



SWISS DISASTER REDUCTION STRATEGY FOR CENTRAL ASIA 2004–2008

Swiss Disaster Reduction Strategy for Central Asia 2004 – 2008

This document has been approved by the head of the Department for Humanitarian Aid and the Swiss Humanitarian Aid Unit (SHA) of the Swiss Agency for Development and Cooperation (SDC) in summer 2004.

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Cover picture Left: Community mobilisation for riverbank protection work in Muminabad, TJ
Right: Poorly maintained river channel in TJ (photos by Sebastian Eugster)
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Executive Summary

I. Rationale and context

Natural disasters occur all over the Central Asian countries of Tajikistan (TJ), Kyrgyzstan (KG) and Uzbekistan (UB). The effect on national economies as well as on individual households and livelihoods is severe. Floods, landslides, droughts or earthquakes hit these countries in the past and will continue to hamper the development of this fragile area. On the other hand, the awareness of and the preparedness for disasters is rather limited in the whole area.

In the past ten years, disaster reduction was set on the international agenda. In Central Asia, however, prevention and preparedness efforts are only marginally developed despite the prevailing risks and the fast developments after the break-up of the Soviet Union. The coping mechanisms are still response-orientated. A shift from response towards prevention and mitigation is urgently required.

A programme of the Swiss Agency for Development and Cooperation (SDC) through its Humanitarian Aid Department aims to increase awareness and to strengthen capacities for prevention and mitigation of natural disasters, while promoting sustainable, gender and poverty sensitized development approaches to disaster reduction. The programme contributes to the on-going Swiss development efforts of SDC and seco in the area.

II. Risk profile for Central Asia

Recalling the major hazards, the overall vulnerability and the existing coping mechanisms and capacities, the following risks are considered highest for Central Asia:

Earthquakes – The capitals of the three countries as well as many other urban and rural areas are located in a high earthquake danger zone. A repetition of the 1907 Dushanbe earthquake, for instance, would cause over 50'000 casualties and an overwhelming economic burden. Awareness on the part of the population is lacking and the authorities are hardly prepared for this type of event.

Mountain hazards – Landslides, floods, debris flows, rock falls or snow avalanches constitute a high risk for communities in the young mountain ranges of Central Asia. Such events are limited in spatial extent; however, they occur very often and almost all over these places. Besides the many casualties, very often infrastructure is heavily affected.

Floods – The probability for severe flooding represents a medium to high risk. Vulnerable areas are the main valleys in TJ, KG and UB (especially Ferghana Valley). The existing flood forecasting capacities and flood protection structures are in a poor state.

Flash floods, GLOFs, debris flows – The rapid melting of glaciers (climate warming) causes the development of glacial lakes. Glacial lake outburst floods (GLOFs) will occur more frequently. Scientific institutions or responsible units in the government administration hardly have the awareness for this increasing type of hazard, and lack know-how and capacity to identify, assess and monitor them.

Landslides and contaminated floods – A very high risk is posed by landslides in tailings of large mining areas. Landslides and subsequent floods can contaminate large irrigation areas and the ground water of low-lying areas (e.g. along Syr Darya in the Ferghana Valley).

Slow-onset disasters – Insufficient rain in the main precipitation period can lead to droughts, which affect not only the irrigated cultivation areas, but also agriculture in general. Desertification is another risk as a result of mismanagement of natural resources. Areas at risk are all regions with water stress. The population does not have the awareness necessary to develop adaptation strategies and to prepare adequately.

III. Stakeholders in the field of disaster reduction

There are a number of national institutions working mainly in the field of response (Ministry of Emergency of the respective countries, Red Crescent Societies, as well as local NGOs). The international organizations (UN, EU, etc.) are somewhat active in this field in TJ (Tajikistan), but less active in UB (Uzbekistan) and KG (Kyrgyzstan).

The Swiss agencies (SDC, seco) already have various partners working in related fields.

IV. Swiss Disaster Reduction Strategy for Central Asia

Overall goal – The overall goal of SDC's disaster reduction efforts in Central Asia is to ensure safe life and sustainable livelihood by minimizing the effects of natural disasters through the appropriate use of natural resources, a safe environment and improved coping mechanisms, thus contributing to poverty reduction. The main focus is to raise overall awareness for disaster reduction in the region, to increase risk and disaster management capacities, to foster collaboration between agencies working in the field of prevention with those working in response, and to include disaster reduction aspects in development efforts.

Approach and basic principles – The work of SDC's disaster reduction activities in Central Asia is based on an integrated approach. It considers the prevailing risks and the existing local knowledge in the area. There is a strong focus on the link between disaster reduction and development issues. The already established networks and partnerships will be used for the implementation of projects.

Objectives/lines of action – Based on the risks and the existing coping capacities, there are four distinct outcomes defined:

- A) Increased awareness for disaster reduction
- B) Increased capacity to analyse and to manage risks and disasters
- C) Performance of risk assessments and contribution to disaster reduction
- D) Support to development projects

Partners – The implementation of the strategy will be conducted by partner organisations based on needs expressed by governments and/or other institutions. The individual projects will be linked as much as possible to each other and with other ongoing development activities.

Geographical focus – Based on the overall risk, a focus will be laid on Tajikistan (particularly for the initial phase (2004 and 2005). Outcome *B. Capacity building* will especially bear this in mind. The extension of the work to KG and UB is foreseen for the second half of the term.

Timeframe – The first phase of the Disaster Reduction Programme lasts till 2008.

Means – The annual budget for Disaster Reduction in Central Asia for the next 5 years is approximately CHF 1.5 Mio. (USD 1.1 Mio.). About 50% of this amount will be allocated to capacity building, 20% for awareness building and 30% for risk assessment and risk reduction.

Activities – Individual projects of the programme (according to the 4 lines of action) will have an impact on the centre of the disaster management cycle (risk assessment, awareness), as well as on the prevention/mitigation side.

Non-priority activities – Although requested by some organisations, SDC will neither consider (i) the support of search and rescue units, nor (ii) the implementation of structural measures in tailing areas, nor (iii) awareness building on national level as priorities.

Sustainability – The sustainability of the activities under the Swiss Disaster Reduction Programme is of major concern. The consideration of local needs, the local ownership, and the mid-term commitment will all contribute to the sustainability of the projects.

1 Context

Central Asia is a disaster-prone area. Numerous damaging events frequently affect the economy and the population of Central Asian countries, killing people, damaging livelihood and hampering sustainable development. In the last few years, the region suffered a number of devastating events drastically affecting the national economies. In 1992, floods in southern Tajikistan killed 1300 persons and wiped out about 90% of the national GDP of that year. Torrential rains in 1998 caused damage of USD 240 Mio. in southern Kyrgyzstan. The severe drought in 2000/01 that hit Uzbekistan and Tajikistan caused damage of several hundred Mio. USD and affected more than 3 Mio. people in the two countries. Fortunately, Central Asia has escaped large-scale human losses in the last two decades, such as those potentially caused, e.g. by an earthquake in one of the capital cities. However, history as well as scientific investigations prove that such types of disasters can occur as well.

The dramatic increase of economic damage, in developed as well as in less developed countries, has boosted risk and disaster management higher on the political agenda. However, in the Central Asian states this global move is only partly visible. Here, disaster reduction (DR) is not well institutionalized or is based on outdated approaches. Efforts are made in disaster response (preparedness on national level), but little activity is being done in disaster prevention, mitigation (especially non-structural measures) and preparedness (local level). A programme of the Swiss Agency for Development and Cooperation (SDC) through its Humanitarian Aid Department aims to increase awareness and to strengthen capacities for prevention and mitigation of natural disasters, while promoting sustainable, gender and poverty sensitized development approaches to disaster reduction. The programme contributes to the on-going development efforts of SDC and seco in the area.

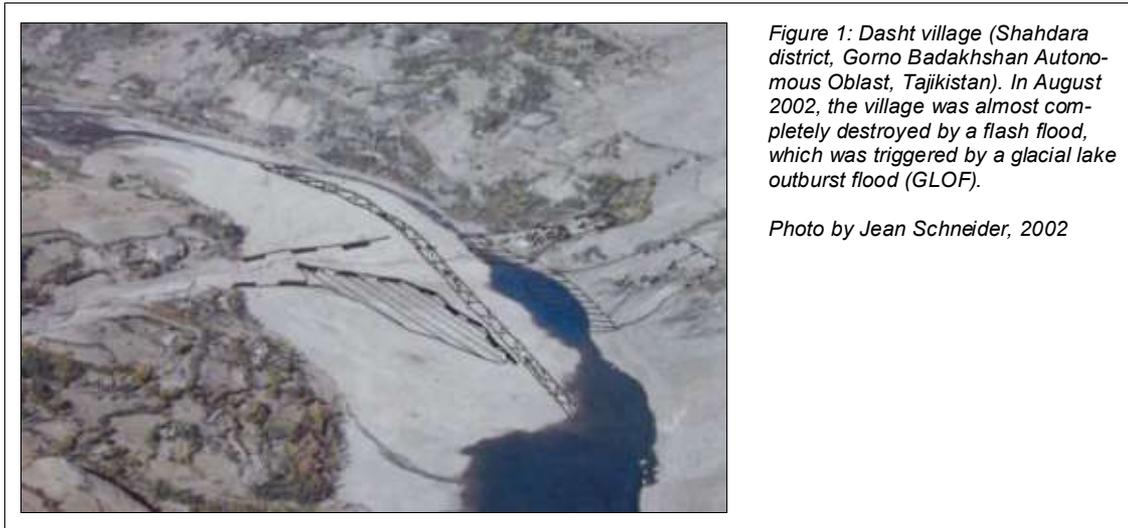


Figure 1: Dasht village (Shahdara district, Gorno Badakhshan Autonomous Oblast, Tajikistan). In August 2002, the village was almost completely destroyed by a flash flood, which was triggered by a glacial lake outburst flood (GLOF).

Photo by Jean Schneider, 2002

The Disaster Reduction Programme started in July 2003 with an in-depth situation analysis in the field of natural disaster risks and disaster reduction. It is based on the 'Swiss Regional Mid-term Programme Central Asia 2002-2006', the 'Regional Concept 2003-2005 for Central and southwest Asia' of SDC's Humanitarian Aid (HA) Department and fully considers the projects formulated in the 'Swiss Water Strategy for Central Asia 2002-2006'. SDC implements similar programmes on disaster reduction in Central America, Turkey and the South Caucasus, based on the 'Natural Disaster Reduction Strategy of the HA Department (2001).

This paper aims to outline the strategic orientation of the activities planned by SDC's Humanitarian Aid Department related to disaster reduction in the Central Asian countries of Tajikistan, Kyrgyzstan and Uzbekistan. Additionally, it focuses on the link between development activities (by SDC's development department and by seco) and disaster reduction efforts.

2 Risk profile for Central Asia

2.1 Natural disaster reduction – a challenge for development in Central Asia

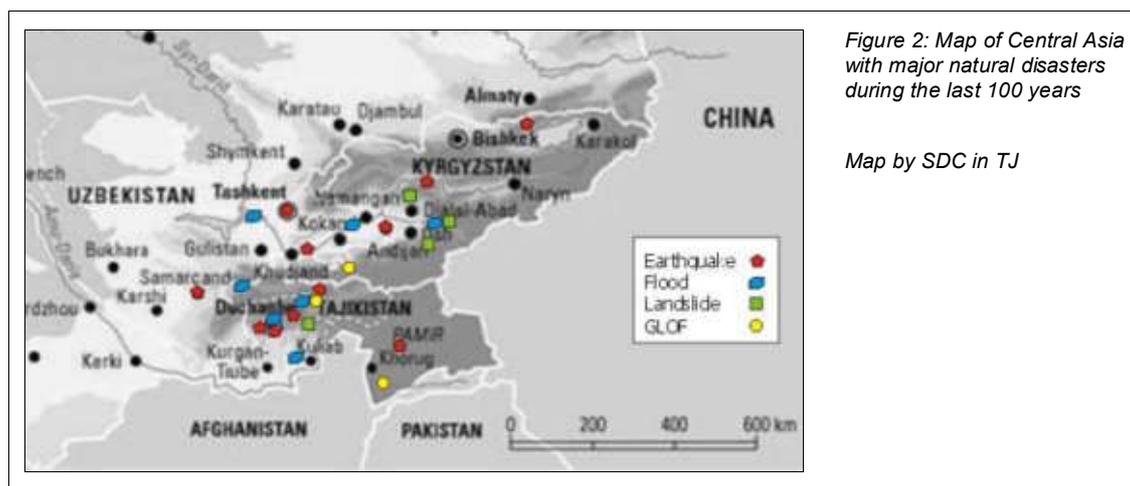
In Central Asia, the number of geological disasters (mainly earthquakes) reported over the last decade has remained stable, but according to observations by specialists, hydro-meteorological disasters (floods, storms, droughts, rain-induced landslides) increased strongly in the same period. This trend might continue as a result of climate variability and climate change phenomena. However, more important are the effects of vulnerability changes (population pressure, extension of land use and housing into marginal areas, lack of planning control, etc.). The fast increase of vulnerability together with the effects of climate change constitutes a major challenge for Central Asian countries.

Natural phenomena affect the mountain parts of Central Asia and their population more severely, as these regions are exposed to a number of processes simultaneously, such as floods, avalanches, rock-slides, or earthquakes. The risk profile identifies these hazards (natural processes), vulnerabilities (elements at risk, exposure, vulnerability), and coping mechanisms (response capacities, risk perception, existing risk reduction strategies) in Central Asia.

The available data and information about hazards and risks of the area are scarce. It is very difficult to obtain reliable figures for the Soviet or even pre-Soviet era. This is particularly relevant for information about economic damage. Figures for the post-Soviet period are more reliable; however, it has to be assumed that much of the economic losses and social costs are not reported.

2.2 Hazards

The context in terms of natural hazards is similar for Tajikistan, Kyrgyzstan and parts of Uzbekistan. They all frequently face small to mid-scale disasters and bear a high potential for large-scale disasters (see Figure 2). Floods, debris flows, landslides and avalanches occur regularly in most places of the mountainous parts, with floods also stretching into the plains of the Ferghana Valley and along the major rivers. In the high mountains, outbursts of usually young ice or moraine-dammed glacial lakes are likely to occur due to climate change. An outburst causes flash floods or large-scale debris flows. With a continental climate, despite large irrigation infrastructure, there still remains a high probability for droughts. This can severely affect local communities. Soil and vegetation are highly sensitive to degradation due to drought and overuse. Large earthquakes bear a high potential, with the entire region being located in the high to very high risk zone.¹ A tremor in one of the capitals or any other major city in the region would cause enormous damage. Estimates for an earthquake in Dushanbe with a Magnitude of 7.2 on Richter scale predict more than 50'000 casualties and over 120'000 injured.



In the following paragraphs, some examples of recent disasters are given, which serve as indicators for the prevailing hazards. The information is often difficult to obtain and, particularly for the Soviet period, almost incidental. The ministries of emergency of the respective countries may have more comprehensive lists of past events; however, they are barely accessible. In addition, one has to be aware that only

¹ According to the Global Seismic Hazard Map, 1999.

major events are reported. Small-scale incidents or those affecting a remote area are hardly recorded and reported.

Earthquakes

Earthquakes clearly constitute the most damaging hazard in Central Asia, especially in terms of casualties. The collision of the Indian with the Asian plate leads to the highest continental tectonic deformation in the world. Almost 15% of the great (M 8.0) earthquakes documented in the twentieth century have occurred here.²

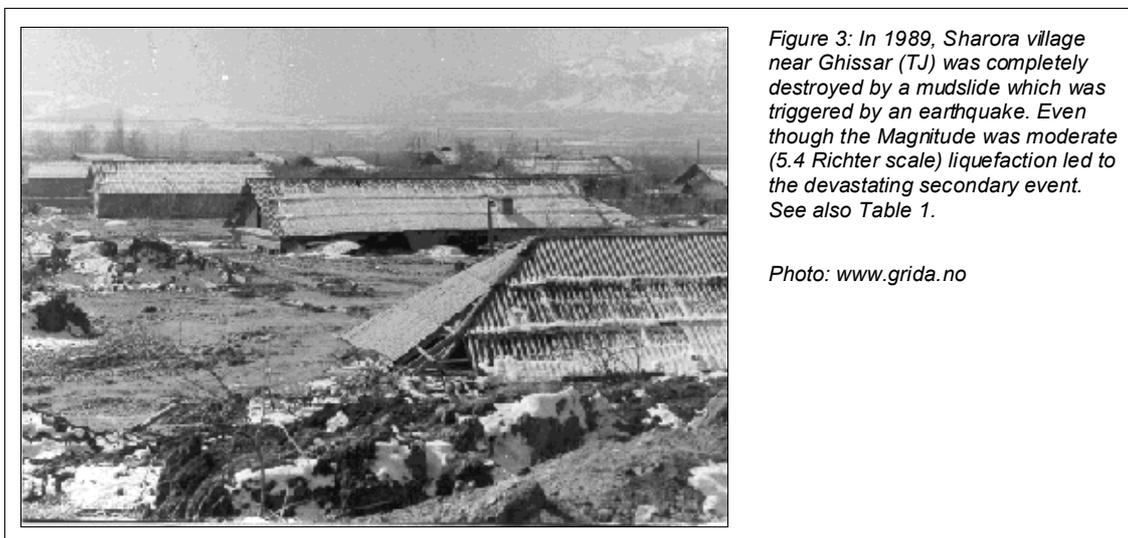


Figure 3: In 1989, Sharora village near Ghissar (TJ) was completely destroyed by a mudslide which was triggered by an earthquake. Even though the Magnitude was moderate (5.4 Richter scale) liquefaction led to the devastating secondary event. See also Table 1.

Photo: www.grida.no

Table 1: Major earthquakes in Central Asia

Year	Location	Casualties	Remarks
1902	Andijan (UB)	4562	
1907	Samarkand (UB)	12'000 (est.)	
1907	Karategin (TJ)	12'000 (est.)	Earthquake-triggered landslide (7.2 Richter scale)
1911	Lake Sarez (TJ)	Entire village buried	Earthquake-triggered landslide formed lake
1911	Issyk-Kul (KG)	452	
1930	Dushanbe (TJ)	151	
1949	Khait (TJ)	28'000	7.5 Richter scale, casualties by secondary event ³
1966	Tashkent (UB)	Unknown death toll	20% of city destroyed; economic impact unknown
1985	Khairakhum (TJ)	29	> USD 100 Mio. (est.)
1989	Ghissar (TJ)	389	Earthquake-triggered mudslide (see Figure 3)
1992	Suusamyр (KG)	54	USD 130 Mio. damage

Landslides

Landslides are a common feature that often occur jointly with floods and heavy precipitation. Areas with extensive Loess deposition in southern Kyrgyzstan (around the north-eastern edge of the Ferghana Valley), as well as in the centre of Tajikistan, are markedly prone to mass movements. However, landslides occur in almost all mountainous terrains. Major reported events are summarized in Table 2.

A major problem is constituted by the huge tailing deposits, containing either radioactive material or heavy metals. On many occasions, they are on unstable ground, as it is the case in Mailuu Suu of southern Kyrgyzstan. Landslides may transport the contaminated material into the rivers and dam them. Subsequent floods will bring the substances to downstream areas, spoiling ground water or irrigated land, for instance in the whole of Ferghana Valley. The tailings at Mailuu Suu and in few other locations are well known to the authorities. Many investigations were performed and the sites are periodically

² Gupta, 1993.

³ MRD: Vol. 21, No. 1, Feb. 2001: A. Yablokov, "The Tragedy of Khait – A natural disaster in Tajikistan".

monitored. However, so far there are hardly any measures being implemented to stabilize the landslide areas or to protect them from erosion.

Table 2: Landslide disasters in the last 10 years

Year	Location	Damage	Remarks
1992	Kandak (TJ)	243 deaths	Triggered by hailstorm
1992	Osh and Jalal-Abad (KG)	USD 31 Mio. (est.)	Torrential rain and earthquake
1993	Kyrgyzstan	USD 21 Mio. (est.)	Heavy rains
1994	Osh and Jalal-Abad (KG)	115 deaths / USD 36 Mio.	
2003	Uzgen, Suzak (KG)	38 deaths	In Loess belt in S-KG

Floods

In the last decade, TJ and KG were hit by 3 big flood events, which caused huge damage to infrastructure and housing. In addition to the major events, the area is affected by a large number of small to mid-scale events every year (see Figure 4). Records by OCHA Tajikistan list approximately 30 local flood events all over Tajikistan during the past 3 years. The frequent occurrence of smaller-scale floods can also be related to the insufficient maintenance of flood protection works after the breakdown of the Soviet Union.

Table 3: Major floods in last decade (no reliable information available for Uzbekistan)

Year	Location	Damage (death / USD)	Remarks
1992	Dushanbe, Kulyab (TJ)	1346 / 300 Mio. (est.)	
1998	Jalal Abad (KG)	240 Mio. (est.)	Torrential rains
1998	Gharm, Vose (TJ)	134 / 60 Mio. direct damage	Precipitation 2-4x > than average

Of particular importance are floods originating in tailing areas. These floods can be highly contaminated (see above, landslide) and can transport radioactive substances or heavy metals into the lower reaches of the rivers.



Figure 4: Varzob River, 40km north of Dushanbe, TJ. Torrential rains in mid-July 2004 caused severe flooding. The river banks were heavily eroded, the main road became impassable and water supplies in the capital city of Dushanbe were disrupted.

Photo: UN Coordination Unit in Tajikistan, 2004

Glacial lake outbursts

The most well-known example of a potential lake outburst flood would be the outburst of Lake Sarez. However, the probability is said to be rather small. Much more likely are flash floods of smaller volumes as have occurred on a number of occasions (see Figure 1 and Table 4). Such flash floods are referred to GLOFs (Glacial Lake Outburst Floods) as they originate very often in glacial lakes. The rapidly changing high mountain environment with the shrinkage of glaciers is particularly prone to the development of new lakes and the sudden release of the dammed water masses. Such phenomena are well known for all mountain chains in the world, particularly in the Himalayas. Usually the power of such flood waves is highest due to a high content of debris material. In Central Asia three major events are reported.

Table 4: Glacial Lake Outburst Floods (GLOF)

Year	Location	Casualties	Remarks
1969	Yaldamich (TJ)	69	
1998	Shahimardan (UB)	116	Camp ground destroyed
2002	Dasht GBAO (TJ)	24	Half of village destroyed

Droughts

In 2000/2001, a large-scale drought hit Central Asia, affecting more than 3 Mio. people (est.) in TJ and UB (in TJ about 50% of the population was affected). It destroyed more than 50% of cereal harvests, and heavily struck the irrigation-dependent cotton industry in TJ and UB with economic damage estimates of several hundred Mio. USD. Although part of the problem was related to the distribution of irrigation water, the event showed how sensitively the system reacts to the amount of available water.

Mountain hazards

The term mountain hazards encompasses a number of geological and hydro-meteorological processes generally of limited geographical extent, but highly destructive. Among others are floods, landslides, rock fall, and snow avalanches which occur on steep slopes or narrow valleys and which can heavily affect local communities. According to a survey carried out by the UN Coordination Unit for Tajikistan in 2004, about 160 events of this type occurred in the past 2 years in Tajikistan.

2.3 Vulnerability

The interaction between hazards and the overarching social, economic, and political structures of class, gender, race and ethnicity is what actually shapes a given risk to disasters. The conditions determined by these structures describe the exposure and susceptibility of a community to the impact of hazards (ISDR 2004). Some of these factors are described below in a qualitative manner. The second aspect of vulnerability, the coping mechanisms and capacities (these are the means by which people or organizations use available resources and abilities to face the adverse consequences of a hazard), are summarized in chapter 2.4.

Population density as an indicator for physical vulnerability is mainly controlled by the availability of water. Besides the Central Asian capitals, especially the Ferghana Valley, as well as the irrigated areas in the south (Khatlon) and north (Sughd) of Tajikistan and the south of Uzbekistan along the Zeravshan river (Samarkand, Buchara) show densities of more than 100 people per km². In the arid and narrow mountain valleys of the Pamir and the mountainous parts of S-KG, people also depend on the scarce water resources. Thus settlements are drawn to flood-prone valley bottoms and alluvial fans, because there are no other flat surfaces available for irrigated land use and settlement. Here, in some places population density even exceeds 200 people per km².

Population growth in Tajikistan is significant compared to other CIS republics, with a 6-fold increase over the last 70 years. This results in an enormous pressure on the natural resources and a marginalization of certain parts of the population, a circumstance that can be observed in the entire region. Because of the desolate economic condition all over Central Asia, labour migration of predominantly male migrants (e.g. to Russia) is an important factor to consider in the national demographics, leaving a big burden on the women's shoulders. As a result of this imbalance, the portion of adolescents is very high⁴, a fact that has especially been increased in TJ by the civil war.

Power imbalance in gender relations is considered as a root cause of social vulnerability of women. The vulnerability of women is much greater because of their subordinate position in the family and society arising out of patriarchy, sexual division of labour and traditionally embedded cultural values that privilege male access to resources and productive assets. Women's subordinate position, lower social, cultural status and economic dependency on men, along with the lack of voice and power to influence political decisions regarding development, social policy and environment etc., have serious ramifications on their ability to anticipate, prepare for, survive, cope with, and recover from disasters.⁵ Since disasters occur in highly gendered social systems where gender identity functions as a marker in shaping differential vulnerabilities and capacities of men and women, corresponding disaster management needs to be engendered by providing a special focus on women's vulnerabilities.

⁴ 41% of the population in TJ younger than 15, 69% younger than 30 (State Statistical Committee of TJ, 2001).

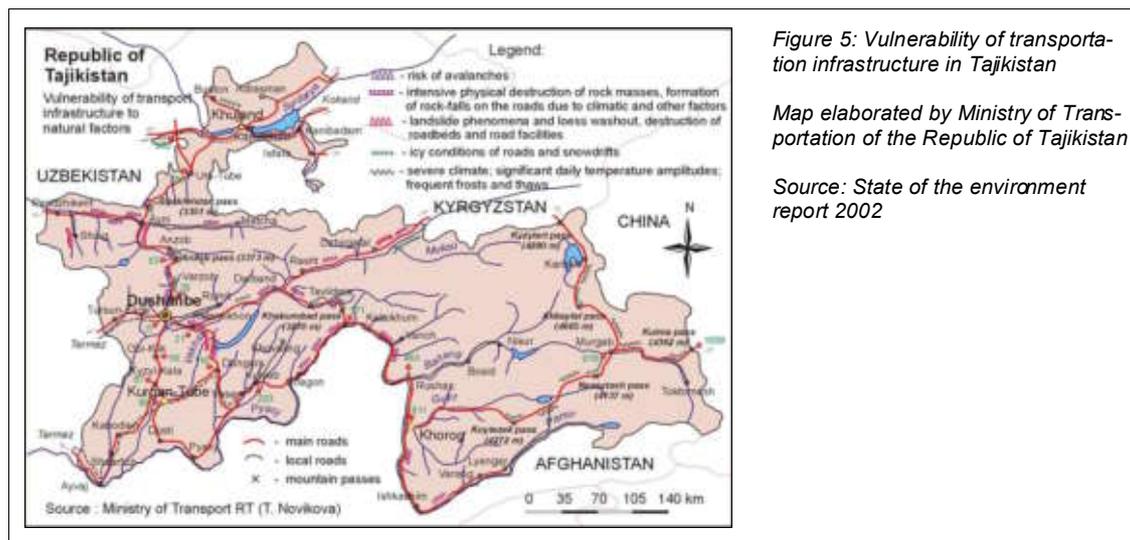
⁵ Gender Mainstreaming in Disaster Reduction, ISDR, 2002.

Economic vulnerability is tremendous, especially compared to what it used to be during Soviet times. The Tajik state budget for 2003 e.g., amounted to USD 229 Mio., which corresponds to one tenth of the budget before 1990⁶ (est.). This fact shows that economic vulnerability has increased considerably⁷. The damage of the 1992 flood in TJ (est. USD 300 Mio.) for instance, was of the order of the GDP for that year.

In Tajikistan, 83% of the population lives below the national poverty line and in KG 68%⁸ with very high unemployment figures (estimated at 40% in TJ for 2002)⁹. But this sobering figure has to be put into perspective, as it stands in contrast to the high degree of subsistence, which cannot be economically quantified. Nevertheless, this shows that struggle for daily survival reduces people's options to mitigate, prevent disaster effects, or move out from disaster prone areas. Increasing poverty pushes disaster reduction into the back of people's minds.

Physical vulnerability: In rural areas, mud-brick construction without armoring is widespread. They are very vulnerable towards earthquake risk, due to compact debris in case of collapse (no cavities in which to survive), and towards floods, as the structure gets very weak when inundated for too long. Frame panel systems are used for the construction of residential and public buildings in many cities throughout Central Asia, showing vulnerability along the panel joints. With a revitalisation of the private economy, especially in Kyrgyzstan and to a lesser extent in Tajikistan and Uzbekistan, a lot of small enterprises are mushrooming up with the reorganisation of basic building structures. Carrying walls are being cut out of existing buildings, thus decreasing the carrying capacity and further increasing the vulnerability of concrete buildings.

Communication and road networks in mountainous terrain are particularly vulnerable to a number of different natural hazards like rock fall, landslides, debris flows, avalanche. Figure 5 shows the vulnerability of transportation infrastructure in Tajikistan.



Environmental vulnerability: With the increasing signs of **global climate** change, a transformation of the environmental settings has to be expected. This might be particularly evident in the high mountain areas where glacier shrinkage and permafrost degradation constitute increased instability of the mountainous terrain. In the areas of the Pamir, Tien Shan, Alay and Turkestan mountain ranges, **land degradation** is especially severe. The need for firewood or building material leads to deforestation and land degradation. Forest cover in TJ e.g. declined to one-third between 1960 and 2000. Decreasing nomadic livestock movement results in overgrazing and destruction of the protecting soil cover around villages and towns. Both aspects signify a huge impact on the fragile ecosystem and thus floods, mass-movements and avalanches are more likely to occur.

⁶ International Crisis Group (ICG) report: Tajikistan – A Roadmap for Development, April 2003.

⁷ Per capita income dropped from USD 1050 in 1990, USD 480 in 1992 to around USD 150 in 2002.

⁸ 13 USD expenditure per month in TJ (7 USD income per month in KG) – 2000, World Bank Poverty Assessment.

⁹ 7.2% in KG (est. 1999), 10-20% in UB (est. 1999).

2.4 Coping mechanisms and coping capacities

Legal framework – Various decrees, acts and laws provide a legal basis for disaster management, but are hardly applied or controlled. In KG, for instance, by law every forest is seen as protective forest. In TJ, the Civil Defence Law regulates disaster reduction and mitigation. In UB, the Law on national safety covers protection of the population against acts of nature and technological accidents.

A unified system for normative documentation in the construction industry (SNIp)¹⁰ functioned on the territories of the Central Asian republics before 1992. Today the state of **building codes** is questionable. Even if they exist, they are neither applied nor enforced due to widespread corruption. Generally, information on seismic vulnerability of buildings is not available in any of the countries in the region. This aspect goes in line with the effectiveness of land use. Theoretically, the legislation is available, and different committees have come into existence.

The State Committee on **Land Use** Management in TJ is well equipped (GIS) thanks to a WB project. New land-use plans are being developed, as known e.g. for Muminabad in the south of TJ. In KG, the Swiss cadastre project (funded by seco) aims through the collaboration of the State Agency for Registration of Land Rights with the Kyrgyz State Service of Geodesy and Cartography to update the analogue cadastre and land-use plans around Bishkek and Osh/Jalal Abad, and transform them into digital format. Land-use planning helps to mitigate disasters and reduce risks by serving as guidelines: to define what type of land use is allowed (agriculture, residential, industry, ...), to avoid high-density settlements and construction of key installations in hazard-prone areas, or to control development of population density and expansion. In reported cases, however, these regulations are not handled with the required strictness. Recent cases show that housing development occurs within high-risk zones, like the affected houses of the 2003 flood near Penjikent. As safe land is used for cotton production, the houses had to be reconstructed in the same flood-prone place again.

Every Central Asian country has its own ministry to deal with emergency situations, usually called the **Ministry of Emergency Situations (MoES)**¹¹. In UB and KG, they were founded in 1996, the one in TJ three years later in 1999. Prior to independence in 1991, in case of a disaster the Republics received aid from the Soviet Union. Usually the ministry has disaster management departments on national as well as oblast and, in some cases, district level¹². On district and village level, most of the time the chairman is simultaneously head of civil defence (e.g. for evacuation). A common fact is the general lack of equipment, not to speak about finances. The national expenditure for the MoES in KG, for instance, is about 0.5-0.6% of the annual GDP, which corresponds to USD 10 Mio. Due to a severe lack of local capacity in disaster management, humanitarian assistance is often needed in case of emergencies (a whole system of national and international institutions supports the respective ministries). Forecasting departments exist, but they have a very technical understanding of disaster prevention and preparedness (structural measures and relocation). In none of the Central Asian countries does a comprehensive national contingency plan exist. In KG, the ADB is planning to support the development of a national disaster management plan. The same is planned for TJ with assistance from UNDP. Relocation of people is often the only preventive measure applied by the MoES.

Risk mapping – Risk mapping (pure hazard mapping in many cases) is largely known from Soviet times. However, the maps' scale can hardly be used for risk management activities. Besides the respective state agencies' work (geology, seismology, cartography), a lot of research has also been done, the outcome of which was used in disaster management. Dushanbe, for instance, was world famous for research on seismology and related engineering; Almaty for debris-flows hazards. Hazard maps were developed on the basis of aerial photography and satellite imagery, and a sophisticated monitoring system allowed alarms to be transmitted directly to Moscow.¹⁴

Today, hazard maps are mostly outdated. The annual hazard forecasting in KG indeed predicts certain events, but it lacks a sound risk understanding with respect to where the aspect of vulnerability would be considered. Vulnerability maps hardly exist. Generally, this information is only available for bigger urban centres (more than 150,000 inhabitants) and furthermore it mostly dates back to Soviet times. Therefore, in most cases hazards are forecasted, but the entire risk is not assessed.

¹⁰ SNIp in Russ. Straitilniye Normy i Pravila = Building Rules and Regulations.

¹¹ In TJ: Ministry of Emergency Situations and Civil Defence, in KG: Ministry of Ecology and Emergency Situations, in UB: Ministry of Emergency Situations.

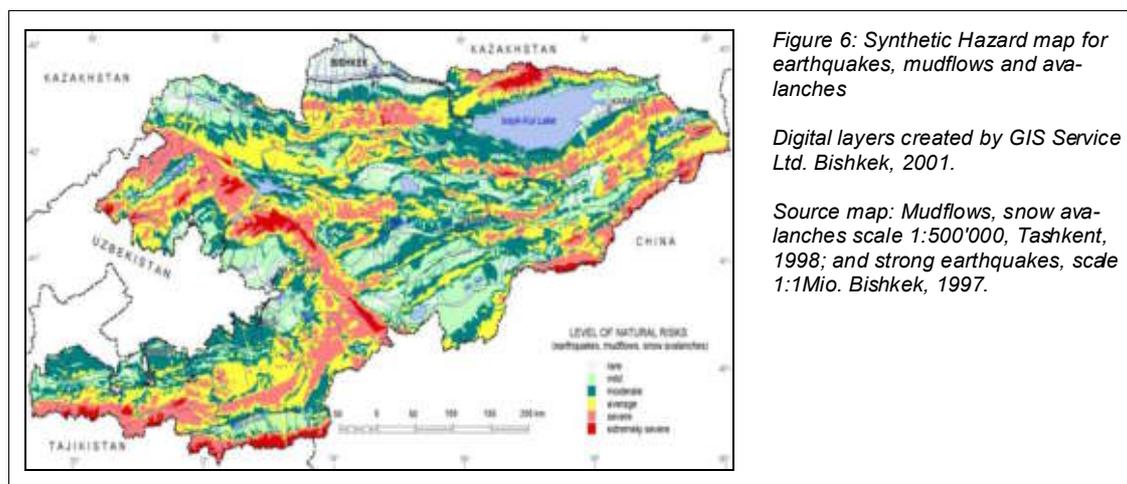
¹² Oblast (TJ & KG) = District (UB), Rayon/District (KG/TJ) = Hakimyat in UB, Jamoat (TJ) = Makhala (UB) = Aylokmata (KG); for convenience, we subsequently speak of oblast, district and village levels.

¹⁴ During Soviet times, the alarms first went to Moscow and then back to a republican disaster management centre.

Table 5: Overview on national risk mapping in Central Asia

	What	Scale ¹⁵	Who
TK	Hazard map	500'000	State Geol. Service
	Hazard map	200'000	Tojikkoynot (unpublished)
	Vulnerability map	n/a	
	Land-use plans	10'000	Land Management Committee, Fazo Institute
KG	Hazard map	500k / 1:3.5 Mio.	State Geol. Service / UNDP project @ MoES
	Seismic hazard map	500'000	Seismologic Institute
	Vulnerability map	50'000	MoES (only cities with pop. > 150k)
	Cadastre	1:2'000 (orthophoto)	State Service of Geodesy and Cartography
	Glacial hazard catalogue	100'000	n/a, performed only during Soviet times
UB	Landslide hazard map	200'000-400'000	Institute for Hydro- & Engineering Geology
	Microzonation Tashkent	100-200'000 (est.)	Uzbek Academy of Science
	DB on mudflows & GLOF	Information System	Hydromet and State Monitoring Service
	Vulnerability map	n/a	

New Technologies – A few international organisations have started working on risk assessment, namely within the framework of the LSRMP or DIPECHO programme, as well as SDC in TJ and UDNP in KG¹⁶. New technologies and approaches were introduced (GIS, remote sensing data). Some local organisations have started working with GIS, but current applications are still far below its potential. In KG, some hazard modelling has been performed for various types of hazards by the MoES and some academic institutions (see Figure 6), but with different versions of hazard maps available, it's hard to judge which is correct. For any risk assessment in the future, it is crucial to cooperate with the national institutions like Glavgeology, Glavhydromet, seismologic institutes etc, as they dispose of former technical data and know-how.



Structural measures – A lot of protection structures still remain from Soviet times, particularly dams and dikes for flood protection, sediment control devices and other structures (see Figure 7). Huge amounts of concrete were used to stabilize riverbanks. But lacking maintenance suspends the protective function and in some cases even enlarges the risk, thus amplifying a disaster. In the past, maintenance units cleaned drainage channels or emptied retention basins. Today, this work is no longer performed, and neither equipment nor budget is available. Even if in Tajikistan this situation is more severe due to the civil war, it is similar in KG and UB.

Civil society and community response – The general awareness for natural disaster risk is very low, be it in national organisations or in the population at large. The human memory of past events very seldom survives more than one generation. If a disaster strikes, a fatalistic behaviour can often be observed. Communities' coping mechanisms for natural disasters are stretched far beyond their limits,

¹⁵ Scale is expressed as 1:XY k, k = 1000 (kilo).

¹⁶ E.g. local hazard assessment in GBAO by FOCUS (LSRMP, DIPECHO), remote hazard assessment in GBAO funded by SDC.

leaving many to fall into severe poverty. The clan system is the main risk-sharing mechanism, but not always able to properly cope with the losses.



Figure 7: Lacking maintenance of riverbank protection structures can even increase the risk (Muminabad, southern Tajikistan)

Photo by Markus Zimmermann, May 2003

International and regional cooperation – Natural disasters have no national boundaries. The Ferghana Valley with its difficult demarcation calls for regional cooperation in case of trans-boundary disasters. Within the framework of the Partnership for Peace Programme (PfP) by NATO, a regional simulation exercise was conducted in 2003, which, however, did not include all Central Asian countries. Between the Central Asian countries and within the CIS, bilateral agreements exist on cooperation in the event of natural disasters, crisis or serious emergencies. Russia is still a partner ready to cooperate in case of any disaster, but agreements are more focussed on development. For the case of TJ, a bilateral agreement has been signed with Switzerland to facilitate assistance in case of emergencies.

UN – Under the initiative of OCHA in TJ, the REACT group (Rapid Emergency Assessment and Coordination Team) was set up. This interagency disaster management coordination body brings all international agencies and relevant national institutions together. The overall objective is to support the TJ government, namely the MoES, in disaster response, to assist in identifying urgent needs for disaster relief assistance and to facilitate timely and adequate response. The forum was expanded considerably in 2003 and serves as general interagency disaster management platform.¹⁷

2.5 Major risks

Taking into account prevailing hazards, vulnerability and coping mechanisms, the following risks are considered highest for Central Asia:

1. **Earthquakes** – Based on the high earthquake hazard and the high overall vulnerability, strong earthquakes are among the most threatening natural risks in Central Asia. A report by Geohazard International states that there is a high (about 40%) probability that, during the next 20 years, a large earthquake close to one of the Central Asian capitals will cause enormous human and economic loss, unless preventive action is taken before such an event happens. In addition, the coping mechanisms present are virtually unable to manage this type of disaster. Big devastating earthquakes in Dushanbe, for instance, have a return period of 80-120 years. The last occurred in 1907. Due to lacking maintenance, the building conditions have deteriorated and the scale to which they would withstand a tremor is less than before (MSK = 8). A scenario¹⁸ (similar scale to the one in 1907) predicts around 50'000 deaths and 120'000 injured. Similar assumptions can be made for other urban areas in Central Asia. The seismic institutions lack the capacities to monitor earthquake activity, and the rescue units present in all of the three countries are totally unable to manage this type of disaster. In addition, the population is hardly aware of this risk and therefore completely unprepared.
2. **Mountain hazards** – The young and still growing mountains of Central Asia are characterized by high relief energy, and thus regularly face mass movements of various types: landslides, rock falls, snow avalanches, debris flows, floods, etc. The large Loess belt in the south of KG and valleys in the high mountains are of special concern. Although the geographical extent of

¹⁷ E.g. launch of a website for information exchange (www.untj.org).

¹⁸ By the Seismologic Institute at the Academy of Science of TJ.

these problems is limited, they occur very often. Small to mid-scale disasters hit villages and infrastructure (road, communication, energy), hamper local development and severely affect local economy and livelihood. The know-how available to assess these hazards and to draw the relevant conclusions is out of date or completely missing. Additionally, the population in the villages has little awareness for these risks and doesn't consider them in village development plans.

3. **Floods** – The probability for severe flooding represents a medium to high risk as a result of (i) thunderstorms in summer, (ii) heavy winters followed by a wet spring and (iii) rising groundwater tables in irrigated areas (over-watering). Vulnerable areas in TJ are in the valleys of Zeravshan and Rasht, as well as Khatlon oblast; in KG in the Chuy Valley, around Issyk-Kul and in Osh oblast; and in UB in the Ferghana Valley and along the Syr-Darya and Piskam rivers with large communities and intense land-use. Flood forecasting and flood proofing is hardly known in these areas. The present flood forecast capacities and flood protection structures are in a poor state.
4. **Flash floods, GLOFs, debris flows** – Glaciers are retreating due to global climate warming. Considering such climate change phenomena, it is assumed that glacial hazards as a result of lake outbursts will occur more frequently and are therefore a growing risk. Several glacial lakes can be identified on recent remote sensing imagery, an outbreak of which for instance could affect the irrigation network in the Ferghana Valley. Other areas at risk include mountain villages in GBAO, the Zeravshan and upper Rasht Valleys in TJ, as well as Batken and Yssyk-Kul oblasts in KG. Scientific institutions or responsible units in the government administration hardly have the awareness for this increasing type of hazard, plus they lack the know-how and capacity to identify, assess and monitor them effectively.
5. **Landslides and contaminated floods** – A very high risk is posed by landslides in tailings of large mining areas. Landslides and subsequent floods can contaminate large irrigation areas and the ground water of low-lying areas. This is a major problem in the northern part of the Ferghana Valley (along Syr Darya), around Issyk Kul (northern Kyrgyzstan), or near Khujand (Tajikistan).
6. **Slow-onset disasters** – The lack of rain in the main precipitation period can lead to **droughts** which affect not only the irrigated cultivation areas, but also agriculture in general (like pasture management). **Desertification** is another risk as a result of mismanagement of natural resources, additionally influenced by changing environment. Areas at risk are all regions with water stress or irrigation (mono-culture). On the one hand, the population does not have the necessary awareness to develop adaptation strategies and to prepare adequately; on the other hand, basic needs can not be satisfied due to widespread poverty.

3 Stakeholders in the field of natural disaster reduction

3.1 National and international stakeholders

There are a number of national and international organisations working in the field of natural disaster reduction. The most important are:

- **Ministry of Emergency Situations** – see 2.4 Coping mechanisms and coping capacities.
- **National Organisations** – The MoES in all Central Asian countries consult national institutions for risk management questions, like the hydro-meteorological or the geological services. As during Soviet times disaster management was well institutionalized, a lot of mostly analogue information is available within these agencies, but working approaches and resources are totally outdated. Further on, there are several other state services or committees dealing with forest, land-use planning, construction, cadastre, cartography, etc. that were - and in some cases still are - incorporated in national disaster management. The collaboration between the different stakeholders is mostly not maintained anymore.
- **National Red Crescent Society** – In TJ and UB, they are supported by IFRC; in KG, by the Netherlands Red Cross Society. They both focus on community-based disaster preparedness, with the activities in KG and UB being incorporated in the DIPECHO programme.
- **International lending institutions** – In TJ the WB together with seco and USAID are supporting the Lake Sarez Risk Mitigation Project (LSRMP). Loans have been given for emergency flood reconstruction projects in TJ and KG. In summer 2004, a new project starts mitigating

natural disasters around the radioactive tailing site of Mayлуу Suu. In KG, the Asian Development Bank (ADB) is strengthening the capacity of the government to reduce the country's vulnerability to frequently occurring natural disasters, in particular floods and landslides.

- **International donors** – In 2003, the European Commission Humanitarian Aid Office (ECHO) funded with Euro 3 Mio. several one-year projects under its Disaster Preparedness Program (DIPECHO), all implemented by international NGOs. Another yearly project cycle will start in June 2004. DFID's Europe and Central Asia Department is currently reviewing disaster preparedness capacities and risks in Central Asia. The focus is on KG and TJ and, to a lesser extent, on UB. The review will result in an internal strategy. Besides co-financing the LSRMP, USAID supports two initiatives touching disaster reduction: 1. The Central Asian Regional Earthquake Safety Initiative (CARESI) in Dushanbe, Tashkent and Almaty, which is implemented by Geohazard International (focussing on urban earthquake awareness and preparedness). 2. In the Ferghana Valley, Mercy Corps International implements the Peaceful Communities Initiatives (PCI) and a Community Action Investment Programme (CAIP), which both promote conflict-prevention. These activities are linked to Mercy Corps DIPECHO programme on regional disaster preparedness in the Valley.
- **United Nations** – Within the United Nations Organisations in Central Asia, **UNDP** is the main agency involved in DR.. UNDP TJ finalized a preparatory assistance phase for the government and enlarged its DR portfolio in 2004 with a disaster risk management project that supports the government in strengthening national DR institutions, national coordination mechanisms and public awareness. The activities of the UN Coordination Unit¹⁹ in TJ (under UNDP) as focal point for **REACT** (see 2.4 Coping mechanisms – UN), will be incorporated into this new programme. In KG and UB, the role of the UN in disaster reduction is very weak at the moment. In KG, an UNDAC team came in for an assessment mission after the devastating landslides in spring 2003, recommending a stronger role of UNDP. Nevertheless, for 2004 nothing more is foreseen except contingency planning. For 2005 and onwards, it was said that disaster management would be taken into account in UNDP's country profile in KG. UNDP in UB recently took up the disaster management issue in forming a respective unit.

ISDR - The United Nations proclaimed 1990–1999 the *International Decade for Natural Disaster Reduction* (IDNDR). At the end of the decade, the UN General Assembly adopted the 'International Strategy for Disaster Reduction (ISDR)' as an independent UN body to succeed and promote the implementation of IDNDR recommendations, in particular the shift from response to a more proactive effort for prevention and preparedness. ISDR confirmed becoming active in Central Asia in 2004. The regional head office will be supposedly based in Dushanbe, bringing together for Tajikistan a joint coordination unit with UNDP, OCHA and ISDR. The aim of their work is strengthening the capacity on disaster risk management, prevention, response and advocacy. This new constellation will open new perspectives in terms of DR in the region.

- **International NGOs** – Most international organisations working on DR are linked to the DIPECHO programme and work mainly on community-based disaster preparedness, including a training component. FOCUS conducted a local hazard assessment in GBAO (TJ) as a follow-up to their experience within the LSRMP, developing local disaster management plans. Mercy Corps works on cross-border disaster management in the Ferghana Valley; and IOM/Shelter for Life, on seismic hazard reduction in Ghissar and Khojand. The German Agro Action (GAA = Deutsche Welthungerhilfe) is active in awareness building and includes some small-scale mitigation activities. Further implementing organisations of the DIPECHO programme are IFRC in UB, Netherlands NRCS in KG, MERLIN, ACTED, Care and Hilfswerk Austria.
- **Local NGOs** – The Scientific Engineering Centre GEOPRIBOR in KG has a lot of experience in developing geophysical and geotechnical instruments, conducting risk assessments, as well as monitor areas at risk. GIS Service Ltd., a spin-off from the Swiss Forestry Support Programme in KG, provides modern geoinformation services, including remote sensing data analysis, additionally bringing along a good background on risk analysis. In TJ, the young NGO *For the Earth* already has considerable experience working on risk reduction and disaster preparedness in rural as well as urban environment. The *Youth Ecological Centre* (YEC) is an umbrella organisation for various NGOs in TJ addressing general environmental issues.
- **Academia** – During Soviet times, some Central Asian research institutions under the Academies of Science were world famous. Today, out of all of them, the seismologic institutes are

¹⁹ As the situation in TJ is not seen anymore as humanitarian OCHA pulled out of the country in early 2004. The coordination work of OCHA will be carried on by the UN Coordination Unit (UNCU) under UNDP.

the most active, consulting the MoESs on earthquake risk both in KG and TJ. The geologic institutes still emphasize on mining geology, with little work on risk assessment. In TJ, the Scientific Research Department of the Institute for Geodesy and Cartography had a lead in satellite imagery interpretation and even trained Russian Cosmonauts. It was a key resource institution for all agencies interested in remote sensing imagery. Today, the capacities are very weak. In Uzbekistan, the Institute of Hydrogeology and Engineering Geology (landslide hazard map & monitoring) and several institutes under the Academy of Science, like geology or geophysics are presently very active. The latter institute was involved in the RADIUS²⁰ research programme.

In the late 90ies, foreign universities started to extend their research areas into Central Asia. The University of Berne (Switzerland) is doing research in GBAO and within their global research programme NCCR-North-South²¹, hosts several case studies in Central Asia. CDE plays an important role in the development of the curriculum for the University of Central Asia in Khorog (GBAO, TJ). The Institute of Applied Geology (University of Vienna) is involved in the Swiss remote risk assessment in the Tajik Pamir. In 2003, the GFZ Potsdam opened the 'Zentralasiatisches Institut für Angewandte Geowissenschaften (ZAIAG)' in Bishkek, which is to serve as research hub for earth scientists. More foreign research institutions will certainly follow.

3.2 Swiss development and humanitarian activities in Central Asia and possible links to DR

Switzerland has been active in CA since 1991. Kyrgyzstan and Tajikistan are priority countries for Swiss development cooperation, both of them benefiting from Swiss activities since 1993. Activities in Uzbekistan began in 1995. Swiss-funded projects are divided between Technical Cooperation, Financial Cooperation, and Humanitarian Aid (HA). The annual budget for the entire region (TJ, KG & UB) amounts to around USD 33 Mio. (13 Mio. from SDC and 20 Mio. from seco).

Table 6: Average annual funds allocated for the Central Asian countries 2004 – 2006 in CHF²²

	Tajikistan	Kyrgyzstan	Uzbekistan	Regional
SDC	3.6	4.6	1.6	4.5
seco	5.3	7.5	4.2	3.3

Regional – The **Regional Dialogue and Development** Programme (RDD), a project funded by SDC and PD IV²⁴, is being implemented by several local and international NGOs in the border regions of the Ferghana Valley. The programme addresses conflict prevention and mitigation, maintaining a network of Ambassadors of Goodwill, while supporting community development and the rehabilitation of basic infrastructure. In some cases, natural risks are a cross-border problem and addressing them could contribute to peace promotion.

The outcome of the Regional **Hydromet** project, which is funded by seco (till 2004) and SDC (2005 onwards), is a Regional Centre of Hydrology for Central Asia. The aim is to support the Central Asian national hydro-meteorological services in order to contribute towards better runoff forecasting of the Amu-Darya and Syr-Darya rivers for energy and agricultural purposes, with free exchange of data. The use of the same information for flood forecasting could enhance the regional water management capacities.

The **Central Asian Mountain Partnership** Programme (CAMP), funded by SDC and implemented by the Centre for Development and Environment (CDE, at the University of Berne), works on rural development in KG, TJ and KZ. The four key areas of activity are natural resource management, village development, product development, and marketing and policy dialogue. Raising the awareness on the interrelation of the use of natural resources with the occurrence of natural hazards, could greatly contribute to sustainable resource management and village development.

²⁰ Risk Assessment tools for Diagnosis of Urban Areas against Seismic Disasters.

²¹ <http://www.nccr-north-south.unibe.ch>, funded by SDC and the Swiss National Science Foundation.

²² Source: Swiss Regional Mid-Term Programme Central Asia 2002 – 2006; DR budget of CHF 1.5 Mio. included in SDC's Regional contribution.

²⁴ Political Affairs Division IV, Human Security within the Ministry of Foreign Affairs.

The **Integrated Water Resources Management** Project in Ferghana Valley (IWRMFM), funded by SDC and implemented by the 'International Water Management Institute (IWMI)', addresses the following aspects of water management: (1) the organization of water management on regional level (set-up of Water Users Associations), (2) water saving and improvement of soil fertility, as well as (3) the elaboration of sustainable water allocation mechanisms between the three countries. As part of the Swiss water portfolio, one project automates irrigation canal sluice gates in the Ferghana Valley. Water as a key trigger of many natural disasters can have a crucial impact on the various projects within the IWRMFM.

Tajikistan – The Local Development Program funded by SDC supports strengthening of local infrastructure, institutional capacities and economical development, and is being implemented in Muminabad by CARITAS Switzerland, in Murghab by ACTED, and GBAO by AKF. Local development needs to take proper disaster management into account in order to guarantee sustainability. Further fields of SDC activities include projects in the governance domain and a reform of the health sector.

Seco is co-financing the Lake Sarez Risk Mitigation Project (**LSRMP**), supporting the installation of an early warning system on the Usoi dam at Lake Sarez. Other seco activities include projects in the **power sector** which target the restructuring of the sector and rehabilitation of energy infrastructure, as well as possible co-financing in rehabilitation of the Khujand **water supply** system. In all these projects, proper DR measures would strongly enhance their benefit.

Several individual DR projects of SDC's Humanitarian Aid Department are presently being implemented in TJ, forming part of the Swiss DR Programme:

1. Elaboration of a disaster reduction plan for GBAO based on a **Remote Hazard Assessment in western Pamir, GBAO**: remote sensing data analysis and ground verification are used to elaborate a disaster reduction plan for selected villages in GBAO.
2. The **Disaster Reduction Project in Muminabad** supports the local development project implemented by CARITAS with first basic investigations on flood and debris flow risk in Muminabad district, which is followed by assistance to design and construction of preventive measures and induce a risk dialogue with the local population.
3. **Provision of Non-food Emergency stocks** to the MoES TJ to strengthen their capacity to respond to recurring natural disasters, which is being implemented by Global Partners.

Kyrgyzstan – Within the framework of the SDC-funded Kyrgyz Swiss Agricultural Programme (KSAP), the countrywide **Rural Advisory Service** Project (RAS) is being implemented by Helvetas. RAS provides consultancy to local farmers in up-to-date farming technologies and aims to support the reform of the agricultural sector. Including DR know-how in the consulting service would greatly increase the impact of the advice and would reach a key target community (farmers) dealing with environmental problems.

The **KirFor** programme (Kyrgyz-Swiss Forestry Support Program), funded by SDC and formerly known as LesIC, is being implemented by Intercooperation in close cooperation with the State Forest Service. It aims at forestry sector reform and strengthening the capacity of sustainable community-based forest management (CFM). Future forest management focuses more and more on qualitative aspects, including of course the role of trees as simplest mean for natural disaster prevention.

The seco-funded **GIS/Cadastre** Project was completed in 2003, with the target to promote the process of land privatization and an efficient use of land resources. It supported the Kyrgyz State Service of Geodesy and Cartography in cooperation with the State Agency for Registration of Land Rights. This project, although completed, can be seen as a linking point for land-use management questions, micro-zonation, and risk mapping, as the base information is an orthophoto produced by the Swiss Air Force in 2003.

Uzbekistan – Several regional Swiss programmes are being implemented in the Ferghana Valley (see above). Further Swiss activities are mainly funded by seco and include: **water supply** for Bucharu and Samarkand, rehabilitation of **Andijan district heating system**, and **Nukus sewerage system** rehabilitation.

4 Swiss Disaster Reduction Strategy for Central Asia

4.1 Overall goal

The overall goal of SDC's disaster reduction efforts in Central Asia is to ensure safe life and sustainable livelihood by minimizing the effects of natural disasters through the appropriate use of natural resources, a safe environment and improved coping mechanisms, thus contributing to poverty reduction.

The main focus is:

- To raise overall awareness for disaster reduction in the region.
- To increase risk and disaster management capacities.
- To foster collaboration between agencies working in the field of prevention with those working in response.
- To include disaster reduction aspects in development efforts.

4.2 Approach and basic principles

Integrated Disaster Reduction approach – Natural Disaster Reduction (NDR) is a generic term for all kind of activities related to the alleviation of the negative impact of natural processes such as earthquakes, landslides, floods, avalanches, droughts, etc. Any type of disaster reduction effort requires the consideration of the overall risk in the area. This includes the consideration of the prevailing hazards and vulnerabilities. In addition, it requires the collaboration of/with all stakeholders on all intervention levels and in all sectors (multi-stakeholder approach), working in the three aspects (prevention, response, recovery). An integrated approach to manage risks and disasters is outlined within the Johannesburg Plan of Implementation²⁵. It considers:

- The **disaster cycle**: this conceptual frame represents disaster reduction, where prevention, response, and recovery are equally addressed. Risk assessment and the awareness of all involved are a pre-requisite for any kind of activity.
- A **multi-stakeholder approach**: the complexity of disasters requires a collective approach, including multi-levels and multi-sectors. All stakeholders are partners, such as local communities, the national level as well as international organizations. The private as well as the public sectors have their specific roles.
- A **multi-risk approach**: all prevailing hazards that can threaten a community have to be considered. If necessary and important, technical risks have to be included.
- Disaster reduction, as an integrated part of development plans, provides a contribution to the **sustainable use** of natural resources.



Figure 8: The disaster management cycle

Risk-oriented focus - SDC activities are planned in areas where the risk is considerable, and where the existing coping mechanisms are insufficient.

Policy dialogue – Disaster reduction is a cross-cutting issue for any activity with spatial impact. It is not a competitor to other development priorities, but is an essential component of those other priorities. The international policy efforts need to be continued on regional and national levels as strongly promoted e.g. by ISDR. In particular, there is a shift required from a response-oriented to an integrated risk reduction approach with an emphasis on prevention and preparedness.

Mitigation measures – Integrated disaster reduction includes soft as well as hard measures. Non-structural measures (watershed management, land-use planning, awareness building, etc.) have a clear priority. Structural measures (dams, dikes, river training, etc.) or monitoring equipment always have to

²⁵ World Summit on Sustainable Development, Johannesburg, 2002: Programme for the further implementation of Agenda 21.

be accompanied by awareness building (risk dialogue) and capacity building (education and training) of professionals and local communities.

4.3 Objectives of the Disaster Reduction Programme

Based on the evaluated hazards, vulnerability and coping mechanisms in Central Asia (see chapter 2), along with the basic principles outlined in chapter 4.2, the following outcomes of the programme are identified, and will be further outlined below:

- A – Increased awareness for disaster reduction
- B – Increased capacity to analyse and to manage risks and disasters
- C – Performance of risk assessments and contribution to disaster reduction
- D – Support to development projects

A. Increased awareness for disaster reduction

Rationale: In most Central Asian areas disaster reduction is presently not a priority at local level due to more urgent pending problems (daily struggle for life). In addition, the absence of major events in the region in the past few years has added to a reduced or even inexistent awareness for disaster reduction. However, the daily struggle is dramatically increased, if a disaster strikes (e.g. an earthquake or a flood). Today's conditions and developments contribute to a generally high vulnerability and to elevated risks:

- Inappropriate land-use at village level (e.g. housing development into hazard-prone areas), disregarding building codes and non-existing land-use and watershed management (e.g. irrigated fields on steep slopes, degradation of soil and vegetation cover).
- Lacking maintenance of existing protection works (channels, riverbanks, slope stabilisation measures).
- Poor relief capacities for remote areas (difficult access) and overwhelmed relief units in case of a major event in urban areas (e.g. earthquake in Bishkek).

Therefore, the local communities need to be prepared in order to mitigate the impact of possible events. Disaster reduction needs to be integrated into the daily life of local people and in any development effort.

Objectives:

1. A risk dialogue that covers all aspects of disaster reduction (risk bearing, risk shearing, risk mitigating mechanisms) is initiated at local level with men and women.
2. Male and female members of local communities are aware of prevailing risks in their area, recognize possibilities to reduce these risks, and build capacities to resist disaster.

Beneficiaries: Selected local communities in urban and rural areas, preferably where previous and on-going development (not only SDC) activities have been implemented.

Aspects to consider: Awareness building aims to support the male and female members of a local community to

- Recognize prevailing hazards and risks (or to ask for in-depth risk assessments)
- Recognize the necessity to maintain existing protection structures
- Recognize community-based coping mechanisms by taking inputs from all members of the community and building new initiatives on them
- Consider appropriate land-use practice (village development, agriculture, watershed management)
- Implement small-scale mitigation measures (or ask for outside support to implement them)
- Improve emergency preparedness
- Establish risk sharing mechanisms

- Understand the interrelation of sustainable use of natural resources and natural disasters

B. Increased capacity to analyse and to manage risks and disasters

Rationale: Know-how and knowledge for risk analysis and disaster management are required at national as well as at local levels for efficient disaster reduction efforts. A sound expertise and experience is particularly important because:

- The institutional memory for past events is practically inexistent (little information available about disasters during Soviet times).
- The environment is rapidly changing (watershed degradation, climate variability and climate change, uncontrolled urban development in post-Soviet times, etc.).
- Natural events are often cross-border issues and require good coordination capacities.

Today, this know-how is scarcely available either at scientific institutions or in practice and, whenever it does exist, it is completely out of date. On the other hand, there are existing structures (e.g. MoES training centre) - or structures still in a development stage (University of Central Asia) - where this type of education can be taught.

Objectives:

1. Scientific and administrative-technical personnel are educated, trained and equipped in order to recognize and manage risks and disasters appropriately.
2. Institutions working in the field of disaster reduction are linked together.

Beneficiaries: Capacity building targets specifically

(1) universities and similar institutions (e.g. academy of science)

(2) the technical-administrative level (professionals at ministries and national services)

Aspects to consider:

- Improve graduate and post-graduate education for identification and assessment of hazards and risks. Include male and female professionals into this educational process (continuing education).
- Improve the capacity to manage risks (e.g. to install and maintain monitoring and early warning systems, to share regional hazard information, to establish risk reduction concepts, to link the relevant institutions)
- Improve the capacity to analyse risks (incl. hazard, vulnerability) among professionals, as well as gender and poverty awareness
- Strengthen and upgrade existing structures to efficiently manage disasters on national and oblast level through:
 - up-to-date disaster management courses and equipment (education, training, drill)
 - improved data bases and the integration of newly elaborated information into commonly used data bases
 - interagency coordination and cooperation

C. Performance of risk assessments and contribution to disaster reduction

Rationale: Where human life, property and infrastructure are at imminent risk, the implementation of disaster reduction measures is urgently required. At present, the local capacity to perform risk assessments and to implement specific mitigation measures is only partly available and/or outdated. In many areas, risk assessments and disaster reduction measures are required due to:

- A fast changing environment. High mountain areas are particularly vulnerable to climate change. Hazards can develop to an extent where even no historic parallels exist.
- Deteriorating protective structures. From Soviet times, there exist numerous protective structures which are deteriorating. If not properly maintained the failure of those structures can aggravate the impact of a natural process considerably.

- Uncontrolled urban development. Since the break-up of the Soviet Union uncontrolled urban development is ongoing. This trend puts many new developments unnecessarily at risk and needs to be reversed.

Objectives:

1. At specific locations risk analysis is performed.
2. Specific protection structures are maintained or implemented.

Beneficiaries: High mountain areas and the adjacent valleys are given a special focus for risk assessments and the implementation of mitigation measures.

Aspects to consider:

- Local authorities are supported in areas where there is an urgent need for risk assessments to perform these activities in an up-to-date manner. This is particularly important e.g. in climate sensitive areas (high mountains). Every risk assessment needs to have a capacity building component (on the job training for local specialists) and include gender and poverty aspects.
- Local authorities are supported in the implementation of disaster reduction measures. The priority list of measures is:
 - (1) Hazard and risk assessment
 - (2) Maintenance of existing protection structures (riverbank protection, slope stabilisation)
 - (3) Emergency standards, disaster preparedness training for all groups (men, women and children) of the community at risk
 - (4) Development plans for hazard prone areas
 - (5) Appropriate land-use practice (e.g. watershed management, land-use planning)
 - (6) Structural measures (e.g. dams, dikes, river bank protection) to be implemented through the consultation of all members of local communities
 - (7) Preparedness (e.g. response capacity at local level)
- The implementation of mitigation measures needs to be accompanied by awareness building.

D. Support to development projects

Rationale: A large number of development projects are presently being implemented in Central Asia. Many of these development projects are located in disaster-prone areas. As examples show, some of the development efforts are not crisis-resistant, e.g. natural hazards can damage or even wipe out the efforts made. Environment impact assessments are frequently performed; however, a hazard impact assessment (disaster appraisal) is hardly known.

Objectives:

1. Development projects are offered a consulting service - as added value - to perform a risk assessment (disaster appraisal) and provide proposals for adequate improvement of the project to become disaster resistant.
2. A small group of specialists is educated and trained to perform such investigations.

Beneficiaries: Swiss development stakeholders and any interested local or international organisations.

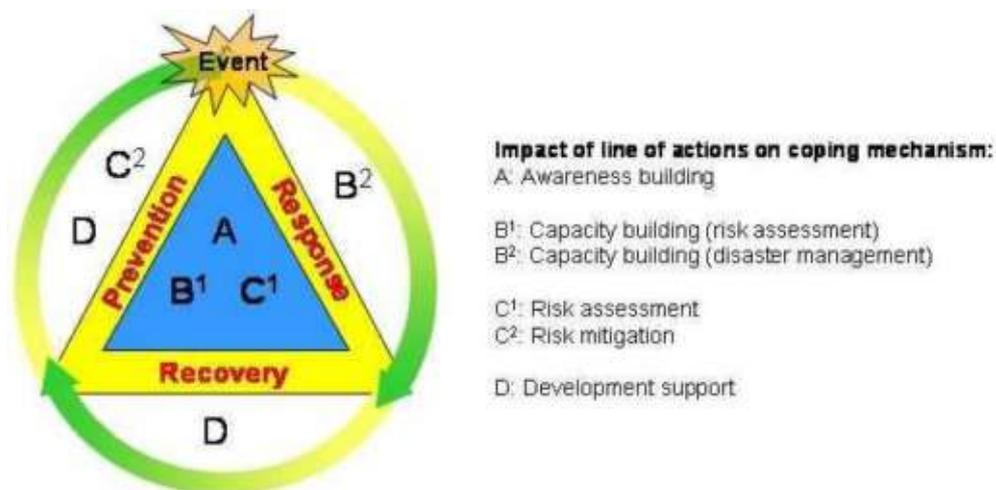
Aspects to consider:

- Educate and train a small group of local experts in risk analysis and disaster reduction
- Offer a non-sophisticated "disaster-proof" check where the project owners have already identified a problem or where projects in disaster-prone areas are jointly assessed

- Provide information to increase disaster resistance of projects by easy-to-implement measures (proofing of structures, etc.)
- Training on gender issues in disasters
- The disaster-development links are made clear
- Provide services before spatially relevant projects are implemented
- Increase the awareness of national and international programme officers for the issues of disaster reduction.

4.4 Strategic frame for implementation

Implementation of the Swiss Disaster Reduction Strategy - The following figure shows the impact of the 4 lines of actions (A-D) on the three coping mechanisms (prevention, response, recovery) and the precursors (risk assessment, awareness building in the centre):



To implement this strategy, a number of individual projects will be outlined in a programme document. Joint annual planning and reviews will guarantee programmatic steering.

Local need and local ownership - Local communities (particularly in the mountainous regions of Central Asia) as well as institutions of the former Soviet Union, have a wealth of knowledge in disaster preparedness, mitigation and management. However, very often it is neither applied nor implemented due to inadequate capacities or resources. The definition of individual projects for disaster reduction will consider the locally expressed needs by governments and/or other institutions and the already available capacities in a participatory way. The question of ownership of a project is vital for the sustainability of the activity itself.

Existing networks and collaboration - The implementation of the strategy will be conducted by partner organisations either as bilateral agreements or together with other international/regional partners. The individual projects are coordinated by the Disaster Reduction Programme Unit at the Swiss Cooperation Office in Dushanbe. It is clearly intended to link the individual projects as much as possible with each other and with other ongoing development activities.

The Swiss Agency for Development and Cooperation and the Swiss State Secretariat for Economic Affairs (seco) are presently implementing a number of development programmes and projects in the region. The Disaster Reduction Programme with its individual projects uses, whenever possible, the already established networks and tries to benefit from synergies. All work performed within the programme shall contribute as added value to those development efforts.

Swiss Regional Mid-term Programme Central Asia 2002-2006 - Based on the conceptual framework and different domains of the mid-term programme, the following aspects shall be taken into consideration:

- **Gender focus** – Considering the gender perspective in disaster management will create better understanding of women's different vulnerability, as well as their capacity in risk management and during emergency situations. It creates awareness among policy-makers that women need to be consulted as equal partners in decisions related to disaster management and their needs

targeted in all aspects of integrated disaster risk management. Engendering disaster reduction enhances a society's capacity to deal with emergency situations. Gender equality shall be promoted among the different stakeholders and partners when designing or carrying out disaster reduction projects.

- **Governance focus** – Governance refers to planning, decision-making and management processes through high standards of transparency, predictability, public accountability and the absence of corruption. Good governance principles therefore also apply for all bodies involved in integrated risk management, from local to national and international level, through all sectors (multi-stakeholders approach), as well as to all implementing partners. Activities within the DR programme shall follow a rights based approach and wherever possible synergies to the Governance Programme shall be strengthened (e.g. local governance projects in Muminabad, GBAO, Murghab, or the Regional Dialogue and Development project). The referential framework is constituted by the *Swiss Governance Concept Paper for TJ 2005 – 2007*.
- **Poverty focus** – Poor people are often forced to settle in disaster-prone areas such as unproductive and barren lands, drought prone areas, flood plains, and mountain slopes subject to erosion and landslides. Lack of alternatives expose them more to the external shocks of hazards and disasters. Furthermore, they often lack access to information and power to influence policy decisions regarding development planning, land use, forests, etc. The unsafe living conditions of the poor pose a serious threat to their sustainable livelihoods. Poverty locks them in a cycle of vulnerability. Therefore, the poverty focus needs to be integrated while coping with natural disasters and risk management.
- **Environment** – Environmental management is closely linked to disaster management, as inappropriate use of natural resources has an impact on the occurrence of natural disasters. Therefore, addressing disaster management should, conversely, contribute to a sustainable environment.

Geographical focus - Based on the overall risk evolving from the risk profile in this document (see chapter 2.5), a focus will be placed on Tajikistan (particularly for the initial phase (2004 and 2005). Especially Line of Action B. '*Capacity building*' will bear this in mind. As part of Line of Action C. '*Risk assessment and disaster reduction measures*' further emphasis will be laid on glacial hazards; therefore, all glacial areas in the Tajik Pamir, Turkestan Range and Tien Shan of mainly KG are herewith of specific concern.

Timeframe - This strategy covers the period from 2004 to 2008. Already running individual projects which started in 2002 and 2003, are incorporated into the operational phase of the programme. New projects are defined and outlined for mid 2004. Further specific activities will be determined later in 2004 and 2005.

Available means - The annual budget for disaster reduction in Central Asia over the next 5 years is approximately CHF 1.5 Mio. (USD 1.1 Mio.). Planned allocation of the overall budget is roughly:

- 20 % for awareness building
- 50 % for capacity building
- 30 % for risk assessment and disaster reduction

Small-scale projects on prevention, mitigation and response shall be supported according to the '*Small action's credit line for DR projects*' directly by the Swiss Cooperation Offices. Annual budget for Central Asia is USD 100'000.

Sustainability of the activities - The sustainability of the activities under the 'Swiss Disaster Reduction Programme' is a priority concern. The following aspects will contribute to the sustainability:

- Collaboration only according to specific local needs
- Local ownership of the individual projects
- Implementation of the projects by intermediate partner organisations
- Support of government institutions (preserve existing capacity from Soviet times)
- Mid-term commitment

Non-priority activities - A number of disaster reduction activities are presently being discussed in the region. SDC will consider those listed below not as priority since other organisations are already working in these fields or they are beyond the capacity of SDC:

- Awareness building campaigns at national level
- Search and rescue (SAR) education and training, material support
- Implementation of structural measures in tailing areas

4.5 Monitoring and review of the programme

The outcome and the impact of the programme shall be reviewed in 2006 (mid-term review) and 2008. The annual planning will be the platform and basis for regular monitoring. In the context of the planning of the next phase of the Swiss Regional Mid-term Programme 2007-2012, this document will be reviewed.



Figure 9: Risk dialogue during community based awareness building workshop in village in Varzob district, Tajikistan

Photo by Sebastian Eugster, 2004

Glossary

For the purpose of this strategy, the following definitions are used:

- ➔ **Disaster Reduction:** “The systematic development and application of policies, strategies and practices to minimise vulnerabilities and disaster risks throughout a society, to avoid (prevention) or limit (mitigation and preparedness) the adverse impact of hazards, within the broad context of sustainable development.” (Source: ISDR Living with Risk: a Global Review of Disaster Reduction Initiatives, Geneva, July 2004).
- ➔ **Prevention:** Encompasses activities to ensure a permanent protection against a probable loss. These include engineering and physical protection measures, a legal framework for the control of land use and building codes. They reduce the physical vulnerability and/or exposure to hazards through infrastructure (e.g. flood barriers, building of refuges) and sustainable land-use practices (e.g. forest control in upstream areas).
- ➔ **Mitigation:** Structural and non-structural measures taken before disasters, intending to reduce or eliminate the impact on society and environment. These measures reduce the physical vulnerability of existing infrastructures or of vulnerable sites, which directly endanger the populations (e.g. retrofitting of buildings, reinforcing of "lifeline" infrastructure like roads, communication, energy).
- ➔ **Preparedness:** Organisational activities taken before disasters, which ensure that when confronted with a natural disaster the systems, procedures and resources required are available in order to provide timely assistance to those affected, using existing mechanisms wherever possible. (e.g. awareness raising, training, establishment of disaster plans, evacuation plans, pre-positioning of stocks, early warning mechanisms, strengthening indigenous knowledge, etc.).
- ➔ **Response:** Disaster Response (sometimes called Disaster Relief) is the sum of decisions and actions taken during and after a disaster, including immediate relief and rehabilitation. It is, therefore, the implementation of all kind of preparedness measures to alleviate the impact of a disaster. Spontaneous help (families, neighbourhoods, etc.), as well as international response and assistance during and immediately after a disaster belong to response activities.
- ➔ **Recovery:** Decisions and actions taken well after a disaster with a view to restoring or improving the pre-disaster living conditions of the stricken community drawing maximum benefit of the lessons learnt from the recent disaster. The risk sharing mechanisms enable to implement recovery measures. Recovery offers the opportunity to develop and apply further disaster reduction measures.
- ➔ **Vulnerability:** The exposure to natural hazards is represented by a set of conditions and processes as a result of physical, social and economic factors. Therefore vulnerability can be seen as the susceptibility of a community to the impact of hazards. Physical vulnerability relates primarily to structural features (house, dam, road, bridge), but also concerns population density, social vulnerability to age, gender and population growth, and economic vulnerability to poverty or general economic conditions.
- ➔ **Disaster reduction mechanisms:** Disaster reduction measures are implemented and applied before (prevention), during and immediately after (response), or well after (recovery) the event strikes. However, the relevant mechanisms for these three aspects need to be planned, prepared, implemented, and trained well before the event strikes. The following list of disaster reduction measures refers to the disaster management cycle described earlier (see Figure 8 in 4.2 Basic Principles), serving as an example:

Aspect	Mechanism	Disaster reduction measures (to be planned, prepared and implemented before the event strikes)
Response	Risk bearing	<p>Preparedness measures (to ensure that when confronted with a natural disaster the systems, procedures and resources required are available in order to provide timely assistance):</p> <ul style="list-style-type: none"> ➤ Prepare the relevant legislation ➤ Strengthen the institutional framework (e.g. disaster management unit, security system, assessment teams) ➤ Install monitoring, warning and alert systems for rapid-onset as well as slow-onset disasters ➤ Perform contingency planning ➤ Educate and train SAR teams ➤ Prepare emergency stocks ➤ Strengthen indigenous knowledge and perform general awareness building and training ➤ Prepare links with neighbouring countries and international mechanisms (e.g. UNDAC)
Recovery	Risk sharing	<p>Preparedness measures (to ensure that society learns from past disasters and becomes disaster-resilient):</p> <ul style="list-style-type: none"> ➤ Prepare for event analysis and lessons learnt process ➤ Implement effective risk sharing mechanism (legal framework, insurance system, village fund, etc.) ➤ Strengthen family / clan mechanisms for recovery and disaster resilience (disaster-proof long-term development)
Prevention	Risk mitigating	<p>Preventive Measures (taken to ensure a permanent protection against a disaster):</p> <ul style="list-style-type: none"> ➤ Prepare the relevant legislation (water, forest, land-use management) ➤ Implement disaster-relevant land-use planning ➤ Perform watershed management (e.g. reforestation, grazing control, contour farming) ➤ Implement structural measures to stop, deviate, transfer natural hazards <p>Mitigation measures (taken to reduce or eliminate the impact on society and environment):</p> <ul style="list-style-type: none"> ➤ Establish and enforce building code for disaster-proof buildings and infrastructure ➤ Reinforce lifeline infrastructure (earthquake-proof) ➤ Develop risk adaptation strategies
For all aspects	Risk assessment	<ul style="list-style-type: none"> ➤ Perform hazard, vulnerability and risk assessments ➤ Perform disaster preparedness planning ➤ Introduce information management system
For all aspects	Risk awareness	<ul style="list-style-type: none"> ➤ Perform awareness building

Abbreviations and Acronyms

ADB	Asian Development Bank
ALS	Autodidactic Learning for Sustainability
CA	Central Asia
CIS	Commonwealth of Independent States
DFID	Department for International Development
DIPECH O	Disaster Preparedness Program funded by ECHO
DR	Disaster Reduction
ECHO	European Commission Humanitarian Aid Office
est.	estimated
GBAO	Gorno Badakshan Autonomous Oblast
GIS	Geographic Information System
GLOF	Glacial Lake Outburst Flood
HA	Humanitarian Aid Department of SDC
ISDR	International Strategy for Disaster Reduction
KG	Kyrgyzstan
LSRMP	Lake Sarez Risk Mitigation Project
MoES	Ministry of Emergency Situations
OCHA	UN Office for the Coordination of Humanitarian Affairs
RAS	Rural Advisory Service
SAR	Search and Rescue
SDC	Swiss Agency for Development and Cooperation
seco	State Secretariat for Economic Affairs
TJ	Tajikistan
UB	Uzbekistan
UNDAC	UN Disaster Assessment and Coordination team
UNDP	United Nations Development Program
WB	World Bank