United Nations Development Programme

Sustainable Human Development

A Preliminary Assessment of Damages caused by Hurricane "Mitch"

Prepared by the United Nations Development Programme (UNDP) and
The Economic Commission for Latin America and the Caribbean (ECLAC)
For the IDB Consultative Group Meeting for the Reconstruction of Central America

1. Overview

On 24 October Atlantic Tropical Storm Mitch was upgraded to Hurricane status and transformed itself into one of the strongest and most damaging storms ever to hit the Caribbean and Central America During the following week it swept across Honduras, Nicaragua, Guatemala, El Salvador, Belize and Costa Rica, even while the eye remained some 150 km offshore. It then became stationary off the Caribbean coast of Honduras, causing torrential rains, flooding, landslides and high intensity winds. At its height, on 26 and 27 October, the hurricane reached Category 5 (the highest), one of only four hurricanes to reach this level during the 20th century in a region often hit by tropical storms During this period it sustained winds of almost 300 km per hour and dumped heavy rains all over Central America.

The effects of the natural disaster were aggravated by man-made factors. Population pressures had resulted in large-scale deforestation and the cultivation of marginal lands without proper soil conservation. These conditions left communities vulnerable to deadly floods and mudslides. Flooding was aggravated by lack of adequate watershed management.

The poor bear the brunt of disasters like "Mitch" since they have restricted access to land and often must live in marginal, high-risk areas, such as the banks of rivers and in gullies Many of the poorest have been hit twice, as "Mitch" washed away both their homes as well as their sources of income "Mitch" aggravated pre-existing social conditions, such as unequal access to employment, land and social services. The recovery process should incorporate a balance between the immediate needs for rehabilitation and the need to improve the underlying social and economic relations.

2. The Humanitarian Toll

Preliminary estimates reveal the following humanitarian impact in the most affected countries:

	Honduras	Nicaragua	Guatemala	El Salvador	Total
1. Dead	7,007	2,863	268	240	10,378
2. Missing	8,052[1]	948	121	19	9,140
3. Wounded	11,998	388	280	n a.	12,666[2]
4. In Shelters	285,000	65,271[3]	50,000[4]	55,864	456,135
5. Total Evacuated	617,831	370,641	108,594	84,316	1,181,382
6. Total Affected Population[5]	4,753,537[6]	867,752	734,198	346,910	6,702,397
7. Total Population[7]	6,203,188	4,492,700	11,645,900	6,075,536	28,417,324
8. Percentage Affected	76 6	19 3	6.4	5.7	23.6

[1] As of 9 November 1998
[2] Does not include wounded for El Salvador.
[3] As of 26 November 1998
[4] As of 15 November 1998
[5] Includes the dead, injured and homeless as well as those who suffered material and economic losses Source for definition: ECLAC
[6] This includes both the primary affected population (estimated at 2 1 million in OCHA Situation Report #14) and the secondary affected population. which includes city inhabitants still without basic services.
[7] Estimated as October 1998; source: CELADE

3 Direct and Indirect Damages

"Mitch" left behind an unprecedented loss of life, devastation and ruin. The quantification of its many damages is an on-going process. UNDP and ECLAC have prepared this executive summary, using the best estimates available, in order to provide an idea of the magnitude of the destruction but not the costs of reconstruction. The figures shown are, by definition, preliminary. More refined and detailed information will be presented during the Consultative Group meeting. The following represents the preliminary technical opinion of ECLAC, at the time of its missions to each country, of the direct and indirect damages[8] in both the private and public sectors It does not include immediate emergency costs.

The initial ECLAC missions were sent to El Salvador, Guatemala, Honduras and Nicaragua. A mission to Costa Rica will take place beginning 13 December, and will concentrate on indirect damages from reduced economic ties with its neighbours, including fewer exports, lack of access to primary inputs and non-payment of commercial debt. Official estimates set direct damages due to "Mitch" at US$ 113.1 million, concentrated mainly in the agricultural and infrastructure sectors (US$ 59.5 million and 41.5 million, respectively) The energy, manufacturing and trade sectors are still to be evaluated.

Belize did not suffer the most devastating effects of "Mitch". However, heavy rains and gusty winds took their toll on the fragile tourism industry, roads and education facilities (which were used as shelters during the crisis) A total of 75,000 were evacuated and no casualties were reported. Immediate needs relate to the prevention of potential health hazards such as vector-borne diseases and cholera.

3.1 Regional Summary of Damages

TABLE 1: CENTRAL AMERICA - SUMMARY OF DAMAGES (US$ millions)

SECTOR	DIRECT DAMAGE	INDIRECT DAMAGE	TOTAL DAMAGE
TOTAL	**3,096.5**	**2,264.3**	**5,360.8**
SOCIAL SECTORS	**547.2**	**792.3**	**1,339.5**
Housing	444 9	707.7	1,152.6
Health	59.7	74.1	133.8
Education	42.5	10.5	53.0
INFRASTRUCTURE	**610.2**	**430.3**	**1,040.5**
Roads, bridges, railways	535.4	385 1	920.5
Water and sanitation	47.3	16.6	63.9
Energy	27.7	28.6	56.3
PRODUCTIVE SECTORS	**1,871.7**	**1,041.1**	**2,912.8**
Agriculture, livestock, fisheries and forestry	1,759.0	510.5	2,269.5
Manufacturing Industry	32.8	301.9	334.7
Trade, Restaurants, Hotels	79.9	228.7	308.6
ENVIRONMENT	**67.3**	**0.7**	**68.0**

"Mitch" caused the widespread destruction of water distribution and sanitation systems, health care centres, schools and other social infrastructure. It compounded existing chronic housing deficits. Stagnant water has led to increased incidence of water-borne diseases and enhanced the threat of

[8] **Direct Damages:** all damage to fixed assets (including property), capital and inventories of finished and semi-finished goods, raw materials and spare parts which occur simultaneously or as a direct consequence of the natural phenomenon causing a disaster. The destruction of crops ready for harvesting must also be valued and included as direct damage.
Indirect damages: damage to the flows of goods and services that cease to be produced or provided during a period of time beginning almost immediately after the disaster and possibly extending into the rehabilitation and reconstruction phase. Any calculation should extend to the period needed to restore all or part of production capacity. It includes the costs or increased costs as well as losses of income as the result of the impossibility or difficulty in producing goods or providing services.
Source of Definition: ECLAC

dengue fever, cholera and malaria. School attendance rates will decrease due to infrastructure damage and to decreases in family income. All the countries suffered some degree of damage to road systems, resulting in the interruption of the trade flows within the region. Damages in the energy sector range from the temporary closing of plants to systematic energy rationing. Most of the losses in the productive sector relate to agriculture. The destruction of plantations and crop fields has resulted in increased unemployment and reduction in the foodstuffs available for poor families. Reduced exports among the Central American economies constitute important indirect costs to the productive sector to the region as a whole.

3.2 Summaries of Direct and Indirect Damages by Country

In El Salvador, the preliminary data shows most of the damages occurring in the agricultural sector, representing a mainly rural phenomenon Some indirect costs to industry and trade will occur due to the reduced markets for exports.

TABLE 2: EL SALVADOR – SUMMARY OF DAMAGES (US$ millions)

SECTOR	DIRECT DAMAGE	INDIRECT DAMAGE	TOTAL DAMAGE
TOTAL	**137.1**	**124.8**	**261.9**
SOCIAL SECTORS	**6.3**	**14.7**	**21.0**
Housing	3.6	8.9	12.5
Health	1.6	5.5	7.0
Education	1.1	0.3	1 4
INFRASTRUCTURE	**23.8**	**49.3**	**73.1**
Roads, bridges, railways, telecommunications	22.1	48.3	70.4
Water and sanitation	1.6	0.7	2.3
Energy	0.1	0 3	0.4
PRODUCTIVE SECTORS	**100.1**	**60.5**	**160.6**
Agriculture, livestock, fisheries and forestry	100 1	4.3	104 4
Manufacturing Industry	0.0	28.2	28.2
Trade, Restaurants, Hotels	0.0	28.0	28.0
ENVIRONMENT	**6.9**	**0.3**	**7.2**

Guatemala also shows most losses corresponding to the agricultural sector, chiefly coffee, bananas, melons, and basic grains. Close attention is being given to the impact of "Mitch" on especially vulnerable populations such as returned refugees and the internally displaced and to minimising the risk that the gains made by these populations as a result of the peace process, will be eroded.

TABLE 3: GUATEMALA – SUMMARY OF DAMAGES (US$ millions)

SECTOR	DIRECT DAMAGE	INDIRECT DAMAGE	TOTAL DAMAGE
TOTAL	**283.2**	**279.5**	**562.7**
SOCIAL SECTORS	**39.5**	**15.1**	**54.6**
Housing	24.5	10.8	35.3
Health	7.6	3.8	11.4
Education	7.4	0.5	7.9
INFRASTRUCTURE	**56.0**	**59.5**	**115.5**
Roads, bridges, railways, telecommunications	40.1	49.6	89.7
Water and sanitation	10.5	5.6	16.1
Energy	5.4	4.3	9.7
PRODUCTIVE SECTORS	**182.6**	**204.9**	**387.5**
Agriculture, livestock, fisheries and forestry	176.8	173.7	350.5
Manufacturing Industry	2.8	16.2	19.0
Trade, Restaurants, Hotels	3.0	15.0	18.0
ENVIRONMENT	**5.1**	**N/A**	**5.1**

Honduras demonstrates an unparalleled degree of direct and indirect damages that constitutes a direct threat to the economic viability of the country. The greatest losses are in agriculture, where not only crops have been lost but the topsoil itself gone, washed away by the torrential rains Banana production, a chief source of monthly income, will take 16 to 18 months to recuperate, while fields are cleaned of debris, topsoil replaced and new seeds planted These losses as well as the infrastructure damage will have a sustained impact on the rest of the economy, especially small business, and will reduce per capita income.

TABLE 4: HONDURAS- SUMMARY OF DAMAGES (US$ millions)

SECTOR	DIRECT DAMAGE	INDIRECT DAMAGE	TOTAL DAMAGE
TOTAL	**2,177.4**	**1,461.1**	**3,638.5**
SOCIAL SECTORS	**305.4**	**719.4**	**1,024.8**
Housing	259 1	675.3	934.4
Health	25.6	36.7	62.3
Education	20.7	7.4	28 1
INFRASTRUCTURE	**347.6**	**164.2**	**511.7**
Roads, bridges, railways, telecommunications	314 1	140.0	454.1
Water and sanitation	24 2	7 2	31.3
Energy	9.3	17.0	26.3
PRODUCTIVE SECTORS	**1,477.6**	**577.1**	**2,054.8**
Agriculture, livestock, fisheries and forestry	1,387 3	274 2	1,661.5
Manufacturing Industry	15.8	196 3	212.1
Trade, Restaurants, Hotels	74.5	106.7	181.2
ENVIRONMENT	**46.8**	**0.4**	**47.2**

In Nicaragua damages are concentrated in the infrastructure sector, especially housing and roads, where conditions had already deteriorated. There is also significant damage to the productive sectors, namely agriculture, livestock and fisheries. The magnitude and economic implications of the disaster are severe and will be felt for several years. "Mitch" also aggravated the already precarious conditions in health care, water and sanitation Reconstruction costs will be above and beyond normal reposition costs. The Nicaraguan Government has estimated that public sector infrastructure and housing construction will amount to no less than US$ 1.3 billion.

TABLE 5: NICARAGUA – SUMMARY OF DAMAGES (US$ millions)

SECTOR	DIRECT DAMAGE	INDIRECT DAMAGE	TOTAL DAMAGE
TOTAL	**498.8**	**398.9**	**897.7**
SOCIAL SECTORS	**196.0**	**43.1**	**239.1**
Housing	157.7	12 7	170.4
Health	25 0	28.1	53.1
Education	13.3	2.3	15.6
INFRASTRUCTURE	**182.9**	**157.3**	**340.2**
Roads, bridges, railways, telecommunications	159 0	147.2	306.3
Water and sanitation	11 0	3.1	14.1
Energy	12.9	7.0	19.9
PRODUCTIVE SECTORS	**111.4**	**198.5**	**309.9**
Agriculture, livestock, fisheries and forestry	94.8	58.3	153.1
Manufacturing Industry	14.2	61.2	75.4
Trade, Restaurants, Hotels	2.4	79.0	81.4
ENVIRONMENT	**8.5**	**N/A**	**8.5**

4. Towards Rehabilitation and Reconstruction

Central America is a disaster prone area where climatic anomalies and geological phenomena are common. There is a growing international consensus that a global process of climate change may be partially responsible for especially violent events in recent years, such as the El Niño phenomenon in 1997-98 and an unusually virulent hurricane season in 1998. A dozen powerful tropical depressions and hurricanes occurred during September and October of this year and their impact was magnified by damage caused previously by El Niño.

Working with the best estimations of damage costs, reconstruction programmes will reflect national needs and priorities and will address the key objectives of timely and efficient absorption of the adverse effects of Hurricane Mitch and the reduction of risk and vulnerability so as to avoid similar consequences in the future. Efforts will ideally focus not only on the rehabilitation of damaged infrastructure but also on reducing the vulnerability of the poorest segments of the population and on addressing environmental factors which exacerbate the effects of disasters. This can be done by focussing efforts on issues such as secure resettlement for the displaced, integrated watershed management, reforestation, and capacity building for disaster mitigation and prevention.

Reconstruction strategies should support more just and sustainable development models, in which the reduction of exposure to the effects of natural disasters is taken into account Consideration ought to be given to particularly vulnerable groups, such as children and women, and to the gender-differentiation of the effects of disasters The incorporation of children and gender considerations can expand the presence of agents for change and promote new criteria and values such as an enhanced concern for sustainability and reduction of vulnerabilities. Women serve as natural leaders during emergencies as shelter organisers and administrators and conduits for rehabilitation. These capacities could be enhanced during rehabilitation and reconstruction, through the encouragement of greater participation of women at the communal and neighbourhood level.

"Mitch" has highlighted the importance of adequate institutional and organisational schemes for mitigating the impact of disasters, both at the central and community levels. Casualties were lower in areas where early warning systems and community organisation for disaster response had been established Decentralisation should facilitate reconstruction and local development. Availability of reliable geographical, social and economic information for prevention and response has also been shown to be an important factor that can save lives and livelihoods.

Some aspects of the recovery process would benefit from analysis at the sub-regional level, such as the reconstruction and improvement of the Central American transportation network, electricity, watershed management, environmental management, disaster preparedness and mitigation and sanitary controls.

The preliminary damage figures contained in this executive summary do not represent the costs of reconstruction. These needs will be reflected in the national reconstruction programmes, in accordance with each country's own priorities, bearing in mind that improvements in infrastructure, disaster mitigation and preparedness will be key elements.