Washed Away

A Food Security Assessment of Flood-Affected Populations in Kamber-Shahdadkot and Dadu Districts, Sindh Province, Pakistan

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Table of Contents

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Executive Summary

This report presents the results from a food security assessment of the two districts of Sindh province most affected by the 2007 floods: Kamber-Shahdadkot and Dadu. The findings are based primarily on 200 household interviews conducted in 8 union councils in the two districts in early September. The goal of the assessment was to understand the context in which the floods occurred, to analyze the current food security situation of the flood-affected, to make projections about the evolution of the situation in the coming months, and to make recommendations about potential early recovery interventions.

Main Findings:

- 71% of households displaced by the floods are already back or plan to return to their villages by the end of October. In isolated areas, displacement will continue for several more months due to a lack of drainage possibilities for standing water.

- 89% of interviewed households ranked agriculture as their most important source of income. The rice crop was almost completely destroyed by the floods, which will prolong the annual "hunger gap" until the first post-floods harvest. Only 32% of households expect to plant for the upcoming wheat season, while the remainder will have to wait until next year's rice harvest in October 2008.

- 70% of interviewed households report that they are consuming less food than a normal year. Daily food intake is estimated at 1350 Kcal, or 64% of daily requirements.

- Flood-affected households are currently relying on three main coping strategies: casual labor, the sale of livestock, and the taking of credit. These coping strategies are used in a normal year to bridge the "hunger gap" period but are unsustainable for periods of longer than six months.

- The main needs identified by interviewed households include food, shelter, household items, and seeds/fertilizer. With limited cash available, households are having to choose between competing daily expenses and are unable to save up for the larger investments that are needed for them to fully recover.

Key Recommendations:

- Continued external support is needed up until the first post-floods harvest.

- Targeting should be done at the village rather than the household level.

- Market and work based interventions should be prioritized as large town markets are easily accessible and households are struggling to find labor opportunities.

- Interventions should focus on "big needs" and be well-timed to maximize impact.

I. Introduction

The irrigation system of the Indus Valley is the largest integrated irrigation network in the world, with over 110,000 water courses. The current system of barrages, bunds, canals, and drains was developed in the 1930's under the British colonial administration, which expanded on a network built in the 18th century. 90% of Pakistan's agricultural output is dependent on irrigation, and there are 5.7 million hectares of irrigated agricultural land in Sindh province alone.[1]

Flooding is a natural and regular part of life in the Indus Valley. In a water-dependent and water-intensive agricultural economy, there is a fine balance between enough water and too much. Minor flooding in the irrigated regions of Sindh occurs on an annual basis during the summer monsoon rains in July and August. Major floods, linked to unusually heavy monsoon patterns and breaches in the protection and drainage systems occur roughly once a decade.

In 2007, heavy monsoon rains coupled with the landfall of Cyclone Yemyin on 26 June led to extensive flooding in northern Sindh, with Kamber-Shahdadkot and Dadu Districts the most acutely affected. Although these districts avoided much of the cyclone-associated rainfall that fell in Balochistan province, most of this water had to drain through them on its way to the Indus and ultimately the Arabian Sea. A map of the main flood-affected areas is included in Appendix A of this report.

A key component of the water management system in this part of Sindh is the Flood Protection Bund (or FP Bund), which runs north-south along the western edge of the Indus Valley. Water draining southwards in rivers from Balochistan and eastwards in hill torrents descending from the Kirthar Mountains is supposed to be channeled along the outside edge of the bund until it drains into Manchar Lake in southern Dadu District and onwards into the Indus. However, the massive water pressure exerted on the FP Bund in late July coupled with its poor maintenance over the years led to over 20 breaches in the bund beginning on 29 June.

The bund breaches were clustered in the northwestern corner of Kamber-Shahdadkot District. Flood water gushed into the irrigated agricultural lands to the east, where the rice crop had recently been planted. As the water accumulated, the drainage networks in Kamber-Shahdadkot, designed for relatively limited amounts of agricultural wastewater, were quickly overwhelmed. Drainage channels, including the principal Right Bank Outfall Drain (RBOD), began to develop breaches of their own, and the saline, chemical-laden water from the drains mixed with the flood water coming from across the bund.

As the floods spread across the agricultural lands of Kamber-Shahdadkot District, local stakeholders scrambled to protect their interests. Particular attention was focused on the two key gates where water can cross the FP Bund. The first gate, located between the towns of Kamber and Ghaibi Dero, allows drainage water from the irrigated parts of Kamber-Shahdadkot to traverse the bund from east to west, where it enters the seasonal

[1] Project Information Document, Sindh On-Farm Water Management Project, World Bank.

Hamal Lake and joins the water normally diverted along the outside of the bund. The second, a few kilometers south along the border of Kamber-Shahdadkot and Dadu districts, allows this same water to re-enter the protected agricultural lands through the critical MNV Drain, which connects Hamal Lake to Manchar Lake in the south. Authorities with ties to different parts of Kamber-Shahdadkot and Dadu districts, each out to protect their own areas, struggled over control of these gates during the first week of July. In the meantime, floodwater spread and accumulated in Kamber-Shahdadkot, reaching depths of 16 feet.

When both gates were finally opened, floodwater swept southward into the MNV drain, which promptly developed breaches of its own, resulting in flooding in Dadu District between the MNV drain and the FP Bund beginning on 8 July. The FP Bund remained intact in Dadu District, although surrounded by water on both sides. Excess water that could not enter the MNV drain flooded marginal areas along the outside of the FP Bund all the way down to Manchar Lake. A schematic map of the flooded areas in Kamber-Shahdadkot and Dadu Districts is shown in Figure 1.

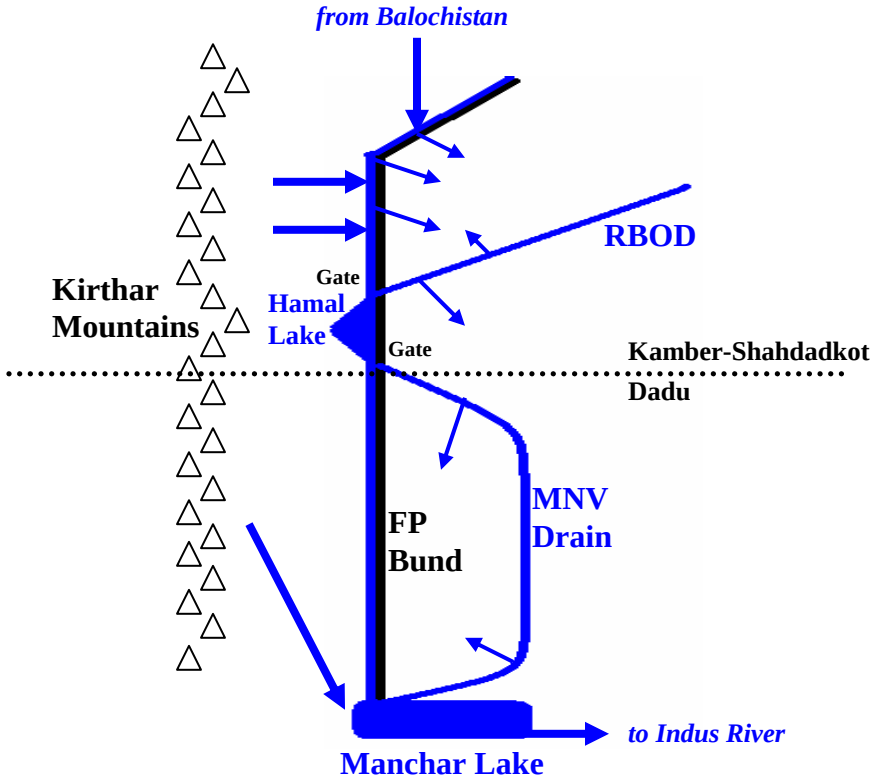


Figure 1. Breaches of FP Bund, RBOD, and MNV Drain lead to flooding.
(*Schematic map only – not to scale.*)

Because the floods were the result of breaches rather than direct flows, water levels rose relatively slowly in the two districts, and the local population had time to escape from their villages and seek shelter on higher ground (frequently along elevated roadways) or in nearby towns. All told, more than 100,000 people in Kamber-Shahdadkot and Dadu

(up to 10% of the overall population of the two districts) were displaced by the floods or stranded in villages built on the tops of hills and completely surrounded by water.

Action Against Hunger (ACF) reopened its operations in Pakistan in October 2005 following the devastating earthquake in Azad Jammu & Kashmir (AJK) and the Northwest Frontier Province (NWFP). For the past two years, ACF has implemented a variety of nutrition, food security, and water/sanitation programs in the earthquake-affected areas, particularly the Kaghan and Allai valleys in NWFP.

ACF initiated a water/sanitation emergency response in the flood-affected areas of Kamber-Shahdadkot and Dadu Districts on 17 July. Shortly thereafter, ACF began partnering with two local NGO's to implement a project financed by UNICEF involving water trucking, latrine construction, shallow wells, hygiene promotion, and the distribution of hygiene kits, water purification tablets, and water transport and storage containers in selected settlements of internally displaced persons (IDP's) in both districts.

During the month of August, flood waters started to recede, allowing some of the displaced to start returning home. For others, displacement was expected to continue for several months as they wait for what is left of their houses and fields to emerge from the receding waters. While ACF and other organizations began to scale back their emergency interventions, the need for recovery assistance became increasingly apparent.

This assessment took place in the midst of this changing context. Its goal was to develop a greater understanding of the socioeconomic context in which the floods occurred, to analyze the current food security situation of the flood-affected, to make projections about how the situation will evolve in the coming months, and to make recommendations about potential interventions during the early recovery phase of the crisis as the displaced make the transition back to their land and their villages.

II. Methodology

The group of people covered by the assessment was the flood-affected population of Kamber-Shahdadkot and Dadu Districts. This group was defined as including those people living in villages that were either flooded or completely surrounded by water during the floods. At the time of the assessment, some of the people belonging to this group were still displaced in official camps, some were still displaced but not in official camps, some had already returned to their villages, and some had stayed in their villages during the floods.

Eight full-day field visits were conducted from 4 to 15 September 2007 at eight different sites in the two target districts. In the Pakistani administrative structure, districts are divided into *talukas*[2], which are further divided into union councils. A typical union council consists of 10-30 villages. For the purposes of site selection, the union council was chosen as the basic unit. A list of flood-affected union councils by *taluka* is

[2] Sub-districts, also known as *tehsils*.

presented in Table 1. In Kamber-Shahdadkot, 12 union councils were affected in 5 *talukas*; in Dadu, 15 union councils were affected in 3 *talukas*.

Kamber-Shahdadkot District	
Taluka	**Union Council**
Qubo Saeed Khan	Qubo
	Bago Dero
	Hazar Wah
Shahdadkot	Silra
Miro Khan	***Khabar***
Kamber	***Ghaibi Dero***
	Dost Ali
	Bohar
	Kalar
Warah	***Mirpur***
	Khandoo
	Gaji Khuhawar

Dadu District	
Taluka	**Union Council**
Johi	Chhinni
	Sawro
	Tando Rahim Khan
	Drigh Bala
	Pat Gul Muhammad
	Tore
	Kamal Khan
Mehar	Fareedabad
	Khan Jo Goth
	Mangwani
K.N. Shah	***Gozo***
	Bugg Burarro
	Kandi Chukhi
	Chhor Qamber
	Mitho Babar

Table 1. List of affected union councils in Kamber-Shahdadkot and Dadu Districts.
(Union councils selected for field visits are highlighted in ***italics***.)

Four union councils were selected for field visits in each district. One union council was selected from each affected *taluka*. Shahdadkot and Miro Khan *talukas* were combined into one group in Kamber-Shahdadkot District, while two union councils were selected from Johi *taluka* in Dadu District, as the *taluka* with the most affected union councils. Additional criteria used to select the union councils visited included:

- *Settlement pattern*. In Kamber-Shahdadkot, one union council was chosen where most people were displaced into towns, one where most people were displaced along roads and bunds, one where most people were displaced in neighboring villages, and one where most people had already returned to their villages. In Dadu, one union council was chosen where most villages were surrounded by water, one union council was chosen where villages were surrounded by water but water had receded, one union council was chosen where most people were displaced along bunds, and one union council was chosen where most people had returned to their villages.

- *ACF intervention*. In Kamber-Shahdadkot, two union councils were chosen where ACF has intervened in water and sanitation and two union councils were chosen in areas without ACF intervention. In Dadu, where there is less ACF coverage, one union council was chosen with ACF intervention and three without.

- *Irrigated vs. non-irrigated land*. In Johi *taluka*, where floods have affected a number of union councils in the non-irrigated lands outside the FP Bund, one union council was selected from inside the FP Bund and one union council from outside the FP Bund.

In each of the target union councils, 25 household questionnaires, 2 food consumption questionnaires, and 1 focus group discussion were conducted, in addition to a drive-through of the flood-affected areas and a walk-through of visited villages. On average, 3-4 different villages or IDP settlements were visited in each target union council. Households within visited villages were selected at random for interviews with the questionnaires.

Topics covered by the *household questionnaires* and *focus group discussions* included displacement and return, livelihood sources, agriculture, livestock, food sources, markets, debts, coping strategies, aid, and needs. The *food consumption questionnaires*, which targeted women, involved a 24-hour food recall to obtain a snapshot of household food consumption. The forms used for the household questionnaires and food consumption questionnaires are included in appendices B and C of this report.

To complement the site visits, secondary information was collected in both districts from district officials, local NGO's, and international NGO's.

During the final phase of the assessment, four market visits were conducted in town markets frequented by flood-affected people. Two town markets were visited in Kamber-Shahdadkot District (Warah and Shahdadkot) and two town markets were visited in Dadu District (Johi and K.N. Shah). One additional visit was made to the Larkana town market for comparative purposes. In each market, prices on common food items, agricultural inputs, and construction materials were obtained from multiple vendors. In addition to current prices, vendors were asked about price changes since the floods for six indicator items – wheat flour, sugar, wheat seeds, urea, bamboo, and straw mats. Interviews were also conducted with shopkeepers, moneylenders, and people looking for work in casual labor markets.

III. Results

A. Displacement and Return

Since Pakistan's independence in 1947, there have been major floods in Kamber-Shahdadkot and Dadu Districts once a decade, with this year's floods ranking among the most severe, along with those of 1976 and 1995. Depending on the specific causes of each event and the state of the existing protection and drainage infrastructure, different floods have affected different areas of the two districts in different ways. In the irrigated portions of K.N. Shah and Johi *talukas* of Dadu District, for instance, the 1995 flood was the worst in living memory because the F.P. Bund developed breaches locally. This year, these *talukas* were affected by floodwater from the MNV Drain while the F.P. Bund

remained intact. In Kamber-Shahdadkot District, in contrast, all communities visited reported that the 2007 flood was the worst in living memory.

Figure 2 illustrates the different histories of flood-related displacement among households who left their homes during this year's flood. A majority of households in Kamber-Shahdadkot District were leaving their homes for the first time due to flooding, while others had last left their homes during the 1976 floods ("more than 15 years ago"). In Dadu District, meanwhile, more households displaced this year were last displaced during the 1995 floods, which fall within the category of "5-15 years ago." For the two districts combined, 48% of displaced households were leaving their homes for the first time due to flooding, 2% had been displaced within the last 5 years, 22% had last been displaced 5-15 years ago, and 28% had last been displaced more than 15 years ago.

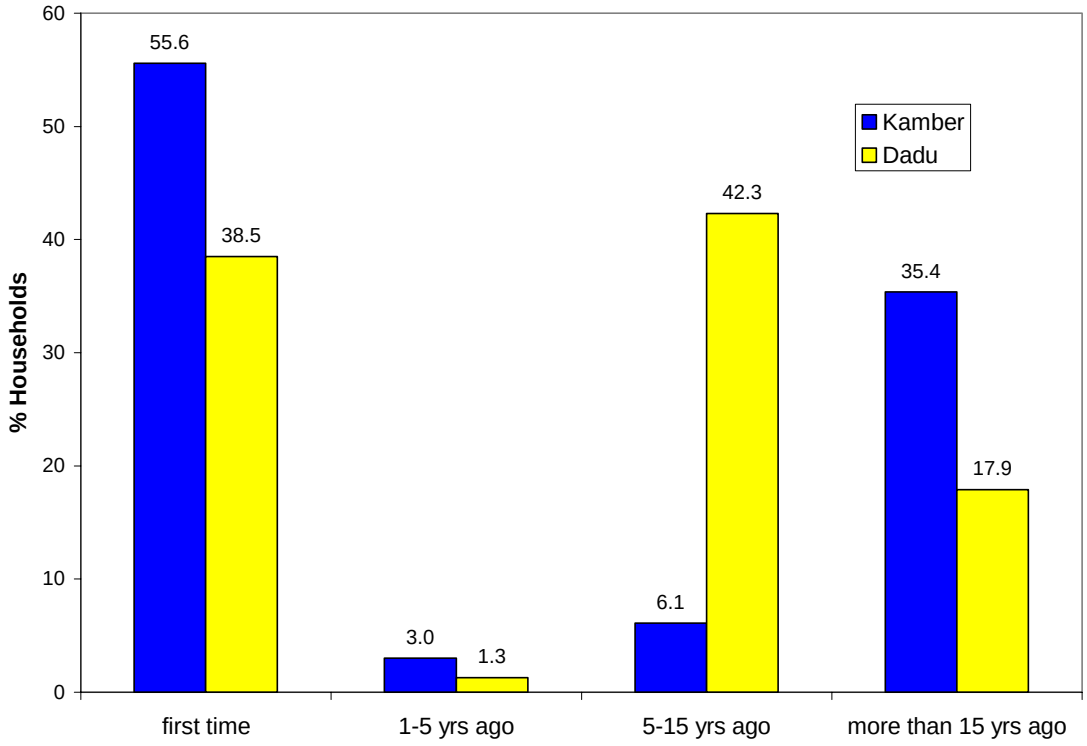


Figure 2. When was the last time your household moved due to flooding?

All in all, 89% of interviewed households were displaced by this year's floods, while the remaining 11% clung on to a precarious existence in villages surrounded by water. Some villages were given a few hours warning by the police that the floodwater was coming. Most describe water appearing unexpectedly and rising over a period of 6-12 hours. People hurried to collect what possessions they could and move to higher ground, often along roads, canals, or bunds. Young men and boys herded the larger animals to safety, while small livestock like chickens were often left behind. The large, heavy traditional mud storage containers for food stocks were left behind with the remains of the previous season's harvest, but most households were able to take along a limited amount of food to get them through the first week of displacement. Lighter household items were loaded

onto donkey carts if available, while heavier ones were moved to higher ground in the center of the village in hopes that the rising water would not reach them.

Once people fleeing the floodwaters had escaped from their villages, they had to decide where they were going to settle while they waited weeks or months for the water to recede. In general, two options presented themselves: to stay close to their village on higher ground in makeshift shelters or tents distributed by the army or NGO's, or to move to towns and seek shelter in schools, other government buildings, or with friends and relatives. In general, as is shown in Figure 3, households in Kamber-Shahdadkot District were displaced further than households in Dadu District, with more people displaced into towns. Overall, 21% of displaced households moved less than 1 kilometer from their homes, 41% moved 1-5 kilometers, and 38% moved more than 5 kilometers.

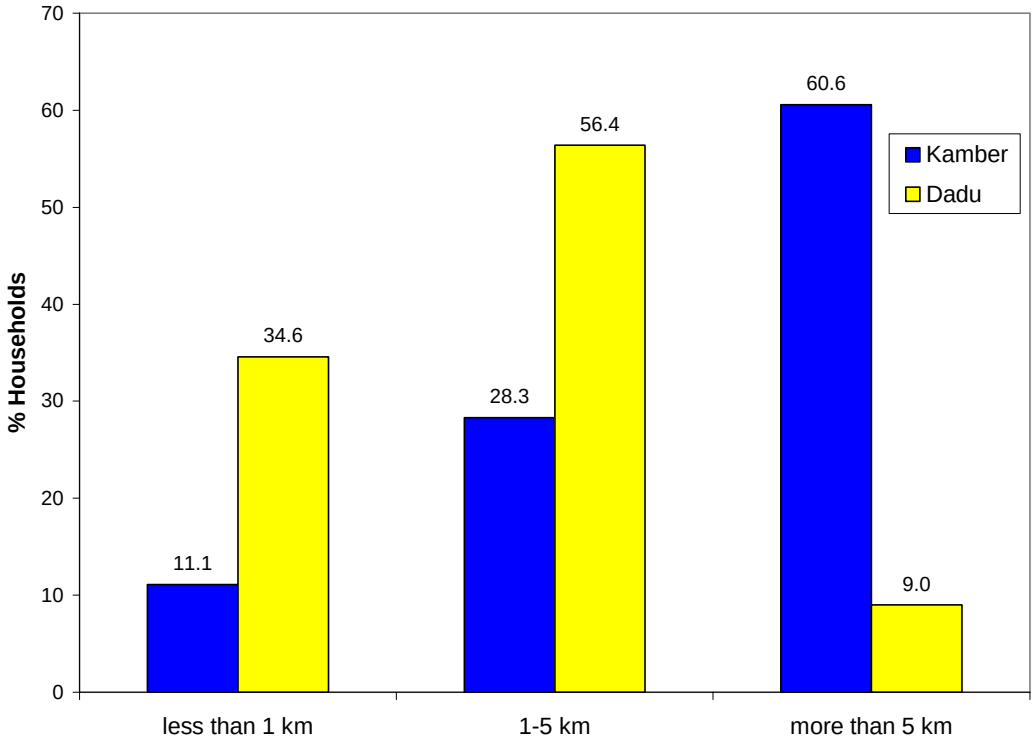


Figure 3. How far did you move due to the floods?

As the floodwater began to recede in mid-August, the remains of villages began emerging and people began returning home. Despite the high level of destruction in many villages, where houses and virtually all items left behind were completely destroyed, 99.3% of interviewed households who were displaced planned to return to their original villages. Figure 4 shows the return dates for displaced households in the two districts. By the time the survey took place in early September, nearly half of displaced households had returned to their villages, while 70% of households expected to be back by the end of October. Many households said that they planned to be home in time for the Eid celebrations in mid-October.

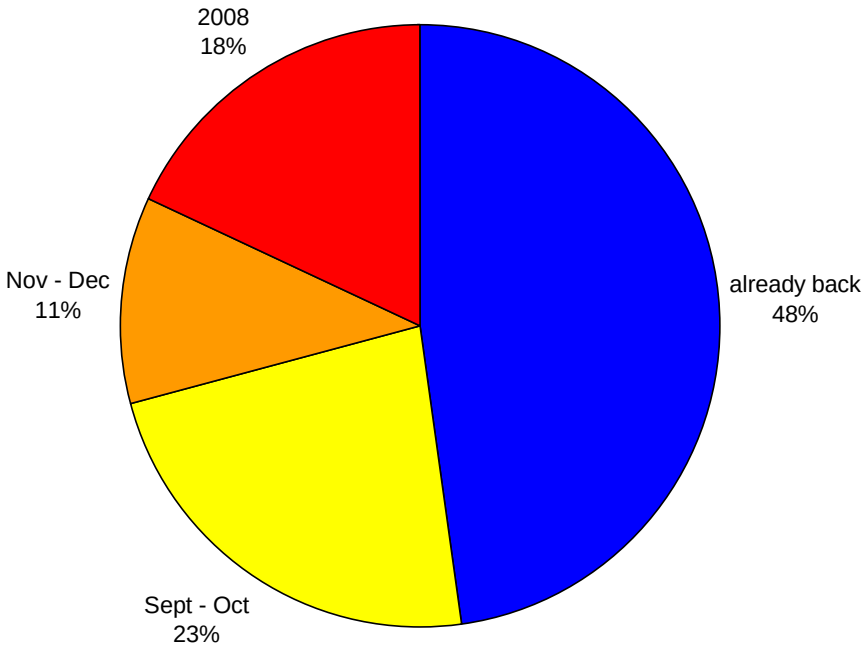


Figure 4. When will you be able to go back to your village?

It is important to note that a significant number of households (18%) do not expect to be able to return to their villages until 2008. These households are from areas where flood water is trapped with no possible drainage path, so they will have to wait until the water either evaporates or is able to be absorbed into soil that is already very water-logged. Along the Saifullah canal in the northernmost part of Kamber-Shahdadkot district, for instance, 6 feet (2 meters) of standing water was still present in the last week of September.

In general, households in Dadu District have been able to return to their villages more quickly than households in Kamber-Shahdadkot District, partly because Dadu villages tend to be built on higher ground. In Dadu District, most households have returned in August and September, while in Kamber-Shahdadkot District, households are returning in September and October. However, many returnees in Dadu District are facing considerable difficulties as their villages are still surrounded by floodwater, and they have to rely on small wooden boats to access things like drinking water and markets.

Upon return, households whose houses were destroyed have used tents they received during displacement or built temporary, open shelters using wood pillars. Families often split up, with a few members back in their village building temporary shelters, a few members still staying in tents along roads and bunds where they have better chances of receiving aid, and a few members in towns trying to earn some money through casual labor.

B. Livelihoods

People living in the flood-affected areas of Kamber-Shahdadkot and Dadu Districts are heavily dependent on agriculture for their livelihoods. 89% of interviewed households identified agriculture as their most important source of income before the floods. The importance of different income sources is summarized in Figure 5.

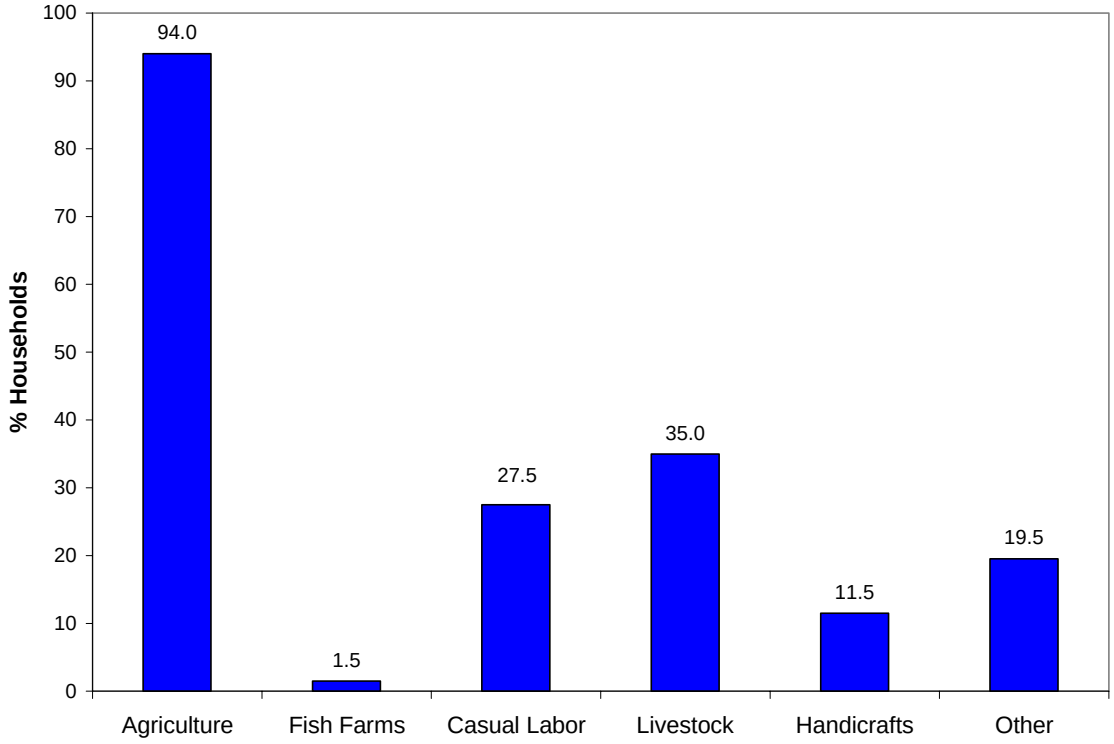


Figure 5. What were your household's 3 main sources of income before the floods?

The graph in Figure 5 shows the percentage of households ranking each income source among their top three before the floods. Agriculture (94%) is clearly the most important source of income, followed by livestock (35%). It should be noted that more than 35% of households own some livestock, but only 35% of households regularly generate income from livestock by selling animals or animal products. Casual labor (28%) and handicrafts (12%) are the third and fourth most important sources of income. The most common type of handicraft is rope-making, which is particularly common in parts of Dadu District. Raw materials are purchased in towns for 6 PKR/kg, and women weave them into ropes that can be sold for 20 PKR/kg. A typical woman can make 10-20 kg of rope in a month.

Other sources of income include fish farms (1.5%), petty trade, remittances, government jobs, traditional drumming for ceremonies, etc.

Because so many flood-affected households are highly dependent on ***agriculture***, their lives are organized around the seasonal agricultural calendar, shown in Figure 6. There are two main agricultural seasons each year. The *kharif* season, from June to November,

is timed around the monsoon rains, which fall from mid-June to mid-August, and includes the cultivation of water-intensive crops like rice. The *rabi* season, from October to April, is used to cultivate wheat, barley, legumes, mustard/oil seed, and animal fodder, crops which require less water.

Month	Jan		Feb		Mar		Apr		May		Jun		Jul		Aug		Sep		Oct		Nov		Dec	
Rainfall		Light										Monsoon												
Rice									Prep		Sow								Harvest					
Cotton											Sow								Harvest					
Wheat						Harvest														Sow				
Legumes					Harvest														Sow					
Mustard	Harvest																			Sow				
Food															Hunger Gap									

Figure 6. Seasonal Agricultural Calendar

Because most of the agricultural land affected by the floods is in the irrigated area of Sindh, water for crops is as dependent on water in the irrigation channels as it is on actual rainfall. In general, irrigation channels in Kamber-Shahdadkot and Dadu Districts have the most water following the summer monsoon but do contain some water year round, except for a brief period in the spring when channels coming from the Indus River are closed for cleaning and repairs.

The harvest of rice in November and wheat in April gives households a "boost" in food and income that lasts them for 4-5 months, depending on the year. The most difficult times during the year are just before the harvests, when the food and income from the previous harvest has run out. Of these two periods, the one just before the rice harvest (August and September) is generally considered to be the more difficult. This is the "hunger gap," or time during the year when people have the most difficulty getting food.

This year's floods arrived shortly after households had finished transplanting their rice crop from the nursery beds and sowing it in their main fields. Nearly 100% of the rice crop in flood-affected areas was destroyed. While the houses of some villages were spared because they were on high ground, the rice paddies are typically on the lowest-level ground, so they were the first parts of the land to be flooded and will be the last to be uncovered. District officials estimate that more than 55,000 acres (23,000 Ha) of crops in the two districts were destroyed by the floods.

As a result of the loss of the rice crop, the annual hunger gap is expected to continue this year until the first post-flood harvest, with a steady deterioration in the food security situation of flood-affected households. This problem will be discussed in greater detail in subsequent sections.

The average farming household cultivates crops on 10 acres of land. Major crops grown in both *kharif* and *rabi* seasons are shown in Figure 7. During *kharif*, rice is grown by nearly all households (91%), although a significant percentage of households (25%) cultivate cotton, particularly in Dadu District. During *rabi*, crops are more varied, with

most households growing wheat (86%) alongside mustard/oil seed (65%), legumes (48%), barley (15%), and other crops (sorghum, vegetables, animal fodder, etc.). Many households are engaged in monocropping, with different pieces of land reserved for rice and wheat. Only the best quality pieces of land are used for both *kharif* and *rabi* seasons.

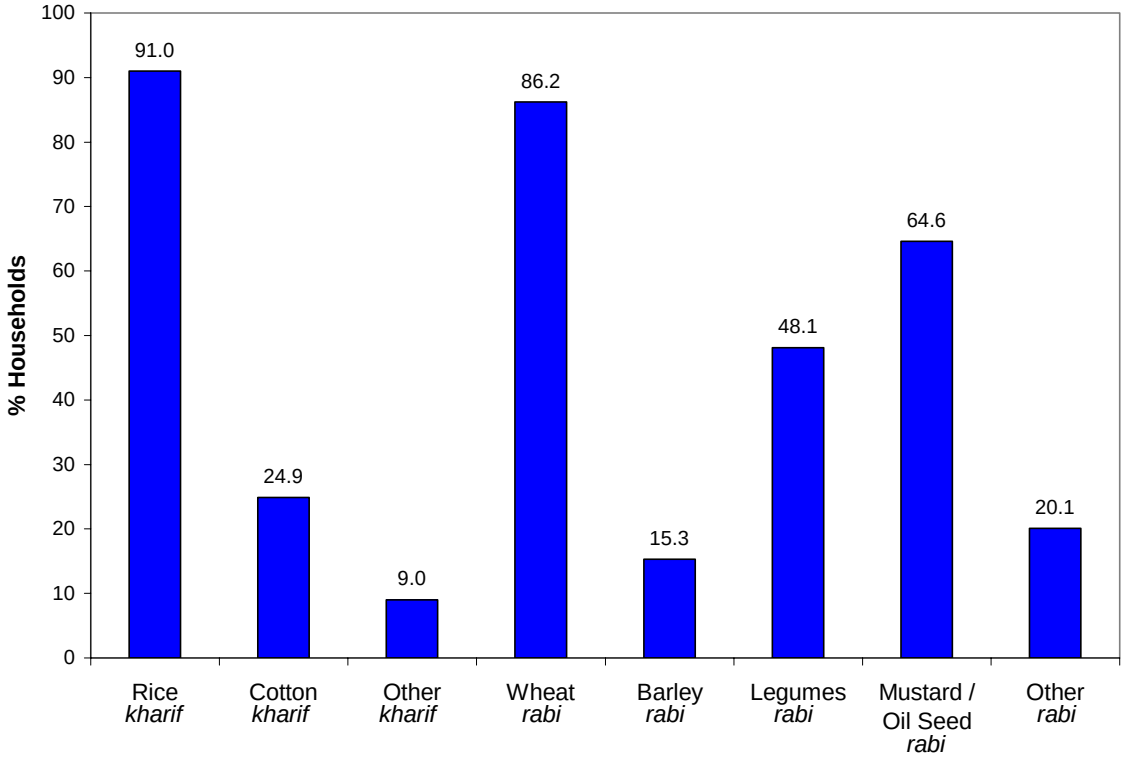


Figure 7. What crops does your household grow during *kharif* and *rabi*?

In general, farmers in Kamber-Shahdadkot and Dadu Districts can be divided into three groups – large absentee landlords, small landowners, and tenant farmers who farm the land of the large landlords. 32% of farming households interviewed own their own land, while 65% are tenants and 3% own some land but are tenants on some land as well.

Although the terms of the relationship between tenants and landlords vary, the standard setup is known as the "50-50" arrangement. Under this system, the landlord provides 50% of chemical inputs (fertilizers and pesticides), while the tenant is responsible for the costs of plowing (by rented tractor or ox-plough), 100% of the seeds, and the labor. At the end of the season, the landlord takes 50% of the harvest in exchange for the use of his land. If the landlord has provided the plowing charges, seeds, or the tenant's share of the chemical inputs, he cuts this amount from the tenant's share of the harvest.

Landowners and tenants differ in where they get their seeds. 84% of landowners use the market as a source of seed, as compared to 39% of tenants. 38% of landowners save seeds from previous harvests, whereas only 12% of tenants do. This is mainly due to the fact that tenants have less harvest available after giving half of their harvest to their landlord. 73% of tenants use their landlords as a source of seed, taking seed at the beginning of the season and reimbursing it from their harvest at the end of the season.

Both landowners and tenants primarily use their harvest for their own household consumption. Sale of crops is done only if the household is in need of cash for things like tea, sugar, or medicines, or if the harvest exceeds the amount needed to cover the household's food consumption. Seed saving is dependent on a similar calculus – if the harvest is enough to save some seeds, seeds are saved; if not, seeds will be sought from the market or landlords, using credit if need be. An average harvest covers 4-5 months of a household's food needs. If food stocks run out before the subsequent harvest, households search for food from other sources. Many take credit for 1-2 months to cover their needs until the next harvest comes.

Despite the fact that the floods have damaged water courses and left agricultural land with problems of salinity and water-logging, flood-affected households are determined to plant as soon as the land allows it. Depending on the local situation, this may be in October – November 2007 (*rabi*) or May – July 2008 (*kharif*). Yields are expected to be low during the first few seasons after the flood but will slowly return to normal over the course of several years.

Overall, 32% of interviewed households said that they would be able to plant during this year's *rabi* season, while the remaining 68% will have to wait for next year's *kharif* season or in some isolated cases even longer. In areas where *rabi* planting is possible, it will be limited and late, as significant work (especially local water course repair) needs to be done before planting will be possible, and households who have just returned to their homes will struggle to have the organization and resources needed to plant on time.

Based on this data, it is clear that agriculture as a livelihood source has been severely affected by the floods and for most will not provide significant income again until next year's *kharif* harvest, in October – November 2008. In the meantime, the importance of other main income sources – particularly livestock and casual labor – will increase.

91.5% of interviewed households owned some ***livestock*** before the floods. Livestock is primarily used as a saving mechanism. If there is a successful harvest or another big boost in income, households will try to buy some livestock, which they then save to be sold in time of need. In the meantime, livestock can generate income through the sale of animal products or animals themselves. Even if income is not generated by livestock, animals are an asset. Milk and eggs are used for household consumption, as is meat on special occasions. Donkeys are used for transport, and dried cattle dung is used as the principal source of fuel for cooking.

Figure 8 shows the most common types of livestock owned by households in both districts before the floods. For the two districts combined, 78% of households owned cattle, 57% owned goats, 51% owned chickens, 45% owned buffalo, 26% owned donkeys, and 14% owned sheep. Livestock ownership was more widespread in Kamber-Shahdadkot District than in Dadu District. Other income sources (particularly casual labor and handicrafts) are more important in Dadu District. In addition, many Dadu

households said that they lost or were forced to sell nearly all of their livestock during the 1995 floods and that their livestock had still not recovered to pre-1995 levels.

On average, each household owned 2.9 cattle, 5.3 goats, 5.7 chickens, 1.1 buffalo, 0.5 donkeys, and 2.5 sheep before the floods. Each individual household typically owned several different types of animals.

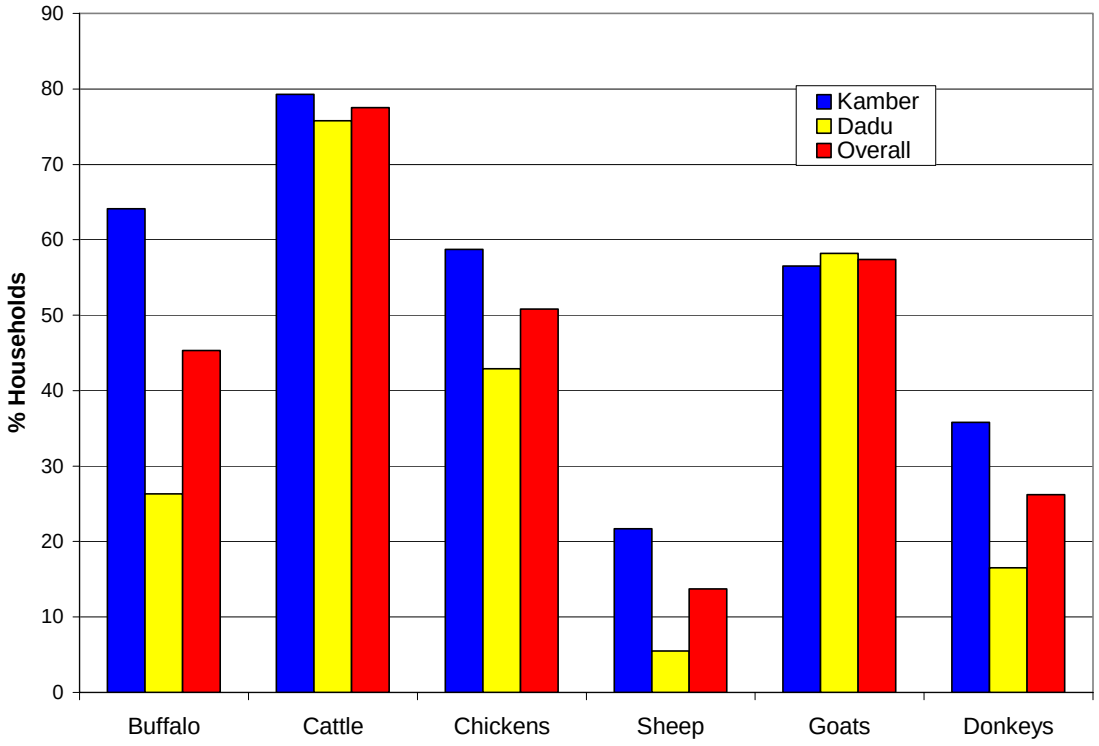


Figure 8. What types of livestock did your household own before the floods?

Although livestock are mobile and therefore less affected by the floods than agricultural fields, 66% of livestock owning households have lost or sold livestock since the floods. These households were asked to identify the main reason for the loss of livestock. The most common response was that livestock were lost or killed during the flood event (44%). Although households were often able to escape the rising waters with their larger livestock (cattle, buffalo, donkeys), many had to leave their smaller livestock (chickens, goats, sheep) behind.

Since displacement, lack of food (18%) and disease (13%) have led to further losses of livestock. While some households, particularly in Dadu District, have been able to send their animals with family members to pastures in the desert areas on the outside of the FP Bund, others have faced difficulties in finding food and space for livestock in the towns or along the roads and bunds where they have been displaced. Local landowners do not allow livestock to graze on their land, and the crowded conditions where animals live and the bad water they drink have led to disease.

Sale of livestock (24%) is another main reason for the declining number of animals since the floods. Households typically try to sell diseased and starving livestock before they die rather than lose their potential income entirely. In addition, livestock-owning households have started to sell their animals as a coping strategy to get cash badly needed for food, medicines, and other expenses. The sale of livestock is expected to increase as time goes on – 66% of livestock owning households plan to sell livestock in the coming months to meet other needs.

Because so many flood-affected households are trying to sell livestock, prices of livestock in local markets have fallen dramatically since the floods. While a buffalo might have sold for 40-50,000 PKR[3] before the floods, flood-affected households are now selling buffalo for 20,000 PKR. A cow that would have gone for 20-25,000 PKR is now selling for 10-12,000 PKR. Similar price differences of roughly 50% apply to smaller animals like goats, sheep, and chickens.

Casual labor, the third most important livelihood source for flood-affected people, is perhaps the one least affected by the floods because it does not involve assets (like planted fields and animals) that were damaged or destroyed. Unskilled labor in towns pays between 100 and 200 PKR per day, depending on the employer and the nature of the work. Lighter tasks like house construction are paid less, while heavier tasks like loading and unloading trucks are paid more. On average, a person actively looking for work can find work 2-3 days per week. Informal casual labor gathering points are found in most towns, where laborers gather in the morning and are sought out by employers.

As more people in the flood-affected area are now looking for casual labor opportunities, it has become more difficult to find work. Some flood-affected households plan to send members to bigger cities, like Hyderabad and Karachi, to look for work in mills and factories during the time it takes to reestablish their normal livelihood mechanisms.

C. Food Sources and Food Consumption

Before the floods, most households relied on their own agricultural production for most of their food. When asked to identify their main source of food before the floods, 65.5% of households cited own production, 34.5% of households cited markets, and 0.5% of households cited gifts or remittances. A typical household buys food only when its own production is not sufficient or when it needs a food item that it does not produce. Local village markets are not used much because availability is low and prices are high. 96% of households prefer to go to markets in towns like Shahdadkot, Warah, K.N. Shah, and Johi if they need to purchase food.

70% of interviewed households say that they are consuming less food than normal as a result of the floods. Of those consuming less food, 45% are eating fewer meals a day (typically 2 instead of 3), while 84% are eating less food at each meal. Before the floods, households described eating as much as they wanted whenever they wanted. Now,

[3] 1 US Dollar (USD) = 60 Pakistani Rupees (PKR)

households have to think more about the food they eat, rationing it out during the course of the day among the different family members.

At each of the eight sites visited, two households were interviewed in depth about their current daily food consumption. The woman responsible for preparing food in the target household was asked to list all food items consumed by the household the previous day. Although the sample size was limited, the data collected allows for a rough estimate of the current daily diet of a flood-affected person, calculated by dividing the household's food consumption by the household size. The results of this exercise are presented in Table 2.

Item	Quantity
Tea (without milk)	1 cup of 125 mL
Milk	0.5 cups (62.5 mL)
Sugar	30 g
Chapattis	2 pieces (150 g)
Rice	100 g
Daal or Vegetables	75 g
Ghee	20 g

Table 2. Average Daily Food Consumption of a Flood-Affected Person.

A flood-affected person typically drinks 1 cup of tea (water and tea leaves) per day. Roughly half of households have access to milk, either fresh milk from their own buffalo or powdered milk from food aid. The average person consumes half a teacup, or 62.5 mL of milk per day, either mixed with the tea or with rice. 30 g of sugar is consumed also with tea or rice. Chapattis are mostly made from wheat flour, although sometimes they are made with rice flour. The average person consumes 2 chapattis per day, which is equivalent to 150 g of flour. 100 g of rice is also consumed daily.

Roughly half of households interviewed consumed daal (legumes) the previous day, while the other half consumed vegetables instead. Vegetables include potatoes, onions, tomatoes, squash, and eggplant. In one extreme case, a household that had just returned to its village and could not afford to buy daal or vegetables was cooking wild grass (typically used for animal feed) instead. On average, 75 g of daal or vegetables is consumed per person per day.

Ghee (clarified butter) is used by most flood-affected households instead of vegetable oil, which is more expensive. Small amounts of ghee are used in chapattis and daal, for a total of approximately 20 g per person per day.

Animal protein (typically fish) is consumed occasionally. On average, households consume 1 kg of fish once a week. Fish is not included in Table 2 because it is not consumed on a daily basis.

All in all, the individual food consumption presented in Table 2 is equivalent to roughly 1350 Kcal, or 64% of daily requirements. There is an overall lack of carbohydrates, as well as a deficiency in vitamins A and C due to low intake of fruits and vegetables.

Among the 200 households interviewed with the household questionnaire, the average household size was 10 persons. Household size is relatively large because of the joint-family living arrangement typical in this area. The data from the food consumption questionnaire was used to come up with a typical weekly food basket of a flood-affected household of 10 persons. This food basket is presented in Table 3, along with average prices in town markets in flood-affected areas, calculated based on the results of the market survey.

Item	Quantity	Unit Price (PKR)	Total Price (PKR)
Tea	1 packet (125 g)	33 / packet	33
Milk	5 kg	23 / kg	115
Sugar	2 kg	29 / kg	58
Wheat Flour	10 kg	17 / kg	170
Rice	7 kg	20 / kg	140
Daal (*channa*)	5 kg	39 / kg	195
Ghee	1.5 kg	85 / kg	128
Fish	1 kg	140 / kg	140
Total			**969 PKR**

Table 3. Weekly Food Basket of an Average Flood-Affected Household.

The total price for the weekly food basket of an average flood-affected household comes to 969 PKR (16 USD). It is important to note that the quantities of food in the basket do not represent normal or ideal food consumption; rather, they represent the reduced quantities of food households are actually consuming now as a result of the floods. It is also important to note that households are not spending 969 PKR per week on food, because they are not buying all of their food in the market. The goal of this calculation was to give a cost-estimate of food being consumed.

All interviewed households were asked to identify their main source of food currently. The results are presented in Figure 9.

The most important source of food currently is aid (36.5%). This includes both direct food distributions and the 15,000 PKR (250 USD) compensation checks distributed by the Pakistani government, which many households are using to buy food. The importance of this source of food is a cause for concern, as most food distributions have now stopped, and no more checks are being distributed. In the absence of continued food or cash aid, households will have to start relying on other sources of food.

The second most important source of food currently is income from daily labor (30%). Among all of the food sources mentioned, income from daily labor is the only sustainable food source, as households can continue earning income from daily labor as long as they can continue finding work.

Borrowed money (13.5%) and income from the sale of assets like livestock (6%) follow aid and daily labor as the third and fourth most important sources of food. The taking of

credit and the sale of livestock are important coping strategies that will be discussed in greater detail in subsequent sections. However, both of these food sources are unsustainable in the sense that credit sources and assets will start to run out if households continue to borrow and sell.

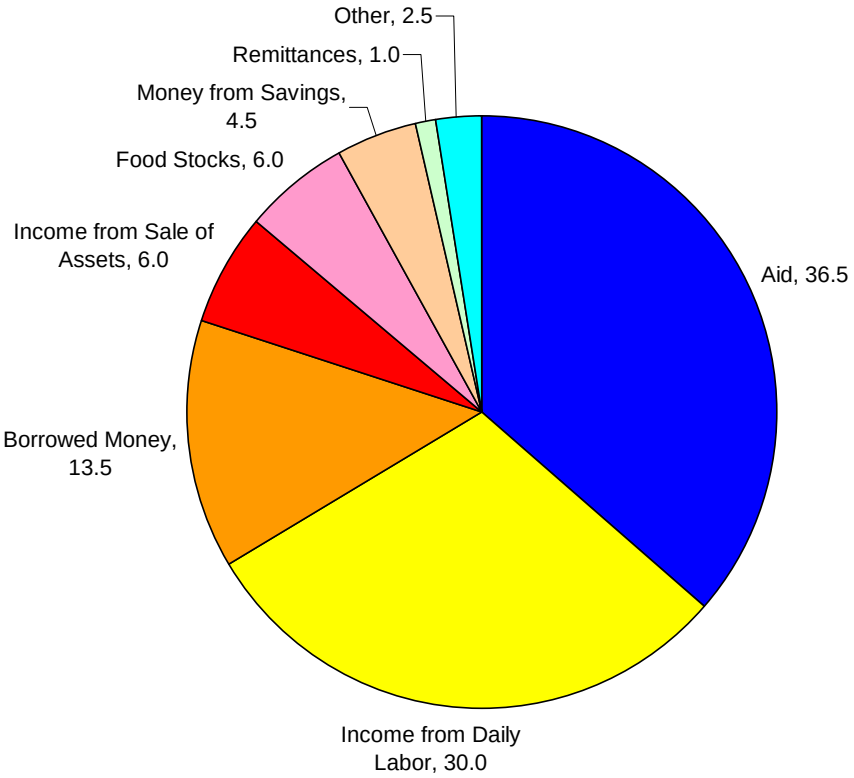


Figure 9. What is your main source of food now?

Smaller numbers of households are still relying on food stocks (6%) or savings (4.5%) from before the flood, in addition to remittances (1%) and other sources (2.5%).

In sum, not only has food consumption decreased since the floods, but current food sources are primarily unsustainable, and food consumption is therefore expected to continue to decrease as aid, credit, assets, stocks, and savings run out. The next section will look more closely at what aid has been received and the different coping strategies people affected by the floods are using.

D. Aid and Coping Strategies

The aid response began immediately after the floods under the overall coordination of the National Disaster Management Authority (NDMA). The Pakistani army and some NGO's distributed tents to those displaced who were living under the open air on bunds and roads. The army also distributed bags of food, containing 10 kg wheat flour, 5 kg rice, 1 kg sugar, 1 kg ghee, 1 kg daal, and some tea, salt, chilies, and milk powder. NDMA figures indicate that more than 2,500 tons of food rations were distributed in Sindh. The distribution was done in a "drop and run" fashion, with bags unloaded from

the trucks and people left to figure out who got what. In general, households say that the stronger people were able to get bags of food but the weaker people were not. In most places, bags of food were received from the army once or twice. Occasionally, households reported receiving bags once a week for a month. Distributions ended in early August.

A number of local NGO's and concerned, wealthy individuals also got involved in the distribution of food or cooked meals. This was particularly true where people were displaced into towns and living in government buildings, although some food was distributed by local NGO's at the more accessible roads and bunds.

Overall, 86% of interviewed households received at least some food aid. Food aid was very common during displacement, but food aid is not being given out once people return to their villages. As a result, some households have tried to leave at least a few members waiting for aid in tents along roads and bunds while the rest of the household goes back to the village.

International NGO's focused on water and sanitation during displacement. Several NGO's, including ACF, Premiere Urgence, IFRC, Care, Mercy Corps, and Oxfam were involved in water-trucking, hand pump installation, water treatment plants, emergency latrine construction, hygiene kit distribution, and hygiene promotion activities. Most of these international NGO's worked through local NGO's in both Kamber-Shahdadkot and Dadu Districts. Most water and sanitation programs finished by early September, although a few organizations planned to prolong their operations into October in areas of continued displacement.

In some disasters, relatives and friends are an important source of aid and support for affected families. However, only 16% of interviewed households received some aid from relatives and friends after the floods. Most households said that all of their relatives and friends were also affected by the floods, so they were unable to provide assistance.

Shortly after the floods, the president announced the distribution of checks worth 15,000 PKR to flood-affected households. A process of registration and check distribution was initiated through the district revenue offices and local nazims.

51% of interviewed households in Kamber-Shahdadkot District and 54% of interviewed households in Dadu District had received a government check at the time of the survey. Complaints were raised during focus group discussions about difficulties in the registration process (including identification requirements), and accusations were made about favoritism by the local officials responsible for check distribution.

Whatever the reasons, it is clear that roughly half of flood-affected people received the checks and roughly half did not. Those who did receive have then faced an additional hurdle: cashing the checks. Of interviewed households who received checks, 58% had been able to cash them at the time of the survey. The process of cashing checks can be long and difficult, as the check holder has to first open an account at a branch of the

national bank. At one bank branch visited, a long line of flood-affected people were waiting outside, some of whom had been coming every day for over two weeks without success.

In several places, agents have offered to cash the checks for flood-affected people in exchange for 3,000 PKR of the 15,000 PKR from the check. Some households have chosen this option in order to get the money quickly and avoid the long and complicated process at the bank. This is particularly true in Kamber-Shahdadkot District, where cashing the checks has been more difficult than in Dadu District. While 78% of households receiving checks had been able to cash them in Dadu District at the time of the survey, only 37% had been able to do so in Kamber-Shahdadkot District.

Once the cash is received, most flood-affected households use the money for three urgent priorities: food, medications (especially for sick children), and paying back credit. Some households took credit to buy food and medications as soon as the check distribution was announced, planning to reimburse the credit once the check was received. Although some households have been able to save some of the money from the check for longer-term needs like house construction and agriculture, most seem to have spent most of it on immediate, short-term needs and on paying pack credit.

Overall, aid seems to have been distributed quite unevenly, with people in more accessible, visible locations receiving more aid. One example is that of a private businessman who drove up from Karachi one day to Johi *taluka* in Dadu District, the closest part of the flood-affected areas. He drove slowly along the road, handing out 1,000 PKR notes to flood-affected households. Those households who were living along the road and who were quick-moving received the money; others did not. The same can be said in general for most of the aid distributed during the flood relief effort.

Despite uneven distribution, it is clear that many households have benefited from some form of aid. At the same time, they have had to rely on their own coping strategies to survive. The three most important coping strategies used by flood-affected people are casual labor, the sale of livestock, and the taking of credit.

As discussed in previous sections, casual labor is an example of a "sustainable coping strategy," in the sense that it can continue as long as work is available. It was also used by flood-affected households as a normal source of income before the floods. The difficulty with casual labor lies in the fact that work is hard to find and income earned can be limited. On any given day, a flood-affected person may have to spend money to get to and from town to look for work. He has no guarantee that he will find work that day, and even if he does a substantial part of the money he earns will go towards paying the transport cost.

The sale of livestock can be attractive because of the relatively large amount of cash that can be obtained all at once. However, flood-affected households have to think hard before selling any of their livestock, because livestock are an asset that cannot be easily replaced. In addition, livestock numbers are limited, and households who sell livestock

now run the risk of running out of livestock as the weeks go by. Low prices also mean that livestock are not worth what they once were.

Credit, like the sale of livestock, is an easy way to get money in the short term that has dangerous consequences in the long term. Households are used to taking credit, and many take credit every year to cover the hunger gap period. 77% of interviewed households reported having some debt. The sources of credit for households in debt are presented in Figure 10.

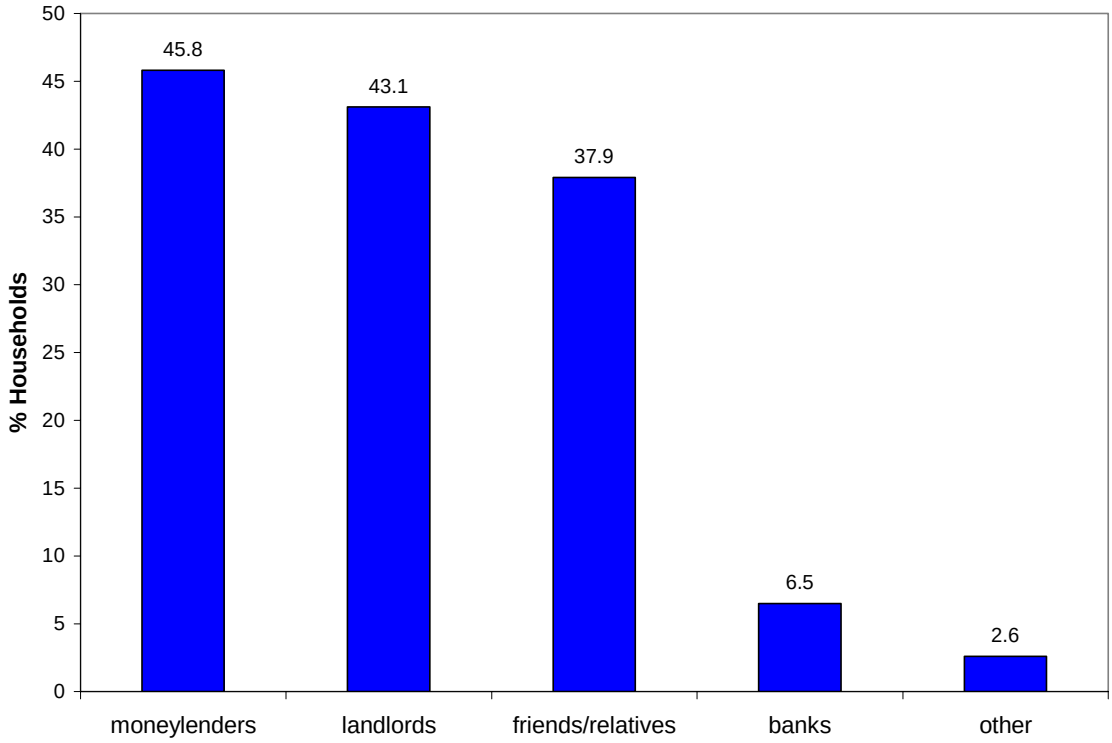


Figure 10. To whom is your household in debt?

Moneylenders (45.8%), landlords (43.1%), and friends / relatives (37.9%) are the three main sources of credit. Moneylenders tend to be businessmen who have accumulated some capital and make additional income by loaning out money on high interest on the side. Landlords primarily give credit for agricultural goods and services, which is reimbursed by taking an additional portion of the tenant's harvest. Certain landlords also extend cash credit to their tenants in times of need. Friends and relatives can give small amounts of credit in cash or kind, which is usually reimbursed whenever possible with no or little interest. In general, credit is taken on a need basis in increments of 1-2,000 PKR, and creditors limit the overall amount based on the size of the household's potential harvest (usually 25-50,000 PKR).

53% of households in debt have taken out additional loans since the floods, although it is harder to find willing lenders now because they lack the normal harvest guarantee. Most of these loans are from moneylenders, since landlords are focused on agriculture and

friends and relatives were also affected by the floods. Interest rates given by moneylenders vary, but the local standard is 40% interest for a six-month loan. If a credit of 1,000 PKR is taken, for instance, 1,400 PKR must be paid back within six months. A variation on this in some areas is an interest rate of 10% per month. In this case, only 1,100 PKR will be paid if the loan is paid within one month, but this can increase up to 1,600 PKR if it takes the full six months to pay back the loan.

Interest rates have not increased as a result of the floods, and most households are used to dealing with this level of interest on the seasonal loans that they take. Although interest rates in banks would be cheaper, the data shown in Figure 10 indicates that few households have bank loans. This is mainly due to the fact that banks do not give loans of small amounts and require more rigorous guarantees than local moneylenders.

In a normal year, most households are able to pay back loans they have taken at the end of the season, although a few households do fall into debt in the long term. If a household cannot pay back a loan within the stipulated six-month period, they try to get credit from a second moneylender to pay off the loan from the first. Some moneylenders allow extensions for a second six-month period, but they double the interest.

It is clear that the significant number of households who have taken additional loans since the floods as a coping strategy will have difficulty repaying these debts within six months since there will be no rice harvest to generate the amount needed for repayment. When asked, most households in this situation said that they will sell some of their livestock if they cannot find another way to pay back the credit they have taken. This, in turn, will deprive them of one of their alternative coping strategies.

Some households in Johi *taluka* in Dadu District faced this problem after the 1995 floods. 12 years later, some households visited are still repaying debts taken in 1995. For the most part, they have been able to delay full repayment by making small installments and juggling debts between different moneylenders, but some landowners have lost their land to moneylenders in the process as a consequence of non-repayment. It is likely that a similar situation may arise in areas hard-hit by the 2007 floods in the years to come.

Casual labor, the sale of livestock, and the taking of credit are all coping strategies that households use during a normal year to bridge the hunger gap between harvests. Flood-affected households are currently relying on a combination of the three, supplemented by the aid that they have received to date, in order to cover daily expenses like food and transport. However, significant problems are expected to arise in the coming months as aid stops, credit expires, and livestock run out. Even if households are still able to cover minimal daily expenses, they will have difficulties making the big investments needed to rebuild their villages and relaunch their productive activities. The next section will analyze the main needs of flood-affected households during this pivotal period.

IV. Needs Analysis

Immediately after the floods and during displacement, flood-affected households faced a variety of problems, including evacuation transport, drinking water, temporary shelter, etc. Now that the emergency phase is drawing to a close and people are moving back to their villages, a new set of problems is expressing itself. Most of these problems are related to the disruption of the main livelihood source in the flood-affected areas – agriculture. One agricultural season (*kharif* 2007) was destroyed by the floods, and a second agricultural season (*rabi* 2007) looks like it may be severely affected because the majority of households will not be able to plant. These disruptions of agriculture mean that the hunger gap, which normally ends with the rice harvest, will be prolonged an additional six months to one year while households wait for their first post-flood harvest.

Households have a variety of coping strategies – casual labor, the sale of livestock, and the taking of credit – that they normally use to survive the 1-2 month hunger gap, and they are using these strategies currently to cover their immediate, daily needs. However, there are two main warning signals that traditional coping strategies may not be enough to get households through this critical period. The first is that two of the three main coping strategies (the sale of livestock and the taking of credit) are unsustainable, viable in the short term but not viable in the long term, particularly for periods longer than six months. Because credit is typically given on a seasonal basis for six month periods, households that took credit after the floods will start having to repay these debts in January 2008. Some will sell additional livestock just to pay back their loans. But livestock are limited, and as time goes by they will start running out to.

The second warning signal is that unlike the normal hunger gap period when households are just trying to cover immediate needs, during this period a number of big investments are required. One such big investment is the reconstruction of houses that are destroyed. Although returnee households have managed to construct temporary, open shelters out of locally available materials, they are worried about the coming winter season when it is normally too cool at night to sleep outside. Another big investment is the seeds, fertilizers, and land preparation for the coming agricultural seasons. It is already clear that in some places where *rabi* planting might be possible, households will not plant because they are unable to mobilize the resources needed to do so. By the time next year's *kharif* season begins in May 2008, the household economic situation could be even more precarious.

The flood affected different areas of Kamber-Shahdadkot and Dadu Districts in different ways. As a result, some areas can be identified as more vulnerable than others. In some contexts, vulnerability is best defined at the level of the household. Social and economic inequalities within villages, for example, may make certain households more vulnerable than others. In addition, certain types of disasters may affect different types of households in different ways. However, in this particular context, vulnerability is best defined at the level of the village. Some villages were in the direct path of the floodwaters and have been completely devastated; others saw rising waters destroy their fields and come close to their village but never had to leave home. Vulnerability

differences observed between villages are far greater than vulnerability differences observed between households within a particular village. Villages tend to be small (25-50 households), and most households within a village have been affected by the floods in the same way.

Table 4 presents a series of five key indicators that can be used to assess the vulnerability of flood-affected villages.

Indicator	Most Vulnerable	Average	Least Vulnerable
Shelter	All houses in the village are completely destroyed	Houses in the center of the village are damaged Houses at the edge of the village are completely destroyed	Houses in the center of the village are intact Houses at the edge of the village are damaged
Food, Income, and Coping Strategies	Food stocks lost during floods Food aid received once or never No income source besides agriculture. Selling livestock and/or taking credit as only source of income	Food stocks lost during floods Food aid received regularly during displacement Some secondary income sources (casual labor, handicrafts, etc.). Have sold some livestock and/or taken some credit to supplement income	Food stocks saved during floods Food aid received regularly, even in villages Diverse income sources (fishing, petty trade, government jobs, etc.) Will sell livestock or take credit if needed
Agriculture Prospects	Fields are still under water Next planting planned for *kharif* 2008	Some fields are dry; others still wet Hopeful for some planting in *rabi* 2007 but worried about inputs	Fields were flooded but are dry already Planting is planned for *rabi* 2007
Livestock	Many livestock lost during floods Livestock dying regularly from problems of food, water, and disease Diseased livestock sold before dying; others sold to meet household needs	Livestock saved during floods Livestock weakened by problems of food, water, and disease Some livestock already sold to meet household needs	Livestock saved during floods Few problems faced May sell some livestock in coming months as needs arise
Location and Aid	Isolated and remote No aid received	Towns easily accessible by day trip Received limited aid (tents, food, and some checks)	Near towns and along main roads Aid received from government and multiple NGO's

Table 4. Vulnerability Analysis of Flood-Affected Villages.

In terms of ***shelter***, the level of destruction of houses in the village can be used to measure its vulnerability because it determines whether or not the households in the village will have to make the "big investment" involved in house construction. In terms of ***food, income, and coping strategies***, the level of destruction of food stocks, the receipt of food aid, the diversity of income sources, and the extent to which households are relying on unsustainable coping strategies can indicate the level of vulnerability of a particular village. In terms of ***agricultural prospects***, the key vulnerability indicator is when villages will be able to plant next, which depends on the level of water and also the capacity (or lack thereof) to mobilize resources on time for *rabi* 2007. In terms of ***livestock***, the extent to which livestock have been lost during the floods, killed by disease or starvation, and sold to meet other needs is an important indicator of vulnerability because it will determine the capacity of households to continue to cope with the prolonged hunger gap. And in terms of ***location and aid***, access to main roads and towns determines access to aid, markets, and labor opportunities, which in turn determines a village's vulnerability.

While there are villages that fall into the most vulnerable category in both flood-affected districts, there are more in Kamber-Shahdadkot District than in Dadu District. Villages in Dadu District tend to be built on higher ground, and fewer were completely destroyed by the floods. As a result, in most cases food stocks were saved and fewer livestock lost. In addition, income sources tend to be more diverse in Dadu District, with a higher percentage of households involved in handicrafts and casual labor. While a majority of households in both districts will not be able to plant in *rabi* 2007, more households will be able to plant in Dadu District (37%) than in Kamber-Shahdadkot District (28%). Finally, perhaps because they are more accessible from Karachi and Hyderabad, villages in Dadu District seems to have received more aid, particularly from local and national NGO's. In contrast, while easily-accessible parts of Kamber-Shahdadkot District have received significant amounts of aid, many of the more remote areas have not. This analysis is not meant to minimize the needs in Dadu District, where there are plenty of villages that fall into the most vulnerable category, but rather to suggest that more such villages exist in Kamber-Shahdadkot.

Households in both districts were asked to identify their three most important problems now and their three most important problems in the coming year. The results are shown in Figure 11. No choices were provided to households at the time of the survey, and responses were later grouped into categories. The graph in Figure 11 includes the number of households who identified each problem as among their top three. As can be seen, although many different problems were identified, the seven which had a significant number of responses were: food, shelter, household items, seeds/fertilizer, drinking water, health, and cash.

Food was mentioned most frequently by households among their top three problems both now and in the next one year. 46% of households ranked food as their most important problem now, while 34% mentioned food second or third. Fewer households ranked food as their most important problem in the next one year (27%), while more households

mentioned food second or third (38%). Food sources and food consumption have been discussed in detail in previous sections. Clearly, people are eating less than normal and will continue to have difficulties in getting enough food until the first post-flood harvest.

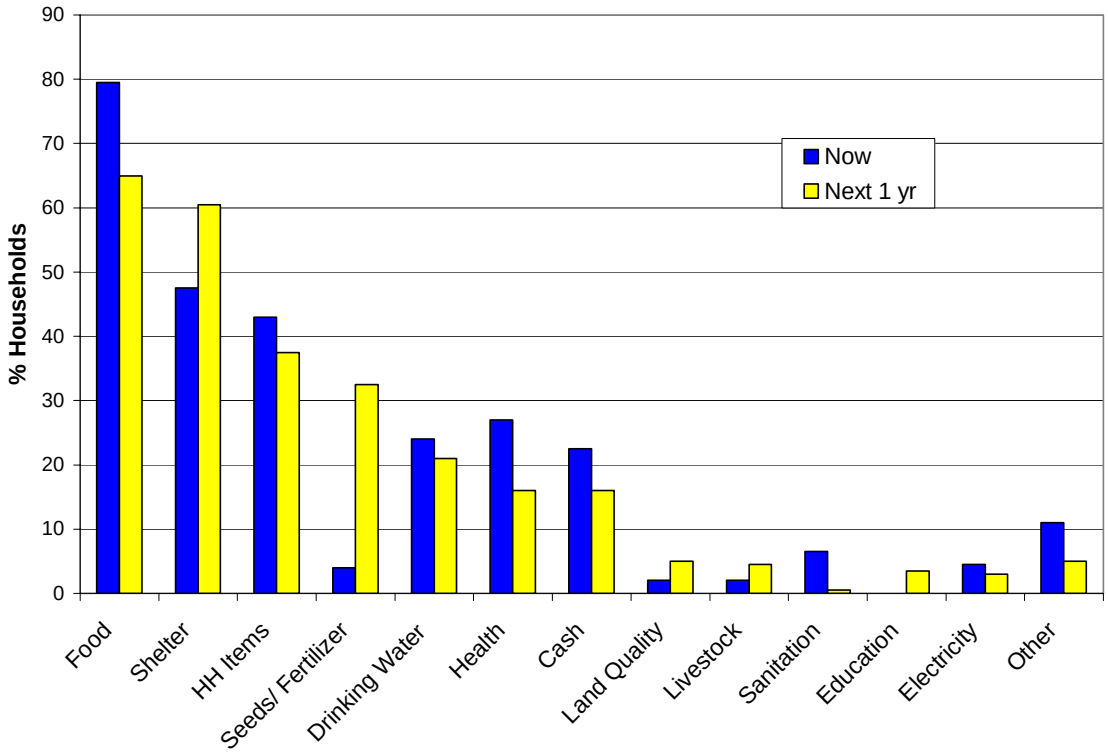


Figure 11. What are the 3 most important problems you are facing now? What are the 3 most important problems you will face in the next year?

Shelter emerged clearly as the second most important problem, particularly in the next one year, when 42% of households ranked it as their most important need, while 18% of households mentioned it as their second or third need. In the most vulnerable villages, high water levels left all houses in rubble. Traditional mud construction techniques are highly susceptible to water damage, and even one foot of water can cause severe structural damage. In one village visited in Mehar *taluka* in Dadu District, a returnee had died while sleeping in his damaged house when it collapsed on top of him.

Flood-affected households may be able to salvage some materials from damaged houses, but little if anything will be able to be used again from houses that were completely destroyed. One possible exception is the iron girders used as rafters to support the roof, although some iron girders were severely bent under the pressure of the water.

Table 6 shows the cost of construction of a typical mud brick house, measuring 12 feet by 12 feet with one door and one window. Prices quoted in the table are averages calculated using data from the market survey. It should be noted that this cost estimate does not include the construction of a veranda and fence, which are traditionally part of a house compound as well. Items included in the table are materials that households usually

purchase when they are making their own houses. Walls are made with bricks, while roofs are made of straw mats and plastic sheeting with iron girders and bamboo supporting them. Mud used as plaster is not included in the cost estimate as it is typically locally available.

Item	Quantity	Unit Price (PKR)	Total Price (PKR)
Mud Bricks	8,000	450 per 1,000	3,600
Bamboo	10	100	1,000
Iron Girders	1	1,414	1,414
Straw Mats	10	54	540
Plastic Sheeting	8 meters	19 per meter	152
Door with Frame	1	954	954
Window	1	596	596
		Subtotal Materials	**8,256**
		Transport	2,500
		Labor	3,250
		Total	**14,006**

Table 6. Cost of Construction of a Typical Mud Brick House.

It is interesting to note that the cost estimate of house construction (roughly 14,000 PKR) fits neatly within the amount of the government checks of 15,000 PKR that have been distributed. However, because nearly half of flood-affected households have not received these checks and because those who have are using the money to cover more immediate needs (especially food, health, and credit repayment), most flood-affected households will have to start from scratch to buy the materials needed for house construction, and few will have the capacity to do so.

Household items were the third most important problem identified by interviewed households, both now and in the coming year. Common household items mentioned included kitchen items, clothes, blankets, and beds. Many of these smaller items were left behind in the rush to escape the floods and are now lost. Because needs vary significantly from household to household and because household items are readily available in nearby markets, direct distributions are not recommended. Indeed, the need for household items can be linked to the need for cash income, which could be used to purchase those items.

Seeds and fertilizer, although included by only 4% of households among their current problems, was included by 33% of households among their problems during the coming year. Because most households will be unable to plant a *rabi* crop this year, they did not identify seeds and fertilizer as a current need. However, as next year's *kharif* planting season approaches, seeds and fertilizer may become the most important need. Unlike food, shelter, and household items, seeds and fertilizer are necessary for restarting the principal activity that normally generates food and income for flood-affected households.

Table 7 shows the estimated cost of cultivation of 5 acres of rice during the *kharif* season. Although the average farming household cultivates 10 acres of land, not all of this land is used for rice. 5 acres was used as a reasonable estimate for the area cultivated in rice per household. The calculation in Table 7 does not include labor or transport costs as most households do the labor themselves and may do necessary transport of inputs and harvest with their own donkey carts. It also does not include the costs of pesticides, which are applied on a need-only basis in the area.

Item	Quantity (1 Acre)	Unit Price (PKR)	Total Price (5 Acres)
Rice Seeds	20 kg	554 / 40-kg bag	1,385
DAP	1 bag of 50 kg	1,249 / 50-kg bag	6,245
Urea	2 bags of 50 kg	541 / 50-kg bag	5,410
Plowing (Tractor)	3 hours	250 / hour	3,750
Total			**16,790**

Table 7. Cost of Cultivation for 5 Acres of Rice.

It is interesting to note the relatively low cost of seeds (particularly for rice, which has a lower price and seed rate than wheat) as compared to the relatively high cost of fertilizer and plowing. For tenants, the landlord does cover half of the cost of fertilizer, but even half of fertilizer costs is still a significant amount of money. These additional costs must be considered before planning an agricultural intervention. For example, a distribution of seeds might not be the most helpful intervention if beneficiaries are unable to plant them because they are unable to meet the costs of fertilizer and plowing. All farming households use fertilizer systematically, although application rates vary. For plowing, the use of rented tractors is almost universal, although in rare cases people with small pieces of land use ox-plows.

Drinking water was listed by 24% of households among their top three current problems and by 21% of households among their top three problems in the coming year. Although a number of NGO's have been active in water trucking, hand pump installation, and water purification, drinking water remains a difficulty for many during displacement. This is particularly true in areas where displacement will continue for several more months due to persistent floodwater.

In most villages, hand pumps (shallow wells) were the main source of drinking water before the floods. Although many hand pumps are still in working condition after the floods, reports in several locations indicate that they may be contaminated by flood water. In more isolated cases, particularly where flood levels were high, hand pumps are actually broken and in need of repair.

Health was ranked by a significant number of households as a problem, both currently and in the next year. The displaced are experiencing more health problems than normal due to their cramped, unsanitary living conditions. Common health problems include skin and eye infections and gastrointestinal diseases. In general, health is perceived as

less of a problem as households return to their villages – only 16% ranked health among their top three problems in the coming year. Although flood-affected households struggle to access health facilities, most say that the bigger problem is that they are unable to purchase prescribed medications. In fact, health, like household items, can be linked to the need for cash income, which could be used to purchase medications.

Cash was listed as a problem by roughly 20% of households both currently and in the coming year. Cash is different from the other problems identified because it is in fact used to resolve them. Of the six other significant problems identified, all except drinking water could be resolved if households had a reliable source of cash income. In the highly monetized economy of the area, where big markets are easily accessible in nearby towns, cash is used to purchase food, construction materials, household items, seeds and fertilizer, and medications. Results from the market survey indicate that prices of most items have not changed since the floods, and price changes are mostly due to changes on the national market.

The central role played by cash in the household economy is illustrated in Figure 12. The three main coping strategies that households are currently using to generate cash are shown on the left side of the figure, while expenditures are shown in the center and the right side of the figure.

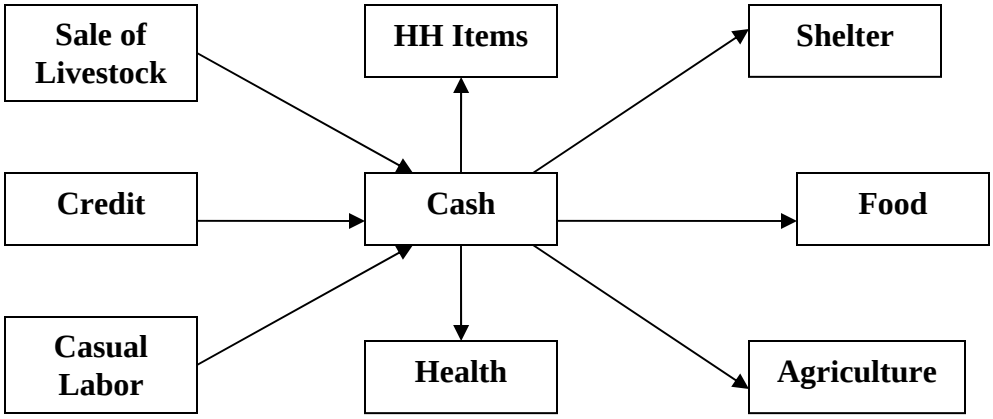


Figure 12. Schematic Diagram of the Flood-Affected Household Economy.

From this perspective, it is clear that while mechanisms for generating cash are limited to coping strategies that are mostly unsustainable, households face many competing needs for the use of their cash. Tradeoffs are made daily, as flood-affected households have to decide whether they should spend what cash they have to buy a little extra food for a hungry family, to purchase medicines for a sick child, to buy a blanket in preparation for the winter season, or to save up for building a new house or purchasing seeds and fertilizers. Given these difficult choices, it is little wonder that most households are focusing on the most urgent, daily needs, which may require less cash, rather than saving for longer-term needs like shelter and agriculture, which require more.

Interventions in any one area should keep in mind the impact they might have on the overall household economy. In general, the most helpful projects would be those that help households either to generate cash or to reduce their expenditures. A handicrafts project, for instance, would have as its goal the generation of cash that could be used to meet many different needs. A health program offering free medications, on the other hand, would have as its goal the reduction of health expenditures, which would free up limited cash that could be spent in other areas.

Flood-affected households, particularly in those villages identified as most vulnerable, are having difficulties meeting their multiple needs. These difficulties are expected to increase in the coming months as coping strategies run out. Drawing on the assessment results and needs analysis, the next section will present a series of recommendations for actors who are considering possible interventions to help flood-affected households recover.

V. Recommendations

The results presented in this report show that the food security situation of flood-affected households is precarious at best and is expected to deteriorate further in the coming months. The following recommendations are made for donors, agencies, and organizations interested in intervening in the recovery phase of the flood crisis.

(1) *Continued external support is needed to help flood-affected households recover up until the first post-floods harvest.* Many organizations are in the process of closing their activities and withdrawing from Kamber-Shahdadkot and Dadu Districts now that the emergency phase of the crisis is over and people are returning to their villages. Although the flood-affected are less visible when they are no longer living in towns, on bunds, and along roads, their principal livelihood source – agriculture – will not be restored until the first post-floods harvest, which for many will only come in October 2008. In the meantime, unsustainable coping strategies like the sale of livestock and the taking of credit, which households typically use during the 1-2 month hunger gap each year, will become increasingly insufficient to cover daily expenses. The larger investments needed to rebuild houses and plant crops will be even more difficult to make.

(2) *Targeting should be done at the village rather than the household level*. Villages in the flood-affected areas are small, typically consisting of 25-50 households. Vulnerability differences are much greater between villages than between households in a particular village. Interventions seeking to target the most vulnerable should target those villages meeting the vulnerability criteria presented in Table 4 of this report. This includes villages with destroyed houses and food stocks, limited income options, no planting prospects until *kharif* 2008, dwindling herds of livestock, remote locations, and no aid sources. All households in these villages should be considered as potential beneficiaries.

(3) *Market-based interventions should be prioritized as local town markets are large and easily accessible.* The flood-affected areas are near to large towns where items from all over Pakistan are sold at standard market prices, and flood-affected households are used to using town markets to purchase food, agricultural inputs, construction materials, and household items. Given this context, market-based interventions that give beneficiaries more choice and inject cash into the local economy should be prioritized over direct distributions.

(4) *Work-based interventions should be considered as flood-affected households are unoccupied and facing difficulties in finding casual labor opportunities.* Casual labor is one of the major coping strategies of flood-affected households, but many are unable to find sufficient work because so many others are also looking. At the same time, important projects in their villages – from the construction of houses to the repair of water courses – are stalled due to a lack of materials. Well-planned work-based interventions could achieve the double objective of rebuilding local infrastructure and increasing household income.

(5) *Interventions should focus on "big needs."* Coping strategies do exist and are generating limited income for flood-affected households. However, households are forced to choose between competing needs because of insufficient resources. Most households end up spending what money they have on food, medicines, and other immediate needs rather than saving for the big investments needed to rebuild their houses and restore their livelihoods. As a result, assistance should focus on "big needs" – particularly shelter and agriculture – that require large, one-time investments.

(6) *Interventions should be well-timed to have maximum impact.* Because the resources of flood-affected households are limited, there is an understandable tendency to use them as soon as they are available. As a result, interventions targeting specific needs should be timed to take place when those needs are most apparent. A cash grant intended to help cover the costs of construction materials, for example, should be given shortly after a household's return to its village. Likewise, an income generating activity intended to generate the money needed to buy agricultural inputs should be timed so as to make that money available just before the planting season. When needs are many and creditors are hovering just around the corner, proper timing is essential to achieving maximum results.

VI. Conclusion

Major floods occur roughly once a decade in Kamber-Shahdadkot and Dadu Districts. This year's flood, triggered by Cyclone Yemyin, was one of the most – if not *the* most – destructive flood in the area since Pakistan's independence in 1947. Kamber-Shahdadkot was particularly hard hit due to multiple breaches in the Flood Protection Bund. In Dadu, flooding occurred later due to breaches in the MNV Drain.

71% of households displaced by the floods will be back to their homes by the end of October, while villages in a few scattered pockets where water is trapped will not be able to return for several more months. However, the flood crisis will not be over once the flood-affected return home; on the contrary, households will continue to face difficulties in the coming months because their principal livelihood source – agriculture – was destroyed during the floods. The annual hunger gap, which normally ends with the harvest of rice in October and November, will be prolonged as the rice harvest has been destroyed. This difficult period will continue up until the first post-floods harvest, which will occur in either March or October 2008, depending on local flood conditions, which may or may not allow for the planting of this year's wheat crop.

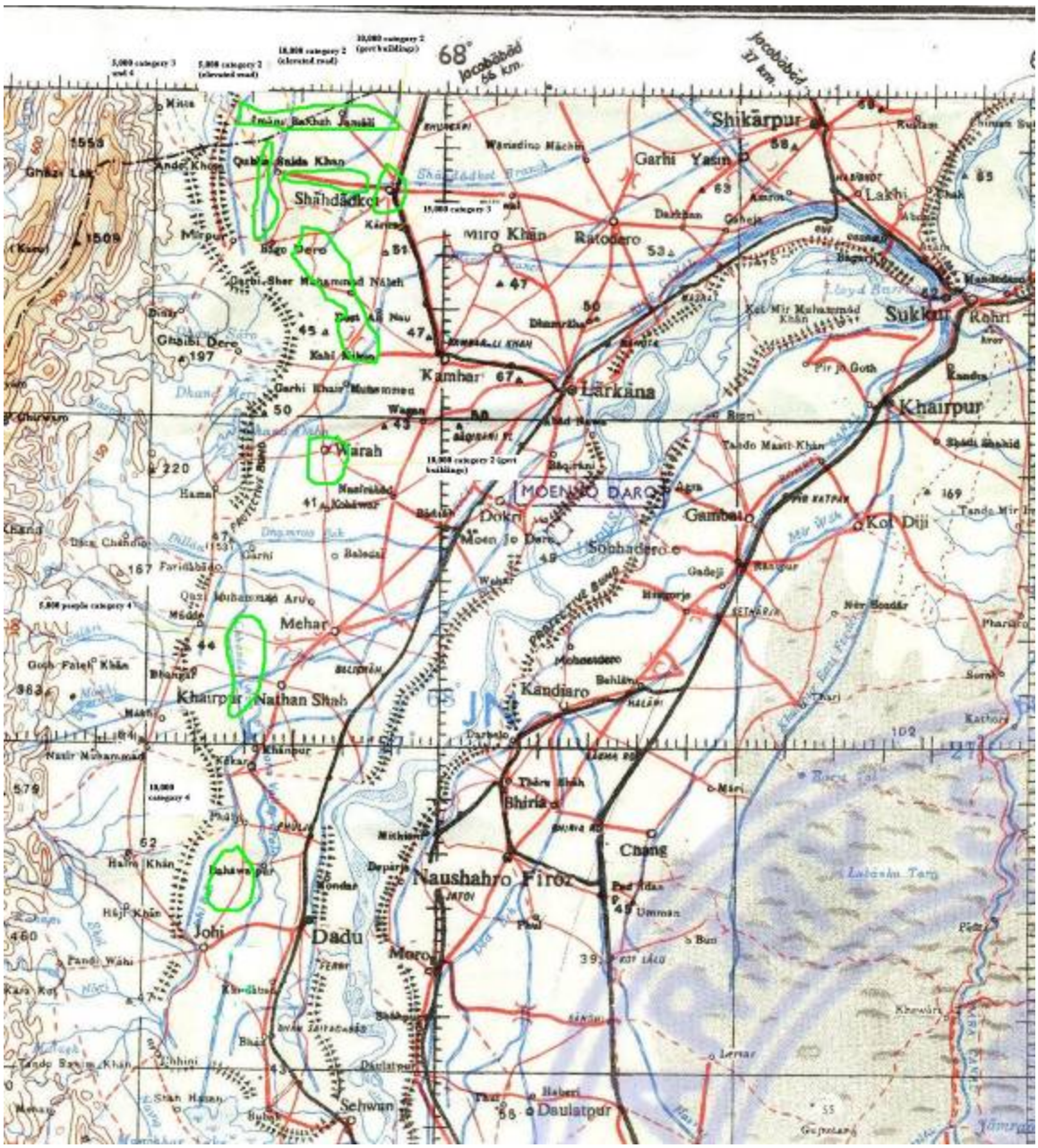
In the meantime, households are decreasing their food consumption and relying on three principal coping strategies, each of which is problematic. Casual labor is the most sustainable of the coping strategies, but it is difficult to find enough work to make a substantial difference in the household's economic situation. The sale of livestock can provide more income all at once, but local prices of livestock have fallen and households will run out of livestock to sell as time goes by. Credit, meanwhile, is usually extended for six month periods, so it is also not sustainable in the long-term. In general, these coping strategies, coupled with the aid that households received during displacement, can be enough to cover daily expenses in the short term but will be less and less sufficient as the months go by.

The six most important needs identified by flood-affected households are food, shelter, household items, seeds and fertilizer, drinking water, and health. Most of these needs can be linked to a seventh need – cash – because the local economy is highly monetized. In general, needs can be divided into smaller, daily expenses for things like food and medication and larger, one-time expenses for things like house construction and agricultural inputs. As available cash is limited, households must choose between competing needs, and the tendency is to prioritize immediate daily needs rather than saving for bigger, one-time investments.

Given the situation on the ground, it is clear that the flood crisis is not over and continued external assistance, if properly designed, can help households during the critical period they will face up until their first post-floods harvest. It is hoped that the data and analysis presented in this report can assist potential actors in the planning of relevant, high-impact projects that will help flood-affected households fully recover.

Appendix A

Map of Flood-Affected Areas in Kamber-Shahdadkot and Dadu Districts



N.B. Green circles indicate areas of initial IDP settlement immediately after the floods.

Appendix B

Household Questionnaire

District: **Name of Surveyor :**
Taluka: **Date :**
Union Council:
Village:
Household Size:

1. Did your household move due to the floods? (Yes/No) *if no, skip to question 2*
1.1. How far did you move due to the floods?
A – less than 1 km; B – 1-5 km; C – more than 5 km;
1.2. When was the last time your household moved due to flooding?
A – first time; B – in the last 5 years; C – 5-15 years; D – more than 15 years ago;
1.3. Do you plan to go back to the village where you lived before the floods? (Yes/No)
If no, where do you plan to go?_____
1.4. *If yes,* when do you think you will be able to go back?
A – already back; B – September/October; C – November/December; D – 2008

2.What were your household's 3 main sources of income before the floods? (*rank 1-3*)
A.Farming_____ B.Fish Farms_____ C.Casual Labor_____
D.Livestock_____ E.Petty Trade_____ F.Remittances_____
G.Handicrafts_____ H.Other (specify)_____

3. Does your household farm? (Yes/No) *if no, skip to question 4*
3.1. Do you own your own land (A) or are you a tenant (B)?
3.2. How many *jerabes* do you farm? _____
3.3. What crops do you normally grow during *kharif*? (*mark all that apply*)
A – rice; B – cotton; C – other (specify)_____
3.4. What crops do you normally grow during *rabi*? (*mark all that apply*)
A – wheat; B – barley; C – legumes; D – mustard/oil seed; E – other_____
3.5. Will your land be accessible to plant a *rabi* crop this year? (Yes/No)
3.6. Where do you normally get your seeds? (*mark all that apply*)
A – landlord; B – market; C – saved from previous year; D – other_____

4. How many livestock did your household own before the flood? *if none, skip to 5*

	Buffalo	Cattle	Chickens	Sheep	Goats	Donkeys	Other_____
Before Flood							

4.1. Have you lost or sold livestock since the floods? (Yes/No)
4.2. *If* yes, what is the main reason for the loss of livestock?
A – lost/killed; B – lack of food; C – disease; D – sold; E – other_____
4.3. Do you plan to sell livestock in the next few months to meet other needs? (Yes/No)

5. What was your most important food source before the floods?

A – market; B – own production; C – gifts/remittances

5.1. Where did you go to purchase most of your food items before the floods?

A – local market; B – town market (specify town_____)

6. How does your current food consumption compare with a normal year?

A – less; B – same; C – more

6.1. *If less*, how has it changed? (*mark all that apply*)

A – fewer meals B – less food at each meal

C – less variety D – other_____

6.2. What is your main source of food now?

A – stocks from before flood B – money from savings

C – income from daily labor D – income from sale of assets

E – money from remittances F – aid (food or cash)

G – borrowed money H – landlord

I – other_____

7. Is your household in debt? (Yes/No) *if no, skip to question 8*

7.1. To whom is your household in debt? (*mark all that apply*)

A – landlord; B – bank; C – local money lender; D – friends/relatives; E – other__

7.2. Have you taken out additional loans since the floods? (Yes/No)

8. Have you received food aid since the floods? (Yes/No)

8.1. Have you received a government check since the floods? (Yes/No)

8.2. *If yes*, have you received the money from the check? (Yes/No)

8.3. Have you received assistance from relatives/friends since the floods? (Yes/No)

9. What are the 3 most important problems you are facing now? (*rank 1-3*)

A.Food_____ B.Health_____ C.Livestock_____

D.Shelter_____ E.Seeds/Fertilizer_____ F.Household Items_____

G.Drinking Water___ H.Land Quality_____ I.Education_____

J.Irrigation Water___ K. Other (specify)_____

9.1. What are the 3 most important problems you will face in the next year? (*1-3*)

A.Food_____ B.Health_____ C.Livestock_____

D.Shelter_____ E.Seeds/Fertilizer_____ F.Household Items_____

G.Drinking Water___ H.Land Quality_____ I.Education_____

J.Irrigation Water___ K. Other (specify)_____

Appendix C

Food Consumption Questionnaire

District: **Name of Surveyor :**
Taluka: **Date :**
Union Council:
Village:
Household Size:

1. How many times did your household eat yesterday?

2. What did your household eat yesterday?

Item	Quantity	Source

Possible sources: market, own production, gifts/remittances, food aid, etc.