FINAL REPORT

NORTHERN AREAS

District Astore

HAZARD, LIVELIHOOD AND VULNERABILITY BASELINE AND CONTINGENCY PLAN

May, 2009

FAO FIAT PANIS

WFP

PAKISTAN NDMA

GOP KANA

FINAL REPORT

NORTHERN AREAS

District Astore

HAZARD, LIVELIHOOD AND VULNERABILITY BASELINE AND CONTINGENCY PLAN

May, 2009

GOP KANA

TABLE OF CONTENTS


Union Councils /Tehsil wise map of District Astore
N
W
E
S
China
Afghanistan
Iran
Pakistan
India
Doyan
Astore
Louse
Eid Gaha
Rehman Pur
Gudai
Marmay
Rattu
Shounter
Minimerg(qamari)
35°0'0"N
35°0'0"N
Legend
Union Councils Boundary
Tehsils Boundary
Astore
Shounter
Prepared By:
VAM Unit WFP Pakistan
Disclaimer:
The designations employed and the presentation of material in this publication donot imply the expression of any opinion whatsoever on the part of the World Food Programme (WFP) concerning the legal status of any country, territory, city or area or of its frontiers or boundaries
WFP VAM Unit House No.3,Street No.2 F-8/3 Islamabad ,Muhammad.Siddique@wfp.org.Ph:111-937-937-ext 3519,0333-5574160
75°0'0"E

PREFACE

In order to assist Astore district government, UN and NGO partners and civil society in responding to the next natural disaster, this Livelihood Baseline and Contingency Plan has been prepared through a highly participatory and inclusive process involving stakeholders at district, tehsil and community levels. Government, UN and NGO partners have been actively involved in contribution to the document, and for this reason it forms a common assessment of the baseline situation in the District and should be used by all stakeholders as a key planning and preparedness tool.

We would like to thank all those who gave their time and expertise to this process.

The HLV team:

Dr. Syed Sajidin
Mr. Jiwan Das
Ms. Robeela Bangash
Mr. Neil Marsland

May 2009.

EXECUTIVE SUMMARY

Astore is the sixth district in Northern Areas of Pakistan, separated from Diamer district in 2004. The district lies between 34^0 - 40 to 35^0 - 52 north latitude and 73^0 - 08 to 75^0 – 12 east longitude. The district has only two tehsils, namely Astore and Shounter covering an area of 6554 sq Kilometres. Total projected population of the district in 2008 is estimated slightly above 89,000. The district has 44 revenue villages (with more than 100 hamlets) divided into 8 Union Councils. The terrain of the district is mountainous with 100% of the population living above 4,500ft above sea level (up to 12,000 ft above sea-level). The mountains are highly deforested and soil covering is unstable. Road access is difficult and can be severed by landslides, flooding, snow slides and avalanches.

Thunderstorms with associated flash flooding and landslides occur every year, as do minor avalanches. Exceptionally severe thunderstorms, flooding and landslides have been recorded in 1950, 1978, 1984,1996 and 2008, these led to localised but significant damage to agricultural land, housing, roads and livestock. There is snowfall every year which reaches 6 inches in the lower areas and may be 2 or 3 feet deep in the higher altitudes. Serious blizzard conditions, deep snow drifts and more powerful avalanches occur every few years and severe conditions in which communities are cut off from the outside world for months on end also occur less frequently. Drought is rare but has been experienced relatively recently (1998 – 2001) and earthquakes also occur occasionally. The following table lists the populations at risk from the various natural hazards affecting the district[1].

Frequent Hazards

Hazard	Overall total at risk			High risk			Medium risk		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Thunderstorm and associated flooding, landslides and lightening strikes	13487	7061	6427	5640	2914	2727	7847	4147	3700
Avalanches	13487	7061	6427	5640	2914	2727	7847	4147	3700
Heavy snowfall and snow slides[2]	50,362	26172	24190						

Infrequent / less likely hazards[3]

Hazard	Overall total at risk		
	Total	Male	Female
Sudden outburst of Derlay lake	5639	2944	2696
Drought	98051	51691	46360
Earthquake	98051	51691	46360

For the purposes of livelihood and hazard analysis the district can be divided into two zones: a lower altitude zone. (locally called “Kool”) with an altitude ranging between 4500 – 7000 ft and the upper

[1] These figures are derived from the 1998 census figures, updated to 2008 using official growth factors
[2] This is the total projected 2008 population living above 7000ft above sea-level
[3] Drought and earthquake have occurred but are relatively unlikely events. As it is not possible to predict where they might strike, for planning purposes the total population of the district is deemed to be equally at risk.

zone (locally called “Niral”) above 7000 feet. There are some significant differences between the zones in terms of overall livelihood patterns, and the kinds and severity of hazards faced are different. In relation to **livelihood strategies:** on average households in the lower zone have greater mobility, and off-farm income is more important in relation to on-farm income than in the upper zone. In terms of **assets**: for a given level of wealth, livestock holdings and land sizes are generally lower in the lower zone and literacy levels are higher (42% in the lower zone and 29% in the upper zone[4]).In addition, anecdotal evidence suggests that incomes are generally higher in the lower zone. Finally, in relation to **hazard profiles**, communities and households in the upper zone are exposed to long periods of show fall (from December to March) and may be seriously affected by deep snow and the impact of avalanches. In the lower zone, the snow fall season is shorter and flash flooding and land sliding are major hazards.

The natural hazards affecting the people of District Astore can be categorized into exceptional relatively infrequent events and less severe but more regular events. The more regular events such as annual flooding, snow sliding and landsides can be effectively combated by supporting communities to undertake risk reduction measures. Households already have several coping strategies and these should be supported by government, NGOs and UN agencies as appropriate. For the more exceptional events, external assistance after the hazard has struck is appropriate and will be necessary. This report contains details of which communities and household would most likely be in need of particular types of assistance at particular times. It also quantifies and costs the likely assistance, thereby creating hazard specific contingency plans for use by local authorities. All of the planning assumptions, intervention types and timings have been validated by district authorities and local NGOs.

[4] Extracted from the 1998 census.

1 INTRODUCTION

1.1 The need for a Livelihood Baseline and Contingency Plan

Pre-disaster information is always a vital resource in post disaster response (which includes post disaster assessments). When disaster strikes, it is critical to know how many people are likely to have been affected and how. This requires knowledge of the demographic breakdown of the population and the likely vulnerability of different people to the disaster. Vulnerability will determine how badly they will be affected, how quickly they can be expected to recover and what kinds of assistance they are likely to need. This information can also be used to create *livelihood based contingency plans*, to be used in case of a natural disaster.

Despite its obvious importance, it remains the case that in Pakistan today there is no single universally accepted source which combines information on hazards, vulnerability and livelihoods at district and sub-district level. In recent natural disasters, there have been problems in obtaining rapid and universally accepted and agreed information on which to base responses and post-disaster assessments. These problems were highlighted in the evaluation of the 2007 floods in Balochistan and Sindh[5]. Whilst there is a great deal of information available from different sources, this is scattered in different offices, at district, provincial and national levels and may not be in a format that facilitates rapid post-disaster decision making. Moreover, some of the information that does exist is old and needs to be updated and / or supported by more recent information to be useful for decision makers.

As well as the information gap, there is also a gap in pre-disaster planning. Most district level contingency plans focus only or mainly on *capacities and procedures* for dealing with disasters. Whilst such information is indeed vital, what is often missing is a detailed knowledge of the likely relief and recovery needs of the population, particularly in terms of recovery of their livelihoods. Combining this livelihood recovery element with existing contingency plans will add an important dimension to the capacity of district authorities to respond to the needs of populations stricken by natural disasters.

This hazard, livelihood and vulnerability (HLV) baseline and contingency plan has been developed to respond to the existing gaps in information and pre-disaster planning. It is intended that henceforth, this document will become a key resource for decision makers in dealing with the next natural disaster in the district.

1.2 What is in this document?

The document consists of a range of information gathered from different sources using different methods. The key elements are as follows:

- *General description* of the district
- *Hazard information:* This shows the history of hazards in the district: the frequency and severity of different hazards and the geographical areas where they strike.

[5] Preliminary Damage and Needs Assessment, ADB and World Bank, Islamabad, Pakistan, September 2007.

- *Demographic information:* The next element in the baseline is a description of the demographic characteristics of the populations in the areas at risk. This is derived from 1998 census data that has been updated to 2008 using techniques agreed with the Bureau of Statistics.
- *Livelihood exposure and vulnerability profiling*: This tool consists of four different elements: (i) Identification and description of different livelihood / wealth groups.
- (ii) Quantification of these groups (iii) Identification of those groups most affected by hazards and why (iv) Identification of those groups most vulnerable to hazards and why
- *Seasonal impact and response calendar:* This shows us what happens to the different activities taking place in an area (village, tehsil, district) over the year, how these are affected by different hazards and what that implies in terms of intervention types and timing.
- *Response typologies:* This gives likely scenarios in terms of numbers of people likely to be affected by moderate and severe hazards, together with probable livelihood support needs quantified as much as possible.
- *Annexes:* The annexes detail the following:

  1. Detailed livelihood based contingency plans
  2. Population numbers in different UCs likely to be affected by different hazards in district Astore
  3. Methodology used to compile HLV baseline and contingency plan
  4. Key organizations for livelihood support and recovery
  5. Socio-economic secondary data
  6. Village/UC/Tehsil level demographic and housing data.

2. GENERAL DESCRIPTION OF THE DISTRICT

Astore is one of six districts in the Northern Areas of Pakistan. It was created after Diamer district was split into two parts in 2004. The district lies between 34^0 – 40 to 35^0 - 52 north latitudes and 73^0 - 08 to 75^0 – 12 east longitude. On its north lies district Diamir,, on the south east Azad Kashmir and Occupied Kashmir, on the south west Skardu district, on the east Balthistan district, on the east Chillas district and on the north east Gilgit district. The total area is 6554 sq km[6] and the general terrain is mountains and valleys. The district falls in the Karakuram and Hindukush ranges with altitudes ranging from 4500 feet to over 12,000 feet. The world's ninth (2^{nd} in Pakistan) biggest mountain peak "Naga Parbat" ("Naked Mountain") with an altitude of 8126 meters (26,660 ft) above sea level also falls in Astore district. The mountains in Astore valley are fragile, mainly rocky and barren and road access is difficult.

The total 2008 projected population is slightly above 89,000. The district has 44 revenue villages (with more than 100 hamlets), 8 Union Councils and two Tehsils, namely Astore and Shounter. Based on the 1998 Census report, three Union Councils with 17 revenue villages are in Tehsil Astore, leaving five Union councils and 27 villages in Tehsil Shounter. With its extensive pastures and grazing lands, the geographic area of Tehsil Shounter is about 1.5 times the size of Tehsil Astore, although the populations of the two tehsils are roughly equal[7].

Astore valley has a moderate climate during summer. In winter, it can snow up to 6 inches (15 cm) in the valley bottom and up to 2-3 feet (60-90 cm) in the up mountains. The winter can last up to seven months and the summer months are typically dry and warm. Farm activities rarely go beyond the month of October. The cold weather conditions and fragile ecosystem (dominated by soil erosion and irregular rainfall), compound the difficulties of subsistence farming.

The two key sources of livelihood are income from labour (increasingly outside of the district in Pakistan) and subsistence agriculture. Findings from a large survey carried out by the Aga Khan Rural Support Programme in 2005 (SESNAC 2005) indicate that in comparison with the early 1990's, there has been a "dramatic" shift from the farm sector to the non-farm sector as far as occupational structure in the Northern Areas is concerned. In 2005, Roughly 40% of the population was found to be engaged in off farm work and about two thirds of this off-farm labour has either permanently or temporarily migrated out of their native villages to seek employment in the formal and informal sectors. In Astore district, off-farm incomes were estimated to be 69% of total incomes (up from about 40% in the mid 1990's), The importance of farm vs off-farm income varies markedly and directly with decreasing wealth: off-farm incomes are much less important for the poor than they are for the better – off[8]. In common with other Northern Area districts, incomes in Astore are far below the national average (SESNAC 2005 estimated average per capita incomes to be 38% of the national average).

[6] See Annex 3.

[7] Astore Tehsil and Shounter Tehsil have projected populations of 47,178 and 50,873 respectively in 2008.

[8] For the Northern Areas as a whole, whereas off farm incomes account for about 70% of total incomes for the wealthiest fifth of the population,, they account for just 40% of total incomes for the bottom fifth (Source: SESNAC 2005: 18).

The following table gives an idea of the food security and poverty position of the district relative to other districts in the Northern Areas and Pakistan.

Table 1: Food insecurity and poverty indicators for district Diamir in 2003 (Astor was one of two Tehsils in Diamer district at that time)

Indicator	Classification	National ranking	Provincial ranking
1. Indicator of Availability of food at district level[9]	Low deficit (1)	65	5
2. Indicators of Access to food by rural population[10]	Extremely Low(2)	5	1
3. Indicators of Absorption of food by the rural population[11]	Extremely low(3)	10	1
4. Overall food insecurity of the rural population[12]	Extremely insecure (4)	9	1
5. Proportion of population below food poverty line[13]	46.2%	24	1
6. Per capita income	Extremely low(2)	37	5

National Rank: 1 – 120. 1 being worst and 120 the best. The Provincial ranking depends on the number of districts. Northern Areas has a total of 6 districts, so 1 is the worst and 6 is the best

(1) Classification: Extreme deficit; High deficit, Low deficit; Sufficient Production; Surplus Production

(2) Classification: Extremely low; Very low; Low; Moderate; High/reasonable

(3) Classification: Severely affected; Highly Affected; Less Affected; Affected

(4) Classification: Extremely insecure; Very insecure; Less insecure, moderately insecure, reasonably insecure

Source: Food Insecurity in Rural Pakistan 2003, WFP-SDPI publication

Whilst availability of food at district level was deemed to be in only a slight deficit, the abuility of the populaiton to access that food was very low. Almost half of the total population was estimated as being below the food poverty line and per capita income was very low in relation to other parts of the country. The overall picture is of a poor and food insecure population.

[9] Per capita per day consumption vs production of all food.

[10] This is a composite indicator derived from: roads (km) per 100km2 area; % of marginal cultivators (holding land less than 2.5 acres); landless labour as a % of rural households; adult literacy rate, and; per capita income in each district.

[11] Another composite indicator of the extent to which food can be biologically absorbed by the body. It is derived from measures of: access to safe drinking water; immunization; infant mortality; availability of rural health infrastructure.

[12] This is an amalgamation of the composite scores for the indicators of availability, access and absorption

[13] This is the estimate of the proportion of the population which consumes less than minimum required kilo-calories per day.

3. AREAS AT RISK: HAZARDS, DEMOGRAPHY AND VULNERABILITY CONTEXT

3.1 Hazard Analysis

One of the important functions of the fieldwork for the compilation of the HLV baseline is to get a consensus from key stakeholders in the district on the frequency, severity and geographical impact of hazards within the district.

Astore district is a mountainous district, fragile and has little vegetation. The district is exposed to serious hydro-meteorological hazards due to its topography, latitude and proximity to the Himalayan mountain range. It is regularly affected by thunderstorms associated with heavy rainfalls in the monsoon season and this leads to frequent flash floods and landslides. Heavy snowfall also creates problems, affecting access to remote villages and damaging trees and houses. This is particularly the case at the higher altitudes, where avalanches are common in the months of April-May when the temperature starts rising causing increased snow melting and sliding of bulk of snow together with land sliding.

3.1.1 Hazard Time line

The intial reason for selection of Astore district for the HLV pilot project was so that risks and vulnerabilities caused by Glacial Lake Outburst Floods (GLOFs) could be assessed. However, in various discussions with communities, Tehsil and District officials, this risk to livelihods was felt to be less than some other hazards. The most serious risk of sudden lake flooding was found to be from a temporary lake called “Darlay Lake” which has formed at the intersection of three UCs (Ratto, Rehman Pur and Marmay) after thunderstorm and land sliding in July 2008 blocking Astore river. In case of its sudden outburst, this temporary lake would directly affect a number of villages in the three UCs. A further, less likely, risk of sudden flooding was reported in Rehman Pur UC where tow large glaciers - “Payeen Glacier” and “Bala Glacier” have started melting and have blocked passages for visitors. In the event of a GLOF, the likely most affected villages under these glaciers are Tharishang, Nake Churat, Zaipur and Rupal with about 250 acres of agricultural land and about 300 households at risk. Other than these examples, there was no other reported risk of GLOF in Astore district[14].

The following table sets out a historical time line for hazards in the district. The table was compiled from discussions with key informants at the District and Tehsil levels, validated with communities during the field visit to hazard prone communities and validated once more at a workshop in Islamabad on 9th February 2009. For each hazard event, informants were asked to score the event in terms of physical damages and economic losses. The range of scoring is from 0 to 5, 5 being the most severe. The scores were then summed to derive an overall impact score. Scores given by different groups of key informants were triangulated to derive overall scores for all the hazards.

[14] A well known natural lake “Rama Lake” exists on the top hill side of Eid Gah UC in Astore Tehsil. Astore District H/Q is also located in this UC. Discussions with district officials and communities indicated that the Rama Lake is not dangerous as it lies in closed mountains.

Two types of hazard were reported: exceptional relatively infrequent events and less severe but more regular events. Table 2 is arranged to show this clearly. Severe thunderstorms have been recorded several times since the 1950's and represent the most important physical hazard to the livelihoods of people living in Astore. As well as the exceptional years of 1950, 1978, 1984, 1996 and 2008, damaging thunderstorms occur every other year on average. Snowfall and snow slides also occur regularly with some exceptional years in living memory. Drought is not a regular phenomenon and earthquake has affected south Astore only once in 2002. On the other hand Astore district is frequently affected by other hydro-meteorological hazards such as thunderstorm, heavy rains/flooding and heavy snow fall/avalanches as may be seen in the following table.

Table 2: Historical Time line for major disasters in district Astor

Hazard	Year	Season	Geography	Physical damages (Score)	Economic and financial losses (% + Score)	Overall Impact (Sum of score)
A. Exceptional events						
Thunder-storms	1950	July/ August	Perishang Valley UC: Louse, Tehsil Astore (Upper Zone)	Most Houses in UC damaged (Score 3)	Agriculture, Forest (Score 3)	6
Thunder-storms	1978	July/ August	Derlay Village UC: Marmay, Tehsil Shounter (Upper Zone)	Housing, Irrigation Channels (Score 3)	Agriculture, Forest (Score 3)	6
Heavy rains/snow fall/ Avalanche	1983	March/A pril	Hamlet Puffan, Village Mir Malik UC: Rattu	70 houses washed away 22 lives lost (Score 4)	30% agriculture land lost 50% Livestock killed (Score 4)	8
Thunder-storms	1984	July/ August	Shugam Village UC : Rattu, Tehsil Shounter (Lowe Zone)	An artificial lake has emerged Houses, Roads, Bridge damaged (Score 3)	Livestock Agriculture (Score 2)	5
Thunder-storms	1996	July/ August	Mir Malik revenue village with all hamlets below (6) were severely affected UC: Rattu, Tehsil Shounter	Housing (Score 4)	Agriculture Fishery (Score 3)	7
Drought	1998-2004	No rains during April – Sept Springs dried	The whole of Astore/Northern Areas	0	Agriculture/ Fishery Cumulative score over 3 years: 10	10
Earthquake	2002	Nov.	UCs Doyan; Astore: H/Q	500 houses damaged, 8 lives(Score 3)	Forestry, Agriculture	3
Heavy snow fall	2003	April/ May	Hamlet Puffan, Village Mir Malik, UC: Rattu	Households damaged, road blocked (Score: 2)	Standing fruit crop destroyed (score 5)	7
Flood due to	2005	July	Chogam Village,	10% Houses	80% agri land	6

Hazard	Year	Season	Geography	Physical damages (Score)	Economic and financial losses (% + Score)	Overall Impact (Sum of score)
A. Exceptional events						
heavy rains and snow melt			Rattu UC in Tehsil Shounter	80% irrigation channel (Score 2)	damaged 10% Livestock killed (Score 4)	
Thunder-storms	2008	July/ August	New lake has emerged at Darley UC: Marmay, Rattu and Rehman Pur, Tehsil Shounter are at high risk due to lake formation	New lake is 2 Km long) Bridge submerged, road communication affected) (Score 4)	Agriculture land all submerged (Score 4)	8
B. Frequent / regular less severe events						
Mild Avalanches	Every year	March/A pril	UCS: Rattu; Marmay; Rehman Pur and Qamari, in Tehsil Shounter	Road blocked, areas inaccessible Aggregate score since 1990 = 4	Irrigation channels and agriculture land damaged Aggregate score since 1990 = 5	10
Heavy snow fall	Every 3rd /4th year since 1990	January	Tehsil Shounter (upper zone)	Road blocked aggregate score since 1990 = 4	Agriculture land damages, aggregate score since 1990 = 4	8
Flood due to thunderstorm s and heavy rains	Every 2nd year since 2003	July/Aug ust	Lower Zone All district	Houses irrigation channel Aggregate score since 2003 = 3.5	Agri land, crops and Livestock damages: Aggregate score since 2003 = 3.5	7

3.1.2 Overall Hazard Impact Matrix

To derive an overall picture of the physical and economic impact of the different types of hazards the damage, loss and overall impact scores per hazard were totalled. The results of this are presented in the following hazard matrix (table 3). Thunderstorms and the associated flooding, landslides, wind and lightning damage are easily the most important hazard. Combined, the scores from avalanches and heavy snow fall are almost as high as thunderstorms, whilst drought and earthquakes are scored much lower due to their infrequent nature.

Table 3: Hazard matrix of district Astor

Hazard	Frequency	Season	Geography*	Total physical damage score	Total economic loss score	Overall impact on score
Thunderstorm/Heavy rains/Flooding	Every year with some exceptional years	July/August	High risk UCs: Rattu; Marmay; Rehman Pur Medium Risk UCs: Qamari; Louse; Eid Gah	20	15	35
Avalanches/ Snow slide	Every year with some exceptional years	April/May	High risk UCs: Rattu; Marmay; Rehman Pur	9	9	18
Heavy snow	Every 3rd /4th year since 1990	January (Once in April)	Tehsil Shounter (upper zone)	6	9	15
Drought	Once	No rains 1998/2001	All district		10	10
Earthquake	Once	November	UC Doyan	3		3

* See demography at risk in the next section.

3.2 Demography in areas at risk

On the basis of the hazard analysis it is possible to work out the numbers of people at risk from the different hazards. The overall picture is represented in Table 4. More detailed figures are given in annex 2. Table 4 shows that of the total district population of around 98,000 persons, roughly 13,000 can be said to be at moderate to high risk of being affected by the most likely / frequent hazards – i.e. Thunderstorms and avalanches.

Table 4: Summary table of Populations at risk from Hazards in district Astore Frequent Hazards

Hazard	Overall total at risk			High risk			Medium risk		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
Thunderstorm and associated flooding, landslides and lightening strikes	13487	7061	6427	5640	2914	2727	7847	4147	3700
Avalanches	13487	7061	6427	5640	2914	2727	7847	4147	3700
Heavy snowfall and snow slides[15]	50,362	26172	24190	50,362	26172	24190	-	-	-

[15] This is the total projected 2008 population living above 7000ft above sea-level. It is a less precise estimate than that for thunderstorms and avalanches. Note that snow slides are not the same thing as avalanches.

Infrequent / less likely hazards

Hazard	Overall total at risk		
	Total	Male	Female
Sudden outburst of Derlay lake	5639	2944	2696
Drought	98051[16]	51691	46360
Earthquake	98051	51691	46360

3.3 Longer term trends (Vulnerability context)

The impact of sudden onset natural hazards on livelihoods of the population in Astore is influenced by some important longer term trends and external factors. One critical issue is the remoteness of many villages in the district due to a road network which is limited in coverage and of low quality in terms of road surfaces. The main road connecting the district to Northern areas and the rest of Pakistan is the only link available. It is a narrow road always prone to land sliding. Valley link roads are in dangerous positions and many villages in the upper zone are deprived on this facility. This limits the development work and opportunities for marketing of farm products and off-farm work with in the Northern areas as well as in Pakistan.

A further important factor is the trend of deforestation which has been taking place over many years. Most of the mountains have been “necked” meaning that all the natural coniferous forest has been decimated and not replaced leaving soil, rock and loose stones exposed. This practice increases the fragility of the soil and the speed of run-off, thus increasing the likelihood and severity of land sliding during the monsoon and avalanches in April-May. Damage to dwellings through these events is made more likely by the traditional practice of constructing houses on slopes (plain lands are usually used for agriculture using traditional methods of cultivation).

Partly as a response to the above trends, temporary and permanent migration out of the district has increased very significantly over the past 20 years or so. This trend has changed the balance of income sources from farm to non-farm income and has also been a major factor in increasing the wealth of households in Astore (though still far below the national average). At the same time this increased migration reduces on-farm labour power and contributes to a “brain drain” from the district.

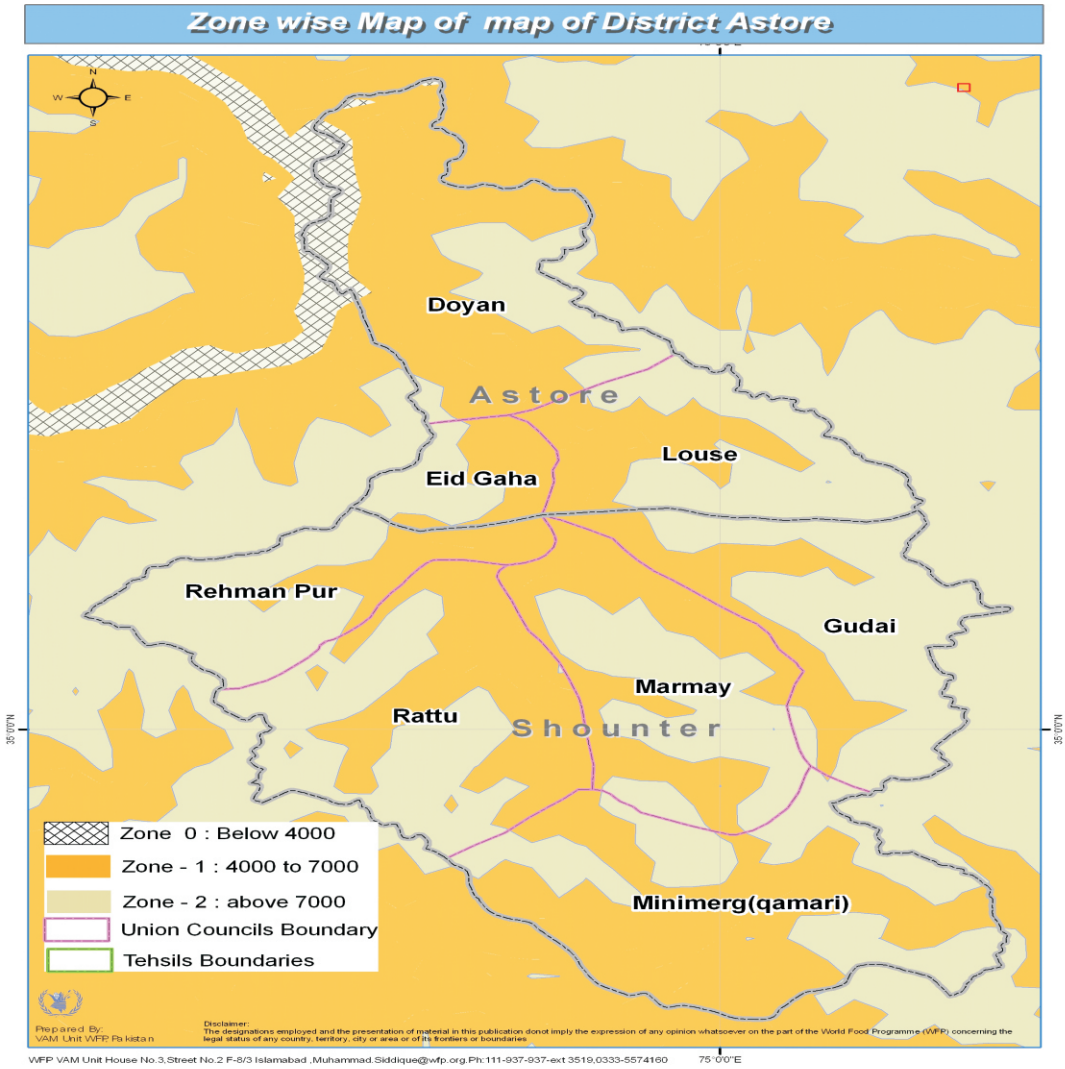
[16] Whilst drought and earthquake have occurred in Astor, they are relatively unlikely events. As it is not possible to predict where they might strike, for planning purposes the total population of the district is deemed to be equally at risk.

4. LIVELIHOODS, VULNERABILITY AND RESPONSE OPTIONS

For the purposes of livelihood analysis, Astore district can be divided into two zones- the lower zone (locally called "Kool") with an altitude ranging between 4500 – 7000 ft and the upper zone (locally called "Niral") above 7000 feet (Figure 2). The demography and geographical area of the two zones is given in table 5.

Table 5: Demography and land use area by zone in district Astore

Topographic Zone (ft)	Population (%)	Geographic Area (%)	Cultivated Area (% of total)	Uncultivated Area (% of total)
Lower (Kool) Zone (4500 – 7000 ft)	49	37	43	32
Upper (Niral) Zone (>7000 feet)	51	61	55	68
All	100	98	98	100



There are two main reasons for dividing the district into these zones. First because there are some significant differences between the zones in terms of overall livelihood patterns, and second because the kinds and severity of hazards faced are different. In relation to **livelihood strategies:** on average households in the lower zone have greater mobility, and off-farm income is more important in relation to on-farm income than in the upper zone. In terms of **assets**: for a given level of wealth, livestock holdings and land sizes are generally lower in the lower zone and literacy levels are higher (42% in the lower zone and 29% in the upper zone[17]).In addition, anecdotal evidence suggests that incomes are generally higher in the lower zone. Finally, in relation to **hazard profiles**, communities and households in the upper zone are exposed to long periods of show fall (from December to March) and may be seriously affected by deep snow and the impact of avalanches. In the lower zone, the snow fall season is shorter and flash flooding and land sliding are major hazards.

Differences in general livelihood patterns and hazard types means it is sensible to analyse livelihood, vulnerability and response options in the two zones separately. As can be seen from Figure 2 above, all Union Councils cut across zones 1 and 2. This is important to note when planning responses.

4.1 Zone 1 - Lower Zone: 4500 - 7000 ft

4.1.1 Livelihood groups, vulnerability and poverty

The following table lists the main sources of livelihood in zone 1. It shows a clear relationship between wealth status and the role of farm and non-farm employment in overall livelihood. The poorer groups rely more on local employment and agriculture for food and income, whilst at the same time having less land. Most of these families (about 50% of the total) cannot afford to send men away for temporary migration and supplement their meagre food and income from agriculture with locally available on and off farm casual labour. As we move up the income scale, land holding increases and income from labour also increases, and it is this labour income which is more important in determining wealth, overtaking agriculture as the main source of livelihood (these findings are consistent with the SESNAC 2005).

[17] Extracted from the 1998 census.

Table 6: Livelihood groups in Zone 1 (lower zone between 4500 to 7000 ft)

Livelihood group	Characteristics	Wealth and vulnerability status	Proportion in overall population
Landless/sharecroppers (mainly migrants)	• 1/3rd share in double cropping area; Half share in mono crop areas • 1 cow or a goat for milk consumption • Bonded labour mainly from Kohistan, Diamer	Very poor	3%
Small-holder – local casual labourers	• 1 - 5 Kanals of cultivated land • 1 cow or goat • Labour (farm and off-farm (50%) • Wood cutting and selling	Poor	45%
Small-holder – local salaried and local labour	• 6 – 10 Kanals • Labour (farm and off-farm) • Low wage private/govt service • 1 cow, 1 goat • Some migrant labour	medium	20%
Employment within and outside district and farming	• Remittances • 5-10% govt service • Contractors • Petty business outside district • Sell milk and milk products • 10 – 25 kanals • 2 -5 cows, 1 – 2 Zoozomo, 2 - 5 goats, 1 -2 oxen • Politically influential	Above Medium	25%
Migrant labour, business and politics	• Remittances from migrant labour • Transport and business outside district • Fruits selling business • Politics Government professionals • Commercial property • Above 30 Kanals land • Hiring of labourers for agriculture land • 1-2 cows; 1 -2 goats, 1 – 2 Zoozomo	Well off	7%

4.1.2 Seasonality

The seasonal calendar of communities in the lower zone is given in Figure 3. Lower zone receives both monsoon and spring rains. Snow fall starts in November but remains only for few days. Heavy snow fall occurs in the months of December/January. The whole of Astore district is a mono crop zone including the lower zone because of cold weather in the winter. However, farmers have the choice to grow wheat, maize and potatoes in the lower zone.

The planting season starts from February and March for wheat and potato crops and the month of May for maize crop. Some fruits (apple and apricot) are also grown in the lower zone. Apricot is usually harvested in August, dried and used mainly for home consumption in the winter season. Potato is the only cash crop for the households, sold to middle men coming from cities. Some potatoes are kept for home consumption mainly in the winter season and for seed next year. Households from lower zone send their livestock to upland pastures during summer season.

Men mainly from the medium and better off classes migrate to work off-farm in cities and towns either in winter season or permanently, leaving the poorer groups, women, and the elderly for farming and local off-farm and non-farm work. Locally available labour opportunities are restricted to the April – October period and during winter, most poor households have no labour work and remain at home.

Figure 3: Seasonal calendar in Zone 1 (lower zone), district Astor

Activities/Crop	J	A	S	O	N	D	J	F	M	A	M	J
Wheat	H	H						P	P			
Maize			H								P	
Potato		H	H	H				P	P	P		
Other vegetables	H	H						P	P			H
Apricot		H/ D	D									
Apple			H	H								
Migration of animals to pastures	X	X	X									X
Grass cutting		X	X									
Seasonal labour migration (to cities)						X	X	X				
Own land cultivation and repairing of terraces									X	X		
Local labour	Pk	Pk	Pk	L	L	-	-	-	L	Pk	Pk	Pk

Monsoon rains Snowfall season spring rains

P: Planting; H: Harvesting; Pk: Peak season; Gr: Harvesting for grains; H/D: harvesting/drying; D: drying. L: low season

4.2 Zone 2 - Upper Zone: > 7000 ft

4.2.1 Livelihood groups, vulnerability and poverty

People living in the upper zone above 7000ft have larger pieces of land than in the lower zone, but these are less productive due to a harsher climate and shorter growing season. As is the case for the Lower Zone, there is a positive association between increases in income and diversification of livelihoods away from agriculture and into off-farm employment, however in comparison with the Lower Zone farming is more important for the

better-off groups. Households grow maize or potatoes in this area. Apple and walnuts are also owned by the households. About 30% of households have cultivated land below 5 – 10 Kanals and are considered as poor (Table 7). Some additional 5% of the households were also reported to be landless, mainly migrated from the border area of AJK/Occupied Kashmir. These persons cultivate agricultural land of large land owners on share basis (half share in agricultural production, but no share in fodder products). Households above 10 Kanals have more or less the same characteristics as those of the medium to well off groups in the lower zone, although they keep a higher number of livestock and have less opportunity for seasonal work.

Table 7: Livelihood groups in Zone 2 (Upper Zone above 7000 ft)

Livelihood group	Characteristics	Wealth and vulnerability status	Proportion in overall population

Landless/Share croppers (mainly migrants)	• Labour (farm and off farm)
	• Wood cutting labour
	• Share cropping
	  ○ 50% grain
	  ○ Input by landlord
	  ○ Bhusa to landlord
	• 1 cow, 2 goats, 1 donkey
		Very poor	5%

Farming and local casual labour	• Labour (farm and off-farm) • Seasonal labour • 5- 10 kanals land • Tourist guide • Forest cutting/selling • Some govt jobs • Soldier in Army • Share cropping • 1 cow, 3 goats, 1 oxen/Zoe, 1 donkey	Poor	40%
Farming and employment inside and outside district (a)	• 10 Goats, 2 cows (some keep one Zoozomo),1 oxen, 1 zoe,1 donkey • Private services • Army/Government Clerical Jobs • Wood selling • Seasonal labour in Karachi • 10 – 20 kanals land	Medium	30%
Farming and employment inside and outside district (b)	• 10 Goats, 2 cows (most keep 1-2 Zoozomo), 1 Oxen, 1 Horse for polo, 1 Donkey • Wood business • Army commissioned Jobs • Political influence • Contractor • Transport • Seasonal labour in Karachi • 15 – 30 kanals land	Medium/Better Off	20%
Government and business	• 1 Goat, 1 cow, • Government Officials • Timber Business • Other Business • 30 and above kanals • 1 horse for polo	Well Off	5%

4.2.2 Seasonality

As in the Lower Zone, labour migration, local labour opportunities and agriculture follow clear seasonal patterns. The agricultural season is between April and October and because of cold temperatures, only one crop (maize or potato) is grown by the farmers. The period August to September is important for livestock grazing and grass is also cut for winter feed at this time. Families in the Upper Zone generally have more livestock and are more reliant on livestock than in the lower zone. In October, cattle and sheep are taken down from the high pastures for the winter and will rely increasingly on cut grasses. November to March is the peak season for labour migration. Migrants return to their villages in April to participate in the agricultural calendar once again with land preparation and planting of crops. Local labour opportunities start to increase at this time and casual work is available until the end of the harvesting season in September / October.

The following figure shows the seasonal calendar for the upper zone.

Figure 4: Seasonal calendar in Zone 2 (upper zone), district Astor

Activities/Crop	J	A	S	O	N	D	J	F	M	A	M	J
Maize			H							P		
Potato		H	H	H						P		
Barley			H								P	
Vegetable	H	H	H								P	
Grass cutting		X	X									
Labour												
Seasonal labour to cities					X	X	X	X				
Family migration to Cities (in areas where there is shortage of fire wood – 9000 ft and above)					X	X	X	X	X	X		
Local labour	Pk	Pk	Pk	L						L	Pk	Pk

Monsoon rains Snowfall season spring rains

P: Planting; H: Harvesting; Pk: Peak season; L: low season

5. RESPONDING TO DISASTERS: COMMUNITIES AND EXTERNAL ASSISTANCE NEEDS

As noted earlier, the natural hazards affecting the people of District Astore can be categorized into exceptional relatively infrequent events and less severe but more regular events. In the first category, severe thunderstorms are the most important historically, causing widespread wind damage, flooding and landslides. As well as the exceptional years of 1950, 1978, 1984, 1996 and 2008, damaging thunderstorms occur every other year on average. Snowfall and snow slides also occur regularly with some exceptional years in living memory (i.e. 1983 and 2003). Drought is not a regular phenomenon and earthquake has affected south Astore only once in 2002. Glacial hazards in the foothills of Naga Parbat exist but the damage caused by glacial melting has historically been slight, though this may change in future due to global warming.

5.1 Community coping mechanisms

The responses to these different types of hazards can be distinguished by the degree to which local communities and households are able to reduce the risk of the hazard turning into a disaster – either by preventing or reducing the effects of the hazard, and/or effectively dealing with the consequences. To deal with the impact of regularly occurring hazards, communities and households have developed a number of coping mechanisms. These are often sufficient to contain the effects of the hazard, but at some often considerable cost on the asset-base of households and their resilience to repeated shocks. It should be noted that the following coping mechanisms are practiced in other mountainous areas in Pakistan, for example, similar strategies exist in Bagh district in AJK[18].

The following coping mechanisms (Table 8) are employed to deal with the hazards of thunderstorms (and associated flash floods and landslides), snow-slides and drought.

Table 8: Coping Mechanisms for Land Slides and Flash Floods in district Astore

General for all kind of disasters	Thunderstorms, Flash Floods/Land slides	Snow-slides, avalanches and heavy snow
• Use local safety nets (sharing of resources/shelter/food etc) • Wait for government relief • Reduce expenses on consumption • Sale of livestock • Obtain remittances from family members working in Pakistan • Obtain distress loans for food and repairs from money lenders and shopkeepers • Repair houses/Make temporary shelters • Send male members for local or migrant labour.	• Divert water • Shift houses • Put big stones in the flash flood streams to break the pressure of water , • Use wooden flat pieces to cross the streams	• Remove snow from roof-tops as soon as possible • Construct barriers to prevent / slow snow slides

[18] See Bagh Hazard, Livelihood and Vulnerability Baseline and Contingency Plan, NDMA/UN: December 2008.

5.2 Supporting Communities in dealing with frequently occurring hazards

There are a number of ways in which communities can be "helped to help themselves" to reduce the impact of frequently occurring hazards. These measures can and should be taken to reduce the risk of the occurrence of a hazard turning into a disaster for villages and households. In the light of the hazards experienced in the district, and based on community consultations in similar conditions in Pakistan[19] a number of likely risk reduction measures can be highlighted. If implemented, these could reduce the effects of both small and larger-scale hazards, and many could be put into place at a fraction of the cost of the various response measures detailed later on in this report. Ideally, risk reduction measures should be implemented alongside response planning and response action, so that livelihoods can be protected during the impact of the hazard and supported after the hazard has stuck.

The following list of risk reduction measures have been discussed with and endorsed by district government as well as staff from the Aga Khan Rural Support Programme in Astore.

Table 9: List of Risk Reduction Measures for various hazards in district Astore

Hazard type	Risk reduction measure	Community contribution	State / UN agency / NGO support
Flash-flooding; landslides	Small Check dams, watershed terracing	Implementation and labour/cash contribution	Funding and technical design support; food /cash for work schemes
	A forestation	Plantation and management of plants	Community mobilization and technical support; food /cash for work schemes
	Small-scale drainage channels	Labour for construction	As above
	Small-scale embankments / safety walls	Gathering of local materials; labour for construction	As above
	Protection bunds and terracing	Labour, community mobilisation	Technical support; provision of napier grass, agro-forestry species
	Shifting to safer places	Mediating in land discussions (community leaders); Construction of houses	Providing new land, mediating in land discussions
	Livestock shelters	Labour for construction	Technical support, credit for materials
Snow fall/ snow slides	Village snow clearance and gritting sheds	Gathering of grit; gathering of local materials for construction; construction	Provision of shovels; ox driven snow ploughs; training
Drought	Afforestation	As for flash-flooding and landslides	As for flash-flooding and landslides
	Introduction of drought resistant crops	Participation in adaptive trials, plantation, seed multiplication	Technical advice, mobilisation
	Rain water harvesting structures	Labour for construction	Funding for low cost materials , mobilization and capacity building
	Linking springs with water storage tanks	Implementation; operations and maintenance	Funding, Mobilization and capacity building

[19] Source: HLV fieldwork conducted in District Bagh, July 2008.

5.3 Type, timing, quantities and costs of material support for exceptional events

When very large scale hazards hit the district, risk reduction measures and community coping strategies will not be sufficient to avert large scale damage to lives and livelihoods (although they may be able to reduce the severity of impact). In these situations, external support from the government and other external actors is required. These actors include local and international NGOs, UN agencies, international aid donors, the private sector and philanthropic private individuals and foundations.

In order to facilitate these responses, livelihood based contingency plans have been developed for the various types of exceptional hazards that may occur in the district. A number of steps have been taken to ensure that these plans are constructed on the basis of plausible assumptions and, crucially, that they are understood and endorsed by local government and NGOs operating in the district.

The ***technical steps*** to achieve this are as follows:

1. With the exception of earthquake, which may strike at any time of year, a hazard impact calendar has been constructed for each hazard. This shows when the hazard strikes in relation to the livelihood activities taking place at the time. From this, it is possible to pick out appropriate type and timing of response activities to support livelihoods.

2. This information is then "mapped" onto the demographic information contained in table 4 above, and is adjusted according to an estimate of likely vulnerability of the population subject to the hazard using information contained in the wealth / livelihood categorization tables. This is done because for a given severity of event, whilst many people will be affected, those with less assets and incomes will be in greater need of assistance.

3. The amount and cost of material assistance likely to be necessary to restore livelihoods is then calculated in a spreadsheet using current prices (this can be updated as necessary), and an estimate of overall quantities and costs is given[20]. This then serves as a hazard contingency plan for the district: to inform budgetary allocations and / or stockpiling decisions and to guide initial planning and budgeting estimates after a hazard has struck.

In order to gain ***endorsement of Astore district government and local NGOs***, the following steps have been taken:

- The hazard impact calendar and types and timing of responses are developed in full consultation with the tehsil and district level government officials and NGOs.
- Costs and amounts of material assistance are validated with these stakeholders.
- The overall contingency plan is then discussed with district level officials and validated by them.

The following sections thus represent the output of a transparent and technically sound process of consultation with key stakeholders in the district.

[20] A description of the quantities used in the Contingency Plan is given in Annex 1.

5.4 Response Strategy to Hazard of Thunderstorm and Heavy rains /Floods

Thunderstorms and flooding usually occurs in the monsoon season. Figure 5 shows when the hazard strikes and the required responses, phased according to priority and relevance in relation to livelihood patterns. A summarized quantification of response interventions (contingency plan) is provided in table 10 with a more detailed plan in annex 1.

Figure 5: Response strategy sequencing for Thunder storm/Heavy Rain Floods in district Astore

Response strategies	J	A	S	O	N	D	J	F	M	A	M	J
1.Rescue	1	1										
2.Food support	2	2										
3. Cash for distress loans		3										
4. Veterinary support for livestock	4	4	4									
5. Wheat seed and fertilizer (Lower Zone only)									5	5		
6. Maize seed and fertilizer (Upper zone only)									6	6		
7.Support for Kitchen gardening package									7	7		
8.potato seed +Fertilizers									8	8		
9. support for restocking small ruminant											9	
10. Support of restocking cattle cow											10	

Sequence of response interventions: Thunder Storm and heavy rains /Floods
(Based on seasonal calendar analysis)

1. Rescue (as soon as possible at time of disaster in July/August by Government/NGOs) –
2. Food relief as soon as possible at time of/after the disaster in July/August (one month) by (WFP/NGOs/Government).
3. Cash to reduce distressed loans in August by INGOs/Government
4. Veterinary support for livestock (July to Sept) FAO/INGOs/Livestock Department/ Local NGOs
5. Wheat seed (and fertilizer) for 2 kanal in March/April by FAO/INGOs/Government
6. Maize seed and fertilizer for 2 kanals in March/April by FAO/NGOs/Government
7. Support for kitchen gardening package in March/April by FAO/INGOs
8. Potato seed +Fertilizer for 2 kanals in March- April by FAO/INGOs
9. Support of restocking of small ruminants in May by FAO/INGOs
10. Support of restocking Cattle animals cow in May by FAO/INGOs/government

Even in exceptional years, this hazard affects relatively localized areas. To cater for this and based on discussions with Key Informants in the fieldwork, the planning assumption is that 20% of households in high and medium risk Union Councils will be in need of external assistance. The following contingency plan reflects this.

Table 10: Livelihood based contingency plan for Thunder storm/ Heavy Rain Floods in high and medium risk UCs, district Astore

Type of response	Number of affected Ucs	Number of affected HH	Proportion of HH in need of support (%)	Period of Intervention	Estimated Cost (million of USD)
Rescue and Shelter	6	1,534	20	At early warning	-
Food Support	6	1,534	20	July or August (one month)	0.09
Kitchen Utensils	6	1,534	20	July or August (Once)	0.09
Distress Cash Grant (eqvi to one month wage)	6	1,534	20	do	0.09
Veterinary Support (8 animals/hh)	6	1,534	20	June-Oct (Once)	0.00
Wheat Seed support (Affected HH in Zone 1* for 2 Kanals/hh)	6	660	9	March (Once)	0.01
Fertilizer support (Urea)	6	660	9	do	0.01
Fertilizer support (DAP)	6	660	9	do	0.01
Maize Seed support (Affected HH in Zone 2** for 2 Kanals/hh)	6	874	11	March (One time only)	0.01
Fertilizer support (Urea)	6	874	11	March (Once)	0.01
Fertilizer support (DAP)	6	874	11	do	0.02
Kitchen Gardening Support	6	1,534	20	do	0.02
Potato Seed Support (2 Kanals/HH)	6	1,534	20	March/April (Once)	0.31
Fertilizer support (Urea)	6	1,534	20	do	0.03
Fertilizer support (DAP)	6	1,534	20	do	0.08
Restocking of small ruminants (3 goats/hh)	6	1,534	20	May (Once)	0.32
Restocking of cattle animal (1 Cow/hh)	6	1,534	20	May (Once)	0.99
TOTAL million USD					**2.09**

* Support for communities only in low zone; ** Support only for communities only in upper zone

5.5 Response Strategy for heavy snow fall, snow slides and avalanches

The snow based hazards were rated as the second major hazard and usually occur in the winter season mainly affecting the whole of upper zone. While some households above 9000 ft migrate to lower parts before the onset of snow fall season, most families stay at in the village along with livestock and make their livings on stored food and fodder during the snow season. In case of heavy snow fall, the burden on families increases for protecting their houses and removing excessive snow from roof tops. The food and feed stocks that may be sufficient till the end of February/March could be exhausted if not properly managed.

Immediate external support is generally not possible or very difficult because of inaccessibility. Some post disaster response needs for livelihood recovery are listed in Figure 6 for worst case heavy snow fall. A summarized quantification of response interventions (contingency plan) is provided in table 11 with a more detailed plan in annex 1. The total number of projected households in need of support (all in upper zone) are 5,713 (details of population are given in Annex 2 and Annex 3). These interventions could be possible from March onwards after the snow melts down and access to the upper zone becomes possible.

Figure 6: Response strategy for Heavy snow fall, snow slides and avalanches

Response strategies	J	A	S	O	N	D	J	F	M	A	M	J
1.Food support										1	1	
3. Cash for distress loans										**2**	**2**	
3. Veterinary support for livestock										**3**	**3**	
4. Maize seed and fertilizer (next year)									**4**			
5.Support for Kitchen gardening package (next year)									**5**			
6. Potato seed +Fertilizers (next year)									**6**	**6**		
7. Restocking of goats/sheep											**7**	

Sequence of response interventions: Heavy snow fall, snow slides and avalanches
(Based on seasonal calendar analysis)

1. Food relief after the snow melts down in April/May (one month) by (WFP/NGOs/Government).
2. Cash for labour to reduce distressed loans in April/May by INGOs/Government.
3. Veterinary support for livestock in April/May FAO/INGOs/Livestock Department/ Local NGOs.
4. Maize seed and fertilizer for 2 kanals in March next year by FAO/NGOs/Government.
5. Support for kitchen gardening package in March next year by FAO/INGOs
6. Potato seed +Fertilizer for 2 kanals in March- April next year by FAO/INGOs
7. Restocking of goats/sheep 3 goats/hh in May by FAO/INGOs

Table 11: Livelihood based contingency plan for Heavy snow fall, snow slides and avalanches in high risk UCs, district Astore

Type of response	Number of affected Ucs	Number of affected HH	Proportion of HH in need of support (%)	Period of Intervention	Estimated Cost (million of USD)
Rescue	Zone Ucs	6,240	20	Soon after	-
Food Support	do	6,240	20	Dec-Jan (one months)	0.37
Distress Cash Grants (Month eq.)	do	3,120	20	Dec- Jan (once)	0.19
Veterinary Support for (6 animals/ hh)	do	6,240	9	April - June (once)	0.01
Maize Seed support (2 Kanals/hh)	do	6,240	9	March (Once)	0.04
Fertilizer support (Urea)	do	6,240	9	do	0.06
Fertilizer support (DAP)	do	6,240	11	do	0.12
Kitchen Gardening Support (seed package)	do	6,240	11	March (once)	0.06
Potato Seed Support (2 Kanals/hh)	do	6,240	11	March/ April (Once)	1.25
Fertilizer support (Urea)	do	6,240	20	Next March/ April (Once)	0.14
Fertilizer support (DAP)	do	6,240	20	Next March/ April (Once)	0.31
Restocking of small ruminants (2 goats/hh)	do	3,120	20	June (Once)	0.38
TOTAL (million USD)					2.94

5.6 Response strategy for the outburst of Darley Lake

A thunderstorm at a high altitude occurred in July 2008 in Marmay UC. The land sliding has blocked the Astore River up to 2 kilometres at Darley village. This has resulted in the formation of a temporary lake locally called “Darley Lake”. There are some concerns that the spring rains followed by seasonal glacial melting could cause the lake to overflow, in April/May thereby putting a number of communities and households at risk of flooding. The following areas and numbers of households are estimated to be at risk:

- Rattu: (325 households at risk – 30% of estimated 2009 total).
- Marmay: 309 households at risk – 35% of estimated 2009 total).
- Rehmanpur: 119 households at risk – 10% of estimated 2009 total).

Total at risk: 753 households.

A response strategy has been prepared in case of the lake bursting its banks and overflowing (Figure 7) and a summary contingency plan is provided in Table 12 (a more detailed plan is found in Annex 1).

Figure 7: Response strategy sequencing for outburst of Darley Lake in district Astore

Spring Rains

Response strategies	J	A	S	O	N	D	J	F	M	A	M	J
1.Rescue										1		
2.Food support										2		
3.Kitchen Utensils										3		
4. Cash for distress loans										4	4	4
5. Veterinary support for livestock	5*	5*									5	5
6. Wheat/Maize seed and fertilizer									6*			
7. Kitchen gardening package												7
8.potato seed +Fertilizers									8*	8*		
9 (a) support for restocking small ruminant												9a
9 (b) Support of restocking cattle cow												9b

* Following season/Next year

Sequence of response interventions: out burst of Derlay Lake
(Based on seasonal calendar analysis)

1. Rescue (as soon as possible at time of disaster (by Government/NGOs) –
2. Food relief as soon as possible at time of/after the disaster in April/May (one month) by (WFP/NGOs/Government).
3. Kitchen utensils (along with food) in April/May by INGOs
4. Cash to reduce distressed loans in April/May by INGOs/Government
5. Veterinary support for livestock (May to August) FAO/INGOs/Livestock Department/ Local NGOs
6. Wheat/Maize seed (and fertilizer) for 2 kanal in March (next year) by FAO/INGOs/Government
7. Support for kitchen gardening package in June/July/August(next year) by FAO/INGOs
8. Potato seed +Fertilizer for 2 kanal in March- April (next year) by FAO/INGOs

9(a) Support of restocking of small ruminants in June by FAO/INGOs
9(b) Support of restocking Cattle animals' cow in June by FAO/INGOs/government

Table 12: Livelihood based contingency plan for Derlay Lake outburst.

Type of response	Number of affected Ucs	Number of affected HH	Proportion of HH in need of support (%)	Period of Intervention	Estimated Cost (million of USD)
Rescue	3	753	24	-	-
Food Support (one month)	3	753	24	April/May (1 month)	0.05
Kitchen Utensils	3	753	24	April/May (Once)	0.04
Distress Cash Grants (Equi. of one month wage)	3	753	24	April/May (Once)	0.05
Veterinary Support (8 animals/hh)	3	753	24	April - June (once)	0.00
Support for Agri. Small tools	3	753	24	Next March (Once)	0.04
Wheat Seed support (2 Kanals/HH)	3	753	24	do	0.01
Fertilizer support (Urea)	3	753	24	do	0.01
Fertilizer support (DAP)	3	753	24	do	0.02
Kitchen Gardening Support	3	753	24	June- August (Once)	0.01
Potato Seed Support (2 Kanals/HH)	3	753	24	Next March/April (Once)	0.15
Fertilizer support Urea)	3	753	24	Next March/April (Once)	0.02
Fertilizer support (DAP)	3	753	24	Next March/April (Once)	0.04
Restocking of small ruminants (3 goats/hh)	3	753	24	June (Once)	0.16
Restocking of cattle (1 cow/hh)	3	753	24	June (Once)	0.49
TOTAL million USD					1.05

5.7 Response strategy for Earthquake in Astore district

The earthquake 2002 affected only the Doyan UC in Astore tehsil where the fault line exists. No impact of 2005 earthquake in Kashmir and NWFP was observed. On the basis of history, the probability of a major earthquake hitting the district is low, but it is a possibility. Because of the low probability and the high cost of response, it is certainly not recommended that the following estimates of response needs should be utilized for stockpiling or budgetary allocation decisions. Rather they should be taken as a guide to possible needs in the event of an earthquake on the scale of the 2005 Kashmir quake occurring in Astor in the next 10 – 15 years. The estimates are made on the basis of 2008 prices and using 2008 population figures and livelihood patterns.

The projected number of households in Astore district is 10,948. Since the earthquake can occur any time of the year, only the sequence of response interventions have been provided as shown in Figure 8. These are derived from the responses to the 2005 earthquake and lessons learned subsequent to that response effort. The contingency plan for the earthquake is given in Table 13 with details in Annex 1.

Figure 8: Response strategy sequencing for earthquake in district Astore

Activity	Time line	Responsibility
1. Rescue	First week	Government/INGOs/UN
2. Tents	First week	Government/INGOs/UNHCR
3. Food support	First week to 3 months	Government/WFP/INGOs
4.Kitchen Utensils/cooking stoves	First month	I/NGOs, NGOs/UN
5.Cash for Distress loans	First month	Government/INGOs
6. Medical support	First week to six months	Government/WHO/UNICEF/INGOs
7.Compound feed for cattle	Second month after EQ	FAO/INGOs/Livestock Deptt:
8.Compound feed for small animals	Second month after EQ	FAO/INGOs/Livestock Deptt:
9. Veterinary Support for animals	Up to six months	FAO/INGOs/Livestock Deptt
10. Support for Agri small tools	After three months of EQ	FAO/INGOs
11. Wheat seed + fertilizers	One month before plantation season	FAO/INGOs/Government
12. Maize seed + Fertilizer	One month before plantation season	FAO/INGOs/Government
13.Kitchen Gardening Package	One month before plantation season	FAO/INGOs/Government
14. Support for potato seed	One month before plantation season	FAO/INGOs/Government
15. Support for EQ resistant housing	After six month of EQ	Government/UN/ADB/WB/Bilateral/multilateral donors
16.Restocking of small animals	After six months of EQ	FAO/INGOs/Government
17. Restocking of cattle cow	After six months of EQ	FAO/INGOs/Government/bilateral donors
18.Animal shed	After six months of EQ	FAO/INGOs/Government

Table 13: Livelihood based contingency plan for the EQ in district Astore

Type of response	Number of affected Ucs	Number of affected HH	Proportion of HH in need of support (%)	Intervention Period	Estimated Cost (million of USD)
Rescue	7	10,948	100	First Week	-
Shelter (Tents),	7	10,948	100	First Week	-
Food Support (2 months)	7	10,948	100	2 Month	1.31
Kitchen Utensils	7	8,758	80	First Week	0.53
Distress Cash Grant (Eqvi to 1 month wage)	7	5,474	50	First Month	0.33
Medical Support	7	10,948	100	within two months	-
Livestock Feed (5 Kg/cow for 2 cows each /hh for 2 month)	7	5,474	50	2 Month	0.82
Livestock Feed (0.5 Kg/goat for 6 goats each /hh for 2 month)	7	5,474	50	2 month	0.25
Support for Agri. Small tools	7	5,474	50	After 3 months	0.27
Veterinary Support (8 animals/hh)	7	5,474	50	within 3 moths	0.02
Wheat Seed support (10 Kg seed / Kanal for 2 Kanals/HH)	7	5,474	50	next season	0.05
Wheat - Urea Bags	7	5,474	50	do	0.05
Wheat - DAP Bags	7	5,474	50	do	0.11
Maize seed support (6 Kg seed / Kanal for 2 Kanals/HH)	7	5,474	50	do	0.03
Maize - Urea Support	7	5,474	50	do	0.05
Maize - DAP Support	7	5,474	50	do	0.11
Kitchen Gardening Support	7	5,474	50	do	0.05
Potato Seed	7	5,474	50	do	1.09

Type of response	Number of affected Ucs	Number of affected HH	Proportion of HH in need of support (%)	Intervention Period	Estimated Cost (million of USD)
Potato - Urea	7	5,474	50	do	0.12
Potato - DAP	7	5,474	50	do	0.27
Support for Earthquake resistant houses	7	5,474	50	6 month	27.37
Restocking of small ruminants (3 goats/hh)	7	5,474	50	do	1.15
Restocking of cattle animal (1 cow/hh)	7	5,474	50	do	3.53
Support for Animal Sheds	7	5,474	50	do	2.74
TOTAL million USD					40.27

5.8 Response strategy for drought in Astore district

The prolonged drought of 1998 – 2001 that occurred all over Pakistan, also affected the whole of Astore district. Based on this experience a response strategy has been prepared covering 100% of the households (figure 9). A detailed contingency plan for drought (done on the assumption that there are no rains throughout the year as well as during monsoon season) is provided in Table 14 with details in annex 1.

Figure 9: Response Strategy sequencing for Drought in district Astore

Response strategies	J	A	S	O	N	D	J	F	M	A	M	J
1. Food support			**1**	**1**	**1**							
2. Cash for Distress Loan			**2**									
3. Compound feed for livestock			**3**									
4. Veterinary support for livestock			**4**	**4**	**4**							
5. wheat seed + Fertilizer									**5**			
6. Maize seed +Fertilizer									**6**			
7. Kitchen Gardening Package									**7**			
8. potato seed +fertilizer									**8**	**8**		
9. Restocking of animals									**9**	**9**		

Sequence of response interventions Drought
(Based on seasonal calendar analysis)

1. Food support for (September – November) Government/WFP/INGOs
2. Cash for distress Loan (September) Government/INGOs
3. Compound feed for small and big animal (September) Government/INGOs
4. Veterinary support for livestock (September to November) (FAO/INGOs/Livestock Deptt)
5. Wheat seed +fertilizer (March) FAO/INGOs

6. Maize seed +fertilizer (March) FAO/INGOs
7. Kitchen gardening package (March) FAO/INGOs
8. Potato seed + Fertilizer (March-April) FAO/INGOs
9. Restocking of animals

Table 14: Livelihood based contingency plan for drought in district Astore

Type of response	Number of affected Ucs	Number of affected HH	Proportion of HH in need of support (%)	Period/Duration of Intervention	Estimated Cost (million of USD)
Food Support	All Zone 1&2	10,948	100	Sept-Nov	0.66
Distress Cash Grants (Month eq.)	All Zone 1&2	10,948	100	Sept	0.66
Livestock Feed (5 Kg for 3 cows each /hh for a month)	All Zone 1&2	10,948	100	do	1.23
Feed for small ruminants (0.5 Kg for 3 Goats each /hh for a month)	All Zone 1&2	10,948	100	do	0.12
Veterinary Support (6 animals/hh)	All Zone 1&2	10,948	100	Sept-Nov	0.03
Wheat Seed support (10 Kg Wheat seed / Kanal for 2 Kanals/HH)	All Zone 1&2	10,948	100	do	0.11
Wheat - Urea Bags	All Zone 1&2	10,948	100	do	0.10
Wheat - DAP Bags	All Zone 1&2	10,948	100	do	0.22
Maize seed support (6 Kg Maize seed/canal for 2 canals	All Zone 1&2	10,948	100	do	0.07
Maize - Urea Support	All Zone 1&2	10,948	100	do	0.10
Maize - DAP Support	All Zone 1&2	10,948	100	do	0.22
Kitchen Gardening Support	All Zone 1&2	10,948	100	do	0.11
Potato Seed	All Zone 1&2	10,948	100	March/April (Once)	2.19
Potato - Urea	All Zone 1&2	10,948	100	do	0.25
Potato - DAP	All Zone 1&2	10,948	100	do	0.55
TOTAL million USD					6.60

REFERENCES

1. Food Insecurity in Rural Pakistan, WFP-SDPI publication, Islamabad 2003
2. Government of Pakistan, Population Census, 1998
3. Government of Pakistan, Agricultural Census, 2000
4. Government of Pakistan, Livestock Census 2006
5. HLV fieldwork conducted in District Bagh, NDMA/UN, 2009
6. Preliminary Damage and Needs Assessment of Flood in Baluchistan, ADB and World Bank, Islamabad, Pakistan, September 2007.
7. Socio-Economic Survey of Northern Areas Communities (SESNAC), Agha Khan Rural Support Programme 2005

ANNEXES

1. Detailed livelihood based contingency plans
2. Population numbers in different UCs likely to be affected by different hazards in district Astore
3. Methodology used to compile HLV baseline and contingency plan
4. Key organizations for livelihood support and recovery
5. Statistical annex (summary tables)
6. Statistical annex (village/UC level demographic and housing data)

ANNEX 1: DETAILED CONTINGENCY PLANS

The following Annex gives the detailed breakdown of hazard-specific contingency plans. In constructing the plans a number of quantities and assumptions have been made. These are explained below:

Food:
The food package per household (HH) for one month includes the following items:
Rice: 10 kgs, Lentils: 10 Kgs, Oil 5 ltrs, Wheat Flour: 80 kgs, Sugar: 5kg, Tea: 01kg , Iodized salt: 1 kg, Red chilies: 1/2kg.

The above food package is designed with the consultation of WFP and provides about 2150 K calories/person/day. The prices of food are mentioned CG is based on the current market rates. The fluctuation in the food prices is frequent so it can be change any time of the year.

The quantity of the above mentioned food items may change according to the area context or geographical and the eating habits of the affected communities.

Kitchen Utensils:
Wok (Tawa), 12 Plates different size, Sauce Pan, Cooking pot, 6 cups, 6 small bowls, 1 big bowl, 6 Glasses, 1 Jug, 6 Spoons, Knife, Piece of cloth, Basket/plate for Bread, Cooking, Cooking spoons 2, Bucket with Mug, Cooking Stove with Gas Cylinder) + Match box, Lantern, Washing soap with foam.

Livestock Feed:
The quantity of the animal feed is designed with the consultation of FAO technical team.

Livestock Vaccination:
The livestock vaccination per animal is done in the consultation with FAO team and based on FAO experience in the field in different parts of the county.

Livestock Restocking:
The number of livestock is recommended with the consultation of community, as well as with the Livestock Department at the district level. This package is highly recommended for the poorest of the poor segments of society especially women.

Poultry Restocking:
24 Chicks (age ten weeks) + 50 kg poultry feed per HH. This package is designed with consultation of FAO technical team. This intervention is designed & recommended for the women the most vulnerable segment of the society.

Agri inputs:
Wheat seed/Maize seed/Veg seed, Rice seed/potato/ kitchen package and fertilizer: The quantity of the agriculture inputs are recommended on the basis of consultation with farming community in the field and verified with technical experts of agriculture department at local level.

Scenarios:
The Contingency plan is a sample model to develop any contingency plan according to the context and situation. In the sample model contingency plan the **most likely** scenario is covered.

In worst case scenario the sample model can be used but the contingency plan will be based on the magnitude of the disaster. The CP will be developed according to the need of the local area affected by the disaster.

Table 1a: Detail of Livelihood based contingency plan for Thunder storm/ Heavy Rain Floods in high risk UCs, district Astore

Activity	Affected area	Support Unit	Period	Total HH	Affected HH*	Cost per unit (USD)	Unit Quantity/ hh	Duration (Days or # times)	total quantity (000 units)	Total amount (million USD)	Responsibilities (through ERRA)
Rescue and Shelter	20% HH of 6 High Risk Ucs in Zone 1 & 2	-	At early warning	7,670	1,534	-	-	-	-	-	District Government/NGOs
Food Support	do	Package	July or August (one month)	7,670	1,534	2	1	30	46.02	0.09	WFP / NGOs / Food Dept
Kitchen Utensils	do	set	July or August (Once)	7,670	1,534	60	1	1	1.53	0.09	INGOs
Distress Cash Grant (eqvi to one month wage)	do	Cash	do	7,670	1,534	2	1	30	46.02	0.09	District Government / INGOs
Veterinary Support (8 animals/hh)	do	Vaccine	June-Oct (Once)	7,670	1,534	0.4	8	1	12.27	0.00	Livestock Dept/ FAO / NGOs / Bilatera/l Donors
Wheat Seed support (Affected HH in Zone 1* for 2 Kanals/hh)	20% affected hh from villages in Zone 1	Kg	March (Once)	7,670	660	0.5	20	1	13.19	0.01	Agriculture Department/FAO / INGOs
Fertilizer support (Urea)	do	Kg	do	7,670	660	0.45	20	1	13.19	0.01	do
Fertilizer support (DAP)	do	Kg	do	7,670	660	1	20	1	13.19	0.01	do
Maize Seed support (Affected HH in Zone 2** for 2 Kanals/hh)	20% affected hh from villages in Zone 2	Kg	March (One time only)	7,670	874	0.5	20	1	17.49	0.01	do
Fertilizer support (Urea)	do	Kg	March (Once)	7,670	874	0.45	20	1	17.49	0.01	do

Activity	Affected area	Support Unit	Period	Total HH	Affected HH*	Cost per unit (USD)	Unit Quantity/ hh	Duration (Days or # times)	total quantity (000 units)	Total amount (million USD)	Responsibilities (through ERRA)
Fertilizer support (DAP)	do	Kg	do	7,670	874	1	20	1	17.49	0.02	do
Kitchen Gardening Support	20% HH of 6 High Risk Ucs	Package	do	7,670	1,534	10	1	1	1.53	0.02	do
Potato Seed Support (2 Kanals/HH)	do	Kg	March/April (Once)	7,670	1,534	2	100	1	153.40	0.31	do
Fertilizer support (Urea)	do	Kg	do	7,670	1,534	0.45	50	1	76.70	0.03	do
Fertilizer support (DAP)	do	Kg	do	7,670	1,534	1	50	1	76.70	0.08	do
Restocking of small ruminants (3 goats/hh)	do	Number	May (Once)	7,670	1,534	70	3	1	4.60	0.32	Livestock Dept/ FAO / NGOs
Restocking of cattle animal (1 Cow/hh)	do	Number	May (Once)	7,670	1,534	645	1	1	1.53	0.99	do
TOTAL million USD										2.09	

* Zone 1 has 43% of total HH in six UCs ** Zone 2 has 57% of total HH in six UCs

Table 1B: Detail of Livelihood based contingency plan for Heavy snow fall, snow slides and avalanches in high risk UCs, district Astore

Activity	Affected area	Support Unit	Period	Total HH (Zone 1 & 2)	Affected HH*	Cost per unit (USD)	Unit Quantity/ hh	Duration (Days or # times)	total quantity (000 units)	Total amount (million USD)	Responsibilities
Rescue	All HHs in Zone 2*	-	Soon after	10,948	6,240	-	-	-	-	-	Government / NGOs
Food Support	do	Food Package	Dec-Jan (one months)	10,948	6,240	2	1	30	187	0.37	WFP / NGOs / District Government
Distress Cash Grants (Month eq.)	50% HHs in Zone 2	Cash	Dec-Jan (once)	10,948	3,120	2	1	30	94	0.19	District Government / INGOs
Veterinary Support for (6 animals/ hh)	All HHs in Zone 2	Vaccines	April - June (once)	10,948	6,240	0.4	6	1	37	0.01	L. Stock Dept/ FAO / NGOs
Maize Seed support (2 Kanals/hh)	do	Kg	March (Once)	10,948	6,240	0.5	12	1	75	0.04	Agri. Dept/ FAO / INGOs
Fertilizer support (Urea)	do	Kg	do	10,948	6,240	0.45	20	1	125	0.06	do
Fertilizer support (DAP)	do	Kg	do	10,948	6,240	1	20	1	125	0.12	do
Kitchen Gardening Support (seed package)	do	package	March (once)	10,948	6,240	10	1	1	6	0.06	do
Potato Seed Support (2 Kanals/hh)	do	Kg	March/ April (Once)	10,948	6,240	2	100	1	624	1.25	do
Fertilizer support (Urea)	do	Kg	Next March/ April (Once)	10,948	6,240	0.45	50	1	312	0.14	do
Fertilizer support (DAP)	do	Kg	Next March/ April (Once)	10,948	6,240	1	50	1	312	0.31	do
Restocking of small ruminants (2 goats/hh)	50% HHs in Zone 2	Number	June (Once)	10,948	3,120	61	2	1	6	0.38	L. Stock Dept/ FAO / NGOs
TOTAL (million USD)										2.94	

* Zone 2 has 57% of total HH in six UCs

Table 1C: Detail of Livelihood based contingency plan for the hazard of Derlay Lake in high risk UCs, district Astore

Activity	Affected area (High Risk)	Support Unit	Period	Total HH	Affected HH	Cost per unit (USD)	Unit Quantity/ hh	Duration (days or # of times)	total quantity (000 units)	Total amount (million USD)	Responsibilities
Rescue	*UC Rattu, Marmay, Rehmanpur	-	-	3,159	753	-	-	-	-	-	District Government / NGOs
Food Support (one month)	do	Food Package	April/May (1 month)	3,159	753	2	1	30	22.6	0.05	WFP / NGOs / District Government
Kitchen Utensils	do	Set	April/May (Once)	3,159	753	50	1	1	0.8	0.04	INGOs
Distress Cash Grants (Equi. of one month wage)	do	Cash	April/May (Once)	3,159	753	2	1	30	22.6	0.05	District Government / INGOs
Veterinary Support (8 animals/hh)	do	Vaccines	April - June (once)	3,159	753	0.4	8	1	6.0	0.002	Livestock Dept/ FAO / NGOs / Bilateral Donors
Support for Agri. Small tools	do	Tool set	Next March (Once)	3,159	753	50	1	1	0.8	0.04	Agriculture Dept/ FAO / NGOs / Bilateral Donors
Wheat Seed support (2 Kanals/HH)	do	Kg	do	3,159	753	0.5	20	1	15.1	0.01	do
Fertilizer support (Urea)	do	Kg	do	3,159	753	0.45	20	1	15.1	0.01	do
Fertilizer support (DAP)	do	Kg	do	3,159	753	1	20	1	15.1	0.02	do
Kitchen Gardening Support	do	Package	June-August (Once)	3,159	753	10	1	1	0.8	0.01	do
Potato Seed Support (2 Kanals/HH)	do	Kg	Next March/April (Once)	3,159	753	2	100	1	75.3	0.15	do

Activity	Affected area	Support Unit	Period	Total HH	Affected HH*	Cost per unit (USD)	Unit Quantity/ hh	Duration (Days or # times)	total quantity (000 units)	Total amount (million USD)	Responsibilities (through ERRA)
Fertilizer support Urea)	do	Kg	Next March/April (Once)	3,159	753	0.45	50	1	37.7	0.02	do
Fertilizer support (DAP)	do	Kg	Next March/April (Once)	3,159	753	1	50	1	37.7	0.04	do
Restocking of small ruminants (3 goats/hh)	do	Number	June (Once)	3,159	753	70	3	1	2.3	0.16	Livestock Dept/ FAO / NGOs / Bilateral Donors
Restocking of cattle (1 cow/hh)	do	Number	June (Once)	3,159	753	645	1	1	0.8	0.49	do
TOTAL million USD										1.05	

* The affected HH is the three Ucs are: Rattu (30% HHs) Marmay (35% HHs) Rehmanpur (10% HHs)

Table 1D: Detail of Livelihood based contingency plan for the EQ in district Astore

Activity	Affected area	Support Unit	Period	Total HH	Affected HH*	Cost per unit (USD)	Unit Quantity/ hh	Duration (Days or # times)	total quantity (000 units)	Total amount (million USD)	Responsibilities (through ERRA)
Rescue	100% HH in all Ucs	-	First Week	10,948	10,948	-	-	-	-	-	District Government UN/INGOs, NDMA
Shelter (Tents),	do	Tent	First Week	10,948	10,948	-	-	-	-	-	do
Latrine for women, Health, Hygiene	do	-	First Week	10,948	10,948	-	-	-	-	-	do
Medical Support	do	Hospital	within two months	10,948	10,948	-	-	-	-	-	Heath Dept/ WHO / UNICEF/ INGOs
Food Support (2 months)	do	Food Package	2 Month	10,948	10,948	2	1	60	657	1.31	Food dept/WFP / INGOs / District Government
Kitchen Utensils	80% HH in all Ucs	Set	First Week	10,948	8,758	60	1	1	9	0.53	INGOs
Distress Cash Grant (Eqvi to 1 month wage)	50 %HH in all Ucs	Cash	First Month	10,948	5,474	2	1	30	164	0.33	Govt of Pak / WB/ADB
Livestock Feed (5 Kg/cow for 2 cows each /hh for 2 month)	do	Kg	2 Month	10,948	5,474	0.25	10	60	3,284	0.82	Livestock Dept/ FAO / NGOs
Livestock Feed (0.5 Kg/goat for 6 goats each /hh for 2 month)	do	Kg	2 month	10,948	5,474	0.25	3	60	985	0.25	do
Support for Agri. Small tools	do	Tool set	After 3 months	10,948	5,474	50	1	1	5	0.27	Agri Dept/ FAO / NGOs
Veterinary Support (8 animals/hh)	do	Vaccines	within 3 moths	10,948	5,474	0.4	8	1	44	0.02	do

Wheat Seed support (10 Kg seed / Kanal for 2 Kanals/HH)	do	Kg	next season	10,948	5,474	0.5	20	1	109	0.05	do
Wheat - Urea Bags	do	Kg	do	10,948	5,474	0.45	20	1	109	0.05	do
Wheat - DAP Bags	do	Kg	do	10,948	5,474	1	20	1	109	0.11	do
Maize seed support (6 Kg seed / Kanal for 2 Kanals/HH)	do	Kg	do	10,948	5,474	0.5	12	1	66	0.03	do
Maize - Urea Support	do	Kg	do	10,948	5,474	0.45	20	1	109	0.05	do
Maize - DAP Support	do	Kg	do	10,948	5,474	1	20	1	109	0.11	do
Kitchen Gardening Support	do	Package	do	10,948	5,474	10	1	1	5	0.05	do
Potato Seed	do	Kg	do	10,948	5,474	2	100	1	547	1.09	do
Potato - Urea	do	Kg	do	10,948	5,474	0.45	50	1	274	0.12	do
Potato - DAP	do	Kg	do	10,948	5,474	1	50	1	274	0.27	do
Support for Earthquake resistant houses	do	Houses	6 month	10,948	5,474	5,000	1	1	5	27.37	UN Habitat / Government / ADB / WB / INGO
Restocking of small ruminants (3 goats/hh)	do	Number	do	10,948	5,474	70	3	1	16	1.15	Livestock Dept/ FAO / NGOs / Bilateral Donors
Restocking of cattle animal (1 cow/hh)	do	Number	do	10,948	5,474	645	1	1	5	3.53	do
Support for Animal Sheds	do	Number	do	10,948	5,474	500	1	1	5	2.74	do
TOTAL million USD										40.27	

Table 1E: Detail of Livelihood based contingency plan for drought in district Astore

Activity	Affected area	Support Unit	Period	Total HH	Affected HH	Cost per unit (USD)	Unit Quantity/ hh	Duration (days or # of times)	total quantity (000 units)	Total amount (million USD)	Responsibilities
Food Support	All 7 UCs in the district	Food Package	Sept-Nov	10,948	10,948	2	1	30	328	0.66	District Government WFP / NGOs
Distress Cash Grants (Month eq.)	do	Cash	Sept	10,948	10,948	2	1	30	328	0.66	INGOs, Government
Livestock Feed (5 Kg for 3 cows each /hh for a month)	do	Kg	do	10,948	10,948	0.25	15	30	4,927	1.23	Livestock Dept/ FAO / NGOs /
Feed for small ruminants (0.5 Kg for 3 Goats each /hh for a month)	do	Kg	do	10,948	10,948	0.25	1.5	30	493	0.12	Livestock Dept/ FAO / NGOs /
Veterinary Support (6 animals/hh)	do	Vaccine	Sept-Nov	10,948	10,948	0.4	6	1	66	0.03	Livestock Dept/ FAO / NGOs /
Wheat Seed support (10 Kg Wheat seed / Kanal for 2 Kanals/HH)	do	Kg	do	10,948	10,948	0.5	20	1	219	0.11	Agri. Dept/ FAO / NGOs
Wheat - Urea	do	Kg	do	10,048	10,948	0.45	20	1	219	0.10	do
Wheat - DAP Bags	do	Kg	do	10,948	10,948	1	20	1	219	0.22	do
Maize seed support (6 Kg Maize seed/kanal for 2 kanals	do	Kg	do	10,948	10,948	0.5	12	1	131	0.07	do
Maize - Urea	do	Kg	do	10,948	10,948	0.45	20	1	219	0.10	do
Maize - DAP	do	Kg	do	10,948	10,948	1	20	1	219	0.22	do
Kitchen Gardening	do	Veg seed package	do	10,948	10,948	10	1	1	11	0.11	do
Potato Seed	do	Kg	March/ April (Once)	10,948	10,948	2	100	1	1,095	2.19	do
Potato - Urea	do	Kg	do	10,948	10,948	0.45	50	1	547	0.25	do
Potato - DAP	do	Kg	do	10,948	10,948	1	50	1	547	0.55	do
TOTAL million USD										6.60	

ANNEX 2: AT RISK POPULATION NUMBERS

UCs at risk due to Thunderstorm, Heavy rains, Flooding/avalanches*					
Tehsils	**UC**	**20% of Population at risk**			Number of HH
At High Risk		Both Sex	Male	Female	
Shounter	Rattu	2094	1119	975	217
Shounter	Rehman Pur	2096	1059	1037	239
Shounter	Marmay	1450	735	715	176
	Total at high risk	**5640**	**2914**	**2727**	**632**
Shounter	Qamari	1617	871	746	178
Astore	Louse	2671	1363	1308	312
Astore	Eid Gah (Chungra)	3558	1912	1646	413
	Total at medium risk	**7847**	**4147**	**3700**	**902**
	All Total	**13487**	**7061**	**6427**	**1534**

Note: In general all UCs are affected

UCs at risk due to likely outburst of Derlay Lake					
Tehsils	**UC**	**Population at risk**			Number of HH
At High Risk		Both Sex	Male	Female	
Shounter	Rattu (30% population likely to be affected))	3141	1678	1463	325
Shounter	Rehman Pur (10% population likely to be affected)	1048	530	518	119
Shounter	Marmay (35%) population likely to be affected)	1450	735	715	309
	Total	**5639**	**2944**	**2696**	**753**

UCs at risk due to Heavy snow fall					
Tehsils	**UC**	**Population at risk**			Number of HH
At High Risk		Both Sex	Male	Female	
District Astore	All upper zone UCs:	50,362	26172	24190	5713
	Total	**50,362**	**26172**	**24190**	**5713**

UCs at risk due to Drought					
Tehsil	UC	Population at risk			Number of HH
At High Risk		Both Sex	Male	Female	
Astore	All UCs	47178	25326.4	21852	5432
Shounter	All UCs	50873	26364.8	24508	5516
Total		**98051**	**51691.2**	**46360**	**10948**
UCs at risk due to Earthquake**					
Tehsils	**UC**	**Population at risk**			Number of HH
At High Risk		Both Sex	Male	Female	
Astore	Doyan	16032	8949.8	7083	1809
Total		**16032**	**8949.8**	**7083**	**1809**
All Astore district		**98051**	**51691.2**	**46360**	**10948**

* The Thunderstorm, heavy rains and flooding are usually in July and August; and avalanches usually occur in April/May. Both these hazards affect the three UCs. The assumption is that 20% of the population could be affected, whose houses are located in the high risk area prone to these hazards (as suggested by the communities).

** Only Doyan UC is in the fault line, however the response for earthquake has been prepared covering the whole Astore district.

ANNEX 3: METHODOLOGY FOR HLV BASELINE AND CONTINGENCY PLAN

Baseline data collection and compilation involved three steps: (i) Review of secondary data collection and analysis, (ii) Group discussions with district and tehsil officials as well as village communities to obtain qualitative/quantitative information in the district on hazards, vulnerabilities and response to these hazards, and (iii) Triangulation of field findings with secondary data for further validation. In an addition a questionnaire was used to assess food security status of the hazard prone population in the area.

The secondary data includes the analysis of demographic data by sex /rural-urban and age group. The 1998 Census data was collected at tehsil and Union Council levels and projected to 2008. Similarly, agriculture and livestock statistics was collected from the census reports and some from the district officials. List of tables on secondary data are annexed to the baseline report. It provides a useful source for preparing response/ contingency plan in case of disaster and can be readily used for post disaster damage and livelihood assessments.

Participatory methods were used in the field for collection and analysis of qualitative data from the government officials/NGOs and communities in the hazard prone areas.

The following steps were adopted:

(i) Initial meetings were conducted with NDMA to identify five hazard prone districts, including the present district. A thorough review of literature about the district was carried-out and secondary data compiled before the field visit. Further discussions were held with the officials of Provincial Disaster Management Authority (PDMA) and Provincial Relief Commissioner in the province.

(ii) Visits were made to the districts for further understanding of hazards, livelihoods and vulnerabilities. These involved:

- Group discussions with district officials (DDMA and senior district officers from revenue and line departments) for half a day followed by discussions with local NGOs (for further validation and more details). Flip charts were used to obtain the following information:
  - Hazard mapping and impacts
  - Identification of vulnerable areas (prone to various hazards) on district map.
  - Coping mechanisms, assessment systems and relief efforts
  - Role and responsibilities at district and sub-district level in response to disaster
  - Broad classification of livelihood groups
- The above results were further validated in a group meeting with Tehsil officials, using the same flip-charts. Tehsil-wise quantitative information on cropping and livestock etc. was also obtained.

(iii) Finally, based on discussions with district/ tehsil officials and NGOs, a list of high risk areas (UCs) was prepared and field visits conducted. This involved the following steps:

- High risks UCs were selected in consultation with government officials and NGOs for field visit in each area (zone).

- Prior appointments were made through local NGOs with the hazard prone communities in the selected UCs (where necessary) in each tehsil.

- Interviews were held with communities in vulnerable areas using PRA tools (at least two - four villages in each of the hazard prone areas)[21]. Interviews were also held with selected members of the community form different socio-economic groups to assess food security situation of the communities in the area.

- Information collected through district/tehsil meetings was further validated. Livelihood groups and their characteristics were identified and quantified in proportion in each village and their seasonal activities were mapped-out, including calendar of activities for their livelihood sources (in normal and bad years), and coping strategies during disasters and type of/ timing for support needed by the most vulnerable groups.

(iv) The findings on the basis of the above were presented to the district officials and NGOs in a separate/ joint meeting to debrief/validate and agree upon the results. A debriefing was also held with PDMA and NDMA. The findings were also shared with various stakeholders including the UN partners, NGOs and NDMA at the national level, before finalizing the baseline document.

[21] See list of communities visited in the annex

ANNEX 4: INSTITUTIONS FOR LIVELIHOOD SUPPORT

District Officials

S.No	Name	Department-	Designation	Contact#
1	A.Qamar Shehzad		Deputy. Commissioner Chief Secretary, Gilgit	0581750100 Cell: 03555404712 0581150200
2	M. Sharif		Assistant Commissioner	05817 50106
3	Aslam Abdullah	FG Inter College	Principal	05817 - 51196
4	M. Mansoor Khan	Police	SP	05817 - 51315
5	Walayat Noor	Forest	DFO	05817 - 50211
6	Mohd Mushtaq	LGRD	DG	05817 - 420062
7	Akram Khan	DC Office	AO	05817 - 51329
8	Fazal Shah	Food Dept	CSO	05817 - 205360
9	Ghulabud-Din	Education	DEO	05817-50212
10	Abdul Rehman			05817 - 420052
11	Shahid Ali	Tourism	Astt. Director	03555 420068
12	Dr.Takbir Ali	VAS(AH)	Vet Hospital Astore	05817-50204
13	Javed Arif	Id Officer	AKRSP	05817 51061
14	Khokuro	Agriculture	Deputy Director	05817 - 420061
15	Basharatullah	B&R Division	XEN	05817 - 50200
16	Inayat Ali Khan	W&P Division	XEN	05817 - 51306
17	Sardar Alam		Astt. Executive Engineer	05817 - 51306
18	G.Mussa Shinsha	AKRSP	AKRSP Area Office Astore	05817 -51061
19	Naveed Ullah	KRSP(LSO)	AKRSP Area Office Astore	05817 - 51061
20	Shahid		AKRSP Area Office Astore	05817 – 51061
22	Mohd Younas	AEO	DDE Office Astore	**05817 – 50212**
23	Sabir Hussain		Metrological Dept	Not Available

B: Local NGOs in District Astore, Northern Areas

S.No	Name	Designation	Organization	Postal Address
1.	Abdul Muqeem	Manager	Doesi Rural Support Programme(DRSP)	Village Gudai Tehsil Shounter District Astore Northern Area
2.	Abdul Ghani	Gen Secretary	Kohsar Rural Support Programme(KRSP)	Dashkin , District Astore.
3.	Kifayat Din	President	Kohsar Rural Support Programme(KRSP)	KRSP Office Eid Gah Astore
4.	Naveed ullah	Manager (M&E)	Kohsar Rural Support Programme(KRSP)	KRSP office near Micro Finance Bank Eidgah Astore
5.	Abdul Wahid	Member	Kohsar Rural Support Programme(KRSP)	Harcho District Astore Cell:03555-206824
6.	Himayatullah	Press Secretary	Kohsar Rural Support Programme (KRSP)	K.Dass ,Bunji Astore Cell: 0335-407812
7.	Imran Khan	Manager (M&E)	Astora Rural Support Programme (ARSP)	ARSP office Eid Gah near FMFB Astore Cell:03555-205477—0323-9900837
8.	Javed Arif	I D Officer	Aga Khan Rural Support Programme (AKRSP)	AKRSP, Area Office, Astore PH: 0581-7420144 Cell:03355205880
9.	Rafiullah Khan	Chief - Organizer	Astore Welfare & Development Organization (AWDO)	Afridi Bookstall,Village Eid Gah Astore Ph:05817-9900837

ANNEX 5: SOCIO-ECONOMIC DATA

1. Area and Population (2008 estimates)			
Tehsil/District	**Astore Tehsil**	**Shounter Tehsil**	**All District Astore**
Area (Sq. Km)	-	-	6,554
Number of Households** (000)	5.4	5.5	10.9
Rural	5.4	5.5	10.9
Urban	0	0	0
Population density/Sq Km	-	-	15
Average HH size*	8.8	9.4	9.1
Average growth rate*			3.13
Number of Union* Councils	3	5	8
Number of Revenue villages*	17	27	44
Total Population (000)	47	51	98

2. Population by Sex (000) (2008 estimates)			
Tehsil/District	**Tehsil**		**All District Astore**
	Astore	**Shounter**	
Male	25	26	52
Female	22	25	46
Total	**52**	**46**	**98**

3. Population by Rural-Urban (000) (2008 estimates)			
	Tehsil		**All District Astore**
	Astore	**Shounter**	
Rural	47	51	98
Urban	0	0	0
Total	**47**	**51**	**98**

4. Population by Age group (2008 estimates)	
	All District Astore
Total (000)	98
0- 4 years of age	19
5-14 years of age	28
15 - 64 years of age	48
Above 64 years of age	2
Rural (000)	98
1- 4 years of age	19
5-14 years of age	28
15 - 64 years of age	48
Above 64 years of age	2
Urban (000)	0
1- 4 years of age	0
5-14 years of age	0
15 - 64 years of age	0
Above 64 years of age	0

5. Number of houses by type (2008 estimates)			
Tehsil/District	Astore	Shounter	All District Astore
Number of Houses(000)*	5	6	11
% pacca (cemented)**	82	68	75
% semi pacca**	2	18	10
% kacha (mud or wood/thech material)**	16	13	14

6. Land use in district Astore (Agri census 2000)			
Land use Area	Tehsil		All District Astore
	Astore	Shounter	
Geographical area (Sq. km)	-	-	6,554
Total area (000 acres)	18	26	44
Uncultivable area (000 acres)	8	17	25
Cultivated area (000 acres)	6	6	12
% Forest area	-	-	6.0

7. Livestock data (2006 Census)	
Number of animals by type	District Astore
Cattle	31,143
Buffaloes	2,071
Goats	52,994
sheep	57,191
Poultry Birds	33,623
Asses	4,099
Horses	1,976
Total	**183,097**

8. Schools in district Astore	
Tehsil/District	Astore District
Mosque schools	4
Primary schools*	63
Middle schools*	12
Secondary schools	8
Colleges	1
Comm. Schools (Social Action Programme (SAP)*	39
Vocational centres/Technical colleges	5

ANNEX 6: POPULATION AND HOUSING DATA AT VILLAGE & UNION COUNCIL LEVEL

Name of UC	Total Population			Literacy	Religion		Age group.	Housing				
	Total	Male	Female	Ratio %	Muslims	Others	>18	Total	Pacca	Semi-pacca	Kacha	Area in Acres
Doyan	**16032**	**8950**	**7083**	**36**	**15926**	**106**	**8005**	**1809**	**1625**	**40**	**145**	**7735**
Bulachi	289	150	139	11	289	0	125	23	20	3	0	174
Bunji	6145	3891	2254	65	6142	3	3573	715	692	14	9	2677
Doyan	2164	1094	1070	39	2163	1	932	238	230	8	0	890
Turbeling	939	498	441	35	939	0	431	108	1	3	104	285
Kudkist	604	284	320	18	604	0	241	83	83	0	0	326
Dishkin	3200	1594	1606	40	3166	34	1448	344	336	8	0	2086
Hercho	2692	1439	1253	44	2624	68	1255	299	262	4	33	1297
Eid Gah	**17791**	**9561**	**8230**	**40**	**17769**	**22**	**8593**	**2063**	**1542**	**33**	**489**	**5683**
Patipura	969	504	465	32	969	0	491	118	8	10	101	291
Chongrah	5078	2874	2203	47	5072	5	2533	599	573	8	18	1309
Eid Gah	3615	1946	1669	51	3611	4	1724	408	24	14	370	733
Bulan	1230	640	591	41	1229	1	591	150	150	0	0	358
Gorikote	6164	3235	2929	39	6156	8	2932	702	701	1	0	2724
Ahmed Abad	735	362	373	32	732	3	323	86	86	0	0	268
Louse	**13355**	**6816**	**6539**	**37**	**13276**	**79**	**6241**	**1560**	**1289**	**45**	**226**	**4583**
Fina	2457	1287	1169	53	2452	4	1189	250	12	15	223	1086
Louse	4487	2312	2175	28	4442	45	2097	557	538	18	1	1576
Perishing	5692	2862	2829	28	5662	30	2647	672	660	12	0	1307
Gotumsar	720	354	366	39	720	0	308	80	79	0	1	614
Gudai	**14584**	**7439**	**7145**	**44**	**14562**	**22**	**6459**	**1468**	**1317**	**39**	**112**	**5551**
Nowgam	3895	1964	1931	41	3892	3	1698	431	427	4	0	1347
Pakora	2854	1462	1392	45	2854	0	1252	238	94	34	110	897
Gudai	2669	1339	1330	59	2653	16	1184	264	264	0	0	611
Bubind	1777	875	902	43	1776	1	715	166	165	1	0	640
Dasskhrim	3389	1799	1590	33	3387	1	1610	369	367	0	1	2056
Rehman Pur	**10481**	**5297**	**5184**	**29**	**10477**	**4**	**4574**	**1194**	**860**	**15**	**318**	**3594**
Chorit	3574	1786	1788	33	3573	1	1605	380	380	0	0	1293
Tarishing	2800	1440	1360	28	2800	0	1251	342	15	12	314	772
Ziapurah	1433	735	698	25	1433	0	672	177	177	0	0	549
Rehman Pur	2674	1336	1338	31	2672	3	1047	295	289	3	4	980
Rattu	**10470**	**5595**	**4875**	**35**	**10447**	**19**	**4961**	**1083**	**1064**	**16**	**3**	**6800**
Chogam	5423	2817	2606	36	5410	14	2574	573	558	14	1	946
Rattu	2127	1198	930	47	2123	4	1089	211	211	0	0	1558
Mir Malik	2919	1580	1339	21	2914	1	1298	299	295	3	1	4296
Marmay	**7251**	**3677**	**3574**	**25**	**7225**	**26**	**3100**	**882**	**510**	**69**	**216**	**6059**
Faqir Kot	2127	1033	1094	34	2124	3	966	259	200	59	0	1847
Derlay	1017	572	445	31	1008	8	467	102	20	3	79	1606

Name of UC	Total Population			Literacy	Religion		Age group.	Housing				
	Total	Male	Female	Ratio %	Muslims	Others	>18	Total	Pacca	Semi-pacca	Kacha	Area in Acres
Paeen												
Derlay Bala	589	301	289	42	589	0	272	59	59	0	0	244
Gomay	291	143	148	25	290	1	1	117	31	0	0	237
Farucha	218	108	110	21	218	0	97	20	20	0	0	251
Ispa	930	486	444	23	930	0	404	108	0	3	105	372
Sakamal	1023	502	521	21	1010	14	450	116	84	1	30	466
Gashat	86	45	41	9	86	0	41	10	10	0	0	300
Marmay	970	489	482	19	970	0	401	93	86	4	3	736
Minimerg (Qamari)	**8087**	**4356**	**3730**	**27**	**8077**	**10**	**3696**	**889**	**1**	**829**	**59**	**4451**
Minimarg	1979	1189	789	48	1971	8	979	181	1	174	5	330
Kolashi Bala	799	414	385	16	799	0	318	103	0	102	1	913
Kolashi Paeen	955	509	446	13	955	0	444	72	0	72	0	592
Qamari	3461	1769	1692	28	3460	1	1592	434	0	382	52	2184
Piswari	373	214	159	29	373	0	171	44	0	44	0	239
Mapnu Abad	520	261	259	27	520	0	192	54	0	54	0	193