



**UNITED NATIONS  
ECONOMIC  
AND  
SOCIAL COUNCIL**



Distr.  
LIMITED  
E/CEPAL/MEX/1982/L.30  
3 February 1983

ORIGINAL: SPANISH

---

ECONOMIC COMMISSION FOR LATIN AMERICA

EL SALVADOR: THE NATURAL DISASTERS OF 1982 AND THEIR  
EFFECTS ON ECONOMIC AND SOCIAL DEVELOPMENT

EL SALVADOR: THE NATURAL DISASTERS OF 1982 AND THEIR  
EFFECTS ON ECONOMIC AND SOCIAL DEVELOPMENT

CONTENTS

	<u>Page</u>
Introduction	1
I. The Natural Disasters of 1982	5
1. Description of the Damages	5
2. Emergency Measures Adopted	8
II. Estimates of the Damages	10
1. Effects on the Population and Social Conditions	10
2. Damages in the Social Sectors	11
a) Health	11
b) Housing	12
c) Education	14
3. Damages to Infrastructure	14
a) Highway Transport	14
b) Railway Transport	15
c) Ports and Airports	17
d) Electricity Service	17
e) Water Supply and Sewerage Systems	19
f) Telecommunication Services	19
g) Other Sectors Affected	20
4. Damages to Agriculture	20
a) Losses in Agricultural Production	20
b) Damage to Livestock	25
c) Damage to Fisheries	25
d) Damage to Land, Plantations and Infrastructure	26
5. Damages to Industry and Commerce	29
6. Summary of Damages	29
III. Effects on the Economy	32
1. Effects on General Economic Development	32
2. Effects on the Gross Domestic Product	32
3. Effects on the Balance of Payments	34
4. The Public Sector and the Plan for Economic Reactivation	38

/IV. Requirements

	<u>Page</u>
IV. Requirements for New International Co-operation	41
1. General	41
2. Characteristics of the Required International Assistance	42
3. Prioritary Fields for International Financial Assistance	43
a) Emergency	43
b) Rehabilitation	49
c) Reconstruction	50
4. International Technical Co-operation	50
Notes	53

# TABLES

## Table

1	Damages in the Social Sectors	13
2	Damages to Infrastructure	16
3	Estimated Losses in Staple and Export Products due to the Disasters of 1982	22
4	Estimated Losses in Basic Grains and Export Products, 1982/1983	23
5	Food Availability and Requirements, 1983	24
6	Damage in the Agriculture and Livestock Sector	27
7	Summary of the Damages Caused by the Disasters	31
8	Gross Domestic Product by Economic Activity, 1981, and Forecasts for 1982	33
9	Balance of Payments	35
10	Medium and Long-Term Foreign Indebtedness	37
11	Central Government Income and Expenditures	39
12	Suggestions on Possible International Assistance to El Salvador Required to Repair Damages Caused by the Disasters of 1982	45

## INTRODUCTION

From 16 to 20 September 1982, El Salvador was affected by persistent rains which were concentrated in the central, southwestern and coastal areas and caused numerous deaths and considerable damage to agriculture, housing and transport infrastructure. An estimate of damages and their impact over the medium-term are presented in this report, which also includes a list of measures that must be undertaken and that should be considered by agencies providing international assistance urgently required by El Salvador under its present circumstances.

This disaster augmented the distress caused by the drought that also occurred in 1982 and that cast even more gloom over the already negative economic forecasts made at the beginning of the year. The two natural phenomena intensified the economic and social disruption suffered by the nation as a result of more than three years of internal armed conflict. The per capita income, which in 1981 had declined by 25 per cent in comparison with 1978, will probably be reduced by one third by the end of 1982. This acute crisis has caused a set back of more than 15 years in the average levels of well-being of the population, and has had devastating effects on future growth potential owing to the prolonged paralyzation of investment, the destruction of stocks and the unprecedented unemployment that affects more than one quarter of the labour force.

The excessive and persistent rainfall which occurred in mid-September caused floods and landslides and felled many trees. It also caused the death of 600 people and the destruction or damage of 3 500 dwellings, especially those built on the shores of rivers and creeks and in Colonia Montebello, a suburban area located in the outskirts of San Salvador. Agricultural production, soils and transportation infrastructure were also severely affected.

The damages, which were limited to a relatively small geographic area, are estimated at some 126 million dollars; or, approximately three per cent of the gross domestic product for 1981. A full

/recovery

recovery of the losses will be possible in most instances, except in the case of the agricultural soils that were washed away. In this context, the 1 500 hectares that were damaged - mainly in the Department of Ahuachapán - are of substantial importance in view of the country's high population density, which demands that all farmland be utilized to the fullest possible extent.

The rate of growth of the gross domestic product which, according to the most reliable mid-year estimates, was to decrease by 2.7 per cent, will now be reduced still further to 4.5 per cent as a result of the damages referred to above, particularly in the agricultural sector, whose decline will exceed 7 per cent, as compared with the 1.5 per cent forecasted prior to the drought and the rains. The decline in agricultural output will be somewhat greater than the one expected for the manufacturing sector, particularly because of the temporary intensification of problems related to the supply of imported inputs and of an appreciable reduction in the generation of electricity - not all attributable to the natural disasters - combined with a decrease in transportation activity because of damaged roads, a reduction in home ownership and in the provision of services as a whole. These declines will not be offset by an increased activity in the construction industry during the remainder of this year in order to complete and repair buildings already under construction nor by the operating expenses which the Government has earmarked to meet the demands of the emergency, which will probably continue at least until the end of next year.

The disasters described in this report are therefore superimposed on a state of economic prostration never before experienced by the country, at least not during the postwar period, and consequently their effects, which to a certain degree are rather moderate in comparison with other natural phenomena experienced in the region not too long ago, have had a serious impact on the country because of its precarious economic position.

/The present

The present report, prepared at the request of the Government of El Salvador, analyses some of the repercussions of the disasters on the country's economic and social development and outlines priority areas requiring immediate attention. In order to prepare it, CEPAL sent a fact-finding mission to El Salvador that was supported by the collaboration of the United Nations Development Programme (UNDP) and several governmental entities, especially the Ministry of Planning, the National Emergency Committee headed by the Ministry of the Interior, the Ministry of Agriculture and the Ministry of Public Works. The mission learned of the immediate effects of the natural disaster as described in detail in the document titled Informe de daños ocasionados por el temporal de los días 16 al 20 de septiembre de 1982 y requerimientos para acciones de emergencia (Report on the Damages Caused by the Rains of 16 to 20 September 1982 and Requirements for Emergency Action) prepared by the Ministry of the Interior. The speed with which the problems caused by the disasters are being faced was corroborated by the mission. The mission also noted the determination of the Salvadorean people to continue working and, in the case of the disaster victims, to do their utmost to become self-sufficient once again as soon as possible.

## I. THE NATURAL DISASTERS OF 1982

### 1. Description of the Damages

In 1982, El Salvador suffered three natural disasters of differing magnitude, cause and effect that had varying impacts on the country's diverse social and economic sectors, already adversely affected by the armed conflict that has been taking place in recent years. Two of these natural phenomena also caused disasters in other neighbouring countries.<sup>1/\*</sup>

On 19 June, a strong earthquake, which registered 5.6 degrees on the Richter scale, shook the central-western part of the country, causing damage or destruction to many rural and urban dwellings and buildings. Fortunately, no deaths occurred, although some people were slightly wounded.

The rainy season usually begins in May, reaches its first peak in June, then diminishes in July and August, increases to its maximum in September and ends in October. In the period July/August there usually occurs a dry spell which lasts between 10 and 20 days, and during which there is not enough rainfall to satisfy crop water requirements. Plants must therefore resort to water stored in the soil's root zone in order to survive.<sup>2/</sup>

In 1982 the dry spell of the rainy season - the so-called canícula - in El Salvador was very severe, specially in the eastern part of the country, since it began in early July and ended until about September 10,<sup>3/</sup> thus making it the worst event of this type in recent decades and surpassing those of 1972 and 1976. Soil water storage was not sufficient to meet crop demands, especially for corn, rice and cotton. Some crops were lost entirely or their yield were drastically reduced as will be described later on.

During the second half of September - immediately after the canícula had concluded - a tropical depression was formed at a location of

---

\* Please see notes on page 53



250 kilometres southwest of San Salvador that was to affect both Salvadorean and Guatemalan territory. Such tropical depressions are frequent during the month of September and follow a path parallel to the Pacific coast. They sometimes increase in force and become tropical storms or cyclones when they reach median latitudes.

In this case, however, the depression began its displacement towards the northwest, but on September 18 changed course and moved inland on the El Salvador-Guatemala border. It followed a path along the Guatemalan highlands and then moved out to sea over the western extreme of Guatemala and the southeastern part of Mexico. Even if the depression had not moved inland it would have produced heavy rains - known as temporales - which can at times last up to five days. In this case, the rains began on 17 September, and continued through 20 September; the main portion fell on 18 and 19 September and was concentrated within a period of 18 hours on those days. In the San Salvador area rainfall reached nearly 400 millimetres, and in the western part of the country exceeded 500 millimetres, which represent more than 20 per cent of the average annual rainfall. Winds of up to 90 kilometres per hour felled many trees and uprooted bushes in the higher areas; they also produced waves four to five metres high in the western seashore of the country.

The geologically young soils of the upland areas had been loosened by the June earthquake, and were subsequently subjected to shallow faulting due to the canícula. The rapid saturation of those soils and the strong winds of the temporal, caused heavy runoff, eroded many land tracks and swept away rocks and trees. Extraordinary floods - that of the Paz River, on the border with Guatemala, for example, exceeded by far the one induced by hurricane Fifi in 1974 which was the highest previously recorded - and mud flows occurred in rivers and streams. In the upland areas valuable soils for the production of coffee were destroyed. After the rivers reduced their flow slope upon reaching the coastal plain, the floods topped the banks and the water-mud-rock-trees flow inundated the adjacent low-lying lands, which became heavily silted and unfit for production.

/The Paz

The Paz River, located in the western portion of the country, altered its course and overflowed into both Guatemalan and Salvadorean territory; other smaller rivers located between the Grande de Sonsonate and the Paz rivers also overflowed their banks. Several hundred dwellings and a considerable extent of farmland located near the rivers were completely destroyed and sedimented, respectively. Many human lives and livestock were lost and extensive areas of land suitable for intensive farming became unusable. In the upland areas of the river basins, wherein land with 60-degree slopes are usually devoted to coffee growing, there occurred large landslides. In several hundreds of hectares coffee trees were lost together with the soil on which they were planted. On the other hand, the high waves referred to above coincided with a low tide, thereby preventing possible damage to the Port of Acajutla and the surrounding coastal area, although they obstructed the free flow of the rivers, they aggravated the flooding of the coastal lowlands.

The case of the city of San Salvador requires special attention. Located among the foothills of several volcanoes and relatively steep mountains, the city's growth in recent years has been made at the expense of clearing areas previously devoted to coffee production, while the forests located in the uplands were rapidly and indiscriminately cut down. The ecological system was therefore modified. There occurred a significant reduction in the retention and in filtration capacity of the soils for replenishing the already over-exploited groundwater reservoir which provides the city's drinking water supply. The upland areas received the full impact of the winds and the intense and persistent rains. The soils, further loosened by fallen trees, were swept away by the rain towards the natural drainage channels. Mud floods occurred and laid bare several hundreds of hectares of land. The mud flowed into recently urbanized areas of the city - which did not have an adequate drainage capacity for such an event - with such violence and swiftness that it swept away and buried hundreds of dwellings killing hundreds of Salvadoreans. Such was the case of Colonia Montebello, a district located in north-western San Salvador, wherein it has been impossible to recover

/all the

all the bodies of the victims and to accurately determine the extent of the damages. Furthermore, conditions in the same drainage sub-basin as well as in others located around the capital city, are such that there exists the threat of more mud flows similar to that which occurred in Montebello, thus threatening not only shun areas but residential middle-class districts as well.

It is therefore essential and urgent to remove the dwellings located in dangerous areas and to initiate reforestation, soil conservation and river control works in the upland areas, in order to avoid the results of possible new floods in the immediate future.

## 2. Emergency Measures Adopted

Governmental and non-governmental institutions began to attend to the needs of the storm victims immediately after the disaster. On 20 September the Government declared a national state of emergency and appointed a National Emergency Committee, headed by the Minister of the Interior, to administer to and provide temporary shelters for the affected population. Many wounded persons were treated by the Red Cross and in hospitals, while the homeless were transferred to relatives' homes or lodged in provisional shelters set up in schools, churches and other community centres, CONADES, an organization that had been established to provide assistance to persons displaced by the armed conflict, was entrusted with the task of attending these victims.

A preliminary assessment of the damage caused by the storm was prepared by the Emergency Committee and submitted to the international community with a request for aid to meet the most urgent needs.<sup>4/</sup> Only very general figures could be provided due to the short time available for preparing this assessment; therefore, the report provides only an order of magnitude estimated of the extent of the damages in each sector. In response to such appeal for international solidarity and to that made by the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), certain countries and international organizations initiated a flow of aid

/from abroad.

from abroad. The Committee, in collaboration with CONADES, was able to begin relocating several tens of thousands of victims and to provide them with food and medical care. Other governmental organizations initiated the repair - at least temporarily and partially - of drinking water and electric power supplies as well as the damaged road network. In rural areas the peasants undertook the search and recovery of the livestock they had lost, the harvesting and drying of the salvageable part of their corn crops, and the repair or reconstruction of their homes, fences, etc. to the best of their abilities. A national collection campaign to provide assistance in cash and in kind is also being carried out to aid the victims.

Despite the efforts undertaken so far, there are still matters which require assistance from the international community during the emergency stage. In the first place, assistance to prevent epidemics due to the unavoidable overcrowding in temporary shelters. In the second, the shipment of basic foodstuffs to replace those destroyed by the drought and the storm. Finally, the provision of urgently needed materials for the construction of housing for the victims and of earth-moving equipment required to remove rubble, restore the courses of rivers, etc.

/II. ESTIMATES