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NICARAGUA: THE MAY 1982 FLOODS AND THEIR REPERCUSSIONS ON THE ECONOMIC AND SOCIAL DEVELOPMENT OF THE COUNTRY

82-6-1317

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INTRODUCTION

Nicaragua has once again experienced the after effects of a natural disaster which has resulted in considerable loss of life and material damage, and will have a highly unfavourable effect on the living conditions of the population.

Over a period of ten years, the country has suffered the impact of three disasters, including the present one, which have justifiably attracted world attention. The violent earthquake at the end of 1972, whose destruction was never wholly repaired, was followed by a period of political upheaval which culminated in the triumph of the revolutionary movement in mid-1979, not before it had caused the virtual paralyzation of production activities, an unprecedented decapitalization and flight of capital, and considerable losses in human lives and infrastructure. The authorities who assumed power at that time formulated a government programme centred on policies basically oriented towards the establishme of a more egalitarian society and on the adoption of a number of measures designed to improve the efficiency of production activities, all within the framework of a mixed economy which would gradually be consolidated.

Recovery from the conflict which ended in the middle of 1979 has in itself been difficult. Added to the high cost of reconstruction of the material damage have been the increasingly unfavourable international position for Nicaraguan exports and the pressures originating from the reorientation of the past economic policy within the programme which the Government Junta for National Reconstruction has been promoting. The main manifestations of this climate of tension includes, at the national level, the reluctance of important strata of private enterprise to carry on their activities normally -no longer to expand them- and, at the world level, a progressive restriction of Nicaragua's access to credit from its traditional sources, at least over the past year.

In addition to the aforementioned disasters, at the end of May a metereologica phenomenon of exceptional characteristics took place mainly because of the time of year in which it occurred. The torrential rainfall over about 10 days left approximately 80 dead -which might have numbered many more had the Government not acted with speed and foresight- and a great deal of material damage, mainly in agricultural natural resources and the economic and social infrastructure. If the immediate destruction is taken into account, as well as its effects on production activities in the remainder of the year, the total losses could amount to about 357 million dollars, including material losses (220 million), damage to the soil (55 million) and indirect losses (82 million). Moreover, this damage probably did a great deal to counteract the country's economic growth of about 5% which was expected for 1982.

The considerable extent of the damage caused by the rain and the consequent floods was due to the wide geographical area they covered -in terms of the number of departments and cities- and the area of cultivated land affected; to the nature of the damage, almost all entailing a slow recovery; to the fact that they more seriously affected a key sector of the economy -which generates foreign exchange- and above all to the circumstance that the phenomenon concerned should have occurred in a period in which the country was making great efforts to recover from the two previous disasters and solve their many development problems.

The present note, prepared at the request of the Government of Nicaragua, examines the repercussions of the phenomenon referred to on the economic and social development of the country. For its preparation, CEPAL sent a mission to

/Nicaragua which

Nicaragua which remained there for 10 days in order to collect and analyse the necessary information. In the performance of this work, the group received extensive co-operation from the United Nations Development Programme (UNDP) and many institutions of the Government of Reconstruction, notably the Department of Information and State Operations (DIGE), the International Reconstruction Fund (FIR) the Planning Ministry (MIPLAN) and the National Disaster Committee. It also had timely access to a mass of information on the damage and other immediate effects of the disaster, which was collected and tabulated by the various ministries and government departments, with the co-ordination of the Department of Information and State Operations of the Office of the Government Junta.

The mission was able to determine the efficiency and speed with which the Government and popular organizations faced the problems arising from the disaster. In a very short time, some of the 70 000 persons who had taken refuge in emergency centres, were already resuming their normal lives. If the above-mentioned organization had not acted as it did, the loss of life would undoubtedly have been considerably greater.

In spite of the efforts made, the country needs international co-operation in order to deal efficiently with the longer-range repercussions of the disaster, which it must be stressed, are additional to the accumulation of obstacles already mentioned. For this reason, in addition to describing the natural disaster, estimating the extent of the damage and formulating some observations concerning its effects on the immediate-, medium- and long-term development of the economy, this document presents some considerations on the additional technical and financial co-operation which Nicaragua requires from the international community.

I. DESCRIPTION OF DISASTER AND IMMEDIATE ACTION TAKEN

1. Origin and description of the disaster

The floods occurring in Nicaragua -and on a much lesser scale in Honduras- at the end of May 1982 were due to the intensive rainfall produced by the combined presence of two metereological phenomena. In the first place, around 20 May an area of low atmospheric pressure formed near Punta Cosiguina which remained almost stationary and then slowly moved towards the Caribbean. Secondly, one end of the Intertropical Convergence Zone (ITCZ) -which is the equatorial band in which the main winds from the northern and southern hemispheres converge and which move in a north/south direction throughout the year- was over Central American territory and fed and stimulated the aforementioned depression.1/

The simultaneous occurrence of these two phenomena, each of which has a high potential for generating heavy rainfall, originated the persistent and intensive rains which covered a wide area of the Central American Pacific seaboard, extending from the Nocoya peninsula in Costa Rica to the Fonseca Gulf, and also covering the basin of the big lakes in Nicaragua (see attached map).

The areas most affected by the tropical depression were undoubtedly the north-western part of Nicaragua and the southern coast of Honduras. In that area the rainfall not only exceeded the average and maximum ever recorded, but -in some cases like Chinandega- amounted to over 500 millimetres in a single day, and 70% of the rainfall in a normal year fell between 20 and 31 May.

The amount of rainfall was truly extraordinary. After the first few days of this situation, when the soil had absorbed a considerable proportion of the rain, virtually all of it flowed towards the river beds carrying with them soil, trees, stones and everything they found in their way. The flow was so great that the river beds were insufficient, particularly at those points where the mountains come down to the coastal plain. The abrupt reduction of the slope and in some cases the obstruction of bridges by trees and other material carried along by the waters caused the rivers to overflow their banks, flooding and denuding the land and adjacent population centres on the higher parts of the plain, destroying bridge structures or heads and depositing the material they carried on the land near the coast, in the estuaries, and even in the open wells used by the rural population.

The loss of vegetable cover and soil erosion on the mountain slopes were very severe, as also were the artificial widening of river beds in the upper stretches of the rivers and ravines, and the depositing of sand and rocks in the river beds and the land situated in the lower areas. Thus a large proportion of the vegetable cover of extensive areas and considerable tracts of arable land were lost owing to the considerable widening of the river beds, and large stretches of arable land in the lower areas were buried or partially covered by the material carried by the torrents. Furthermore, the ground water was affected by the inflow through the flooded wells not only of sediment but also of pesticides and fertilizers, which could make it unsuitable for human and animal consumption. No less serious were the effects on Lake Managua whose level rose considerably with the rain and the

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1/ Newspaper versions attribute the persistent rainfall to the tropical storm Aleta. Information obtained by means of photographs from metereological satellites and data from radiosonde stations indicate, however, that Aleta was already far away from Central American territory at the time of the disaster.

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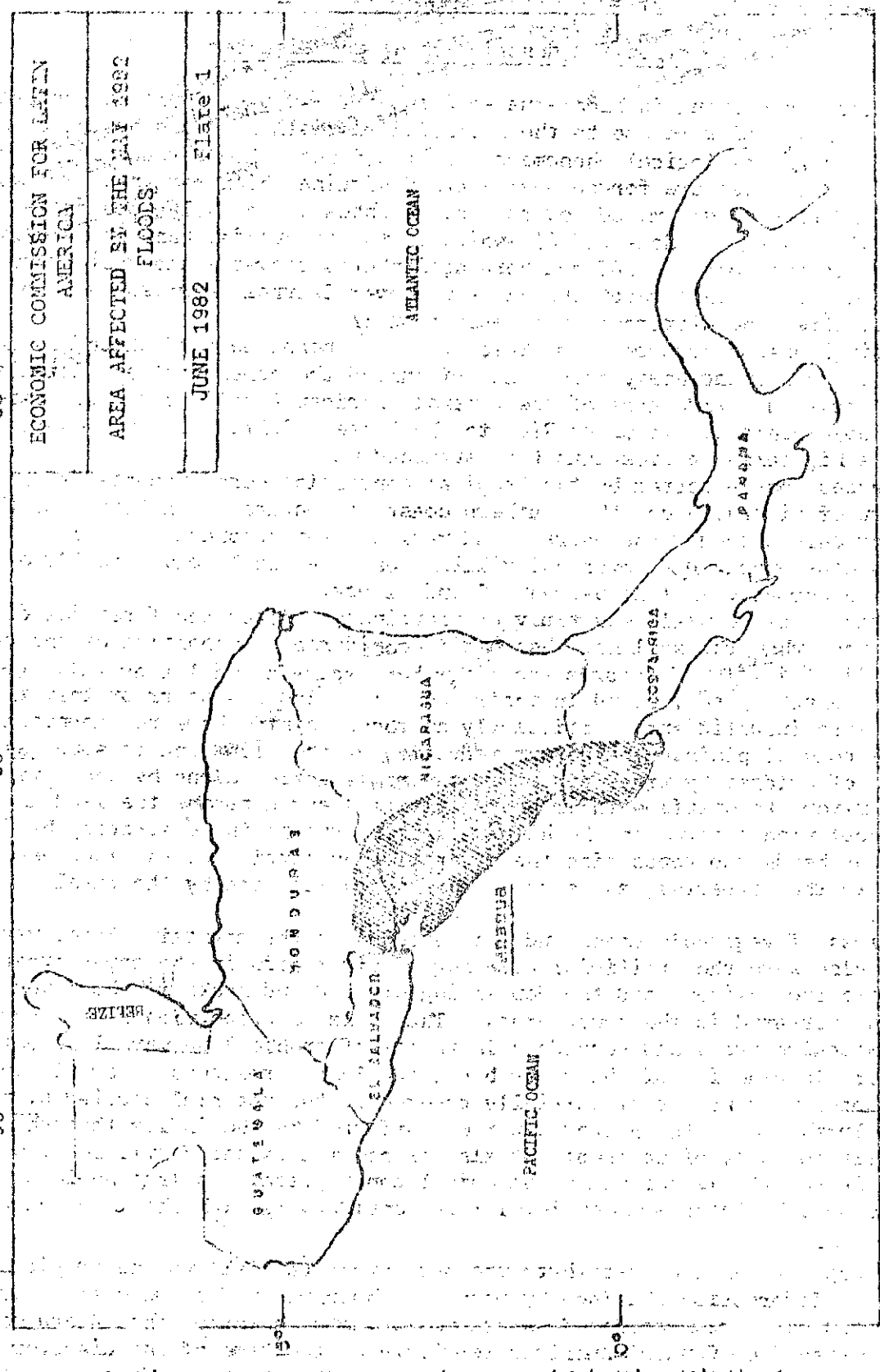

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torrents it received, flooding the dwellings on its banks, filling up with sediment and preventing the natural and artificial disposal of waste from the capital. In short, in only a few days the ecological balance of the region was significantly altered.

When the rivers overflowed their banks the agricultural, physical and social infrastructure was damaged in varying degrees, as also was agricultural production and the stock of cattle. Terraces and other soil conservation works in agricultural areas devoted mainly to cotton-growing were destroyed or damaged; road and railway bridges and many sewers were carried away completely or the ends and bases were damaged; many dwellings in low-lying areas adjacent to the rivers were flooded and in some cases swept away, and, finally, crops which were already sown or about to be harvested were destroyed, land which had been prepared for sowing was flooded and many animals were drowned.

In the cities -especially Chinandega and Managua- natural or artificial sewerate proved insufficient to dispose of the waters. Many dwellings, shops, industries and public service buildings situated in the low-lying parts near river beds and Lake Managua were completely inundated. The aqueduct and sewerage systems, and telephone and electricity networks suffered considerable damage.

The road network was severely affected since the asphalt layer of extensive tracts of paved highway was carried away and secondary roads and access roads to the interior were flooded and covered with sediment. Electric light and telephone communications were interrupted because of fallen posts and broken lines.

In one of the ports near the place where the tropical depression had formed, the simultaneous action of a relatively high tide, strong winds -of up to 48 knots- and copious rainfall eroded the beach which sank several metres, dragging with it many dwellings and threatening to cut off the highway and railway.

To aggravate this situation, the danger has not yet disappeared. Further intensive rainfall may occur and, owing to soil erosion in the high lands, could cause new landfalls which would considerably increase the already substantial damage. It should be taken into account, moreover, that the rainy season is just beginning, the soil has reached saturation point and statistics show that similar phenomena with grave consequences may still take place, particularly if they occur simultaneously with the highest tides of the year which, together with storm conditions, are expected in September and October.

It is therefore a matter of urgency to proceed with the immediate reconstruction of terraces in agricultural areas and the removal of obstructions in the river beds. Another pressing matter is to reinforce the metereological and hydrological forecasting facilities in order to detect this type of phenomenon sufficiently in advance and reduce future damage.

2. Action taken vis-à-vis the emergency

As distinct from what normally happens in other places and at other times, at the end of May 1982 Nicaragua had an extensive and efficient organization for mobilizing its people. That civilian organization, in close co-operation with the Army, made it possible rapidly to evacuate the inhabitants of the affected areas, and provide lodging and care for the flood victims in the improvised refuges. This circumstance explains the low number of deaths recorded during the disaster.

The Government Junta for National Reconstruction, after realizing the magnitude of the damage caused by the floods, declared the region affected a disaster area and established a National Disaster Committee. This Committee is responsible for

/looking after

looking after the flood victims, determining the most urgent needs, and receiving and distributing the aid sent from abroad, which it has done fairly and efficiently.

The Government Junta prepared a very provisional evaluation of the damage suffered as a result of the rains, and on 27 May it sent out an urgent appeal for aid from the international community.2/ In view of the urgency with which the document containing this appeal was prepared and the fact that some population centres were still isolated, the Junta's report reflects only the order of magnitude of the direct damage and indicates priorities for the assistance required.

The appeal -reinforced by another made by the United Nations Co-ordination Office for aid in cases of disaster- was answered by some countries and international institutions and organizations and assistance began to flow into Nicaragua, although on a somewhat small scale if the immediate needs are considered.

The National Disaster Committee distributed the aid as it was received, at one moment having met the requirements of about 12 000 families. Other government departments and civil and popular organizations devoted themselves to satisfying various urgent needs.

A start was made on the resettlement of the inhabitants of marginal areas of the cities who had lost their dwellings and belongings in safer places. Work went ahead actively on the re-establishment of communications, electricity and the water supply service. The temporary repair of partially damaged bridges was begun and also the construction of fords which made it possible to cross rivers where the bridges had been destroyed.

School activities were suspended in order to use the premises as temporary refuges for the flood victims, and school children were included in cleaning and reconditioning brigades. In the interior of the country a food programme was established for work which enabled some operations for clearing river beds and local roads to be initiated.

Although there were no water supply or waste disposal services for a relatively long period -a situation that still prevails in some population centres which are still isolated- the immunity levels of the population were fairly satisfactory thanks to the recent health campaign, and no epidemics have been recorded so far. This does not mean, however, that they may not occur in the future owing to crowding in the temporary shelters.

In spite of the activities described above, and the fact that food and medicines as well as doctors and reconstruction personnel have been received from abroad, Nicaragua still needs a great deal of assistance to cover the flood victims'' basic needs and, as will be seen later, to devote its efforts to the tasks of rehabilitation and reconstruction.

The additional emergency aid most urgently required is food to alleviate the shortage due to the loss of crops which were about to be harvested, and heavy machinery and equipment to reopen access to production areas in time to be able to sow.

2/ See Secretaría General de la Junta de Gobierno de Reconstrucción Nacional, Informe preliminar de la cuantificación de los daños ocasionados por el desastre, 27 May 1982.

II. ESTIMATES OF THE MAGNITUDE OF THE DAMAGE

The following pages present a preliminary evaluation of the damage caused by the floods. The results are based on information provided by the Nicaraguan authorities and estimates prepared by CEPAL after a reconnaissance of the flood area.

The provisional nature of the estimates is underlined, since the available information referred only to the most direct effects of the phenomenon. In many cases the assessments were based on the quantification of the number of units lost or damaged, to which the average replacement cost was applied. In others it was necessary to use improvised methodologies to quantify the losses, especially those caused by erosion or sediment on agricultural land.

An attempt has also been made to include an estimate of the income which will not now be received owing to stoppages or delay in the economic activity of some production and service sectors.

1. Effects on the population and living conditions

Although the meteorological phenomenon affected between 35% and 40% of the whole national territory, contrary to what usually happens in this type of disaster the number of victims was relatively small. The most recent calculation places the loss of human life at approximately 80 persons and those who have had to be lodged in temporary shelters at some 70 000.

The small number of deaths is explained -as stated elsewhere in this document- by the efficient and widespread popular organization existing in Nicaragua and by the decided action by the Sandinist Army. This largely facilitated the work of evacuation and temporary resettlement of the persons affected, reducing loss of life and to a certain degree alleviating the situation of the flood victims. Thanks to the work of cleaning and rehabilitation to a large extent undertaken by this organization, these persons will be able to return to their places of residence all the sooner, or install themselves in other places specially prepared for the purpose.

2. Damage in the social sectors

Although the damage to the social infrastructure was less than that suffered by the physical infrastructure and production apparatus, the efforts made over the past three years to improve living conditions were severely affected.

(a) Health

Before the floods, the National Reconstruction Government had embarked on an effective programme to improve the health of the population. Hospitals and other health centres damaged during the 1978-1979 conflict had been repaired and newly equipped, and preventive medical campaigns had been initiated the results of which were already

The meteorological phenomenon had three types of effects: destruction or damage in the public health infrastructure, destruction or loss of equipment and medical supplies, and the need to launch or reinforce some campaigns for the prevention of diseases.

Among the first type is the damage to the Chinandega hospital whose foundations were undermined by the flood, which will make it necessary permanently to remove a large part of its facilities, and the flooding and partial destruction of other smaller health centres. The second type includes damage to X-ray and

laboratory equipment, loss of medical supplies in store and the additional expenditure on medicines made necessary by the disaster. Finally, mention should be made of pools of water that still remain and may cause the spread of malaria, yellow fever, dengue and other diseases, so that intensive prevention campaigns should be initiated. It should be noted that owing to the relatively high levels of immunity attained thanks to the health campaigns undertaken before the floods, there have as yet been no outbreaks of those diseases. The crowded conditions of the flood victims and the damage sustained by the water supply services, however, make it imperative to initiate the above-mentioned preventive campaigns.

In view of the foregoing considerations and the need to provide services in the new settlements which will be referred to later in this document, new modular health centres and water supply and sanitary disposal systems will have to be established.

It is considered that the damage suffered by the health sector could be repaired with an investment of 12.5 million dollars. Of this sum, 6.5 million would be assigned to the reconstruction and repair of infrastructure (including the replacement of the Chinandega hospital), 3 million to the repair and replacement of the equipment and medical supplies, and, lastly, 5.5 million to the cost of the campaigns for the prevention of malaria, dengue and yellow fever (see table 1).

(b) Education

Priorities in the educational sector prior to the disaster were oriented towards the extension of school attendance at the primary and pre-school levels, the improvement of the teaching staff and popular education for adults as a follow-up to the national literacy campaign. For this purpose, a considerable investment had been made in the construction of physical plant, the purchase of teaching materials and equipment, and the establishment of a national system of Popular Education Collectives (CEP).

Although the material damage is not substantial -compared with other sectors- the educational system has been affected. Rural popular education centres, which represent over 80% of the national total, were located in improvised premises which were carried away by the floods, several normal schools were considerably damaged and the equipment of the only national centre for the production of teaching materials in the country was destroyed.

On the basis of information supplied by the Ministry of Education (MED), it is considered that the infrastructure, furniture and materials of some 60 educational establishments, apart from the CEP, were destroyed or damaged. A provisional estimate indicates that an investment of over 3 million dollars would be necessary to replace all this, and of this sum nearly 1 million would cover material and equipment from abroad (see table 2).

(c) Housing

The Ministry of Housing and Human Settlements had recently initiated a Progressive Urbanization Programme which consisted of the distribution of plots with the minimum infrastructure -including public sources of water, rain drainage and latrines- for settling families that were living in precarious places.

/Table 1

Table 1

NICARAGUA: DAMAGE IN THE HEALTH SECTOR

(Thousands of dollars)

Component	Replacement cost	Value of imported component
Total	15 000	9 850
Infrastructure	6 500	1 950
A hospital with 120 beds	2 500	750
Repairs to hospitals and other health centres	4 000	1 200
Damaged equipment and medical supplies	3 000	3 000
Prevention campaigns	5 500	4 900
To combat malaria	4 000	3 600
To combat dengue and yellow fever	1 500	1 300

Source: CEPAL estimates on the basis of data supplied by the Ministry of Health (MINSA) and the Panamerican Health Organization (PAHO/WHO).

/Table 2

Table 2

NICARAGUA: DAMAGE IN THE EDUCATIONAL SECTOR

(Thousands of dollars)

Department	Number of establishments affected	Replacement cost	Value of imported component
National total	58	3 055.6	916.7
Managua	14	50.4	
Estelí	1	139.2	
Jinotega	1	37.2	
Carazo	5	315.3	
Masaya	3	10.6	
Chinandega	23	1 716.1	
León	1	270.0	
Boaco	2	11.0	
Chontales	1	320.0	
Granada	7	40.3	
Others (Popular Education Centres)	...	145.5	

Source: CEPAL estimates on the basis of information supplied by the Ministry of Education.

/It was

It was precisely those precarious housing areas which were most affected by floods, since they are situated in low-lying regions adjacent to rain drainage systems on the borders of Lake Managua. A great many rural and urban dwellings located in areas which were flooded by the interior rivers of the country were also destroyed or damaged. Equally significant was the destruction of dwellings the whole length of the Corinto coast, due to the high tides which occurred there.

The number of dwellings which were completely destroyed is estimated at 6 400, and those partially destroyed at 4 700. The cost of their replacement, in suitable conditions and locations, is estimated at 20 million dollars. It is estimated that household equipment which is irretrievably lost could be replaced at the cost of 6 million dollars. In other words, the total damage in the housing sector would amount to 27 million dollars, and of that sum 3.5 million would be used for materials from abroad (see table 3).

The programme of the Ministry of Housing and Human Settlements for the provision of minimum housing for the population will have to be increased and considerably stepped up in order to cover, in the least possible time, the housing demand of some 12 000 families affected by the disaster.

3. Damage to infrastructure

The May 1982 floods mainly affected the infrastructure, causing substantial damage, as will be seen below, and heavy losses in terms of income.

(a) Road transport

As a result of the rivers overflowing their banks, 732 km of paved road, 1 000 km of secondary roads and 2 500 km of branch roads were damaged or destroyed; this represents 40% of the paved road network and 5% of the secondary and branch road system. In addition, seven main bridges were destroyed -including the Guasaule bridge linking Nicaragua with Honduras- and 18 more were affected when their heads broke or their structure was damaged.

The bridges were destroyed by the exceptionally high water levels which carried away the superstructure and/or undermined their bases. Many others were virtually clogged by the material carried and were converted into temporary dams which broke at the weakest points, thus accounting for the failure of the bridge heads. The sewers were insufficient to allow the passage of the flood waters and were broken or buried by the current as the rivers widened.

As a result of the foregoing events, added to the fact that many secondary and branch roads served as an outlet for the intensive rainfall, the waters inundated the paved and secondary roads, carrying away the surface paving and destroying extensive tracts of terraces.

The main damage in the road transport sector was along the Managua-León-Chinandega-Guasaule route and its branch roads, over which a high percentage of inter-Central American trade was carried, as well as Nicaragua's exports outside the Central American region. In spite of the recent urgent repair of some bridges and the construction of fords in several rivers, heavy traffic will have to take the alternative route along the Pan American Highway, with the consequent increase in costs owing to the longer and semi-mountainous run.

/Table 3

Table 3

NICARAGUA: DAMAGE IN THE HOUSING SECTOR

(Thousands of dollars)

Item	Number of units	Replacement cost	Value of imported component
Total value		26 660	3 500
Units destroyed a/	6 400	18 560	3 136
Units damaged	4 700	2 100	364
Household equipment	-	6 000	

Source: CEPAL estimates on the basis of data supplied by the Ministry of Housing and Human Settlements (MINVAH).

a/ Including the cost of reconditioning land for resettlement purposes.

/The damage

The damage to the road system is calculated at 111 million dollars, to which must be added 6.6 million covering the cost of replacement of the bridges, and a probable loss in 1982-1983 of 1.8 million for increased transport costs on the alternative route.36/ It is estimated that of the above figure 48.5 million cover imported construction materials -asphalt, steel, etc.- and thermoelectric generation for the production of cement (see table 4).

The final reconstruction and repair of bridges and sewers will necessitate a revision of the hydraulic criteria used for its design, and the utilization now of more extensive hydrological and meteorological series which could raise the cost of construction of those structures.

(b) Rail transport

As in the case of road transport, the floods affected the main railway branch line linking Managua with the port of Corinto and serving as an alternative route for the transport of imports of goods and exports to countries outside Central America.

Eighteen kilometres of railway track and nine bridges were totally destroyed; this completely halted rail traffic to the west, which generated over 90% of the service's income. All that remained in operation was the Managua-Granada stretch which is mainly used for the transport of passengers.

Before the disaster, plans had already been made for the modernization of the system, the aim being to increase the gauge and renew the railway inventory. It is necessary now to determine whether it is best to adopt a new layout instead of repairing or modernizing the existing track, and to undertake a financial analysis to determine whether the rates should be modified or whether the Government will continue to subsidize this means of transport.

In the event that it was decided to reconstruct only what was lost, this would require an investment of 7.7 million dollars. Of this sum, 4 million would be assigned to the reconditioning of the track and 3.7 million to the reconstruction of bridges. Assuming that such repairs were to take 15 months, the railway would receive 1.7 million dollars less income over that period (see table 5).

(c) Ports and airports

The port of Corinto which is the main port terminal on the Pacific, suffered serious damage to its infrastructure as a result of the heavy rains and strong winds and simultaneously a relatively high tide. The wind and the waves destroyed the lighthouse and affected some piles of the wharf; they also seriously eroded the coast and damaged the breakwater protecting the port, which caused the destruction of a great many dwellings -as mentioned in the previous section- and constitutes a danger to the highway and railway-line running the length of the coast. The

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3/ The increase in transport costs affects not only Nicaragua's trade, a provisional estimate indicates that the rest of the Central American countries will have to pay an additional 1.4 million dollars under the head of transport over the next 18 months, as a result of the damage of Nicaragua's road system.

/Table 4

Table 4

NICARAGUA: DAMAGE TO ROAD TRANSPORT

(Thousands of dollars)

Component	Length affected (km)	Replacement cost	Value of imported component
Total		117 475	48 465
Roads		110 900	44 000
Paved	732	65 900	39 500
All-weather	1 000	25 000	2 500
Branch	2 500	20 000	2 000
Bridges		6 575	4 465
Gausaule a/		1 125	900
Other bridges destroyed (6)		2 800	2 240
Bridges damaged (18)		2 650	1 325

Source: CEPAL estimates on the basis of information supplied by the Ministry of Construction and MIDINRA.

a/ Includes only 50% of the total replacement cost, which will be shared with Honduras.

/Table 5

Table 5

NICARAGUA: DAMAGE TO RAIL TRANSPORT

(Thousands of dollars)

Item	Replacement cost	Value of imported component	Loss of income a/
Total	7 668	4 547	1 730
Railway track (18 km)	3 960	1 580	-
Bridges of over 40 metres (4)	2 712	2 170	-
Shorter bridges (5)	996	797	-
Service	-	-	1 730

Source: CEPAL estimates on the basis of information supplied by the Ministry of Transport (MITRANS).

a/ Loss of income for a period of 15 months.

/flood also

flood also deposited a considerable volume of sediment in the recently dredged section of the port. It will be necessary, therefore, to reinforce and extend the coverage of the coastal defence works in order to prevent the sea from coming inland and ensure the safety of port operations -since a large proportion of extra-Central American trade enters and leaves the country through Corinto- and to carry out further dredging operations to enable vessels with a deeper draught to come alongside the wharf.

Furthermore, the currents seriously eroded about 25 air landing strips in the interior which were mainly used as a basis for operations involving the fumigation of crops, in particular cotton. Their reconditioning is also a matter of high priority with the aim of ensuring the activities designed to protect the crops against pests.

The replacement and repair of damage to port facilities, and the reconditioning and extension of coastal protection works would cost approximately 13 million dollars The reconditioning of landing strips would cost some 125 000 dollars. Thus the total cost of rehabilitation and replacement under this head would amount to nearly 13 million dollars, of which 5.7 million would cover imported materials. Moreover, since the facilities for shipping and unloading goods were affected only to a minimum extent, it is not expected that the port authority's income will be reduced.

(d) Urban infrastructure

The urban infrastructure of the flooded cities was severely damaged, in particular because 35 bridges and sewers were destroyed or undermined; structures for the control and lining of rain water gutters were eroded and destroyed, and over 30 km of paved streets, 56 km of cobbled streets and over 90 km of earth streets were damaged.

This damage will directly affect the cost of urban transport -both collective and individual- because of the wide detours which will have to be made in view of the damage to bridges and the increased maintenance costs for transport units.

The replacement or repair of the damage to urban infrastructure will cost approximately 16 million dollars. The bridges, sewers and gutters will require 8.7 million and the damage to roads 7.3 million. It is estimated that of the total cost mentioned, 10.4 million would cover imported materials and the thermoelectric generation for the production of cement (see table 6).

(e) Electric energy

In 1981 electric energy was supplied in equal proportions by hydroelectric sources and thermoelectric plants whose operation requires imported fuel. Before the floods, the Nicaraguan Energy Institute (INE) was making rapid progress towards bringing into operation the Momotombo geothermoelectric plant and to complete the interconnexion line with Costa Rica, which would make it possible to reduce the volume and cost of imports by replacing thermoelectric generation by the country's own geothermal energy and low-cost Costa Rican hydroelectric energy.

The floods left Nicaragua's generation capacity almost intact, save for minor damage to a hydroelectric plant caused by the fall of an access bridge. The damage to transmission lines was, however, considerable and affected important sections of 69, 138 and 230 kV on the León-Chinandega, León-Pavana and León-El Viejo lines. Approximately 100 km of the distribution networks of Managua, León, Chinandega, and other cities were damaged.

/Table 6

Table 6

NICARAGUA: DAMAGE TO URBAN INFRASTRUCTURE

(Thousands of dollars)

Item	Replacement cost	Value of imported component
Total	16 022	10 361
Streets	7 281	4 917
Asphalt (30 km)	5 272	4 745
Cobbled (56 km)	342	162
Earth (90 km)	1 436	-
Pavements	32	10
Bridges and water courses	8 741	5 444
Pedestrian bridges (1)	492	246
Vehicle bridges (22)	5 763	4 322
Sewers (17)	205	102
Ramps	447	224
Rain water gutters	1 835	550

Source: CEPAL estimates on the basis of information supplied by the Department of Municipal Affairs (SAMU) and the Managua Reconstruction Junta (JRM).

/In addition

In addition, two electricity projects under construction were also affected. In the case of the Momotombo geothermoelectric project, some damage was sustained by the access road and the canals protecting the plant and production wells, and valuable drilling equipment was flooded and will possibly have to be replaced. The access roads and excavations for the interconnexion line were also affected.

Owing to the fall of high-tension lines in the west, that region remained isolated from the national interconnected system, so that it was necessary to operate a steam plant in order to supply electricity to the area, with the consequent increase in costs and foreign exchange for its generation. Furthermore, the delay in the entry into operation of the Momotombo station and the interconnexion with Costa Rica will entail higher expenditure on thermoelectric generation both this year and the next.

The Nicaraguan Energy Institute estimates that the repair of infrastructure and replacement of the drilling equipment lost will be over 2 million dollars. Moreover, the indirect damage due to the drop in sales of electricity and the need to generate it in thermoelectric plants would amount to nearly 13 million dollars. In other words, the sector's total losses would amount to 15 million dollars, of which 3.8 million would represent expenditure in foreign exchange (see table 7).

(f) Aqueducts and sewers

The floods affected the water supply systems of approximately 40 towns and the sanitary sewerage of two of them. The drinking water service was interrupted in most of the communities and the installations in nearly all of them were repaired provisionally, but in mid-June there still remained several population centres without this service. The damage occurred mainly in the water catchment projects, in the lines for carrying it and the distribution system, in the pumping equipment and its electrical installations, and in the sanitary sewerage system.

Replacement of the works thus affected could cost slightly over half a million dollars; half of that figure represents imported equipment and materials. In spite of the small amount of damage incurred, the equipment and material and human resources required for its repair are not at present available, so that the services are expected to continue to be interrupted or functioning partially for at least six months. Accordingly, the loss of income of the Nicaraguan Aqueduct and Sewerage Institute is estimated at slightly over 4 million dollars, which substantially exceeds the material losses of the service (see table 8).

With the aim of preventing any possible epidemics owing to the lack of drinking water and the consumption of polluted water, it would be advisable immediately to divert the external loans for works in process to the rehabilitation and reconstruction of the damaged systems.

(g) Other sectors and services

In addition to the sectors already analysed, other activities were also affected although on a lesser scale: the country's cultural heritage, cargo and passenger terminals, goods warehouses, telecommunications and tourist facilities.

The damage in the cultural sector consisted of the undermining and inundation of several schools of art and popular cultural centres, and the historical patrimony. The cost of repair and rehabilitation of this item is estimated at 1.3 million dollars.

/Table 7

Table 7

NICARAGUA: DAMAGE AND LOSSES IN ELECTRIC ENERGY SERVICE

(Thousands of dollars)

Item	Losses in infrastructure	Production losses	Value of imported component
Total	2 113	12 850	3 785
Generation works	190	2 550 a/	2 686
Transmission lines	295	-	102
Distribution system	458	10 300 b/	272
Other items c/	1 170	-	725

Source: Nicaraguan Energy Institute (INE).

a/ In thermoelectric generation owing to the delay in completing projects for generation and interconnexion with Costa Rica.

b/ Loss of income due to a drop in expected demand.

c/ Including drilling and miscellaneous equipment.

/Table 8

Table 8

NICARAGUA: DAMAGE TO AQUEDUCT AND SEWERAGE SYSTEMS

(Thousands of dollars)

Item	Replacement cost	Value of imported component
Total	629	315
Water catchment works	51	5
Carrying and distribution networks	412	206
Pumping equipment and electrical installations	47	47
Sanitary sewerage systems	116	56
Other items	3	1

Source: CEPAL estimates on the basis of information supplied by the Nicaraguan Aqueduct and Sewerage Institute (INAA), the Department of Municipal Affairs and the Managua Reconstruction Board.

/Likewise, these

Likewise, there was damage by undermining, wetting and flooding of warehouses and cargo and passenger terminals in Managua and other towns in the interior, as well as damage to machinery and equipment for the handling of cargo. It is estimated that the repairs will amount to 475 000 dollars.

Telecommunications suffered damage to the physical lines, telephone exchanges and the telex system and some materials which were in the warehouses of TELCOR were lost. The systems were almost completely re-established with materials originally intended for other purposes; the cost of repair is estimated at nearly 150 000 dollars. Moreover, due to the interruption of the service, TELCOR received over 85 000 dollars less in income.

The tourist infrastructure also suffered damage in some popular complexes such as Xiloá. The cost of its rehabilitation is estimated at some 150 000 dollars.

Lastly, as a result of the rains, some public transport enterprises, received nearly 35 000 dollars less in terms of income.

In total, it is estimated that the cost of replacing material losses under these heads will amount to about 2 million dollars; imported equipment and materials will represent nearly 150 000 dollars. Finally, these activities will receive approximately 120 000 dollars less in terms of income (see table 16).

4. Agricultural sector

Since the end of the armed conflict, great efforts have been made in Nicaragua to restore the production capital of the agricultural sector, since before 1979 the machinery parks had been considerably reduced by the indiscriminate use of the equipment in activities other than agriculture. In addition, stock-breeding had experienced a drop of about 20% in the number of cattle as a result of slaughtering and excessive exports during the previous régime.

From 1979 onwards the agricultural sector was organized in a mixed ownership system in which the People's Ownership Area controls approximately 14% of the value of production, and the private sector the remaining 86%. Harvest trends since then made it possible slowly but surely to recover the volumes reached in 1978.

The 1982 agricultural programme envisaged an increase in the production of cotton -the main export crop- and of maize, one of the staple items of the Nicaraguans' diet which in the last few years had had to be supplemented by imports. The programmed increases for the year in general terms reflected the historical trend observed. Increases were also expected in other crops for domestic consumption except for sorghum in view of the surpluses obtained in 1981.

Because of the rains and floods the agricultural sector was seriously affected in terms of both its stock of capital and its production, inventories and infrastructure. The damage in this sector has been so great that it was only surpassed by the losses in the road infrastructure.

(a) Damage to soil and capital goods

Although the main damage under this head relates to soil swept away and/or eroded and the death of cattle, the production infrastructure was also severely affected.

Some 2 800 hectares of land used for intensive agriculture were virtually destroyed by the torrents when the river courses widened immeasurably or deposited upon them a considerable quantity of sediment, stones and trees; an additional 5 600 hectares of arable land were eroded by the water and lost a thickness c

/several centimetres

several centimetres od fertile soil, which will reduce its productivity. Another 77 000 hectares already prepared for sowing were also affected, and the terraces of some 24 500 hectares used for cotton-growing were partially or completely destroyed.

Furthermore, as a result of the floods, some 11 600 head of cattle -3 850 breeding cows, 7 000 calves and 2 300 steers- perished, thus reducing the stock of cattle which had barely started to recover after the damage suffered in the 1978-1979 conflict.

In addition, the waters inflicted serious damage on the equipment, installations and raw materials of a fertilizer mixing plant. Also destroyed by the waters were the fences of many farms, nurseries and other forest instalations, irrigation and fishing equipment, and some agricultural machinery and implements. Lastly, another loss was the plantation of bananas in some 1 200 hectares, which will have to be replaced this year and the next; similarly, it should be noted that about 1 500 hectares of coffee were destroyed.

Not less important was the destruction or serious deterioration of the access roads -as noted in the road transport sector- which are used for the transport of inputs and commodities and are indispensable for the sowing of crops, the season for which begins in mid-July and finishes at the end of August.

Total losses in land and capital goods in the sector, excluding access roads, amounted to over 68 million dollars. The most serious losses were in land (55 million) since where the soil was washed away there will be no production for an estimated period of 10 years, and eroded land will have lower yields. There was less damage to capital goods, i.e., 13 million dollars, of which a little over 4 million represent imported inputs and equipment (see table 9).

It should be stressed that the losses described above are a severe blow to Nicaragua, since, in addition to losing a considerable area of its best land, its productivity will diminish over a very wide area, the work of preparing the soil for the next harvest was lost, the stock of cattle was reduced and an input processing plant was affected.

(b) Agricultural production losses

The rains and floods caused losses both in exportable production and production for domestic consumption, the effects of the former will make themselves felt more intensely in 1983, while those of the latter will occur in the present calendar year.

(i) Export crops. Production of export crops suffered the most serious losses since the intensity of the disaster was greatest in the centre of the main cotton and banana growing area of the country, two commodities which generate a high percentage of foreign exchange.

In spite of the fact that cotton had not yet been sown at the time of the rains, the soil had already been prepared for the purpose; in fact, before the first rains of the season the terraces are prepared and the earth is broken up and ploughed; this work had already been done and was totally or partially lost. In view of the large number of terraces destroyed, it is difficult -if not impossible- to prepare once again all the land intended for sowing before the sowing period ends on 30 August. Besides the land which was completely carried away or covered with sediment, extensive tracts of the best cotton-growing land were eroded by the floods and by the lixiviation caused by the rains, which will adversely affect productivity.

/Table 9

Table 9

NICARAGUA: DAMAGE TO LAND AND CAPITAL GOODS IN THE AGRICULTURAL SECTOR

(Thousands of dollars)

Losses	Replacement cost	Value of imported component
Total	68 177	4 185
Land affected	54 882	1 085
Losses, 2 800 hectares a/	44 800	-
Eroded, 5 600 hectares b/	6 272	-
Lost terraces, 14 000 hectares	360	300
Damaged terraces, 10 500 hectares	150	125
Prepared land, 77 000 hectares	3 300	660
Capital goods	13 295	3 100
Lost cattle, 15 000 head c/	3 500	1 600
Damage to fertilizer mixing plant	1 608	1 000
Fences destroyed	420	270
Damage to nurseries and other forestry projects	297	-
Damage to fishing equipment	100	60
Damaged machinery and equipment	170	170
Loss of banana plantation (1 200 ha)	1 200	-
Loss of coffee plantation (1 500 ha)	6 000	-

Source: CEPAL estimates on the basis of information supplied by MIDINRA, the Ministry of Planning (MIPLAN), the International Reconstruction Fund (FIR) and the Department of Information and State Operations (DIGE).

a/ Estimate based on the harvests which cannot be produced in ten years time.

b/ Estimate based on the reduction in yields over five years (35 quintals of cotton at 1981 prices).

c/ 3 850 breeding cows, 5 400 calves and 2 300 steers.

Banana activities are located in what was no doubt the centre of the heaviest rainfall. Bananas are highly sensitive to excessive humidity, so that they were seriously affected; the plantation, whose extension is estimated at around 3 000 hectares, suffered not only from excess water, but it also remained exposed to fungus diseases, mainly Sigatoka. It is estimated that sowings were destroyed on about 1 200 hectares of land, in addition to which 1 million boxes already prepared and in warehouses could not be exported, although it is understood that these were covered by insurance. The infrastructure of the banana plantation -interior roads, wires for the transport of the fruit, packing plants, etc.- was also affected, but recovery under this head is not so important as that of the plantation. It is considered that this will take approximately one year, so that in 1982 and part of 1983 exports will diminish.

In the case of coffee, the damage was less serious since its characteristics and those of the production areas -mountain slopes- were less affected by the rains. It is estimated that some 1 500 hectares of coffee were damaged, so production will fall by only a small proportion.

The cultivation of sugar cane received the impact of the rains when fortunately the bulk of the harvest had already been completed. It is estimated that only 3 500 to 7 000 hectares remained uncut. This crop has a good capacity for recovery so cane-growing activities may be reinitiated as soon as the humidity of the land has been reduced. Before the disaster, some of Nicaragua's sugar plantations had planned to extend their production areas in the present agricultural year, so that the main effect of the disaster on this activity is confined to the destruction of about 80 000 quintals of refined sugar which were already in Corinto warehouses ready for export, as is noted later in this study.

Other crops -such as sesame and tobacco- suffered minimal damage since they had not yet been sown. In the case of sesame the only loss was 25 tons of seed which it was planned to use when initiating activities in 1982.

(ii) Commodities for domestic consumption. In view of the fact that there was a deficit in some grains at the beginning of the year, the Government promoted their cultivation during the low-water season, taking advantage of the irrigation infrastructure for the purpose; it was thus expected to produce enough to meet the current demand for maize and rice until the first crop was harvested, that is, approximately at the beginning of September. These crops were in the growing stage, part of them flowering and another part already in the ripening process. The rain affected maize more seriously since, unless the plant falls over, rice is not harmed by water. Although the maize harvests were not completely destroyed, it is estimated that 31 500 tons of this grain will have to be imported to satisfy demand until the new harvest.

The rest of the commodities for home consumption were undamaged as they had not yet been sown; even in the case of sorghum -which has come to replace maize in times of greatest demand- the 1981 harvest was excellent so that the reserves will suffice to meet demand in the main areas affected. For 1982 it is envisaged that the increase in production will not reach the figure planned.

Altogether agricultural production is expected to fall by about 35 million dollars, which means that the growth rate originally programmed for 1982 will be practically halved (see table 10).

/Table 10

Table 10

NICARAGUA: AGRICULTURAL PRODUCTION VALUE AND DAMAGE CAUSED BY THE FLOODS a/

Crop	1981	1982		Difference (damage)
		As planned	After the floods	
	Millions of dollars at 1980 prices			
Total	524.5	606.8	570.7	34.9
For export	352.8	396.4	361.7	34.7
Ginned cotton b/	106.8	126.4	96.4	30.0
Sesame	6.5	10.6	10.5	0.1
Bananas	9.7	10.0	6.9	3.1
Coffee b/	180.7	189.5	188.8	0.7
Sugar cane	42.6	50.3	49.5	0.8
Havana tobacco	6.5	9.6	9.6	
For domestic consumption	171.7	210.4	209.0	0.2
Maize	55.8	72.8	72.8	- -
Beans	41.1	45.2	45.1	0.1
Rice	53.7	67.7	67.7	- -
Sorghum	17.1	19.9	18.7	c/
Light tobacco	4.0	4.8	4.7	0.1

Source: CEPAL estimates on the basis of data supplied by the Planning Ministry.

a/ The 1982 data relate to the calendar year, except in the case of cotton, sesame and bananas, where they refer to the agricultural year (season).

b/ For 1982, calculated on the basis of world prices in force in mid-June 1982.

c/ The decline in production is due to the fact that there were surpluses in 1981, not to flood damage.

(c) Losses in inputs

Before the floods Nicaragua already had the necessary inputs for the crops which were about to be sown. As a result of the rains an appreciable quantity of fertilizers was lost, as well as 9.5 tons of rice seed and as much again of cotton seed, and maize seed and other inputs. Their replacement cost is estimated at 1.7 million dollars (see table 11). Seemingly, only a minimum part of these commodities was covered by insurance policies.

(d) Losses in products ready for consumption

Owing to the flooding of warehouses in the packing plants or port terminals there was a substantial loss of agricultural commodities from the 1981/1982 harvest which were ready for consumption and export, mainly bananas -1.2 million boxes- and to a lesser extent, plantains, sugar, coffee and cotton. This loss is estimated at 4.2 million dollars, although most of it was ensured (see table 12).

(e) Effects on livestock production

The main damage in the livestock production sector was basically the death of about 11 600 head of cattle as mentioned above. This was due, in the first place, to lack of feed for several days -since the flood débris completely covered the pasture in some regions- and to tension in the animals produced by the flood which prevents them from moving and feeding properly and whose effects may last much longer than the rainy season.

Even though in terms of the stock of cattle the damage does not seem significant, it should be noted that it occurred at a time when stock-breeding was beginning to recover after having suffered the effects of the war, which meant a high slaughtering rate and the aforementioned reduction of about 20% in the stock of cattle which in 1978 amounted to 2.4 million head.

The effects of the rains were reflected in the main stock production indicators -for example, a larger number of abortions, a considerable drop in the production of milk, a fall in the calving indexes, etc.- hence the losses will probably turn out to be more serious than those indicated in table 13, and will affect productivity for the next three years.

Pig and poultry production were also affected by the disaster and will show a drop in the current year; however, since they are rapidly produced species the effect in the medium term could be easily overcome by a recovery programme.

Estimates of the loss in livestock production for 1982 in relation to the improvement envisaged before the disaster show a figure of 1 million dollars, which will represent a drop in the production index from 6.4 to 6% (see table 13).

(f) Effects on forestry

The damage to forest production was concentrated exclusively in the projects which are under the control of the Nicaraguan Natural Resources and Environment Institute (IRENA) and is mainly confined to losses of plants in nurseries which were ready for permanent transplanting, the loss of some machinery and implements and the cost of recovering some of these materials, and the time during which activities were at a standstill because of work difficulties. In all, the damage caused in the forestry sector amounts to about 300 000 dollars, a sum which is already included under the head of capital losses (see table 9).

/Table 11

Table 11

NICARAGUA: AGRICULTURAL SECTOR. LOSSES IN PRODUCTION INPUTS

Item	Estimated value (thousands of dollars)
Total	1 683
Fertilizers	1 240
Rice seed (9.5 tons)	10
Maize seed (30 000 hectares sown)	300
Cotton seed (9 tons)	9
Various inputs	124

Source: CEPAL estimates on the basis of information supplied by MIDINRA, the Planning Ministry, the International Reconstruction Fund and the Department of Information and State Operations.

/Table 12

Table 12

NICARAGUA: AGRICULTURAL SECTOR. LOSSES IN COMMODITIES READY FOR CONSUMPTION

Commodity	Estimated value (thousands of dollars)
Total	4 192
Cotton (1 000 quintals destroyed)	64
Cotton (4 000 quintals damaged)	128
Sesame (seeds)	14
Coffee (9 000 tons damaged)	180
Sugar (9 450 tons damaged)	175
Bananas (1.2 million boxes)	3 000
Plantains (17.5 million units)	175
Vegetables	10
Fishing	372
Milk (46 000 gallons)	74

Source: CEPAL estimates on the basis of information supplied by MIDINRA, the Planning Ministry, the International Reconstruction Fund and the Department of Information and State Operations.

/Table 13

Table 13

NICARAGUA: DAMAGE TO LIVESTOCK PRODUCTION

(Millions of dollars at 1982 prices)

Commodity	1980	1981	1982 a/	
			As planned	After the floods
Cattle	145.3	106.4	105.3	104.4
Pigs	20.4	24.3	23.0	23.0
Poultry	11.0	14.2	19.3	19.3
Milk	78.0	81.0	85.0	85.0
Eggs	24.5	27.0	36.5	36.5
Total livestock	279.2	252.9	269.1	268.2

Source: CEPAL estimates on the basis of figures supplied by the Planning Ministry.
a/ Estimates.

/(g) Effects

(g) Effects on fishing activities

The damage to fishing caused by the rains consisted of losses of equipment and machinery and a small reduction in the catch of crabs and lobsters, since the ships had to take shelter throughout the time the rains lasted. This damage was also included under the head of capital losses (see table 9).

(h) Medium-term effects

In the previous sections, losses in terms of land, capital goods and production as a direct and indirect result of the floods have been estimated. There is, however, some damage in the sector whose effects will make themselves felt even in the medium term. These relate mainly to productivity in cotton growing, since the land use for this commodity suffered the whole force of the elements. Part of it was carried out to sea; another part was covered with sediment, stones, tree trunks and sand, and yet another part was eroded by the excess rainfall and carried away. Despite the fact that the soil in this area is highly productive, its physical characteristics -very loose sand- makes it highly susceptible to erosion, by both wind and water, so that its productivity will fall in the next few years.

Even though the worst effects of the rains are already past, it is necessary to take action to restore the previously existing conditions -incorporation of humus- and to formulate programmes for the prevention of erosion by both wind -by means of windbreakers- and rain, by protecting the upper courses of streams and ravines which are badly damaged and totally unprotected. These activities should be carried out concurrently with the work of protecting the ravines in which there were considerable landfalls, and loss of soil will continue even in the normal rainy season.

The land covered by rocks, wood débris and sand will need to be cleared to make them suitable for cultivation, and this may take a relatively long time. The water courses which were blocked up and caused this damage should also be rehabilitated because there is still a possibility that new destructive floods may occur; it will undoubtedly be necessary to clear the river beds, expand them in some cases and protect their banks in others.

The medium-term situation for other crops is less gloomy, since with the exception of bananas -whose devastated land will begin to produce at the end of 1983- there could be a rapid recovery which will depend on the country's capacity to rehabilitate the land before the end of August which is the time limit for sowing.

5. Damage to industry and trade

(a) Manufacturing and mining sector

The manufacturing sector felt the impact of the floods in a climate of decidedly deteriorating climate which had been gathering way during the year in the face of the drastic reduction in the availability of foreign exchange for the purchase of inputs, which was much lower than that envisaged at the beginning of the year and compelled the Government to establish very strict priorities for its provision. This was one of the reasons why even before the natural phenomenon took place a drop of 2.2% was expected in the growth rate of 4.9% envisaged for 1982 in the Government plan. According to the estimates in this report, as a result of the floods that rate will necessarily fall even lower until it becomes a negative rate (-0.4%).

/At the

At the level of branches of industry, serious damage is noted in the production potential of the group of industries comprising food, beverages and tobacco, followed by the chemical industries.

According to the results of a survey of the industries affected (see table 14) and to provisional calculations it is estimated that the manufacturing sector suffered total damages amounting to about 19 million dollars, mainly in the way of losses of stocks of raw materials which were stored in enterprises and/or customs houses, and also in the form of damage to industrial plant. Only a minimum proportion of those goods was ensured. In most of the enterprises located in the disaster zone production activities came to a stop during the emergency period which caused production and sales to fall. The largest proportion of the damage was to enterprises in the private sector, except for a number of chemical and metal manufactures and machinery industries of the public ownership area which were seriously affected by the metereological phenomenon.

Although no very accurate information is available, the amount represented by the estimated figures seems to indicate that despite the efforts made it is not feasible that the sector will recover completely during the year, particularly owing to the limitations of foreign exchange for the purchase of the substantial imported component (machinery and raw materials). Approximate estimates show that the total loss in terms of production value represents not more than 2% of the 1981 level of gross industrial production (estimated at 7 700 million córdobas). Its repercussion on the sector's economy could, however, reduce the possibilities of achieving the growth targets of the current year.

Damage to the whole of the mining sector is estimated at about 500 000 dollars and comprises that affecting gold mining and the production of non-metallic minerals. The former showed production losses in three of the mines and the branch roads deteriorated in all of them; as regards the latter, producers of lime, gypsum and some quarries stopped their activities completely, although only on a temporary basis.

(b) Trade

According to very provisional estimates the damage to local trade amounted to 3.5 million dollars and was basically due to damage to stocks, buildings -including markets and slaughter-houses- and warehouses; the most serious losses appear to have been due to the reduction or stoppage of trade activities and damage to warehouses and inventories of ENABAS, which were partially insured (see table 15). In some cases the damage halted activities during the rainy period, as occurred in 21 municipal markets. The estimate includes losses in terms of income not earned by the trade activities affected for a period of approximately two weeks. It is believed, however, that the damage done to real estate may be fairly easily recovered, so that it will probably be repaired in the middle of 1982. The interruption of internal road traffic or its obstruction and higher cost, including that carried on in Central America itself, has reduced the flow of supplies so that the volume of this sector's sales has decreased even in establishments where no damage was inflicted. This situation will continue until the transport system is completely reconditioned.

Lastly, the 3% expansion expected in the Government plan for domestic trade and banks in 1982 can scarcely be attained, and even growth for the whole year will be zero in view of the above-mentioned damage.

/Table 14

Table 14

NICARAGUA: ESTIMATED DAMAGE IN MANUFACTURING AND MINING SECTORS

(Thousands of dollars)

Item	Value
Total	19 113
Manufacturing sector	18 613
Fixed assets	2 477
Buildings	84
Spare parts and machinery	216
Equipment and transport	260
Other installations	1 917
Stocks	2 299
Raw materials	1 788
Finished products	511
Fall in production and sales	13 837
Mining sector a/	500
Gold ore	250
Non-metallic minerals (lime, gypsum and others)	250

Source: CEPAL estimates on the basis of information supplied by the Department of Information and State Operations.

a/ Production losses.

/Table 15

Table 15

NICARAGUA: DAMAGE IN THE TRADE SECTOR

(Thousands of dollars)

Item	Replacement value
Total	3 482
Damage to warehouses and inventories (ENABAS)	1 180
Popular Trade Corporation	100
Municipal markets and slaughter-houses	462
Total estimate of losses to small-scale trade a/	500
Estimated losses due to the cessation or suppression of activities b/	1 240

Source: CEPAL estimates on the basis of information supplied by the Department of Information and State Operations.

a/ It is estimated that 1 000 establishments (10% of those existing in the country) suffered losses averaging 500 dollars each.

b/ Estimated on the assumption that 10% of the establishments received no income for two weeks, using for the purpose the value of the trade gross domestic product in 1981 (approximately 300 million dollars).

/6. Recapitulation

6. Recapitulation of the damage

An analysis of the damage clearly reveals that the sectors most seriously affected were transport, especially the road and railway systems; agriculture, which suffered substantial capital and production losses; and housing.

Manufacturing, and mining, electric energy and trade suffered less damage, which was concentrated in losses of stocks and of income from future sales. The urban infrastructure also sustained significant damage to a value similar to that of the three above-mentioned sectors. Lastly, the port protection works in Corinto were damaged.

The health and education sectors suffered relatively light damage; however, the losses were costly in qualitative terms because they seriously affected the efforts that were being made in such important social sectors.

In short, it may be said that the floods destroyed the transport structure which was the means of access to production areas for domestic and international trade, did even more damage to the key agricultural sector which generates foreign exchange and staple commodities, and caused the deterioration of the attention to the most primitive social needs. In view of the magnitude and type of damage suffered by these sectors, their recovery may only be achieved in the medium term. Other sectors maintained their production capacity virtually intact and only suffered losses in inventories or the temporary contraction of sales, so that they will be expected to recover shortly.

Table 16 presents an overall view of the damage caused by the floods, whose total cost is estimated at around 355 million dollars.4/ Of this sum, 55 million represent temporary or permanent damage to the land -one of the country's main resources- measured in terms of the updated value of the opportunity cost represented by doing without the crops that could have been harvested on that land; 82 million are indirect losses, either under the head of income which would not be received owing to the stoppage of normal activities or to the additional operating costs caused by the disaster; finally, about 220 million dollars represent losses in the country's capital stock which will have to be replaced. Moreover, about half of such replacement will require imports (see table 16). It is estimated that barely 10 million dollars' worth of losses will be recovered from reinsurance.

For a fuller understanding of the extent of the damage -direct and indirect- it should be noted that it represents, for example, almost one-fifth of the country's gross domestic product and around 40% of its exports in 1981. There can be no doubt, therefore, of the significant magnitude of the damage, whose impact on Nicaragua's economic development is analysed below.

4/ The same meteorological phenomenon also caused considerable damage in the neighbouring republics of Costa Rica and Honduras. Although the mission did not visit those countries, not having been requested to do so by the governments concerned, the United Nations Disaster Relief Office (UNDRO) has estimated that in Honduras there were at least 200 dead and that material losses amounted to 100 million dollars; of this amount, 60 million dollars' worth of losses affected the agricultural sector, 30 million, represent damage to highways and bridges, and the remaining amount represents damage to educational and health facilities and dwellings. It is also reported that the drinking water supply was affected, thus causing contamination.

/Table 16

Table 16

NICARAGUA: SUMMARY OF THE DAMAGE CAUSED BY THE FLOODS

(Millions of dollars)

Item	Total damage	Direct damage	Indirect effects	Import or export component a/
Total	356.5	274.7	81.8	
Social sectors	44.8	39.3	5.5	
Health	15.0	9.5	5.5	9.9
Education	3.1	3.1	-	0.9
Housing	26.7	26.7	-	3.5
Infrastructure	179.5	150.8	28.7	
Road transport	119.3	117.5	1.8	48.5
Railway transport	9.4	7.7	1.7	4.5
Ports and airports	12.9	4.9	8.0	5.7
Urban infrastructure	16.0	16.0	-	10.4
Electric energy	15.0	2.1	12.9	3.8
Aqueducts and sewers	4.8	0.6	4.2	0.3
Other sectors and services	2.1	2.0	0.1	0.2
Agricultural sector	109.7	78.1	31.6	
Losses in land and capital goods	68.2	68.2	-	(4.2)
Losses in agricultural production	34.9	3.3	31.6	(33.0)
Losses in inputs	1.7	1.7	-	1.0
Losses in products ready for consumption	3.6	3.6	-	(3.0)
Losses in livestock production	0.9	0.9	-	(0.3)
Losses in fishery production	0.4	0.4	-	(0.4)
Manufacturing and mining sector	19.1	4.8	14.3	
Losses in industrial plant	2.5	2.5	-	1.0
Losses in stocks	2.3	2.3	-	(2.3)
Losses in manufacturing output	13.8	-	13.8	-
Losses in mining production	0.5	-	0.5	0.5
Trade sector	3.4	1.7	1.7	
Losses in fixed assets	0.5	0.5	-	0.1
Losses in inventories	1.2	1.2	-	1.0
Losses in sales	1.7	-	1.7	-

Source: CEPAL estimates on the basis of official figures.

a/ The figures in brackets indicate losses in exports; in total, 91 million represent imported materials and 36 reductions in exports.

III. EFFECTS ON ECONOMIC DEVELOPMENT

1. Evolution of the Nicaraguan economy as from 1979

(a) Main features of the economy and inherited problems

Nicaragua presents the typical characteristics of a small agro-exporting economy, based on a small number of commodities which make it highly sensitive to the international situation. Its traditional export base was considerably expanded and diversified in the 1960s -as well as coffee it exported cotton, sugar and meat as "motor" products- and at the same time it made some progress in industrialization within the context of the Central American Common Market integration commitments. The dynamic stimulus of the traditional export sector and of import substitution industrialization permitted a rapid expansion of the economy as from 1960, but with a very unequal distribution of its benefits among the different population strata. Thus, among the main features of the Nicaraguan economy are at present its extreme dependence on situations associated with the international economy -and among these the shortage of foreign exchange which is the principal factor limiting development- and the large number of lacks and delays of various kinds suffered by the bulk of the population.

The devastating effects of the 1972 earthquake aggravated those inequalities, punishing to a great extent the low-income groups living in the marginal areas of the city and added to the aforementioned delays.5/ The sequel to the reconstruction period, still uncompleted, joined with increasingly intense civil upheaval which in turn led to a situation of progressive economic recession, characterized by a contraction of private investment, the flight of foreign exchange, growing external public indebtedness and, lastly, considerable damage occasioned by the armed conflict which culminated in the middle of 1979 at a cost of not less than 50 000 human lives and material damage amounting to some 500 million dollars.6/

When the new authorities assumed power a large extension of cotton and basic grains had remained unsown; the country was immersed in an acute internal decapitalization process and an unprecedented external financial insolvency -the total external debt amounted to 1 500 million dollars, with service payments which in 1979 would have absorbed 100% of the generation of foreign exchange earned by exports of goods and services; open unemployment of more than 30% of the economically active population and a fiscal deficit of over 1 200 million córdobas,7/ equivalent to 70% of current income. As a direct result of the war and because of the transfer of capital goods abroad, there was heavy decapitalization in both production and the economic infrastructure.

(b) Salient aspects of the economic policy as from 1979 and its main results

In the face of this profound economic depression and the paralyzation of most production activities, combined with the longstanding problems of Nicaragua's economy, the Government Junta for National Reconstruction established a number of objectives

5/ See CEPAL, Informe sobre los daños y repercusiones del terremoto de la ciudad de Managua en la economía nicaragüense (E/CN.12/AC.64/2/Rev.1), January 1973.

6/ See CEPAL, Nicaragua: Repercusiones económicas de los acontecimientos políticos recientes (E/CEPAL/G.1091/Rev.1), December 1979.

7/ A córdoba is Nicaragua's national currency whose official value is equal to 10 US cents.

/which at

which at the beginning of 1980 were combined in an annual plan,8/ and continued in a second plan adopted early in 1981.9/ These measures were designed to reactivate production and at the same time were consistent with the social justice objectives outlined in the Government's original programme.

This reactivation was sought by imbuing the State's operational structure with dynamic force, in an endeavour to combine in a mixed economy system the interests of the workers, the Government and private enterprise. Incentives were offered to production and exports, both through credit and fiscal concessions and by fixing remunerative sales prices for the main export commodities. At the same time, an attempt was made to raise the level of well-being of the masses, not so much through the wage policy -although minimum wages were adjusted nominally in the period 1980-1981, real wages fell- but rather through the provision of services and other indirect benefits and the creation of new employment opportunities. For example, ceiling prices were fixed for a basket of basic commodities and for rents; distribution channels were organized for essential articles on the basis of popular markets; and there was some improvement in the provision of health and education services, notably the literacy campaign launched in 1980. At the same time, the year-end rates of open unemployment dropped from 23% in 1979 to 17.8% in 1980 and to 13.4% in 1981.

During this period, too, an important change was introduced in the structure of property, with the State confiscating all the assets of the overthrown political group.10/ In addition, an agrarian reform was initiated on the basis of the land take over, and subsequently of the unused areas in properties of 500 manzanas on the Pacific coast and 1 000 manzanas in the rest of the country. This land is administered as State enterprises or as co-operatives of the beneficiaries.

In order to alleviate the external bottleneck, the new authorities initiated concerted action with the aim of obtaining additional credit from abroad on favourable terms -the official loans contracted between July 1979 and December 1981 amounted to about 1 200 million dollars-11/ and renegotiation with private creditors

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8/ See Planning Ministry of Nicaragua, Programa de emergencia y reactivación en beneficio del pueblo, January 1980.

9/ Ministry of Economic Planning of Nicaragua, Programa económico de austeridad y eficiencia, 1981, January 1981.

10/ At the end of 1981, approximately 55% of the total assets of the economy were in private hands, and 45% in the public sector. The State controlled 24% of the agricultural sector, 22% of manufacturing, 100% of mining and finance, and 40% of trade.

11/ Official loans were obtained from the following sources:

Multilateral	470.1
BCIE	80.8
IBRD	90.7
IDB	189.1
Others	109.5
Bilateral	348.8
United States	72.6
Western Europe	68.7
Socialist countries	56.5
Latin America	51.0
Libya	100.0
Credit lines	353.2
Suppliers	24.6

Of the above sum, during the period analysed, 840 million dollars were spent and debt servicing absorbed 370 million (90 million in amortization payments and 280 million in interest payments).

/of the

of the previously existing external public debt was successfully concluded.

Finally, important efforts were made to improve the efficiency of the enterprises which came under State control -the so-called Popular Ownership Area- and to improve the public sector's capacity to stimulate economic growth and promote the changes postulated in the Government programme and development plans referred to above, although problems of organization and shortage of executive and intermediate staff hindered the attainment of these goals.

Unfortunately, all these efforts were made within the context of a gradual decline in the world economy, a deterioration which was particularly severe in 1981 so that the main obstacle to economic recovery -the acute scarcity of foreign exchange- was seriously aggravated. Furthermore, the changes proposed by the Government Junta for National Reconstruction were questioned both inside and outside the country, so that they were not free from pressures: private enterprise was reluctant to reactivate its investments nothwithstanding the fiscal incentives offered, in view of the uncertainty of a great many entrepreneurs concerning the medium-term future of the country, and these pressures sometimes turned into acts of violence, which, among other effects, increased the authorities' concern for national security and defence. Moreover, Nicaragua, in common with the rest of the Central American countries, has also experienced recent difficulties in obtaining resources to finance its development, particularly if it is taken into account that, for various reasons, some important international agents blocked the flow of new resources into the country. Nevertheless, since 1979 the Government Junta has attained important achievements. In 1981 the gross domestic product increased for the second consecutive year at a rate of about 9%. Although real per capita income in the past year was 25% lower than that recorded five years before, this growth was appreciable, if it is considered against the backdrop of the adverse trends described above, and reflects reactivation from an extremely depressed internal situation.

The production of goods showed a recovery in 1981, basically stimulated by agriculture with a 14% increase in that sector's value added, although the production of cattle continued to fall that year. The rise took place in production both for export and for domestic consumption. Construction -the sector most severely affected by the 1979 recession- had shown in the two-year period 1980-1981 a distinct trend towards recovery -even though it only reached 75% of the 1978 level- basically influenced by public investment and the support and financing of building and low-cost housing. Notable developments in this sector are the virtual conclusion of the highway to the Atlantic (Puerto Cabezas), the great stimulus given to local roads, the works connected with the energy sector, and the building of hospitals, health centres and schools. In general, public expenditure -both special and operating- became one of the main dynamic factors of the economy; for example, the value added of the public administration contributed one-quarter of the 1981 economic growth. Of course this also gave rise to the financial disequilibrium which will be referred to later. Lastly, mining, electricity generation, transport and trade also showed fairly vigorous growth in the recent two-year period.

The manufacturing sector, in contrast, has had to face the most serious problems in its reactivation, although it grew moderately in 1980 and 1981; some factors contributing to this were the destruction of its installations and equipment, the depletion of its inventories and the breaking down of the financing-input imports-production process-distribution-exports chain. This sector continues to be affected by the lack of skilled personnel and the attitude described above of part of the private industrial sector in the face of the new economic policy guidelines, which has discouraged investment and even led to decapitalization.

/As regards

As regards the external sector, the growth of exports has been agruptly halted by the instability and drop in the prices of the main commodities and in their purchasing power, and further limited by the rise in the average price of imports. The high interest payments on the external debt, despite its recent negotiation, combined with the negative trade balance, raised the deficit on current account to approximately 490 million dollars in 1981 -a sum which for the first time comes fairly close to the current value of exports- and the shortage of foreign exchange constituted a crucial limitation on the operation of economic activities in general. This shortage contributed to the formation of a parallel market used mainly for non-essential imports and the movement of unregistered capital, in which the exchange rate almost tripled the official rate, introducing additional distortions in the financial area and in the general price system.

On the domestic economy front, notwithstanding the austerity and rationality of the efforts made, the disequilibria and pressures of the most important economic and financial variables still exist, although inflationary pressures have diminished. In this respect, a source of concern was the growing deficit of the central government, which increased from 1 840 to over 2 900 million córdobas between 1980 and 1981 -8.5% and 11%, respectively, of GDP- despite the increase in income which almost tripled between 1979 and 1981. The rapid expansion of expenditure -in 1980 on investment and operations; in 1981 only operating expenditure- is consistent with the Government's effort to achieve its many and sometimes conflicting economic, social and security policy goals.

To sum up, in the past two-year period Nicaragua faced two longstanding development obstacles -disequilibria in the balance of payments current account and in public sector finances- added to new obstacles linked with the effort to introduce changes in the conduct of economic policy, within the context of increasing political polarization.12/ What is more, the country had not yet recovered from the damage caused by the 1972 earthquake, and still less from the considerable destruction and indirect consequences of the armed conflict in 1979. Added to this whole constellation of adverse phenomena now come the effects of a new natural catastrophe.

2. Possible repercussions on the economy in 1982

(a) General considerations

The natural disaster will have decisive effects on the progress of the economy in the rest of 1982 and also undoubtedly some in 1983. As regards the damage to certain natural resources linked with agriculture, its repercussions will be felt over a still longer period.

In the first place, the growth rate of nearly all the production sectors will slow down, which in its turn will affect the high levels of unemployment recorded in the country, i.e., about 13% of the work force when the disaster occurred. Perhaps the only exception will be construction, in which the urgent need for repairs to highways, bridges, buildings and housing will demand a high level of activity, which in part will probably counteract the situation of increasing unemployment, in view of the high demand for manpower characterizing this sector.

12/ For a more detailed analysis of the situations described above, see CEPAL, Nicaragua: Notas para el Estudio Económico de América Latina, 1980 y 1981 (CEPAL/MEX/1042 and E/CEPAL/MEX/1982/L.23).

/Secondly, there

Secondly, there will be repercussions on the balance of payments with the drop in exports of agricultural commodities destroyed or damaged and the increase in external purchases of consumer goods, raw materials for agriculture and industry designed to replace lost stocks and capital goods, in particular spare parts, and to bring rapidly into operation machinery and equipment set a standstill in the production sectors. In addition, despite the magnitude of the disaster, the flow of donations thus far received (mid-June 1982) continued to be insignificant in terms of the additional needs. Hence an even greater current account deficit on the balance of payments is expected than the already high figure (520 million dollars) estimated before the disaster.

A third type of negative effects will be recorded in the public sector's operation. On the one hand, the reduction in the growth rate of the product will affect the collection of taxes, both direct and those deriving from consumption; as regards expenditure, there is no doubt that the austerity policy in current expenditure and investment envisaged before the disaster will have to be altered in the face of the urgent need to undertake activities such as the reconstruction of roads, the transport system, housing, hospitals, schools, etc. It is even possible that there should be increases in the subsidies to State agencies for the distribution of food in order to permit them to revert to the levels of operation required by the population.

It is still too early to attempt to assess the full effect of the recent disaster on the general area of Nicaragua's economy. There is no doubt, for example, that the problems of supply which it has brought about will affect the rate of inflation, as borne out by the efforts made by the authorities -with varying results- to exert a stricter control of the prices of basic commodities which had shot up in the first few weeks after the disaster; not unrelated to this is the greatly increased demand for certain materials that will necessarily arise in terms of the reconstruction process.

In short, the disaster is having negative effects on three areas of key importance for the economic situation prevailing in the country: it is reducing the production of goods, with the consequent impact on the rate of growth and employment which it was a crucial matter to imbue with renewed vigour in order to face the unemployment problems and plans to raise the population's level of consumption in the short term; it is aggravating the problem of the shortage of foreign exchange, which has already constituted a basic factor hindering the economic reactivation plans which have been put into effect since the new authorities assumed power in 1979, and at the same time it raises new requirements in terms of foreign capital, despite the high levels reached by debt service payments; and, finally, it is accentuating the disequilibrium in public finance with the reduction in public income and the rise in the expenditure required to repair the damage. It should be noted that the Government had been making praiseworthy efforts in this connexion which seemed to indicate that a considerable reduction in the absolute amount of the deficit might have been expected.

Within the as yet conjectural character of the figures, an attempt is made below to define somewhat more precisely the foreseeable effects in each of these fields.

/(b) Prospects

(b) Prospects for the economic situation in 1982 before the disaster

The two main financial bottlenecks which with varying intensity had characterized the economic situation in 1981 13/ -extreme shortage of foreign exchange and serious fiscal imbalance- were accentuated after the first quarter of 1982, causing a drastic fall in economic activity -with negative effects on employment- and increased inflationary pressures.

In the first place, the rigidities which were already evident previously in economic relations with other countries, in general, became more acute. On the one hand, with a volume of exports which would apparently exceed the previous year's level, the further decline in world prices of the main commodities, would increase the loss in trade, which would not be compensated for by the efforts to continue reducing imports. Hence the current account balance would almost maintain, in general terms, the critical 1981 levels. On the other hand, the high level of cumulative indebtedness -which, in addition to the level of the inherited debt, is explained by the execution of projects mainly benefiting the production sectors and economic and social infrastructure- and the difficulty in executing investment projects, determined that disbursements would not be high, so that an even sharpter drop in international reserves was expected at the end of 1982. As already stated in the preceding pages, among the causes underlying these predictions, both the international situation and the conjunctural circumstances in Central America played an important part.

Secondly, as regards public finance, the aforementioned difficulties which increasingly encouraged a less expansive expenditure policy gave grounds for assuming that in 1982 the high fiscal deficit would be reduced, basically thanks to a rise in tax income (improvements in the collection of taxes on income and property and new charges on beverages and tobacco). The fiscal situation, however, would in any case maintain its critical levels since, for example, the coefficient of fiscal deficit/total expenditure of the Government would only have fallen from 34% to 30%. It should also be noted that the above-mentioned efforts to moderate the vigorous growth of public expenditure with the aim of reducing the financial disequilibrium conflicted with various pressures deriving from the international situation which, for reasons unrelated to economics, required in the present year more than in the past the orientation of more resources to defence.

Both these disequilibria -balance of payments and fiscal- owing to both internal and external factors had determined, as noted earlier, that already at the beginning of the year the goals considered in the Government's economic plan contemplated a slowing down of the growth rate from nearly 9% in 1981 to less than 5% in 1982. Subsequently, the more serious situation with respect to the shortage of foreign exchange, over and above what was expected, had already determined an additional drop in this rate as a result of more pessimistic prospects in the case of manufacturing industry, one of the sectors which in Nicaragua is most dependent on supplies of imported raw materials 14/ (see table 17). In order to understand the persistence of the low levels of real economic activity, it should be taken into account that the growth that had been predicted for 1982 meant that even the total value added at constant prices would be lower than that recorded in the middle of the 1970s, and would represent approximately 80% of the 1977 total.

13/ See Nicaragua: Notas para el Estudio Económico, 1981, op. cit.

14/ It is considered that in May manufacturing operated at 60% of its installed capacity.

/Table 17

Table 17

NICARAGUA: GROSS DOMESTIC PRODUCT BY ECONOMIC ACTIVITY, 1981 AND PROJECTIONS FOR 1982 a/

(Growth rates)

Item	1980	1981	1982	
			Expected before the disaster	Probable results after the disaster
Gross domestic product	10.0	8.9	4.2 b/	0.7
Goods	0.7	10.3	6.4	2.1
Agriculture	-10.0	14.3	7.4	3.1 c/
Mining	49.2	6.6	14.4	0.0
Manufacturing	11.8	2.8	4.9 d/	-0.4
Construction	117.3	34.8	7.0	10.0
Services	115.8	9.2	2.9	-0.8
Electricity, gas and water	11.8	16.0	15.0	-2.5
Transport, storage and communications	18.5	6.1	...	-5.0
Trade and finance	16.3	6.9	3.0	0.0
Ownership of dwellings	-	4.9	...	...
Public administration and defence, and other services	26.2	11.8	0.0	0.0

Source: CEPAL, on the basis of figures supplied by the Planning Ministry.

a/ Preliminary, subject to subsequent revision.

b/ Already adjusted for the drop in the industrial growth rate.

c/ Estimated on the basis of table 10, an increase was expected in the agricultural quantum of 15.7%, which was reduced to 8.8% because of the disaster, this proportion was maintained in calculating the new growth rate of the agricultural product. The estimated losses in livestock production and in stocks of products ready for sale were reduced (see table 13).

d/ Owing to foreign exchange problems, it had been proposed to reduce this rate to 2.2% even before the disaster.

/At the

At the sectoral level, with the exception of the large increment in mining -of relatively little significance in Nicaragua's production structure- and a levelling in Government services in real terms -which was expected to be achieved without sacrificing the volume of services rendered on the basis of greater efficiency and without filling any vacancies- it was expected that the rest of the activities would lose some of their dynamism. In the case of agriculture, a slightly smaller increase than in the previous year was envisaged mainly on the basis of an extension of the area sown for purposes of production for domestic consumption (precisely through the stimulus to the production of basic grains, the consolidation of associate forms of production continues to be encouraged). As regards fishing, through the direct action of the State the catch of fish and shrim had increased significantly. In the case of manufactures, in their turn, action was being taken to promote the production of basic articles in widespread use such as foodstuffs, textiles and clothing, as also construction materials, especially wood.

These results of economic activity, in general envisaged since the beginning of 1982, were already occurring in the early months of the year simultaneously with the changes in some of the trends which it had been possible to attenuate in 1981, particularly at two levels. On the one hand, in the preceding two-year period intensive efforts had been made to overcome at least partially the serious problem of open unemployment,15/ which succeeded in consolidating a trend in this direction, which apparently in 1982 was losing some of its momentum despite the policy to stimulate the production of basic grains. On the other hand, relatively satisfactory results had been obtained up to 1981 in substantially attenuating the inflationary process.16/ The continued scarcity of some staples, however, although the possibilities of speculating on the market had been largely eliminated, already in the early months of 1982 was determining a certain acceleration of the rate of increase in prices, even predicted in the goals of the Government's economic plan.17/

Finally, economic trends in 1982 presaged a further deterioration in the workers' real wage as the result of increased inflationary pressures vis-a-vis a somewhat austere wage policy, given the generalized financial difficulties. It was also expected that, if new improvements in employment levels were not achieved -taking into account that the total volume of wages would diminish in real terms- the levels of personal consumption would drop. Of course, if these predictions are confirmed, they would interfere with one of the main objectives of economic policy which the administration has kept in force since it assumed power in 1979: the progressive redistribution of income.

(c) Prospects for the economic situation in 1982 after the disaster

As noted earlier, the natural phenomenon described throughout this study significantly alters the country's 1982 economic development prospects, thus adding to the group of obstacles described earlier in this study. The following is a summarized review of the implications of this phenomenon for the main macro-economic variables.

15/ Open unemployment had stood at 25%, 18% and 13% in 1979, 1980 and 1981, respectively.

16/ The average annual rate of increase in consumer prices had been 48%, 35% and 24% in 1979, 1980 and 1981, respectively.

17/ The cost-of-living index would rise from 24% to 30% in 1982.

/(i) Rate

(i) Rate of global and sectoral growth. The external and internal difficulties which Nicaragua's economy had been confronting in order to maintain a rate in accordance with its rehabilitation needs -result of the civil war commented on above- which had led to a reduction in the growth rate predicted for 1982 to half that recorded in 1981, will undoubtedly be aggravated in the rest of the year (see table 17).

Taking into account the production losses observed in the various production sectors, an attempt has been made to revise the projections prepared by the Government before the disaster. The contraction in the rate recorded, however, probably fails to reflect the full magnitude of the effect of the damage, because of the difficulties in assessing some indirect effects on levels of activity such as, for example, obstruction, slowness and higher cost of transport, or the greater relative shortage there will be of certain inputs and other supplies whose use should be given priority in the more immediate rehabilitation work. Moreover, some of the effects of the floods -particularly on cotton, coffee and bananas- will make themselves felt in agricultural year 1982/1983 and, therefore, on the balance of payments for the next financial year.

The estimate prepared for the whole calendar year 1982 shows an appreciable reduction in the growth rate of the gross domestic product, which altogether would drop from 4.2% to less than 1%, representing a setback of at least 1.5% in per capita income levels. The contraction attributable to the disaster is fairly serious as far as the production of goods is concerned (the expected rate would fall from 6.4% to 2.1%), caused in its turn by drastic reductions in the dynamism originally predicted for agriculture -the growth rate of its gross domestic product would fall from 7.4% to 3.1%- and for manufacturing in which the rate would become negative. In the mining sector, the losses -partly attributable to the damage suffered in gold production- would virtually nullify the expected growth although there would probably be a recovery in the rest of the year in non-metallic mining in terms of the additional demand for construction materials which is bound to be generated. In this respect, it is expected that the growth rate of the construction sector will necessarily be accelerated, as the only case within the evolution of the sector, for the same reasons as those noted above. Naturally, the reactivation of this activity will not be sufficient to counteract the foreseeable evolution of the other production sectors, so that the above-mentioned rate would fall.

In the services sector, for which the Government had already predicted a very moderate growth of 2.9% -basically because of the austerity and rationalization programme undertaken by the public administration, including the State distribution apparatus- a contraction of about 1% is estimated as a result both of the effects on trade activities and transport owing to interruptions in the road and railway systems and the loss of impetus of each, as a more direct sequel to the disaster.

(ii) The balance of payments. The natural disaster will have a negative effect on the various flows which make up the 1982 balance of payments, although its adverse effects on exports of traditional commodities are estimated as being even greater in 1983. The estimates presented in this respect, which are of a very provisional nature, may be found in table 18. This shows, in the first place, an increase in the balance-of-payments deficit on current account of 65 million dollars over that envisaged before the disaster, or around 40 million dollars with respect to the 1981 figure, so that at the end of the year the deficit will be over 550 million dollars.

/Table 18

Table 18

NICARAGUA: BALANCE OF PAYMENTS

(Millions of dollars)

	1980	1981	1982 projections	
			Before the disaster	After the disaster
Exports FOB	451	501	549	521
Cotton	30	122	122	96
Coffee	166	136	179	189
Sugar	20	49	49	49
Bananas	8	6	7	7
Other	...	158	192	180
Imports FOB	803	919	886	940
Services balance	-135	-155	-200	-195
Income	78	80	61	66
Expenditure	214	235	261	261
Donations	81	57	48	60
Balance on current account	-407	-516	-489	-554
Movement of capital (net)	206	569	374	...
Official capital (net)	343	588 a/	374	...
Withdrawals	366	654	467	...
Normal	280	411	467	...
Renegotiated	85	243	-	-
Amortization payments	-22	-66	-93	...
Undetermined capital	137	-19	...	...
Special drawing rights	5	5	...	...
Change in net reserves	196	-58	115	...
Balance of external debt (due in over a year's time)	1 571	2 141	...	...

Source: CEPAL estimates on the basis of information supplied by the Central Bank of Nicaragua and other official sources.

a/ Does not include 71 million as the effect of the renegotiation of the external debt.

/The increase

The increase in the deficit is due both to the predicted drop in external sales because of the effects of the floods and to the bigger imports required owing to lost of stocks and additional requirements for carrying out rehabilitation and reconstruction activities.

The projections prepared before the natural disaster of the volume which exports would reach were relatively encouraging and altogether represented 550 million dollars thanks to bigger sales of coffee, cotton and cane, and not withstanding a certain stagnation in the sale of non-traditional products, particularly those destined for the rest of Central America.

As a result of the floods, external sales of ginned cotton estimated at 122 million dollars will probably only reach 96 million, while those of bananas will practically remain at around 7 million dollars. Of lesser importance were the drops experienced in exports of cane (see table 18). External sales of meat, shellfish and, in general, the commodities purchased by Central America will probably also decrease, among other factors because of the obstruction of the communication system. In short, total exports of goods would decrease from 550 to 520 million dollars. As regards donations, which had normally entered the country and been assigned to the reconstruction process, the amount involved contracted drastically in the early months of 1982, so that taking into account those which Nicaragua expects to receive in view of the natural disaster, they will probably rise for the whole year to some 60 million dollars, which -in the light of what has occurred after the floods- will be insufficient.

In general, the losses in goods in customs warehouses which were either for export or were entering the country for subsequent use were largely protected by local insurance, which in its turn was to a large extent reinsured abroad, so that it may be expected that income envisaged under this head within the services account will increase in the course of the year.

Imports, estimated by the Central Bank for the whole year at 886 million dollars, will rise due on the one hand to donations in kind of 10 million dollars which had not originally been considered -their counter-entry being the income recorded in the capital account- plus 45 million representing 50% of the total requirements of imported goods calculated in this report in terms of losses of stocks and/or urgent needs arising in the various sectors.18/

Logically enough, the capital account will also be affected, although the magnitude and characteristics of its evolution will depend on the volume of additional resources which may be mobilized, and on the country's executive capacity to absorb it. In this respect, a certain slowness is noted in the utilization of pledged foreign capital owing to problems in the execution of projects of various kinds which have been started on the basis of this capital (the utilization of net official capital which amounted to 654 million dollars in 1981 should be reduced to some 450 million according to estimates prior to the disaster). This situation entailed the need to utilize international reserves of over 115 million dollars. In the face of the deterioration in the balance-of-payments current account which has resulted from the metereological phenomenon and the consequent needs in terms of imports and replacement of assets, in the next few months additional capital needs will be proposed on very favourable maturity and interest terms, particularly keeping in mind that the country's total external debt was already 2 150 million dollars in 1981 and that same year its servicing absorbed over 35% of total exports.

18/ The other 50% will have to be imported in 1983.

/(iii) The

(iii) The public sector. Owing to the important stimulating role played by the public sector and its efforts to make good the considerable deficiencies in the provision of social services, since the present administration assumed power in the country, the fiscal deficit is one of the greatest disequilibria facing the economy.

In 1982 serious efforts were being made to alleviate this problem by means of a sustained increase in the collection of taxes -both direct and indirect- and by slowing down the expansion of expenditure in relation to previous years. Had it not been for the disaster, the fiscal deficit would have been reduced from nearly 3 000 million córdobas (54% of current income and 11% of GDP) in 1981, to 2 600 million in 1982 (37% of projected income and 7.6% of GDP) (see table 19). This would have constituted an important achievement if it is considered that it was to be attained without reducing the magnitude of the services programmed for the population, and even though it meant a drop in the real execution of investment projects of approximately 400 million córdobas.

The natural disaster altered the situation envisaged in several respects. The reduction in the levels of activity described above was bound to affect the levels of tax collection in the rest of 1982 by a sum roughly estimated at a little over 300 million córdobas (a deficit of 100 million in taxes on income and net worth, and a deficit of 200 million in consumer taxes). Despite this contraction, the income under this head exceeded that received in 1981 thanks to the changes and improvements in the tax collection system (see table 19). Taxes on foreign trade would not be substantially modified, since although there could be a reduction in taxes on imports, these are of little importance; in contrast, it is probable that import taxes will be maintained, notwithstanding the expected increase in these owing to the fact that most of the additional imports expected would be tax free.

As regards the evolution of current expenditure, it was assumed that the system of austerity in connexion with wages and salaries will have to be maintained, in spite of the increase in working hours of many of the Government personnel connected with the emergency and rehabilitation activities, since to a great extent recourse will be had to voluntary work. On the other hand, there should be an increase in expenditure on the purchase of goods and services related to the above-mentioned process, and very probably, too, in transfers to some official institutions, particularly those responsible for the distribution of foodstuffs and other basic items.

In accordance with the above observations, the negative current saving would increase by about 940 million córdobas. Moreover, a moderate increase of 420 million córdobas has been estimated in the capital expenditure required for reconstruction in 1982, so that the fiscal deficit would increase considerably -from 2 600 to 3 870 million- representing as much as 59% of current income and 11.3% of the estimated GDP. The increases in expenditure are fairly modest if account is taken of the substantial requirements for the reconstruction of the infrastructure works destroyed, and the fact that many of them will have to be redesigned so that they can withstand eventualities such as that which occurred. It has been assumed, however, that part of the new expenditure involved in the rehabilitation and reconstruction works will be based on the postponement or elimination of projects which were originally meant to be executed in 1982 but which are less pressing.

/Table 19

Table 19

NICARAGUA: CENTRAL GOVERNMENT INCOME AND EXPENDITURE

(Millions of córdobas)

	1980	1981 a/	1982 b/	
			Before the disaster c/	After the disaster
1. Current income	4 526	5 523	6 923	6 570
Tax income	3 991	4 531	5 509	5 160
Direct	934	966	1 161	1 060
Indirect	1 840	2 684	3 113	2 900
From foreign trade	1 217	881	1 236	1 200
2. Current expenditure	5 008	6 880	7 000	7 500
Wages and salaries	1 562	1 954	2 343	2 340
Other current expenditure d/	3 446	4 926	4 657	5 160
3. Current saving (1-2)	-482	-1 357	-77	-930
4. Capital expenditure	1 356	1 610	2 518	2 940
Real investment	972	992	...	...
Amortization of the debt	170	381	...	...
Other capital expenditure	214	237	...	...
5. Total expenditure (2+4)	6 364	8 490	9 518	10 440
6. Fiscal deficit (1-5)	1 838	2 967	2 595	3 870
7. Financing of the deficit				
Internal financing	450	2 018	745	1 020
External financing	1 388	949	1 850	2 850

Source: CEPAL, on the basis of figures supplied by the Planning Ministry.

a/ Preliminary figures.

b/ On the basis of figures supplied by the Fiscal Economic Studies Division of the Ministry of Finance.

c/ Updated budget (on the basis of January-April collection; in the case of expenditure: January-May), the source being the Ministry of Finance.

d/ Including transfers (except those made to ENABAS, CORADEP, ENABUS, Ferrocarril and INPESCA.

/In any

In any case, the appreciable increase in the deficit envisaged faces the public sector with additional external financing needs of around 100 million dollars which would not have been the case if the disaster had not occurred, which means trebling the level of disbursements effected in 1981. The following chapter advances some observations regarding the feasibility of attaining that goal.

IV. NEW INTERNATIONAL CO-OPERATION NEEDS

1. General considerations

As noted earlier, the floods caused serious material damage to physical and social infrastructure and considerably undermined Nicaragua's production capacity, more intensively affecting those areas in which the country's economic activities are concentrated and, particularly, those which generate most of the foreign exchange and fiscal income.

This disaster came on top of a situation in which the Nicaraguan Government was confronting what was in itself an important task of recovery from the damage caused by the 1972 earthquake -which was not completely repaired by the previous administration despite the long time that has elapsed- and from the effects of the 1978-1979 war. In addition, the Government had set itself the task of improving the living conditions of the population and bringing about a more equitable distribution of income, both of which activities required an economic effort and mobilization of the people on a very large scale. Nor can the fact be overlooked that the enormous inherited debt, in spite of having been recently renegotiated on more favourable terms, imposed high expenditure of the country's foreign exchange.

It is an undeniable fact that the international financial community has made a substantial contribution towards the Nicaraguan Government's reconstruction efforts by lending and donating a sum of around 1 300 million dollars as from July 1979. That contribution, however, has been insufficient for the country to recover from the damage caused by the two disasters that affected it in the 1970s, and also to confront the many obstacles to its development.

The May 1982 disaster has aggravated the situation that prevailed before that date and will bring many and more serious adverse effects. On the one hand, it will make it necessary to effect unforeseen expenditure to rehabilitate or repair instead of increasing the existing stock of capital, at much higher replacement costs than the original value of the existing resources. On the other hand, the national economy's capacity to finance that expenditure -in terms of both saving and the external sector- will undoubtedly be affected for a period of two or three years.

There is also a sense of urgency in carrying out some rehabilitation and reconstruction works, especially those connected with the reconstruction of access roads and the rehabilitation of agricultural infrastructure, since they must be done in time to ensure the sowing of some crops such as cotton and basic grains, an activity which cannot be prolonged beyond the middle of August.

Notable in the first place, therefore, is the need to provide Nicaragua urgently, apart from emergency aid, with significant support for its balance of payments and public sector financing. Only in this way is it possible to avoid a considerable deterioration in the living conditions of the population and a shortage of liquidity which could prevent Nicaragua from meeting its commitments abroad.

/Secondly, it

Secondly, it is considered necessary that, with the assistance of the international community, Nicaragua should face this new disaster in such a manner as to reduce or eliminate as far as possible any negative effect on the economic and social development effort which the country has been making. In other words, it is imperative that the rehabilitation and reconstruction efforts should be integrated with the development plans in force before the disaster, endeavouring, in essence, not to alter the achievement of the development goals and objectives which the National Reconstruction Government has set itself. This means the international aid for dealing with the damage caused by the disaster should be of an additional character, not substitutive for that originally envisaged in support of its development plans. As a result of the disaster, the Government will not only have the difficult task of obtaining the external resources envisaged in its financial programming in view of the growing shortage of resources, but it will now require more financing for unforeseen needs.

Thirdly, the assistance required for the thres stages following a process of this nature -emergency, rehabilitation and reconstruction- should be determined. This does not mean that a strict chronological order must be observed, since in some cases they could even be dealt with simultaneously or on a complementary basis. By way of example, it should be noted that the aid in terms of foodstuffs will be required until the new harvests are brought in, while the rehabilitation and reconstruction works -already initiated- may well require a longer period, probably not less than 18 months.

Finally, there is no doubt that the efficiency, spped and earnestness with which the Nicaraguan authorities and the popular organizations -at both the national and the department level- have responded to the emergency imposed by the disaster are a guarantee that the proper organizational capacity is avilable to mobilize and orient an appreciable flow of international assistance with the aim of undertaking the reconstruction and development projects. Such capacity could be strengthened on the basis of external technical co-operation, on which point some guideliness are suggested later in this study.

2. Characteristics of the international assistance required

Although it is still too early to estimate the full extent of the international assistance which will be required to repair the damage caused by the floods, the estimates presented earlier in this study indicate a sum of approximately 220 million dollars in direct losses of physical assets alone. Moreover, it seems feasible to indicate some of the characteristics which that assistance could have.

Because of the type of damage caused, which largely affected the country's export capacity, and the balance-of-payments position, in the next 18 months Nicaragua will obviously require additional international financing -both public and private- to prevent the complete breakdown of its external sector. In view of the considerable burden which the country must bear in covering the servicing of the already renegotiated external debt, that volume in addition to the amount of net capital inflows in recent years, would undoubtedly raise very serious problems with respect to Nicaragua's capacity, unless it was granted on very favourable terms as regards maturity, grace period and interest, or as donations.

/It seems

It seems justifiable, moreover, that taking into account the difficulties which the Government will have to face as a result of the disaster, a system of direct support, flexible as far as local counterpart contributions are concerned, should be designed and put into practice. In other words, it is essential that the new loans, in addition to being granted on highly favourable terms, should cover almost the entire cost of the programmes and projects.

In view of the extreme urgency with which Nicaragua needs increasing financial assistance from abroad to deal with the emergency, rehabilitation and reconstruction, in order to prevent the external sector from reaching a critical position in the immediate future, it seems in order to put forward some suggestions to the international financing agencies.

In the first place and immediately, unutilized resources of some loans already granted might be reoriented and those which are in "frozen" could be renewed. Secondly, it would be desirable to grant preferential treatment as consistent with the magnitude of the disaster and the conditions prevailing before it, making the procedures, mechanisms and conditions which are normally applicable in the evaluation and approval of loan requests more flexible, in the same way as some projects were handled after the war. Finally, it would be highly desirable that financing should be provided by programme -not by project- with the purpose of avoiding the delays involved in the formulation and approval of specific projects.

Fortunately, as a result of the reconstruction work after the war, Nicaragua possesses an ad hoc agency to analyse and direct the mobilization and absorption of external resources: the International Reconstruction Fund (FIR).

As regards support for the balance of payments, the country has already made full use of the procedures available in the Central American Integration process (especially the Central American Monetary Stabilization Fund) and it would not seem feasible to conclude agreements within the short term with the International Monetary Fund. Accordingly, that support should come from credit lines, inter-bank deposits of central banks of friendly nations, and official loans from bilateral sources.

Finally, the United Nations Special Programme to provide emergency aid and development assistance, established by the General Assembly in resolution 3202 (S-VI) could be approached, since the disaster at the end of May 1982 clearly fulfils the requirements established for the purpose.

3. The specific fields requiring priority international assistance

It is not essential to wait for the completion of a detailed reconstruction plan to be able to indicate the projects, programmes, sectors or geographical areas requiring urgent attention from the Government and the international community. On the basis of the analysis of the damage presented in this document it is possible to identify the areas or sectors which should undoubtedly be given priority. These activities, which are summarized below and are presented in detail in table 20, cover the three aforementioned stages after the disaster, that is, emergency, rehabilitation and reconstruction. It is once again stressed, however, that this classification or subdivision does not necessarily mean any chronological order of execution, and that they should even be projected in the future as part of the Government's economic and social development plans.

/Without underrating

Without underrating the damage in other sectors and activities, those which demand preferential attention are agricultural infrastructure and production, the road system, housing, food and health.

(a) Emergency

The floods affected the crops of basic grains which were about to be harvested, as well as the soil which was ready for sowing, which had led to a shortage of the former and has imposed a considerable delay in the sowing and possible harvests of cereals, especially maize. As a result, food contributions will have to be extended at least until August or September.

Furthermore, it is a matter of urgency to provide more permanent housing in safer places for about 12 000 families which lost their homes and household effects, by strengthening and supporting the programme which the Government has initiated in this respect.

With the purpose of preventing an outbreak of epidemics among the flood victims owing to crowded conditions in the temporary shelters, it is urgently necessary to provide preventive and curative medical services and the medical supplies they require, and to continue using the campaign hospitals which arrived a few days ago. Another urgent matter is to repair and re-establish the drinking water and sanitary disposal systems in some towns of the interior.

In order to ensure that sowings are completed in time it is also a matter of the utmost priority to have fertilizers, seeds and other inputs, and to be able to refinance farmers who lost their crops and land already prepared for sowing.

(b) Rehabilitation

While recognizing the need for some overlap between the emergency and rehabilitation stages, which must also occur between these two stages and that of reconstruction, it is important to indicate the most urgent rehabilitation activities which should be undertaken.

In view of the urgency imposed by the climatic conditions, it is a pressing necessity to repair the branch roads providing access for inputs and machinery to agricultural areas; to reconstruct the terraces in the land used for cotton-growing; to sow all the basic grains and cotton itself, and to rehabilitate and repair the landing strips required for agricultural pest control. These activities would have to be completed within a very short period in order to ensure that the crops are harvested in time.

It is also necessary to continue the temporary repair of the damage to the road system, filling in the approaches to the bridges, repairing sewers and constructing fords with minimum safety conditions or using the "Bailey"-type structures in the case of bridges which were completely destroyed or their structure seriously affected; this work has already been initiated by the Government with the co-operation of friendly countries. The same action must be taken in the case of the network of secondary roads. For these activities it is necessary to acquire heavy earth-moving machinery to supplement the park available in the country.

Finally, another necessary step is to start the aforementioned campaigns for the prevention of malaria, dengue and yellow fever, before the propagating agents can start having any effects.

/(c) Reconstruction

(c) Reconstruction

Taking into account the above-mentioned overlap with rehabilitation activities, it would be necessary to undertake the final reconstruction of the road and agricultural infrastructure, the renewal of banana plantations, the final rehabilitation of eroded land with sediment deposits and river courses which overflowed their banks, and the reconstruction of urban, port and airport infrastructure.

The reconstruction of bridges and sewers which were damaged or destroyed should be undertaken after a review of the criteria for achieving a design more compatible with the hydrometereological situation in the area. The same may be said of rain drainage courses and structures in the cities, and of the correction, removal of obstructions and definitive protection of river courses in the coastal areas.

The road system will also have to be repaired in final form, adequately replacing the surfaces, while the railway track will have to be reconstructed along the lines most compatible with the country's needs.

A start should be made on work designed to protect slopes and land with a relatively pronounced gradient against progressive erosion, by reforesting, constructing soil retention and conservation works and establishing tree or bush-wind break. Permanent rehabilitation tasks would also be necessary on the land upon which large volumes of sediment were deposited, by removing dêbris, stones and tree-trunks. Fences and other minor agricultural and stock-breeding structures should also be rebuilt.

Moreover, it will be essential to strengthen and extend the coastal protection works (breakwaters) in the port of Corinto, so as to prevent the sea from advancing inland.

The health and education infrastructure, together with educational materials and the inventory of medical supplies should also be replaced on a permanent basis, taking into account the location of the new settlements.

Lastly, and equally important, would be the establishment of a system of surface metereological stations with height measurement facilities -including radar and radiosonde stations-, the re-establishment of hydrometric stations which were carried away by the currents, and specialized training in forecasting for Nicaraguan personnel so that there will be an efficient system available to foresee metereological and hydrological phenomena under the actual weather conditions and thus be able to lessen the damage doen by future disasters.

4. International technical co-operation

The financial co-operation projects and programmes which have just been outlined should be supplemented by technical assistance additional to that which international organizations and friendly governments are currently providing. This assistance should be basically oriented towards supporting the Government for National Reconstruction in dealing with economic areas and sectors defined as of priority importance, and particularly in the formulation of specific rehabilitation, reconstruction and development programmes and projects in order to facilitate and accelerate the granting of external financing. This co-operation could also be oriented towards the inclusion of the disaster requirements in national development plans.

/Another point

Another point which might be defined is technical assistance in the formulation of plans for the reconstruction of road and railway infrastructure and drainage, and in a thorough study of the hydrological systems of rivers and the establishment of an efficient system of forecasting floods.

There is also a possibility of providing assistance in formulating plans for the recovery of débris-strewn land, the protection of eroded land, erosion control on the highlands and reforestation; in short, for control of the soil and forests which were so seriously affected. Co-operation in analysing and counteracting the effects on marine fauna caused by the sediment in estuaries might also be required.

Finally, there might be a need for advisory assistance in the planning of human settlements, with the aim of relocating the flood victims in accordance with the best possible criteria.

To sum up, after the emergency phase in which the co-operation of governments, UNDRO, PMA, the International Red Cross and PAHO is crucial for the stages of rehabilitation and reconstruction, the Government of Nicaragua should urgently devote itself to the task of defining as precisely as possible the expected priorities and periods for undertaking and completing activities in the various fields. Obviously, the sounder basis and rationality with which action priorities converted into projects and preliminary projects are presented, the greater will be the possibilities that international, regional and sub-regional financing institutions, as well as friendly governments, will make resources available in the volume and of the nature required. Perhaps one of the first steps to take immediately would be to form technical groups, with the collaboration of international assistance that may be deemed advisable, in order to prepare the necessary draft projects in at least the following fields: road infrastructure, bridges, railways, land management and protection, housing and human settlements. Once the Government has stated its needs in terms of technical assistance for this phase, UNDP could be responsible for locating and mobilizing the experts in the various specialties requested.

/Table 20

Table 20

SUGGESTIONS CONCERNING POSSIBILITIES IN CONNEXION WITH INTERNATIONAL ASSISTANCE TO NICARAGUA IN DEALING WITH THE DAMAGE CAUSED BY THE FLOODS

Stage and sector	Financial co-operation		Technical co-operation	
	Description of programme or project	Possible sources of co-operation	Description of programme or project	Possible sources of co-operation
(a) Emergency stage				
Social sectors	Supply of 31 550 tons of maize to meet food requirement up to September	Governments PMA/FAO UNICEF		
	Supply or donation of construction materials and tools for 12 000 dwellings	Governments IDB BCIE OAS Private organization	Assistance in urban planning in the smaller towns	Governments United Nations
	Emergency health assistance, including personnel, medical supplies and campaign hospitals	Governments Red Cross PAHO/WHO		
	Repair of drinking water and sanitary disposal systems	Governments IBRD	Assistance in the reorientation of existing loans	PAHO/WHO IBRD
Agricultural sector	Purchase of 400 tons of maize seed, 20 tons of sesame seed and 20 tons of fertilizer	Governments PMA/FAO		
Public sector	Refinancing of loans to farmers who lost crops or land prepared for sowing	BCIE IDB IBRD Governments		

Table 20 (Continued)

	The same headings			
(b) Rehabilitation				
Infrastructure sector	Acquisition of heavy equipment for the removal of sediment and the reconstruction of roads and river courses	Governments BCIE IDB IBRD		
	Acquisition of "Bailey"-type bridges for the rehabilitation of the road system	Governments BCIE IDB IBRD		
	Temporary repair of highways, roads, bridges and airstrips, so as to restore minimum access throughout the region affected	Governments BCIE	Hydrological studies to determine flows in the design of bridges and sewers	Governments WMO UNDP
	Establishment of a factory of pre-stressed concrete for the construction of bridges	Governments	Technical and economic study to determine the best method of reconstructing the railway system, and analysis of the rate structure	BCIE Governments United Nations UNDP
Agricultural sector	Acquisition of agricultural machinery and implements for the repair of terraces and preparation of land for sowing	Governments BCIE		
Public sector	Loans to Central Bank of Nicaragua in support of the balance of payments	Central banks CMCA Governments		
	Channelling of extraordinary resources to the public sector by special lines of credit and budgetary support	Governments	Assistance in the formulation of development programmes and projects	FAO UNIDO United Nations UNDP

Table 20 (Continued)

	The same headings			
Public sector (Concluded)			Inclusion of programmes of rehabilitation and reconstruction of damage in the development plan	CEPAL/ILPES UNDP TCD
Health sector	Campaign for the prevention of malaria dengue, yellow fever, etc.	Governments PAHO/WHO	Assistance in the formulation of prevention campaigns	Governments PAHO/WHO
Housing sector	Financing of housing construction programme	BCIE IDB IBRD Governments		
(c) Reconstruction Infrastructre sector	Final repair to the road and railway systems, including bridges, sewers and rain drainage in urban areas	BCIE IDB IBRD Governments		
	Repair and protection of slopes in river courses which were eroded or obstructed	BCIE IDB IBRD FIDA		
	Repair and extension of breakwaters in Corinto	BCIE IDB IBRD Governments		
	Establishment of meteorological and hydrological system for forecasting floods and hurricanes	Governments WMO UNDP		
Agricultural sector	Re-establishment and improvement of the national stock of cattle	IDB IBRD FAO		

Table 20 (Concluded)

		The same headings		
Agricultural sector (cont.)	Programme for the control of erosion and reforestation of the highlands	FIDA	Design of the relevant programme	FAO Governments
	Recovery of land covered by obstructions in low-lying areas	IDB		
			Research on the effects of sedimentation in estuaries and coastal lakes for the protection of marine fauna, and the changes which occurred in Lake Managua	FAO UNDP UNEP
			Study on changes in the general environment as a result of the disaster	UNDP UNEP
Public sector	Establishment of a special fund to cover immediate needs and a minimum deposit of emergency materials in case of future disasters, preferably at the regional level	BCIE Red Cross Governments	Inclusion of an analysis of vulnerability to disaster in all development projects	UNDP UNDRO CEPAL/ILPES
			Identification of areas susceptible to various types of disasters, and establishment of anti-disaster construction rules	UNDP UNDRO OAS WMO UNESCO CEPAL/ILPES
			Inclusion of projects and programmes for the prevention and forecasting of natural disasters in the national development plan	UNDP UNDRO CEPAL/ILPES