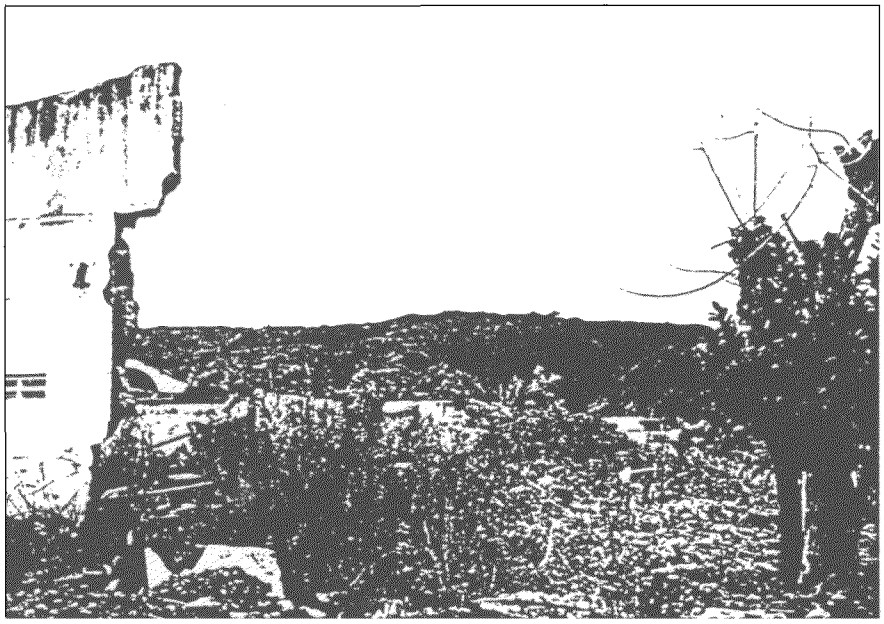
Besides Lerida other urban and several rural housing projects were under similar agreements assigned to individual donors: the Red Cross Societies of Switzerland, Germany, Bayern, Japan and France, but also other organizations such as the Lions Clubs, World Vision and Rotary International.



The town has been covered by mud and now only the ragged tops of the higher buildings stand above the hardened new soil.
photo Nimpuno

From the Colombian government's perspective this approach had many advantages. The foreign currency would help the national economy and a corresponding local money flow would be converted in capital investments to stimulate the Colombian economy. It would reduce the avalanche of unwanted goods that plague so many disaster hit countries. The mountain of unsorted drugs that already had arrived demonstrated the scope of the problem. The plan would also offer donors investment objects that could carry their proud flag and become visible proof of a proper use of donations.

The Dutch commitments were substantial and many suggestions for support projects of a Dutch project identification team were taken into account. The report recommended to emphasize structural support rather than short term relief and stressed specifically the importance of agricultural processing and commerce as priority areas.

The Dutch Red Cross funded the construction of an arcade block of shop houses, housing being a quite new area of disaster response for this organization. It also financed the construction of 18 houses in Colombia's second city Meddelin. DGIS financed and built a separate area of one story council houses along cul-de-sacs, while it considered a whole range of income generation schemes.

Rescue, public support and prevention.

International disaster assistance has long been the domain of Red Cross Societies with public generosity as the main source for its interventions. Rescue and medical work have always been the area of special competence of the Red Cross and that is still the case. The organization is experienced in fund raising. The public in industrialized countries identifies disasters abroad with medical help and in particular with the Red Cross. In a clear compliment to the Red Cross legacy a whole host of medical disaster

response organizations are now making a name for themselves.

As in other disasters, also in Armero some foreign medical relief workers tried to execute a vaccination campaign, ignoring the lack of medical justification for such action. This emphasis on rescue and on medical aid, rather than on rehabilitation relates to the prompt, but short lived, public generosity after disasters.

Disaster management however is not merely dressing mortal wounds, but also preventing the recurrence of the disaster. In other words preparedness and prevention are as much the task of disaster workers as rescue work is. Development planning requires however a quite different approach and knowledge than rescue work. It is also more difficult to fund as it does not enjoy the same public support as rescue work.

International disaster workers have in recent years been reconsidering their roles in the light of rehabilitation, prevention and preparedness. They rethink and learn to build and protect communities rather than just to attend the wounded. Structural support after disasters becomes therefore an element in development planning and requires initiating and facilitating a process rather than delivering a product.

The development of local resources, prevention measures and the process of growth and participation are ingredients that do not fit all too easily in the program of rescuers. In addition to that, it does not just concern the supply of facilities, but also the initiation of a process of growth that bears the seeds of sustainability within itself. It is in this light that the Dutch interventions after the Armero disaster are reviewed here.

Habitat development options after disaster.

Housing strategies after disasters.

The first interventions after disaster have the habit of setting long term patterns for development. Erroneous choices in the first weeks after disasters have proved to be very difficult to overcome in following years. But in the wake of major disasters it is difficult to make considered decisions that meet the crisis of the day and also offer solid solutions for the future. Such decisions are often taken by politicians and technicians with little background in development planning.

In recent years there have been lively international discussions about housing options after disasters, which have been summarized in a Dutch financed UNDRO study of 1982. Many extreme solutions, such as the importation of pre-fabricated emergency houses, were in the study shown to do more harm than good. There is now a consensus that there are a half dozen strategies to choose from to meet shelter needs after disaster, which are summarized here. The participation of dwellers in the housing process in planning, construction or in finance is seen as an essential element of housing after disaster. Due consideration must be given to the scope of the project, the level of local development, the avail-

ability and type of external assistance and national political factors. But no matter which form it may take, participation is accepted as essential.

a. Emergency shelter.
The first shelter needs after disaster are usually met by the victims themselves as close as possible to their original dwelling in an immediate improvisation with whatever material is available. In general, disaster victims resist evacuation and prefer to stay close to the remains of their homes. This is to a considerable extent related to the deep psychological importance of our habitat for our self identification. Hopes of protecting and recovering lost property plays a role, but the importance of the 'home' even after its destruction is very great.

Relief work during the first days focuses much on the shelter needs. The immediate provision of tents and blankets, to give cover at almost any location is an almost inevitable relief ingredient. The use of schools, meeting halls and similar public buildings to offer basic protection is another common measure of basic relief.

For the relief agencies it is usually the provision of elementary infrastructure that requires most efforts. Without safe waste disposal and clean water, public health will deteriorate swiftly; without basic communications, supplies and reconstruction work can not develop. In the first phase after disasters physical planners are therefore as urgently needed as medical workers. It is then essential to distinguish between the need to maintain public health and interventions that aim at a rehabilitation of a normal existence. It is often the blurring of these two elements that damages the long term development of the victim community.

b. Temporary housing.
Rapid provision of temporary shelter is one of the most common international responses to major disasters. It concerns pre-fabricated and imported solutions that offer shelter within a very short time. Temporary shelter options are often accepted as the result of donor pressure to import tents, caravans, plastic or aluminum huts. The results are not often satisfactory.

In harsh climates this solution may be necessary to protect survivors from additional health risks. Temporary housing fails however in most cases to gain acceptance, resulting in sometimes amazingly low occupancy rates. But when people move in, temporary housing tends to become permanent and is likely to result in slum developments. Once the survivors live in temporary housing they lose the attention of donors and are likely to be left to their own devices to improve their habitat. When they enter into their hut they disappear from the tv screen and become ineligible for further aid. As a result temporary housing becomes as permanent as any other form of housing and is therefore the least attractive of all support options.

c. Improved designs with local materials
There are some recent disaster projects with emphasis on traditional construction methods combined with modern improvements to reduce vulnerability. The advantage of using local materials and local technical know how are obvious. This approach makes the best use of local manpower and stimulates the local economy, it

teaches the local builders to reduce building vulnerability and can provide dwellings that suit the local way of life. It is foremost in rural areas that this options is successful.

d Aided Self Help Housing.
In countries with very limited resources, self help housing has become accepted as an integrated part of the general housing policies. It is recognised that only by combining the capacity of the dwellers with that of the housing industry it is possible to meet housing needs. After disaster it is therefore a wise option to use the strategy of self help housing. This can entail the provision of serviced plots on which the scheme participants themselves construct houses, assistance with design, supply of building materials, the organization of building groups or housing finance schemes with various types of price controls, subsidies and cross subsidies. This solution is far from universal and applies mainly in situations where the dwellers have time to spend.

Architects meet three years later in Ibague to learn from the mistakes in rehabilitation
photo Colombian Arch. Congress 1986

e. Core housing.
A core house may initially be just a wet unit and only one room but it is designed for a considerable later growth. One of the advantages of core housing is its rapid production of basic facilities with possibilities to adjust the house at a later stage to the individual needs of the dweller. The core is a permanent and hazard resistant unit, that offers basic shelter and fully fledged infrastructure services at minimal costs, leaving other resources for the development of the economic base and social structure of the community.

Core housing can be developed with or without dwellers' participation in construction. It is however always based on strong community participation in its long term development. It also offers a flexible design that in its later stages can accommodate individual requirements of dwellers. In urban locations it is quite common that construction of the core and most of its expansion is done by contractors or craftsmen. In rural areas self help building is common.

f. Conventional housing
Accelerated conventional housing is an approach that in few major disasters in developing countries is chosen. Avoiding the sequence of emergency shelter, temporary housing and permanent solutions, it relies on the dwellers to make do with their own improvisations, while the authorities prepare permanent housing. It makes use of the established building industry: architects, planners, contractors and local building materials. The recent programs in Armenia are an example of this solution. It is possible to execute the construction work through self help, as with the 1976 Guatemala earthquake. But it is more common to commission such projects to professionals, since it is complicated and not always economic to produce conventional houses through self help. Conventional housing is in developing countries an unusual response to disasters since it is costly. It also encounters victim resistance, because it requires in most cases resettlement.

Housing choices after Armero

The location of Armero town in the hazard zone ruled out reconstruction on the same site and resettlement was therefore a necessity. Now the question of choosing a housing policy arose. Resettlement was bound to be a long process of finding a site, develop a plan and design and build houses and in the meantime shelter had to be provided. Even temporary settlement on the old location was out of the question and the development of temporary camps was therefore justified. Generous international aid made it possible to do this and to develop permanent houses thereafter.

So from the above six housing options four remained :
- aided self help,
- improved indigenous housing,
- core housing and
- conventional housing.

The first option, aided self help housing, was never seriously considered, partly because Colombia has little experience with it and partly because the generous aid pledges made options requiring complete funding possible. The victims of the disaster were however staying idle for years in the camps and this solution would therefore have been worth to consider. The Dutch Red Cross chose aided self help for the small resettlement area of 18 houses in the city of Meddelin, a 2 hours drive to the North.

The second option of improved indigenous housing, was applied in a few schemes around Manizales at the other side of the volcano. It concerned an exciting solution of cement plastered bamboo buildings, developed by local architects as a radical improvement of traditional split bamboo structures. The new houses have long-legged bamboo frame and cement plastered split-bamboo walls, yielding a sophisticated light weight construction: very economic, modern and earthquake resistant. This technology and design will be discussed in a forthcoming DERC working paper. It offers one of the best examples of improved traditional construction seen anywhere. It was chosen for some rural resettlements and in a Manizales slum upgrading project. The majority of the Armero projects, in fact the whole Lerida scheme, used only conventional techniques.

Improved traditional housing.
Bamboo frame houses on steep slopes in Manizales
The frames are covered with split bamboo mats and then plastered with cement. Floors and bathrooms are tiled. The finished house looks like a concrete or brick block building.
Functional, modern, cheap, earthquake resistant and very local. A light house of local material.
photo: Ninguno

The third option: core housing would have been an obvious choice for Armero, offering a rapid delivery of professionally built infrastructure and cores, with enough capital left over for the development of an economic base and for continued finance of the habitat development. In many of urban housing studies, where self help construction was not a viable option, contractor built core housing were shown to offer a suitable alternative and much of these lessons would apply to the Armero projects. Some aspects of core housing were indeed included a few of the designs.

In the end 'accelerated conventional housing' was chosen as the main strategy and a review of the outcome raises, as we will see later, some doubts about its wisdom. A question that should be asked is why donors with a long experience in technical co-operation and development planning accepted solutions that are more product than process focused.