accurate evaluation of the effects of the disaster.

The estimation of secondary effects should include background information and quantification of the damages to the manufacturing sector to allow the macroeconomist to estimate the effects of the disaster in the months after it strikes on the main macroeconomic variables including, gross domestic product, investment, balance of payments, public finances.

The likely secondary effects are:

A reduction in investment, consumption (due to the fall in incomes), and exports in the manufacturing sector. The performance of manufacturing imports will reflect on the one hand an increase in imports due to the reconstruction and recovery needs. On the other hand imports will decrease due to the declines in income.

These effects have a negative impact on the growth of GDP. The impact will be, other things being equal, proportionate to the importance or weight of the manufacturing sector in GDP.

A reduction in taxes levied upon the activities of the manufacturing sector. The impact will be mainly felt in a reduction in indirect taxes. The reduction in taxes will result in a decline in government revenues. This in turn will exert a negative effect on government finances.

Increased government spending. This will have an expansionary effect on output and at the same time will in combination with lower government revenues increase the fiscal deficit.

The information obtained directly from the productive units affected is provided in terms of the gross value of production. It is a gross value because depreciation has not been netted out of production. The specialist must present the data in value added terms by linking the gross value of production and its value added. The conversion is made using coefficients linking both concepts which can be found in industrial censuses or obtained from statistics and national accounts.

Table 25
Evaluation of the impact of damages of the manufacturing sector on macroeconomic variables

Impact on the balance of payments (millions/thousands of U.S. dollars)

Decrease in Exports 15
Increase in Imports 105
Increase in the current account deficit 120
Demand for capital from international financial institutions 50

Impact on public finances (millions of national currency)

Reduced Revenues 4 700
Increase in Expenditures 5 000

Conversion to U.S. dollar (exchange rate equals 10 units of nation currency per US dollar)
Reduced Revenue 470
Increase in expenditures 500

Source: Manual for estimating the socio-economic effects of natural disasters. ECLAC (1999)

Table 25 shows a hypothetical example of the evaluation of secondary effects on the balance of payments and public finances caused by damages to the manufacturing sector. As a result of the damage, exports decrease by 15 million US dollars and imports increase by US $105 million. The result is an increase in the current account deficit of 120 million dollars. At the same time, the damage causes a decrease in government revenue of 470 million dollars and an increase in government spending to rehabilitate the industrial base of 500 US dollars. The deficit of the government increases by 970 million US dollars.

This example represents a situation where detailed data are available to compute exactly the effects of the damage to the manufacturing sector on main macroeconomic aggregates such as the current account balance and the fiscal deficit. More likely, the sector specialist will have less detailed information. In general, the specialist will work mainly with the expected or projected decrease in manufacturing production. On this basis, the specialist will be able to derive its impact on GDP. Table 26 shows the estimations obtained in the case of Hurricane Keith (2000) in Belize expressed in current dollars.

Table 26
Gross domestic product by industrial origin at factor cost
Current prices (Thousands of Belize Dollars)

	1998	**1999**	**2000 (pre-Keith)**	**2000(post-Keith)**	**2001**	**2002**
GDP nominal	1054000	1177500	**1234801**	**1318900**	**1363800**	1431990
Primary activities	207041	224688	251965	233774	240341	269713
Secondary activities	235316	253110	271088	277148	299676	329738
Manufacturing	139827	148603	**151016**	**155200**	154100	160218
Sugar	27155	26286	25421	759080	19500	21000
Citrus	9431	12543	**14174**	**256866**	**22600**	25538
Other manufacturing	103241	109774	**111421**	**111000**	112000	113680
Services	653117	722562	758489	759080	797581	850121
Imputed bank service	44240	45471	46741	46740	47784	49028
Annual Percentage change	1.1	9.9	6.9	5.9	5.4	8.6

Source: Belize: Assessment of the Damage Caused by Hurricane Keith, 2000 (LC/CAR/G.627; LC/MEX/G.4, November 2000).

The manufacturing sector represents 12 per cent in nominal terms. The effects on the output of the manufacturing sector are mostly felt in the aftermath of the disaster. In 2001, the rate of growth of manufacturing is –1 per cent whereas in 2000 the rate of growth of manufacturing output was 4.4 per cent. The most significant negative effect is on the sugar production, which registers a negative rate of growth of 8 per cent and 20 per cent in 2000 and 2001. The output of sugar starts to recuperate in 2002. Table 27 shows the same estimates in real terms. The data does not have the same level of detail as when presented in nominal terms. In particular, the only the figure for the manufacturing sector as an aggregate is available. Data showing the impact of the decrease in the real output sugar on real GDP is not available.

Table 27
Gross domestic product by industrial origin at factor cost
Constant prices (2000)
Thousands of Belize Dollars

	1998	1999	2000 (pre-Keith)	2000 (post-Keith)	2001	2002
GDP real	1097612	1165242	**1234801**	**1223262**	**1253490**	1336331
Primary activities	202451	225752	251965	233774	234604	259568
Secondary activities	249301	255929	271088	277148	290642	313365
Manufacturing	143484	150502	**151016**	**155200**	149196	151723
Sugar	.....	.....	25421	.....	.....	.....
Citrus	.....	.....	**14174**	.....	.....	.....
Other manufacturing	.....	.....	**111421**	.....	.....	.....
Services	699886	729434	758489	759080	774685	810179
Imputed bank service	43796	45873	46741	46740	46441	46780
Annual Percentage change	1.5	6.2	6.0	5.0	2.5	6.6

Source: Belize: Assessment of the Damage Caused by Hurricane Keith, 2000 (LC/CAR/G.627; LC/MEX/G.4, November 2000) and ECLAC, Economic Overview of Caribben Economies (LC/CAR/G.697) 19 July 2002.
Note: .... denotes not available.

The data in Table 27 shows that in real terms GDP experiences a significant decrease in its rate of growth from 5 per cent in 2000 to 2.5 per cent in 2001. For its part the rate of growth of the manufacturing sector output decreases from 6 per cent to 4 per cent in 1999 and 2000 and becomes negative (-3 per cent) in 2001.

Priorities for recovery and reconstruction

The evaluation for the manufacturing sector should conclude with a list of priority actions that the government should undertake to focus and make efficient the recovery efforts.

The list of priorities should be obtained from the firms and sub-sectors affected and should be presented, when possible, in a project like form.

The objectives of the project are to rebuild and improve destroyed and damaged assets, re-establishe productive and export processes and reactivate the process of economic and social development. The analysis of the project profiles should facilitate drawing definitive projects and to outline priorities to design repair and reconstruction programmes. This will allow the improvement of the living conditions of the victims of the disaster and recover the material and economic losses from the effect of the natural disaster; to enhance design project standards; carry out works and establish mechanisms to control and mitigate the damage caused by the disaster.

Establishment of an audit trail

An audit trail provides a record to check estimates in the event of doubt as to an outcome. It allows the capability of inspecting each step in the process of valuation and estimation. Tables 28 to 30 provide guidelines to establish an audit trail in a hypothetical case of a natural disaster that affects a region in a given country. Table 28 provides the general characteristics of the manufacturing sector at the regional and national level.

Table 28 General characteristics of the manufacturing sector			
Concept	**Region**	**National (total)**	**Percentage participation**
Number of establishments	6081	119212	5.0
Employees (000´)	50	1747	3.0
Total fixed assets (millions of dollars)	9	171.3	5.4
Value added	5	182.8	2.9
Source: ECLAC, 2001			

Table 29 Direct damage estimation on the manufacturing sector			
	Estimated value to assets (millions of dollars)	**Percentage of the total**	**Imported components (millions of dollars)**
Buildings and installations	114	10	11
Machinery and equipment	151	38	57
Furnishings and vehicles	74	10	7
Inventories	92	30	30
Total	431		105
Source: ECLAC, 2001			

According to Table 28, the number of establishments in the region affected by the disaster represents 5 per cent of the total and 53 000 employees representing 3 per cent of the total labor force. Total fixed assets amount to 5 per cent of the national total. Finally the manufacturing sector in the regional affected by the damage generates 3 per cent of the total value added. This information makes it possible to conclude that if the damage caused by the natural disaster

would have destroyed the manufacturing sector in the said region, losses to national industry would amount to 3 per cent and 6 per cent measured in terms of number of establishments, number of employees, fixed assets or value added. These estimates constitute a ceiling for the subsequent damage evaluation.

Table 29 provides the estimations for direct damage to the manufacturing sector by category (buildings and installations, machinery and equipment, furnishings and vehicles and inventories). According to this table, the loss of fixed assets totaled 431 million dollars and the category most affected by the natural disaster was machinery and equipment (151 million dollars and 35 per cent of the total). The imported component of direct losses amounted to 105 million dollars or 24 per cent of the total.

Table 30 shows the estimates of direct and indirect damage on the different industries of the manufacturing sector in the region affected by the natural disaster. The drugstore industries are the most affected. The direct and indirect damages amount to 80 and 83 million dollars respectively adding to a total of 163 million dollars. This represents 22 per cent of the total direct and indirect damage to the manufacturing sector. In this case the total damage to assets as set out in table 6 coincides with the estimation of the direct damage of Table 30.

Table 30
Distribution of direct and indirect damage to the manufacturing sector in the region affected by the natural disaster
Millions of US dollars

Type of establishment	Direct damage	Indirect damage	Total
Drugstores	80	83	163
Apparel factories	40	40	80
Beverages	12	12	24
Bakeries	50	16	66
Footwearshops	62	50	112
Mechanical workshops	59	80	139
Others	116	60	176
Total	431	341	772

Source: ECLAC, 2001

The manufacturing sector in St. Lucia: some stylized facts

In St. Lucia, the manufacturing sector represented 6 per cent of GDP in 2000. Food and beverages constitutes the most important sub-sector of manufacturing (35 per cent of the total) followed by the manufacture of electrical products and the manufacture of corrugated paper (16 per cent and 15 per cent of GDP in 2001 respectively). As well the major exports of the manufacturing sector are also concentrated in the food and beverage section (58 per cent of the total exports of the manufacturing sector in 2001) followed by wearing apparel and electrical products (17 per cent and 16 per cent of the total respectively). (See Table 31).

Table 31
Share of the manufacturing sector in GDP and main subsectors of the manufacturing sector

	1996	**2000**
Manufacturing as % of GDP	6.4	5.9
Share of Food beverages and tobacco in manufacturing	29	35
Share of wearing apparel in manufacturing	5	3
Share of textiles in manufacturing	6	2
Share of manufactures of paper and paperboard	30.3	15.12
Share of electrical products in manufacturing	12.0	16.4
Share of manufacture of other chemicals	4	3

Source: St. Lucia. Economic and Social Review 2000

The manufacturing sector is a small contributor to GDP and is concentrated in six or seven subsectors which account for over 70 per cent of the production in that sector. However, manufacturing is an important contributor to exports and thus to foreign exchange earnings.

Requirements for a good evaluation

Define clearly the geographical area of damage

- Determine the perimeter within which the evaluation will take place.
- Obtain diagrams of the affected area and nature of the damage.
- Search for periodic evaluations
- Obtain informal surveys

Define clearly the type of establishments affected by the damage

- Establish criteria to define size of establishment
- Census data
- Industrial surveys by chamber of manufacturing, commerce or producers associations

Distinguish between the different categories to classify assets that are destroyed or affected.

Define clearly the methodology for evaluation

- Determination of the value of assets in their pre-disaster situation
- Estimation of the replacement costs
- Definition of vulnerability-reduction components
- Define unit values, unit import process, and internationally valid unit costs

Distinguish between direct and indirect damage

- Define direct and indirect damage

Keep a well-informed file of the sector

Summary tables
Specific or detailed tables

Check the consistency of the data

Distinguish between economic activity and output
On the basis of economic activity estimate the direct damage
On the basis of output estimate the value of indirect damage

Discussion and self-assessment

By now you should be conversant with the concept of the manufacturing sector and its importance in assessing damage. Try to verbalise the concepts describing all that they entail. In particular try to answer the following questions.

Describe the information you always need to keep available.

Outline the key features and characteristics of the manufacturing sector.

What are the different categories into which the assets damaged or affected by the natural disaster can be classified?

Enumerate the sources of data information and procedures to select among different data sources.

Try to interpret the results of the damage assessment evaluation shown in Table 32 below.

Table 32
Summary overall damage to the manufacturing sector

Concept	Region	National (total)	Percentage participation
Number of establishments	6081	119212	5.0
Employees (000´)	53	1747	3.0
Total fixed assets	9.2	171.3	5.4
Value added	5.2	182.8	2.9

Source: ECLAC, 2001

As a guide in your analysis try to answer the following questions

What the total loss to the region?
What are the effects of the disaster on big and small establishments?
Compute the capita/output ratio and interpret
What does the value added figures tell us about the magnitude of the disaster?

What are the different valuation criteria and what is their interpretation?

What is the meaning of an “audit trail”?

How can you check the consistency of the data?

What is the relationship between direct, indirect damage and secondary effects?

(The Commercial Sector)

Objective

- To provide a general overview of the commercial sector, delimiting the areas affected by the damage, making it possible to refine successive evaluations and formulate an accurate diagnosis of the commercial sector to enable the authorities to define priorities for the reconstruction of the damaged areas and the recovery of the sector.

Introduction

Brief description of the main sections.

The commercial sector evaluation methodology is very similar to that of the manufacturing sector. As a result and to avoid overlap this section presents a concise methodological description.

The differences of both sectors arise in the average size of establishments, the average number of employees, the relative weight of machinery and equipment and that of inventories.

These sectors are also similar in their development. The similarities between the manufacturing and commercial sector are the growth of mid-sized and small sized businesses.

Illustration of the methodology of evaluation will be carried with practical examples.

References to the availability of data to carry out the evaluation. The data in the commercial sector are not as complete as in the manufacturing sector. Thus in the commercial sector, judgements and opinions can play an important role in providing the basis for the damage evaluation.

Relation of trade and manufacturing or industry sectors.

Preliminaries. Direct and indirect damage and secondary effects

❖ Direct damage

Direct damage refers to the damage suffered by productive assets, infrastructure and inventories. By definition they are damages to stocks that occurred at the same time as the natural disasters. These stocks comprise: physical infrastructure, buildings, installations, machinery and equipment, means of transportation, damage to stocks of land.

Distinguish between ‘private’ and ‘public’ stocks damaged.

- **Indirect damage**

Indirect damage refers to the damage done to flows of goods and services and income. The damage results as a consequence of the interruption of production and distribution processes from the moment the disaster occurs. It can simply be defined as the sum of the value of income foregone due to the interruption of production and distribution as a consequence of the natural disaster and the increase in costs and expenditure to confront the damages of the disaster.

As a matter of convention, the time domain for the estimation period is five years.

Examples of indirect costs: losses in agricultural and industrial production due to land or factory destruction and damage; increasing transport costs (longer or alternative routes), lower incomes in service firms due to the interruption in the provision of those services.

Non quantifiable damage: Refers to intangible, social and/or psychological effects.

Secondary effects. The secondary effects. These are effects on macroeconomic aggregates. The aggregates include:

1. Economic growth (rate of change of GDP).
2. Public Finance
3. Inflation (rate of change in a price level)
4. Unemployment
5. Debt (includes external and internal debt). Estimations of debt ratios (total external debt to GDP) ands their implications.
6. Balance of payments.

General aspects of the commercial sector

Concise methodological description and evaluation due to the overlap with the industrial (manufacturing) sector.

Emphasis on the differences with the manufacturing sector (definition of the manufacturing sector and illustration of its importance). The commercial sector comprises mainly small-scale firms producing margins. An indicator for the wholesale or retail trade is the supply of goods that are distributed by the firms or industries in the sector. As shown in Table 33, the retail sector contributes between 8 per cent (Guyana) and 20 per cent (Jamaica and Barbados) to GDP for Caribbean countries. Its share of GDP has not changed significantly in the last decade.

Table 33
The importance of retail trade in GDP (in percentage) by country

	1990	**2000**
Antigua and Barbuda	9.6	9.7
Barbados	19.6	19.9
Dominica	11.1	11.8
Grenada	11.7	10.8
Guyana	8.6	7.7
Jamaica	19.4	20.0
St. Kitts and Nevis	14.1	15.2
St. Lucia	16.7	13.2
St. Vincent and the Grenadines	11.4	16.6
Trinidad and Tobago	……..	17.0

Source: ECLAC, 2001

Trends in the manufacturing and commercial sectors. The average size of establishments is smaller, the number of employees fewer, and the relative weight of machinery and equipment is smaller in the commercial establishments. However, the stock of inventories is greater in the commercial than in the manufacturing sectors.

Information on the commercial sector is scarcer and less reliable than on the manufacturing sector (GDP by sector). The information on the value of assets is scant or non-existent. There is no information on the level of trade activity in Caribbean countries. Moreover, in some countries, as for example Belize or Trinidad and Tobago, in the national accounts by productive sectors, the retail trade sector is lumped jointly with tourism, which makes it even more difficult to assess the importance of the sector or even its contribution to GDP.

As a result it is important to obtain qualitative information in the commercial sector.

Direct damage

Direct damage is divides into buildings and installations, furniture and equipment and inventories.

Buildings and installations

Distinguish between different types of establishments. It is important at the stage to choose the parameters to define the size of establishments (sales or number of persons employed).

Obtain estimations of the surface area affected.

Obtain estimations of the extent of the damage.

Obtain the replacement value (cost of the square foot of construction including the cost of demolition and the cost of vulnerability reduction).

With the above information this component can be calculated by multiplying say, the floor space affected by the damage by the replacement value of a square meter constructed.

The 1999, ECLAC Manual for Estimating the Socio-Economic Effects of Natural Disasters indicates that small establishments use between 50 and 500 square meters with an average around a median of 100. Fruit stores or stalls in public markets occupy 12 square meters, service stations 500 and supermarkets 1 500. The

replacement cost of a square meter for service stations and stores selling spare parts can be seven times greater than those installations of establishments used as food stores or public markets.

Furniture and equipment

Furniture and equipment account for a lower weight within total assets than in the case of the manufacturing sector. Furniture and equipment represent 20 per cent to 40 per cent in relation to buildings and installations.

Inventories

Inventories account for an important part of the business of the commercial sector, which is an intermediary between producers and consumers.

Inventories correspond to the value, at most, two months sales, on average throughout the sector.

There is a stable relationship between the value of buildings and installations and that of inventories. These ratios can thus be used in the calculations of the replacement value of lost inventories.

Indirect damage

Production losses are computed on the basis of idle cash or foregone profits. Following the ECLAC methodology idle cash or profits can be identified with value added.

The ECLAC methodology estimates the income of which each worker generates on average for the different type of establishments. On this basis of this information the cost of the interruption of activities can be estimated. The available empirical evidence shows that small commercial establishments can restart activities within a month whereas other establishments do so in less than six months.

In a most recent evaluation of damages caused by a natural disaster (Hurricane Keith in Belize, 2000) data was available to estimate the direct and indirect damage in the case of agro-industry commerce. As shown in Table 34, 10

the total damage to the agro-industry commerce was 41,115 thousand Belize dollars. Direct damage accounted for 63 per cent of the total. The loss of inventory represented 3 per cent of the direct damage.

Table 34
Hurricane Keith, 2000
Estimated direct and indirect damage
(Thousands of Belize $)

	Direct damage	Indirect damage	Total
Agro-industry commerce	26,293.0	14,822.0	41,115.0
Loss of stock and inventory	1 381.6	.....	1,381.6

Source: Belize: Assessment of the Damage Caused by Hurricane Keith, 2000 (LC/CAR/G.627; LC/MEX/G.4, November 2000).
Note: ..... denotes not available.

Secondary effects

Determine the effects of the damage on GDP, balance of trade and public finances.

GDP. Estimate the damage by computing the composition of GDP and the contribution of the commercial sector to GDP.

Balance of trade. The commercial sector comprises both internal and external commercial activities. Obtain if possible the breakdown of activities. The damage in the commercial sector is likely to affect the balance of payments through greater imports, a decline in exports, and a decrease in the income account deficit.

Public finances. Government revenues are likely to decrease and expenditures will increase hardening the fiscal constraint. For Caribbean countries one of the most important effects will be the change in government revenue corresponding to the combination of changes in imports taxes and the tax base.

Employment and income. One of the results of the changes of GDP, the balance of trade and public finances as a result of the natural disaster will be felt in employment and income.

Table 35 below shows the gross domestic product by industrial origin at factor cost for Belize before and after Hurricane Keith (2000). The table illustrates a point made earlier relating to the absence of information for the commercial sector. As shown in Table 35 there was not enough information to allow a precise estimation of the impact of the damage of the commercial sector on GDP. Instead, the commercial sector is included in the same category as hotels and restaurants, which are part of the tourism sector. Both contribute jointly 21 per cent to GDP.

Table 35
Gross domestic product by industrial origin at factor cost
Current prices (Thousands of Belize Dollars)

	1998	**1999**	**2000 (pre-Keith)**	**2000(post-Keith)**	**2001**	**2002**
GDP nominal	1054000	1177500	**1234801**	**1318900**	**1363800**	1431990
Primary activities	207041	224688	251965	233774	240341	269713
Secondary activities	235316	253110	271088	277148	299676	329738
Manufacturing	139827	148603	**151016**	**155200**	154100	160218
Services	653117	722562	758489	759080	797581	850121
Trade restaurants and hotels	199103	243475	258084	256866	272278	299506
Imputed bank service	44240	45471	46741	46740	47784	49028
Annual Percentage change	1.1	9.9	6.9	5.9	5.4	8.6

Source: Belize: Assessment of the Damage Caused by Hurricane Keith, 2000 (LC/CAR/G.627; LC/MEX/G.4, November 2000).

The gender perspective

The chapter on social sectors presents a description of how disasters affect women disproportionately and it provides a methodology on how to estimate the impact on women. Each sectoral specialist is reminded to work in close co-operation with the gender specialist. Following the same procedure throughout the manual, both direct and indirect damage must be estimated for women.

Direct damage. Losses of assets in private industrial and different size commercial establishments. Losses of assets of family microeconomic enterprises run by women in their homes.

Indirect damage. Losses of production in formal private enterprises of different size belonging to women. Losses of production in informal home-based enterprise run by women in their homes.

Establishment of an audit trail

An audit trail provides a record to check estimates in the event of doubt as to an outcome. It allows the capability of inspecting each step in the process of valuation and estimation. The establishment of an audit trail for the commercial sector is difficult due to the absence of quantitative data for the sector.

Nonetheless, Tables 37 and 38 show the type of information needed to carry out an accurate and optimal evaluation. Table 37 shows the census information requirements (number of establishments, personnel employed, fixed assets, value added) and its breakdown by establishment size. As pointed out earlier the criteria to define large, medium sized and small can vary from country to country and must be specified in advance.

Table 38 shows an estimate of production chains by sectors and enterprises in the affected area. The 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. The interruption in the supply of raw materials and inputs will affect the flow of production of certain sectors and enterprises temporarily.

Table 37 **Census information for the commercial sector**			
Firms	Domestic	In the area affected	Share (% of the total)
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			

Table 38 Estimate of production chains by sectors and enterprises in the affected area			
Branch/enterprises	Sources of raw materials and inputs	Destination of final goods	Total
Food			
Large			
Medium-sized			
Small			
Textiles			
Large			
Medium-sized			
Small			
Cement			
Large			
Medium-sized			
Small			
Other branches			

Requirements for a good evaluation

The main points of the requirements for a good evaluation are very similar to those described in the manufacturing sector.

Distinguish between manufacturing and commercial sectors.

Delimit the affected area. The affected area should be delimited in geographical and structural terms.

Distinguish clearly between direct and indirect damage and their respective methodology.

Distinguish and define the different types of establishments to provide an estimation of direct and indirect damage.

Clearly define the vulnerability mitigation components of replacement cost estimates.

Check the consistency of the data

Discussion and self-assessment

By now you should be conversant with the concept of the commercial sector and its importance in assessing damage. Try to verbalise the concepts describing all that they entail. In particular try to answer the following questions.

Verbalize the concepts of direct and indirect damage and give example pertaining to manufacturing and trade.

Verbalize the concept of secondary effects and give example pertaining to manufacturing and trade

What are the different categories in the commercial sector used to evaluate direct damage?

Define gross value of production.

Define value added.

Explain the different options for measurement and their use.

List the different sources of information and the availability of information.

Why is it important to distinguish between the size of different establishments?

Construct summary tables in different formats to provide the basic census information for non-agricultural sectors, a general overview of the damage, and to show the estimation of direct and indirect effects.