

V. EMPLOYMENT AND INCOME

1. Introduction

A rapid measurement of the possible impact on employment and income of a disaster is very difficult. Therefore, the decision has to be made only to carry out estimates of the labor force of the country or region affected, exposed to instability in sources of employment and income.

The information thus obtained – which is based on secondary data – must be complemented with information directly collected in the field affording an approximation of the situation of employment and employment generation in those branches of economic activity that, because of their nature and prevalence in the affected area, complete the picture of the employment situation after the disaster. Later, corresponding detailed measurements must be made, requiring time for preparation and the definition of the best moment for application and processing.¹ Often, these aspects also require time and sometimes this prevents the information being taken into account in decision taking in policies related to the repair and reconstruction phases after the disaster.

There is no doubt that being able to have timely information ensures the development of criteria and guidelines to facilitate the recovery of employment in repair and reconstruction plans, by focusing actions on the most affected areas and sectors. The idea being that the dynamics of employment recovery are not limited to being a variable of indirect adjustment – a product of investment in reconstruction – that does not sufficiently consider for how long the affected population sectors are affected, their location, and their type. There is no other way to implement complementary mechanisms that can help to bring about a greater impact on the economic recovery of the most affected areas, and thereby stem potential migratory flows that often happen when there are delays in employment recovery. Such migration contributes to expanding the poverty belts around outlying urban areas, and to render even more precarious the options available to these population groups to undertake their own micro process of family reconstruction, a subject not covered in macroeconomic disaster analysis.

In other words, the information thus generated provides those who take decisions in employment with data on the types of damage and the orders of magnitude of the problem.

¹ The conditions of accessibility or communication with the affected area must be taken into account, and those affected must not be bombarded with multiple surveys and questionnaires during highly sensitive moments because of their situation.

2. Estimation of the overall impact or vulnerable employment

A preliminary response to the problem requires an estimate of the population exposed to the damage caused by the disaster, in terms of vulnerable employment. An approximation may be obtained by relating the effects on the housing and population affected with the economically active population (EAP) of the areas hit, and with such vulnerability indicators as total poverty, the unemployment rate, and female employment.

The procedure to be followed involves determining the percentage of primary and secondary affected population – to then determine the exposed EAP, whether because of direct loss of employment, reduction in income, or income that could be lost or reduced. The exposed EAP is estimated as the total EAP of the affected area, multiplied by the percentage of primary and secondary affected population.

Thereafter the vulnerable EAP must be estimated by combining the figure on the exposed EAP and the percentage of total poverty or poverty index.

Later, the factors that aggravate the vulnerability of employment and income must be determined. For this, there must be information on the percentages for female employment, general unemployment, and the damage to housing within the area or areas affected. This is the case because the situation of salaried women workers, the difficulty in finding employment, and the economic burden of repairing and reconstructing housing, aggravate the population's vulnerability.

The following table presents an example of an analysis of the global impact on employment and income, by illustrating how to estimate the economically active population vulnerable after a disaster, using the case of the January 13, 2001 earthquake in El Salvador.

SECTION FIVE: OVERALL EFFECTS OF DAMAGES

Table 1
Estimation of the economically active population vulnerable to loss of employment and income in El Salvador as a result of the January 13, 2001 earthquake.

	Primary and secondary affected population	Exposed PEA ²	Total Poverty	Vulnerable PEA ³	Factors aggravating vulnerability ⁴		
					PEA Women	Unemployment	Damaged Housing
Departments	%		%		%	%	%
Usulután	96.07	120,230	55.8	67,088	36.5	8.7	71.3
La Paz	76.03	82,624	49.3	40,734	38.0	6.3	63.0
La Libertad	21.2	57,093	32.9	18,783	42.4	6.5	20.4
Sonsonate	21.4	37,151	60.5	22,476	37.6	7.2	25.9
San Vicente	55.9	33,117	39.9	13,213	32.3	7.3	64.4
Ahuachapán	21.0	22,884	60.3	13,799	28.2	8.5	14.3
San Miguel	12.8	22,226	44.6	9,912	36.4	6.5	11.7
San Salvador	2.0	16,920	28.4	4,805	45.1	7.0	2.7
Santa Ana	6.9	14,892	45.7	6,846	36.3	7.7	6.2
Cuscatlán	18.1	14,349	39.9	5,725	41.8	6.9	20.6
TOTAL		421,486		203,381			

Source: ILO estimates based on official information and the mission's own estimates.

As can be seen, the table presents the results of the vulnerable EAP broken down by affected geopolitical unit. The basis for these calculations includes the prior determination of the primary and secondary affected population, the estimation of which is described in the section on population; the use of the poverty index, a figure usually available in the countries' Statistics Offices or in human development reports presented by the United Nations Development Program (UNDP); the use of figures related to paid female employment and total unemployment, once again figures found in the aforementioned sources; and, finally, information on damage to housing, obtained from the assessment carried out by the specialist in the housing and human settlements sector.

These global estimates require, on the one hand, that the employment specialist obtain basic statistical information from the proper national or international sources indicated above. On the other hand, there must be close co-operation between the employment specialist and the mission specialists working with population and housing and human settlements. This is essential to be able to produce the results shown in the previous example.

² Identifies the sector of the EAP that might have been affected by: lost employment + fall in income + income susceptible to loss or reduction. Estimated as: Total EAP x % primary and secondary affected population.

³ Identifies the sector of the Exposed EAP whose recovery of damage suffered is more difficult because of their levels of poverty. Estimated as: Exposed EAP x poverty rate

⁴ The situation as working women, the difficulty of finding employment, and the economic burden of the rehabilitation or reconstruction of dwellings aggravates the situation of vulnerability.

3. Estimates of losses of employment and income on the sectoral level

In some cases coefficients are available linking the volume or value of production lost in each sector with the number of jobs involved. However, most commonly such relationships or sufficient time to derive them for the case under analysis are not available. Therefore, indirect procedures must be used to carry out the estimates of loss of employment in each one of the sectors or activities affected and even in reconstruction activities, where normally a greater use of both qualified and on qualified labor is required.

There follow some examples of calculations or estimates of loss of employment and income for typical productive sectors, permitting application of the estimation methodology to other similar sectors with only adaptations by the employment specialist.

a. Micro, small and medium-sized enterprises (MSMSE)

In developing countries, dwellings commonly accommodate a range of productive activities that generate income for their occupants. Therefore, references to “productive homes” are common.

For the lowest-income population groups, such productive homes are the location for informal markets, wholesale stores, service establishments, etc. Damage to housing causes the interruption of such productive activities, the total or partial loss of stocks or product inventories, and the potential increase in transportation costs in those areas where access roads have been blocked or severely damaged. In addition to the loss of sources of employment or income that this generates, there is a risk of the relative income of other population groups falling due to greater costs, a lack of supply, and speculation in inputs and other daily consumption goods. This latter type of problem – price rises and supply shortages – does not arise immediately after the disaster because the timely distribution of food aid and emergency supplies help to contain it. However, it appears some time later, generally tied in with the beginning of reconstruction activities. This means the population affected by a disaster suffers a double penalty or loss as the cost of “family reconstruction” increases.

The procedure to estimate the loss of employment or income in this sector requires the availability of basic statistical information, normally obtainable from business surveys of micro, small, and medium-sized enterprises, regarding the number of people employed by type of enterprise, and the relationship between the number of such enterprises and the housing accommodating them.⁵ Sometimes, when the disaster happens rapid surveys must be taken by businesspersons’ associations, properly directed or at least co-ordinated by the employment specialist, to obtain information on the damage suffered by members. When

⁵ For example, 1.5 employees per subsistence and simple accumulation microenterprise; 3.5 employees per broad accumulation microenterprise; 25 employees per small enterprise. Moreover, statistics show that in this case there is one such enterprise for every 20 dwellings.

SECTION FIVE: OVERALL EFFECTS OF DAMAGES

combined with the information produced by the housing and human settlements specialist about the number of dwellings damaged or destroyed by the disaster, this allows the corresponding estimates to be made. To this end, the time periods required for the recovery of production in each kind of affected enterprise must also be estimated, and there has to be information available on the wages paid in each one. Obviously, there must be close co-operation between the employment specialist and the specialist in productive sectors to be able to co-ordinate these estimates.

The previous estimation example gives the following results:

- 1.82 jobs per establishment in 11,820 housing units destroyed where there are enterprises = 21,500 lost jobs;
- 30% of jobs lost per establishment only damaged in its installations, in 20,218 damaged housing units that accommodate enterprises = 11,040 lost jobs;
- An extra 25% of jobs put at risk in the damaged 20,218 units = 9,200 jobs at risk;
- 30% of the establishments destroyed are rebuilt in a three-month period, on average 1.5 months' employee wages being lost; 40% of establishments are rebuilt in six months, 4.5 months' income per worker being lost; and 30% of establishments see a 25% fall in the income of their workers after the sixth month (the first six months income being lost and reduced income for the following year). At a rate of one legal monthly minimum wage of US\$ 144 this gives a total for lost income of US\$ 16,254,000.
- 50% of establishments damaged are repaired in the first six months, with an average loss of three months' wages per employee; and the remaining 50% are repaired in the following six months, with an average loss of six months per worker. Combining these figures with the same legal minimum wage we have a total loss of income of US\$ 7,153,900.

Thus, it is estimated that in total 32,540 jobs were lost and another 9,200 jobs are at risk, giving lost income of approximately 23.4 million dollars over a period of between 6 and 18 months required for the repair of establishments. Given the fact that the female share of the employment sector is 65%, it can be seen how women were affected by this disaster. The following table summarizes the results of the previous estimates, losses being broken down by geopolitical division.

SECTION FIVE: OVERALL EFFECTS OF DAMAGES

Table 2
Impact on the employment and income of workers in MSMSE affected
by the January 13, 2001 earthquake in El Salvador

	Enterprises Destroyed	Enterprises Damaged	Jobs Lost	Jobs at Risk	Loss of Wages, US\$
Usulután	3,880	3,398	8,345	2,359	6,117,887
La Paz	2,853	3,668	7,557	2,137	5,485,730
La Libertad	1,985	1,633	4,936	1,396	3,624,167
Sonsonate	1,404	2,242	1,852	524	1,270,555
San Vicente	477	3,801	3,047	862	2,071,840
Ahuachapán	87	440	351	99	242,233
San Miguel	582	2,510	2,975	841	2,066,072
San Salvador	175	842	1,020	288	702,281
Santa Ana	128	156	335	95	242,935
Cuscatlán	229	1,265	1,257	355	864,864
TOTAL COUNTRY			32,540	9,200	23,407,920

Sources: 99 Survey of homes (unpublished), 1998 Directory of establishments, 2001 CONAMPYE report, and ILO estimates based on the mission's complementary figures.

b. Agricultural sector

The impact on employment in the agricultural sector comprises two factors. The first is related to losses in production, farmland, and damage to infrastructure. The second has to do with a combination of indirect factors such as the loss of not self-owned housing by workers in the sector when farm work has to be suspended or the pace reduced

The number of jobs lost in each agricultural productive activity must be determined based on the relationships between production and the reduction therein as a result of the disaster. This information is normally obtainable from countries' ministries of agriculture.

The figures above must be combined with estimates on the periods that each activity will require for recovery after the disaster and with the wages paid to workers in each one.

It must be noted that losses caused by the second factor cannot be measured directly. Therefore, it is very difficult to arrive at an estimate of jobs at risk in this sector.

The following loss of employment in the different agricultural activities was determined in the example that we have been using:

- Coffee picking, 2,015 jobs;

SECTION FIVE: OVERALL EFFECTS OF DAMAGES

- Work in coffee processing plants, 630 jobs;
- Artisan fishing, 1,527 jobs;
- Irrigation districts, 1,240 jobs; and
- Dispersed small irrigation systems, 215 jobs.

In line with the opinions of experts and local authorities, the following estimated periods for the recovery of activities affected by the disaster were established:

- Twelve months for coffee picking, which in this case actually represents the period that will be required for migration toward other labor sectors, because complete recovery of the activity is not expected due to reasons other than the disaster;
- Six months for the repair of the coffee processing plants that were severely damaged, three months for those that were seriously damaged, and no impact for those that suffered less significant damage;
- Three months for the return of biomass to areas where artisan fishermen can reach it, and to repair the sector's infrastructure, and
- Three months to repair irrigation districts and isolated small irrigation systems.

Taking into account the wages paid in each activity, the above permitted estimates of a total loss of 4,716 jobs and 2.9 million dollars in income as a result of the January 13, 2001 earthquake in El Salvador (See the geopolitical distribution of these losses in the following table).

Table 3
Employment and income losses in the agricultural sector caused by
the January 13, 2001 earthquake in El Salvador

Department	Totals		Irrigation districts		Small irrigation		Coffee processing plants		Coffee plantations		Fishing	
	Jobs	1,000 US\$	Jobs	1,000 US\$	Jobs	1,000 US\$	Jobs	1,000 US\$	Jobs	1,000 US\$	Jobs	1,000 US\$
National total	4,716	2,859	1,840	795	235	102	630	467	484	836	1,527	660
Usulután	1,166	571	515	223			70	52	35	60	546	236
La Paz	7	12							7	12		
La Libertad	2,691	1,687	1,325	572	76	33	440	320	305	527	545	235
Sonsonate	549	282			45	19	50	43	18	31	435	188
San Vicente	9	16							9	16		
Ahuachapán	165	94			114	49	50	43	1	2		
San Miguel	1	2							1	2		
San Salvador	20	9					20	9				
Santa Ana	108	187							108	187		

Source: ILO and ECLAC estimates based on official figures and own calculations

The examples above, taken from two key economic sectors in developing countries, show how to estimate employment and income losses caused by a disaster. In light of the huge variety of effects produced by different disasters, employment specialists – in close co-

SECTION FIVE: OVERALL EFFECTS OF DAMAGES

operation with housing and productive sector specialists – should adapt the procedures outlined here to specific situations.