

## C.15 Peru - 1970 - Earthquake

### Case study: Shelter construction

Case study credit:  
UNDRO 1982

**Disaster:**

7.9 magnitude earthquake  
Chimbote Peru

**Disaster date:**

31 May 1970

**Population pre-disaster:**

2,550,000

**Number of houses damaged:**

198,800  
Urban:83,500  
Rural:115,300

**Number of people displaced:**

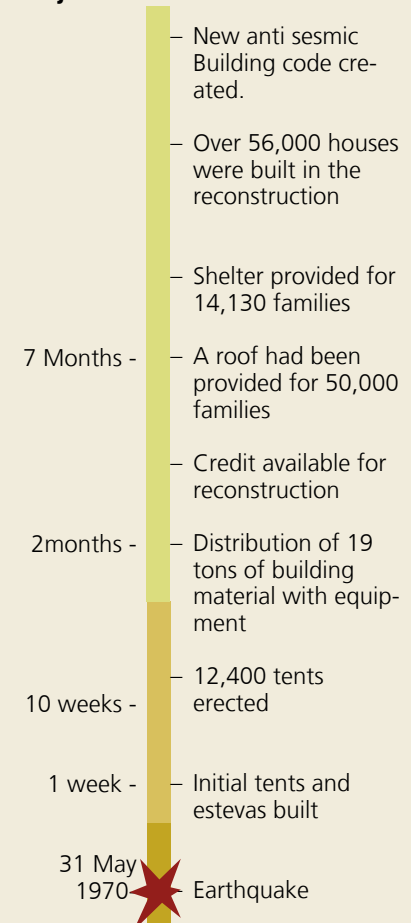
500,000

**Value of assistance:**

44 billion USD from all sources, for relief and reconstruction.



**Project timeline**



**Emergency**

The Housing Ministry established an emergency shelter committee to assess the damage, to provide temporary shelter and re-establish essential water, sanitation and other services. 12,400 tents were distributed along with 19 tons of building materials and 602 tons of building equipment and tools. Over 50,000 families received corrugated iron sheets for emergency shelter. Emergency camps were established by the Government, broken down into family units in a project called Operation Roof. These emergency shelters were formed from metal frames, with corrugated iron sheet roofing; 80% of the materials were re-used in permanent reconstruction.

**Reconstruction**

A government reconstruction commission was established. This commission was to link reconstruction with general development programmes (including industrial and agricultural projects). It also had the responsibility of establishing new seismic codes for all buildings. It did not to permit the repair of damaged adobe buildings, but encouraged the re-use of emergency shelter materials in reconstruction. Over 56,000 houses were built in the reconstruction. These were built by the government (10,600 houses), through loans (3180 houses), by other sources (2400 houses), and through roofing schemes (40,000)

**Strengths and weaknesses**

- ✓ Reclaimed corrugated iron sheets, and the woven timber and straw of the huts served a useful function, being re-used in permanent reconstruction.
- ✓ The Bayer/Red Cross polyurethane igloos were generally well received; 50 per cent were still in use six years after the earthquake, but had been modified through additions and alterations.
- ✗ The decision to halt all reconstruction activity in

- Huaraz until seismic micro-zoning studies and the master plan were completed seriously retarded the reconstruction process.
- ✗ The 16,180 conventional houses built were only accessible to middle class families.
- The government decision to relocate some towns, due to risks of further mud slides was logical but highly unpopular with those affected.