Switzerland, lying in the northern part of the Mediterranean earthquake zone, where the African and Euroasian continental plates clash, has for over 24 years been involved in international cooperation in disaster reduction. The experience gained in many missions in the aftermath of avalanches, landslides, floods and earthquakes led to a significant improvement of measures for disaster reduction.

I. National level

Within Switzerland the disaster rescue work at the front is done by the fire department in coordination with the police. According to the size of emergency situation the responsibility for the emergency management is situated on the level of local, regional or national political authorities. The fire department may ask for military support at the front. A military formation being on duty is always on alert.

In the back the civil protection is responsible for the evacuation of the injured and dead. The civil protection is working jointly with medical services. The civil protection place protected operating rooms, free field shelters and preparation facilities at disposal. The facilities and infrastructure of the civil protection are in full operation. They continuously are renewed to fulfil the demands of future emergency events. Today for every inhabitant in any town or village a protected place is at disposal.

Disaster-reduction drill and training continuously takes place at different levels and with different compositions of all the organisations involved. On a local basis the public is trained in civil protection exercises. Extensive regional or national exercises under the guidance of the political authorities with the fire department, the police, the civil protection, the medical services and the military are carried out periodically.

The research and development of measures for disaster prevention and reduction is a permanent task of the different organisations and of their specialised groups. The exchange of ideas at an international level, the cooperation with Swiss universities or within the frame work of international projects and the experience and competence gained in missions are of importance for improvements.

II. International level

As part of Swiss state aid, federal international humanitarian aid is an instrument of foreign policy which can be rapidly put into use throughout the world. It is a concrete expression of solidarity. In disaster or emergency situations, federal humanitarian aid to the needy can comprise direct missions on the one hand, and support of the activities of international organisations or Swiss aid organisations on the other. Aid is provided in the form of personnel from the Swiss Disaster Relief Unit (SDR), financial contributions as well as food and material supplies. Federal humanitarian aid is provided only outside Switzerland.

From an organisational point of view humanitarian aid provided by the Swiss Confederation is the responsibility of the Division of Humanitarian Aid and Swiss Disaster Relief (SDR). The mandate is defined in the federal law of 1976 concerning international development cooperation and humanitarian aid: through preventive and emergency measures, humanitarian aid should help to preserve the lives of human beings who are in
danger and to alleviate suffering through preventive and emergency aid measures. Such aid is intended for victims of natural disasters or armed conflicts.

Over the past few years events have led to an extension of the mandate. Among others humanitarian aid is provided in the following situations:

- natural disasters (earthquakes, volcanic eruptions, flooding, drought, extreme cold, tornados, landslides etc.),
- civil disasters (bursting of a dam, nuclear accidents, chemical accidents)
- disasters arising through armed conflict (war) as well as
- disasters arising through breakdowns in infrastructure or economic crises e.g. in countries in Eastern Europe

Federal humanitarian aid as an instrument provides direct aid on the one hand, and support to international and Swiss humanitarian organisations on the other. There are four forms of aid: personnel (SDR members), cash contributions, food and material supplies. Federal humanitarian aid is involved in four areas of activities: prevention, rescue, survival and reconstruction.

Direct missions comprise mainly personnel provided by the Swiss Disaster Relief Unit (SDR). Today the SDR has about 1,700 members, of which about 900 can be deployed at short notice. The remaining 800 are in reserve due to professional, family or other reasons.

Upon request from the country concerned or upon request from international organisations the SDR provides aid. It may also offer its services direct through Swiss representations or other channels.

According to their professional qualifications the members of the SDR are allotted to one or more of the nine specialised groups, namely medicine, construction, logistics, communications, rescue, environment/ABC, prevention, information and documentation, drinking water. For particular problems, task forces can be made up of people from various specialised groups (e.g. cholera task force, refugee task force).

Humanitarian aid is necessarily universal. Any country and all people will be considered as possible beneficiaries. The basic criterion is that an emergency situation exists. Aid is provided according to the principle of non-discrimination, i.e. regardless of nationality, race, religion, sex, political or social affiliation. Aid is politically neutral and is not provided in the interests of Swiss foreign or domestic policy, nor with economic interests in mind.

The support given is tailored to meet the requirements of those in need. The situation is evaluated and the most suitable form of aid is determined, bearing in mind local social and cultural conditions. Priority is given to basic needs on which survival may depend. In addition, the local people should always be encouraged to use their own initiative and help themselves so that they do not become dependent on outside aid. Humanitarian aid is subsidiary; it complements the efforts made by the victims themselves and by the partner country. Aid must be provided in a specific, rapid, efficient, appropriate and practical way.

Four areas of activities are of importance:

- prevention
- rescue
- survival
- reconstruction

1. Prevention

Disaster prevention is becoming increasingly important. Preventive measures (prevention and preparedness) are taken in collaboration with Swiss universities or specialised institutes, or as part of an international programme, depending on the situation. Examples of disaster prevention include setting up a volcano observation network in Guatemala (in conjunction with the University of Geneva) and supporting the training of representatives from countries of the southern hemisphere in disaster prevention and management (in conjunction with international organisations).

2. Rescue

This mainly consists of rescue and salvage work, as well as providing emergency treatment for the injured. The extent of the damage has to be determined quickly and further emergency measures for survival have to be taken. In this connection the SDR may call in the services of the Swiss Rescue Chain, a special tool for providing immediate emergency aid.

The Swiss Rescue Chain is composed of eight organisations:

- **SDR** Swiss Disaster Relief
  - (Foreign Ministry)
  - approves, carries out and funds the mission
- **SSS** Swiss Seismological Service in Zurich
  - (Ministry of the Interior)
  - raises alarm, informs SDR in between of 45 minutes after the earthquake
- **REGA** Swiss Air Rescue Service
  - (Private Organisation)
  - Gathers information about earthquake and transports the reconnaissance team up to 4'000 km from Switzerland
- **REDOG** Swiss Disaster Dog Association
  - (Private Volunteer Organisation)
  - Provides rescue dog teams.
- **SART** Swiss Army / Rescue Troops
  - (Defence Ministry)
  - Provides rescue experts and helicopters if needed.
- **SRC** Swiss Red Cross
  - (Private Organisation)
  - Provides aid material (clothing, blankets).
- **SR** SAiR Group
  - (Government holds 50% of shares)
  - Provides a large capacity aircraft.
  - Carries out transports of search and rescue personnel to foreign destinations.
- **FDZ** Zurich Airport Authority
  - (under provincial control)
  - Airport police facilitating all movements, deals with logistics
  - Delivering emergency passports
  - Bearing material stores for personnel and rescue
  - Catering of personnel
The SRC is specialised in rescuing victims of earthquakes. The service comprises about 100 people, 18 rescue dogs and 15 tons of material. It can operate autonomously in the field up to 10 days.

The SDR is authorised by the Swiss government to offer help directly to the authorities of any country which has been hit by an earthquake. The entire costs of the Rescue Chain operation will be payed by the Swiss government. According to the circumstances the reconnaissance team consisting of 12 people and 3 dogs will be sent first. The reconnaissance team can be ready to leave Switzerland about 4 hours after the mission has been approved by the affected country. The fully operational Rescue Chain can be ready to leave Switzerland about 10 hours after the mission has been approved.

The rescue dogs are dogs with the highest level of dog education. The dog-handlers are training their rescue dogs on a half professional level. All the dogs have valid, internationally recognised vaccination certificates. The dogs search for people in the rubble. As people are found, they are brought out by the rescue team using special material belonging to the Rescue Chain. During the whole operation people receive emergency medical treatment from the medical team.

3. Survival
This includes the supply of safe drinking water, the supply and distribution of food and the supply and erection of shelters (tents, emergency houses) as well as medical care for the victims of a disaster.

4. Reconstruction
Infrastructure (major roads, bridges, etc.) has to be repaired and public buildings (hospitals, homes, schools, etc.) and residential facilities rebuilt. At the same time, federal humanitarian aid includes setting up health programmes.

As the SDR is involved in the prevention phase as well as in the rescue phase the SDR is able to suggest the right actions in either phase.

In order to facilitate the acquaintance of permission the custom clearance and the basic logistical support Switzerland has bilateral agreements for reciprocal assistance with more than 20 countries. Since it was set up in 1980 the Swiss Rescue Chain has carried out more than fifteen missions in areas hit by earthquakes (1980 in Algeria, Italy, 1982 in Jemen, 1983 in Turkey, 1985 in Mexico, 1986 in San Salvador, 1988 in Armenia, 1990 in Iran, Philippines, 1991 in Costa Rica, 1992 in Turkey, 1993 in Japan, Columbia, Greece, 1997 Iran).

The different missions disclosed that disaster reduction systems and programs, preparations and actions have to be carried out pragmatically. Aim orientation, efficiency, effectiveness, cost optimization as well as the efficiency of the network performance in this context are important aspects. For organisations it is important to realise that with a few but aim orientated simple measures a benefit cost ratio as positive as possible is to be reached. It then is guaranteed that support and aid tends not to be bureaucratic but take place on the right time at the right place.

III. APENDIX

1. Search and Rescue Missions of the Swiss Disaster Relief Unit (SDR) in 1999
   - Izmit, Turkey earthquake of August 17, 1999
     - Magnitude Mw = 7.4
     - 90 persons located, 12 persons rescued alive
   - Athens, Greece earthquake of September 7, 1999
     - Magnitude Mw = 5.9
     - 14 persons located, 3 persons rescued alive
   - Chi-Chi, Taiwan earthquake of September 21, 1999
     - Magnitude Mw = 7.6
     - 18 persons located, 1 person rescued alive
   - Duzce, Turkey earthquake of November 12, 1999
     - Magnitude Mw = 7.1
     - 26 persons located, 1 person rescued alive

2. Natural Disasters of Switzerland in 1999
   - Avalanches:
     - 720 damaging avalanches in the Swiss Alps between Jan. 26 and Feb. 25, 1999
     - 17 persons killed
     - 200 Million USD direct damage
   - Floods:
- Certain rivers and lakes in central and eastern Switzerland reach all time records in May/June 1999
- 400 Million USD direct damage
  - Hail:
    - 100 Million USD direct damage

3. PLANAT

National platform for natural hazards advising the Federal Council

Major objectives concerning prevention:

- Protecting in an optimal manner against natural hazards.
- Encouraging the transition from a pure defense against hazards to the management of the risk
- Promoting a better understanding for the necessary ecological, social and economic conditions underlying sustainable behaviour and action
- Integrating the efforts undertaken in both the national and international spheres
- Periodically evaluating and documenting the results of preventive measures