

UNITED NATIONS
ECONOMIC COMMISSION
FOR LATIN AMERICA
AND THE CARIBBEAN - ECLAC



Distr.
GENERAL
LC/G.1443
LC/MEX/L.39/Rev.1
16 December 1986
ENGLISH
ORIGINAL: SPANISH



THE 1986 SAN SALVADOR EARTHQUAKE: DAMAGE, REPERCUSSIONS
AND ASSISTENCE REQUIRED

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FOREWORD

The powerful earthquake which took place on 10 October 1986 caused considerable damage in the metropolitan area of San Salvador. News of the disaster deeply shocked the international community, which reacted by immediately sending to the country all types of help for the victims. In addition, on 14 October 1986, the United Nations General Assembly unanimously adopted Resolution A/41/L.4. In this Resolution the Member States express their solidarity and support to the government and people of El Salvador, and request "the Secretary General to mobilize resources to assist in the relief and reconstruction work undertaken by the government of El Salvador and to co-ordinate the multilateral assistance and, in consultation with the Government of El Salvador, to identify the emergency and medium-term and long-term needs in order to contribute to the reconstruction of the affected areas".

This document is in response to this mandate. It was prepared by the Economic Commission for Latin America and the Caribbean (ECLAC), in close collaboration with the authorities of El Salvador, and with financial support from the United Nations Development Programme (UNDP).

INTRODUCTION

On the morning of 10 October 1986, the city of San Salvador was struck by a powerful earthquake. The earthquake left a toll of 1,200 dead and more than 10,000 injured; one fifth of the population of the metropolitan region was left without shelter. The city's economic activity was abruptly brought to a halt and the living conditions, particularly of the poorest segments of the population, were seriously affected through losses of housing, essential services and sources of income. The material damage reached more than 900 million dollars, representing approximately one quarter of the country's gross domestic product and more than 40% of its external debt. These are clearly unprecedented figures in comparison with recent disasters in other countries.¹

The catastrophe caused considerable damage to housing and to the basic service infrastructure - water, drainage, electricity, telecommunications - and either totally or partially destroyed a large number of buildings in the health and education sectors, as well as constructions, equipment and inventories belonging to industry and trade. Moreover, the administrative functions of the government were temporarily interrupted by the destruction of public buildings and by the loss or destruction of archives and communication systems.

The losses caused by the catastrophe added to the intense economic and social crisis in which Salvadoran society was already plunged. The unfavourable conditions on international markets, together with six years of intense armed conflict have caused the country's economy to regress almost one quarter of a century in terms of per capita income. Such losses may well be the heaviest so far recorded in any Latin American country during the present decade. The number of people displaced from areas of conflict towards San Salvador surpasses 350,000, while almost a further million have left the country. Open unemployment in 1986 is in the region of 32% of the economically active population. In addition, in the last five years the external debt has doubled and its servicing represents already more than one half of export income.

The government immediately organized to handle the emergency. As was to be expected, priority was given to rescuing victims trapped under fallen buildings and to caring for the injured. Since the hospital sector was one of those which suffered most damage, posts to provide services were improvised. The electricity, water and telephone services were restored relatively quickly, and two weeks after the disaster, 90% of the area affected possessed electrical energy, the water supply had been restored to most of the zone affected, while tankers and standpipes

¹ As an indication, it is worth pointing out that though total damage caused by the earthquake which struck Mexico City in September 1985 was four times higher, it represented barely 2% of the country's gross domestic product.

were used in the most damaged areas or in those where access was difficult; telephone services in the areas which had not been affected has been by and large normalized.

On the same day as the earthquake took place, efforts began to provide food, clothing and temporary shelter to the victims. For this purpose, several commissions, in which the entrepreneurial sector took an active role, were set up. A variety of non-government organizations also took part in the collection and distribution of food, medicines and construction materials. As of 22 October, the Emergency Committee declared that it had met the requirements of 104,600 families, while the armed forces had met those of 34,746. The Church Emergency Committee stated that it had provided relief for 150,000 people. In addition, the Red Cross directly channelled gifts, in kind and in cash, from abroad.

The population affected by the earthquake reacted admirably. No incidents of looting occurred and they immediately undertook clearing up the rubble, recovering material from damaged houses, to be used for building temporary dwellings, many of which were even more precarious than those which the victims inhabited before the earthquake. It is possible to observe the day by day changes taking place in the appearance of the city, with the construction of improvised housing and survival strategies are multiplying. Neighbours collaborated by exchanging construction material, taking care of children and in other tasks, and a large number of small commerces have reappeared in the streets.

The international community immediately and generously provided help. During the emergency period shipments of medicines, food, clothing and a variety of equipment worth approximately 63 million colones were sent to the country. Assistance in rescue operations, medical attention and relief for the population was also provided. For its part, the various organizations of the United Nations system quickly responded to the emergency, particularly the Office of the United Nations Disaster Relief Co-ordinator (UNDRO), the United Nations Development Programme (UNDP), the United Nations Children's Fund (UNICEF), the World Food Programme (WFP) and the World Health Organization (WHO).

The circumstances facing El Salvador are extremely serious. This is one opportunity for international solidarity to make a decisive contribution to relieving the social costs of the new crisis and providing a thrust for efforts at pacification and development which constitute the country's major goals. This document puts forward a set of technical assistance projects which countries and international and regional organizations could offer. Their estimated cost is one and a half million dollars. In addition, approximately 150 investment projects are proposed, divided into sectors, each with an individual profile. As a whole, they represent an investment of more than 1 billion dollars, whose funding will necessarily require collaboration from the international community.

I. CHARACTERISTICS OF THE EARTHQUAKE, POPULATION AFFECTED AND ESTIMATED DAMAGE

A. Characteristics of the earthquake

The city of San Salvador lies in a valley with high seismic risk in view of its proximity to the area of contact between the major tectonic plates of Cocos and the Caribbean. In addition, a series of local geological faults crosses the valley. Consequently, the city has been affected by earthquakes throughout its existence (see enclosed figure and maps 1 and 2).

At 11:50 on 10 October 1986 a seismic movement of 5.4 on the Richter scale took place and was followed by numerous smaller quakes.² The origin of the seism was located some few kilometres south-east of San Salvador, with an extremely shallow focal point (approximately 5 kilometres). A large number of secondary epicentres located along local geological faults were activated and magnified the effects of the initial movement. One particularly destructive characteristic of the earthquake was its uncommon acceleration, which reached 0.6 G (gravity) in some areas of the city.

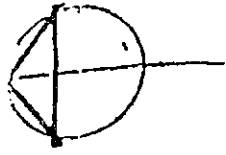
The effects of freeing accumulated energy along the faults were of great intensity and reached maximums of between 8 and 9 degrees on the modified Mercalli scale.

B. Population affected

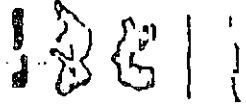
The earthquake left approximately 1,200 dead. The number of victims could have been higher in view of the magnitude of the disaster and the population density in the zone affected. Nevertheless, the time at which the earthquake occurred prevented more people from losing their lives or from being trapped. The number of injured who received attention as a direct result of the catastrophe was over 10,000. The proportion of children among the victims was particularly high.

The population affected was concentrated in the metropolitan region of San Salvador, which consists of 22 municipios with an estimated population of 1.5 million. One third of this population suffered to a greater or lesser extent. Of those, 127,000 persons lost their dwellings or small shops; 165,000 suffered considerable damage in both areas; the

² Fortunately, the seismographs were in satisfactory working order and performed correctly during the disaster. Consequently, an excellent record is available of the earthquakes, and this is being analysed by national and foreign seismologists.



SYMBOLS



SHANTIES AND ENCAMPMENTS

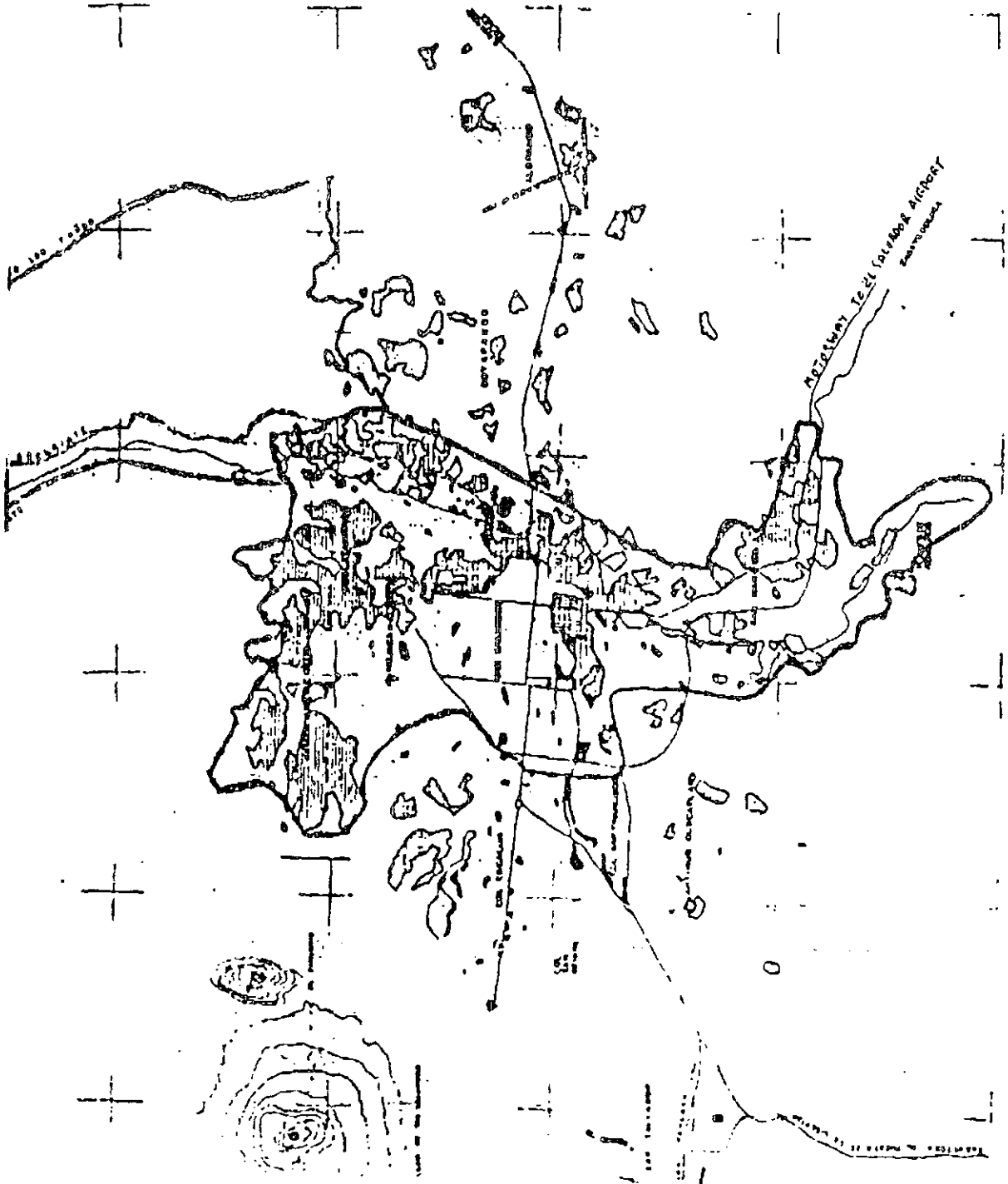
ILLEGAL SETTLEMENTS

PERSONS AND OLD DWELLINGS

HIGHWAY

RIVER

AREA AFFECTED



METROPOLITAN AREA OF
SAN SALVADOR, REPUBLIC OF
EL SALVADOR,
CENTRAL AMERICA

remainder, some 228,000, suffered lighter damage to housing and possessions.

The poorest sectors of the population, those living in shacks or "mesones", "desplazados"³ or marginal sectors of the population were seriously affected, which further aggravated the precarious circumstances in which they lived prior to the disaster.

Authorities have estimated that, of 53,000 families whose housing was damaged approximately 40,000 will be unable to meet the cost of reconstruction.

One of the strata most seriously affected was that of small firms and businesses in the informal sector, wherein the dwelling is usually on the same premises as the workshop or place of business. These small units provide employment for thousands of workers.

C. Estimate of the damage

The data which was available barely 20 days after the earthquake took place, was obtained mainly from official and private sources. Some of the information was incomplete, and it was inexact in a number of areas, as a result of which it had to be complemented and checked with direct on-the-spot observations. The estimate provided here must be considered as an indicative assessment of the order of scale of the damage (see table 1). It will be possible to carry out more precise calculations once the country's authorities complete a series of studies and surveys which have already been initiated.

The estimate includes the value of the infrastructure, furniture and equipment which was destroyed or damaged, expressed in terms of its present replacement cost. It also includes indirect effects, such as the lower income which will be received as a result of lost production or the lack of some services, and the increased cost associated with providing others (see table 2).

In order to set an estimate of the net loss to the country as a result of the disaster, it was borne in mind that some of the installations affected and even part of the production, corresponding to the commercial and industrial sectors, public organizations providing electricity and telecommunications, were covered by insurance policies. Information provided by the association grouping the country's insurance companies indicates that claims received 15 days after the earthquake

³ The term mesones refers to units in which several families live in cramped conditions; desplazados refers to family groups, for the most part of rural origin, which have recently migrated to leave the war zones.

Table 1
ESTIMATE OF DAMAGES CAUSED BY THE EARTHQUAKE

Sector and subsector	Millions of colones			Millions of dollars ^{a/}		
	Total	Direct	Indirect	Total	Direct	Indirec
<u>Total</u>	<u>4 521</u>	<u>3 430</u>	<u>1 091</u>	<u>904</u>	<u>685</u>	<u>219</u>
Social infrastructure	1 968	1 894	74	393	378	15
Housing	1 174	1 132	42	234	226	8
Health	483	456	27	97	91	6
Education	311	306	5	62	61	1
Economic infrastructure	966	730	236	193	146	47
Water and drainage	153	100	53	31	20	11
Telecommunications	136	129	7	27	26	1
Electricity	95	30	65	19	6	13
Transport and urban highways	152	62	90	30	12	18
Public buildings	263	253	10	53	51	2
Banks	142	131	11	28	26	2
Others	25	25	-	5	5	-
Productive sectors	1 160	806	354	232	161	71
Industry	129	92	37	25	18	7
Trade	1 031	714	317	207	143	64
Emergency and immediate repairs	134	-	134	27	-	27
Demolition and removal of rubble	293	-	293	59	-	59

Source: ECLAC estimates.

a/ At 5 colones per United States dollar.

Table 2

ESTIMATE OF THE DIRECT AND INDIRECT DAMAGE TO THE PUBLIC AND PRIVATE SECTORS

(Millions of colones)

	Total			Repairs			Construction			Equipmet			Inven- tories	Indirect		
	Total	Public	Private	Total	Public	Private	Total	Public	Private	Total	Public	Private		Total	Public	Private
Total	4 521	1 391	3 067	1 213	380	833	1 691	570	1 121	386	144	243	136	1 091	296	732
Social sectors	1 968	621	1 347	640	171	469	1 095	399	696	160	25	135	-	74	27	47
Housing	1 174	-	1 174	446	-	446	571	-	571	115	-	115	-	42	-	42
Health	483	408	75	96	86	10	360	300	60	-	-	-	-	27	22	5
Education	311	213	98	98	85	13	164	99	65	45	25	20	-	5	5	-
Economic infrastructure	966	615	351	424	209	215	176	171	5	128	119	9	-	236	114	122
Water and drainage	153	153	-	42	42	-	54	54	-	4	4	-	-	53	53	-
Telecommunications	136	136	-	20	20	-	27	27	-	81	81	-	-	7	7	-
Electricity	95	19	76	30	19	11	-	-	-	-	-	-	-	65	-	65
Transport and urban housing	152	99	53	62	62	-	-	-	-	-	-	-	-	90	37	53
Public buildings	263	139	124	172	66	106	59	54	5	21	12	9	-	10	6	4
Banks	142	69	73	73	-	73	36	36	-	22	22	-	-	11	11	-
Others	25	-	25	25	-	25	-	-	-	-	-	-	-	-	-	-
Productive sectors	1 160	-	1 160	149	-	149	420	-	420	99	-	99	136	354	-	354
Industry	128	-	128	44	-	44	-	-	-	24	-	24	24	37	-	37
Trade	1 032	-	1 032	105	-	105	420	-	420	75	-	75	112	317	-	317
Emergency and immediate repairs	134 ^{a/}	51	20	-	-	-	-	-	-	-	-	-	-	134 ^{a/}	51	20
Demolition and removal of rubble	293	104	189	-	-	-	-	-	-	-	-	-	-	293	104	189

Source: ECLAC estimates.

a/ The total does not correspond to the sum of public and private sectors as it includes 55 millions in external aid.

were on the order of 600 million colones (120 million dollars). This would seem to indicate that the net value of the losses is 785 million dollars. ⁴

1. Damage to the social infrastructure

a) The housing sector

It is estimated that more than 22,800 dwellings were totally destroyed or will have to be destroyed in view of their heavily damaged state. In addition, 29,800 dwellings will require repairs. ⁵ These are essentially dwellings housing one family (60%) as well as units in which several families live (mesones) (20%), together with makeshift dwellings in the city's marginal areas. This significantly worsened both the housing deficit and the precarious living conditions which existed prior to the disaster.

The seism affected both old dwellings - constructed with traditional technologies which make no use of structure (bahareque) - and modern dwellings of mixed construction. Of the dwellings, 35% were inhabited by their owners, and the remainder, by tenants.

Furniture was almost totally destroyed in the case of those dwellings which were completely destroyed, while it was possible to recover it, albeit in a slightly damaged state, from those houses which were only partly damaged. In view of the danger of collapses and landslides in a number of marginal areas, it is vital to relocate some 8,900 dwellings on safer sites.

The cost of replacing the dwellings destroyed or requiring demolition is estimated to be 571 million colones, while that of repairing those damaged reaches 446 million. The value of the furniture lost or damaged is in the region of 115 million colones. The cost of relocating dwellings situated in unsafe locations is 24 million, ⁶ while the loss of earnings from dwellings is 18 million.

⁴ Payment of the claims would not constitute a total loss for the national insurance companies, since they are reinsured by foreign companies. In 1987 the country will receive an inflow of foreign exchange amounting to 110 million dollars in the form of reinsurance.

⁵ Ministry of Planning, Encuesta de Evaluación de Daños Causados a la Vivienda, San Salvador, 22 October 1986.

⁶ Their replacement cost is already included in the direct cost already mentioned; this figure refers to the cost of new land and basic services.

Thus, the total direct cost of the damage to housing is estimated to be 1,132 million colones (232 million dollars), and the indirect cost of relocating dwellings and loss of earnings, a further 42 million.

The above estimates are based on an average of the characteristics and construction costs prevailing in San Salvador. A constructed surface of between 60 and 80 square metres was adopted for single middle-class family dwellings, and 25 to 50 square metres for casones and dwellings in marginal areas. The replacement costs adopted vary from 400 to 1,000 colones per square metre of surface of dwellings to be reconstructed; those for repair were estimated at 30% of the former. The value of furniture was calculated on the basis of a standard inventory of dwellings representative of those in the damaged area.

The cost of relocating dwellings was estimated on the basis of the present value of developed sites with basic services. The loss of income from rented dwellings was calculated as the rent actually not received by landlords for a period of 6 months (4.8 million), and an estimate was made of the imputed rent for the remainder of the dwellings affected (13 million).

b) The health sector

The earthquake caused damage to more than 90% of the metropolitan area's installed hospital capacity, causing irreparable damage to part of the main hospital centres. It was necessary to evacuate more than six public and private hospitals - with a capacity of more than 2,000 beds - located in different parts of the city, to make use of field hospitals to provide emergency medical attention and to transfer patients requiring intensive care to hospitals located outside San Salvador. The administrative offices of the Ministry of Health were also seriously affected.

Moreover, the equipment and furniture of the sector suffered only minor damage, and it will, to a large extent, be possible to recover it. In order to provide attention to those injured during the emergency, special efforts and outlays were required at least two weeks after the disaster.

The direct damage to the sector, including the replacement or repair of hospitals - belonging to the central government, the social security, the armed forces and the private sector - and health centres, were estimated at 456 million colones (91 million dollars). Indirect costs incurred in meeting the emergency, including temporary repairs, were 27 million (6 million dollars).

The cost of rebuilding the hospitals was calculated on the basis of unit investment figures of 350,000 colones per bed, while those for repairs are figures provided by health sector authorities or were calculated as 30% of replacement cost.

The earthquake revealed the need to decentralize the hospital infrastructure outside the metropolitan area. Reconstruction plans have provided for the replacement of some of the hospitals concerned with others with less capacity, and the construction of health centres and units in 4 or 5 points of the outskirts.

c) The education sector

A considerable proportion of the metropolitan area's educational infrastructure was destroyed or damaged in varying degrees. Both public and private sector establishments were affected, including primary schools and colleges, as well as secondary schools, technical colleges and universities.

The structures of 11 public-sector schools were damaged (more than 400 classrooms) as well as several major buildings belonging to the national university, while minor damage was caused to 146 schools (more than 1,100 classrooms) and other university buildings. Major private colleges were either totally or partially destroyed. Fortunately, most of the furniture and equipment was only slightly damaged. It was necessary to relocate at least 5 public schools in undamaged buildings, and to make use of some school buildings to house earthquake victims.

Direct damage to the educational infrastructure, furniture and equipment is estimated at 306 million colones (61 million dollars), indirect cost, incurred in relocating some schools on secure sites and repairing those which were used as temporary shelters, are estimated at 4.8 million (960,000 dollars).

The cost of reconstructing the buildings was estimated on the basis of the surface to be replaced (some 34,000 square metres), and the present cost of construction varies between 2,500 and 3,000 colones per square metre. The cost of repairing some 60,000 square metres was set at 30% of the cost of reconstruction; the value of the equipment and furniture requiring replacement and repair was estimated at 40% of the cost of construction. The cost of relocating schools was provided by the education authorities.

When the disaster took place, the school year had virtually come to a close. It will be necessary for the repairs and reconstruction to be completed before the new school year starts in February 1987; these tasks are consequently of an urgent nature.

2. Damage to the economic infrastructure

a) Water and drainage

The old water supply network serving a third of the capital suffered major damage, while the rest only suffered minor damage. More than 50 kilometres of the sewage network were damaged. Four supply reservoirs were affected by cracks and other major damage. No major damage was caused to the intake and feeder systems as these are located outside the metropolitan area.

Water supply to the whole of the city was cut off as a result of the lack of energy following the earthquake. The supply was gradually restored before a week was out, with the exception of the most damaged area supplied by the old aqueduct, from which losses through leakages were far too high. Leaks in the network and in domestic connections in the remainder of the city have been gradually repaired, but it is expected that many more will appear in the months to come, as seepage in the subsoil becomes apparent on the surface or is detected by other means. Similarly, it is expected that other leaks and damage, which are at present imperceptible, will appear in the sewage network.

The income of the enterprise responsible for the sector - a decentralized State organization - has diminished up as a result of the decline in the number of consumers. Moreover, operating costs increased as a result of the need to supply a greater volume of water than that required to offset leaks from the network.

The enterprise estimates that the cost of reconstruction and repair to the water supply and sewage systems will reach the sum of 96 million colones. If the estimated cost of repairs to damage which is expected to appear later is added, the total direct cost is 100 million colones (20 million dollars). The indirect cost of temporary and permanent repairs, and the loss of income together with the increased costs faced by the firm over 18 months are estimated to be a further 53 million colones (10.6 million dollars).

b) Telecommunications

Four telephone exchanges - with a combined capacity of 30,000 lines - were destroyed or damaged by the earthquake; others suffered lesser damage. Considerable damage was also caused to the installations outside the exchanges, which it has not yet been possible to fully assess, in view of the extent of the telephone network and the fact that it is for the most part underground. The telephone company's administrative buildings were partly damaged.

Services within the city, and between the city and the rest of the country and abroad were immediately cut off following the disaster. With the exception of the areas covered by the four exchanges mentioned above, the service was gradually restored over a relatively short period. Part of the demand from the zone handled by the above exchanges was redirected towards areas of the capital where the service was available.

The cost of repairing the damaged exchanges and rebuilding those destroyed - which could be partly achieved by extending the capacity of other undamaged exchanges - as well as that of repairing external equipment, represents 136 million colones (26 million dollars). The indirect damage resulting from the telephone company's loss of income as a consequence of its inability to provide the service to part of the city during the period of repair and reconstruction, is set at 6.9 million colones (1.4 million dollars). Of this figure, 64% represents loss of currency resulting from the absence of an international service.

The cost of repairing and reconstructing the internal equipment which was damaged was estimated by the company itself. The cost of repairing the external equipment was provisionally set at 20% of the damage to the internal equipment. The loss of income was estimated on the basis of the operating results of the firm and on the basis of a period of 120 days necessary to restore the service to its pre-disaster level.

c) Electricity

The electrical distribution networks in various zones of the metropolitan areas were destroyed or damaged. Two of the substations supplying the networks were considerably damaged. The generating and transmission systems were unaffected as they were situated outside the disaster area. The electricity company's administrative offices and its furniture and equipment were partially damaged.

Immediately following the seism, the national electrical system's load fell off sharply; this led to the service being cut off throughout almost all the system. Services were gradually restored over the following hours, and returned to 90% of normal demand. The remaining 10% corresponds to the residential and commercial demand in that part of the metropolitan area which was most damaged.

Direct damage to the substations and the distribution network represents some 30 million colones (6 million dollars). The indirect consequences as a result of the absence of energy supply during the period of repair and reconstruction reach a figure of 65 million colones (13 million dollars).

The State and private enterprises responsible for generating and distributing electricity participated in estimating the costs of repair and reconstruction. In calculating the loss of income it was assumed that two years will pass before demand returns to its pre-disaster level.

d) Transport and urban infrastructure

The road and street system in and around the metropolitan area suffered direct damage as a result of subsided roads and streets and collapsed bridges, culverts and other works. The rainwater drainage system was affected by cave-ins, landslides and bursts to an extent which has yet to be assessed.

There were also indirect consequences, such as damage caused to streets by the use of heavy equipment to demolish and clear rubble; work to carry out repairs to the water and telephone networks, and higher costs incurred in transporting passengers and goods as a result of the use of longer routes made necessary by the temporary closure of the most damaged areas.

Direct damage to the urban infrastructure has been set at 62 million colones (12 million dollars), while the indirect impact thereon and upon transport has been calculated to represent 90 million (18 million dollars). Thus, total damage in this area would seem to be in the region of 152 million colones.

The cost of repairing streets and link roads, bridges and culverts was set at 42 million colones by the Ministry of Public Works on the basis of an inventory of damages. In the absence of more detailed information, repairs to the rainwater drainage network were set at 20 million colones. According to the same Ministry, repair work to streets after demolition, rubble removal and cleaning operations will cost 27 million; the figure for the indirect costs of street repairs in order to restore telephone, drinking water and sewage networks was set at 10 million colones, assuming a linear distance of 20 kilometres, at a cost of 500,000 colones per kilometre; the extra cost in fuel and lost time in urban passenger and goods transport as a result of longer journeys over a 90-day period was set at 53 million.

e) Public buildings

Dozens of buildings occupied by the public sector - in some cases privately owned - suffered differing degrees of damage. One of them completely collapsed, the structures of others were damaged and they will have to be demolished, while others may be repaired. This item, in which damage was among the heaviest, includes ministries, court buildings,

barracks and prisons, municipal markets, stadiums and other buildings. In most cases, the furniture and equipment has been recovered, with slight damage.

The need to relocate these offices in office or residential buildings on the outskirts of the city has involved indirect costs for the transfer, fitting out and rental of premises. It has also led to problems in the provision of services.

The reconstruction and repair of the buildings mentioned above represents a cost of 231 million colones, and the replacement or repair of the furniture and equipment, 22 million. Thus, the direct cost in this sector is 51 million dollars. Moreover, the indirect cost for the transfer to other buildings, rental and fitting out of premises has been set at 10 million colones (2 million dollars).

Calculation of the cost of reconstructing the buildings was based on the surface originally constructed (3,500 m²) at a cost of 3,000 colones per square metre. The cost of repair was based on a surface of 36,000 m² and a unit cost equivalent to 30% of the above. The value of the partial losses of equipment and furniture was set at 10% of the cost of repairs and at 80% of the cost of replacement of buildings. The indirect cost involved in transfer and modifications was set at 10% of the cost of repairs to buildings. The indirect cost resulting from the temporary suspension of services was not calculated.

f) Banks

At least five buildings occupied by nationalized banks ⁷ suffered structural damage and will have to be demolished; others will require minor repairs. The furniture and equipment - including computer systems - may be recovered, repaired and re-installed at a fraction of its original cost. Banking services have been hampered by the transfer of offices to other premises which had to be modified, as well as by the temporary absence of some equipment and electronic computer systems.

The figure for direct damage in the sector attains 131 million colones (26 million dollars), including repairs and reconstruction of buildings and the recovery and restoration of furniture and equipment. The indirect cost of the transfer and fitting out of premises represents around 11 million colones (2 million dollars).

As in the case of public buildings, reconstruction costs were based on the surface originally constructed (12,000 m²) at a construction cost of 3,000 colones per square metre. The costs of repair were based on a surface of 15,000 m², assuming a unit cost equivalent to 30% of the cost.

⁷ Only the building occupied by the Central Reserve Bank headquarters was owned by the institution.

of construction. Recovery and repair of equipment and furniture was estimated at 20% of the cost of repair and reconstruction of the buildings. The indirect cost of the transfer and modifications was estimated to be 10% of the damage to the buildings. The indirect damage deriving from the increased cost resulting from the temporary suspension of and delays to the provision of services was not taken into account, nor was the prejudice resulting therefrom to users.

3. Damage to the productive sectors

The industrial sector located in the capital suffered losses of only relative importance. Approximately 5 major industries suffered damage to their buildings and machinery as well as to stocks; moreover, they temporarily ceased production. As far as medium-sized industry is concerned, after some repair work, it rapidly resumed production. Small industry located in the most damaged zones, as well as craftsmen working in their own dwellings suffered considerable damage to their premises and means of production.

Almost all large and medium-sized enterprises, both in the industrial and trade sectors will be able to replace most of their losses or direct damage thanks to their insurance against this type of disaster. However, small entrepreneurs, lacking any kind of protection, have to face almost total losses, and consequently require special assistance.

Repairs and restoration of the industrial sector's infrastructure and its equipment and furniture, as well as replacement of the stocks lost are estimated to represent 92 million colones (18 million dollars). The loss of earnings resulting from the temporary suspension of industrial production reaches the figure of 37 million colones (7 million dollars).

The cost of repairing the large industrial buildings was calculated on the basis of a surface of 15,000 m² and a unit cost of 1,000 colones per square metre. In calculating the cost of repairs to the infrastructure of medium-sized industry it was assumed that 50 factories suffered damage costing 150,000 colones each. Damage to small industrial buildings was assessed on the basis of a survey carried out by the sector's association. The cost of repairing equipment was estimated at 20% of its value, which in turn was calculated as being twice the value of the infrastructure. As far as the losses of products are concerned, the value of the production of large and medium-sized firms over a fortnight was calculated; as far as small firms are concerned, figures provided by the relevant association were adopted. With regard to loss of earnings, it was assumed that large and small firms will take a month to resume their activity, while medium-sized firms will require only 10 days.

The commercial sector suffered extremely high losses as a result of the total or partial destruction of major buildings, as well as the loss of furniture and stocks. Large commercial establishments lost mostly

stocks, but medium-sized and small concerns were also affected, although relatively speaking, the latter suffered most.

The cost of reconstruction and repair to commercial buildings, their furniture and equipment, and the merchandise destroyed is estimated to represent 714 million colones (143 million dollars); the loss of earnings has been set at a further 317 million colones (64 million dollars).

The cost of reconstructing the commercial buildings which were destroyed or which require demolition was calculated on the basis of a total surface of 140,240 m² and a reconstruction cost of 3,000 colones per square metres. The value of repairs was calculated for an area of 116,450 m² at a cost of 900 colones per m², in addition to 28,000 m² which were slightly damaged, for an overall cost of 1.4 million colones. The value of the furniture destroyed was set at 50% of the value of the buildings destroyed, and at 10% in the case of those to be demolished or requiring repairs. The value of inventory losses was calculated to be 40% of the sales of the establishments during a typical month. The loss of earnings was based on the value added for a six-month period.

4. Loss of employment and earnings in the informal sector

Prior to the seism, 41% of the economically active population in the metropolitan area of San Salvador worked in the informal sector, and centred their activity on small commerces, the service sector, and domestic manufacturing workshops. Many of these establishments were part of dwellings. A high proportion of them were temporarily closed down as a result of the damage caused by the disaster, leaving owners, active partners, unpaid family workers and salaried employees without work.

It is estimated that 38,100 jobs were lost in the informal sector as a direct consequence of the seism. The greatest losses were in the commercial and service sectors. Consequently, the rate of open unemployment in the metropolitan area rose from 26% to 35%. Gradually, a large number of these jobs are being recovered. The recovery or replacement of jobs in the small manufacturing workshops is proving rather more slow and difficult.

It is estimated that the loss of income in the informal sector represents a total of approximately 10 million colones.⁸ As repair and reconstruction projects are implemented, the levels of unemployment in the metropolitan area will decline significantly.

⁸ This figure is included in the losses affecting productive sectors (industry and trade).

5. Other sectors

Varying degrees of damage were caused to the installations and buildings of sports centres, as well as to religious buildings and historic monuments, whose replacement or repair has been set at an overall figure of 25 million colones (5 million dollars).

6. Other damage

a) Emergency and immediate repair expenditure

It is estimated that relief and rescue operations for the victims of the earthquake together with immediate repairs, including the provision of temporary shelter and the supply of food, will continue some 30 days after the disaster. A preliminary estimate sets the cost of this at around 126 million colones (25 million dollars). International assistance received by El Salvador up to 31 October - according to UNDRO reports - amounted to 12.5 million dollars (62.5 million colones), of which 4.1 million were cash donations, 6.6 million were donation in kind ⁹ and 1.8 million covered freight expenses.

b) Demolition and removal of rubble

The cost of demolition and removal of the rubble from the buildings which collapsed or were irreparably damaged was estimated to be 10% of the cost of rebuilding them; in the case of buildings which were partially damaged, the removal of rubble has been estimated to cost 5% of the value of repairs. It is estimated that this item represents 293 million colones (59 million dollars).

7. Summary of damage

An estimate of the damage, made on the basis of the information available less than three weeks after the disaster, seems to indicate a total figure of 4,521 million colones, or 904 million dollars. ¹⁰ (See table 3.)

⁹ 100 metric tonnes of medicines, food and equipment, 5,200 tents, 47,500 blankets, 300 rolls of plastic for temporary shelter and 42 search, rescue, medical and evaluation teams, according to UNDRO report No. 14 on the situation.

¹⁰ The exchange rate adopted is 5 colones per United States dollar.

Table 3

SUMMARY AND BREAKDOWN OF THE DAMAGE CAUSED BY THE EARTHQUAKE

	Millions of dollars ^{a/}					Percentages				
	Total	Direct damage	Indirect losses	Sectors		Total	Direct damage	Indirect losses	Sectors	
				Public	Private				Public	Private
Total	904	685	219	278	613	100.0	100.0	100.0	100.0	100.0
Social infrastructure ^{b/}	393	378	15	124	269	45.0	57.2	7.0	44.6	46.0
Economic infrastructure ^{c/}	193	146	47	123	70	22.1	22.1	22.0	44.2	12.0
Productive sectors ^{d/}	232	161	71	-	232	25.7	23.5	33.2	-	37.8
Industry	25	18	7	-	25	2.9	2.7	3.3	-	4.3
Commerce	207	143	64	-	207	22.9	20.9	29.9	-	33.8
Emergency and immediate repairs ^{e/}	27	-	27	10	4	2.8	-	12.3	3.6	0.7
Demolition and removal of rubble	59	-	59	21	38	6.5	-	26.9	7.6	6.2

Source: ECLAC estimates.

a/ At 5 colones per dollar.

b/ Includes the housing, health and education sectors.

c/ Including damage to water and sewage networks, telecommunications, electricity, transport and urban highways, public buildings, banks and others.

d/ Includes large, medium sized and small firms, as well as entrepreneurial activities of a family nature.

e/ Figures for public and private sectors do not include international assistance received which amounted to approximately 13 million dollars.

Calculation of the net losses caused by the disaster must take into account that some of the installations affected were covered by insurance, as was part of the production of the commercial and industrial sectors as well as that of the public bodies supplying electricity and telecommunications. This coverage represents approximately 14% of the total damage.

These figures represent the estimated amount of the damage at present replacement costs. However, future reconstruction requirements will undoubtedly be higher, in particular if it is borne in mind that inflation will raise the costs during the period of repair and reconstruction, and that it will most likely prove necessary to relocate dwellings and buildings on sites of lower seismic risk and/or to incur greater unit investment as a result of anti-seismic design. According to preliminary estimates based on the profiles of projects identified to date, reconstruction requirements could be considerably greater than the cost of damages.

II. THE ECONOMIC AND SOCIAL IMPACT

A. The economic and social situation prior to the earthquake

Since the end of the previous decade, El Salvador has been plunged into a deep economic, political and social crisis. To a great extent, this situation has come about as a result of the confluence of two factors. The first of these concerns the virtual state of war in the country, which has existed for seven consecutive years, and which has led to the loss of many lives, the destruction of productive assets, the diversion of considerable public funds towards security and defence, as well as a permanent state of unrest and social tension. The second springs from the clearly unfavourable trend in external demand. Between 1979 and 1985, the current value of total exports fell 32%, while the terms of trade worsened by 14%. Consequently, in 1985 the purchasing power of exports was 44% lower than it had been in 1979 (see table 4).

As a result of these factors, the country's economic activity declined 20% between 1978 and 1985, thereby bringing down per capita income to a level it had surpassed more than 20 years ago. The average consumption of families has shrunk by around 25%. The level of activity is low in almost all productive sectors, and open unemployment is around 30%. All of these factors have led to a sharp deterioration in the already low living standards of the population, and to a deep cutback in capital formation. Gross fixed investment declined by 50% between 1978 and 1985, bringing down its share of gross domestic product from 24% to 13% over the same period.

The war and economic depression have led to the flight of enormous capital sums from the country - particularly during the opening years of the present decade -, as well as to the emigration of a large number of the general population, including skilled human resources, together with a domestic migration from the countryside towards the city which has rapidly raised the level of urbanization. Approximately half a million people have abandoned the countryside and nearly 350,000 of these have settled in the metropolitan area of San Salvador, where they live in precarious living conditions and with extremely limited access to public services.

Further, during the 1978-1985 period, other sectors of the economy were affected by severe imbalances:

a) The balance of payments deficit rose from barely noticeable levels to 340 million dollars, representing almost 8% of the gross domestic product.

b) The fiscal deficit (largely the result of military expenditure) rose from 130 to 970 million colones, equivalent to 2% and 7% of GDP respectively.

Table 4
EL SALVADOR: MAIN ECONOMIC INDICATORS

	1979	1980	1981	1982	1983	1984	1985 ^{a/}
<u>Basic economic indicators</u>							
Gross domestic product at market prices (millions of 1980 dollars)	3 919	3 567	3 267	3 081	3 099	3 144	3 187
Population (thousands of inhabitants)	4 435	4 529	4 576	4 624	4 673	4 722	4 772
Per capita gross domestic product (1980 dollars)	884	786	714	666	663	666	668
<u>Growth rates</u>							
<u>Short-run economic indicators</u>							
Gross domestic product	-1.8	-8.9	-8.4	-5.7	0.6	1.4	1.4
Per capita gross domestic product	0.2	-11.1	-9.2	-6.7	-0.6	0.4	0.3
Rate of unemployment ^{b/}	6.7	16.1	25.0	30.0	30.0	30.0	30.0
<u>Consumer prices</u>							
December-December	14.8	18.6	11.6	13.4	14.8	9.8	30.8
Variation between annual averages	15.9	17.4	14.7	11.7	13.1	11.7	22.1
<u>Real wages and salaries ^{c/}</u>							
Money	12.3	-5.6	-10.4	-11.8	-12.9	-8.9	-23.6
	21.6	7.2	-0.8	4.7	-1.5	17.3	26.9
Current income of government	18.3	-14.4	6.4	0.3	13.7	22.5	23.2
Total government expenditure	12.8	17.6	13.3	4.6	50.0	-8.0	14.4
Fiscal deficit/total government expenditure ^{b/}	7.0	32.3	36.4	39.0	53.8	38.5	33.8
Fiscal deficit/gross domestic product ^{b/}	1.1	5.6	7.3	7.9	14.6	8.5	6.9
Current value of exports of goods and services	37.2	-4.0	-24.0	-10.9	6.1	-4.7	0.3
Current value of imports of goods and services	3.9	-6.8	-0.8	-10.3	1.9	12.2	3.6
Terms of trade (goods and services)	-5.0	-7.7	-9.0	2.5	-9.8	12.7	-1.3
<u>Millions of dollars</u>							
<u>External sector</u>							
Trade balance (goods and services)	11	45	-237	-218	-187	-328	-368
Net payments of profits and interest	77	94	100	129	131	163	150
Balance on current account	15	-1	-272	-271	-256	-313	-342
Balance on capital account	-149	-74	223	242	280	320	389
Variation in international reserves (net)	-128	-69	-43	-27	39	7	47
External debt (end of year balance)	939	1 176	1 471	1 710	1 891	1 949	2 003

Source: ECLAC, on the basis of official data.

^{a/} Preliminary figures.

^{b/} Percentages.

^{c/} Real minimum wages of agricultural workers.

c) The economy's liquidity (M_2 /GDP) rose gradually from 30.5% to 39.4%.

d) Inflation has remained on average at around 15% in the last six years, with an accelerating trend, in 1985 and 1986.

e) The colon tended to be considerably overvalued in terms of effective parity (approximately 40% between 1980 and 1985), in spite of the partial devaluations initiated in 1982 with the creation of an official parallel market. In turn, progressive increases in foreign exchange quotations in banking and other markets have been a major source of inflation in recent years.

Within the general behaviour of the Salvadoran economy described above, two clearly distinguished periods are nevertheless apparent. The first of these covers the period 1978-1982, during which the economy contracted severely. The second covers the years 1983-1985 during which recessive trends came to a halt, thanks to donations and the various types of assistance provided by the United States, as well as to ever increasing transfers from Salvadorans residing abroad. It is estimated that between 1983 and 1985 the country received approximately 350 million dollars per year, only from official economic assistance in the form of donations and loans. On the one hand, this figure is approximately equal to the balance-of-payments current account deficit, and on the other, to the central government deficit.

Offsetting the imbalance in the balance-of-payments current account through unilateral transfers, which amounted to 370 million dollars in 1985, substantially changed the country's economic situation. To some degree, the economic situation was also changed by fiscal and credit constraints which, together with other actions, were incorporated in 1982 and 1983 into an adjustment programme agreed upon with the International Monetary Fund. Productive activity grew slightly (a yearly average of 1% between 1983 and 1985). Expanded domestic demand encouraged certain production sectors, which prevented greater deterioration in the high level of open unemployment.

This did not suffice to put an end to unrest and social tension. On the one hand, the war continued with its trail of human and material damage. Moreover, the macroeconomic imbalances which had persisted over previous years continued and in some cases tended to worsen. The current account balance recorded an average deficit of 300 million dollars per year between 1983 and 1985; although the central government deficit shrunk slightly owing to heavy cutbacks in non-military expenditure, it nevertheless still represented 7% of gross domestic product in 1985; inflation continued to rise and underwent a pronounced acceleration in 1985; both, idle installed capacity and unemployment remained high, while the colon continued to appreciate as a result of the increased domestic inflation.

In 1986, the trend followed by the economy was compounded by two new features: First of all, the expectation of a relative boom in coffee exports, arising from the increase in international prices and secondly, the application of a programme of economic stabilization designed to mitigate the macroeconomic imbalances inherited from previous years.

It was estimated that the higher prices for coffee on international markets and, consequently, the marked increase in the value of exports would assist in reactivating the economy to a certain extent. Moreover, it was hoped that the boom in exports would somewhat reverse negative trends and that public finances would receive considerable income therefrom, above all as a result of the imposition of a temporary 15% surtax on external sales.

The package of economic policy measures, due to come into force in 1986, included: Unification of the exchange rate at 5 colones to the dollar and a prohibition against operations using currency on non-banking markets; a rise in the rates of public transport and fuel prices; increases in the interest rates, particularly on long-term deposits; increases in selective consumer taxes, and an increase in both, the rural and urban minimum wages (50% for rural workers and 15% for public employees). These measures were to be complemented by price controls on some articles included in the family shopping baskets (food, rents, school fees and medical services) and the application of the new Central American tariffs. As of October, only exchange measures and partial wage adjustments had been implemented.

According to preliminary calculations, during the first ten months of 1986, economic activity maintained a growth rate below 1%, compared to an average of 1.4% for the 1984-1985 biennium. This has been caused partially by a contraction in the production of basic grains, owing to the severe drought in July and August; continued reductions in the area dedicated to cotton growing; stagnation in manufacturing production caused by the shortage in foreign exchange needed to import intermediate goods; the exchange measures adopted at the beginning of the year, and the persistence of difficulties in the Central American Common Market in view of interregional payment problems, and the slowdown in construction due to increased production costs and the consequent drop in the demand for lower-income strata.

Moreover, repercussions of some of the economic measures adopted tended to sharpen the main imbalances affecting the economy. The devaluation of the exchange rate, the increase in the rates of interest and the wage increases contributed to intensifying inflationary pressures at an annual rate of more than 35%.

For its part, the fiscal deficit continued to deepen and surpassed that of the previous year. While the package of economic policy measures considered the adoption of a series of tax adjustments, these had still not been introduced by October; consequently, income grew less than

expenditure. Moreover, the public sector experienced a number of difficulties which delayed its receipt of the bilateral assistance from the United States forecasted for the year.

As far as the external sector is concerned, the balance of payments current account deficit attained similar levels to those of the previous year (approximately 340 million dollars). While imports declined slightly as a result of the lack of timely available currency, exports increased to a certain extent thanks to the rise in the international prices for coffee. Nevertheless, it is estimated that both, private and official transfers from abroad by October, had already attained the same level as in 1985.

Inflation considerably exceeded the average wage increase granted at the beginning of the year. Consequently, during the first ten months, the purchasing power of wage-earners continued to deteriorate, although some strata of workers, particularly rural workers, obtained a slight real increase.

B. Short and medium-term repercussions

Preliminary estimates of the damage caused by the earthquake reach critical proportions for the Salvadoran economy. Total losses in assets and production represent approximately 23% of the 1986 gross domestic product. More than 10% of the country's accumulated productive capital was destroyed and the domestic product dropped 2%, all of which makes the productive system, which was in a critical state before the earthquake, even worse.

Furthermore, during the recovery and reconstruction period, social deficiencies, which are already serious, particularly in health and education, are expected to become more pronounced. That is why intense reconstruction efforts cannot be postponed, if greater deterioration in the population's standard of living is to be prevented. To the years of development lost due to the international crisis and armed conflict more were lost because of the repercussions of the earthquake.

1. The challenges

The circumstances indicated above (the great magnitude of destruction, the urgent need to repair damages, the weakening of the productive apparatus and increasing financial imbalances) undoubtedly present serious dilemmas in establishing priorities within the economic policy and particularly in managing the fiscal budget. The disaster occurred at a time when the basic concern of the authorities revolved around two basic economic objectives: sustained reactivation of the economy and correction of severe financial imbalances. This concern inevitably arose in a situation where the social and economic burden of the armed conflict and the presence of strong external financial aid to prevent the economy from plummeting left little leeway for action.

The earthquake, therefore, destabilized the precarious balance achieved in the three preceding years and brought about enormous complications in a task that was already extremely difficult. Meeting the unpostponable needs of the earthquake victims and carrying out reconstruction tasks will require significant additional resources and substantial changes in the allocation of public resources.

The Ministry of Economic Planning and the Central Reserve Bank are designing a National Emergency and Reconstruction Programme, which includes inter-alia, an economic, social and financial strategy. This Programme will undoubtedly contemplate action to avoid the burden of costs linked to the earthquake, from falling disproportionately on the weakest social groups and to ensure that both, the public and private sectors, make more efficient use of their resources.

Sustained recovery of economic reactivation, particularly in the sectors that generate most employment, will also be sought in order to mitigate social imbalances and stimulate development.

Simultaneously, dealing with the effects of the earthquake, working towards growth objectives and correcting acute imbalances in the economy will require a great degree of pragmatism and caution in economic policy, in order to prevent greater financial instability and delays in urgent reconstruction tasks.

Nevertheless, it is clear that the economy's response capacity and the resources available are, in fact, inadequate to meet the major challenge facing the country. Thus, the importance of mobilizing international financial and technical assistance is decisive in achieving recovery within a reasonable period of time.

2. Short-term repercussions

As far as the remainder of the year is concerned, it is estimated that the direct consequences of the earthquake centre on: a) an increase of more than 24% in the fiscal deficit, owing to emergency expenditures and loss of income, b) a fall of 2% in the gross domestic product, c) disturbances in productive activities and in public administration in the areas affected by the earthquake, and d) additional import needs over and above the international aid received (see table 7 below).

The social impact is even more significant. The already considerable housing shortage grew substantially and unemployment rose from 26% to 35% in the metropolitan area of San Salvador, as a result of the destruction of numerous productive units in the informal sector. There was also a drastic reduction in public health services. Furthermore, most of the families affected belong to the lowest-income strata. Finally, new inflationary pressure is expected and will aggravate imbalances in the external sector, in public finances and in income distribution.

3. Medium-term consequences

The medium-term consequences of reconstruction on the economy will depend on the pace determined by the government, on the response capacity of the productive sector and on the amount of external resources available. It will also be influenced by the scope of the reallocation of public resources, in accordance with changes in priorities on the part of society and authorities.

As an illustration, an attempt has been made to draw up a hypothetical timetable for reconstruction, spread out over the remainder of 1986 and the five coming years (see table 5).

In general terms, it is believed that the productive and financial system could experience significant tension, at least during the next three years, particularly in reference to the concentration of activities in the construction sector and to equilibrium in public finances and in the balance of payments.

a) The construction sector

First of all, delays are expected in the construction industry which could exceed this sector's response capacity, particularly in 1987 and 1988, years in which the greatest efforts will be concentrated (see table 6). There will not only be a shortage of skilled labour, but also a limited supply elasticity of the industrial sector linked to this activity. A related problem should also be noted: reconstruction would tend to concentrate economic activity in the city of San Salvador, to the detriment of efforts aimed at attaining development that is better balanced geographically. According to the estimates mentioned, the San Salvador rehabilitation programme will occupy more than twice the number of workers employed by the construction industry throughout the country in 1985.

b) Other productive sectors

Additionally, and still within the hypothetical timetable, construction would have a significant indirect impact upon other productive sectors, particularly industry and transport. Overall calculations indicate that the total (direct and indirect) impact on the economy could represent between 3% and 4% of the annual gross domestic product in 1987 and 1988. However, consideration should be given to the possibility that the production of industrial inputs, such as iron and lumber, may not meet the demand, in which case, imports may rise.

Table 5
 POSSIBLE RECONSTRUCTION TIMETABLE
 (Millions of 1986 colones)

	Total	1986	1987	1988	1989	1990	1991
<u>Total</u>	<u>3 720</u>	<u>541</u>	<u>1 241</u>	<u>919</u>	<u>490</u>	<u>322</u>	<u>207</u>
Construction and repair	3 197	445	1 050	785	444	281	192
Equipment	387	70	122	93	46	41	15
Inventories	136	26	69	41	-	-	-
Public sector	1 198	147	471	240	145	115	80
Construction and repair	1 054	142	422	200	125	100	65
Equipment	144	5	49	40	20	15	15
Private sector	2 522	394	770	679	345	207	127
Construction and repair	2 143	303	628	585	319	181	127
Equipment	243	65	73	53	26	26	-
Inventories	136	26	69	41	-	-	-

Source: ECLAC estimates.

Table 6

ECONOMIC IMPACT OF THE DISASTER AND RECONSTRUCTION

(Millions of 1986 colones)

	1986	1987	1988	1989	1990	1991
<u>Immediate consequences</u>						
Public sector						
Loss of income	65					
Increased expenditure	71					
Gross total	136					
Percentages in relation to 1986 deficit	24.3					
Productive sector ^{a/}						
Loss of income	250					
Loss of stocks	129					
Increase in operating costs	20					
Total production losses	408					
Percentages in relation to GDP (1986)	2.1					
<u>Medium term consequences</u>						
Construction sector						
Gross production	445	1 050	785	444	281	192
Value added	194	457	341	193	122	83
Percentages in relation to the sector's value added in 1986	38.8	91.4	68.2	38.6	24.4	16.6
Indirect impact on value added of other sectors	148	349	261	148	94	64
Total impact on value added	342	806	602	341	216	147
Percentages in relation to 1986 GDP	1.8	4.3	3.2	1.8	1.1	0.8
Direct generation of employment (thousands of persons)	18	42	31	18	11	7
Percentages in relation to number employed in construction in 1985	45.0	105.1	77.6	45.0	27.5	20.0
Total generation of employment (thousands of persons)	11	26	19	11	7	5
Indirect generation of employment (thousands of persons)	29	68	50	29	18	12
Percentages in relation to national employment in 1985	2.7	6.3	4.6	2.7	1.6	1.1
Investment						
Investment in construction, equipment and stocks	541	1 241	919	490	322	207
Percentages in relation to total 1986 investment	22.7	52.0	38.5	20.5	13.5	8.7
Private investment	394	770	679	345	207	127
Percentages in relation to private investment in 1986	22.0	42.9	37.8	19.2	11.5	7.1
Public sector						
Expenditure on reconstruction and replacement of equipment	147	471	240	145	115	80
Percentages in relation to 1986 public investment	24.8	79.6	40.5	24.5	19.4	13.5
Immediate impact	136					
Increase in expenditure	283	471	240	145	115	79

/(Continues)

Cuadro 6 (Conclusion)

	1986	1987	1988	1989	1990	1991
Less:						
Increase in tax revenue	37	89	66	37	23	16
Net increase in deficit	246	382	174	108	92	63
Percentages in relation to 1986 deficit	44.1	68.5	31.2	19.4	16.5	11.3
Percentages in relation to 1986 gross total	6.6	10.3	4.6	2.9	2.5	1.7
Percentages in relation to 1985 GDP	1.3	2.0	0.9	0.6	0.5	0.3
External sector (millions of dollars)						
Direct imports of production	23	56	41	22	14	10
Imports of equipment	10	18	14	7	6	2
Indirect imports of production	13	31	22	10	6	4
Indirect imports by the system	18	44	35	18	12	8
Total impact	64	149	112	57	38	24
Percentages in relation to 1986						
cif imports	6.7	15.5	11.6	5.9	4.0	2.5
Percentages in relation to 1986 deficit	43.8	102.1	76.7	39.0	26.0	16.4

a/ Including public enterprises.

c) Employment

Reconstruction may raise employment levels, which dropped significantly as a result of the earthquake. A few days after the disaster, the government took concrete steps to use intensive labour, in so far as possible, for cleaning, demolition and removal of rubble. Consideration should be given to the fact that more specialized construction work may not be able to absorb the unemployed who have different skills. If the demand is met, reconstruction could, directly and indirectly, create approximately 70,000 jobs in 1987, which would alleviate the critical unemployment problem.

d) Private investment

The reconstruction effort that would be carried out by the private sector, within the hypothetical timetable, would also reach levels that contrast with the low capital formation of recent years. In the remainder of this year alone, private investment in reconstruction and in certain recovery of stock and equipment will amount to 394 million colones, which represents 22% of estimated national investment for the year. In 1987 and 1988, the value of private investment for recovery would amount to 770 and 679 million colones, respectively, which would be equivalent to approximately 40% of investment in 1986. Such an effort seems disproportionate in view of the saving capacity that the private sector has been demonstrating and particularly in view of the weak trend to invest, observed in the sector.

e) The public sector

The public sector will also feel considerable consequences over the medium term. On the one hand, it has to face the reconstruction of the economic and social infrastructure and the replacement of equipment, which will require great efforts. During the period of greatest activity (1987-1988), reconstruction is likely to represent almost 70% of forecast public investment for 1986. On the other hand, tax income may increase the inflow of economic reactivation. Even so, all factors indicate that tension in public finances will grow, even taking into account the transfers received from abroad. In this regard, there is obvious incompatibility between the objectives of budgetary equilibrium and the goals of reconstruction, which can only be solved, as has been indicated, by extending the period of adjustment and by making significant changes in the manner in which public resources are allocated.

f) The external sector

In the hypothetical timetable, it is assumed that reconstruction activities will have a major impact on the external sector, especially during the 1987-1988 biennium, when the new demand for products imported

by the construction sector and other industrial branches could increase cif imports by 15%, which would mean doubling the 1986 current account deficit. This elastic demand for imports contrasts with the difficulties the country is encountering in fomenting new sales in markets abroad. This would further accentuate that already pronounced imbalance in the external sector, which is being covered by official transfers and by external transfers from Salvadorans residing abroad.

g) Prices

Over the medium term, with the implementation of reconstruction programmes, the possibility of certain intensification in inflationary pressure, particularly as a result of an increase in the liquidity and of limitation in the response capacity of the productive apparatus, cannot be ruled out. Confronting this situation will require the greatest discipline in managing monetary, tax and public spending policies, and success in obtaining complementary external financing.

III. REQUIREMENTS IN TERMS OF EXTERNAL ASSISTANCE

The estimates given in previous chapters, make it possible to grasp the magnitude of the damage caused in El Salvador, the seriousness of the situation now facing the country and the impossibility of its being overcome with the country's own resources. Thus, the only viable alternative in order to overcome the crisis is for the international community to manifest its solidarity in the near future through aid in the form of both technical assistance and donations.

This chapter sets out the technical assistance and investment projects which it has so far been possible to identify. These projects take into account the pressing needs of reconstruction, but also broader objectives. It is hoped that the action deriving therefrom will, first of all, make it possible to tackle the aftermath of the seism and simultaneously generate employment and increase the income of the poorest sectors, by training the labour force and making use thereof in a more productive and better-paid manner.

A. Technical assistance required

Co-operation could be provided by international and regional bodies, industrialized countries, and horizontal co-operation from a number of Latin American countries, which possess valuable experience in areas of interest to El Salvador.

The projects are set out succinctly, but they should subsequently be expanded and formulated in greater detail. Moreover, they are also complementary to various investment projects suggested in section B of this chapter.

Geological and seismic-risk assessment

The support of countries with experience in the field, such as Chile, Japan, Mexico, Peru and the United States, could complement studies existing in the country on the geological, geodynamic, geovolcanic and geomorphological state of the soil in San Salvador. Such studies provide fundamental background information for carrying out various specific activities involved in the process of rehabilitation, reconstruction and resettlement which will have to be rapidly initiated. Obviously, this will also prove useful in updating the construction codes (see the following project).

Evaluation of structures

Frequently, following a seism, the population's reaction takes two extreme forms: they either "patch-up" cracks in walls, pillars and beams, or rapidly demolish those structures which seem to be seriously damaged.

Consequently, it is advisable that the process of structural examination begin as rapidly as possible. This could well be carried out with support from Mexico, and other countries with recent experience in the field.

Revision of the code of antiseismic design and construction standards

The period following the disaster is an opportune moment to update some criteria, so that the new code of design and construction standards will give due weight to structural and financial considerations.

Major structures - in particular high buildings, dams, silos, industrial plants - must observe the standard antiseismic norms. On the other hand, the criteria for light dwellings should merely aim at improving the structural resistance of light elements which, should they collapse, will cause the least possible injury to the inhabitants trapped within.

The training of labour for construction

At the present time there is a shortage of skilled workers in the country, and in particular of plumbers, carpenters, constructional steel erectors, painters, electricians and bricklayers in general, partially as a result of the heavy emigration in recent years.

Consequently, there is an urgent need to direct efforts towards training the unemployed in these skills, a task which may be carried out simultaneously to the reconstruction process. Training of labour may contribute to such labour being used intensively.

Management training for small industrial and craft entrepreneurs

Since reconstruction will require a great amount of manufactured products, which may well be supplied by the activities performed by small craft enterprises, and since the Salvadoran people have revealed a clear vocation for productive activity, albeit on a small scale, it is essential to train this sector of the population in simple entrepreneurial management techniques.

Optimization of urban transport

The destruction caused by the earthquake together with the demolition to be carried out later and the excavation which will be necessary in order to repair the underground public service mains, will considerably worsen the problems of traffic congestion which had already begun to emerge as a result of the vigorous growth of San Salvador's population. This is an opportune moment for carrying out studies into

urban transport with the aim of minimizing costs in the short term, and endowing San Salvador with the urban road network it will require in the medium term.

In this context, it is necessary to carry out traffic engineering studies to provide the necessary background data for appropriate solutions to be adopted.

Promotion and development of non-traditional agricultural and agroindustrial exports

Any steps to develop agricultural and agroindustrial export would seem to be unconnected with the direct impact of the seism, since the sectors in question were not affected by the earthquake. However, if the available alternatives are weighed up, it is apparent that only this type of project is capable of partially absorbing some of the seism's harmful consequences.

The project is designed to stimulate and promote the cultivation of agricultural export crops, so as to: i) create employment at the various stages of the overall production process (soil preparation, sowing, irrigation, harvesting, selection, packaging, transport, handling, institutional and banking activities, insurance and external trade); ii) obtain the greatest possible productivity from the available resources - some of which are idle - in particular from the soil, the climate, water, individuals, the infrastructure and resources in general, and iii) earn foreign currency by exporting products with high value added and whose prices are high on international markets.

Training of personnel in preinvestment

It would be desirable to strengthen public-sector capacity in the complex field of project identification, assessment and formulation so that optimum investment programmes may be formulated in the near future.

Consequently, it is essential to set up a Programme for Technical Assistance in Training in Methods of Preinvestment and Financing. This project could fall within the area of the Ministry of Planning and would concern the development of already identified projects as well as those which emerge from the sectoral and regional analyses.

The Programme would be designed to train personnel in:

- i) techniques for identifying ideas, assessing investments and carrying out feasibility studies;
- ii) setting up systems of sectoral information to provide the necessary data regarding quantity, quality, reliability and opportunity which the projects may require;
- iii) strengthening the Project Bank, in which projects are arranged in order of priority and broken down by sector and region;
- iv) establish schemes for the

administration, follow-up and supervision of the development of the projects and investments made, and v) design schemes for providing financial support for the private sector, on terms which are both soft and appropriate.

Summary and costs

The proposed technical assistance projects are for the most part short-term ones.

The forms of assistance proposed are horizontal co-operation with Latin American countries, bilateral co-operation and technical assistance from international or regional bodies. Consequently, it is neither easy nor necessary to specify the cost and duration of each of the activities to be carried out within each project. Nevertheless, in view of the need to have an idea of the amount of aid required, table 7 provides a number of preliminary figures.

B. Investment projects

As a result of the proposal to carry out profitable investment projects and develop productive employment, some 150 investment projects have been identified.

These proposals were not developed beyond the outline stage; they are presented under separate cover in an annex, which also includes sectoral summaries regarding investment and employment generated. Proposed investments amount to more than one billion dollars. The national component, including inputs and labour, would represent 70% of the overall investment; the labour directly employed in executing the projects, could reach 227,900 man-years. The tasks could well be spread out over a five-year programme, as a result of which the proposed projects would provide employment for some 45,000 people over this period. (See table 8.)

Table 7

DURATION AND COST OF TECHNICAL ASSISTANCE

Proyects	Duration (months)	Cost (thousands of dollars)
<u>Total</u>		<u>1 370</u>
Geological and seismic risk assessment	6	120
Assessment of structures	3	250
Code of standards on anti-seismic design and construction	12	100
Training labour for construction	24	300
Management training for small industrial and craft entrepreneurs	24	150
Optimization of urban transport	6	50
Promotion and development of non-traditional agricultural and agro-industrial exports	36	300
Training of personnel in pre-investment	24	200

Source: ECLAC estimates.

Table 8
 SECTORIAL SUMMARY OF IDENTIFIED PROJECTS: FINANCING
 AND EMPLOYMENT

	Investments ^{a/}			Financing ^{a/}		Labour employed	
	Total	Breakdown		Local	External	Thousands of man-year	Percentages
		National	Imported				
Total	<u>1 069.5</u>	<u>730.4</u>	<u>339.1</u>	<u>461.7</u>	<u>607.8</u>	<u>227.9</u>	<u>100.0</u>
Percentages	<u>100.0</u>	<u>68.3</u>	<u>31.7</u>	<u>43.2</u>	<u>56.8</u>		
Emergency	102.5	73.0	29.5	26.1	78.4	31.3	13.7
Health	120.6	63.4	57.2	13.9	106.7	24.1	10.6
Sanitation	21.7	11.6	10.1	4.3	17.4	4.7	2.1
Housing	264.9	245.3	19.6	47.6	217.3	84.5	37.1
Transport	8.4	5.0	3.4	1.7	6.7	2.4	1.1
Education	95.5	89.7	5.8	13.5	82.0	25.7	11.3
Energy	6.0	2.0	4.0	1.3	4.7	0.4	0.2
Communications	42.1	8.8	33.3	8.1	34.0	1.9	0.8
Public buildings	39.4	36.6	2.8	7.8	31.6	12.1	5.3
Agricultural	8.1	5.2	2.9	7.4	0.7	1.2	0.5
Industry	45.2	37.1 ^{b/}	8.1	21.0	24.2	4.7	2.0
Buildings and trade	310.0	148.0	162.0	310.0	-	33.3	14.6
Monuments	5.1	4.7	0.4	1.0	4.1	1.6	0.7

Source: Annex and ECLAC estimates.

a/ Millions of dollars.

b/ Includes 25.0 million dollars to provide funding for small commercial or informal sector enterprises, and for the small and medium size industrial enterprises or handicrafts.

