



United Nations
Economic Commission for Latin America
and the Caribbean
Subregional Headquarters for the Caribbean
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The ECLAC Natural Disaster Assessment
Methodology
Objectives and Basic Concepts



The ECLAC Methodology

- **Does not address the study of the origins of the disaster.**
- **The focus is not on the actions undertaken during the emergency phase following a natural disaster.**
- **Its objective is to provide guidelines to evaluate the damage.**
- **The ultimate goal is to measure in monetary terms the impact of disasters on the society, economy and environment of the affected country or region.**
- **National accounts are used as means of valuation supplemented with procedures for specific estimates in selected areas (environment, gender).**



The ECLAC Methodology

- **Provides the means to determine the value of lost assets and define reconstruction requirements.**
- **Enables the identification of the most affected geographical areas and sectors together with reconstruction priorities.**
- **Estimates effects on economic flows, the country's capacity to undertake reconstruction efforts and the extent to which international financial and technical cooperation are needed.**



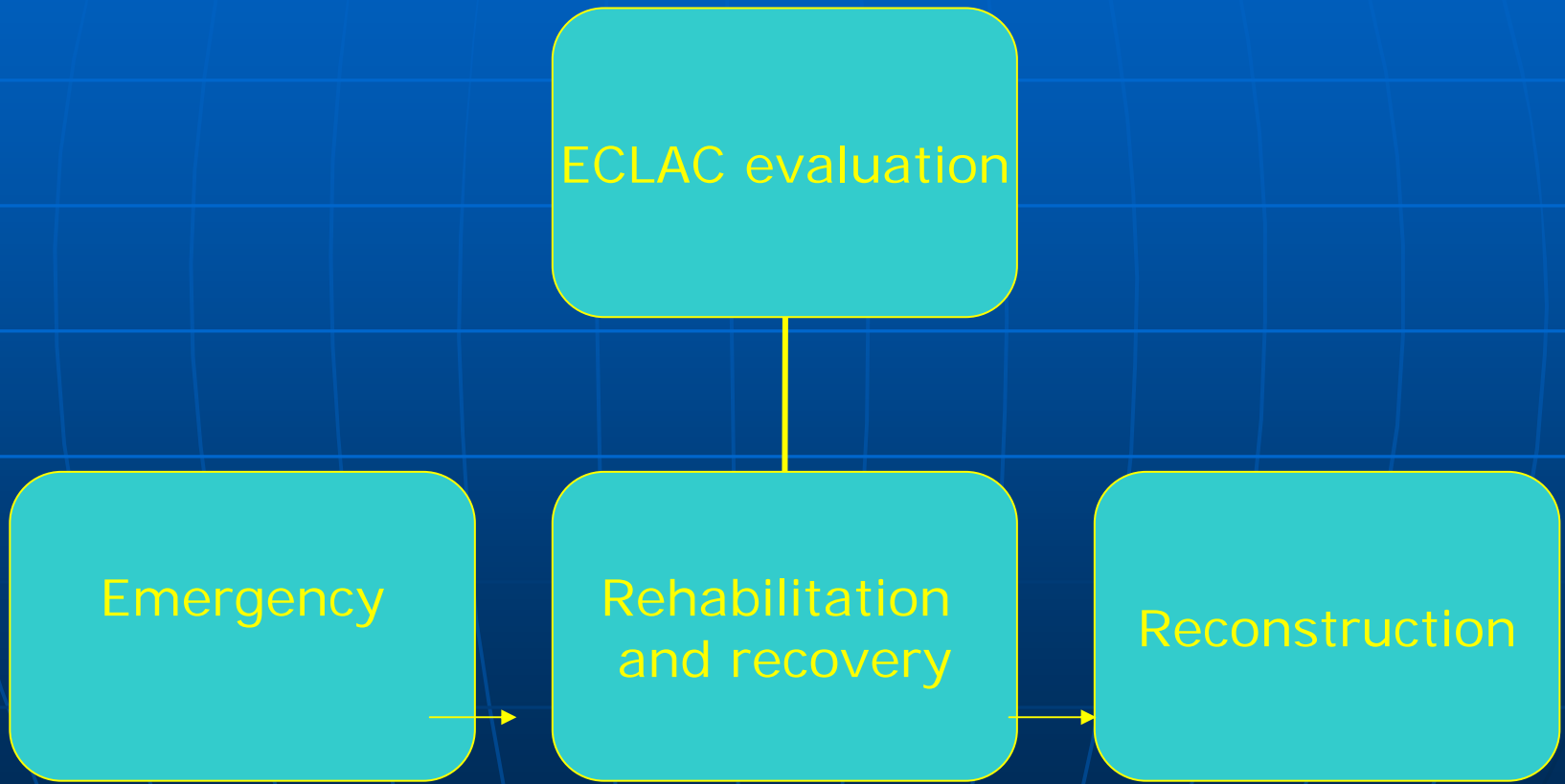
The ECLAC Methodology

- **Identifies the changes in public policy and development of programmes needed to deal with needs arising from the disaster and avoid undesirable effects in economic performance and well being.**



The ECLAC Methodology

The post-disaster cycle





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The Baseline:

- **Meet the pressing needs of the population.**
- **Timely presentation of the assessment.**
- **Time takes precedence over exhaustive analytical precision (or even precise calculations).**
- **The basic requirement is to state the magnitude of damage and the reconstruction requirements.**
- **The starting point is the gathering of all existing quantitative information.**
- **Identify and consult all information providers (government, associations, service providers, chambers of commerce, resident experts of national and international associations or bilateral missions).**
- **Make a list of contacts and list the information.**



The ECLAC Methodology

- **The damages and effects of natural disasters require the application of two criteria:**
 - ✓ **Assessment of the full socio-economic and environmental effects at the time the disaster occurs as well as during its aftermath.**
 - ✓ **The assessment must take into account the different geographical levels and sectors.**
- **The estimates for the assessment are undertaken at three levels:**
 - ✓ **Direct damage**
 - ✓ **Indirect losses**
 - ✓ **Secondary effects**



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Direct damage

- **Stock and temporal dimension**
- **Stocks:**
 - ✓ **Immovable assets**
 - ✓ **Stocks including final goods, goods in process, raw materials and spare parts.**
 - ✓ **Physical infrastructure, buildings, installations, equipment, means of transportation, storage, furniture, farmland, irrigation, reservoirs, crops ready for harvest.**
- **Temporal dimension**
 - ✓ **At the time of the disaster**
- **Provide an estimation of the imported component**



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- **Losses**
- **Flow and temporal dimension**
 - ✓ Refers to the flow of goods and services –expressed in current values- that will not be produced or rendered after a time span beginning after the disaster. The time span may extend throughout the rehabilitation and reconstruction periods.
 - ✓ Indirect losses result from the direct damage to production capacity and social and economic infrastructure.
 - ✓ Also includes disaster-induced increases in current outlays or costs in the provision of essential services as declines in expected income.
- **Losses are estimated by sector and aggregated to yield the secondary effects of the damages.**
- **There are indirect effects that cannot be measured.**



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➤ Secondary or macroeconomic effects

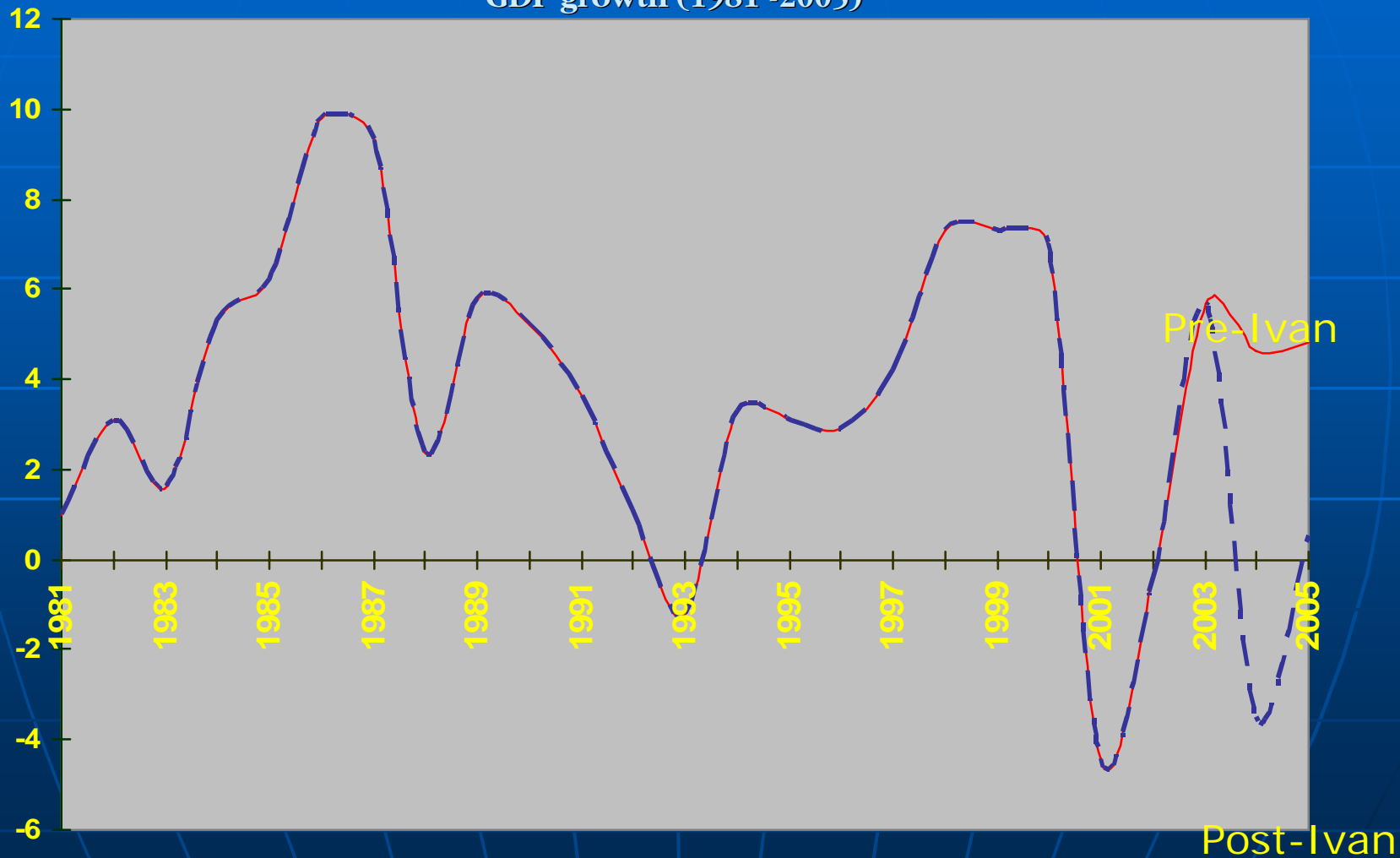
- ✓ The macroeconomic effects reflect the manner in which the disaster modifies the performance of the main macroeconomic variables of the affected country.
- ✓ The quantification of the macroeconomic effects is obtained for the national economy as a whole.
- ✓ The main purpose is to obtain an estimation of the overall effects taking into account and comparing the situation with and without the disaster.
- ✓ The estimate requires a forecast of how each variables would have performed had the disaster not occurred.
- ✓ It is ultimately a counter-factual exercise.



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Grenada

GDP growth (1981 -2005)





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- **Secondary or macroeconomic effects**
 - ✓ **GDP and income**
 - ✓ **Gross investment**
 - ✓ **Balance of payments**
 - ✓ **Public finances**
 - ✓ **Prices and inflation**
 - ✓ **Employment**



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The procedure summarized

Part I

Description



What is it?
Whom it has affected?
Where?
What has been done?

Part II

Assessment



How much?
Magnitude?
Requirements?

Part III

Rehabilitation and reconstruction



What is and needs
to be done?



The ECLAC Methodology

The assessment summarized

Part 1

Part 2

Social and productive sectors, infrastructure and environment

Macroeconomic effects

Immovable Assets

Income foregone

Stocks

Higher costs

GDP

Fiscal
Accounts

Direct losses

Indirect losses

Secondary effects

Balance of
payments

Employment

Prices

At the time of
the disaster

Following the disaster

1 to 5 years



The ECLAC Methodology

- **Damage valuation criteria:**
- **Recommendations:**
 - ✓ **Direct and indirect damage should be valued in local currency.**
 - ✓ **Prices should be expressed in foreign currency in the case of export products or imported goods.**



Economic impacts following a natural disaster on a smaller economy

<u>Variable</u>	<u>Year of event</u>	<u>Year after</u>	<u>Subsequent years</u>
GDP	Immediate drop in GDP growth	Rise in GDP growth from reconstruction	Slow down in 2 and 3 year
Exports of goods	Reduction in the rate of growth	Return to previous levels	Continuation of year after
Imports of goods	Considerable increase in rate of growth	Return to pre-disaster level	Further drop, possibly caused by reduced incomes
Tourist arrivals	Considerable drop	Some recovery	Recovery continued
Cruise ship arrival	Considerable drop		
External debt	Increase in rate of growth	Drop of the rate of increase to below pre-disaster levels	

**Non-independent territories****Summary of direct and indirect damage in US dollars and total damage as percentage of GDP**

NIC	Event	Year	Direct damage	Indirect damage	Total damage	Total as % of GDP
Anguilla	Hurricane Luis	1995	46	10	56	28
Anguilla	Hurricane Lenny	1999	66	27	93	98
St. Maarten	Hurricane Luis and Marilyn	1995	571	469	1070
Cayman Islands	Hurricane Ivan	2004	2,844	590	3434	179

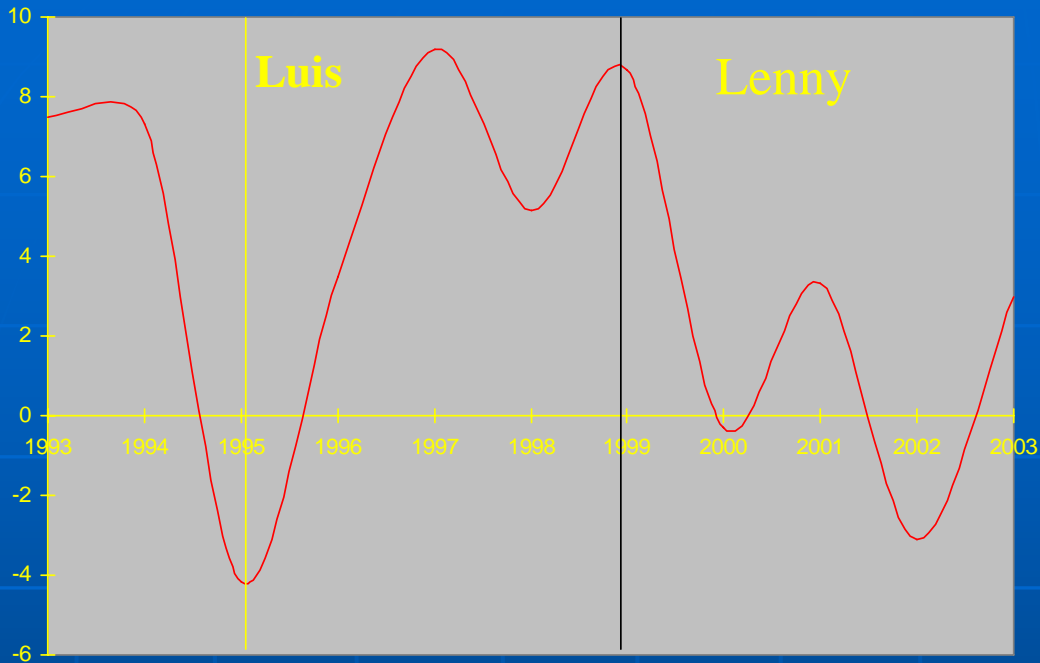
Source: ECLAC (1995, 1999 and 2004)



Non-independent territories
Percent distribution of total damage by sector

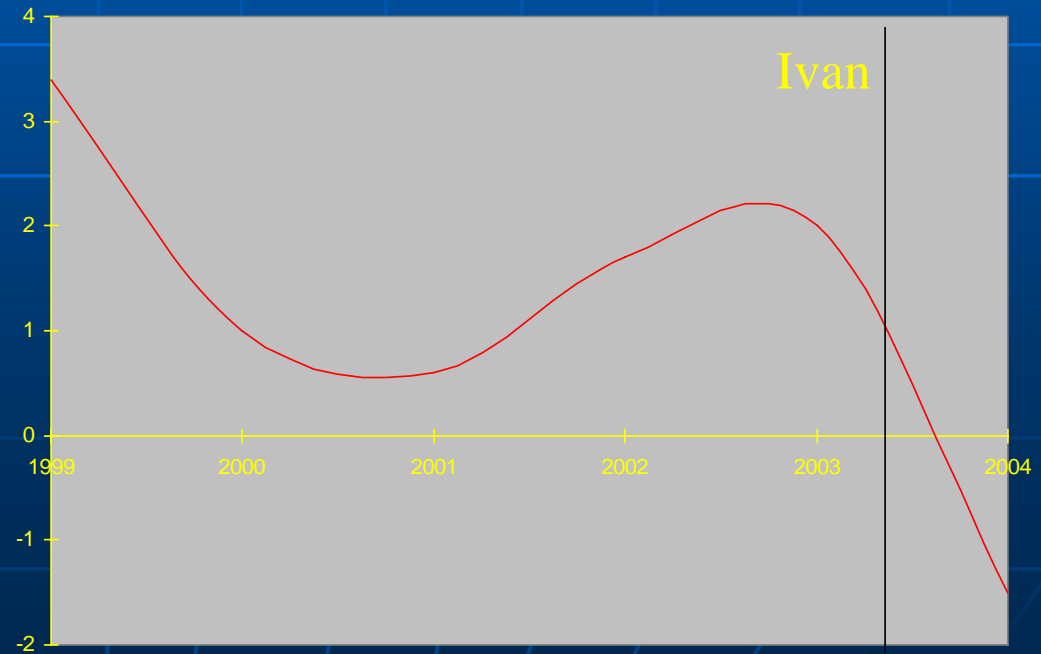
NIC	Year	Social sectors	Social sectors (Housing)	Productive sectors	Productive sectors (Tourism)	Infrastructure
Anguilla	1995	15	14	60	53	24
Anguilla	1999	8	6	84	84	8
St. Maarten	1995	20	18	71	46	8
Cayman Islands	2004	53	51	33	16	14

Source: ECLAC (1995, 1999 and 2004)



The impact of hurricanes Luis (1995) and Lenny (1999) on GDP growth in Anguilla

The impact of hurricane Ivan (2004) on GDP growth in the Cayman Islands





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