

CHAPTER 9

THE DAMAGE TO THE ECONOMY OF THE PHILIPPINES

9.1 The trend of the economy and the impact of disasters during the period 1987-1991

According to the Asian Development Bank (ADB, 1991b), after the critical period of 1983-1986 the economy of the Philippines began to recover in 1987, slowing down again from 1989 onward. The slowdown is explained by the decrease of investments, exports and industrial growth. Beyond these factors, the progressive drop in growth rates was aggravated by a number of disasters which affected the country.

The 1989 drought lowered agricultural production with negative effects over the first half of 1990 and the consequent increase of food prices. In July 1990 a strong earthquake caused numerous casualties, widespread destruction and disastrous effects on the local economy in Central and Northern Luzon provinces. Because of these events, the growth rate of the GNP was 3.7 percent, compared to the planned 6.5 percent of the updated Medium-Term Philippine Development Plan (1988-92). The 1990-1991 Gulf crisis by increasing oil prices worsened the country's balance of payments and decreased workers' remittance from the Middle East.

The June 1991 eruption of Mount Pinatubo, however, was the most catastrophic event. First, the immediate and destructive impact of the ashfall heavily affected agriculture and private property in Central Luzon, practically destroying its economy. Second, the sequence of mudflows activated by monsoon rains brought devastation to a distance of 45-50 km from the crater, where the ashfall only had a marginal impact.

Because of the above phenomena and their combined effects, the GNP growth rate which had already lowered to 3.7% in 1990, was expected to drop to 1.1% in 1991, from the projected estimate of 1.4 (ADB, 1991b). The decelerating trend of the economy was also induced by the destruction yearly brought by typhoons, which caused several hundred Million US\$ damage during each year of the period 1987-1990. Table 9.1 lists the damage to the economy of the Philippines during 1987-1991, due to these major domestic disasters and the Gulf crisis.

The loss of nearly 4 billion US\$ during the period 1987-91 (Note a, Table 9.1), due to the combined effects of national disasters and the Gulf War, definitely hampered the recovery efforts of the economy; more than 3 billion of this amount occurred in 1990-91, about 1.5 billion US\$ per year. Over a Gross National Product of 28.6 billion US\$ in 1990, this represents a loss of more than 5 percent. This is lower than the expected 6.5 percent growth rate in 1990 (updated Medium-Term Philippine Development Plan, 1988-92), but greater than the actual 3.7 per cent growth rate in that year.

Beyond the direct damage which is clear from these figures, there were severe long-term effects due to the disruption of the human environment, which is the essential framework of an agriculturally-based economy. The earthquake and the eruption directly affected nearly 3 million people in various ways, knocking down the economy of Central Luzon, a region which accounts for 60 percent of the production of the Philippines. According to the Task Force Report, as of August 1991 (ADB, 1991b), «It should be noted that due to substantial permanent and irreparable damage (by Pinatubo's eruption) suffered by the agriculture sector in the region, the total agricultural production losses over the next five years may be valued at about 890 million US\$».

TABLE 9.1 - Damage to the economy of the Philippines during the 1987-1991 period, billion US\$

Typhoons	1.26
July 1990 earthquake	0.64
Gulf crisis (1990-91)	0.38
June 1991 Mt. Pinatubo eruption	0.71
Immediate production losses due to earthquake and eruption	0.71
Total	3.70
<p>a) typhoon-related damage in the 1991 is not included. a preliminary figure, however, puts the 1991 damage at over 250 million US\$, thus bringing the total loss to nearly 4 billion;</p> <p>b) Exchange rate 1 US\$ = 25 Pesos (1991)</p>	

The earthquake and eruption-related production losses in the various sectors of the economy, during the period 1992-1996, are likely to exceed 2 billion US\$. The total cost of the reconstruction and rehabilitation can be estimated at over five billion US\$.

9.2 The damage caused by the 1990 Luzon earthquake.

Several domestic and international research groups evaluated the economic damage caused by the July 1990 earthquake. Results show a certain scatter due to different investigation methods and the composition of investigating teams. Based on these studies a comprehensive evaluation of earthquake induced damage is given below.

There was considerable damage to houses, buildings and structures in general. Baguio and the coastal area between Agoo and San Fernando in La Union suffered heavy destruction, while Cabanatuan City located near the first epicenter recorded only the collapse of the Christian School and few casualties. The liquefaction in the Central Plain, instead, involved an area of over 1,500 square km, while landslides in the mountainous provinces occurred in an area of 10,000 square km.

About 1.25 million people were affected and 100,000 houses were damaged. Most of the casualties occurred in Baguio district and several were due to landslides.

The road network was seriously affected by the collapse of bridges or their approach embankments and by the failure of innumerable slopes. Dams near the ground rupture zones and near Baguio City suffered various negative effects, such as cracks and numerous landslides within the catchment basin; a nearly complete siltation of the Ambuklao reservoir (near Baguio) forced the shutdown of electricity production and hampered irrigation activities.

The damage to the environment was severe, due to the widespread slope denudation in the Central Cordillera and Caraballo Mountains. In these two ranges, together with the sliding of the regolith layer, trees were uprooted over extensive areas. The major part of the damage to the environment was not economically quantifiable, consisting of the destruction of resources, such as topsoil and natural vegetation which are not renewable in the short term.

The overall damage, based on various sources including JICA (1990), DPWH (1991) and Author's investigation, is summarized in Table 9.2. Damage to infrastructure accounted for some 40 percent of the total, agriculture less than 10, and private property and industry sectors suffered nearly half of the total damage.

TABLE 9.2 - Damage due to the July 1990 earthquake	
	Million US\$
Agriculture	57.0
Crops	22.0
Fisheries	16.3
Livestock	1.6
Irrigation	4.0
Others	13.1
Infrastructure	273.8
Roads/highways/bridges	138.9
Schools/hospitals/government buildings	134.9
Private property	158.2
Industry, commerce mining and tourism	148.0
Industry and commerce	104.0
Mining	21.1
Tourism	22.9
	Total
	637.0
<small>a) the total loss was rounded to 0.64 billion US\$ in Table 1; b) Exchange rate 1 US\$ = 25 Pesos (1991).</small>	

9.3 The damage induced by the 1991 eruption of Pinatubo

The large ashfall which blanketed Central Luzon provinces caused primary damage followed by destructive mudflows (lahars) activated by the monsoon rains soon after the eruption. Within the heavily affected area (550,000 ha) the cover varied from several meters thick near the crater to some 5 cm at a distance of 40 km. About 385,500 ha of agricultural land (ADB, 1991b) were badly damaged by the ashfall and the later mudflows (near the downstream courses of the major rivers radiating from the crater).

Around 200,000 people were evacuated from the most critical zones near the volcano, 300 evacuation centers were established by the government and a state of calamity was declared in 58 municipalities. Agriculture was the most severely affected sector of the economy. According to the ADB, agriculture accounts for 27 percent of the GDP and over 50 percent of total employment. Half of the new jobs

TABLE 9.3 - Damage and losses due to the 1991 eruption of Mt. Pinatubo

Million US\$	
Agriculture	424.5
a) Damage to agricultural production	229.7
1) Crops (Rice, vegetables fruit trees, sugarcane)	44.7
2) Livestock	2.4
3) Poultry	2.4
4) Fishery	2.3
5) Forestry	177.9
b) Foregone revenue in Agricultural Production	179.6
c) Damage to the Facilities of the Department of Agriculture	4.6
d) Damage to Irrigation Facilities	10.6
Industry	15.3
1) Agri-based industry	6.9
2) Others	8.4
Infrastructure	66.5
1) Roads, Highways and bridges	25.6
2) Water distribution network	4.5
3) Schools	34.8
4) Hospitals	1.6
Private property	205.1
Total	711.4
Data on agriculture and industry derived from the Report of the Task Force (ADB, 1991a). Exchange rate 1 US\$ = 25 Pesos (1991). Data expressed in million US\$	

are created in the agricultural sector and most of the demand in industry and services is generated by agriculture and related activities. Agriculture accounts for 25 percent of export earnings. Four sectors of the economy were severely affected by the eruption (Table 9.3)

9.4 Overall economic losses caused by earthquake and eruption

The disasters of 1990 and 1991 were complementary, both geographically and in terms of the sectors of the economy most affected. Together they caused widespread general devastation of Central and Northwestern Luzon.

TABLE 9.4 - Damage due to the disasters of 1990 and 1991			
Sector	Damage by the 1990 quake	Damage by the 1991 eruption of Pinatubo	Total damage Million US\$
Agriculture	57.0	424.5	481.5
Private Property	158.2	205.1	363.3
Infrastructure	273.8	66.5	340.3
Industry and Commerce	148.0	15.3	163.3
	Total	637.0	711.4
			1,348.4
Note Exchange Rate 1 US\$ = 25 Pesos (1991).			

Table 9.2 shows that July 1990 tremors were most destructive for the infrastructure sector (43%), and significant for the industry (23%) and private property (25%) while the damage on agriculture (9%) was marginal. The destruction associated with the quake mostly affected the mid-northern part of the Central Plain and northwestern Luzon provinces.

Table 9.3 shows that the Pinatubo eruption was catastrophic for the agricultural sector (60%), and that damage to private property was considerable (almost 29% of the total), while damage to industry and infrastructure was relatively smaller (11%). The areas most heavily affected were Pampanga and Bulacan provinces in the western part of the Central Plain and the provinces of Bataan and Zambales, south and west of the crater, respectively. Table 9.4 shows the total damage by sector.

Agriculture was most heavily affected, absorbing more than one third of the cumulative damage, followed by Private Property and Infrastructure sectors with about a quarter each. Industry and commerce suffered only about a tenth of the total damage.