

# Pakistan flood impact assessment

September 2010



## EXECUTIVE SUMMARY

The monsoon induced flooding in Pakistan constitutes an evolving crisis on an unprecedented scale. The impact of the flood has varied: The flash floods in the mountainous north (KPK) were intense and highly destructive. This was also largely the case in parts of Balochistan. In flatter areas of Punjab and northern Sindh, riverine flooding has been a very destructive phenomenon, although with a slower onset, affecting densely populated and cultivated areas. In lower Sindh, the ongoing riverine delta flooding may have longer lasting effects due to soil saturation of these low lying areas.

### Content

	Executive summary		
1	Background and objectives	.....	2
2	Methodology	.....	4
3	The extent of damage	.....	6
4	The market situation	.....	8
5	Impact on livelihoods and assets	.....	10
6	Impact on household food security	.....	13
7	Impact on food consumption, nutrition and health status	.....	15
8	Number of people in need of food assistance	.....	18
9	Targeting the flood affected food insecure	.....	21
10	Assistance provided and priority needs	.....	24
11	Conclusion	.....	25
12	Acknowledgement	.....	26

To date, this assessment identified at least 14.1 million people who were directly affected by the flood across Pakistan. Other estimates may be higher and include indirectly affected populations. More than 1.1 million houses were completely destroyed or made unliveable and more than 2 million hectares of standing crops were damaged or lost.

The people most severely affected were predominantly small farmers and unskilled labourers. They are among the most vulnerable in Pakistan and almost all live below or just above the national poverty line. More than 60 percent lost immediate access to their primary livelihood and are faced with a drop in their already low income by more than half. The significant increase in food prices in flood affected areas is exacerbating the situation. More than three quarters of the affected population have access to less than one week supply of food. Livestock was severely impacted with on average 40% of livestock lost by flood affected households. Almost half of the affected population have unacceptable food intake, in spite of the efforts by government/army, NGOs, UN and the general public. Nutrition measurements indicate that the malnutrition situation is deteriorating.

Based on the number of destroyed and unliveable houses as well as the extent of crop losses, 10.1 million people are in need of immediate assistance. Within this group, considering current food consumption levels and displacement status, at least 7.8 million are particularly vulnerable to lasting food insecurity.

Longer term food assistance requirements for recovery and rehabilitation programmes amount to 3.6 million people living in highly food insecure area.

## 1. BACKGROUND AND OBJECTIVES

The 2010 monsoon flood disaster in Pakistan has been massive and unprecedented, killing more than 1,700 persons, affecting over 20 percent of the land area, more than 14 million people, and causing billions of dollars in losses and damages to infrastructure, housing, agriculture and livestock, and other family assets. Essential infrastructure including roads, bridges and markets has been severely damaged and many remain impassable. According to the WFP Initial Vulnerability Assessment some 10.1 million people are in need of shelter and humanitarian assistance.

Map 1 provides an overview of the affected areas and population density in the flood affected areas.

Depending on topography, land use, population density and other factors, the primary effects of the floods, and their implications in terms of the nature, severity and expected duration of damage have varied. In mountainous areas, for example, the phenomenon, mostly in the form of flash floods, has been intense, concentrated and highly destructive (the highest number of fatalities occurred in Khyber Pakhtunkhwa Province). Within this mountainous region, the flash flood has affected areas where the proportion of land cultivated was relatively low, and where reliance on irrigation was limited. This was also largely the case in Balochistan, where all affected districts are well away from the actual Indus river basin. Balochistan is a province where population density is low, where crops are mostly rainfed, and where rangeland makes up nearly 80% of the total land area.

In flatter areas, such as the Punjab breadbasket, and the northern Sindh districts bordering the Indus, riverine flooding has been a slower onset but economically very destructive phenomenon affecting densely populated and cultivated areas, with one of the most highly irrigated agricultural landscapes in the world. Punjab Province also had the highest total number of people affected by floods. In lower Sindh Province, by contrast, the slow onset riverine

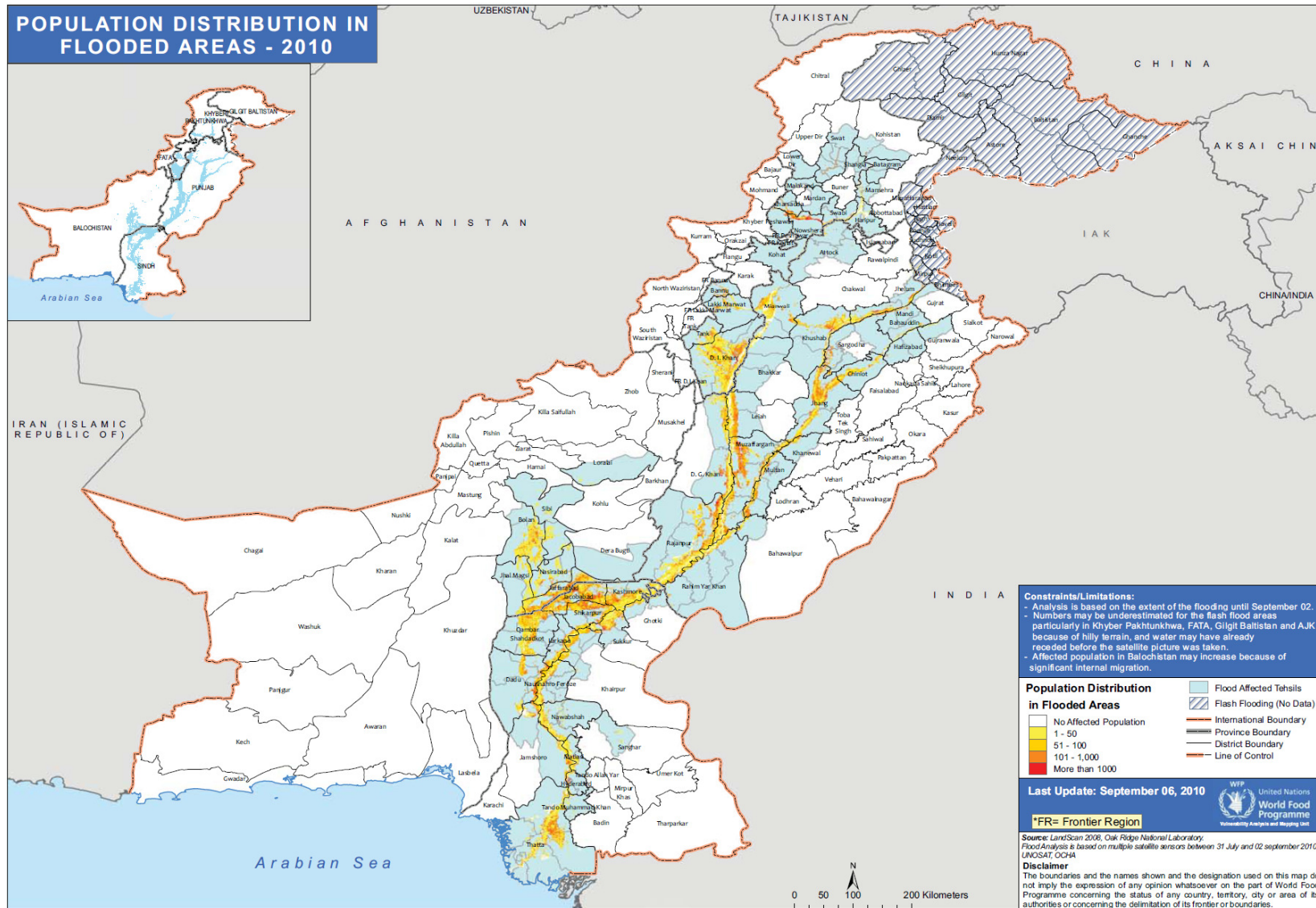
flooding phenomenon may have longer lasting effects: the flatland and delta topography will cause soils to be saturated and unusable for agriculture for a longer period than in the Punjab.

For all these reasons, the effects of the floods, in terms of extent of damage, impact on livelihoods and food security, number of people affected and duration of anticipated needs for food and non-food assistance varies widely. Although the available data did not sufficiently allow for a comparison between the different flood types, i.e. flash floods in mountain and hilly areas, riverine floods in densely populated and farmed areas, and riverine floods in less intensively farmed, delta areas, these distinctions need to be taken into account in the interpretation of the results presented in this report.

This flood impact assessment is based on several just completed rapid surveys. These include the Multi-cluster Rapid Assessment Methodology (McRAM), the WFP Initial Vulnerability Assessment, market monitoring data and the agricultural impact assessment. Data from the Food Insecurity in Pakistan (2009) report has served as the baseline against which recent assessment findings have been compared.

This Assessment aims to quantify the extent of damage and displacement caused by the floods, and their immediate impact on household assets, livelihoods, food consumption and nutrition. It also identifies critical protection, health, water and sanitation issues.

This Assessment will allow WFP and its partners to plan immediate relief interventions. It will also support the development of a strategy for early recovery, nutrition and livelihood support.



Map 1

## 2. METHODOLOGY

The Pakistan Flood Impact Assessment combines the results of several recent assessments that have been conducted. These include:

### 1. The WFP Initial Vulnerability Assessment (IVA)

The WFP Initial Vulnerability Assessment collected data on the number of people affected and the number of people in need of assistance. The latter was determined on the basis of the extent of damage of housing and crop land.

The IVA covered four provinces (KPK, Punjab, Sindh and Balochistan) and 49 flood affected districts. Data from AJK and GB was collected through WFP provincial offices. Data was collected between 29 July and 3 September 2010. Summary data by districts are presented in Annex 1.

### 2. Multi-cluster Rapid Assessment methodology (McRAM)

The McRAM provided household level data on the impact of the flood on livelihoods, food security and nutrition. Household data were collected in four provinces, covering 27 flood affected districts. Table 1 shows the sample distribution.

Province	District	# HH sampled
GB	Ganchi	32
	Ghizer	39
	Skardu	28
KPK	Charsadda	61
	Nowshera	122
	Peshawar	43
	Shangla	39
	Swat	150
	Tank	15
	Upper Dir	30
Punjab	DG Khan	104
	DI Khan	223
	Jhang	46
	Layyah	69
	Mianwali	121

	Multan	44
	Muzaffargarh	331
	R Y Khan	25
	Rajanpur	286
Sindh	Jamshoro	74
	Kamber	52
	Kashmore	70
	Khair Pur	49
	Larkana	93
	Shikar Pur	63
	Sukkur	185
	Thatha	48

Table 1

The McRAM did not cover flood affected areas in Balochistan Province. For more details on the McRAM methodology contact [www.pakresponse.info](http://www.pakresponse.info).

Analysis of the McRAM was generated at province level. While the McRAM provide critical information, the survey is purposively sampled and not random and is therefore not representative, increasing the risk of over or under estimation. Nonetheless, the spread of the sample is good and therefore the McRAM provides useful indicative information.

Due to time limitation the analysis generated under this assessment for all provinces combined was not appropriately weighted and therefore may under or over estimate the situation.

### 3. Agricultural Assessment

The extent of damage incurred by the agricultural sector was determined by the Preliminary Damage Assessment in the Agriculture Sector for Flood-affected Areas of Pakistan that was conducted by the Agricultural cluster (FAO).

### 4. Market and price monitoring

Market and price monitoring in flood affected areas was organized by WFP. In addition, price data

collected by the Central Bureau of Statistics were analyzed to assess impact on markets.

#### 5. GIS analysis

A GIS analysis was conducted to verify the estimate of the number of people directly affected by the flood using satellite imagery and population density map layers.

### 3. THE EXTENT OF DAMAGE

The monsoon floods claimed the lives of over 1,700 people and directly affected more than 14 million people across Pakistan. The floods put millions of people out of their homes, and caused destruction to houses, roads, schools and health facilities. Agricultural production was heavily impacted with losses in standing crops, land, livestock and agricultural inputs and assets.

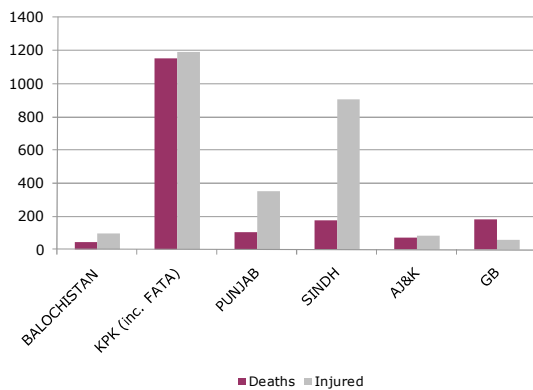


Figure 1 - Casualties (Source: NDMA)

#### 3.1 Housing

The WFP IVA counted 392,786 damaged and 728,192 destroyed houses. The damage was most pronounced in the districts of Muzaffargarh and Rajanpur in the Punjab, Nowshera and D.I. Khan in KPK, and Jaffarabad, Jacobabad, Shikarpur and Thatta in Sindh. Map 2 shows the number of houses destroyed and damaged by district.

#### 3.2 Basic public services

Flooding caused extensive damage to schools and health centres. According to UNICEF 7,600 would need to be reconstructed and 436 health facilities were damaged or destroyed, greatly limiting the provision of health care services to affected communities.

#### 3.3 Infrastructure

Damage to road infrastructure was extensive, cutting off many communities from essential supplies. The damage was greatest in the areas impacted by the flash floods in mountainous areas where many bridges collapsed rendering some areas completely

inaccessible. Over the river Swat for example all connecting bridges over a distance of 140 km (between Chakdara and Kalam) were destroyed. The flood caused significant damage to phone lines, electricity supply and installations. Power supply was interrupted in many large towns in Swat, Lower and Upper Dir as well as Shangla. The majority of ground water wells were clogged up with mud and silt and are unusable.

#### 3.4 Impact on agriculture, crops and livestock

According to the FAO agricultural assessment report, the monsoon floods caused damages of unprecedented scale to agriculture crops, livestock, fisheries and forestry and have destroyed primary infrastructure such as tube wells, water channels household storages, houses, animal sheds, personal seed stocks, fertilizers and agricultural machinery.

The floods struck just before the harvesting of key crops, including cotton, rice, maize, vegetables and sugarcane and on the onset of the *Rabi* (winter) wheat planting season which normally starts in September/October. If waters do not recede on time as could be the case on lower laying areas of Sindh Province, farmers will be prohibited to plant wheat for the *Rabi* season.

Overall production loss of sugar cane, paddy and cotton was estimated by FAO at 13.3 million mt.

The IVA estimates that over 2 million hectares of standing crops were either lost or damaged. According to FAO over 1.2 million head of livestock (excluding poultry) died due to the flood. In addition, more than 14 million livestock are at risk due to fodder shortages and heightened risk of disease. The most affected province in terms of agricultural area affected by the floods is Punjab, followed by Sindh and KPK, death of livestock was more widespread in KPK.





## 4. THE MARKET SITUATION

The floods had a significant impact on markets, primarily through the destruction of transport infrastructure, market infrastructure, including warehouses, and loss of stored food or agricultural input commodities. These, in turn, have decreased the capacity of operators along the value chain (transporters, processors, wholesalers and retailers), raised transaction costs, lowered the functioning of markets, and the availability of food commodities. All these factors have translated into higher prices for basic goods, especially food commodities.

### 4.1 Physical infrastructure

As described in Section 3, the floods have caused significant damage to roads, bridges, and thereby disrupted or reduced the movement of commodities. Traders have found it much more difficult, expensive or even impossible to move goods, leading to scarcities of commodities on local markets. In a few areas, emergency transport measures are used in some places to bring out marketable produce on behalf of local farmers (e.g. helicopters flying food into northern KPK Province locations are bringing out potatoes, onions, turnips and cabbage).

### 4.2 Market infrastructure

Vendors' stalls and storage facilities have been destroyed in many districts, reducing the capacity of markets. This has been verified through field visits and by the analysis of the McRAM household data. Table 2 shows the McRAM results on local markets being open and functional at the time of the survey. The market situation is however evolving quickly, and since the completion of the McRAM survey many markets have started to open again, while others in southern Sindh have closed down. Notwithstanding this, the data provide an overview on where markets were most severely impacted. In most provinces about one third of households reported that local markets were not functioning following the flood. In Punjab this approached almost half in flood affected areas.

**Market functioning severely affected**  
(% of households reporting that markets are not functioning)

KPK	31
Punjab	47
Sindh	31
GB	33
All	39

**Table 2**

### 4.3 Commodity loss

In addition to the crop and livestock losses discussed above, there has been significant loss of food commodities in warehouses owned by government, humanitarian agencies (including WFP), traders and households in affected areas. Current estimates place losses in government warehouses at around 140,000 mt. While the extent of losses by traders has not been quantified, this is expected to be very significant. The official wheat procurement campaign usually starts on September 1<sup>st</sup>, and therefore a significant part of the marketable surplus for wheat was still at the trader or household level. The food stock losses at household level are discussed in the next Section.

### 4.4 Commodity prices

All the above resulted in higher than normal prices for food commodities across the affected provinces and districts. Table 3 presents prices in KPK and Sindh, two severely affected provinces.

The price increases of wheat and rice (the main staples) are shown to range from less than 10% in the districts in Sindh Province to very high (more than 80% in one district in KPK). Other commodities also show price increases averaging between 15% and 25%. The price of sugar, a key commodity, increased with an average of about 20%. Meanwhile, the price of poultry increased by more than 65% in the two districts in Sindh for which data were available.

In contrast, the prices of perishable food items (not shown in the Table) such as fruits and vegetables



have fallen sharply in remote hill and mountain areas. The inability of traders to transport goods due to severe road damage is the key factor contributing to high price increases or decreases (the latter in case of perishable goods).

With the sharp increases in the prices of basic goods, access to food is likely to become increasingly difficult if no humanitarian assistance is provided. As access to some flooded areas is difficult, the effect

that procurement of food aid may have on local prices will need to be carefully monitored. WFP has initiated a market and price watch monitoring system in the flood affected districts that monitors market prices and availability on a weekly basis.

The floods have had consequences for household food security, directly through reduced or limited access to markets, and indirectly through higher prices.

**Increases in Prices after Floods (August compared with July 2010) in %**

Province	KPK+				Sindh*	
	District/ Commodity	Kohistan	Lower Dir	Manshra	Swat	Kamber
Wheat Flour	82	33	10	26	7	6
Broken Basmati Rice	87	..	7	33	-10	10
IRRI6-Rice	..	25	6	38	12	19
Split peas	22	18	22	31	..	..
Edible oil	..	11	22	17	..	..
Pakwan Ghee	9	16	17	18	..	..
Dalda Ghee	..	9	5	..	..	..
Sugar	43	16	8	14	13	22
Onion	..	..	..	..	41	25
Chicken	..	..	..	..	65	69
Beef	..	..	..	..	9	25
Mutton	..	..	..	..	8	13

+ Based on data collected by the Federal Bureau of Statistics (KPK) for WFP for July and August 2010.

\*WFP data for August 2010 compared with Federal Bureau of Statistics data for July 2010

**Table 3**

## 5. IMPACT ON LIVELIHOODS AND ASSETS

### 5.1 Livelihoods

The principal means of livelihood before the flood for half of the population in flood affected areas was agricultural crop farming (more than 50%). Fifteen percent depended on casual wage labour as their primary source of income. Livestock rearing was the second most common means of livelihood for the displaced population. Remittances were not a key means of livelihood in the affected areas (1 % of households) but skilled wage labour and services were (9% and 7 % of households, respectively). This livelihood pattern is similar across the four provinces surveyed, except in KPK where unskilled labour is more prominent.

A majority of households reported that their principle livelihood was severely affected with income derived from it dropping by more than 50 percent. Figure 2 shows the impact on livelihoods by province, indicating that in all but one province more than 60 percent of households experienced a drop in income from their principle source of livelihood by more than 50 percent. In KPK this was lower at 47 percent.

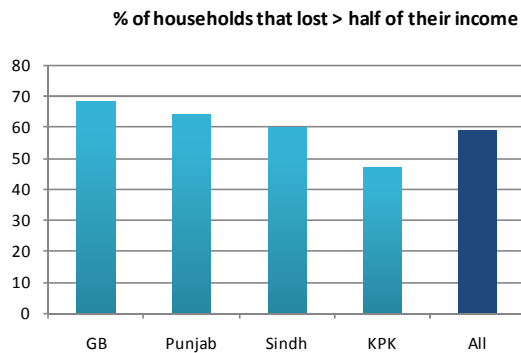


Figure 2

There has been a significant shift in households' main livelihoods before and after the flood. Figure 3 compares the main livelihood before and after the flood. As can be expected, farming has declined sharply as an income source, and the share of

income support (*Zakat*/aid, as well as remittances) increased.

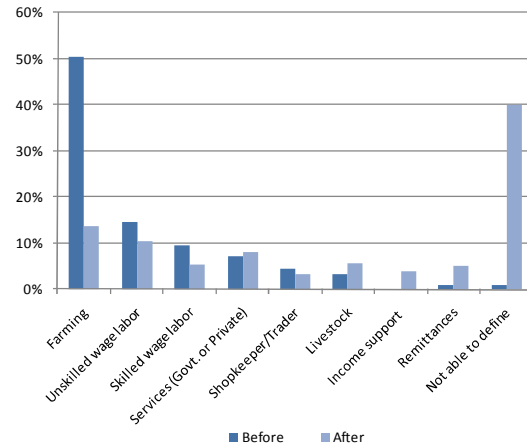


Figure 3

After the floods 40 percent of the interviewed households could not define their principle livelihood, interpreted here as an acute loss of their principle livelihood.

### 5.2 Household income

The households whose livelihoods were most affected have the lowest levels of income; out of those who report that their income was reduced by 75 percent or more, 45 percent live below the national poverty line.

According to the McRAM data, farmers and livestock owners bore the brunt of the flood impact; more than 70 percent of farmers lost more than 50 percent of their expected income (over 60 percent lost more than 75 percent), followed by daily wage labourers (around 60 percent lost more than 50 percent of their expected income). The least affected are government or private service employees of which almost 64 percent reported no losses. They are also the most food secure.

After the floods half of the interviewed households spent more than 65 percent of their expenditures on food, leaving very little for other essential expenditure, including health care, education,

clothing and housing. It will leave these households extremely vulnerable to price hikes.

### 5.3 Crop loss

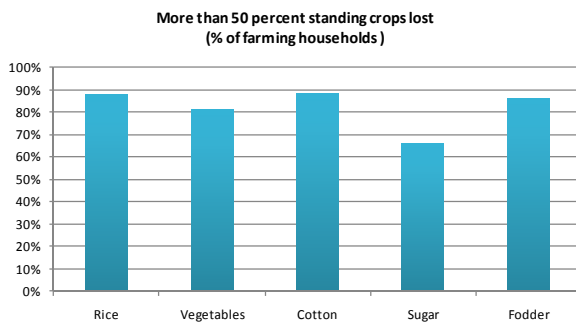
The destruction of crop land underlies these expected income losses. Almost 60 percent of households did cultivate land before the onset of the flood. The mean area planted was 9 acres (median was 5 acres). The area planted was generally higher in Sindh however the average is skewed by a number of very large land holdings in the sample. The median area planted in flood affected areas in Sindh was 8 acres. Reported crop loss was highest in Sindh where more than 95 percent of people’s standing crop was destroyed. The quicker drainage of the water in the more mountainous areas resulted in less crop losses (45% in KPK).

**Crop losses (mean)**

	GB	KPK	Punjab	Sindh	All
Area land holding	2.1	6.3	6.9	16.1	9.1
Crops area lost	1.6	2.9	6.0	15.4	8.0
Percentage lost	76%	45%	87%	95%	88%

**Table 4**

Between 60 and 88 percent of the farming households reported losses of more than 50 percent of their major crops: rice, vegetables, cotton, sugar and fodder. These households were mostly located in Punjab and Sindh.



**Figure 4**

### 5.4 Household assets

Property was badly affected with 42 percent of houses completely destroyed, 19 percent heavily damaged and 28 percent lightly damaged. Only 9 percent of houses escaped undamaged.

	GB	KPK	Punjab	Sindh	All
Not damaged	14.10	26.50	6.40	1.10	9.10
Lightly damaged	20.20	36.70	33.60	10.80	27.70
Heavily damaged	2.0	21.1	19.1	19.4	18.9
Destroyed	62.6	15.7	39	62.9	41.8

**Table 5**

The brunt of the damage as a percentage of total houses occurred in Sindh and GB. In the former, only 1 percent of houses in flood affected areas was not damaged, while 63 percent were completely destroyed. Map 2 on page 7 plots housing damage as recorded in the WFP Initial Vulnerability Assessment. Most damaged and destroyed houses in absolute numbers are in KPK, Punjab and Sindh.

The impact was also severe on other household assets such as furniture, utensils and documents. Unfortunately, the McRAM did not collect data on the extent of household assets lost. Approximately 13 percent of the population reported loss of their national identity cards. This should be taken into account when setting up procedures for aid distribution in affected areas.

### 5.5 Animal losses

Table 6 shows the average number of animals that households owned before and after the flood. The losses are extremely high. On average households lost almost 40 percent of their livestock in the flood affected areas. While many families managed to bring some or all of their livestock from affected areas, many have been forced to sell their cattle in exchange for cash or food, as fodder is in limited supply in the camps. Although the livestock prices

were not covered in this assessment, the assessment teams reported decreases in the price of cattle caused by people trying to sell off their domestic animals.

Losses were extremely high for poultry with households reporting that more than 70 percent of their birds drowned by the flood water.

There is substantial difference in animal loss across provinces. In general losses were greatest in Sindh where on average two third of farm animals were reportedly lost and lowest in the Punjab where losses were substantially lower at about one third on average.

FAO estimates that 1.2 million heads of livestock were lost, not including the 6 million poultry lost.

### 5.6 Productive assets and farm produce

Unfortunately the McRAM did not record losses in productive assets, including agricultural tools, machinery, fishing gear etc. The extent of loss can

be assumed to be substantial but this cannot be confirmed by the household data collected.

More than 60 percent of households incurred substantial losses of their food grain stocks and animal shelter. Seeds losses were high and 55 percent of farm household reported loss of at least half their seed stocks.

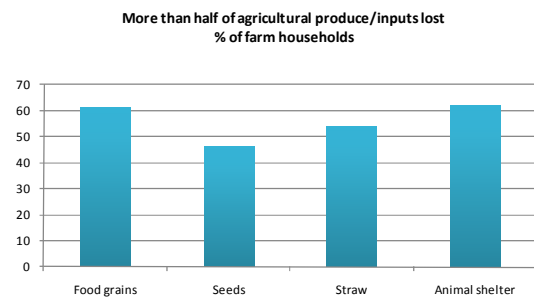


Figure 5

FAO estimates that overall 500,000 to 600,000 mt of wheat seeds were lost.

	GB			KPK			Punjab			Sindh			All		
	Before	Now	% Change	Before	Now	% Change	Before	Now	% change	Before	Now	% change	Before	Now	% change
<b>Cows</b>	2.4	1.9	-24	0.7	0.4	-39	2.2	1.8	-20	3.2	1.1	-66	2.2	1.4	-38
<b>Buffaloes</b>	0.4	0.4	-7	0.5	0.4	-31	1.3	0.9	-25	2.7	1.2	-56	1.5	0.9	-40
<b>Sheep/goats</b>	10.3	5.2	-49	0.5	0.4	-26	3.0	2.4	-21	4.1	1.5	-65	3.1	1.9	-39
<b>Poultry</b>	9.0	2.0	-78	3.3	1.0	-71	4.9	1.6	-68	3.9	0.7	-83	4.5	1.3	-72
<b>Horses</b>	0.0	0.0	n/a	0.1	0.0	n/a	0.1	0.0	n/a	0.1	0.0	n/a	0.1	0.0	n/a
<b>Oxen</b>	0.2	0.1	n/a	0.0	0.1	n/a	0.2	0.1	n/a	0.0	0.1	n/a	0.1	0.1	n/a
<b>Donkeys/Mules</b>	0.1	0.1	n/a	0.0	0.0	n/a	0.2	0.2	n/a	0.3	0.1	n/a	0.2	0.1	n/a
<b>Camels</b>	0.0	0.0	n/a	0.0	0.0	n/a	0.1	0.3	n/a	0.1	0.0	n/a	0.1	0.1	n/a

Table 6

## 6. IMPACT ON HOUSEHOLD FOOD SECURITY

Given the loss of people’s homes, livelihoods and assets, the food security situation at household level is of particular concern and requires continuous monitoring over coming months.

### 6.1 Food stocks and sources

Most households reported that they currently have no food stocks or that current stocks would last no more than one week.

Household food stocks

	GB	KPK	Punjab	Sindh	All
No food stocks	80%	35%	54%	70%	55%
<1 week	11%	49%	17%	14%	22%
1-2 weeks	3%	12%	10%	5%	9%
2-4 weeks	6%	3%	15%	5%	10%
Don't know	0%	1%	4%	6%	4%

Table 7

This is the result of significant losses households have incurred due to the flood. Figure 6 depicts household food stock losses of 3 commodities that WFP is providing to flood victims as part of the relief operation, wheat grain, pulses, and oil. 58 percent of households completely lost their stock of wheat flour and bread, 32 percent lost all dhal, pulses and lentils they had stored and cooking oil, ghee and butter was fully lost by 38 percent of the households. Losses were specifically high in Sindh province.

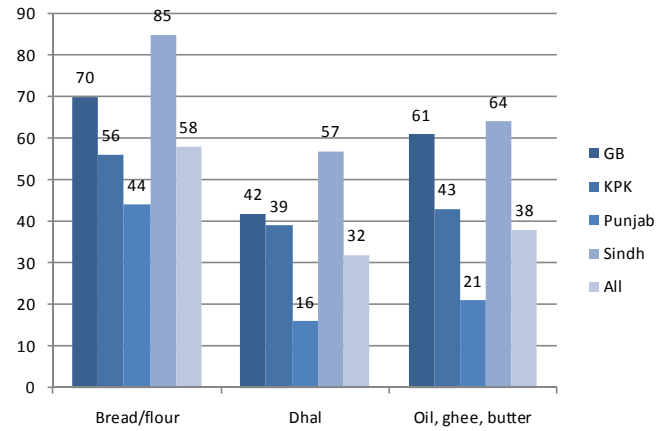


Figure 6 - % of households who lost all food stocks

As shown in Figure 7, many flood affected households have switched their main source for cereals from own production and market purchase to food aid (approximately 20% of households) and between 10-17 percent of households currently rely on local government assistance.

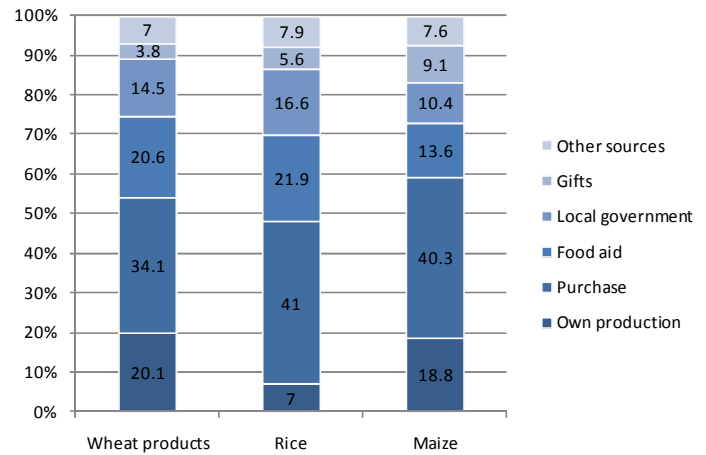


Figure 7 - Main sources for cereals (end of August 2010)

### 6.2 Coping strategies

Figure 8 presents a list of coping strategies used by flood affected households by province. Many flood affected households have shifted their consumption to less preferred foods and borrowing is practiced by more than one third of households across the



surveyed provinces on average. Skipping meals is widely practiced (see next Section) and women eat generally less than men. Sale of household and

productive assets is not widely observed, however there is a slight increase in the sale of farm animals.

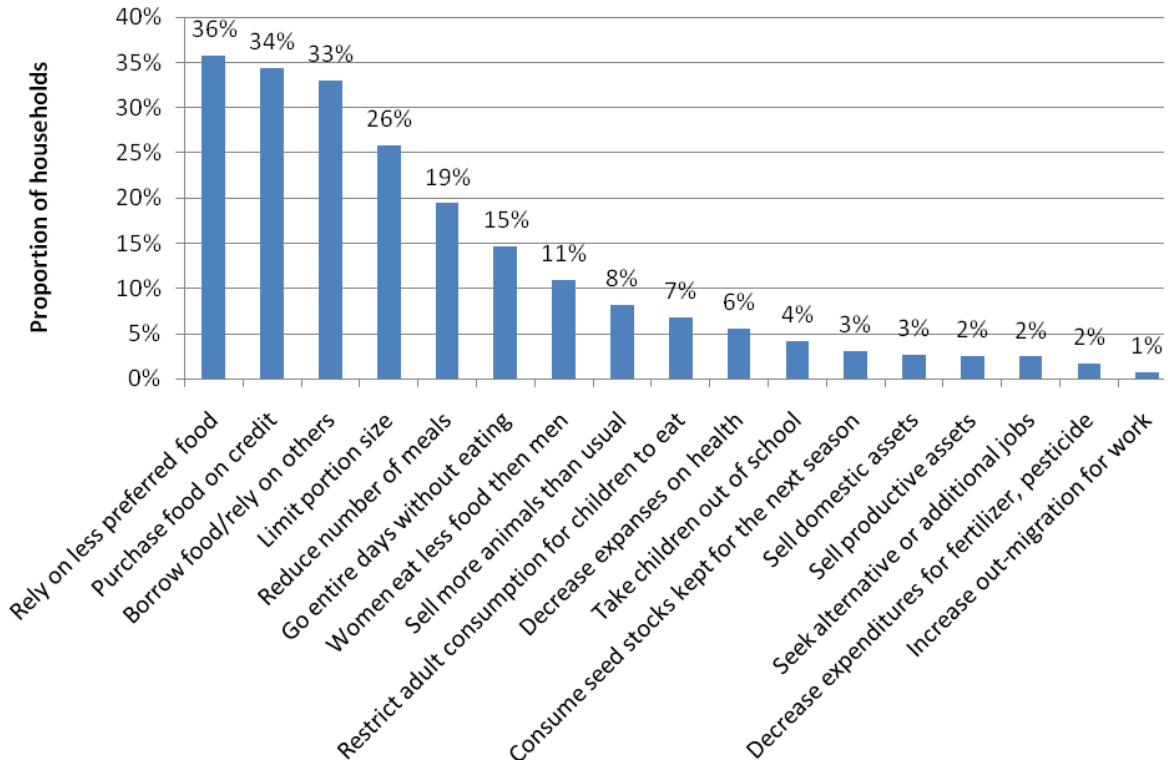


Figure 8

## 7. IMPACT ON FOOD CONSUMPTION, NUTRITION AND HEALTH STATUS

### 7.1 Food consumption

Results for food consumption intake, as measured by dietary diversity and frequency over the past week, indicate that flood affected household ate cereals on average more than 5 days in one week. Milk and dairy products were consumed on average 3 to 4 days in one week. In contrast, fruits, meat, fish were almost not consumed (less than one day a week).

Table 8 shows the food consumption score (FCS) in flood affected areas using standard global threshold values<sup>1</sup>.

Food consumption groups (% households)			
	Acceptable	Borderline	Poor
Flooded areas	54	19	27

Table 8

The lack in dietary diversity as measured by the FCS is very high with almost one third of the population having a poor consumption intake. This means that they predominantly survive on daily cereal intake (wheat and rice).

The report on food security in Pakistan (2009) uses different weights and thresholds to determine food consumption groups<sup>2</sup>. Using this approach, Table 9 compares the 2009 provincial food consumption scores for Punjab and Sindh with the consumption scores in the flood affected areas.<sup>3</sup>

The data shows that there is a severe deterioration in the food security status in flood affected areas

<sup>1</sup>The food consumption score (FCS) was calculated based on the number of days particular food groups were consumed as follows:  $FCS = 2(\text{cereal}) + 3(\text{pulses}) + 4(\text{poultry/meat/eggs}) + 0.5(\text{oil}) + 4(\text{milk products}) + 1(\text{vegetables}) + 1(\text{fruit}) + 0.5(\text{sugar/sweets})$ . Cut-offs were applied as follows:

1. Poor food consumption is score between 0.5 – 21
2. Moderately food consumption is score between 21.5 – 34.5
3. Adequate food consumption is score of more than 35+

<sup>2</sup>See Food Insecurity in Pakistan (2009)

<sup>3</sup>Data on consumption intake for the other two provinces in which the McRAM was conducted (GB and KPK) were insufficient to draw conclusions.

compared to the average for the province. The percentage of households with poor food consumption increases from 10 percent to 45 percent in Punjab and from 13 to 76 percent in Sindh.<sup>4</sup>

	Food consumption groups (% households) 2009 baseline vs September 2010					
	Acceptable		Borderline		Poor	
	2009 baseline	Sep 2010	2009 baseline	Sep 2010	2009 baseline	Sep 2010
Punjab	31	12	58	42	10	45
Sindh	16	2	71	22	13	76

Table 9

The deterioration in household food security is also shown by the number of people skipping meals. Table 10 shows the percentage of adults (above 18) that went without any food the day prior the date of interview. In flood affected areas of Sindh this is worryingly high with 17 percent of women and 19 percent of men not consuming any meal the previous day.

	Female	Male
GB	7.1	9.1
KPK	3.0	1.5
Punjab	5.9	6.9
Sindh	17.6	19.3
All	8.4	9.1

Table 10

<sup>4</sup>Here provincial averages are compared to averages for parts of the provinces which are flood affected. This is, strictly speaking, not valid and only serves to highlight the seriousness of the situation in flooded areas.

## 7.2 Malnutrition

The malnutrition situation in Pakistan is alarming. Nationally the acute malnutrition rate is measured at 13.1 percent, close to the WHO emergency threshold of 15 percent. Table 11 shows the provincial averages.

	Acute Malnutrition			Source
	Global	Severe	Moderate	
Pakistan	13.1	3.1	10.0	NNS, 2001-2002
Sindh	18.2	5.0	13.2	NNS, 2001-2002
KPK	10.9	3.1	7.8	NNS, 2001-2002
Balochistan	13.9	7.4	9.2	NNS, 2001-2002
Punjab	12.1	2.3	9.8	NNS, 2001-2002
	13.0	5.6	7.4	MICS Punjab, 2007-2008

Table 11

According to the McRAM data, more than 66 percent of the interviewed households had a child under 5 years of age. The nutrition status of these children was screened by taking Mid-Upper Arm Circumference (MUAC) measurements. The average MUAC measurement for children 6-59 months was 13.9 cm and global acute malnutrition was measured at 26 percent in flood affected areas, using globally defined threshold values<sup>5</sup>. However, due to inaccuracies in measurements this figure should be interpreted only as an indication that acute malnutrition has likely increased among the flood affected population.

Unfortunately the McRAM did not collect data on the health status of children and so prevalence of diarrhoea and other infectious diseases could not be established.

Pre-flood national data (national nutrition survey of 2001) indicate that on average 12.5 percent of women in Pakistan are underweight. This percentage increases significantly for lactating women among whom 16.1 percent have a body mass index below 18.5.

## 7.3 Health

The health and nutritional well-being of the flood affected people is linked with various factors

<sup>5</sup> Global Acute Malnutrition include all children with a MUAC measurement lower than 12.5 cm

including access to appropriate foods, to health care services, proper feeding practices for infants and young children, safe water, hygiene and sanitation.

Twenty-eight percent of households reported that the nearest health care facility was damaged by the flood. Almost two-thirds of the affected households stated that they could get to the nearest health care facility within an hour.

## 7.4 Care practises

About 5 percent of mothers have stopped breastfeeding following the floods and approximately 16 percent of mothers stated that they had reduced breastfeeding. One of the main reasons given included having no or less quantity of breast milk. A serious issue that was noted, linked to breastfeeding, was the privacy of women. Only 20 percent of the women feel that they have the privacy they require in order to breastfeed their children. Approximately 60 percent also stated that they have inadequate privacy to use available latrines and bathing facilities.

The international code for breast milk substitutes (BMS) recommends that donations of infant formula, bottles and teats and other powdered or liquid milk product should not be distributed in emergencies. Disregarding this code, distribution of infant feeding supplies was reported by 19 percent of interviewed households. Almost eight percent stated that they had received bottles while others have been provided with dry milk (13%), infant formula (3%) and liquid milk (10%). If distributions of BMS are not controlled, it could result in an increase in morbidity of infants due to the use of unsafe water.

## 7.5 Water and sanitation

The majority of the households (59%) stated that their main water source before the flood crisis was protected hand pumps. The other sources were canals, rivers, ponds (10%) and unprotected hand pumps (10%). These water sources were perceived to be both sufficient and of good status (82%). After the crisis, the number of families using the protected

hand pump has declined whilst an increase is seen in those using unprotected hand pumps.

Table 12 summarizes the defecation practices of women before and after the crisis. It indicates an increase in the utilization of communal latrines and open fields.

**Female defecation practices**

Place of Defecation	Before floods (%)	After floods (%)
<b>Communal latrines</b>	10	20
<b>Household latrines</b>	48	26
<b>Open field</b>	32	43

**Table 12**

Regular field monitoring visits have indicated that several children in each camp suffer from gastrointestinal diseases. The poor hygiene practices reported, may result in deterioration in the health and nutritional status of the flood affected people.

## 8. NUMBER OF PEOPLE IN NEED OF FOOD ASSISTANCE

According to the projected census data for 2010, the number of people living in flood affected *Tehsils* (sub-districts) is 66.1 million.

The number of people living within the flood extent and therefore directly affected is estimated at 14.1 million. This number was determined using data collected by the WFP Initial Vulnerability Assessment and verified by a GIS analysis overlying population data with satellite imagery of the flooded area (see Map 1 on page 3).

### 8.1 Emergency needs

In the absence of more detailed information on poverty status within the affected area, asset loss was used to estimate the number of people in need of immediate assistance. More specifically, households were included:

- whose houses were completely destroyed by the flood
- whose houses were significantly damaged and rendered unlivable
- who suffered extensive crop loss

Using this method, **an estimated 10.1 million people are in need of immediate assistance.** The distribution by province is shown in Table 13.

A cross-tabulation of the food consumption score (presented in Section 7) and income poverty indicators was used to determine the degree of food insecurity of this population. Through this analysis, WFP has determined that of the 10.1 million in need of immediate assistance, **more than 7.8 million people are especially vulnerable.** These include those identified as being highly food insecure and those considered moderately food insecure but who have sustained large asset losses. It also covers the majority of people who currently live within temporary shelter and spontaneous camps.

At the time of writing, the flood situation is still evolving and there is the prospect that additional

populations will be affected in the coming days. Moreover, longer-term food security prospects are unpredictable with uncertainty surrounding the extent to which farmers will be able to plant for *Rabi* season, as well as over the evolution of the health and nutrition situation.

The risk of missing the *Rabi* season goes beyond those directly affected. For example, in Thatta district in southern Sindh, a major canal that provides irrigation to more than one million people suffered 28 breaches.

### 8.2 Emergency nutrition needs

While no nutrition assessment has been completed, global acute malnutrition rates were already close to or above the WHO emergency threshold before the crisis and are likely to be on a downward trend. Fourteen percent of the affected population are younger than 5 years of age and 13.1 percent of them were suffering from global acute malnutrition before the crisis. Eight percent of the affected population are expecting or lactating mothers and on average 16.1 percent of lactating women were malnourished before the crisis. Notable here are the coping strategies, which indicated that women reduce their food intake before men. Given these statistics, **260,000 children under five years of age and 180,000 pregnant and lactating women are in urgent need of supplementary feeding.** However, given practical difficulties in nutrition screening, the already high levels of malnutrition and the likelihood of a further deterioration in the nutrition status of flood affected children and women, a blanket feeding strategy is recommended leading to much higher targeting numbers.

### 8.3 Food assistance needs for recovery and rehabilitation Support

Food assistance under longer term recovery and rehabilitation support is recommended to be targeted to the highly food insecure population only. **The number of people requiring food assistance to support recovery and rehabilitation is estimated at approximately 3.6 million.** These are people who

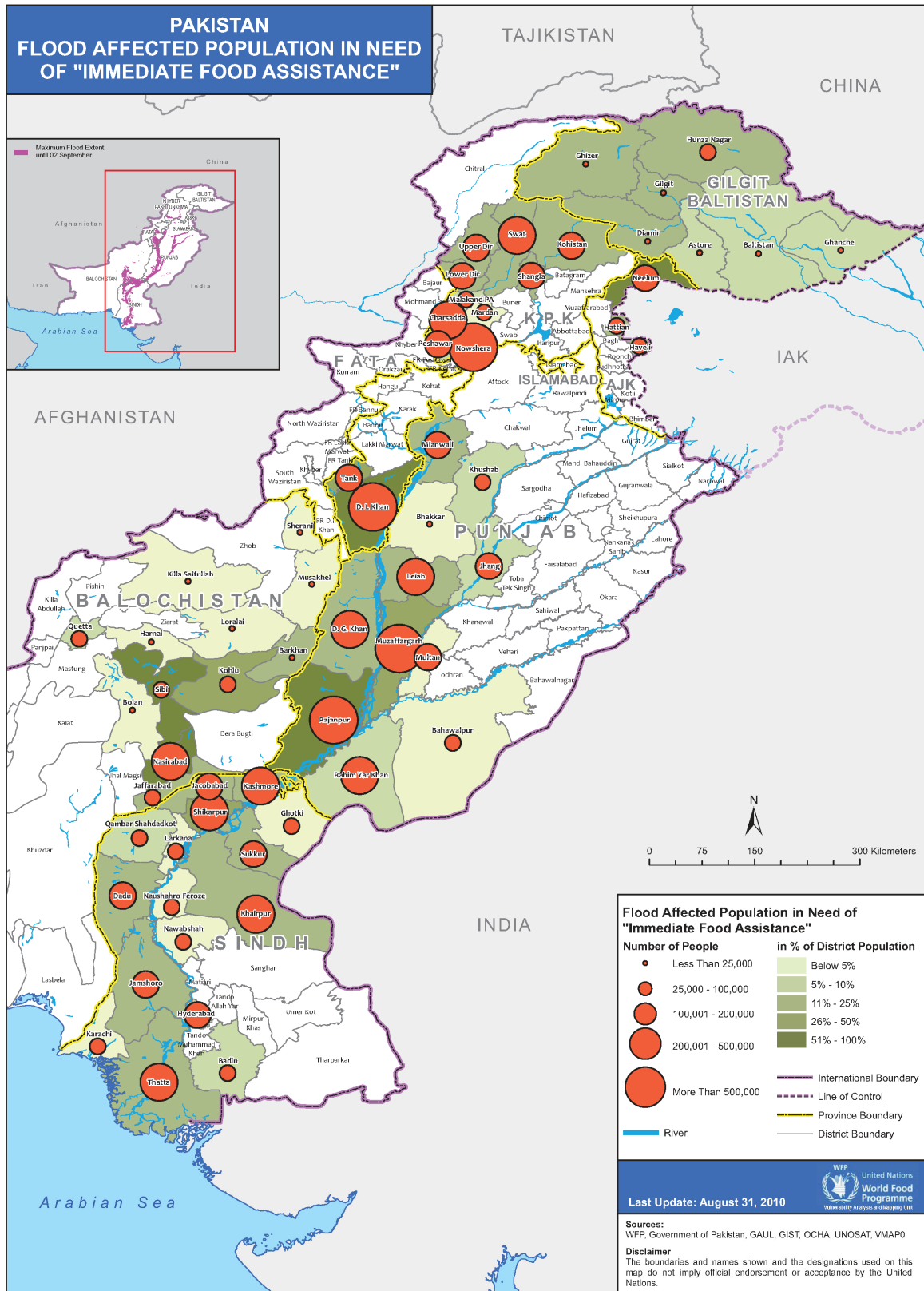


live below the national poverty line, have unacceptable low consumption intake or spend a large share of their income on essential food.

Province	Estimated total population in flood affected Tehsils (millions)	Estimated total population affected (millions)	% affected	In need of immediate assistance (millions)	% of affected population
Punjab	27,120,000	5,330,000	20	4,360,000	82
KPK	13,810,00	5,300,000	38	2,810,000	53
Sindh	19,620,000	2,740,000	14	2,370,000	86
Balochistan	2,430,000	600,000	25	540,000	91
AJK	2,210,000	50,000	2	50,000	100
Gilgit-Baltistan	930,000	80,000	9	30,000	31
<b>TOTAL</b>	<b>66,110,000</b>	<b>14,100,000</b>	<b>21</b>	<b>10,100,000</b>	<b>72</b>

Table 13<sup>6</sup>

<sup>6</sup> Details by district are provided in Annex 1 and shown in Map 3



Map 3

## 9. TARGETING THE FLOOD AFFECTED FOOD INSECURE

### 9.1 Household demographics

Average household size among the affected and displaced is 7 persons per family. Only one percent of households are headed by females. Households can be divided according to the dependency ratio in roughly four quarter as follows:

#### Dependency ratio

Adult per dependent	% of households
> 2	24
2 - 1	23
0.5 - 1	31
< 0.5	22

Table 14

### 9.2 Targeting

Targeting for the immediate relief is predominantly based on the extent of house and crop loss, i.e. people who are displaced or were severely affected by the flood. Map 3 on page 20 provides an overview of the needs and the location by district for immediate relief.

For targeting the longer term early recovery and rehabilitation programmes (food and cash for assets) an analysis was conducted using the McRAM data to determine appropriate targeting criteria. In doing so, the geographic classification, i.e. poorer, more food insecure *Tehsils* (sub-district) or Districts, turned out to be the best criteria for ensuring that food assistance would reach those most in need.

The Pakistan food insecurity map<sup>7</sup> was therefore overlaid with flood affected districts and a distribution model was developed that took into account the level of food insecurity by using the food security index developed for the 2009 food insecurity report.

Results are presented in Map 4 which shows the recommended targeting for recovery and

rehabilitation activities. The size of the circle indicates the absolute number of beneficiaries that were identified for food assistance.

It clearly shows that recovery and rehabilitation efforts should focus on flood affected districts in KPK (Dir, Swat, Shangla, Malakand, Charsadda, Pehawar, Nowshera and Khan), the eastern part of the Punjab, and northern (Jaffarabad, Jacobabad, Kashmir and Shikarpur) and southern Sindh (Thatta).

The McRAM data also provided guidance on household targeting criteria. Flood affected food insecure households have a higher probability to have the following characteristics:

- Living in a house build from mud or grass (pre-flood)
- Landless or marginal farmer (< 3 acres of land)
- Female headed
- Large family size

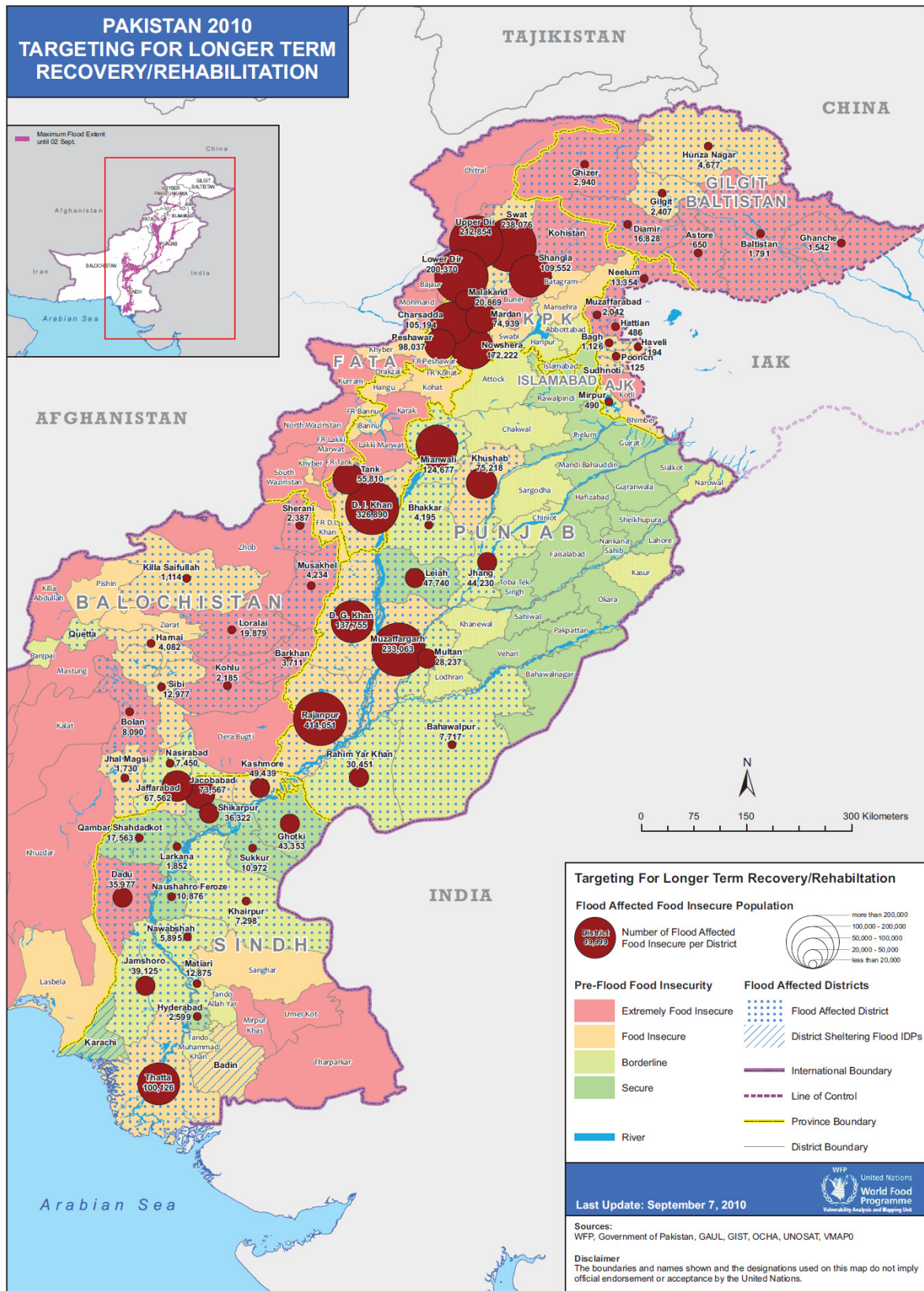
In addition, the majority of these food insecure households lost their house and are currently living in temporary IDP camps, collective centres or spontaneous settlements.

Beneficiary targeting can therefore be directed to these temporary IDP locations and can be further refined by targeting the landless or marginal farmers. Ration sizes could be adjusted in case of large family size.

### 9.3 IDPs

According to the IVA, 8.1 million people have been displaced from affected areas. This includes more than 7 million from Punjab and Sindh. Numerous temporary IDP locations have been established. These include official camps (not necessarily managed), self-managed makeshift camps organized by communities and/or private donors, public schools and colleges, and playgrounds. Many families live scattered along road sides and embankments. In addition, part of the flood affected population has fled to districts not affected by the flood.

<sup>7</sup> See report on Food Insecurity in Pakistan (2009)



Map 4

	Total displaced (source IVA)
Balochistan	218,000
KPK	651,700
Punjab	2,666,000
Sindh	4,596,000
<b>Total</b>	<b>8,131,700</b>

Table 15

The McRAM household survey interviewed displaced households within the affected areas. The displaced

people living in camps, collective centres and spontaneous settlements are in a worse condition than those that remain in their communities; 40 percent of the households living in camps have poor food consumption and almost 55 percent have incomes below the national poverty line, as opposed to 14 and 28 percent respectively for households that remained in their houses.

More than 70 percent of the displaced are small farmers or livestock owners. In addition 10 percent of the displaced are unskilled labourers.



## 10. ASSISTANCE PROVIDED AND PRIORITY NEEDS

### 10.1 Priority needs

The most immediate needs expressed by households in the McRAM survey were cash, food and shelter, followed by non-food items (building material), medical support and clothing/blankets (see Figure 9).

In terms of priorities, 85 percent of the displaced households mentioned food as first or second priority and 60 percent mentioned cash. Non displaced households expressed about the same need for food and cash (around 70 percent mentioned food or cash either in first or second priority).

### 10.2 Assistance received

As of end of August, food aid had been received mostly in camps, collective centres and in spontaneous settlements where 65 percent of the population had received food compared to 40 percent of households that are living in their villages of origin.

WFP launched its emergency response on 1 August and reached three million people in 38 districts in the month of August.

Including the government and UN, over 50 organizations are involved in food relief efforts. Actors other than WFP include the government / PDMA, the armed forces (including the air forces), NGOs, Red Cross and Red Crescent societies and private donations.

Shelter and NFI support was reported to have been provided to almost 20 percent of households. It includes the provision of tents and other shelter material, blankets, jerry cans, buckets, and bedding material.

The badly needed agricultural and livestock support has reached around 3 percent of households.

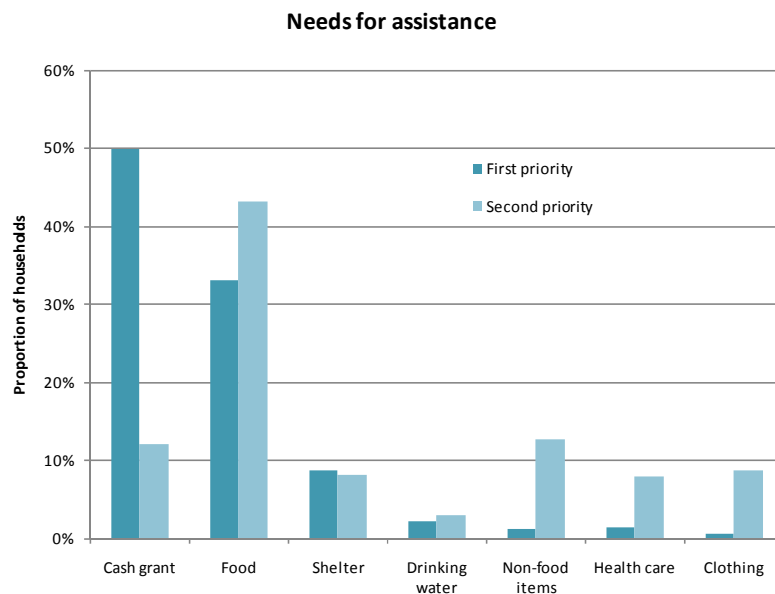


Figure 9

## 11. CONCLUSION

The flood had a severe impact on people's homes, livelihoods and assets. Most people do not yet know when they will be able to return home and resume their livelihoods.

Many markets have closed and prices of essential commodities have risen sharply from an already high level before the flood. It is expected that people will be needing shelter, food and other essential supplies for the foreseeable future until agricultural lands have been restored, infrastructure repaired and houses rebuilt.

Food and other essential aid deliveries can prevent a further deterioration in household food, nutrition and health security. Current estimates are that immediate support will need to be provided to 10.1 million people. An estimated 7.8 million of them are in need of immediate food assistance.

With the expected deterioration in the nutritional status of children over the coming months and with 13 percent of children already malnourished, emergency nutrition programmes must be part of any feeding strategy.

The aid deliveries should support broader early livelihood recovery programmes and disaster risk reduction strategies which are currently being planned. The total targeted caseload for WFP for recovery amounts to 3.6 million people. Areas where this is most needed are indicated in Map 4.

The flood situation is still evolving and there is the prospect that additional populations will be affected in the coming days. Moreover, the food security outlook for the medium term is uncertain and depends on the extent to which farmers will be able to plant for the *Rabi* season, taking into account the losses in seeds, agricultural tools and land. An additional concern is the possible deterioration in the health and nutrition situation.

A follow-up assessment focusing on longer term recovery needs and fine tuning WFP food assistance programmes is recommended to take place in November/December 2010.

## 12. ACKNOWLEDGEMENT

The Pakistan Flood Assessment is a WFP document with the aim to inform WFP programming for the immediate and medium term. The assessment will provide an input into the overall McRAM initiative. The McRAM multi-cluster assessment document is expected to be made available in the coming month.

The Pakistan Flood Assessment was based on an initial vulnerability assessment which took place in 4 provinces, the McRAM household survey, the FAO led agricultural assessment, market and price monitoring information and a GIS analysis.

Many agencies, UN and NGOs as well as government institutions contributed to the assessments. For the IVA, field work was undertaken by 1100 staff from 88 different NGOs.

The WFP assessment team was responsible for putting together this report and comprised of the following staff:

Sahib Haq	VAM Officer, Pakistan	Coordinator of IVA
Laura deFranchis	VAM Officer Pakistan	Impact, IDP analysis and livelihoods
Siemon Hollema	Sr Programme Adviser, WFP HQ	Overall report coordination and editing
Anders Petersson	VAM Officer, Sri Lanka	Data Analysis
Michael Sheinkman	Sr Regional Adviser, WFP Bangkok	Number verification
Axel Pustan	GIS expert, WFP consultant	GIS analysis and mapping
Fawad Raza	GIS/Mapping, WFP Pakista	GIS analysis and mapping
Simon Dradri	Assessment Officer, WFP Bangkok	Markets and prices
Bilan Osman Jama	Nutritionist, WFP Pakistan	Nutrition
Henri Josserand	WFP consultant	Background

The assessment team is grateful to all staff that participated in the data collection for the WFP IVA and the McRAM.

Annex 1 – Affected population by district

Annex 2 – Technical details for estimating the number in need of food assistance

## Annex 1 – Affected population by district

Province	District	Total population	Houses destroyed	Houses damaged	Immediate needs	
Sindh	Dadu	1,462,320	11,108	12,250	168,011	
	Ghotki	1,282,392	9,808	10,372	239,572	
	Hyderabad	1,975,183	1,361	327	13,018	
	Jacobabad	980,296	18,290	21,781	289,121	
	Jamshoro	769,128	12,125	11,686	208,476	
	Kashmore	903,327	18,063	3,274	154,735	
	Khairpur	2,043,532	4,990	374	37,548	
	Larkana	1,324,974	1,602	480	15,778	
	Matiali	970,815	3,231	2,130	50,522	
	Naushahro Feroze	1,437,016	5,370	10,196	122,691	
	Nawabshah	1,415,829	4,018	954	38,158	
	Qambar Shahdadkot	1,221,283	9,958	14,936	174,258	
	Shikarpur	1,163,329	34,450	5,418	325,062	
	Sukkur	1,200,244	7,738	1,864	69,404	
	Thatta	1,470,875	42,294	15,610	459,352	
	Punjab	Bahawalpur	3,286,390	2,395	1,530	31,929
		Bhakkar	1,420,208	171	957	21,846
		D.G. Khan	2,219,373	31,412	9,334	393,648
		Jhang	2,525,038	15,699	7,407	250,615
Khushab		1,223,347	645	13,088	219,185	
Leiah		1,514,073	28,296	6,436	264,705	
Mianwali		1,427,181	3,843	21,298	445,721	
Multan		4,209,952	14,853	2,170	135,269	
Muzaffargarh		3,560,329	78,714	51,454	1,058,817	
RahimYar Khan		4,242,641	34,342	4,754	282,586	
Rajanpur		1,490,665	130,615	23,783	1,257,558	
KPK		Charsadda	1,424,408	22,296	15,102	326,643
		D.I.Khan	1,188,432	38,988	31,185	683,582
		Dir, Lower	999,864	431	3,362	147,274
	Dir, Upper	802,317	1,120	8,649	185,581	
	Malakand	630,154	3,480	871	42,699	
	Mardan	2,034,286	1,629	6,016	73,254	
	Nowshera	1,218,222	51,994	19,217	657,480	
	Peshawar	2,823,914	5,312	15,202	249,220	
	Shangla	605,464	2,184	6,207	117,463	
	Swat	1,752,155	3,268	10,805	220,374	
Gilgit-Baltistan	Tank	331,893	7,604	3,585	104,223	
	Astore	88,016	0	79	711	
	Diamer	143,977	0	953	8,577	
	Ghanche	93,246	0	253	2,277	
	Ghizer	133,981	0	528	4,752	
	Gilgit	110,306	0	761	6,849	
	Hunza Nagar	120,607	0	144	1,296	
	Skardu	234,929	0	112	1,008	
Balochistan	Barkhan	118,490	685	759	10,108	
	Bolan	292,362	1,302	468	15,435	
	Harnai	87,721	200	100	2,100	
	Jaffarabad	495,301	51,867	1,867	381,257	
	Jhal Magsi	125,810	631	297	6,496	
	Killa Saifullah	221,497	95	138	1,826	
	Kohlu	114,259	325	525	5,950	
	Loralai	286,261	342	1,121	26,038	
	Musakhel	153,409	37	590	6,561	
	Nasirabad	281,396	4,306	1,727	43,483	
	Sherani	93,475	34	333	3,299	
	Sibi	156,000	4,672	894	39,441	
	AJK	Bagh	319,900	0	500	3,500
Hattian		189,169	0	197	1,378	
Haveli		132,268	0	86	600	
Mirpur		265,136	0	360	2,520	
Muzaffarabad		448,520	0	827	5,790	
Neelum		170,000	0	5,000	35,000	
Poonch		434,419	0	53	370	
Sudhnoti		252,777	0	50	350	
<b>TOTAL</b>		<b>66,114,081</b>	<b>728,192</b>	<b>392,786</b>	<b>10,152,347</b>	

## Annex 2 – Technical details for estimating the number in need of food assistance

To determine the total food insecure population among those affected, the food consumption score as presented in Section 7 was used and cross-tabulated with income poverty indicators. Two poverty measurements were used as a proxy of household resilience levels. These included household overall expenditure levels and household food expenditure. These direct poverty measures correlated well with the asset indicators available in the McRAM (ownership of land, house, cell phone, radio and bank account as well as housing construction material).

Households with low expenditure levels, *i.e.* below the national poverty line, and high food expenditure (more than 65 percent of their total income), were considered to be more vulnerable to food insecurity than those that had high expenditure levels and low food expenditure.

In this way a matrix was developed in which each cell represents the degree of food insecurity: the top left representing the most food insecure and the bottom right representing the most food secure. These cells were subsequently categorized into three groups: highly food insecure (26%), moderate food insecure (31%) and generally food secure (43%) of the total affected population.

Poverty*	% of total expenditure on food	Food Consumption Score		
		Poor food consumption	Borderline food consumption	Acceptable food consumption
Below the poverty line	> 65 %		26%	
	<= 65 %			
Above the poverty line, below 2 times poverty	> 65 %		30%	
	<= 65 %			
Above 2 times the poverty threshold	> 65 %		44%	
	<= 65 %			

\* Poverty line was based on 29 rupees per person per day (ADB, 2005, Poverty-Specific Purchasing Power Parity for Selected Countries in Asia and the Pacific)