Berlin Geographical Papers 38

# After the Flood in Pakistan

## Assessing Vulnerability in Rural Sindh

Edited by
Hermann Kreutzmann
Stefan Schütte

Centre for Development Studies (ZELF)
Institute of Geographical Sciences
Freie Universität Berlin

2011

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# Preface

## Assessing the impact of the flood - challenges for the future

After the devastating floods of August-September 2010 had destroyed the living abodes and detrimentally affected the basic resources of several million people in Pakistan, the subsequent relief operations were supposed to be terminated half a year later. By March 2011 a new phase with coordinated steps for mid-term rehabilitation and long-term development activities were envisaged. The way forward posed a major challenge. Necessary steps by all kinds of support organisations and institutions need to be based on sound information about local conditions, vulnerable groups and certain fields of action. Interventions are not only determined by local needs, but at the same time by a socio-political environment and the available expertise of organisations that are actively supporting the rehabilitation process.

Pakistan has numerous localities and places that have been severely affected by the floods. These areas are spread over the watershed of the Indus Basin in Gilgit-Baltistan, Khyber-Pukhtunkhwa, Punjab and Sindh and cover a substantial and productive backbone of the country. Affected rural spaces inhabited by vulnerable communities are exposed to a multitude of constraints and challenges. Their livelihoods are endangered to different degrees and extent. In assessing the situation "after the flood" the focus has to be put on all kinds of problems that are the result of present and previous events. A focus on naturally-induced disastrous events would be myopic. Structural deficits in socio-economic conditions such as the fast rising prices for basic foodstuffs, popularly called "food inflation", and adverse constellations of dependency patterns are hampering rural resource utilisation for adequate and sustainable livelihoods. This description applies to tens of thousands of Pakistan's villages. Consequently, an assessment of the effects of the floods could have been executed in most places, a task unmanageable for a small group of social scientists.

The report presented here draws the attention to one of the least-studied regions of Pakistan and to three districts in Sindh Province. The report covers eight villages in Sindh's Badin, Dadu, and Thatta districts. The selection of villages is strongly linked to the initiators and sponsors of this independent research project. The German Red Cross (GRC) and the Pakistan Red Crescent Society (PRCS) suggested to the Centre for Development Studies at Freie Universität Berlin to cooperate again - after a successful joint evaluation of development packages in Kashmir in 2009 (see volume 36 of this series) - in an assessment in Sindh Province. This time, the terms for the assessment followed a different rationale in involving the independent academic supporters. With relief operations coming to an end in Sindh, a strategy and a vision needed to be designed for enhanced development cooperation. The dire needs of the flood affectees in the villages should be the guiding principle for the implementation of development packages. Their experiences and voices are the most important source of knowledge that has to be combined with feasible packages and practical moves. A major challenge is to define packages that are efficient in uplifting the

living conditions, that reach the most vulnerable groups and that will have some lasting effect.

The team that was commissioned with this task was a group of twelve students enrolled in the M.Sc. programme at the Institute of Geographic Sciences of Freie Universität Berlin. All participants specialise in their studies in the Master programme on geographical development research. The challenge of such an enterprise had been lying in the skillful preparation devoted to adequate content and sound concepts, in the methodological approach that is selected and designed for the challenge. The practical implementation was undertaken over a three week-long span of fieldwork in Sindh in February-March 2010. The German Red Cross (GRC) and the Pakistan Red Crescent Society (PRCS) supported the mission at all ends and with necessary logistical support. In all three districts the PRCS staff helped in selecting the villages, and in providing local experts and interpreters for each team.

The objectives were wide-spread and far-reaching: First, to gain some insight into the socio-economic situation of rural communities in a wider setting of their districts, in their relationship to developments in Sindh province and within Pakistan. Second, to analyse the social set-up in rural Sindh in terms of vulnerability and exposure to risk. Third, to assess the impact the recent floods had on the livelihoods of households in the village settings. Fourth, to formulate recommendations for implementation of project packages.

From our point of view - given the short span of time - the assessment mission has been quite productive in terms of findings. The result of our work is presented in this report. With a group of highly-motivated students who perceived the assessment mission as a dual opportunity to gain professional work experience in the challenging environment of present-day Pakistan and to support practical development projects in their search for high quality packages. The implementation was possible because all concerned institutions cooperated. Accountants, drivers and interpreters supported the data gathering, and last but not least about 300 affected households and their members in Badin, Dadu and Thatta districts accepted us and responded to our numerous queries in their houses and in nearly 40 focus group discussions. For all of us it was a learning experiment with lots of experiences gained. Therefore I would like to thank all who participated in this assessment mission, who supported it and who will use the findings.

Berlin, July 10, 2011

## List of participants

**Pakistan Red Crescent Society - PRCS**
Kanwar Wazim, Provincial Secretary PRCS Sindh
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Grit Wagner
Julia Zill

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## List of acronyms

| | | |
|---|---|---|
| ADB | - | Asian Development Bank |
| AKDN | - | Aga Khan Development Network |
| AKRSP | - | Aga Khan Rural Support Programme |
| DCO | - | District Coordination Officer |
| DRR | - | Disaster Risk Reduction |
| GRC | - | German Red Cross |
| IBIS | - | Indus Basin Irrigation System |
| ICRC | - | International Committee of the Red Cross / Red Crescent |
| KPOD | - | Kadhan Pateji Outfall Drain |
| LBOD | - | Left Bank Outfall Drain |
| NGO | - | Non-Governmental Organisation |
| NRSP | - | National Rural Support Programme |
| PFF | - | Pakistan Fisherfolk Forum |
| PPP | - | Pakistan People's Party |
| PRCS | - | Pakistan Red Crescent Society |
| STA | - | Sindh Tenancy Act |
| UNICEF | - | United Nations International Children's Emergency Fund |
| USAID | - | United States Agency International Development |
| VCI | - | Vulnerability Capacity Index |
| ZELF | - | Zentrum für Entwicklungsländerforschung |

# 1 Introduction – assessing and conceptualising vulnerability in rural Sindh

In response to the disastrous flood that hit Pakistan in August-September 2010 the German Red Cross (GRC) and the Pakistan Red Crescent Society (PRCS) were among the first agencies to engage in relief activities to support the suffering population in down country Pakistan from Khyber-Pakhtunkhwa to Sindh. In the wake of the flood, both GRC and PRCS quickly extended their organisational wings to establish a lasting presence in various districts of the southern province of Sindh that was also severely affected as the home of downstream riparian communities by the Indus flood. Now that immediate relief activities were phased out (Fig. 1.1), both agencies have planned to commit significant funds for longer term development efforts to help affected people in rural Sindh to recover from the flood and to improve their livelihoods. At the interface of relief and development, however, the situation after people returned to their destroyed villages and agricultural fields remains largely unknown. For planning and implementing development packages in a comparatively long time span a number of challenges are posed. However, there exists little knowledge about human-environmental relations and socio-economic properties of the Sindh microcosm within the Pakistan context. In light of a rather meagre body of published information on Sindh,[1] a fieldwork-based research on the basic properties of rural settings in Sindh and on intra-community and exchange relations is required.

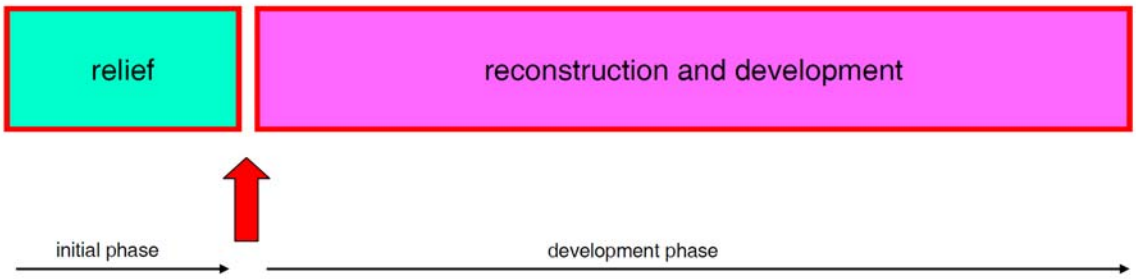


**Fig. 1.1: Generic timeline approach to the transition from relief to reconstruction and development**

To address knowledge gaps and to prepare the ground for the implementation of a larger livelihoods programme and disaster risk reduction and rehabilitation activities by the GRC/PRCS, a socio-economic assessment was carried out between February 10 and March 4 in 2011 by a team of Master students specialising in Geographical Development Research (Centre for Development Research, Freie Universität Berlin) in Sindh province. This assessment had the goals of assessing local socio-economic systems and the levels of rural vulnerability in selected villages across districts that represent future sites for the imple-

[1] Sindh province is regarded as one of the least known regions of Pakistan in respect of data covering the economy, environment, history and society. For some recently published introductory material, bibliography and comments cf. ADB 2010, Arif Hasan 2009, Boivin 2008, Boivin and Cook 2010, Khan 2009, Zaidi 2005.

mentation of development packages by the GRC/PRCS and to provide recommendations for humanitarian aid and development cooperation.

The assessment mission followed a holistic and two-fold approach. First, the expression and enhancement of vulnerability was perceived as a central element in a system that forcefully is affected by influences characterised by (i) environmental properties that are related to the risk-prone ecology in which human activities take place, (ii) economic chances and constraints that provide the arena for local enterprises, current revenue generation and value creation, (iii) societal challenges that influence person-to-person relations, dependency systems and interrelated duties and contributions of local people (Fig. 1.2). The approach based on system-theoretical thinking highlights the importance of vulnerability that is strongly influenced by all three fields and is regarded as a vital expression of the state of affairs in the surveyed localities and households as will be explained in the following. Vulnerability, however, is a major catchword both in social science research and development practice. Conceptualisations may differ, and the systematic approach fol-

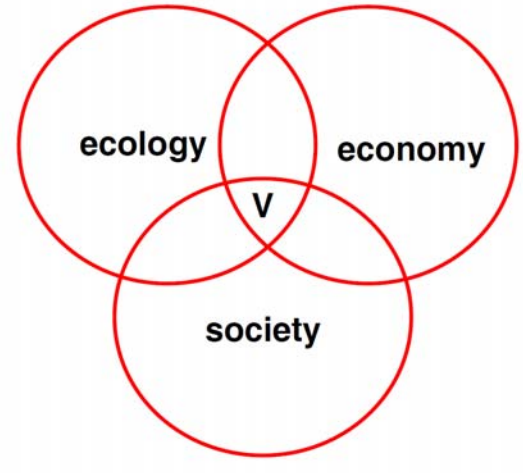


**Fig. 1.2: The interrelationship of ecology, economy and society when assessing vulnerability (v)**

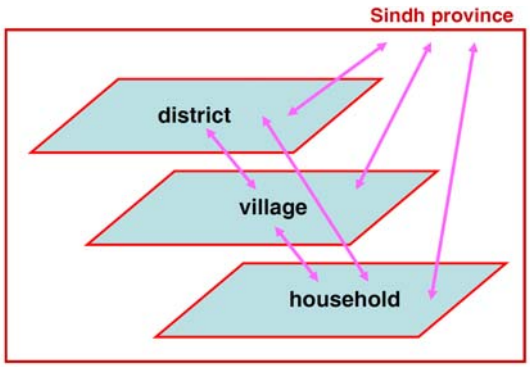


**Fig. 1.3: Multiple relationships and channels of embeddedness on district, village and household levels within Sindh province**

lowed here does not correspond entirely with the GRC/PRCS definition of the term. However, as operationalised in this report, both organisations shall be able to build on the findings of the vulnerability assessment and incorporate them in their practical work.

Secondly, the assessment is based on the consideration that local phenomena are the result of a host of influencing factors that are not necessarily and solely generated locally. Consequently, we adopted a conceptual framework in which the particular socio-economic situation in Sindh was understood as the provincial environment - with its specificities within Pakistan - that influences activities on the ground through legislation, power relations and market forces as much as through rural-urban exchanges, interprovincial mobility and opportunities, to name only a few. In order to analyse the fine structure that is expressed differently on district, village and household levels (Fig. 1.3), especially identified and tuned forms of enquiry were developed. Profiling the challenges that have occurred

after the flood, different methodological and content-wise shaped sets of enquiries were debated and finally agreed-upon prior to the implementation of the assessment strategy. Thus, we are convinced that district profiles could be identified that highlight specificities of challenges and constraints on the three districts - Badin, Thatta, and Dadu - selected for the sample study. By developing village profiles the rural microcosms of different communities that live together in a set of hamlets comprising a village, some characteristics were identified that might allow a better understanding as to how vulnerability is expressed on the level of the eight pre-selected villages in the sample. However, the basic unit where vulnerability affects the livelihood of individual persons and their relatives is the household. The form of a socio-economic unit that generally shares a cooking place and assets under one or more roofs represents the central place of enquiry. Lineage ties, economic interrelationships of mutual care and dependency as well as the streamlined contribution of all members to a common mode of survival has made the household the essential unit of reference when it comes to assess vulnerability, its assets and challenges for survival, and its potential for a better future. Irrespective of all conceptual and theoretical debates, we have adhered to an approach in which the household was regarded as the central location in which influences from state governmental, provincial, district and village level are not only sensed, but become effective in shaping the socio-economic position of its members, and in expressing the risk-prone and sometimes threatening setting they are exposed to. Consequently, our concept aimed to assess a situation by a multi-level approach in order to gain insights and knowledge on different aspects of a socio-economic situation aggravated by the floods that had occurred half a year before.

The team used a variety of methodological and analytical approaches to achieve these goals and to inform development cooperation in rural Sindh after the flood that led to widespread destruction and had a tremendous impact on agricultural production and animal husbandry. The results of the assessment and the recommendations based on the findings are presented in this report.

In doing so, the context of rural livelihoods and the overall effects of the flood in Sindh are presented (chapter 2), and methodological and analytical approaches described (chapters 3 and 4). Evidence from our fieldwork is outlined in detail (chapter 5) thus presenting the findings for each of the three districts, represented by eight villages that were included in the assessment. The implications on development practice for rural Sindh are presented in a final chapter.


Source: Design Kreutzmann 2011

**Fig. 1.4: Pakistan overview and location of Sindh province**

## 2 Sindh – living in a hazardous environment

Sindh province is comprised of the downstream riparian province including the Indus delta (Fig. 1.4). Somehow Sindh has always played a specific role within Pakistan. In terms of regionalism Sindhi nationalism has found its expression in a political strife for more participation and/or autonomy. There is a constant challenge between upstream and downstream provinces. On the one hand, the perceived domination of Punjab is based on demography with more than half of Pakistan's population. In addition, the Punjab is having the upper hand on fertile lands and water access. On the other hand, Sindh province with fertile river oases on both banks of the Indus is - in population terms - representing less than a quarter of the country's people that always have felt to be only in secondary position when it comes to political influence and the distribution of Indus waters (cf. Kreutzmann 2006). The tail-enders' problem sticks to Sindh as does the rural-urban divide within the province. The most significant share to Sindh's economic performance is contributed by the megacity Karachi that not only dominates Sindh's economy but also that of the whole country. The contrast between rural and urban Sindh is significant and characterised by a gap that leaves rural Sindh as one of the regions of Pakistan where feudal dependency relationships characterise the rural scene. Large landlords (*wadera*) and share-croppers (*hari*) who are often similar to bonded labourers (ADB 2010, Khan 2009: 300) represent the two extremes of the socio-economic spectrum.

At the bottom level of society a prevalent social vulnerability is reflected in statistical evidence such as a poverty level of 53% among the rural population in Sindh (ADB 2010: 1, Jamali et al. 2011: 237). The literacy level is modified by a gender-based inequality. While roughly every third man is literate, its share is just above every tenth woman among the female population. Only every tenth person in rural settings has access to safe drinking water. Tenancy and share-cropping are the dominant features of rural Sindh, where nearly half of the farmers belong to that group while the big share of the land is held by the landowning class. In the 1950s, less than one percent of the landowners controlled 29.1% of the land, or eight percent of the landowners controlled more than 54% of all available agricultural land in farms above 100 acres (app. 40 ha, Zaidi 2005: 19). The same author remarks "in the category of extra-large farms, 150 acre and above, there was a sharp increase in both the number of farms and their area in Sindh, between 1980 and 1990..." (Asif Zaidi 2005: 49). Two land reforms and the introduction of the "green revolution" have not significantly changed the agrarian social structures of interior Sindh.

In a comparative ranking of 101 districts in Pakistan in 2002 the selected districts gained only positions in the bottom quartile: Dadu ranked 66, Badin 89, and Thatta 91. The share of Sindhi districts in the bottom quartile has risen from 23.5% in 1970s to 35.1% in the 1990s (Zaidi 2005: 424-425). The comparatively better position of Dadu is mainly due to its better accessibility from the national highway on the right bank of the Indus. All districts belong to a group that are composed of marginal districts, either in mountainous or desert locations, or as in our case in amphibious environments where water-borne catastrophes

and man-made hazards are dominant. This set-up needs to be understood when in prior and post-flood periods the levels of indebtedness, deficiency of cash availability and personal dependency are vital issues in assessing the securing of livelihoods. A huge share of the tenant farmers and landless labourers is heavily indebted and often in a situation that loans once taken can never be repaid. Consequently, a former tenancy relationship resulted in a kind of bonded labour[2] that binds the *hari* to a certain landlord, shop-owner or businessman, and that eventually binds the household to a certain location without the option of moving out. "In terms of severity and expanse, it seems that landless sharecroppers, particularly in southern Sindh and somewhat in southern Punjab, are the largest category and suffer the most, followed by agricultural wage workers in these two regions ..." (Zaidi 2005: 447). Despite an official termination of 'bonded labour' as a practice in working relationships through the 'Bonded Labour (Abolition) Act of 1992' the system has not ceased to exist, in fact it seems to thrive quite profitably for the concerned land-owning and entrepreneurial groups. "Although the nature of debt bondage and of the bonded labour system is not occupation-specific it has been seen to be severest in Pakistan under the sharecropping (hari) system and in the brickmaking industry. The sharecropping system in agriculture is based on, either a 50:50 or 25:75 sharing system where tenants on the land of a landlord provide certain inputs and share in the eventual crop produced. Sharecropping still exists in lower Sindh and in southern Punjab. According to one survey conducted in three districts in Sindh, 100 percent of all rural/agricultural households were in debt" (Zaidi 2005: 448). Mahmood Hasan Khan (2009: 300) summarizes: "Land concentration tends to dominate the rural economic and social structure, and relationships ... [in Sindh]".

A similar practice of bond and dependency can be observed in the fisherfolk communities. Share-cropping for crop farmers is replaced here by different forms of 'sharefishing'. The fishing communities depend for their productive assets and tools on money-lending and on licenses that are often not owned by themselves (PFF 2008). These dependency structures aggravate the socio-economic situation and are even further stressed in times of catastrophes and crises. In the coastal and delta districts of Badin and Thatta the fisherfolk are exposed to societal hazards such as indebtedness, restricted access to low-interest loans, and dominance by influential classes. In addition, natural hazards such as cyclones have destroyed fishing equipment, boats and houses, and flooded and salinated agricultural lands leading to the substantial loss of basic means of their production. The recent flood is one event among others - albeit a very severe one - that aggravated the livelihood situation and increased levels of social vulnerability in a hazardous amphibious environment. The loss of productive infrastructure and phenomena of inclusion and exclusion are the major characteristics of villages in Thatta and Dadu districts that are located close to the Indus floodplain where the breaching of dykes resulted in inundated agricultural lands, loss of houses and destroyed infrastructure.

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[2] The term bonded labour has to be used with precaution and consideration as there are little hard data available. According to the 'State of Human Rights Report' "... over 1.7 million haris remained in bondage across Sindh" (HRCP 2006: 231).

The setting of our case studies is characterised by a wide spectrum of challenges and constraints. In order to investigate root causes and hazard-triggered aggravations in daily life the above-mentioned need for a holistic approach motivated the methodological entry into the assessment. Based on the perception that social vulnerability is a central category for a holistic understanding of diverse socio-economic realities the assessment team focused in its methodological approach on the construction of an adequate set of vulnerability indicators.

# 3 Rapprochement of the field: research methods for assessing flood effects in rural Sindh

Assessing the livelihood situation in eight villages pre-selected by the German Red Cross/Pakistan Red Crescent Society (GRC/PRCS) presented a number of logistical and methodological challenges. A team of Master students and their supervisors carried out the fieldwork in eight villages of three districts in Sindh-Province. The selected sites represent locations where the organisations plan to implement long-term development programming after the relief activities were phased out over March 2011. As such, the assessment is aimed to prepare the shift from relief to development activities of the two organisations and to set the ground on which appropriate project measures can be carried out that strive to improve the livelihoods of affected populations. In order to achieve this goal, the assessment team consisting of twelve students and two supervisors was divided into six smaller teams that were complemented by a local research assistant for translation. These teams visited each of the eight selected villages for three to five days between February 14th and March 1st, and carried out altogether 37 village focus groups, 296 questionnaire-based individual household interviews and 16 expert interviews (cf. Table 3.1). The amount of data gathered is representative of the applied three-tiered methodological approach that consisted of a village survey supported by focus groups carried out with members of respective village communities, a subsequent questionnaire-based household survey, and open interviews with experts. This initial step after entering a village was to engage in longer focus group discussion with the aim to assess the social composition, infrastructral endowments and shortcomings, to get an idea about economic activities and existing social and power relations influencing life in a village, and to gather accounts of the losses endured in the flood event of 2010. These discussions proved quite useful to get an overview of the situation and to get to know the target communities better. The latter was important, as field teams spent three to five days in each location, and developing a

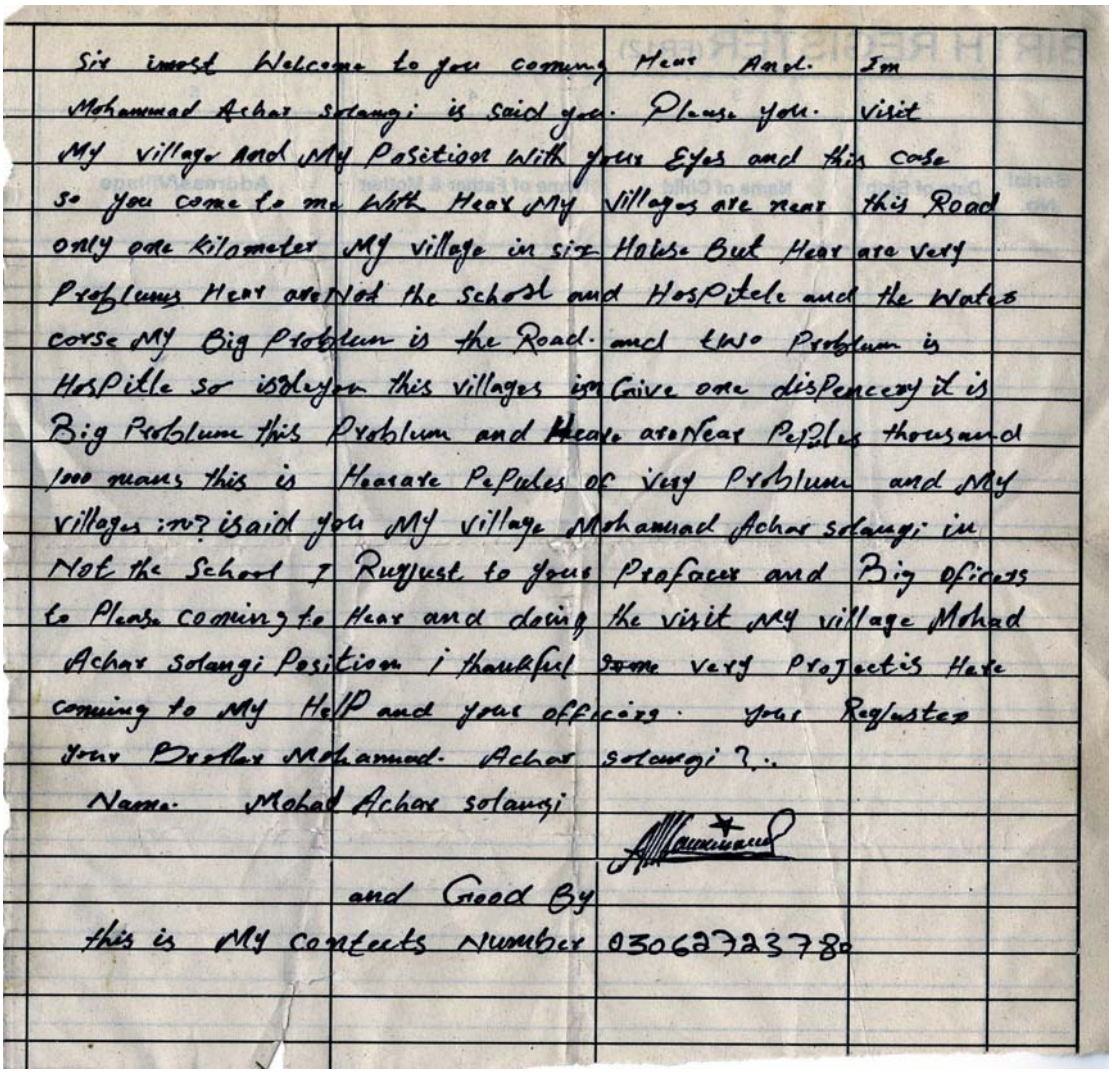
**Table 1: List of interviews**

| Village | No. of household interviews | Focus groups | Expert interviews* |
|---|---|---|---|
| **BADIN** | | | |
| Golo Mandhro | 47 | 3 | 3 |
| Ahmad Raju | 26 | 3 | 3 |
| Sheikh Kiryo Bhandari | 19 | 6 | 0 |
| | **92** | **12** | **6** |
| **THATTA** | | | |
| Aloo Noonari | 17 | 3 | 1 |
| Ahmed Sorju | 47 | 7 | 1 |
| | **64** | **10** | **2** |
| **DADU** | | | |
| Zafarabad | 28 | 5 | 2 |
| Mehrab Qambrani | 71 | 5 | 3 |
| Wali Mohammed Laghari | 41 | 5 | 3 |
| | **137** | **15** | **8** |
| **Total in all villages** | **296** | **37** | **16** |

***list of expert interviews**

| | |
|---|---|
| **BADIN** | |
| Golo Mandhro | two teachers, Shopkeeper |
| Ahmad Raju | Shopkeeper, most educated village member, deputy of Pakistan Fisherfolk Forum |
| **THATTA** | |
| Aloo Noonari | teacher |
| Ahmed Sorju | producer of milk toffees (*barfi*) |
| **DADU** | |
| Zafarabad | headman, Imam |
| Mehrab Qembrani | village eldest, Imam, spokeswoman of Shura |
| Wali M. Laghari | teacher, village elder, son of headman |

mutual understanding of the goals of the assessment mission was important to establish trust and facilitate support from people to learn about their village and to carry out individual household interviews. This second step was carried out rather straightforward and with lots of community support, as villagers were already aware about the presence of research teams in their settlement and opened doors readily. However, often the team members were taken for representatives of aid organisations that surveyed possible beneficiaries for project measures. Especially people from neighbouring villages that were not part of the assessment but where situations were equally grave after the flood destroyed houses and fields asked the research teams repeatedly to visit their localities as well. On one occasion in the village of Ahmed Sorjho, Thatta, the team was even handed a letter describing the problems encountered in the neighbouring settlement (Fig. 3.1).



Sir most Welcome to you coming Hear And. Im
Mohammad Achar solangi is said you. Please you. visit
My village And My Position With your Eyes and this case
so you come to me With Hear My villages are near this Road
only one kilometer My village in six Hause But Hear are very
Problems Hear are Not the School and Hospitele and the Water
corse My Big Problem is the Road. and two Problem is
Hospitle so is they on this villages is Caive one dispencery it is
Big Problem this Problem and Heare are Near Peples thousand
1000 means this is Heare Peples of very Problem and My
villages in? is said you My village Mohammad Achar solangi in
Not the School I Request to yous Profacer and Big Officers
to Please coming to Hear and doing the visit My village Mohad
Achar Solangi Position i thankful some very Projects Here
coming to My Help and your officers. your Regaster
your Brother Mohammad. Achar solangi ?.
Name. Mohad Achar solangi
and Good By
this is My contacts Number 03062723780

**Fig. 3.1: Letter handed over to the research teams in Ahmed Sorjho, Thatta, on 19th February 2011, inviting the members to carry out a survey in the neighbouring village**

The teams continued performing focus groups with certain marginalised groups or additional community members when deemed appropriate, especially in the scattered villages of Thatta that were difficult to overview with their multiple hamlets. This broadened the base of information and was important to crosscheck the data. As third step the teams interviewed various experts, such as villagers, shopkeeper, village headmen, or NGO-representatives. These helped in contextualising the data further and provide additional information on the situations in the surveyed areas.

In terms of logistical challenges, the teams faced different situations in each district. For Badin, the schedule intended three days of fieldwork but the commute from the accommodation in Badin City to the villages led to restricted field times, which is also reflected in the number of interviews provided in Table 3.1. Likewise, the assessment faced tough logistical constraints in Thatta, when the teams were based in Karachi and had as many as seven hours to commute to and fro on their four days scheduled for the location. Logistics turned out most favourable in Dadu, where teams had five days at their disposal. This is reflected in the data too, and in two villages a complete census was taken (Mehrab Qambrani and Zafarabad).

# 4 Measuring vulnerability: the Vulnerability Capacity Index as analytical tool

Vulnerability has turned into a major catchword in the NGO-world over the last two decades. The concept indeed provides important analytical insights that help to better understand local situations especially in respect to hazards research. However, attempts to provide a measure of vulnerability have so far been rather patchy and mostly did not find their way into influencing policy or informing development practice (cf. Mustafa et al. 2011, van Dillen 2002). The problem seems to be a lack of applicability of vulnerability categories for practitioners and policy makers. Thus far, little efforts have been made to substantially reduce complexity so that the realities behind the problem of social vulnerability become more obvious and possibly easier to manage in terms of livelihood packages aiming to address those problems. While condensing and quantifying complex realities into index-values always remains problematic, the benefit of endeavours to pin down vulnerability for development practitioners with limited time at their disposal seems obvious. Such values reflect different levels and different shades and nuances of vulnerability and capture the material and institutional realities of vulnerable places (Mustafa et al. 2011), while at the same time providing aid agencies with an overview of a situation at one glance. From a research perspective, a vulnerability index provides a potent analytical tool that helps in organising the numeric and narrative data gathered through a combination of different methodological approaches, as described above for the assessment of vulnerability levels in rural Sindh after the flood. From the perspective of practitioners, it represents a useful tool in assessing disaster vulnerability.

The field team constructed such a systematic tool for each of the project villages by building on an already trialled approach in comparable rural settings in West-India, that presented a "… theoretically informed, empirically tested, quantitative vulnerability and capacities index (VCI) (Mustafa et al. 2011, 62). The VCI and its various elements were however modified by the field team to better reflect the situation in rural Sindh and consist of eleven domains that represent the drivers of material and institutional vulnerability as well as the capacities that different households possess (cf. Table 4.1). The elements are weighted differently, accordingly to their overall impact on vulnerability conditions of a household. For instance, the quality of income sources assumes greater importance than educational attainments, or immersion in exploitative dependency relationships contributes significantly to the overall vulnerability of a households. The index is built in such a way that the highest possible index-value is 100, representing the maximum vulnerability. This value can be reduced by subtracting the values for household capacities, such as endowment with productive assets, levels of income diversification, or membership in social networks. This implies that given sufficient capacities, an index-value can well reach end up being negatively. In fact, those households that possess a negative VCI value are those that enjoy relatively high levels of livelihood security, whereas all others have to be seen as belonging to the vulnerable, albeit to differing degrees. An illustration of the realities expressed by different VCI values is provided in Box 4.1.

**Table 4.1: Elements of the Vulnerability and Capacities Index for rural Sindh**

| | A composite vulnerabilities and capacities index for the household level in rural Sindh | Vulnerability | Capacity |
|---|---|---|---|
| | ***Material vulnerability*** | **50** | |
| 1 | **Income source:** start value<br>• Start value represents 100% dependency on a local level productive asset (for example, fisheries, land, small shops).<br>• Add 2 to the score if the income sources are unstable or have been lost during flood (for example, daily labour).<br>• Subtract 2 if the local income sources are stable and insensitive to local hazard.<br>• Lower score by 1 for each additional income source reported. | 12<br><br><br>+2 | <br><br><br><br>-2<br>-1 per |
| 2 | **Educational attainment:** start value<br>• Start value represents no member of the household being literate.<br>• Lower score by 1 for every 5 years of schooling of the two most educated male household members.<br>• Lower score by 2 for each female member's 5 years of schooling. | 5 | <br><br>-1 per<br>-2 per |
| 3 | **Assets:** start value<br>• Start value represents no immediately fungible assets (e.g. farm implements, livestock, jewellery, savings, household items).<br>• Lower score by 1 for possession of pukka house, income-generating tools, and small livestock, boat/fishing net, by 3 for cow, buffalo<br>• Add 2 for loss of income-generating tools, livestock, boat/fishing net, house<br>• Add 2 for lack of fresh water supply | 8<br><br><br><br>+2<br>+2 | <br><br><br>-1, or-2, or-3 per<br><br> |
| 4 | **Exposure:** start value<br>• Start value represents location in high likelihood impact area relative to the prime hazard (i.e. flood/drought area)<br>• Lower the score by 1 for every level of decreased impact likelihood between household location and high impact likelihood area<br>• Lower score by 1 for each instance of hazard mitigation (e.g. building of a house on higher plinth for floods). | 4 | <br><br>-1 per<br><br>-1 per |
| 5 | **Dependency relationships**<br>• Start value represents conditions of bonded labour/immersion in exploitative sharecropping systems<br>• Add 3 when enduringly indebted to wholesalers for agricultural inputs or to shopkeepers for basic foodstuffs, without capacity to repay<br>• Lower by 12 for those who are not in bonded labour relations | 12<br><br><br>+3 | <br><br><br><br>-12 |
| | ***Institutional vulnerability*** | **50** | |
| 6 | **Social networks:** start value<br>• Start value represents no memberships in ethnic, caste, professional, or religious organisations.<br>• Lower score by 1 for each organisation a household member belongs to<br>• Lower score by 1 for immersion in neighbourhood self help networks<br>• For each CBO that has provided assistance in the past, lower the score by 1 | 10 | <br><br>-1 per<br>-1 per<br>-1 per |
| 7 | **Extra-local kinship ties:** start value<br>• Start value represents no extra local kinship ties.<br>• Lower score by 2 for instance when extra-local family member provided refuge<br>• Lower score by 2 for instance when extra-local family member provided material assistance | 5 | <br><br>-2 per<br>-1 per |
| 8 | **Infrastructure:** start value<br>• Start value represents lack of access to electricity, roads and healthcare.<br>• Lower score by 4 if household located near access to a sealed, all-weather road<br>• Lower score by 2 if household located near a seasonal road.<br>• Lower score by 4 if household can access a local medical facility.<br>• Lower score by 2 if household has access to electricity. | 16 | <br><br>-4 or<br>-2<br>-4<br>-2 |
| 9 | **Warning systems:** start value<br>• Start value represents lack of a warning system, or warning system that the household is not aware of or does not trust.<br>• Lower score by 4 if warning system exists and is trusted. | 4 | <br><br><br>-4 |
| 10 | **Earning members in a household:** start value<br>• Start value represents a household consisting of only one earning member.<br>• Add 5 to score if single-parent-headed household.<br>• Lower score by 1 for every additional earning member.<br>• Lower score by 1 for household dependency rate higher than 20% | 5<br><br>+5 | <br><br><br>-1 per<br>-1 |
| 11 | **Membership of disadvantaged lower caste, religious or ethnic minority** | +5 | |
| | **Total vulnerability score - Total capacity score** | ------ | ------ |
| | **Combined vulnerability and capacity score** | | |
| | **Highest possible vulnerability and capacity score** | 100 | |

Source: modified for rural Sindh by the assessment team after Mustafa et al., 2011

Looking at the index-values for the entire household sample depicted in Fig. 4.1, the problems encountered by most become rather obvious immediately. Levels of vulnerability are consistently high throughout the sample, and out of all interviewees in the eight villages only four showed negative VCI values and can be categorised as secure. Capacities fluctuate enormously, but tend to remain very low. Negative VCI values mostly relate to households that managed to maintain larger numbers of livestock, a finding that corresponds to earlier research on flood hazard in Pakistan where it was found that livestock represents a key asset for recovery in the aftermath of disaster (Mustafa 1998). Overall, the values for a majority in the sample fluctuate between 60 and 85, indicating consistently high levels of vulnerability and serious lack of sufficient capacities throughout (cf. Fig 4.2).

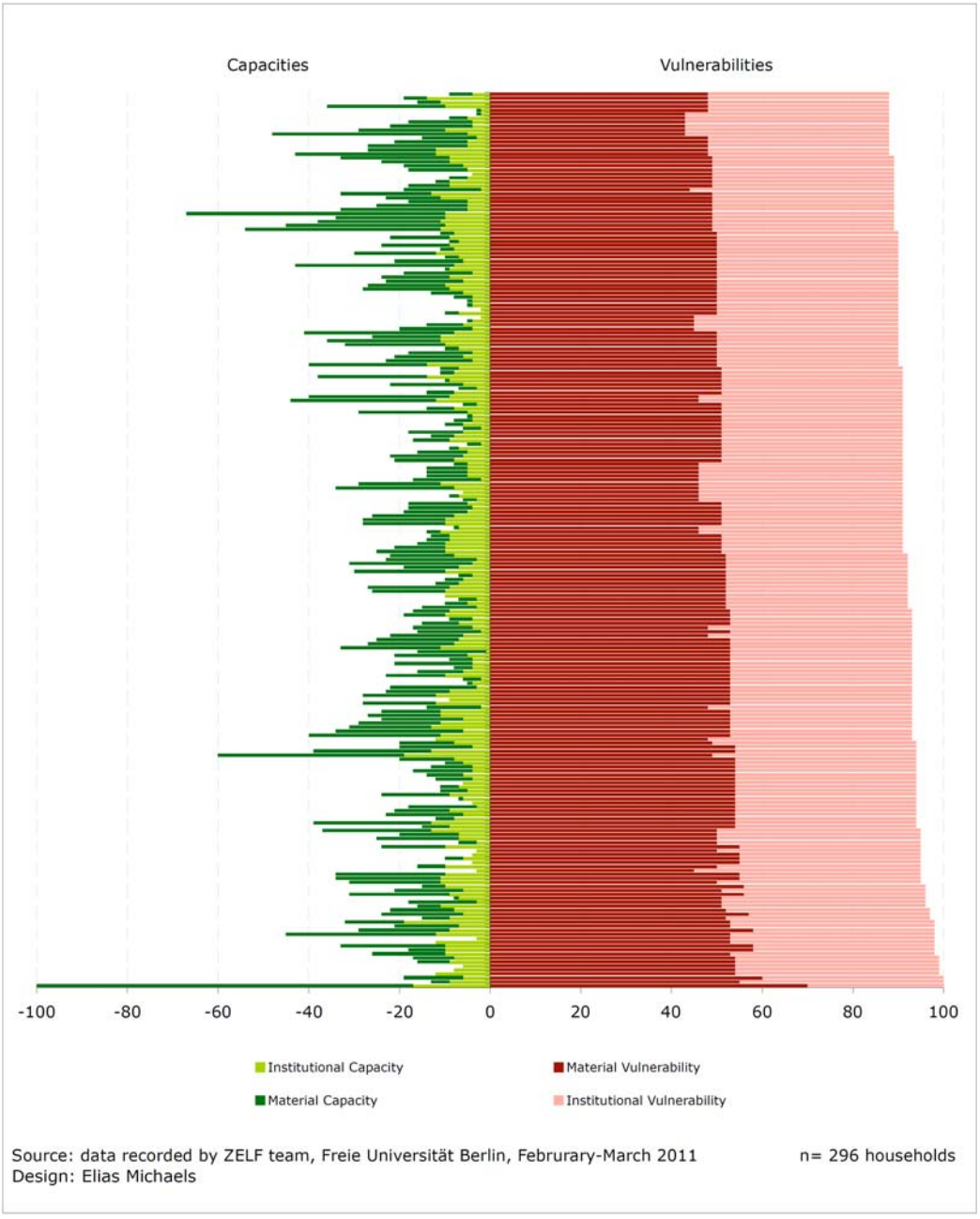



**Fig. 4.1: VCI values for the household sample interviewed in eight villages**

A major finding of the assessment thus clearly points to the fact that a vast majority of households across villages and districts has to endure very high degrees of livelihood insecurity that have increased significantly after the flood event. Especially small farmers and landless sharecroppers who lost their livestock and the summer crop were identified as particularly vulnerable and represent an important beneficiary group for targeted livelihood interventions.

**Box 1: Realities behind numbers. Household representations of different VCI values**

VCI value -4: household security through regularity of income

M. Khan is a retired army person with multiple income sources in Ahmed Raju, Badin. Most important is the regular pension, which allowed him to invest in the husbandry of goats and agricultural land. His possessions make him an influential person, the fact of which is represented in his position as the vice-president of the village council.

VCI value 53: animal husbandry keeps the household afloat

M. Varoo is a sharecropper without own land in Ahmed Sorjho, Thatta. All household members help in the cultivation, and the women contribute to the household income through tailoring. In the flood they lost their house and two cows and buffaloes plus a wooden cart, but they managed to save three buffaloes and two cows still. Today, these animals represent their major assets which keep the household afloat. However, with the autumn season destroyed and not being able to start cultivation in the spring season, they were forced to take on larger debts which increased dependency to their landlord. Also, M. Varoo still worries about how he will be able to manage the rebuilding of shelter for his eight-headed household.

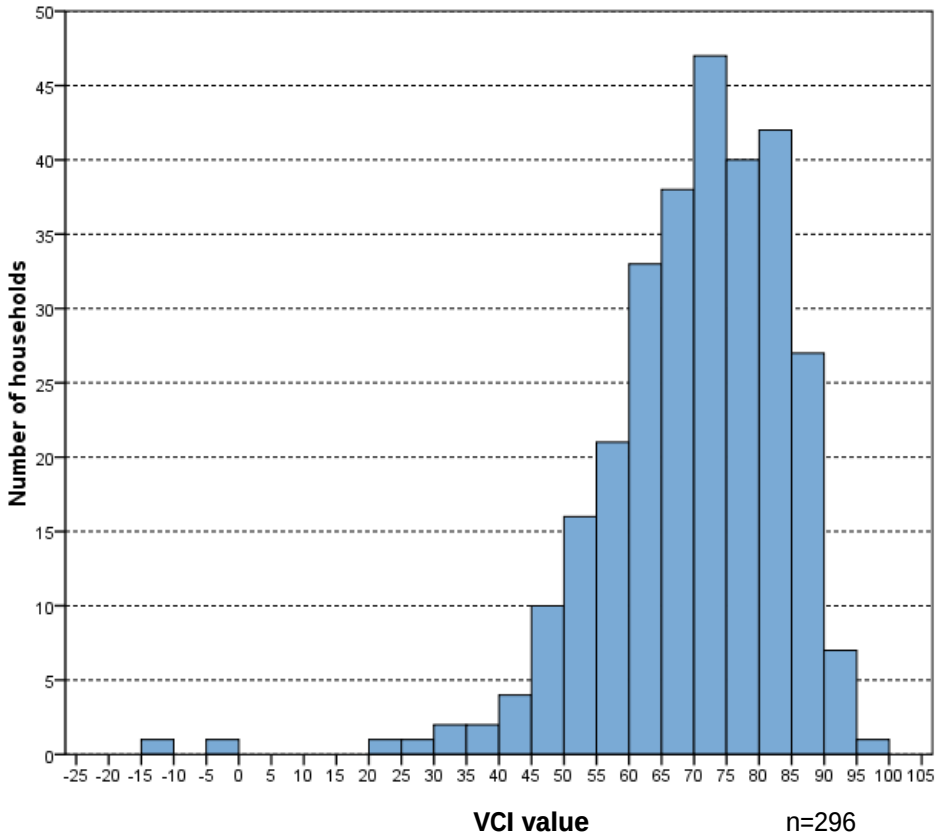
VCI value 91: the fate of the most vulnerable

Didar Qambrani is a bonded labourer on two acres in the village Mehrab Qambrani in Dadu. Before the flood he was able to manage his livelihoods by virtue of his one buffalo and five goats and his donkey plus wooden cart that allowed him to compensate for his meagre share of the harvest in his sharecropping arrangement. However, in the flood he lost all of his productive assets and went into high debts to both his landlord and the donkey cart seller whom he still owed money for the wooden cart he used to transport goods for others. Now he lives in a tent with his wife and three children, and the only income he makes is from occasional wage labour in the urban bazaar of the nearby road town Kakar.

Differences in individual situations inside and between villages are described in the village profiles provided in chapter five of this report. Explanations for the differences encountered can be found when looking at the composition of each index-value, which also points to the virtues of working with a quantified vulnerability index to inform development practice (cf. Mustafa et al. 2011):

- The vulnerability dimensions of the VCI give direction for interventions aimed at strengthening household capacities
- The VCI represents a tool for comparative analysis and makes households and villages comparable

- The VCI provides a measure of inter- and intra-village differences and could provide direction for targeting households
- The VCI can increase the efficiency and accuracy of risk analysis in the context of disaster risk reduction




Note that the two most secure households with negative values of -66 and -266 respectively have been omitted in the illustration for reasons of better readability.

Source: data recorded by ZELF team, Freie Univesität Berlin. February-March 2011

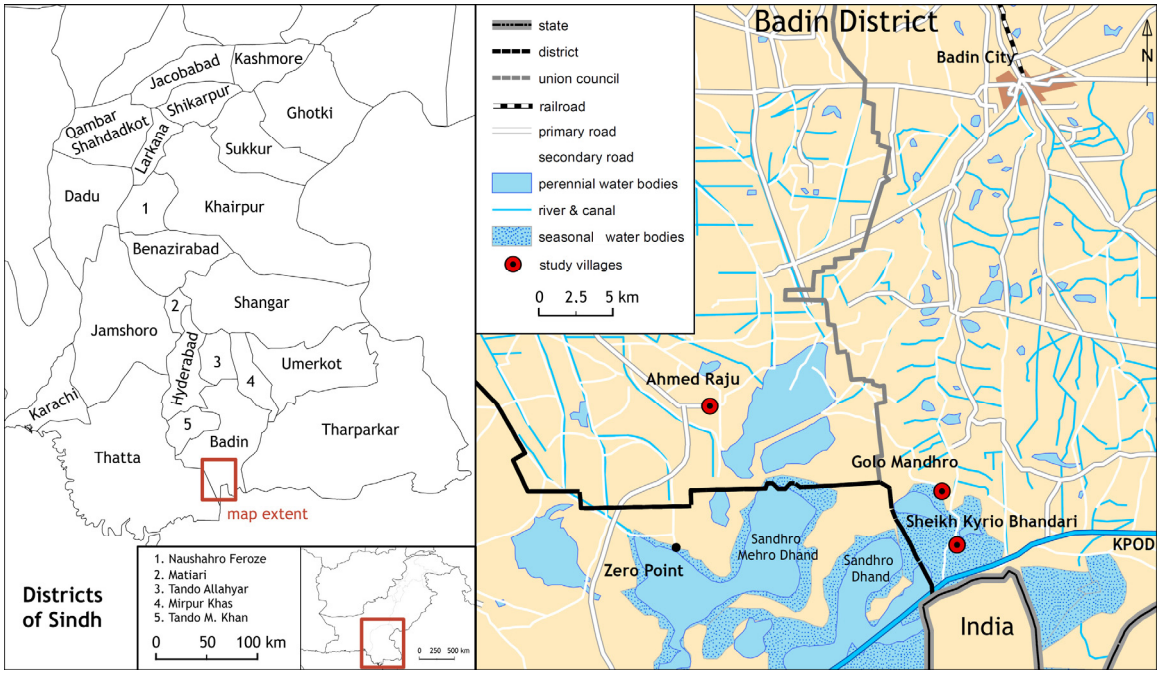
**Fig. 4.2: Distribution of VCI values in the household sample of eight villages**

The assessment of household vulnerability in the selected villages of interior Sindh thus went a long way to fill the knowledge gap that exists when dealing with rural livelihoods in the flood affected areas of Southern Pakistan. In fact, the assessment addressed a major shortcoming identified recently: "There have been no systematic vulnerability assessments in Pakistan, except some piecemeal ones undertaken by a few NGOs. The need is for there to be more systematic vulnerability assessments using some of the insights from recent literature in vulnerability assessment, e.g. attention to diversity of livelihoods and people's access to survivable infrastructure and social capital" (Mustafa and Wrathall 2011, 80). This need, we believe, was fulfilled to a high degree by the assessment mission.

# 5 Post-disaster assessment – districts and villages in Sindh

## 5.1 Badin – a disaster-prone area exposed to multiple risks

The three villages in Badin (Ahmed Raju, Golo Mandhro, Sheikh Kiryo Bhandari) are all located in the in the southern part of the Badin District, a swampy waterlogged area in vicinity to the LBOD/KPOD and close to the Indian border and the Rann of Kutch (Fig. 5.1). This fact poses a whole bundle of problems resulating in recurrent inundation with sea water that threatens agricultural activities in the region and already has led to unrecoverable land losses for all surveyed villages in the past. The amphibious environment is threatening, and the naturacl intrusion of ocean and river water is superimposed by man-made structures such as drains and canals that amplify the run-off and intrusion of water causing wide-scale inundation.



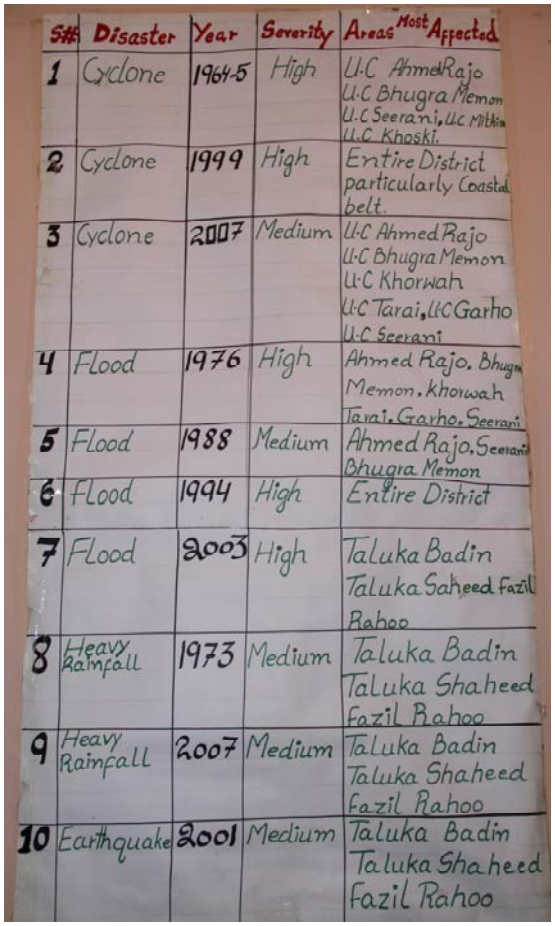

Data source: Topographical Map 1:250,000, sheet 40D, Survey of Pakistan 2004. Design: Marc Transfeld and Martin Enzner

**Fig. 5.1: Location of the assessed villages within Sindh and Badin District**

The area is disaster-prone and natural hazards such as floods, cyclones and heavy rainfall occurred frequently in the past (cf. Fig.5.2). In addition to the exposure to regular natural hazards the amphibious surrounding poses a variety of challenges that require constant adaptation of the resident population. A prominent livelihood strategy in the area is the engagement in fishery, pursued by about 20% of the surveyed households in Badin. Fishery is carried out in irrigation canals, as well as in ponds, lakes and the open sea. Marketing of all fish to middlemen (*baypari*) or directly to wholesale traders takes place at the so-called Zero Point, located at the shore of the *Sandhro Mehro Dhand* (cf. Fig.5.1).

The multiple environmental challenges are even amplified by man-made encroachments and technocratic systems of water control in the Indus Basin Irrigation System (IBIS, cf. Mustafa 1998, 2002, 2007; Mustafa and Wrathall 2011) in which the construction of the Left Bank Outfall Drain (LBOD) and the tidal link of the Kadhan Pateji Outfall Drain (KPOD) in 1986 features as an important element. These major World Bank financed infrastructure projects drain surplus water from the fertile regions of upper Sindh to increase agricultural production there but negatively affect those areas that are located close to the Indus Delta.

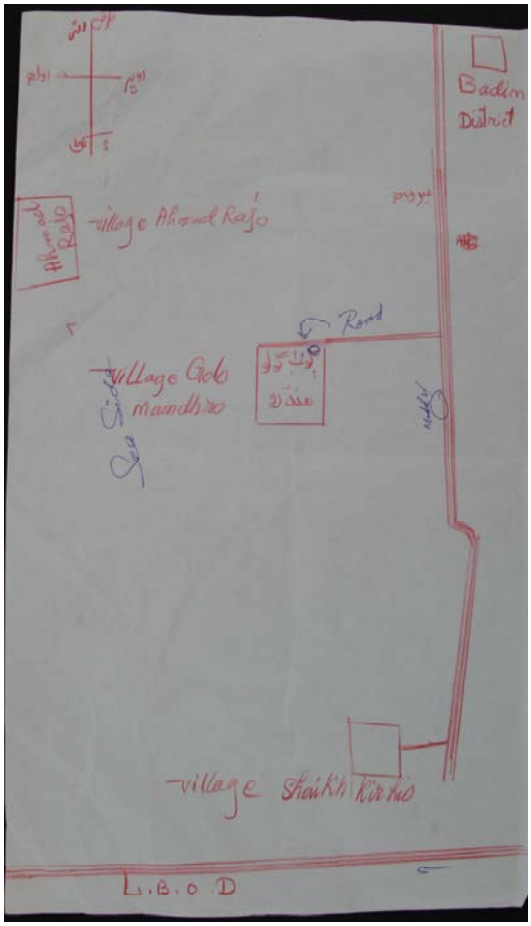
Here, land and livestock are lost, agriculture is made virtually impossible, and waterlogging and salinisation are serious problems everywhere close to the Indus Delta.



| S# | Disaster | Year | Severity | Areas Most Affected |
|---|---|---|---|---|
| 1 | Cyclone | 1964-5 | High | U.C Ahmed Rajo U.C Bhugra Memon U.C Seerani, UC Mithi U.C Khoski. |
| 2 | Cyclone | 1999 | High | Entire District particularly Coastal belt. |
| 3 | Cyclone | 2007 | Medium | U.C Ahmed Rajo U.C Bhugra Memon U.C Khorwah U.C Tarai, UC Garho U.C Seerani |
| 4 | Flood | 1976 | High | Ahmed Rajo. Bhugra Memon. khorwah Tarai. Garho. Seerani |
| 5 | Flood | 1988 | Medium | Ahmed Rajo. Seerani Bhugra Memon |
| 6 | Flood | 1994 | High | Entire District |
| 7 | Flood | 2003 | High | Taluka Badin Taluka Saheed Fazil Rahoo |
| 8 | Heavy Rainfall | 1973 | Medium | Taluka Badin Taluka Shaheed Fazil Rahoo |
| 9 | Heavy Rainfall | 2007 | Medium | Taluka Badin Taluka Shaheed Fazil Rahoo |
| 10 | Earthquake | 2001 | Medium | Taluka Badin Taluka Shaheed Fazil Rahoo |

Source: board displayed in PRCS Office Badin

**Fig. 5.2: A history of natural hazards in Badin District**




Source: sketch drawn by M. Musroof, teacher in Golo Mandhro

**Fig. 5.3: Location of the three villages in relation to a probable site of a protective bund safeguarding agriculture from sea-water inundation**

The natural tidal ranges recurrently lead to the inundation with ocean water, and the effects of major cyclones that occurred in 1999 and 2003 have been exacerbated by the canal system and are felt by the surveyed village population until today.

As such it comes as no surprise that the KPOD/LBOD-System is perceived by villagers to be the major threat to their settlements.

The following brief village profiles give an overview about the differing socio-economic and environmental situations in each site. The initial assessments of these situations form the basis on which the implications for possible livelihood interventions are derived.

### 5.1.1 Sheikh Kiryo Bhandari – the LBOD/KPOD-problem, waterlogging and loss of agriculture

The village of Sheikh Kiryo Bhandari (ca. 35 households) is part of a cluster of nine small hamlets (cf. Fig. 5.4) with a population of about 7,000 people and made up by members of different social groups, i.e. the Sheikh (traders), Mallah (fisherfolk), and Mandhro (agriculturalists). However, for a majority of villagers the main profession is fishing (cf. Fig. 5.5). Five hamlets of the village cluster are inhabited by people belonging to the group of Mallah, three by people belonging to the Sheikh, and one hamlet by people that belong to the Mandhro.

Sheikh Kiryo Bhandari is located only three kilometres south of Golo Mandhro, but the situation appears to be quite different. In terms of vulnerability to poverty and disaster, this village is certainly the most affected of the three surveyed locations in Badin. In Sheikh Kiryo Bhandari only few households are not severely threatened by high levels of vulnerability. This can be inferred from the fact that not a single household was able to fully recover from the 1999 cyclone. For the majority who depend on income derived from fishing alone the complete loss of fishing nets and boats presented a serious and long-lasting problem. Until today, twelve years after the disaster, people have not been able to re-equip themselves with basic tools of their profession. About 100 boats were lost in the cyclone, and today the entire village cluster is in possession of only five functioning boats.

Accordingly, some households strived to supplement fishing by engaging in sharecropping agreements with landed people, but there are only very few households in the village that managed to acquire own agricultural land. In those rare cases where that happened, the immediate vicinity of the hamlet to the Kadhan Pateji Outfall Drain (KPOD) exposes land cultivation to incalculable risks. In fact, before the construction of the Left Bank Outfall Drain (LBOD) and KPOD[3] canal drainages many villagers reportedly had access to land, which afterwards was permanently lost. This threat of diminishing assets exists until this day, and a quote from a *Mallah* headman summarises the adverse situation in clear terms: "Our biggest need is protection from the LBOD/KPOD. Sanitation is not an issue". This

[3] The drainage canals were introduced and built with international support since the 1980s in order to safeguard the agricultural bread basket of interior Sindh. The drainage canals reduced salinification and waterlogging in those areas in the northern parts while the people living close to the tail-end of KPOD and LBOD suffer from regular inundation. They have to pay the price for the well-being of others.

means that the biggest hazard people face stems from the mega-development project which is responsible for waterlogging their fields, and which leads to the frequent flood situations with ocean water and destroyed their drinkable sweet water resources. When disasters strike (i.e. the 1999 and 2003 cyclones), these problems are exacerbated to a degree that makes agricultural activities virtually impossible in large areas of former village lands. Where the land is still cultivable, it yields only one harvest.

The village is connected to the district capital by link road, which was partly destroyed prior to the assessment. Due to the very bad road situation, access to health services in


Data sources: GeoEye satellite image of January 25 and February 2, 2010 (Google Earth).
Design: Martin Enzner

**Fig. 5.4: The setting of Sheikh Kiryo Bhandari**

Badin City gets even more difficult. There is no provision of electricity or fresh drinking water. Drinking water can only be extracted from the canal, and this brackish and contaminated water is the cause for widespread diseases affecting the population. The nearby canal built in 1965 by local landowners carries water only from June until November because cities located upstream extract too much water. The only school in the village is a primary school, which, after a long time of the teacher's absence, is now in use again. For secondary education people have to travel to Golo Mandro three kilometers

away or even further, to Badin city. Five shops are located in the villages itself, but there is no local bazaar where people could market their surplus or buy basic goods.

**Box 2: One household - two heads: merging households as a livelihood strategy**

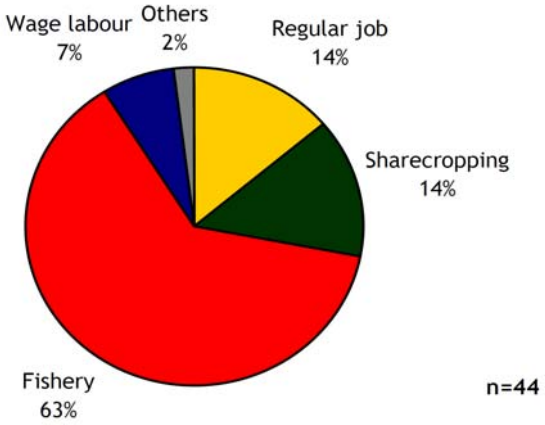
The household of Rehan Shah (name changed by respondent's request) consists of 14 persons. It is composed of two brothers and their immediate families, and both brothers jointly act as head of houesehold. Both of them have an income and contribute to the household wellbeing. Rehan Shah is employed as a teacher by the government and receives a monthly salary of 15,000 Rupees. In his function as a teacher he is organized as a member in the Government School Teachers Association. Jheman, the teachers' younger brother is a retired builder who worked for the government too. On retirement he received a compensation of 50,000 Rupees and receives a monthly pension of 9000 Rs. He invested the 50,000 Rs. in setting up his small shop, which now contributes to the households' income with approximately 3000 Rs. per month. The exceptional status within the village regarding his wealth status is expressed by the fact that people can obtain food on credit in his shop, and there are currently about 50 people with outstanding debt. Some people balance their debts on a monthly basis, some seasonally after the rabi-harvest. Repayment in kind is tolerated too. The products of his shop are purchased wholesale in Badin and transported to Sheikh Kiryo Bhandari via donkey carts. The household has been severely affected by seawater inundation, especially in 2008 when their field was affected and is now salinated and lost to cultivation. Additionally the two brothers used to own four buffaloes, four cows and four goats. Except of two buffaloes all the animals drowned. One of the remaining buffaloes is giving five liters of milk a day, half of which is sold. All those effects of the seasonal flood appear to be extremely grave and they probably would have ruined other households in the village. Secure government salaries and pensions kept this household afloat even during crisis. However, the dire health situation in the village also affected this rather affluent household when the wife of one brother died of Hepatitis B. The children too suffer from frequent stomach and skin diseases because of fresh-water scarcity.

The hamlets are represented by a respective headman, who is responsible for solving disputes within the village in cooperation with the religious authority, the local Imam.

Several NGOs are present in Sheikh Kiryo Bhandari. The Pakistan Fisherfolk Forum (PFF) serves as a representative of the otherwise neglected interests of the fisherfolk in entire Sindh province and aims to help people in getting a fairer share for their product when selling to the local contractor (*tekedar*). In addition, the PFF has proved to be effective in emergency aid in case of disasters, providing the local community with basic needs such as food. The National Rural Support Programme (NRSP) has formed village-based groups, providing for instance vocational training for women.

Most of the people living in Sheikh Kiriyo Bhandari are involved fishing. The second main occupation after fishing is agriculture, involving 13.64% of the interviewed households. Being engaged in agriculture can have different meanings: hardly anybody owns his own

land, some people grow crops on rented land and others only gain their income with harvesting on other peoples land. Often a combination of fishing and sharecropping is employed. Additionaly some people catch crabs or birds as an income source. Only a few people in Sheikh Kiriyo Bhandari work for the government, thus receiving a monthly and stable payment.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.5: Occupational structure of households in Sheikh Kiryo Bhandari**

Agricultural practices are based on rain-fed cultivation in an environment where salinisation affects the soil quality. Especially the fields near the ocean suffer from heavy salinisation and are not cultivable anymore. Due to the shortage of irrigation water, crops on fertile fields can only be grown during the *kharif* season, mostly rice and wheat. During *rabi* season people migrate from the village seeking wage labour in construction or as load-carriers in urban areas. Entire households travel to other villages in order to earn their money by harvesting other peoples' land on a daily wage basis. Additional sharecropping systems lead people to work on fields belonging to absent landowners. Those sharecroppers have to deliver twelve bags of harvested rice to the landowner and can keep only every thirteenth bag for themselves. Another frequent sharecropping practice relates to landowners that hire agricultural workers and pay them in kind. Workers keep 25% of the harvest but have to cover the expenses for agricultural inputs and mechanic equipment, such as the use of tractors. Households working under such arrangement are more vulnerable to crop hazards since their initial investments for seeds, fertilizer and field preparation are at their own risk.

**Box 3: The household of Ali Bux – adapting to permanent hazard**

Ali Bux (35) lives with his mother (60), his father (80), his wife (40), three sons (17, 13, 4) and one daughter (15) in a small house that he built after the old one was destroyed by the cyclone in 1999. He was not able to do this until four years ago, implying that it took him almost eight years to save the amount of money needed for the reconstruction. In the meantime he and his family had to live in a makeshift hut made of straw and plastic. Together with one carpenter, a friend of him from the Mallah part of Sheikh Kiryo Bhandari, he worked on the house for one full month. It is made of wood covered by a layer of mud and a wooden roof covered with straw. The house consists of just one room. The total amount of 50,000 Rs for the reconstruction was compensated by selling two water buffaloes (32,000 Rs) and one full harvest. Besides the house he lost six cows and four goats. He had been warned prior to the cyclone and was able to rescue his family and parts of his livestock by escaping to higher elevations farer from the coast. Ali Bux owns six acres of fertile land, of which only three are still cultivatable after the flood. He grows rice on this land, which is worth approximately 15,000 Rs per year. Currently he and two of his sons generate their income by catching fish only. Since they do not own a boat, they have to swim as far as possible into the sea to set up their nets. The catch is then marketed in Badin, sometimes he even gathers other fisherfolk to sell the fish in Karachi. Often they work as wage labourers on other people's fields during harvesting time. The mother of Ali Bux got sick recently and had to be treated in a private hospital in Badin. The treatment cost the family 40,000 Rs, which forced them to sell the remainder of their livestock, for which they got 30,000 Rs. As this was not sufficient for the required treatment he borrowed a cow from a friend and sold it as well. Other community members pooled some cash to help him with the expenses, pointing at the high level of solidarity present among caste members. His sister is now staying in Badin permanently to take care for their mother. Ali Bux has a bank account, which he created because of the government's promise of money for the flood affected people, but he never received any funds. Instead, relief actions in form of medicine and food supply were carried out by the NRSP, the young Shidis and PRCS. Also the PFF helped the family, an organisation of which Ali Bux himself is a member.

The household of Ali Bux is just one example for the dire livelihood situation in the village, showing the extreme vulnerability to disaster. Before the cyclone Ali Bux and his family could be described as a rather stable household, owning land and some livestock. With the loss of their assets and increasing waterlogging on their fields their economic basis all but disappeared, making them even more susceptible to future hazards.

#### 5.1.1.1 Lasting cyclone impacts and fishing practices

The cyclone of 1999 had up to now the most severe impact on the village of Sheikh Kiryo Bhandari. Due to its effects almost all houses of the village were destroyed and only a little livestock survived. According to the statements of the villagers, there are now about fifteen buffaloes and 60 cows left in the village, whereas before the cyclone the hamlets possessed of about 150 buffaloes and 400-500 cows. As was already the case for Ahmed Raju, the fisherfolk are especially affected by the hazards. They lost most of their boats and were not in the capacity to restock during the last decade. The loss of essential fishing

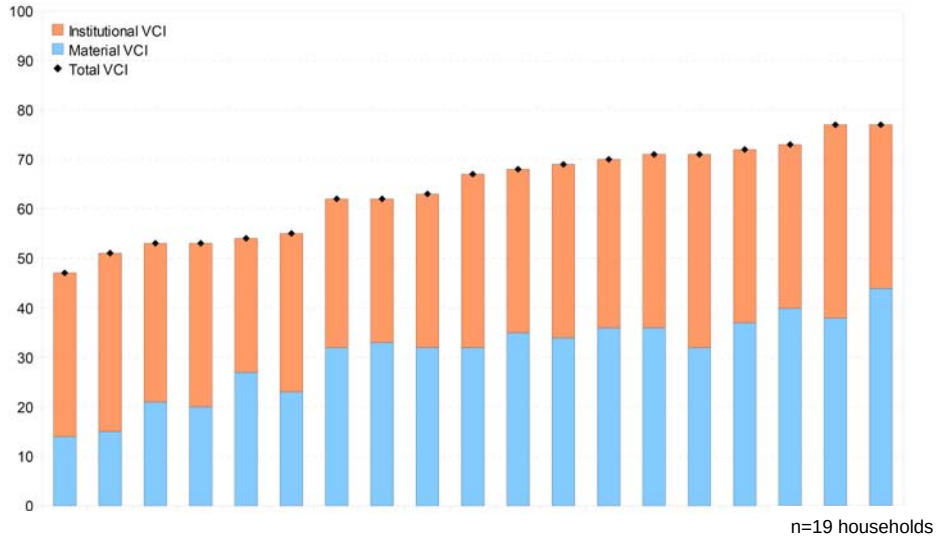
equipment makes it hard for people to execute their profession. This is why many amongst the fisherfolk engage in risky activities when they are forced to swim out to the deeper sea for fixing and returning their net. The main fishing season is restricted to four months between June and September. Small fish are sold in the village, but mostly the catch is taken to middlemen (*baypari*) dictating market prices at the so-called "zero point". There also exists an adverse contract system which forces Sheikhs and Mallahs to share a significant part of their catch with a few powerful individuals holding the fishing licences and claiming a large share of the share marketed at zero point. This latter problem has been partly alleviated by the activities of the PFF, which through extensive lobbying managed to establish the distribution of fishing licenses at affordable prices directly to the Fisherfolk who can now cut out middlemen and market their fish directly to nearby villages and urban bazaars. In peak seasons groups of fishing households sometimes pool their product and resources to market their catch in Karachi where the best prices can be fetched.

Not only the fishermen, but also the farmers of Sheikh Kiryo Bhandari still have not been able to overcome the damages and losses inflicted to them by the cyclone in 1999. Virtually all interviewed households have not yet been able to restock their lost belongings and have to rely on limited and erratic incomes. Exposure to regular hazards affecting the village almost every year requires constant adaptation.

#### 5.1.1.2 Permanent exposure to natural and man-made hazards

The example of Sheikh Kiryo Bhandari makes clear that in the southern part of Badin District people are required to develop the capacity that enables them to permanently adapt to hazardous threats in an amphibious environment. These threats are posed by a combination of man-made megastructures and natural disasters such as the LBOD/KPOD system which is regularly overflowing with the tidal ranges of the sea and that is directly responsible for the extremely high levels of inundation with ocean water, waterlogging and salinisation.

The VCI values (cf. Fig. 5.6) are continuously high in the entire village, with a median of 67 which is the highest value of all examined villages in Badin (i.e. Ahmed Raju 58, Golo Mandhro 64). The reason is the comparatively higher exposition to various hazards. Because of its vicinity to the ocean salination and floodings pose an even bigger threat than in the other villages. Those households with a comparatively smaller VCI value have gained the position by their capacity to keep or restock livestock in the frequent floodings that affected the village in the past. Institutionally, however, the VCI values fare consistently high mainly because of the bad infrastructure in the village with lack of road access, brackish water supply, and lack of electricity.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.6: Total VCI scores of households surveyed in Sheikh Kiryo Bhandari**

#### 5.1.1.3 Implications for development practice

The layers of vulnerability to which the villagers are exposed are complex and manifold. Deterioration of safe drinking water availability poses severe health risks. Today, people rely on polluted water from a small canal and there is need for establishing access to safe fresh-water supply. The easiest option would be the quick supply of a sufficient number of handpumps on a household basis.

The loss of essential fishing equipment makes it hard for people to execute their profession, and support in restocking with boats and fishing nets is essential to help increase their catch. This is especially important in view of the fact that the fisherfolk in Badin are themselves exposed to exploitation by middlemen (*baypari*) that can dictate market prices.

Source: photograph © Julia Zill, February 15, 2011

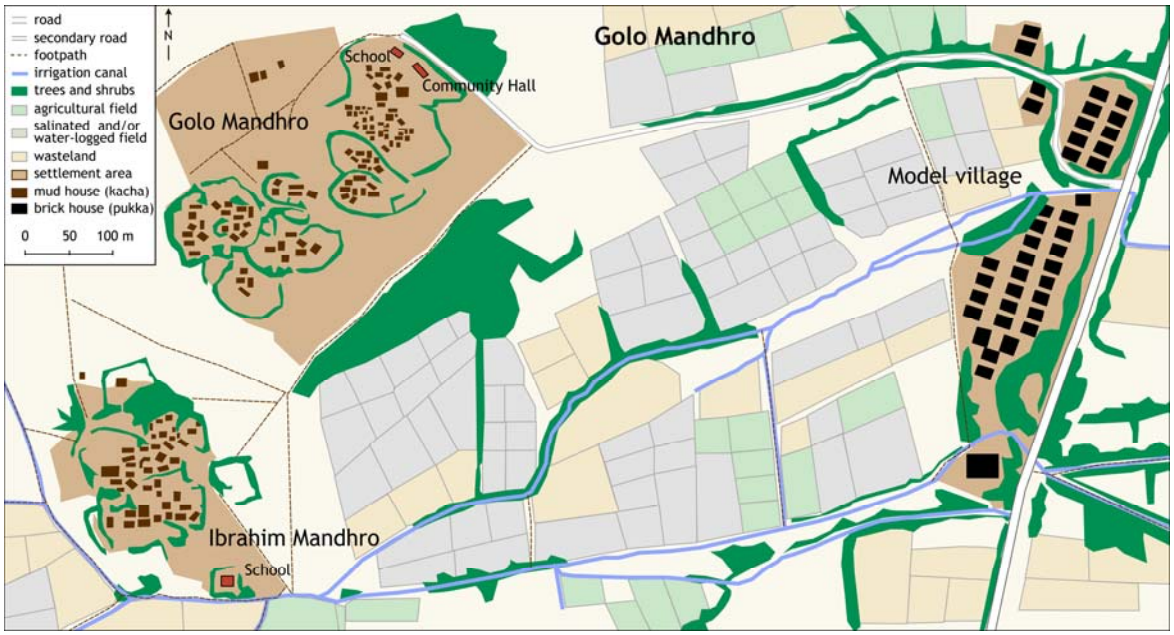
**Fig. 5.7: Access to brackish drinking water from an open pond in Sheikh Kiryo Bhandari**

Unlike Golo Mandhro, the village of Sheikh Kiryo Bhandari so far has no protective bund to protect their already limited agricultural fields. The above mentioned suggestion by villagers to construct a large bund as disaster risk management strategy that connects all three surveyed villages in Badin by use of local labour force should be taken into consideration. This would not only help protecting

agriculture, but also generate much needed cash that could stimulate growth and increase food security in the community. In addition, establishing access to institutional credit at fair interest rates would help decrease dependence on exploitative loan givers.

### 5.1.2 Golo Mandhro – an agricultural village exposed to seasonal seawater intrusion

Golo Mandhro is located in the south-west of Badin District as part of the Union Council Bhugra Memon. The distance to Badin city is about 25 km. Golo Mandhro counts approximately 1,000 people living in about 175 houses. The village is dominated by agriculture of rice, cotton and wheat and inhabited by two different farming groups, the name-giving Mandhro and a smaller number of households from the group of *Sodhro*. The village consists of three parts: The old part which contains appr. 75 houses, Ibrahim Mandhro which is just next to the old part and consists of approx. 25 houses and the 'model village' constructed in 2003 (cf. Fig. 5.8). The housing scheme was implemented by the former government of Nawaz Sharif and consists of 30 concrete buildings that never have been accepted by villagers because of their unadapted building materials that are not suitable for the high summer temperatures in the area. Today, the 'model village' harbours only four




Data Source: GeoEye satellite image of February 2, 2010 (Google Earth). Design: Marc Transfeld

**Fig. 5.8: Golo Mandhro - village setting with community hamlets and new housing scheme**

households who lost their homes in a fire a few years ago.

There are several infrastructural problems that impact on the daily life of the village. The road connection is not maintained and in a very bad condition and especially during the frequent rainfalls it becomes barely passable for vehicles. The electricity supply network

consists of three overland wires but currently only two are working properly, supplying the village with power for about two to six hours a day (respectively ten to twelve hours in the model village). Access to electricity was given to the village in 2005.

About 20% of the houses in Golo Mandhro are in a very bad condition and in need of improvement that can not be afforded by people on their own. The water supply condition is generally sufficient to cover the basic needs for drinking water, but nevertheless there are problems relating to the non-permanent availability of water for the whole community and the progressive process of salinisation. However, a majority of households own local handpumps that were mostly constructed in 2007. These can be also used by neighbours without own access. Occasionally, water shortage affects the entire village and people need to fetch water at the next accessible pump about four kilometres away. Two shops provide the villagers with the most necessary goods, and shopkeepers represent an important source for short time credits in kind (cf. Box 4). Mobile-network-coverage in the village is very low. There are only a few places with an existing connection which makes communication within and outside the community unreliable. Three village schools provide education up to 8th class. Teachers as respected persons are often asked to solve small disputes among community members. It should be noted, however, that most of the village girls do not attend school at all.

Source: photograph © Narges Lankarani, February 16, 2011

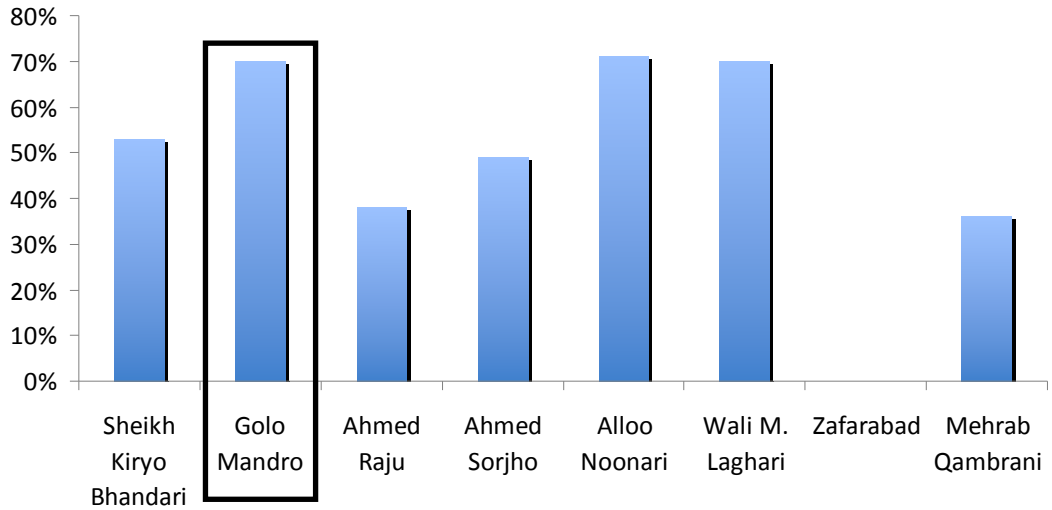
**Fig. 5.9: Adverse road situation in Golo Mandhro**

Income activities in the village are diverse with a majority of households engaged in agriculture (40-50%). Others are employed in government jobs (20-25%) or practise insecure jobs in the private sector, mainly on daily wage basis (20-25%). Most of the households own at least a small piece of land which allows them practicing subsistence farming (cf. Fig. 5.10).

The community has organised itself with the help of the National Rural Support Programme (NRSP) and established two village councils representing men and women to discuss issues of concern, to identify their priorities and to decide on needed infrastructure measures. The most important activity that was implemented by support of the NRSP was a small protective bund to shield agriculture from salt water intrusion. This, however, needs reinforcement, and it has been suggested by villagers that in order to enable sustainable agricultural practices and to improve the handling of crises, i.e. to manage the exposure to flood related risks, a protective bund connecting all three surveyed villages over a length of about 60 km needs to be constructed. These village councils could also function as

facilitating partners for the implementation of livelihood packages provided by the GRC/PRCS.

Social organisation however reflects some more conservative attitudes too, as the women group in Golo Mandhro is headed by a man, the village eldest Mohammed Masroof. Other than that most female members of the community are housewives and do not join public life at all. They do not work outside their houses, and none of the women had ever left the village.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011 n=296

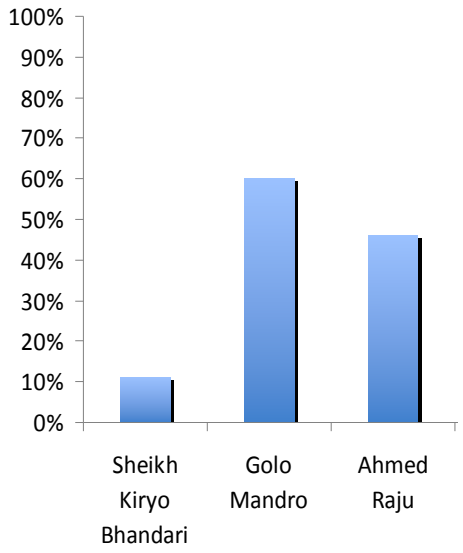
**Fig. 5.10: Proportion of landowning households**

Men and women groups both meet twice a month in order to discuss the most urgent needs of the village and develop ideas and projects for its further development. In the past, the proposals of the two groups have been relatively similar (hand pumps, protection measures to lower the impacts of flood events and salinisation processes caused by oceanic processes, preparation of roads). The groups finance their work through membership fees of 10Rs per month. Furthermore they have the possibility to receive funds from the PPAF (Pakistan Poverty Alleviation Fund) for projects.

Overall, social cohesion among villagers seems to be very high – those with water access share it with neighbours, small credits are provided among community members without involvement of middle-men, and self-help systems exist that enable villagers to afford and to celebrate life cycle events. However, significant challenges and constraints refer to the health situation – most people are not vaccinated against polio and hepatitis and many cases of incidence have been reported. Malaria represents an increasing problem due to the amphibious environment, and diarrhoea, skin diseases, allergies and tuberculosis have been reported as major illnesses affecting people in the village. Water access is still of

mediocre quality – and the regularly interrupted road connection hinders people to access markets and health services.

The difficult situation for villagers is reflected in the levels of credit most households have to take. Levels of indebtedness in Golo Mandhro are the highest among all surveyed villages in Badin District (cf. Fig.5.11). However, unlike in Thatta and especially Dadu District, indebtedness here is not caused by practices of bonded labour.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011 n=92

**Fig. 5.11: Percentage of indebted households**

While the majority of the community was able to cope more or less with the cyclone-induced disaster, the destruction has not been overcome by all during the last decade. Villagers estimated that between 20% and 30% of the households are poverty-affected, mainly those which are female-headed with no support by male labour, and those who do not own land or whose fields have been affected by waterlogging or salinisation. These households lack the capacity for necessary investments to create a basis for productive growth or to restore their housing, and the frequent intrusion of ocean water poses threats to a yielding agriculture. In spite of a growing population the agricultural basis is shrinking. It was estimated by villagers, that every year about five percent of their available agricultural land is lost due to flooding with ocean water.

Agriculture plays a very important role also for people without access to own land, and more than 50% of villagers work as sharecroppers. Only five percent have a second income source. Within *kharif* mainly rice is cultivated, and in *rabi* wheat, tomato, cotton, sunflowers and sugarcane. However, only about 30% of the agricultural land is fertile whereas the remaining 70% are highly salinated. Waterlogging is a huge problem also because a high proportion of the limited cultivable fields are seasonally flooded with seawater.

Some of the cultivated crops are primarily for the market such as cotton and tomatoes. If there is a harvest-surplus other crops might be sold on the market too.

**Box 4: The shopkeeper as major loan-giver in Golo Mandhro**

Source: photograph © Narges Lankarani, February 16, 2011

### Mahmood Arif

Mahmood Arif (30), son of Allah Jurio Mandhro, and his three brothers run the only shop in the village. Mahmood Arif lives with his joint family consisting of 35 members in Ibrahim Mandhro. He did his B.Sc. and MA in Chemistry and Biology in Badin and Hyderabad and came back to work as a teacher in the neighbouring village Bhugra Memon and to help in the shop. The shop was established in 1966 by his father. The entire household depends on the income generated through the shop. Two brothers with a university degree and the father are working as farmers, but they own no land. They also help alternately in the shop.

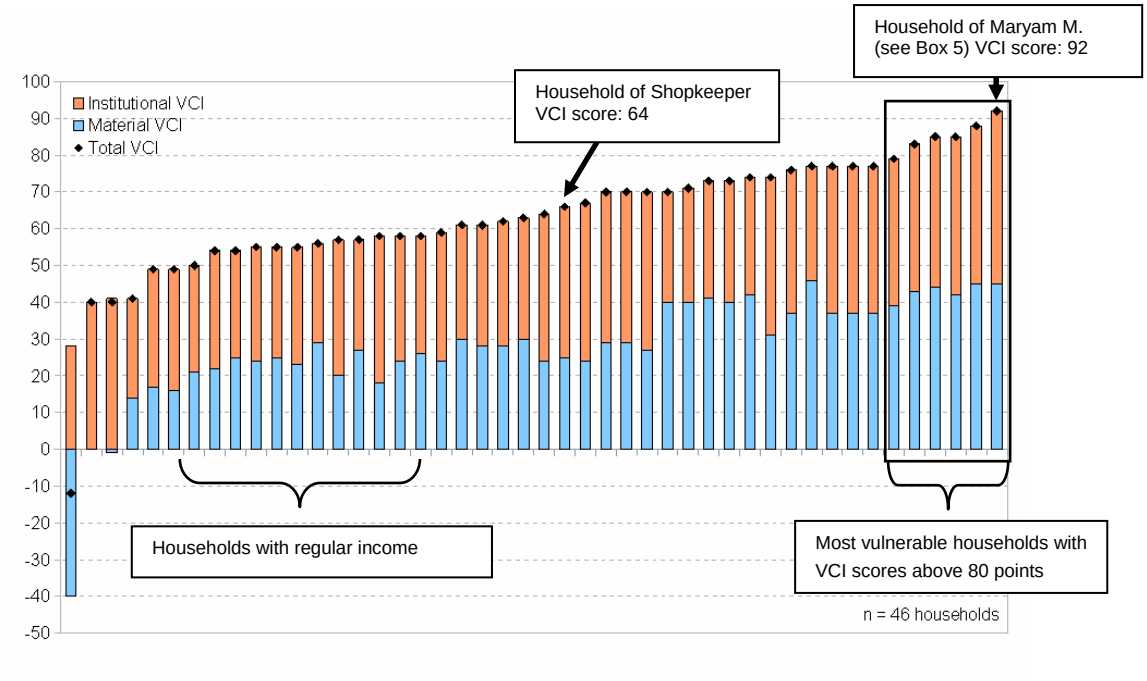
Mahmood Arif is married and has one son and one daughter. The son visits the local primary school. They own two buffaloes, two cows, three goats and one sheep. The household conditions fare well when compared to other people in Golo Mandhro. The rooms are rather spaciously furnished. They have electricity, their own television set and radio. The household built the clay cottages in 1995-2002. However, in 1999 during the great Cyclone disaster and 2003 after the floods all buildings were destroyed. They have lost more than 75% of their agricultural income and 50% of their livestock in the disaster.

The shopkeeper household plays an important role in the credit system of the community's social network. A lot of inhabitants rely on in-kind credits for their daily food requirements and are mostly able to repay their debts after the harvest only. Altogether, the shopkeeper has currently outstanding credits of nearly 200,000 Rs which exemplifies the critical position he assumes in the village's socio-economic system.

The household shows a VCI value of 64. Because of the outstanding credits that presumably will not be repaid fully and due to the large size of the household with many dependents it can be regarded as vulnerable, in spite of their shop. As Mahmood Arif himself put it: "We are already poor. But many other villagers are still poorer".

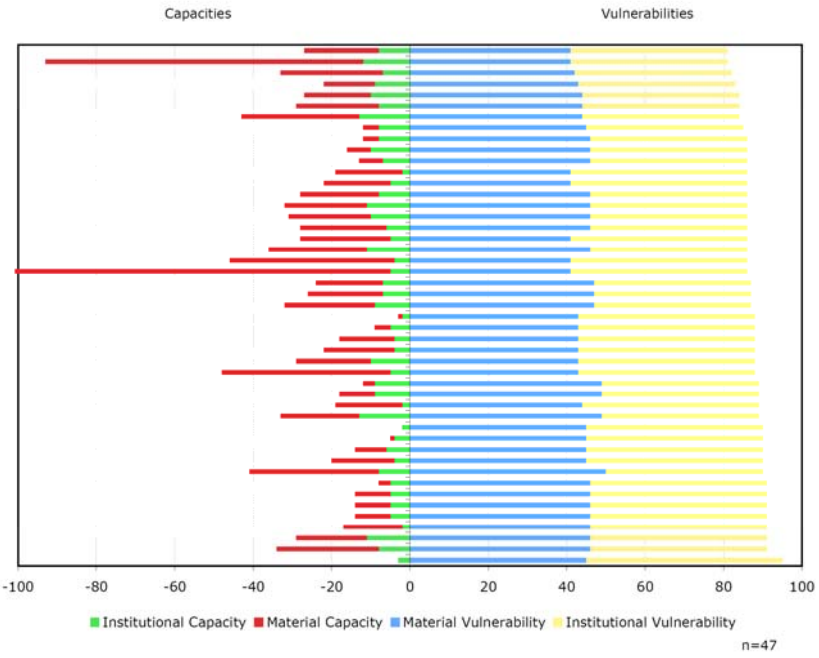
### 5.1.2.1 Levels of vulnerability in Golo Mandhro

In Golo Mandhro 46 of the approx. 175 households were interviewed during the field work (about 26%). Figure 5.12 presents the vulnerability score of each interviewed household.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.12: VCI values for surveyed households in Golo Mandhro**




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.13: VCI values in terms of capacities and vulnerabilities for Golo Mandhro**

The VCI presents an interval of more than 40 VCI values, starting at 40 and ending at 92 for the most vulnerable household (cf. Box 5). Eighty-seven percent of interviewed households have a VCI score above 50 indicating persistently high degrees of vulnerability. Those with regular incomes as teachers or government employees are among the more secure households in the village, whereas the most vulnerable rely on sharecropping without access to own land and livestock as an important distinguishing marker in the degree of vulnerability. Incidentally, those households with larger numbers of large livestock are those showing the greatest capacity in the sample.

**Box 5: The most vulnerable household in Golo Mandhro**

Source: photograph © Narges Lankarani, February 16, 2011

**Maryam Mandhro**

Maryam Mandhro is a 56-years old widow. She represents the most vulnerable household in Golo Mandhro with a VCI value of 92 indicating an almost complete lack of capacities. Maryam lives together with her mother who is 74 years old, her unmarried sister (31) and her unmarried brother (42), named Mohammed Issa. None of them has ever visited a school. They are all unemployed. They own no land, no livestock and have no income source. They own a very little clay cottage (approx. 13m²) where they live together. There is no electricity and their neighbour supports them with drinking water. Maryam has an eye disease but they have no money to supply healthcare. Household members never leave Golo Mandhro. There is no support from NGOs or governmental institutions. The roof of their house is damaged. They can only survive because of support (especially food) from some neighbours.

Source: photograph © Narges Lankarani, February 16, 2011

**Housing situation of Maryam Mandhro**

#### 5.1.2.2 Implications for development practice

The socio-economic and the environmental situation in Golo Mandhro is quite grave and requires some urgent intervention. First of all an efficient and functioning protection bund to stop intrusion of ocean water is necessary. The loss of farming land deprives farmers of subsistence. Both agricultural land and drinking water are affected. Access to all-weather roads is very important in order to reach markets and health facilities.

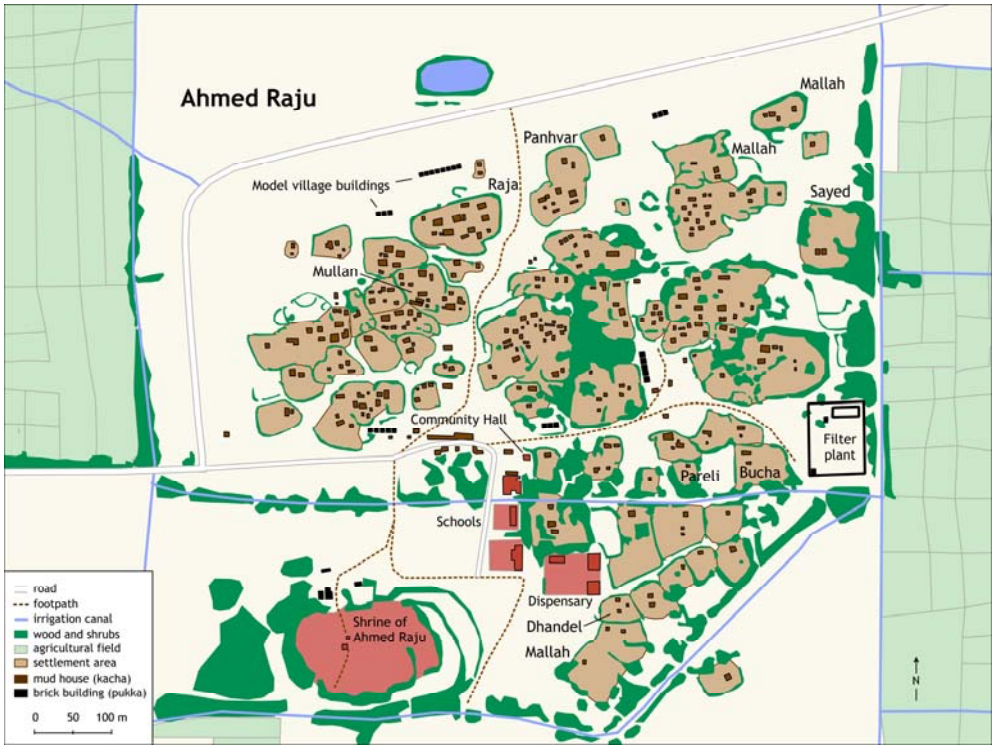
For reconstruction of roads and damaged houses income generating cash for work programmes are advisable. The VCI indicates that possession of large livestock is a means to deal better with vulnerability, and establishing access to buffaloes possibly through provision of access to credit schemes or installments of livestock cooperatives would be an option to open up new markets and new income sources for the vulnerable.

In the longer term, structural changes could provide the basis for new income opportunities. This has to address the fact that women in Golo Mandhro not work on the fields and even never leave the village. Most of them are illiterate. However, women cooperatives could be a good possibility to give women more influence in household decision making and contribute to their empowerment, and would potentially benefit the whole village. Learning from projects such as 'Grameen solar' successfully implemented in Bangladesh would provide an option in Badin too (cf. Martinot et al. 2000). Training women as technicians to maintain solar units for their households has the potential to generate additional household-income, while at the same time providing access to sustainable energy supply.

### 5.1.3 Ahmed Raju – vulnerable groups in a heterogeneous village

The village of Ahmed Raju is a disperse settlement, located near the shrine of the name-giving saint, whose population is estimated by the inhabitants to be composed of approximately 750 to 800 households. While access to the village is possible through seasonal roads (*kacha*) only, there are three main roads (*pukka*) close to it that connect to other small settlements as well as to the cities of Golajir (32 km) and Badin (41 km). It features a comparatively well equipped infrastructure including three schools, a dispensary, two shops for basic needs and a filter plant which is still under construction (cf. Fig. 5.14). Because progress is very slow and there has not been any advancement for many months, water supply is provided by about 15 hand pumps which can be found in various places within the village. Through the governmental *Benazir Bhutto Housing Scheme* the construction of so-called model villages is ongoing, although style and materials used for construction appear not to be suitable (cf. Box 6). Electricity is available to a couple of households only through the local electricity main line and a generator-run charging station. Also the hygiene situation is heterogeneous: While some people own their own sanitation facility, most people have to use the open land.

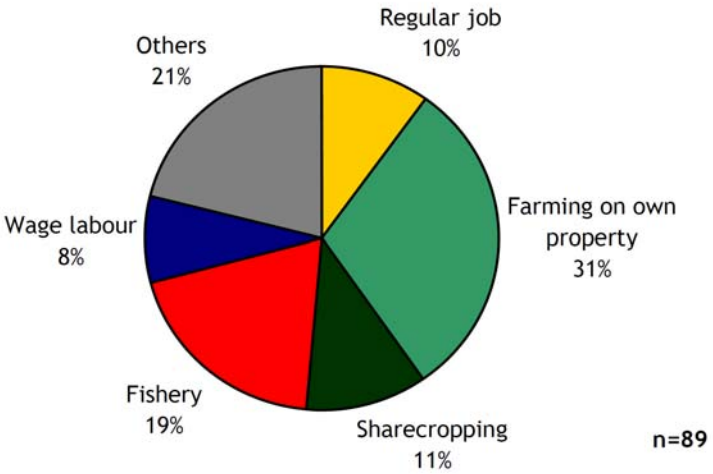
Socially, the village is very heterogeneous with altogether 13 different residential social groups (also called "caste" among the local people) that do not intermarry and whose names advertise rank and hint at existing social inequalities and hierarchies. The social groups are mainly defined through their traditional professions (cf. Table 5.1), and social division of the population is reproduced by the socio-spatial arrangement of the settlement structure because every group resides in its own *Muhallah*. Decisions which affect the whole population of the village are made through the community council where every social group is represented by one of their members. Because of their high portion within the overall population, the groups of *Pahnvar* and *Raja* are represented with more influence than others. The village leader Mohammed Omar (Raja) is serving as representative of the village for the *Pakistan Peoples Party* (PPP) in the city of Golajir, and Mahmud Khan (*Bucha*) took on the role as new headman.




Data Sources: GeoEye Satellite Image of February 2, 2010 (Google Earth); GPS-data gathered on February 14 and 16, 2011. Design: Martin Enzner

**Fig. 5.14: Ahmed Raju - location of clustered community settlements close to the shrine**

A lot of villagers are engaged in agricultural labour (cf. Fig. 5.15). While the percentage of landowning households among the survey population is around 40 percent, villagers estimated in focus groups that about 70 to 80 percent of households in Ahmed Raju own land. Many households aim to diversify their income sources through the keeping of livestock. Compared to other surveyed villages the portion of sharecroppers is quite low. The landowners within the village own fields up to 24 acres. These fields are irrigated by canal throughout the whole year, constrained by a seasonal shortage of water between February and July as reported by villagers. The water-inflow is managed at the village




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.15: Occupational structure in Ahmed Raju**

entry through application of sandbags that direct the distribution of water to three different canals. Dominant cultivated crops are rice for subsistence and cotton as a cash crop in kharif season as well as sunflower for sale in rabi season. Agricultural pro-ducts are usually sold on the bazaar in Golajir or Badin.

**Box 6: Model villages as an example for inappropriate housing schemes**

Source: photograph © David Kersting, February 16, 2011

**Model villages in Ahmed Raju**

Model villages are an important infrastructural phenomenon in the area that can be found in the villages of Ahmed Raju and Golo Mandhro. They were built by Housing Schemes of political organisations after the cyclone of 2003 with the intention to provide villagers with houses more resistant to natural hazards as their traditional kacha houses.

Unfortunately the houses match neither the natural environment nor the social demands of the village's residents: in Golo Mandhro, the houses have never been accepted and remain largely vacant, and the houses in Ahmed Raju remain unfinished to date with apparently no construction work ongoing as the main contractor pulled out recently. In both villages the houses lack a solid basis and loose stability on the waterlogged ground. With such inapporpriate building sites the authorities constantly ignored local expertise: With regard to the inappropriate construction material Abdul Shakur, resident of Ahmed Raju, states "We told the government but they would not listen".

Another main characteristic of Ahmed Raju is the high percentage of resident fisherfolk (*Mallah, Dhandel, Pareli*). Their members fish in the irrigation canals as well as in the lakes (*dhands*) when the tide is high (cf. Fig. 5.1). At low tide boats are used to catch fish on the open sea. The fish is sold either within the village or to a middleman (baypari) at Zero Point. During the assessment a tremendous social gap between the agricultural and the fishing castes became obvious. The fisherfolk of Ahmed Raju have been identified as the most vulnerable social groups, which is intensified through widespread marginalisation and exclusion from access to water pumps and credit facilities provided by local shopkeepers.

**Table 5.1: Population structure in Ahmed Raju (estimated by shopkeeper Abdul Jabaar)**

| | Caste | App. number of households | Traditional occupation | Representatives in the village council |
|---|---|---|---|---|
| | Raja | 300 | farming on own land | Mohammed Omar<br>Abdul Khalil<br>Mohammed S. |
| | Pahnvar | 150 | goat keeping, farming, fishing | Gul Mohammed<br>Mohammed H. |
| | Dars | 50 | cattle breeding, farming | Urs Dars |
| | Mullan | 50 | sharecropping | Dolo Mullan |
| | Mallah | 50 | fishing | Mehar Mallah |
| | Dandhel | 50 | fishing | Mehar Dandhel |
| | Sayed | 30 | not specified | Pir Alad Mushar |
| | Bucha | 25 | mechanics, architects | Mahmud Khan |
| | Khaskeli | 20 | wood working, farming | Nato Khaskeli |
| | Sumro | 20 | confectioning | not confirmed |
| | Lohar | 20 | metal working | not confirmed |
| | Pareli | 15 | fishing | Rabu Dim |
| | Pathan | >10 | textile traders | not confirmed |
| **total** | **13** | **770** | | **13** |

Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Box 7: Rajad Mallah: Coping with social exclusion**

Rajad Mallah lives with his wife and three daughters in the south-eastern Mallah community of Ahmed Raju. His house is built on government property and is poorly rebuild after the cyclone in 2003, compared to most houses in the main village. He also lost most of his livestock, his boat and his son during the cyclone in 2003. Besides the personal tragedy, the cyclone was economically devastating because the only income source of his household is catching fish which he sells in the main village. Luckily he could save one water buffaloe and a fishing net.

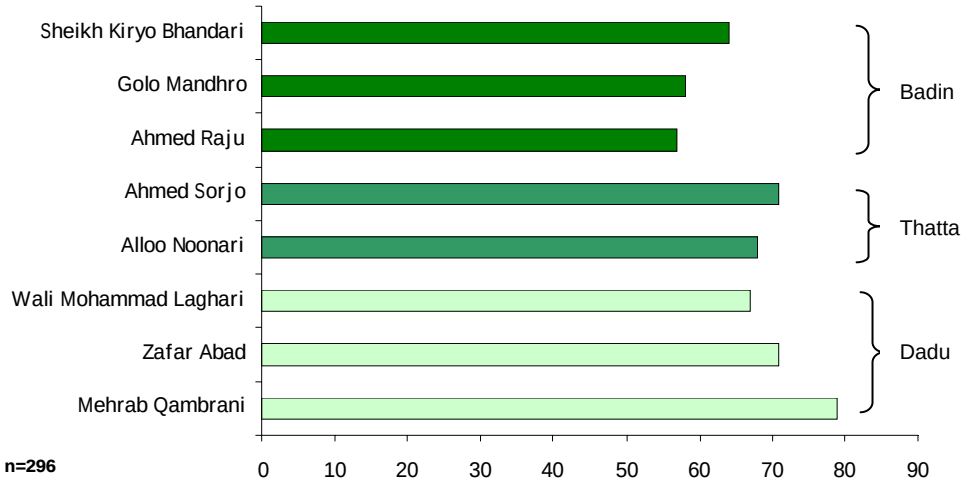
As member of the non-native fishermen communities he faces social exclusion by the dominant groups of villagers that result in the denial of loans from shopkeepers and exclusion from using the hand pumps. His household is forced to use the brackish irrigation canal as a source of drinking water which results in multiple health issues such as malaria, cholera and skin diseases affecting all household members. These add to the addiction to the pungent betelnut mixture (*pan*) that is widely spread in the Mallah community. During the time of water shortage the Mallah have to dig wells to get access to saline underground water. Apart from solidarity within his community the NGO Pakistan Fisherfolk Forum (PFF) provides him with support, for example bamboo sticks for the reconstruction of his house after the 2003 cyclone. Still the family of Rajad Mallah is living of one meal per day because he was not able to fully recover from the impacts of the cyclone. The household is representative for many among the communities of fisherfolk and illustrates how social exclusion aggravates the impact of a natural hazard.

Source: photograph © David Kersting February 17, 2011

**Household of Rajad Mallah**

### 5.1.3.1 Local impacts of natural hazards

Ahmed Raju was not significantly affected by the flood of 2010. The last disastrous hazard events the villagers faced were the big cyclones in 1999 and 2003. Even though a part of the inhabitants were evacuated by the government and lives saved, a majority of houses were destroyed, and there occurred serious losses in harvest, livestock and income-generating equipment. Until today, the bad housing conditions, shortage of equipment and livestock remain a problem for the vulnerable village population. In this respect hazards aggravated already existing ecological and socio-economic problems and inequalities. Because of the existing infrastructure, the low dependency on big landlords and the fact that the last environmental catastrophe is a decade behind, Ahmed Raju appears to be one of the less vulnerable villages taking part in the assessment (cf. Fig. 5.16). However, the diversity of social groups also reflects diverse vulnerability conditions, and most households of the fisherfolk communities score very high VCI values indicating their high exposure to threats and lack of capacity to deal with them.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.16: Average VCI score**

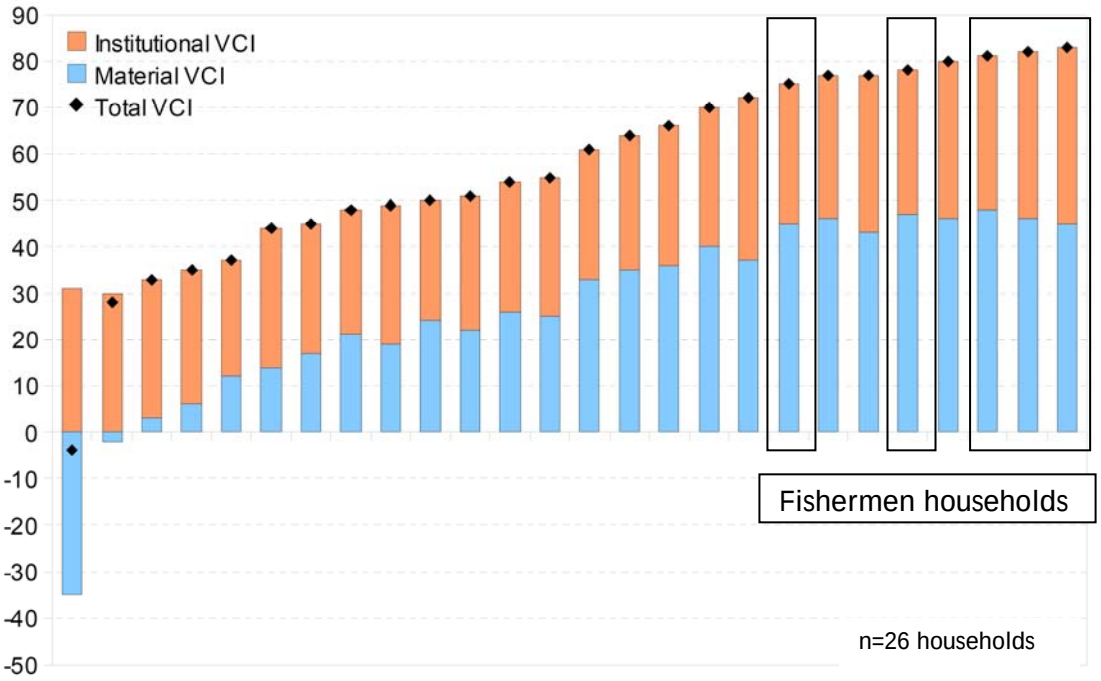
The catastrophic cyclones of 1999 and 2003 have left their permanent marks, but the very frequent intrusion of ocean water and subsequent salinisation and waterlogging represent continuous serious threats for village agriculture as the backbone of local economic activities. Landowners face a loss of arable land while fishermen suffer from a decrease of fresh-water fish availability. In addition to this direct economic impacts of local environmental conditions compounded by the LBOD/KPOD canal system, salinisation and waterlogging lead to a decreasing quality of drinking water and multiple related health problems.

These problems have their biggest impact on the marginalised fishing communities in the village who migrated to Ahmed Raju because they faced similar environmental problems in

their homelands in Thatta. Members of these groups have to struggle harder to cope with these challenges, as the example of a household in the *Mallah* community illustrates (cf. Box 7).

### 5.1.3.2 Analyzing the image of vulnerability in Ahmed Raju

Ahmed Raju has the lowest average VCI score among the eight surveyed villages across all districts. However, this appears due to the diversity of the household sample that includes large livestock owners and landed groups with multiple income sources. In contrast, the landless fisherfolk rank among the most vulnerable of the survey population with VCI values of 70 and above (cf. Fig. 5.17), indicating their rather defenceless position in face of the multiple threats to their livelihoods.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.17: Fishermen households within the total VCI Ranking of households in Ahmed Raju**

The drivers of vulnerability for fishermen households relate to two main factors, apart from social marginalisation that goes along with an exclusion from infrastructure. Initially the 2003 cyclone led to a significant loss of assets such as livestock and fishery equipment. Subsequently, a lot of fisherfolk were driven into bonded labour relations, because most among those who lost their boats now work on boats owned by others at Zero Point. The continuous hazard of seawater intrusion and the related decrease of fresh-water fish availability force the fisherfolk even more into deepwater fishing and increased dependency on boat owners. Further drivers of vulnerability that affect other groups refer

to immersion into sharecropping arrangements without access to own agricultural land. The three non-fishermen households with a VCI scoring more than 70 are engaged in agricultural bonded labour, either as sharecroppers or wage labourers and own very limited assets only.

The effort of fishermen to develop moderate capacities through social networks or NGO support is however palpable. For instance, the Pakistan Fisherfolk Forum has around 200 members in Ahmed Raju alone and supports the communities with money, materials and fish in times of shortages, and there is a high degree of solidarity among the communities. The Mallah, for instance, developed a cash deposit system for lending inside their own community to cope with the exclusion from credit by shopkeepers, and they agreed on a fixed price for fish sold to the main village to avoid internal competition and being forced to sale at too low prices.

It can be concluded that a majority of the inhabitants for the dominant village groups have somewhat recovered from the catastrophic cyclones and are able to cope with the ongoing environmental challenges to some degree, especially due to their relatively high material capacities. This, however, does not apply to the situation of the fisherfolk who, due to social exclusion and bonded labour, represent the most vulnerable groups in Ahmed Raju.

#### 5.1.3.3 Implications for development practice

The vulnerable fishermen groups deserve special attention when it comes to the implementation of development measures in Ahmed Raju. The most urgent needs are the supply with fresh drinking water to help alleviating social exclusion and to improve the basic health situation. The problem of safe fresh-water supply is addressed already by the public authorities currently building a filter plant in the village. However, it seems to be questionable whether all groups within the community will benefit, should the construction work finish eventually. Monitoring the construction process as well as dialogue with officials is necessary to keep up with the development of this infrastructure development in the village.

As immediate measure to improve the situation the distribution of a sufficient number of hand pumps available on the local market for about 3,000Rs to the estimated 115 fishermen households would address one of the most pressing challenges for the fishermen groups. Gaining the acceptance and understanding of the other groups in the village would be crucial. If discussed and monitored carefully in cooperation with the community council, this measure could even contribute to levelling social difference to some degree.

To address the second major driver of vulnerability, one possible measure could be the distribution of fishery equipment such as boats and fishing nets. The GRC could build here on its existing experiences with establishing production cooperatives and support the fisherfolk in the building of boats. The Pakistan Fisherfolk Forum might be a feasible partner in the provision of materials and knowledge. A restocking of these assets would

make it possible again for the fishermen to tap into their self-help potential leading to a broader base of subsistence, higher levels of income and release from bonded labour.

With regard to the ongoing intrusion of seawater and its effects, it is important to explore possibilities for a diversification of income sources for vulnerable households. The distribution of livestock can be considered an option because many fisherfolk as well as vulnerable households from other groups have experience in cattle breeding but were not in a position to restock their lost livestock after the 2003 cyclone. Such projects would need to be implemented in close cooperation with the community council to ensure transparency, and the VCI could help in targeting beneficiaries.

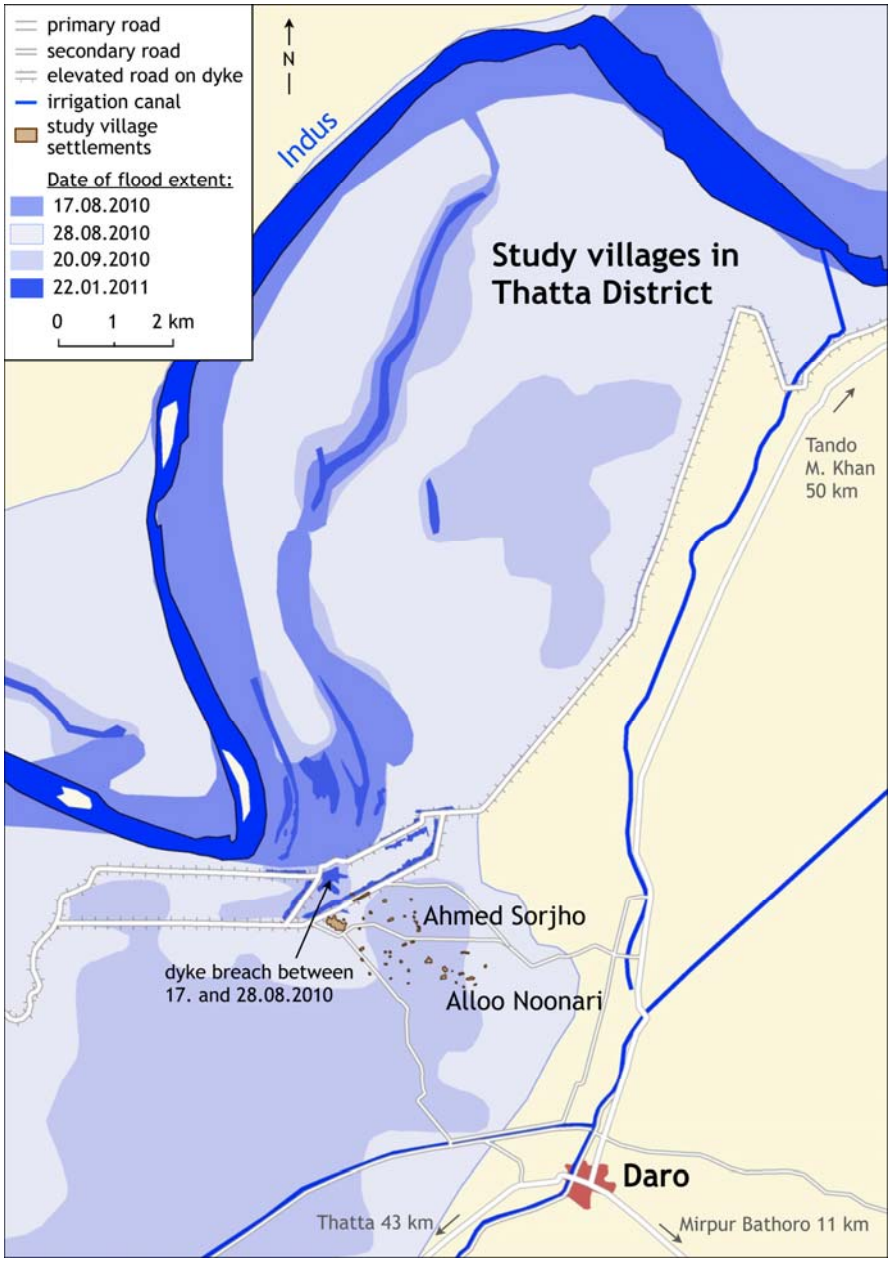
More general implications refer to the application of measures to safeguard agricultural fields of the entire village, e.g. through construction of a protective bund for enabling enhanced disaster risk management using community labour force. A larger infrastructure project like this would require partners as well as human resources. Apart from government institutions and the aforementioned Pakistan Fisherfolk Forum cooperation with the National Rural Support Programme an experienced Pakistan-based NGO who provided link roads and hand pumps to the people of Ahmed Raju in the past, would be feasible.

Looking at the overall situation in Badin, it appears that the exposure to multiple social and natural hazards and high levels of poverty especially among the fisherfolk requires targeted interventions for disaster risk reduction. Also without having been affected by the flood of 2010, vulnerable households and communities in Badin need to continuously engage in a daily struggle to secure their livelihoods in the face of adverse social, economic and environmental conditions.

The communities are well experienced in adapting to all kinds of challenges and crises in their amphibious environment. A systematic and thorough enquiry would be useful for securing conventional and place-specific knowledge about local early-warning systems and strategies of searching for safe heavens in times of rising water.

## 5.2 Thatta – risk exposure in scattered settlements close to a breached Indus-dyke

The two villages Ahmed Sorjho and Alloo Noonari are located close to the Indus River and have been severely affected by the flood of 2010. The Indus-dyke was not solid enough to withstand the pressing water masses and breached on a length of about 1000m. As of February 2010 it has not been repaired yet (cf. Fig.5.18). Due to the dyke breach the flood hit the surveyed villages with enormous force. Both villages needed to be evacuated for several months and a safe haven was found close to Thatta Town in Makli Hills.




Data Sources: GeoEye satellite image of February 27, 2010 and January 22, 2011 (Google Earth); GPS data gathered on February 18, and 20, 2011. Design: Martin Enzner

**Fig. 5.18: Thatta District - dimensions of flooding**

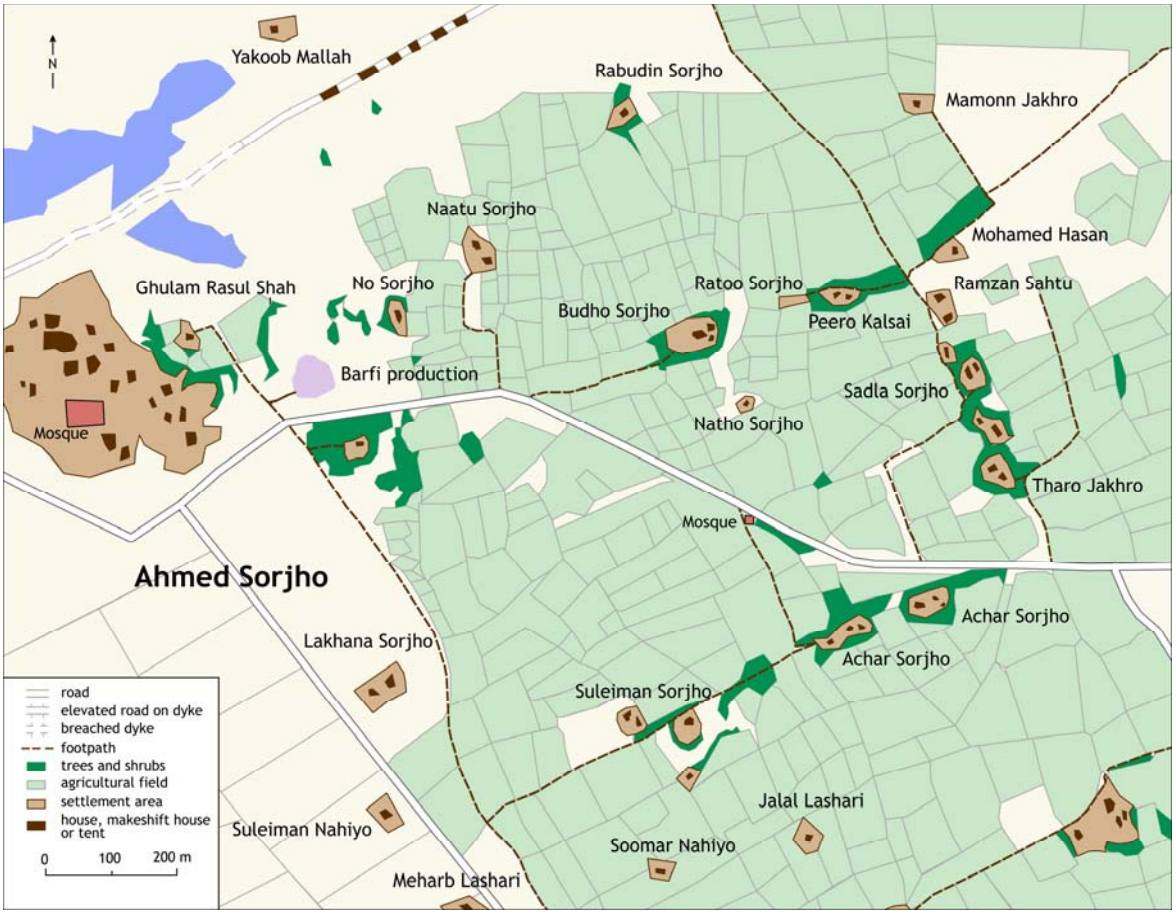
During their flight the people had to leave their homes unattended causing looting of their belongings and large numbers of livestock to perish as the animals could not be evacuated in time. At their return, the vast majority of villagers found their houses and agricultural fields completely destroyed. Since then, people face a daily struggle to rebuild their lives. Most houses in both locations have not been reconstructed for shortage of funds, and people continue to live on open fields in tents donated by aid organisations or other makeshift constructions supported by tarpaulins. At the onset of the hot season, this will pose serious problems in terms of health, shelter from monsoon rains, insects and snakes, and protection from sun exposure.

### 5.2.1 Ahmed Sorjho – a scattered village of multiple hamlets and diverse social groups

The village of Ahmed Sorjho presents a complex spatial, social and economic setting. It consists of as many as 24 scattered hamlets that together comprise a village, or in this context a canal colony (cf. Fig. 5.19). The village lands are composed of limited smallholdings, where agricultural fields are located adjacent to people's houses and where the majority of households engage in sharecropping agreements with bigger landowners. The sometimes tiny hamlets of a few households always carry the name of the head of a clan group in combination with the social denomination and in their entirety define the social spaces of the village. The social groups that reside here belong to the distinct groups of the *Sorjho* (also the eponym of the settlement), *Jakhro, Lashari* (cf. Box 12)*, Nahio, Sahto, Khalsai, Mallah* (cf. Box 9)*,* and *Sayed*. There also exists a village council that consists of one representative of each group. This council convenes only irregularly in times of need or when there is a decision to be made or a conflict to be resolved that affects village affairs. However, as partner for the implementation of project packages this body might be a valuable asset as a village-based institution. Such an organisation can assume institutional responsibilities and establish and safeguard transparency in the selection of beneficiaries.

Economic activities in Ahmed Sorjho are based on agriculture and livestock, with a high degree of dependence from influential landed classes who control cultivation and bound sharecroppers (*hari*) to their land. Most villagers also own plots, but available land sizes are too small to make a living. High levels of indebtedness to large landowners for agricultural inputs (e.g. seeds and mineral fertilizer) lead to different degrees and contracts of sharecropping agriculture. Indebtedness binds people to certain landowners through generations and makes them immobile as they are "bonded" to the place. The same holds true for the fishing community in the village, who are bound to a practice of "sharefishing" where before the flood they were forced to deliver half of their catch to powerful and influential individuals who hold the contract rights for Indus fishing and forcefully extract the revenue from the Mallah community. Sharefishing and sharecropping

are vivid expressions of power relations that govern the social set-up and reflect dependency relationships (cf. Box 9).




Data Sources: GeoEye satellite image of February 27, 2010 and January 22, 2011 (Google Earth); GPS data gathered on February 18 and 22, 2011. Design: Malte Haarmann

**Fig. 5.19: Ahmed Sorjho - scattered and small community hamlets of sharecroppers close to cropland**

The flood disaster worsened these already adverse conditions significantly. It caused massive destruction of housing and agricultural assets and led to the complete loss of equipment for the Mallah. All sectors of the village economy were badly affected – the autumn harvest was lost but credits taken for agricultural inputs will have to be reimbursed. Further, it is estimated that about 75% of the livestock population has vanished during the flood and was not restocked at the time of fieldwork. The proxy of local *barfi* (milk toffee) production served as the indicator for that estimation. Before the flood, barfi production was carried out in eight substantial boiling pans, whereas presently only two pans per day are in operation. Since all production stems from village based milk supply of more than one hundred households, it can be inferred that local milk surplus that can be used for marketing has shrunk significantly (cf. Box 8).

**Box 8: The economics of *barfi* production as indicator for loss of livestock in Ahmed Sorjho**

The example of the milk processing for milk toffee production servers as a valuable proxy indicator for the losses endured by the population of Ahmed Sorjho. The toffees represent a case where local production is immersed into wider economic circuits that reach up to Karachi, where most of the local product is marketed. The milk for production is provided by the people of Ahmed Sorjho and neighbouring villages, and transported directly by a large number of individual milk producing households to the production plant where it is pooled and fabricated into toffees. The stable demand for milk as a raw material gave the villagers the possibility to market a milk surplus close to their homes. The extent of production before the flood can be inferred from the fact that eight boiling pans were in use, whereas today only two are in operation. This indicates that still not enough milk is supplied to re-assume full toffee production in the village – 75% of the required quantity is still missing. This shows that people were not yet able to restock their livestock that perished in the flood disaster. Furthermore, the need for firewood to operate the toffee-pans has decreased too which has negative effects on the income of wood suppliers.

Source: photograph © Stefan Schütte, February 18, 2011

**Local *barfi* production**

In terms of agricultural activities the situation remains dire, and many farmers are not in the position to start cultivation. There is shortage of cash funds to procure seeds and farming inputs or to repair needed machinery, such as tubewells. Investments for the lost harvest season in autumn 2010 have to be compensated for too, as landowners or shopkeepers as the major creditors for agriculturalists demand return of the loaned money or payments for supply in-kind of seeds or fertilizer. In the survey sample, 54% of households have reported growing debts after the flood disaster.

Furthermore, the agricultural lands have been significantly affected by flooding in such a way that certain areas cannot be cultivated at all. Others have been sown with grain crops and pulses, but the standing crop shows signs of partly non-germination due to bad soil

conditions and unsophisticated options in tilling the land properly. Salinification and waterlogging are obvious in many places. Only large-scale and mechanized preparation of agricultural land parcels might alleviate these problems. Consequently, many fields have remained fallow, levels of debt bondage will likely increase, and food insecurity is a severe issue for many households.

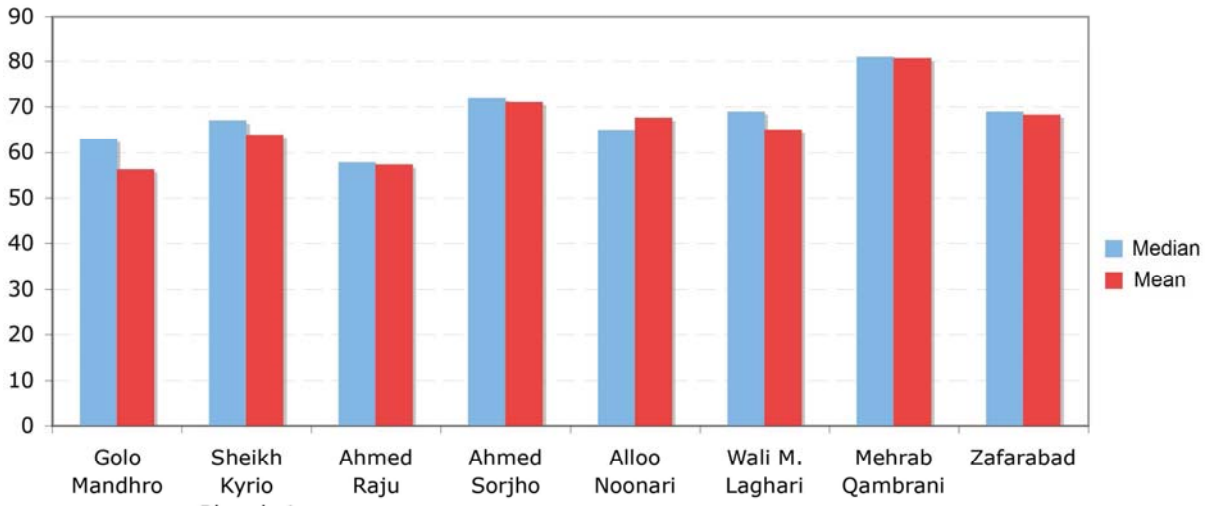
**Box 9: The Mallah of Ahmed Sorjho – sharefishing and poverty**

Fisherfolk in Ahmed Sorjho belong to the caste of Mallah. They are engaged in sweetwater fishing only adnare seemingly not represented by the PFF, as is the case in Badin and Dadu Districts. In Ahmed Sorjho there is not a single Mallah household that owns agricultural land. Their hamlet in Ahmed Sorjho is named after their leader, Yaqoob Mallah, and consists of makeshift mud and plastic constructions spread over the northern part of the village (cf. Fig. 5.19) All Mallah hosueholds are related to each other and provide mutual support. Before the flood they all lived in *kacha* mud houses with their own boats and nets and most of them possessed livestock too.

As with seawater fishing, there exists an exploitative contract system for fishing in the Indus too. Powerful individuals purchased the licenses from the Government and bind the fisherfolk into 'sharefishing' agreements that forces Mallah to deliver 50% of their catch to license holders. Apparently, the lobbying work of the PFF that led to beneficial changes in the license system for fisherfolk in Badin does not apply to the situation Thatta where exploitation through sharefishing remains common practice. However, because all Mallah lost their boats hardly anybody was engaged in fishing at time of research. Only occasionally resources are pooled among households and a boat is rented for Indus fishing.

Before the flood it was common too among housewives to contribute to the households' income by sewing clothes or embroidering textiles. However, sewing machines were lost in the flood and home-based income activities have ceased accordingly. Mallah children collect firewood for marketing and hardly any child has ever visited a school. All handpumps that were present in their hamlet have been destroyed and people now obtain their drinking water from puddles of remaining flood water. Those puddles are also used for washing clothes and bathing. The use of brackish water leads to multiple health problems especially affecting children.

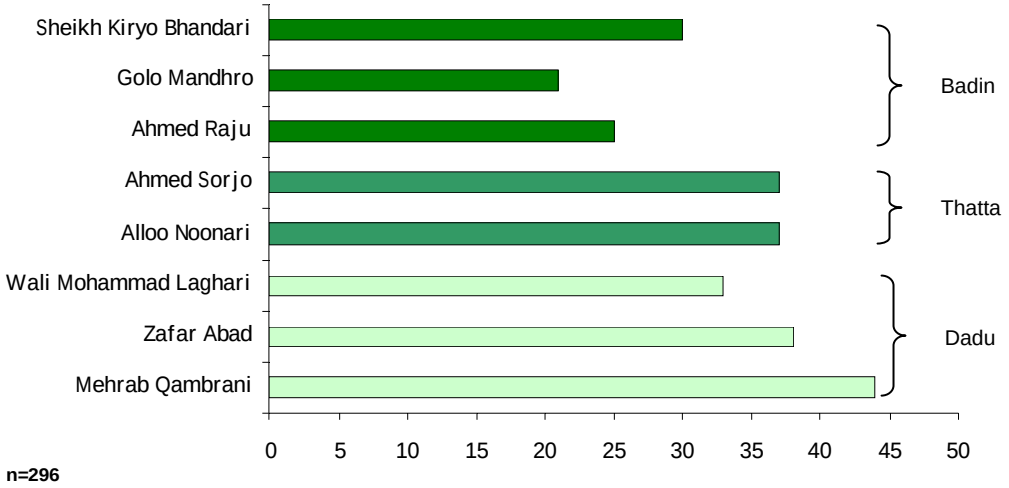
To cope with the adverse situation, an increase in firewood collection among the Mallah is observable. Marketing of sweets from Daro town to their village with small benefits has been tried; others simply became beggars in nearby urban areas. All these activities are not sufficient to ensure food security after the flood. Increased *Pan*-consumption to suppress feelings of hunger is apparent even among very small children.




Source: data recorded by ZELF team February - March 2011

**Fig. 5.20: Average VCI score of the assessed villages**

In case of the fisherfolk the situation is very precarious too. With the fishing boats and most of the nets lost in the flood all their productive assets are depleted. Alternative income sources are difficult to access, and out of desperation many struggle to catch fish in ponds with their bare hands. The systems of dependencies revolving around the fisherfolk's occupation are described in Box 9.




Source: data recorded by ZELF team February - March 2011

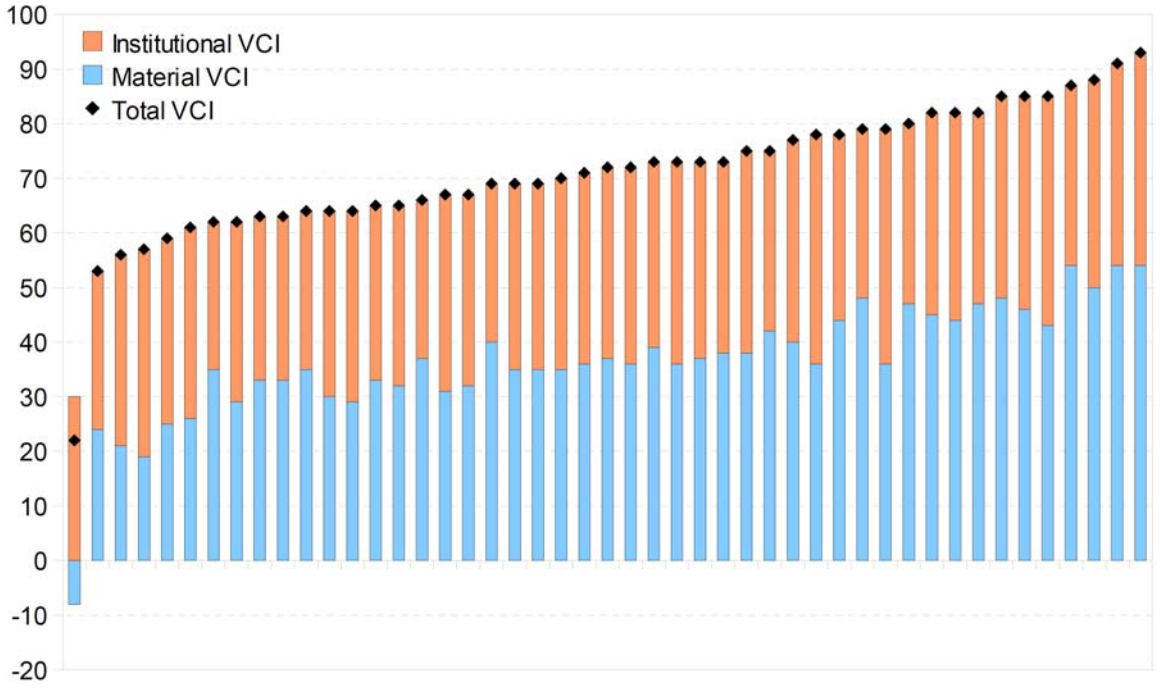
**Fig. 5.21: Average material VCI score of the assessed villages**

The overall very critical situation unfolding in the village after the flood is also expressed through the VCI data. As depicted in Fig. 5.20 the VCI values among the surveyed households are consistently high with an average of 72, signifying that most households lack the capacity to overcome the losses inflicted by the flood disaster. This is also evident when looking at the values for material vulnerability alone, as depicted in Fig. 5.21.

Degrees of vulnerability are uniformly elevated in Ahmed Sorjho. Even before the flood, many households were immersed in exploitative sharecropping agreements, but after the disaster the situation worsened significantly. The flood is associated with great losses, especially in terms of housing and livestock. For most, restocking of lost livestock has not been an option because of lack of capacity, and the VCI values reflect this reality with high degrees of material vulnerability present all over the sample households.

**Box 10: Misdirected aid – an example from Ahmed Sorjho**

Occasionally, powerful actors in a village setting are able to channel emergency relief into their own pockets and exclude those in need. This happened during food distribution in Ahmed Sorjho, when Mallah households were deprived of receiving food parcels by the powerful trading caste of the Memon living in the neighbouring village. Actors from the groups apparently intercepted the representatives of the visiting NGOs to direct to their own settlement and approached the Mallah under the false pretence of providing food deliveries and copied their ID-Cards. This way, they got hold of most relief donations and sold the foodstuffs in their own shops. As a consequence, Mallah disposed off non-food items delivered as emergency aid to obtain much needed cash for buying food. Corrupt individuals of the Memon with their links to government officials were thus able to personally benefit from emergency operations. They are also the holders of fishing licenses and extract revenue from Mallah households. In addition, they operate as major landholders and creditors, driving poor farming households into debt bondage. This rather shocking but unfortunately not so uncommon example has been also confirmed by the only household of the more powerful Sayed-caste in Ahmed Sorjho, who maintains good relations to the Memon in the neighbouring settlement.




Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011, n=47

**Fig. 5.22: VCI score for Ahmed Sorjho**

**Box 11: The fate of the most vulnerable: a female-headed household in Ahmed Sorjho**

The example of a household headed by the 63-years old widow Maryam Sorjho (name changed) illustrates the detrimental effects of the flood disaster. Together with her 15-years old grandson, she has to struggle hard to make a living after the catastrophe. Her house was reduced to rubble and she lost all livestock (one goat, two chicken) in the flood event. Especially the loss of livestock hit that household hard, as the sale of milk and eggs provided the income needed to afford basic food supplies. A hand-injury during the flood led to a permanent disability that makes it impossible now for her to engage in agricultural wage labour during harvest. The only and very minimal source of income at disposal at the time of fieldwork was provided by her grandson who collected firewood for marketing. The result is a VCI score of 88 which equals extremely high vulnerability.

The widow pointed at three things that would be required to improve her living situation: reconstruction of housing before the onset of the hot season, health treatment for her broken wrist to regain her work capacity, and provision with four hens to generate income needed for food security.

The example is eye-opening for a variety of reasons. Most importantly, however, is the fact that the situation is so desperate that even the relatively small investment needed for chicken can not be afforded by any means. The minimal income that can be generated by selling eggs would already make a crucial contribution to the household's wellbeing.

#### 5.2.1.1 Implications for development practice

Given the various problems caused by the flood, the major areas of intervention would need to focus on addressing the cash deficit that exists in Ahmed Sorjho. Agricultural production needs to be facilitated, e.g. through the repair of tube wells and levelling of field parcels, enabling purchase of seeds and restocking of livestock. The reconstruction of housing and drinking water supply devices also needs quick support before the onset of the hot season. Productive assets for fishermen (e.g. fishing nets, boats) need to be provided so that people can re-engage in their area of expertise. Help in the repayment of debts is very much needed to avoid further occurrence of bonded labour and to decrease dependence on influential and powerful groups. The situation in Ahmed Sorjho remains very precarious, and investments are necessary to ensure provision of basic needs for the village population.

Any project intervention should cooperate with the village council that is representative of all settled groups in the village. Eventually, such existing community based structures could develop increased capacity. Development of organisations that can represent a whole village would give people a shared voice when cooperating with the government and would make representation of interests, practices of local disaster management and access to common goods easier.

**Box 12: Lashari – a marginalised social group in Ahmed Sorjho**

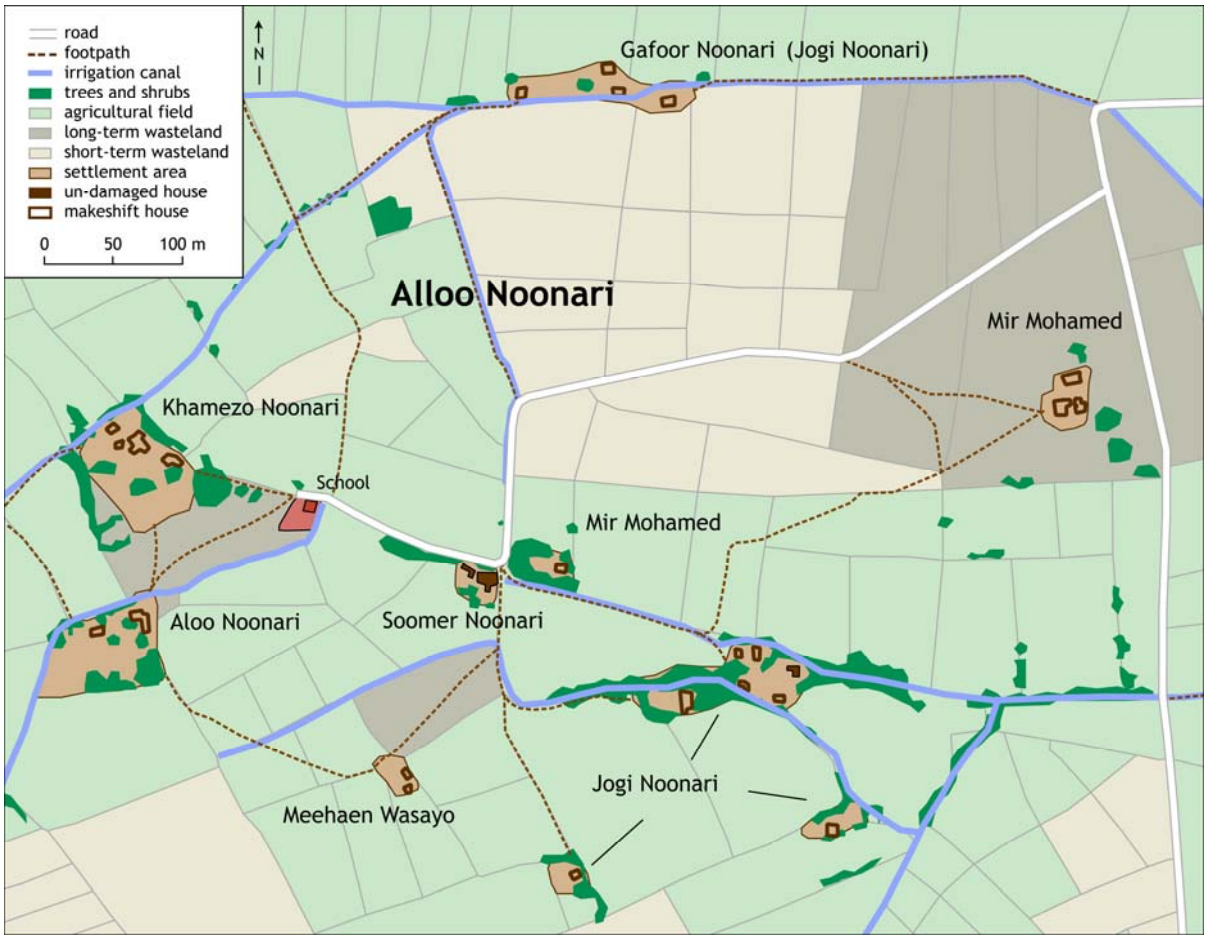
Some hamlets in Ahmed Sorjho are inhabited by members of the Lashari caste. They have begun settling in the area about two years before the flood and are exposed to frequent displacement by powerful landholders. The Lashari are landless labourers and sought refuge on their present location on shrubby government land only a few months before the flood event when they were evicted by their landlord from their former place of settlement. Their newly established shelter represented a significant investment but was completely destroyed by the flood. Also all their livestock and other productive assets perished (seven cows, two goats, and one donkey including a donkey-cart). Today, four Lashari households and their 17 members are tolerated on the public land where they have erected makeshift tent-like constructions for shelter.

Livelihood activities among the Lashari are constrained and basically refer to daily wage labour in urban markets, some sharecropping activities and agricultural wage labour in the harvesting season and collecting firewood. Some women possess sewing skills and occasionally produce fabrics for neighbours. All 17 members of the group are illiterate, and also the young generation is excluded from education. Food expenses regularly exceed available incomes and significant debts have accumulated by the shopkeeper.

The Lashari were supported by the GRC with food packages after the flood emergency. However, the community needs support in shelter reconstruction, establishment of access to safe water, and for investments in productive assets, such as a donkey cart or a sewing machine.

### 5.2.2 Alloo Noonari – complete flood-destruction, water-scarcity and incapacity to cope

Alloo Noonari is solely inhabited by the social group of the *Noonari* and is located in close vicinity to Ahmed Sorjho. Accordingly, in terms of the damage caused by the flood the situation presents itself similar to a large extent. Houses in the village are almost all completely destroyed; people dwell in tents, shelter boxes or in the ruins of their former residences and there is a severe lack of adequate shelter. Also here people suffered a heavy loss of livestock and are not in the position to restock.



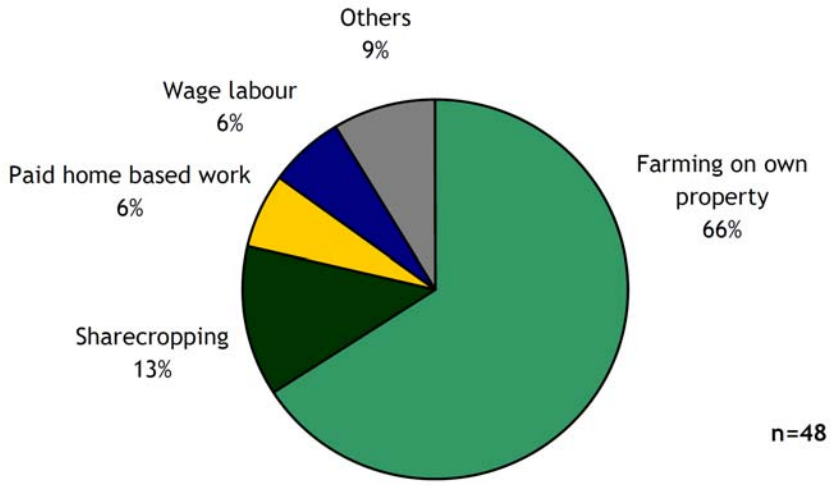

Data sources: comparison of GeoEye satellite images of February 27, 2010 and June 14, 2003 (Google Earth); GPS data gathered on February 18 and 22, 2011. Design: Martin Enzner

**Fig. 5.23: The scattered hamlets of Alloo Noonari**

Fig. 5.24 shows that the individual hamlets of the village are scattered over a larger area, Each hamlet of Alloo Noonari is named after the head of one of the resident households. There are hand pumps for access to drinking water in each hamlet, most of which were destroyed in the flood forcing people to fetch drinking water from canals or walk considerable distances to the few remaining water sources. Replacements would be

available locally for a small investment of only 3,000 Rs, including drilling work, but even this rather small sum is not affordable for people at the present stage.

In the village centre there is a primary school for both boys and girls with only one teacher. From 49 children in the interviewed households in the age between six and 18 only 16 go to school (i.e. 33%). Five of those school-going kids also contribute to household incomes and work either on fields or as firewood collectors. Alloo Noonari does not have a dispensary, and people need to go to the nine kilometres distant urban centre (Daro Town) for medical treatment. On the market in Daro, the villagers of Alloo Noonari can buy food and household materials. Farmers can buy their seeds and fertilizer from shopkeepers in Daro. The shopkeepers in Daro are also a source for cash at varying interest rates.



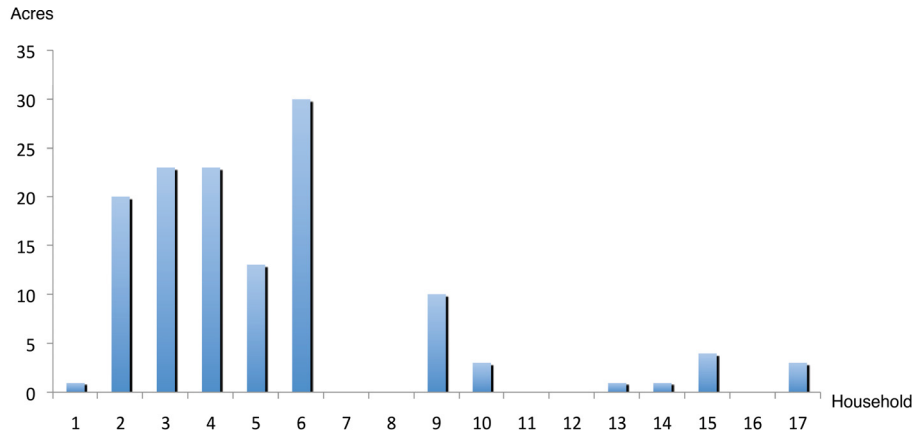

Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.24: Occupational structure of Alloo Noonari**

The backbone of rural livelihoods in the village is provided by agriculture through cultivation of wheat, rice, sugarcane, sunflowers and vegetables (cf. Fig. 5.25). Present deficiencies in the agricultural system as the major livelihood resource in the village refer to the shortage of irrigation water due to destroyed channels and high occurrence of salinisation. Much of the cultivable area in the village is not usable at the present time, and people lack the means to purchase proper seeds and fertilizer. As a consequence, heavy indebtedness to big landlords (*wadera*) for agricultural supplies and shopkeepers (*bania*, *dukandar*) for basic food stuff affects a majority of households.

The fields are irrigated by a canal system that has been partly destroyed. Still, nearly half of the interviewed households said they have always enough water to cultivate their limited fields, while the remaining households point to a shortage of irrigation water restricting agricultural productivity. Even though some village land is owned by big landlords, a majority of the fields are owned by villagers themselves. The field size ranges from one to 30 acres (cf. Fig.5.26), the average field size is eleven acres and the median is seven acres.

There is a village council that convenes irregularly to discuss and decide on matters of concern for the entire village and that consists of members representing all muhallas, except Gafoor muhalla. The council decides on matters of the community and mediates in conflicts between community members. For example after the flood the council wrote a letter to the District Coordination Officer (DCO) asking for help, although this turned out to be futile at people did not receive any respond.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011, n=17

**Fig. 5.25: Household-wise distribution of land ownership in Alloo Noonari**

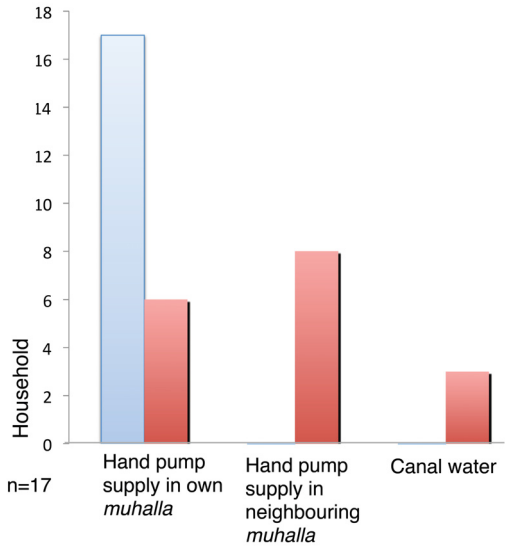
### 5.2.2.1 Flood impacts on the village

The flood in 2010 hit the village of Alloo Noonari with full force. Even though villagers had been warned by the radio and the Imam of the mosque in Ahmed Sorjho, they did not leave their houses because they underestimated the tremendous scale of the flood. When the Indus-dyke breached, they had to leave their places with their entire livestock and household belongings within twenty minutes. At the evacuation camp on Makli Hills people received humanitarian aid. Some households got hold on a so-called *watan* card that entitled to an amount of 20,000 Rs, but in moxt cases the government money was depleted soon.

Severe losses and damages in the fields of housing, agriculture, livestock and access to drinking water occurred. Houses in the village are almost completely destroyed and people dwell in tents, shelter boxes or in the ruins of their former residences. Tents and tarpaulins have been provided by different organizations like UNICEF, ShelterBox and USAID. The non-availability of a secure and sheltered space has caused several incidences of snake bites.

The flood also affected the agricultural system seriously. The farmers lost their entire rabi harvest and in the kharif season planting was impossible due to the remaining water on the fields. Additionally, some irrigation canals have been destroyed, and there is high occurrence of salinisation triggered by the flood. Even though the water is gone seven

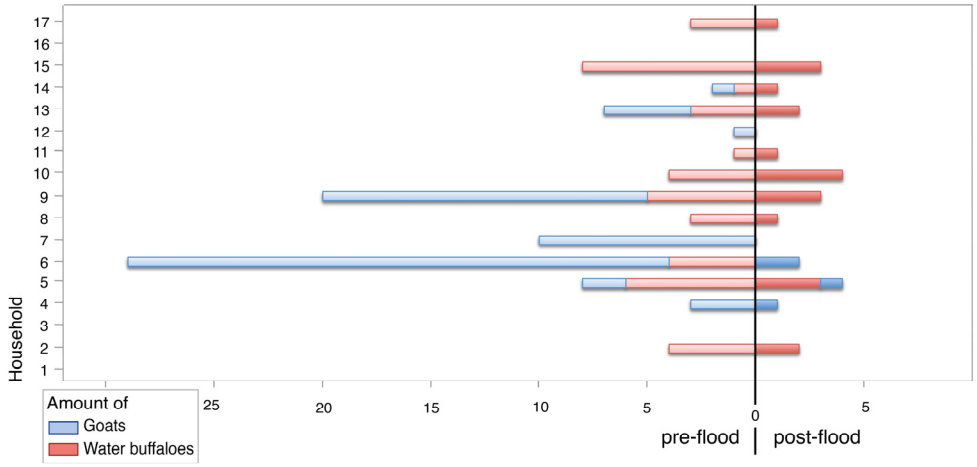
months after the flood, many fields remain empty because people lack the means to purchase proper seeds and fertilizer.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.26: Access to drinking water in Alloo Noonari**

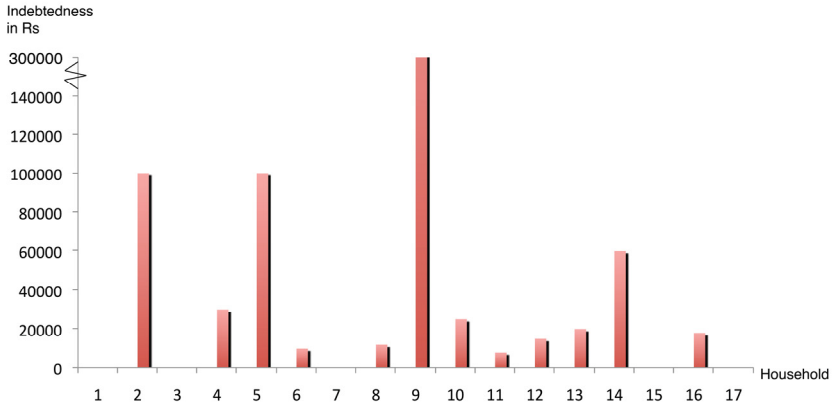
A further important income source refers to livestock, which decreased heavily due to the flood event. The sudden escape after the dyke breach and the high temperatures led to many livestock deaths caused by heat strokes. In order to generate cash after the flood, some households sold their remaining livestock far under the pre-flood market prices. For example, the household of Meehaen Wasayo sold his ten goats after the flood for 3.500 Rs each instead of 10,000 Rs each. There are now 50% less water buffaloes and 93% less goats than before the flood (cf. Fig. 5.28).




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011, n=17

**Fig. 5.27: Lifestock losses caused by the flood 2010**

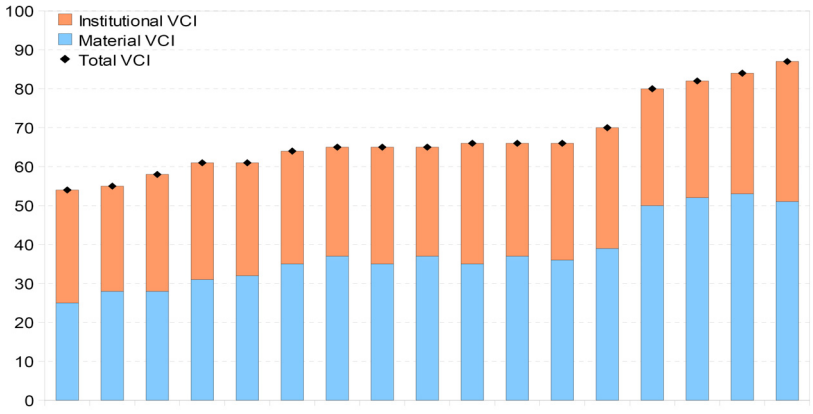
Severe shortage of money prevents villagers from purchasing seeds and fertilizer in order to cultivate their lands again. Because the people could not monetarise the rabi harvest in 2010, many villagers were not able to repay their loans. The average indebtedness is 34,000 Rs, the mean is 15,000 Rs. As Fig. 5.29 shows, fifteen households are indebted, out of these are seven households indebted to wholesale traders and small shopkeepers (bania, dukandar) in Daro town and one household to a big landlord (wadera). In order to get treatment for their flood-related diseases some households are indebted to doctors in Daro, who apparently treated people on credit.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011, n=17

**Fig. 5.28: Indebtedness per household in Alloo Noonari**

There is evidence of high food insecurity amongst the village population, with many households surviving on one simple meal per day. Apparently to suppress hunger, people consume high quantities of betel nut (*pan* or *gutka)*, and even children show already signs of addiction. Evidence is their lost and/or affected teeth because of the pungent ingredients in the pan mixture.




Source: data recorded by ZELF Team, Freie Universität Berlin, February – March 2011, n = 17

**Fig. 5.29: VCI per household in Alloo Noonari**

#### 5.2.2.2 Analyzing vulnerable households

Fig. 5.30 reveals that there are four households that have a very high VCI score of 80 and above. Two of them are living in Gafoor Noonari which seemed to be the part of Alloo Noonari with the most vulnerable households. The driving factor behind these most vulnerable households is the involvement in bonded labour conditions. Three of these households do not own any land, while one household only owns one acre of land. The main income source of these households is sharecropping or wage labour. One head of household suffers from Tuberculosis and has to stay at home all day. Households in Gafoor Noonari seem to be more vulnerable than others, as both of interviewed households in that muhalla are among the most vulnerable households. None of the households on Gafoor Noonari own more than one acre land. Additionally, they are not represented in the village council. However, also less vulnerable have been heavily affected by the flood, as the example provided in Box 14 illustrates.

**Box 13: A vulnerable female-headed household in Gafoor Muhalla**

Sakina is the female head of a small household with four members living on Gafoor muhalla. She was abandonded by her husband four years ago, who married another women and left Sakina and his daughter Bakhudwira (16) and two sons (15, 13). Sakina's main income source is not secure as she is able to work only irregularly on the fields of other people, thereby earning 200-300 Rs per day. Her very erratic and unreliable income is the main cause for the high vulnerability of her household (VCI value 87), making it the most vulnerable in the survey population of Alloo Noonari. The two water buffaloes she owned before the flood provided her household with a small but regular income. She sold four liters of milk earning 80 Rs per day. Milk production however shrunk due to losing a water buffaloe during the flood. She also lost her house, furniture and kitchen equipment. When she came back she collected the remaining wooden beams and constructed her makeshift house. While she could use the hand pump on her own muhalla before, she now has to ask in the neighbouring muhalla for water. Additionally to all these difficulties she accumulated debts in the amount of 20,000 Rs.

Source: photograph © Martin Enzner, February 22, 2011

**The children of Sakina in front of their makeshift house with other children of Gafoor Noonari**

#### 5.2.2.3 Shelter, drinking water and cash

The recommendations for feasible and urgent implication can be assigned to four fields: housing, drinking water, cash provision and health awareness. One of the most urgent needs of the villagers is providing shelter, as all houses of the village have been destroyed by the flood except two brick houses (*pukka*). Some members of the village council voted for houses that are higher and more stable. Houses should be rebuilt with local materials and work force, using community labour through cash-for-work. Another field of action should be the provision of fresh drinking water. As many of the hand pumps have been destroyed by the flood, they need to be repaired or new hand pumps have to be installed. Taking into account that the material and the drilling of a new simple hand pump costs only around 3,000 Rs, this seems to be a relatively small financial investment compared to a high return of social benefit. The water quality could be improved further by the provision of small water filters.

Villagers need improved access to cash resources for necessary investment in productive and reproductive activities. This could be facilitated e.g. by a conditioned cash distribution programme, through cash-for-work programmes or through provision of microcredit. The provision of microcredit with an affordable interest rate could be carried out in cooperation with existing microcredit schemes (Khushhali Bank, NRSP). The provision of cash could be replaced or supplemented by the provision of seeds and fertilizer which could stimulate the cultivation of fields and reduce the dependency from wholesalers and shopkeepers in Daro City.

It is the wish of many villagers to rid themselves from their addiction to betel nut (*pan*). Awareness programmes in order to prevent the smallest children to start consuming pan on the one side and proper medication on the other side could lower the negative impact on their health.

**Box 14: Merging households as a coping strategy – the growing vulnerability of Mir Mohammed**

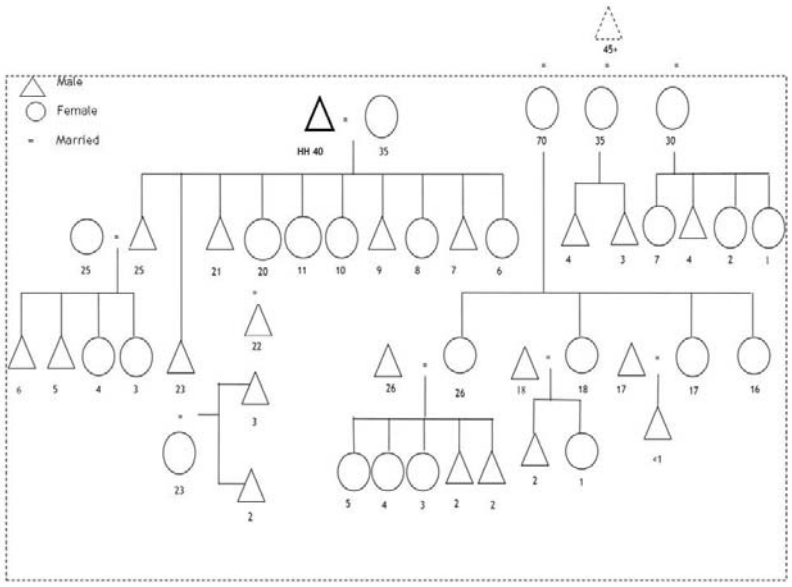
The household of Mir Mohammed currently consists of as many as 47 members. He belongs to the relatively affluent members of the community and is also a member of the village council. He owns 30 acres of land, where before the flood he cultivated crops like sugarcane, sunflower and wheat. He had two brothers, one living at the shore of the canal 'Bikik Mori', who cannot work properly because he is ill, so he was supported with cash and food by Mir Mohammed. His other brother had three wives, ten children and eleven grandchildren. Mir Mohammed himself supports his mother, his wife, eleven children and six grandchildren in his 23–member household. Before the flood, the VCI value of Mir's household indicated a relatively low level of vulnerability with 16 points. When the flood hit, his brother got sick and died, which made Mir Mohammed the sole caretaker of his deceased brothers' household. The losses induced by the flood completely destroyed their harvest of seven acres sugarcane and 16 acres wheat. A great number of their livestock died (two water buffaloes, 25 goats). When they came back to their home, all they found at the place of their former house were some wooden beams. Mir Mohammed had to sell his remaining two water buffaloes for 100,000 Rs (instead of 250,000 Rs).

Source: photograph © Martin Enzner, February 19, 2011

**The household of Mir Mohammed in front of their provisional shelter**

In order to provide cash to feed his household of now 47 members he also cut several trees on his property and sold the wood. He used the money to pay back his loan at the shop keeper in Daro, where he bought seeds, fertilizer and food. He had also to cover bills from the doctor because several family members got sick after the flood. Due to the flood, the VCI score of the household increased by 39 points to the current score of 55.

At the moment Mir Mohammed cultivates only seven acres of his fields, because he does not have enough cash to buy seeds and fertilizer. Additionally he grows the less profitable crop wheat instead of sugarcane, because he could not afford the more expensive seeds. Another problem is the increased salination of his fields caused by the flood. One of the problems his family faces is their consumption of betel nut (pan). Most of the household members, including children, are showing typical signs of addiction. In case they cannot consume pan, they get headache, pain in the mouth, lose concentration, cannot work on the field and cannot find sleep at night. The pan consumption costs the family at least 6,000 Rs per month.




Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011. Design: Stefanie Renz

**Genealogical structure of Mir Mohammed's household**

### 5.2.3 Summary of findings: loss of basic services threatens rural livelihoods

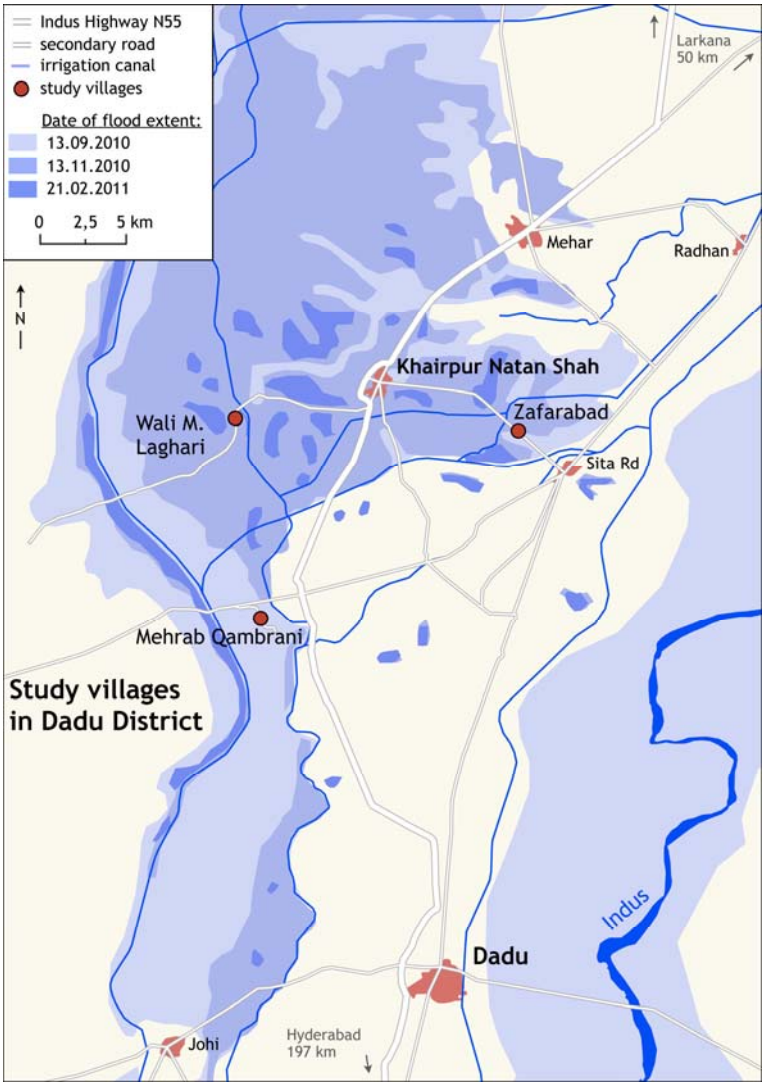
Reconstruction of shelter with local materials through the use of local labour force and before onset of the monsoon has to be facilitated quickly in the survey villages of Thatta. The non-availability of a secure and sheltered space has caused several incidences of snake bites as in the present circumstances everyday life takes place in the open. The urgent need to improve water access and water quality should be addressed by replacement of existing defunct with locally available hand pumps. To address the food crisis in the longer term, provision of seeds and fertilizer is important so that people are in the position to commence agricultural activities. Also support in re-stocking of livestock would help to facilitate food security and to open up additional income sources. There also should be awareness programmes to reduce the betel nut consumption of small children.

In addition both village settings have provided ample evidence that disaster preparedness could be introduced with comparatively little efforts. The display of boards with explanations how early warning strategies could be implemented in the case of flood events, where there are safe havens in case of inundation and where livestock could be driven to in order to prevent the severe losses of the only valuable commodity could help to avoid panic situations and could utilize fresh knowledge from last year's flood event. The cooperation of governmental and non-governmental institutions needs to be guaranteed as these are "shared disasters" where it does not matter who is who. As the government-led repair of the dyke that should protect these villages from the next flood has only commenced recently the local trust in all kinds of institutions is limited. Consequently, the fear of the next flood is prevalent, and even a smaller flood would affect these villages as they are located in close vicinity to the yet un-mended breach in the Indus dyke.

All activities need close monitoring in the field by trained and experienced community facilitators, and subcontracting of procurement through middlemen should be avoided to ensure efficient use of available funds. Any implementation of development packages requires a transparent and consensual process in which is indicated and understood why certain households will benefit and others will not.

## 5.3 Dadu – exploitative sharecropping systems as an accelerating factor for pauperisation

Dadu with its favourable agro-ecological conditions is the breadbasket of Sindh. Wheat represents the main crop, and annual harvest outcomes are of crucial importance to achieve food security in all of Sindh. However, Dadu was also heavily affected by the flood, and large parts of the district were still under water at the time of field research in February 2011. Huge parts of the kharif harvest were completely destroyed in the flood, and thousands of animals drowned in the water. While a lot of people already turned back into their still damaged villages, many have not been able to do so because of flood water still inundating their lands and living places. Where the water receded already, however, food grains present themselves in full maturity and a fruitful first harvest can expected for 2011. However, these village lands often belong to the landed classes alone.




Data source: Nasa 2010. Satellite imagery from Sept. 13, 2010, November 13, 2010, February 21, 2011; own GPS-Data from February 22, 2011. Design: Martin Enzner

**Fig. 5.30: Dadu District – dimensions of flooding**

Similar to the situation in Thatta District, all surveyed locations in Dadu District suffered great losses of tangible assets such as housing, land, and livestock. People still try to cope with the after-effects of the disaster and will need committed long-term support in rehabilitating their livelihoods. The villages in Dadu again present quite distinct features that differentiate from the assessed locations in other districts. For one, all villages are very compact and not consisting of scattered hamlets as was the case in Badin and Thatta. Further, in two out of the surveyed villages the problem of bonded labour appeared to be even more pronounced as was already the case for Thatta. Concerning this point, people in Dadu District are strongly affected by high indebtedness aggravating the problem of bonded labour.

#### 5.3.1.1 Bonded labour, debts and sharecropping in Dadu

Dadu is not only the bread basket of Sindh, but also a district where exploitation through large landowners (*wadera*) via systems of bonded labour and exploitative sharecropping arrangements are an everyday reality for many rural people (cf. Hasan 2000, Hussein et al. 2004, Martin 2009). This fact has been also observed to significant degrees in the survey villages of Wali M. Laghari, Zafarabad, and Mehrab Qambrani.

The Asian Development Bank in its report on rural development in Sindh commented: "The major characteristics of rural poverty stemmed from the complex social, cultural, legal, and political environment, with the feudal relationship between landlords, tenants, and landless laborers at its core. A sharecropping tenancy system prevailed in the canal-irrigated areas of the project districts, and changes in the tenancy system over time worked to the disadvantage of the haris (tenants and sharecropper). The haris were becoming "bonded", in the sense that their right to move and seek employment freely was restricted until their debts were settled. Low levels of compliance hampered the effectiveness of the Sindh Tenancy Act (STA), 1950, which was enacted to regulate the tenancy arrangements and protect the rights of the cultivators." (ADB 2010, 1).

The persistence of feudal relations presents a particular problem for affected communities in times of disaster, as the vicious circle of perpetual indebtedness is further cemented when landlords do not grant amnesty for loans taken to prepare the autumn harvest that was lost in the flood.

Evidence from fieldwork in the villages of Thatta and Badin revealed certain characteristics with regard to the practice of bonded labour. Its major defining feature is the establishment of debt-bondage, when the workforce of a person is demanded as a means of repayment for a loan. In the villages of Dadu and especially in Mehrab Qambrani and Zafarabad landless tenants or tenants with very small landholdings of their own work under sharecropping agreements that keep their households perpetually indebted to landowners, often over generations. Under these arrangements, tenants cultivate land for a specified return of the harvested crop, to begin with often on a 50-50 basis. However, all

agricultural inputs and machinery have to be paid for by the tenant, in almost all cases on credit-terms dictated by the landowner. This reduces the share of the harvest at the tenants' disposal. Even in good years, the remainder is hardly enough to keep a household afloat and new credit for food and agricultural supplies becomes a necessity. During the flood, however, the entire harvest was lost and tenants are forced to repay their debts taken for seeds, fertilizer, and machinery. No amnesty was granted by the landlords, and in many cases encountered during fieldwork a share of 80-90% of the upcoming harvest will have to be delivered to the wadera, leaving almost nothing but debts for the tenants.

Roughly 35% of people working for income in Dadu are bound into such oppressive sharecropping arrangements (55% in Mehrab Qambrani, nearly 50% in Zafarabad, and 14% in Wali M. Laghari). Other forms of debt that affect the rural population in Dadu refer to outstanding loans at high interests with shopkeepers or wholesalers. This permanent indebtedness for most – either in form of sharecropping or the need to access credit to afford basic food and healthcare – is a striking feature of the entire sample of 140 households in Dadu District. As many as 96% of all households in Mehrab Qambrani where all resident households have been interviewed, have outstanding credits. The figures for Wali M. Laghari (80%) and Zafarabad (79%) hardly look any better.

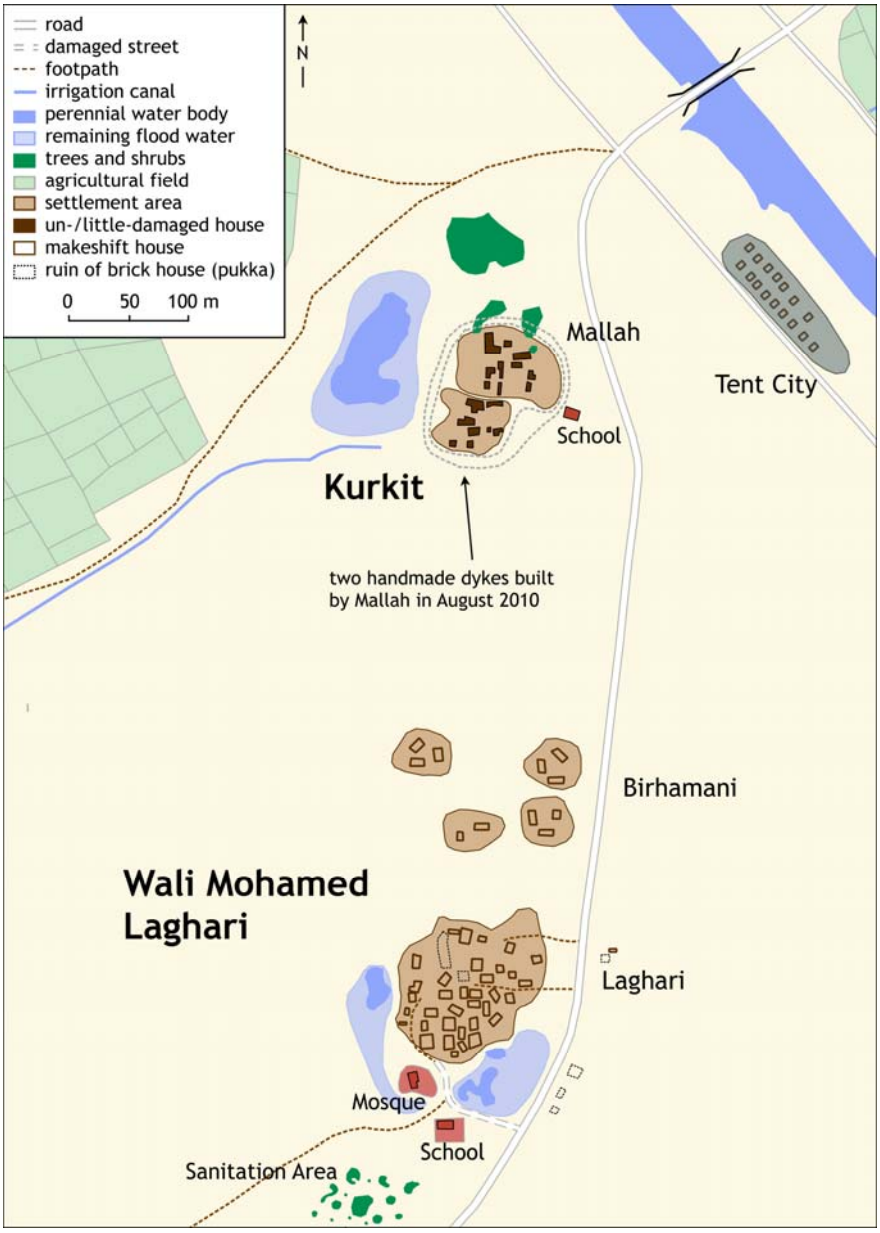
The amounts of outstanding credit is highest in the villages of Dadu too, with an average of 106,000 Rs per household in Mehrab Qambrani where debt bondage is strongest, and 36,000 Rs in Wali M. Laghari and 32,000 in Zafarabad.

Another general feature across all three villages is the heavy loss of livestock in the flood. Those few animals that could be saved had to be sold usually below market prices after the flood, for need of cash to afford basic foodstuff.

### 5.3.2 Wali Mohammad Laghari – small landowners at the tail-end of the irrigation system

Wali Mohammed Laghari has a compact spatial structure. Located at the tail-end of the Meer Mohammed Canal and the irrigation system as a whole, the village presents itself as a typical canal colony accessible via one main road (cf. Fig. 5.32).

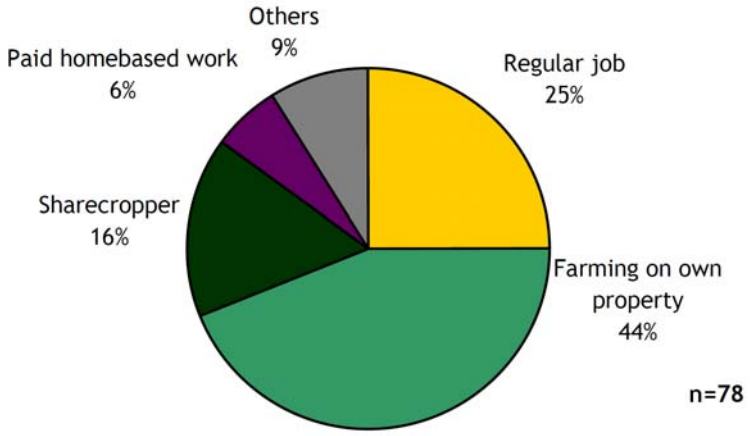
The settlement has a rather homogenous population with the Laghari as major social group engaged in the agricultural sector and with access to small plots of own cultivable lands (between one and 40 acres), on which they farm wheat, cotton, sugarcane and rice. A separate hamlet is populated by the *Birhamani* that predominantly work as camel-breeders that use their animals to provide the means for transport of goods. The women of the group often weave cord from date palm leaves, producing the prime material for *khat*, the traditional Pakistani beds. This home-based activity sustains an important part of the Birhamani village economy. Goods produced by women are usually traded in the nearby urban center of Khairpur Nathan Shah.




Data Sources: GeoEye satellite image of May 1, 2001 (Google Earth); GPS data gathered on February 24, 2011.
Design: Martin Enzner

**Fig. 5.31: Wali Mohammad Laghari and Kurkit - two hamlets and two modes of survival**

A few hundred metres north from Wali M. Laghari there is the hamlet Kurkit, inhabited by about 75 households belonging to the social group of Mallah. Due to the displacement from important fishing areas forced by other social groups the Mallah in Wali M. Laghari are not primarily engaged anymore in fishing such as is the case for fishing communities in Badin and Thatta. In fact, fishing has become a livelihood option only in the frequent years of minor flood events, when they catch fish in the fresh-water on agricultural fields. There used to be even a small pond for professional fish-breeding, but this has deteriorated and could not be used for the last 30 years. Most Mallah today are engaged in sharecropping arrangements or work as casual labourers. The overall occupation structure in the three hamlets is provided in Fig. 5.33.



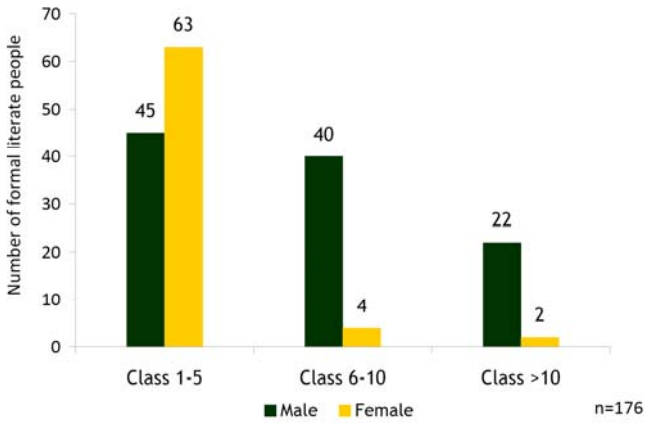

Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011

**Fig. 5.34: Main income structure of working household sample members in Wali M. Laghari**

Wali M. Laghari has developed a reputation for his emphasis on education, signified by the high number of Laghari teachers and a comparatively high level of education with 53% of school attendance (cf. Fig.5.35). In the village itself there are eight teachers. Four of them are in charge of the village primary school with their 150 boys and girls, the others work in neighbouring villag-es. Higher education beyond 5$^{th}$ grade, however, is available only in K.N. Shah 26 kilometres away from the settlement, and needed investments for daily transport and school materials exceed the capacities for most. Children join the agricultural labour process quickly or continue a religious education in a *madrasa*.

Source: photograph © Fabian Singelnstein, February 28, 2011

**Fig. 5.32: School class of Wali M. Laghari**

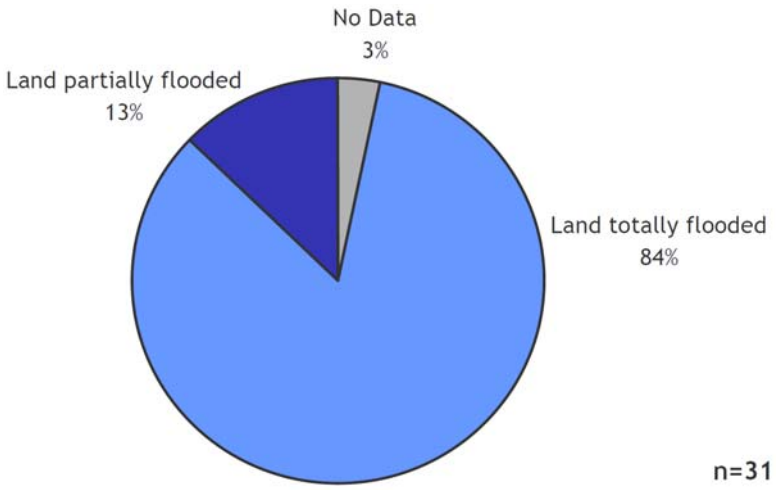



Source: data recorded by ZELF team, February-March 2011

**Fig. 5.33: Literacy distribution of all household sample members by gender and class**

In terms of access to healthcare the village-cluster is excluded, with the closest facility located in K.N. Shah. In case of illnesses and emergencies this presents a serious problem because public transport connects the village only irregularly and people have to rely on the few motorcycles owned by individual villagers, or more often on using donkey or camel carts.

K.N. Shah assumes importance also for any kind of trade related activity and basic household supplies. Agricultural products are marketed there, and farming supplies are accessible via credit relations. This means also, that a majority of villagers are indebted to agricultural wholesalers and shopkeepers to significant degrees (40,000 Rs as median), creating a situation of dependency that is difficult to overcome and that has increased after the flood when cultivation has come to an almost complete stop because many fields are still inundated with standing water or sufficient funds for the provision of needed agricultural inputs are lacking (cf. Fig. 5.37). To cope with the adverse situation, the levels of indebtedness in the village community have risen dramatically.




Source: data recorded by ZELF team, February-March 2011

**Fig. 5.35: Percentage of land-owning sample households with flooded land**

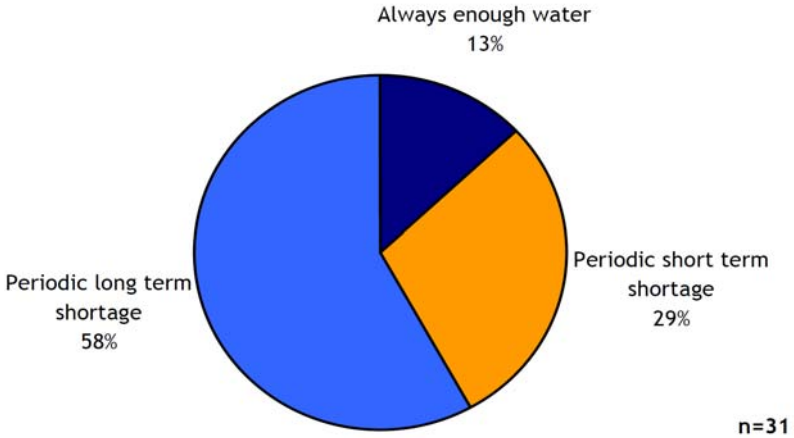
Wali M. Laghari has a village council that meets to discuss and decide on issues of common concern. It consists of ten elders and one chairman, the *muezzin* Mohammed Laghari who also works as a teacher in a government college in Dadu town and visits his village only at weekends. During the flood it was the chairman who was in contact with the army and who helped organising the evacuation of the village. He is also responsible for the social water management and canal-water distribution inside his own village and in cooperation with other heads of neighbouring villages and hamlets depending on the Meer Mohammed canal.

Access to drinking water was made possible by the 15 hand pumps that existed in the village before the flood. However, these are now completely destroyed and water needs to be fetched some distance away. A water filter pump is under construction organised by the Indus Resource Centre but still not completed. Electricity was available for nearly all households in the village before the flood, but connections have not yet been reinstalled.

The location of the village at the tail-end of the canal system leads to irrigation water shortage. People are not in a position to avoid that more powerful landowners further up the canal take out water and leave insufficient quantities for those at the tail-end. As such, in most seasons there is not enough irrigation water for generating two harvests.

In fact influential people further up the canal can yield two crops (*do-fasli*) while poor people have to depend on one crop (*ek-fasli*) only (cf. Box 15). This is why preference is given to wheat or cotton in the dry season because of their limited need of water when

compared to rice or sugarcane. Accordingly, more than half of the interviewed households reported that they suffer from periodic long term shortages of irrigation water (cf. Fig. 5.36). People try to cope with the situation by using tube wells, but although tube well irrigation is adequate for the germination of rice seeds, it does not provide the water quality needed to allow rice to mature as the groundwater is too salty. The great dependency on only one harvest per year in an area where normally two harvests are possible leads to economic instability for farming households, which is why villagers are forced to search additional income, e.g. such as urban construction workers or as sharecropper for bigger landowners. Additional income is also generated by many women in the settlement who contribute to the production of Sindhi caps (cf. Fig.5.40).




Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011

**Fig. 5.36: Access to irrigation water of land-owning households**

**Box 15: Social water management and the canal tail-ender problem in Wali M. Laghari**

The tail-ender-problem describes a situation generated by the unequal use of water resources in an irrigation system where the excessive use of water upstream leads to deficient supply downstream. Although the Indus Basin Irrigation System in Pakistan and India is the most extensive irrigation system in the world, water supply is not overall guaranteed during the year, especially in the southern districts of Pakistan. Technical renovations such as the construction of water storage ponds or the improvement of traditional irrigation methods have been considered (Mirjat M.S. et. al. 2006) but in the concrete case of Wali. M. Laghari the tail-ender-problem is however not just about insufficient water supply but also about economic influence and political abuse of power.

The principal Dadu canal feeds into the smaller Johi Baruge canal, eventually supplying the Meer Mohammed and the Bego Dero canals as the major reservoirs for cultivation in different villages, among them Wali M. Laghari. However, the water level and water distribution capacity of the Johi Baruge canal is manipulated by several powerful politicians and big landholders who own farms upstream and tap surpassing amounts of water in order to cultivate their own fields, leaving insufficient quantities for the farmers of Wali M. Laghari. Local rice farming and irrigation for a second harvest is made impossible this way.

Official water management for the Meer Mohammed and Bego Dero canals is carried out by a government official, the Abdar, who defines the hours of the day when canal water is directed to each village. The order of serving each village is negotiated by the village elders every year and might therefore rotate. Within each village the distribution mechanism is regulated by designated persons too. Usually, equal amounts of water reach every field depending on size. In case of the frequent water shortages faced by villagers, the fields located in the upper part of the village will be first served. This has a bearing on land prices in Wali M. Laghari too and explains why amounts between 40,000 and 200,000 Rs per acre are charged, depending if a parcel is located at the upper or the lower part of the canal.

#### 5.3.2.1 The women of Wali M. Laghari as essential part of the Sindhi cap value chain

The Sindhi cap with its unique design is worn by Sindhi men and regarded as an essential part of Sindhi culture. Complex geometrical designs are embroidered on the cap, and often small pieces of mirror are sewed into it. In several villages in Dadu District, the sewing of Sindhi caps is an important livelihood activity. In Wali M. Laghari and Kurkit a smaller number of men and almost all women and girls are involved in sewing the caps as a home based work activity (cf. Fig. 5.41).

Villagers thus form an important part of the product's value chain:

1) A middleman (tekedar) visits the village regularly and sells machine-made textile sheets to women in cap-producing households. Each Sindhi cap consists of two different parts of textiles that cost 50 Rs each, so the women pay 100 Rs for the textiles needed for one Sindhi cap. Yarn, knitting needle and small pieces of mirror are provided for free.

Source: photograph © Martin Enzner, June 17, 2011

**Fig. 5.37: Machine-made textile sheets needed for one Sindhi cap sold by a middlemen to the women of Wali M. Laghari**

Source: photograph © Martin Enzner, June 17, 2011

**Fig. 5.38: Textile sheets needed for one Sindhi cap processed handmade by the women of Wali M. Laghari**

2) The women and girls of Wali M. Laghari sew geometrical patterns along marked lines on the textile sheets, integrating the small pieces of mirrors in the textile. Their work adds the highest value to the Sindhi cap product and represents the by far most labour-intensive step. For both textile sheets of one average model they need to work at least 10 hours, a good model needs 20 hours work. After embroidering, the women sell the textile sheets back to the middleman for prices between 180 and 200 Rs, realising a profit of 80-100 Rs per cap. That means women earn between four and eight Rs per hour. Most women perform their work in part-time, finishing around three to five caps per month. In another contract model the women get the textile sheets for free and get 120 Rs as a lump sum for their embroidery work of 20 hours.

Source: photograph © Martin Enzner, June 17, 2011

**Fig. 5.39: Sindhi cap: made by villagers and Sindhi cap from a shop**

3) The company finishes the cap by sewing both embroidered parts together.

4) The caps produced in the village are sold in cities nearby, such as Nawabshah, Larkana and Dadu. A market survey in two Sindhi cap shops in Dadu showed, that caps with similar designs cost around 400 Rs.

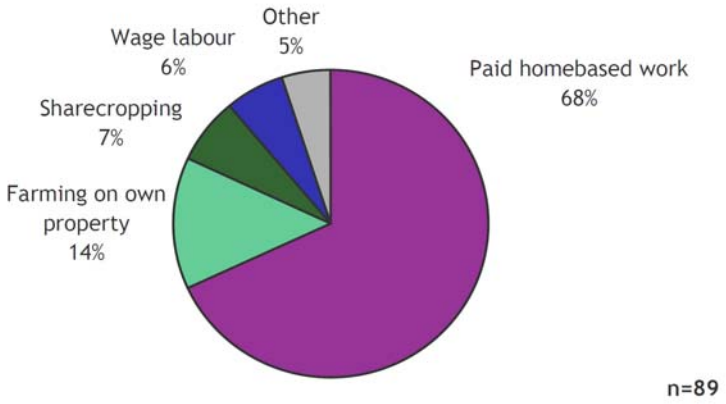
The value chain implies that between 300 and 320 Rs of the sale price goes to the company, the middleman and the retailer. Only one fourth of the selling price (80 - 100 Rs) goes to the hard working women, even though they are the ones who add most of the value to the product. Aysha, a sewing women of Kurkit, says: "We are glad to have some work, but we have never seen a completed Sindhi cap made from our sewing work. We don't know the final selling prices for the caps we worked on" (interview from February 25, 2011).

**Potentials of changing the Sindhi cap value chain to increase household incomes in Wali M. Lagari**

There are three steps in the value chain not covered by the women that form the basis for profit of the Sindhi cap companies who control the entire value chain: production of machine-made textile sheets with marked patterns, uniting both textile sheets after embroidery and the sales & marketing of the product. However, the labour-intensive embroidery work generates the highest value of the final product.

As almost all women and girls of both villages are busy sewing Sindhi caps for several years, they developed comprehensive sewing skills. There seems to be a considerable potential to take advantage of these skills to contribute to the socio-economic development of both villages. If the three steps that are currently not controlled by the women could be given in the hands of the communities in Wali M. Laghari and Kurkit, they could keep the whole sales revenue of the Sindhi cap with almost the same amount of working hours. They would gain control over the value chain to those who contribute most to the value creation of the product. Changing the configuration of the existing value chain could be a measure taken by GRC/PRCS to foster socio-economic development in both villages.

To achieve this, a village-based organisational entity needs to be created that has to be enabled to reach financial sustainability as soon as possible and reassures that all financial profits go back to the community. It will be crucial to find a capable person being in charge to accompany the founding process. It should be an innovative personality that keeps the objective in mind (reconfiguring the value chain to benefit the local community), thinks market-oriented, recruits adequate human resource for the design and marketing of the product, is able to adapt the business model to unpredictable changes and is keen to transfer governance as soon as possible to the local community.




Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011

**Fig. 5.40: Secondary income activities of household sample members in Wali M. Laghari**

In the following, possible actions to be taken to reconfigure the first, third and fourth step of the Sindhi cap value chain to the benefit of the women are outlined.

First, it needs to be assessed which type of automatic sewing machine is needed and where it could be placed. Suitable textile materials have to be procured, and a workforce able to design the marked patterns has to be trained.

Sewing the two pieces of textile together can be done by the village women already with little effort, which has been tested in the village of Wali M. Laghari. The women were asked to sew both parts of a Sindhi cap together and within one day they finished several Sindhi caps with ease.

Sales & marketing of the product can be done through different possible channels which should be tested in order to identify the most effective ones. Caps could be sold directly on markets in the cities nearby (e.g. Dadu, Khairpur Natanshah, Nawabshah, Larkana). There could be a shop run by cap-producing village organisations in a major urban market. Retailers could be employed when the advantage of accessing the retailers outweigh the smaller margin of the product when using middlemen. There are more ways to get the product to the customer and creativity and experimentation is needed in order to market the product successfully in competition to existing companies. If these and other actions are taken, village-based Sindhi cap production has the potential to contribute to the socio-economic well-being and empowerment of the local community.

**Box 16: Ruined life after the flood**

The household of M. Salim illustrates the fate of a majority of Laghari households. As agriculturalist with access to ten acres of own land, some larger livestock and limited indebtedness to wholesalers, the household was able to lead a stable in relative security. The situation changed dramatically because of the flood event, which drove M. Salim into poverty. His house was fully destroyed, he lost his water buffalo and two goats and his fields are still under water. The basis of his livelihoods is diminished and the lack of cultivation drove the household into high debts. Daily food supplies, fodder for his remaining livestock which he used to grow by himself, and his endeavours in rebuilding his house are all financed through credit arrangements which M. Salim might have difficulties to ever escape from – he accumulated as much as 400,000 Rs of debts which represents the fortune of a lifetime for many.

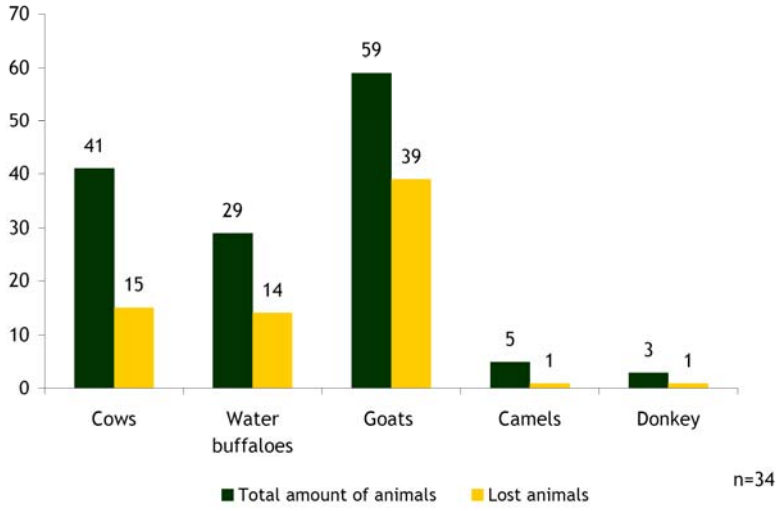
Source: photograph © Martin Enzner, February 26, 2011

**Mohammed Salim in front of the ruins of his house**

#### 5.3.2.2 Local impacts of the flood

Approximately 40 Laghari-households still live in the so-called tent city next to a drainage canal some distance away from the main settlement, because the area where their houses once stood is still waterlogged and too swampy to be resettled (cf. Fig.5.32). Although the village is slightly elevated, this fact could not prevent massive destruction of the buildings in the flood event. Almost all villagers lost their houses, and even the few brick buildings that existed were heavily damaged and are still not habitable. All residents therefore have to live in makeshift shelter constructions. The street to the village is passable too and regular traffic has been re-established.

While the Birhamani managed to save their camels and part of their other livestock, the Laghari lost most of their livestock or had to sell it to cope with the flood disaster (cf. Fig. 5.42).




Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011

**Fig. 5.41: Loss of animals in sample households due to the flood**

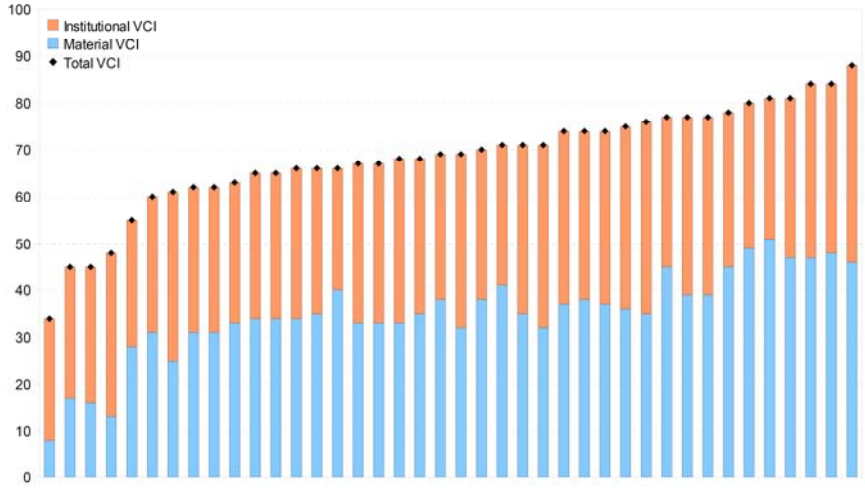
The entire autumn harvest was destroyed, and seven months after the flood a vast majority of agricultural land is still inundated and not cultivable (cf. Fig. 5.37). People are struggling to generate any cash for their basic needs and had to deplete their available assets and seek credit often on exploitative terms. Most people wait for the withdrawal of floodwater from their fields and struggle to cope with the situation. The case study of an affected household in Wali M. Laghari illustrates the severe problems encountered after the flood and may stand exemplary for many others (cf. Box 16).

The situation for the Mallah population in the nearby village Kurkit is not that different in terms of infrastructure. The tail-ender-problem affects the population in the same way it does in Wali M. Laghari and the electric and drinking water conditions are even worse. Only one third of the Mallah households have access to own land so that diversified labor strategies exist as a permanent survival strategy. However, the Mallah of Kurkit established themselves as successful disaster risk managers. Their settlement was not as

severely affected by the flood and the reason for this lies foremost in the strong social organisation of people. After they first heard of the upcoming flood, they immediately built a dam to protect their small settlement. Then they themselves drafted an evacuation plan and all households plus their livestock were immediately transferred to safer areas. Only a task force of about ten men remained in the village to protect it from looting and further destruction. After the return of all household members, they could repair immediately all inflicted destruction, but most houses were in comparatively reasonable condition. As a major asset a lot of their livestock was saved from perishing. This successful example is important in order to understand how disaster preparedness can work at the community level. Villages obviously can be protected by local means. It also demonstrates the importance of functioning systems of social organisation. Where communities are devoid of these, they have to be facilitated in order to support themselves to strengthen their self-help potential, and to establish transparency in any kind of programme implementation and targeting of most vulnerable households. To emphasise this point, the case study of a Mallah household may provide further insights (cf. Box 17).

#### 5.3.2.3 Material destruction and infrastructural needs

As it is illustrated in the description above, the village Wali M. Laghari consists of three muhalla with different social groups each of them employing different coping strategies during the flood in 2010. Fieldwork was concentrated mainly on the Laghari population so that 38 of 41 households shown in the following VCI diagram refer to them. A homogenous and consistently high distribution of the VCI values can be observed, ranging for the majority of interviewed households between 55 to 88 (cf. Fig. 5.43). Only four households present a somewhat lower score - these are two teacher households (Laghari) with a regular income, one Birhamani with a larger number of livestock and one Mallah from Kurkit able to safe the house and some livestock.




Source: data recorded by ZELF team, Freie Universität Berlin, February-March 2011, n=41

**Fig. 5.42: VCI scores for Wali M. Laghari**

For all households it can be established that the very low infrastructure especially in the cases of drinking water, energy supply and medical centre leads to a high vulnerability score which turns even worse for those households which suffer from unemployment due to the flooded cultivation areas and serious dependency rates because of indebtedness. Bigger households with mayor varieties of income sources can cope more flexible in this situation as little nuclear families, especially the six widow households which belong to the most vulnerable ones with VCI scores between 70 and 88. Slightly variation of the VCI scores may also occur because of differences households present in their material equipment. One basic aspect in this context is the loss and the maintenance of livestock (cf. Fig. 5.42).

**Box 17: How social solidarity absorbs the losses**

Mohamed Waris lives together with his parents, six brothers and one sister. One of his brothers is married and has four children. He is 32 years old and worked in a textile mill near Kotri for several years. His father Rahmatullah and his brothers worked as sharecroppers on 10 acres of land. Additional income sources for the household included sewing by the women and fishing when fields are flooded.

Apparently because the Mallah in Kurkit are skilled fishermen, they could cope with the flood of 2010 far better than surrounding villages. Having taken the media warnings seriously, all heads of household in the hamlet convened and discussed probable actions to safeguard their possessions. The entire household of M. Waris participated in building several concentric dams around Kurkit. As the water level rose and the first dam broke, villagers organised the evacuation. They rented trucks and went to relatives in safer areas about 150 kilometres away where they stayed for two months. As many others, M. Waris was able to rescue most of his livestock due to community action. His father Rahamatullah and his cousin Shamir stayed in the village the entire time together with eight other people to protect their settlement from looting. During that time the army provided them with food by helicopter. Still, M. Waris had to endure financial hardship in spite of successful disaster management. Their three mud houses sustained some damages, they lost their harvest as sharecroppers, one water buffaloe and two goats. Health problems occurred (itching skin, diarrhoea) and their credit volume at the shopkeeper in K. N. Shah increased from 2,000 Rs to 40,000 Rs. After the flood the household got two *watan* cards, the money from which they bought two boats for fishing on the still flooded fields and to provide other villagers with transport. Since their returning to the village M. Waris has not worked in the textile mill again, and he plans to join his brothers work as a sharecropper.

#### 5.3.2.4 Measures to improve the situation

In addition to the general lesson for development cooperation provided by the local Mallah community, there are pressing short term issues in Wali M. Laghari to be addressed. As in other places, the reconstruction of shelter with locally adapted and preferred materials through use of local labour on terms of cash for work is of high priority to help people in coping with losses and the imminent hot season and the subsequent monsoon rains. Longer term initiatives should focus on generating cash and support of home-based industries such as the Sindhi cap production outlined above. In Wali M. Laghari support in the provision and maintenance of tube wells could be important too in order to address the shortage of and exclusion from irrigation water. Establishing institutionalised credit schemes is a further step that would enable villagers to access cash that is in great demand to execute their professions and to re-establish a productive physical infrastructure (e.g. carts for the camel-breeding community).

Further it is advisable to quickly establish access to safe drinking water and continue the construction of the water filter plant. Programmes of debt alleviation should be contemplated.

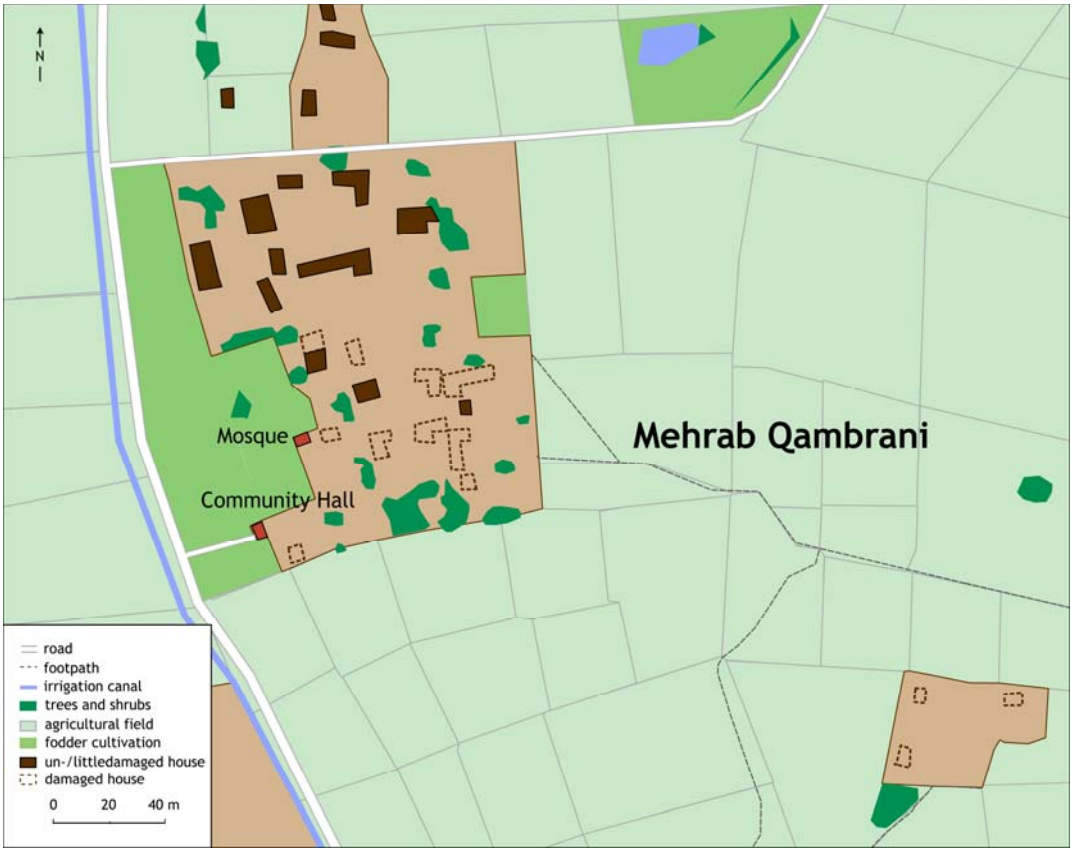
In several interviews people assured that once their houses would be rebuild and agricultural activities could be commenced that their situation would likely improve quickly. Support with seeds and fertilizer is therefore highly recommended to bring people on their feet again.

In terms of DRR much is to be learned from the way the Mallah acted in the catastrophe and how they were able to protect themselves and their village with quite simple but effective methods based on local knowledge, community organisation and available expertise. Supporting communities in building stronger social organisation can be an important way to activate capacities that lay dormant, but also to help implement livelihood packages that benefit all members of a community.

### 5.3.3 Mehrab Qambrani – a sharecropping village dominated by big landlords

The village of Mehrab Qambrani is as a compact settlement inhabited solely by the name-giving group of Qambrani, according to respondents founded in 1942 and with familial relations to a variety of additional Qambrani villages in the region. Today, about 400 people live in 75 households, out of which 71 have been interviewed. The main part of the village is on top of a small hill, two smaller hamlets are located within the surrounding area (s. Fig. 5.44). The majority of houses are built from mud bricks with only a very a few solid houses in the elevated northern part of the village. There is a seasonal road to the small-town of Thar Ree Jado Shareef (4 km), where the inhabitants of Mehrab Qambrani have access to primary education and basic health treatment. Some villagers work as shopkeepers or sell their own agricultural products in that settlement. For further access

to goods and services the villagers have to travel to the market city of Kakar (about ten km). The village is connected to an electricity main line and fresh-water access is provided through nine hand pumps. As important social institutions one can find a community hall and a mosque at the entry of the village where children also receive religious education.




Data source: GeoEye satellite image of August 29, 2010 (Google Earth); GPS data gathered on February 25, 2011. Design: Wibke Ott

**Fig. 5.43: Mehrab Qambrani - The compact settlement of Mehrab Qambrani in the village lands**

Most houses in the village have been destroyed in the flood, much livestock perished in the disaster or has been sold below market value providing the dearly needed cash to afford basic foodstuffs, and there is a severe shortage of safe drinking water supply. There are however two village councils representing men and women that meet very regularly and work actively to address the issues that are deemed important. These councils and their chairman and village leader and arguably richest person in the settlement, Haji Mittah Khan, could serve as implementing partners for any activity that is planned to improve the dire living situation in the location. The separate women's group (*shura*) that meets once a week in different households is led by a lady named Bachal. These meetings provide a forum for women to discuss common issues from their own perspective.

The fields around Mehrab Qambrani have been cultivated and promise a good harvest. However, this fact does not necessarily mean much for villagers, as their own fields are rather small and the majority is bound into sharecropping agreements with larger

landowners. In fact, the situation in the small and compact village provides a measure of the severity at which the flood disaster affected people, and how poverty-stricken villagers have to shoulder most of the losses and duly cope with the burden that was incurred by the flood. The core of the problem lies in the land and labour relations into which people are entangled. Although some households do have access to own agricultural land, the size of it does not suffice for subsistence, let alone marketing of surplus. Here, genealogical sequence and inheritance of available land amongst male sons does continuously reduce the acreage under disposal for individual households. In this respect, the situation resembles that of the Thatta villages. However, in Mehrab Qambrani evidence suggests that agricultural losses are shifted from landowners to sharecroppers through debt relations that were increasing significantly due to the flood. The lost harvest of autumn 2010 was put down to villagers' account and factually there will be nothing remaining for many households in the upcoming spring harvest. Sharecropping in Mehrab Qambrani usually works on a 50-50 basis, i.e., half of the harvest is taken away as the share of the landowner. However, an additional 10% of the harvest is charged for supply of seeds, fertilizer and use of tractor, and one fifth for repayment of the inputs for the lost harvest. On top of this will be a charge on repayment for already outstanding debts. This system ensures that sharecroppers have to shoulder the bigger part of the burden and will be bound to the land they cultivate for others into the unforeseeable future.

Source: Drawn by Meer Aga and a group of villagers, February 26, 2011

**Fig. 5.44: Sketch map of Mehrab Qambrani**

The flood crisis has aggravated the social condition of the most vulnerable groups while landowners transfer their losses to them and try to overcome the crisis scot-free. This is a grave example of becoming more vulnerable by an external crisis that is beyond the means and influence of the affected people. Debts will have to be passed onto the following generations who will become bonded themselves. Options to return the full amount of outstanding credits are almost non-existent under the prevailing circumstances. Respondents have estimated that it will take more than ten years to cover the repayment of the flood-induced losses alone.

**Table 5.2: Landlords controlling agriculture in Mehrab Qambrani**

| **Large landowners controlling agriculture in Mehrab Qambrani** |
|---|
| Meer Mohammed Babar |
| Meenoho Khan Janali |
| Ali Akhbar |
| Nazar Naich |
| Naban Khan Lund |

Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

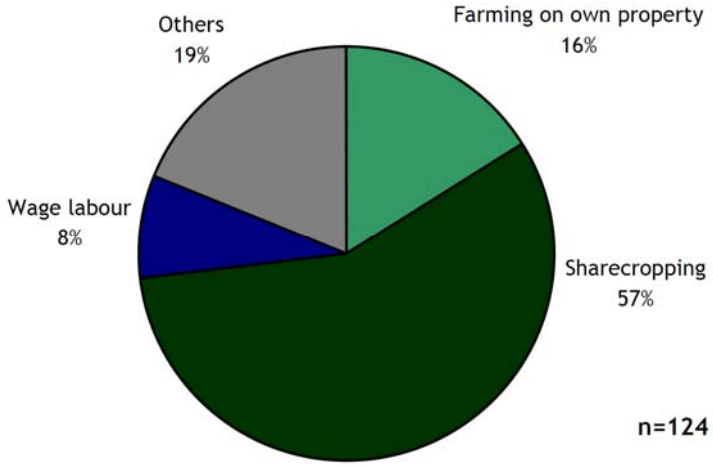
Socio-economically the village is quite homogenous because all of its inhabitants consider themselves as members of the Qambrani caste and the vast majority is engaged in agricultural labour (cf. Fig. 5.46). A community wealth ranking revealed that only six households are considered as wealthier by the village community, whereas the remainder is immersed in relations of bonded labour and is considered as highly vulnerable – an assessment that corresponds with the VCI data presented in Fig. 5.47.

The entire agricultural area of Mehrab Qambrani - apart from the small and scattered landholdings of individual households, belong to five different landlords whose names have been communicated to the assessment team (cf. Table 5.2). The landlords own the big parcels surrounding the village which are usually cultivated with wheat in kharif season and rice in rabi season.

Irrigation of the fields takes place via the main canal and regulated by decisions made by the village head Haji Mittah Khan. Before the flood their have been no water related problems, neither for irrigation nor for drinking. Agriculture is often supplemented by breeding cattle in, but during the flood most livestock perished or had to be sold to cope with flood induced losses. For additional income many villagers try to access on casual wage labour, mostly as truck loaders in Thar Ree Jado Shareef. The importance of casual wage labour has increased significantly after the flood.

The overall situation in the village is, not surprisingly, strongly characterised by the devastating impacts of the flood. The water has vanished more than four months ago and almost all households have come back to the village, but flood effects are still shaping their daily life.

Before the flood, 80 to 90% of the housholds were living in kacha mud houses, ten percent in *pukka* houses. All *kacha* houses were completely destroyed by the water, and people now live in tents provided by relief organisations. The *pukka* houses were all partly damaged too. Some households collected the bricks of their houses to solidify their makeshift shelters. However, none of the villagers, not even those considered wealthy, has the financial or material means to rebuild his house, despite personal skills in house construction exist.



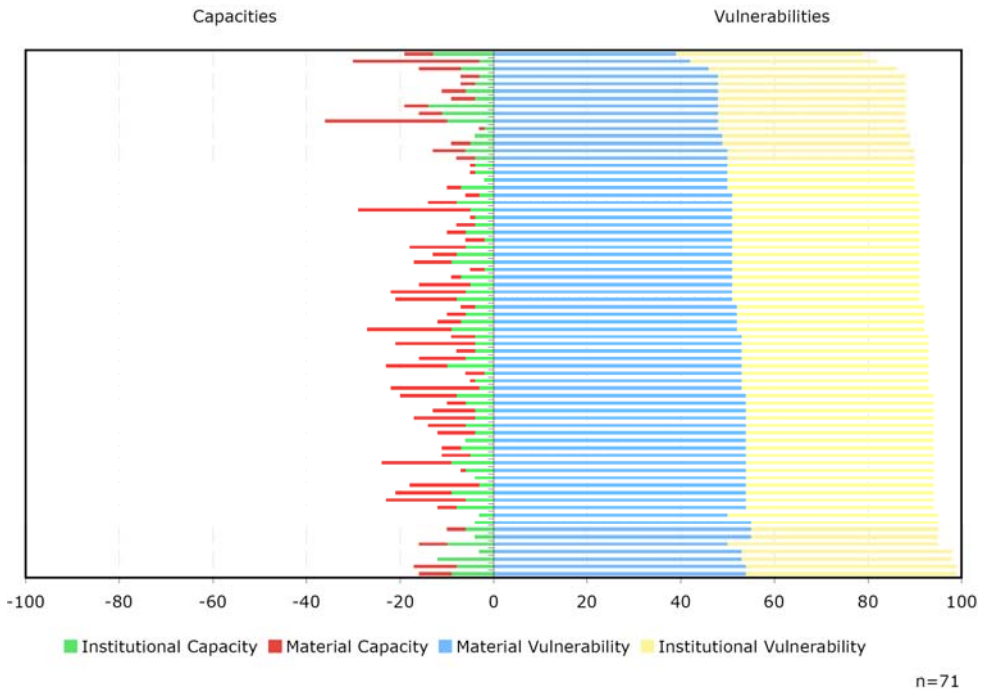

Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.45: Occupational structure of households in Mehrab Qambrani**

#### 5.3.3.1 Mehrab Qambrani as a highly vulnerable village – evidence from the VCI

VCI analysis of Mehrab Qambrani shows very severe levels of vulnerability for the vast majority of resident households. With an average VCI score of almost 80, the condition of the village has to be described as highly precarious.

In particular, the VCI illustrates the comparatively low capacity scores for most households in Mehrab Qambrani, which were even exacerbated by flood losses that led to very high values of material vulnerability, as housing and most productive assets were lost in the disaster. The issue of widespread debt bondage further heightens vulnerability for a majority, leading to the overall very difficult situation in the locality. Existing levels of debt taken from the five landowners in the area far exceed available monthly incomes of all affected households, indicating the complete immersion into a spiral of bonded labour that will be difficult to overcome in future.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.46: VCI of Mehrab Qambrani**

### 5.3.3.2 Development in the face of submissive power structures

In such context characterised by inequity and exploitation, any implementation of projects must consist of packages that can not be absorbed by landowners or other creditors and directly benefits the village population. In Mehrab Qambrani, the most important packages should consist of hand pumps for access to safe drinking water, and the reconstruction of shelter with local materials and the use of local labour. Equally important is the establishment of access to institutional credit at affordable rates to ensure that provision with agricultural inputs is accessible with non-exploitative terms and that investment into livestock can generate additional incomes for the upkeep of households. Most important will be a very close monitoring of any activities in the field by trained community facilitators. Generally, cooperation with the village councils needs facilitation. The women council could be supported in contributing to increased levels of reproductive health, men could organise and channel community labour in the construction of shelter. The community hall as meeting place can be transformed into a DRR centre, where local knowledge is gathered and made available to others and where the required displays of information and suggestions how to reach safe havens can be made public.

**Box 18: Fatmah and Rashid – An example for an indebted household**

Source: photograph © Narges Lankarani, February 24, 2011

**Fatmah and her son**

The household of Rashid and Fatma consists of the parents and their four small children who live in the remains of their collapsed mud house. All of them are illiterate. The example is somewhat typical for the situation in Mehrab Qambrani because of their hopeless indebtedness to landowners that has even worsened after the flood. Rashid is working as sharecropper on the fields of the landlord Bir Meman Burber and tills a mere four acres. Before the flood, they gave 50% of the harvest to the landlord, plus expenses for farming inputs. However, the lost harvest is on them, forcing them to contribute the entire upcoming spring harvest to the landowner and literally working for free. The subsequent autumn harvest will likely result in a 25% share at Rashid's disposal, leaving them with too little to survive without taking on further debts. Fatmah estimated that at least four to five years of good harvest will be needed in order for them to compensate the losses endured in the flood.

A feeling of hopelessness lingers, as there appears no reasonable chance to escape the situation. The house is damaged; they have lost one buffaloe and three goats in the flood; the sanitation situation is very bad as well and there is no regular access to drinkable water. The only glimmer of hope is the one remaining buffaloe, whose fodder requirements however presents a major financial problem. Rashid started to work in the casual work sector after the flood and occasionally loads trucks four days a week and earns 200 Rs per day (3,200 Rs per month). That money helps but is neither enough to feed the family nor to pay for urgently needed health treatments that occurred due to growing health problems in the households. The 10-years old son suffers from tuberculosis and needs at least one year of professional treatment, but doctor's fee and medicine are too expensive. Also, they did not receive a *watan* card about 20,000 Rs as government emergency aid and had to borrow even more money from the landlord. As Fatmah summarises this grave example: "We have absolutely no idea how to manage our situation".

### 5.3.4 Zafarabad - slow return of inhabitants and continuing internal displacement

Zafarabad presents a somewhat special case in that a majority of inhabitants apparently have not yet returned to their village as the availability of shelter is not sufficient. At the time of fieldwork, more than half of the population continues to stay within the wider framework of family relations in urban locations or other less affected villages. Also, many households merged their assets with other relatives after the flood to better cope with the adverse situation through pooling of available resources. All these adaptations and coping mechanisms are directly related to the adverse shelter situation in Zafarabad, where only a very few solid houses remained after the flood; e.g. the school building that up to today

provides shelter to a number of households. The vast majority of returnees live in tents or under tarpaulins, but in view of the upcoming hot season there are great worries and fears amongst the community. The group of Solengi and a small number of Mallah inhabits the village, both groups mainly working in the agricultural sector.

Source: photograph © Wibke Ott, February 26, 2011
**Fig. 5.47: Shelter construction attached to destroyed *pukka* houses**

Souce: photograph © Wibke Ott, February 26, 2011
**Fig. 5.48: Abandoned school as shelter**

**Box 19: The problem of numbers**

The GRC food distribution activities in Dadu worked with quite different estimations about the numbers of resident households in their project villages as those uncovered by the research team during the assessment mission. Zafarabad provides a good example of the problem of numbers articulates itself. The distribution of emergency food parcels in the village estimated a return rate of 95% in Zafarabad for December 2010, and 69 token entitling to a food parcel were disseminated. When encountering aid organization, villagers are smart enough to cope with limited aid resources by assuming the status of nuclear family. However, when actual dealing with the effects of disaster on daily basis, the pooling of resources in joint families is perceived as the most effective strategy. The focus groups conducted by the field team established similar results: when asked about the number of households currently present in the village, the details provided by participants fluctuated between 30 and 80, depending on what definition of household was applied.

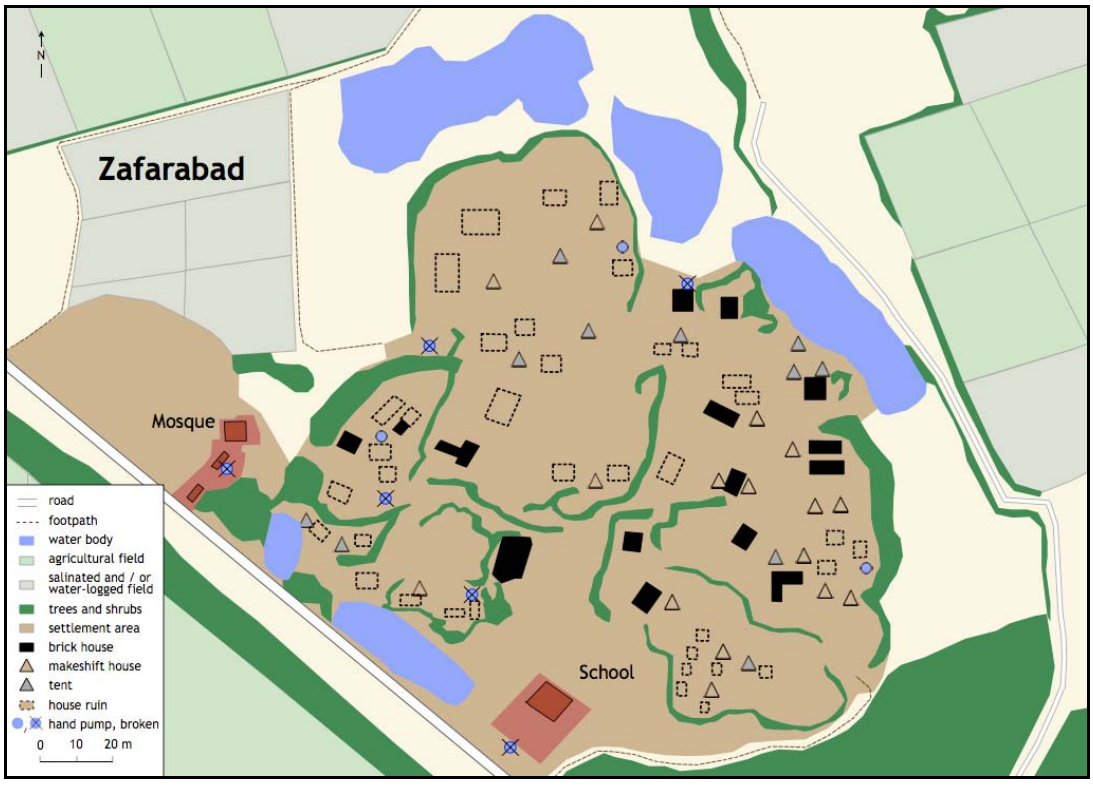
Before the flood, Zafarabad consisted of about 70 households, but the extremely difficult housing situation after the flood resulted in only gradual return. During fieldwork in late February 2011, only 28 resident households were encountered in the village, all of which had been interviewed. However, the definition of what constitutes a household had changed after the flood, and many formerly separate units merged to better cope with the

disaster. However, when trying to access food aid households often present themselves as multiple split units to heighten their chances of gaining beneficiary status (cf. Box 19).

Source:photograph © Wibke Ott, February 26, 2011
**Fig. 5.49: Current housing situation in tents**

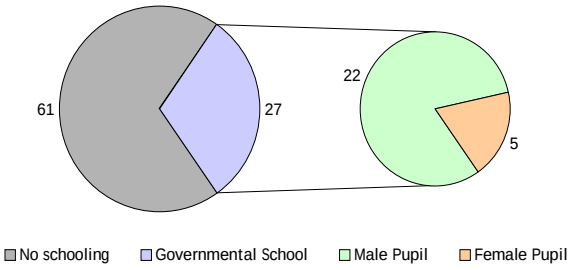
The houses in Zafarabad are compactly arranged, but almost all of them had been destroyed completely in the flood (cf. Fig. 5.51).

People lived in *kacha* mud houses; among the very few *pukka* concrete buildings most form part of the Benazir Bhutto housing scheme that was installed in 2010 to provide shelter for female-headed households and others that were assessed as 'very poor' by the government. However, the construction has never been finished completely and all buildings are missing a roof. Because of a dubious contractor and a variety of middlemen employed for procurement of building materials the construction stopped midway for lack of funds.




Data source: GeoEye satellite image of August 29, 2010 (Google Earth); GPS data gathered on February 27, 2011. Design: Marc Transfeld
**Fig. 5.50: The compact arranged village Zafarabad is highly affected by the flood 2010**

Most people in the village are not in the position to access proper health treatment, with many villagers suffering from hepatitis B and C. A vaccination campaign would be needed rather urgently for preventing others to catch the illness. Incidences of Malaria have increased too due to the large areas of standing water, and the mosquito nets that have been distributed seem not to protect people sufficiently. Problems with respect to reproductive health have been reported too (cf. Box 20). The problem is exacerbated by lack of fresh-water supply - only five hand pumps remained functional after the flood, and some of these apparently only supply brackish water.



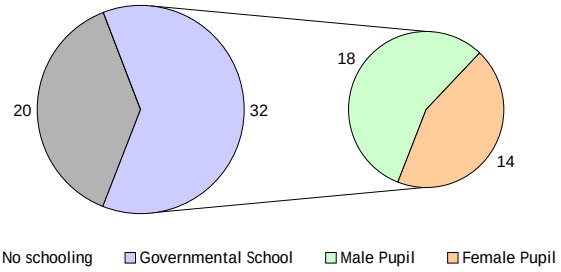

Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011, n=88

**Fig. 5.51: Adults older than 18 years who had visited schools**

In terms of food security the situation remains precarious too – most households can only afford one proper meal per day, and the distribution of food items by aid agencies could only partly alleviate the situation (cf. Box 21).

There is a governmental primary school in the village, but attendance is very low, especially for girls (cf. Figures 5.52 & 5.53). The same is the case for higher education which is accessible in the small market place Sita close to Zafarabad, because most households require children's labour force in agriculture as the major occupational sector in the village.

In terms of land use and agricultural production patterns, Zafarabad presents a picture similar to Mehrab Qambrani. However, here nobody owns any land and issues of establishing land rights for the poor remains a matter to be addressed (cf. Oxfam 2011). Most villagers work as sharecroppers bound to the land they cultivate for others by large and increasing debt levels. Flood induced losses in agriculture were passed down to poor farmers that have to carry the burden of the destruction. It also appears that currently agriculture is not an option for many as inputs for cultivation are lacking and can not be afforded. Those who cultivate will have to deliver about 80% or more of their harvest to landowners for partial repayment of credits.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011, n=52

**Fig. 5.52: Pupils in schooling age**

**Box 20: Reproduction and maternal health**

The field team had the opportunity to engage in an open discussion with elder women and their daughters that quickly led to very personal and sensitive issues. It turned out that the opportunity to talk openly to outsiders without any men being present was highly appreciated by the female group that talked without hesitation about sexual relationships with their husbands, childbirth and reproductive health issues. Most women were really interested in the possibilities of contraception that are available in local hospitals, which however is a tab-subject in their discussions with men. Giving childbirth is often dangerous, even with experienced midwives residing in the village, and most women said that they could do with fewer children (in the group the elder women had six children on average), also out of economic reasons. In terms of sexual relations with husbands it appears that they often feel themselves treated as objects that have to be ready and willing whenever their spouses feel the need to engage in intercourse. However, the feeling of powerlessness is overwhelming and the subjects discussed in the focus group would be never brought up inside their families. However, the discussion very well shows that rural women are indeed very well aware of their situation, that they are able to articulate their problems and ideas, and that they have strong opinions that could be build upon when engaging in gender sensitive livelihood projects.

The whole agricultural land people in Zafarabad cultivate under debt-bondage belongs to three landlords (Naiz Ahamad, Zafar Laghari, Geni Laghari) who reside in Sita and another small town named Chari. Each sharecropping household is assigned a specifically sized plot whose acreage depends on the size of the household. However, more proficient farmers that yield more harvest than others may get additional fields taken away from those that do not perform well enough in the eyes of the wadera. Provision of the farmers with seeds, fertilizer and a tractor is supplied by the landlord but has to be paid for by the tenant on dictated terms that often amount to more than 20% of the harvest. That means even in normal years farmers can use a mere 30% of the harvest they produced with their hard work. The loss of autumn harvest in the flood will also have to be compensated for by the actual tenant.

**Box 21: Perception of GRC food distribution in Zafarabad**

The unfolding food-crisis in Zafarabad was partly addressed by the distribution of much needed food parcels. These parcels were assembled on the assumption that a seven-member household should be able to get by for a month without being forced to buy oil, wheat and other items of daily food-needs. Bigger households, however, were not able to get by that long and exhausted the parcel rather quickly. There was complain that households whose head is younger than 30years were not entitled for distribution, but the limited resources available even for big organisations by necessity required introducing conditions to receive a food token. However, the creativity of villagers in defining their households ensured that all present households were endowed with a food donation.

These conditions require most households to access basic food supplies on credit terms too, which in this case happens through caste networks. The headman of the village, Manzoor Ali Solengi, is a retired army soldier and most affluent person in Zafarabad who also runs a shop in the small market place Sita. Incidentally, all Solengi villagers receive food on credit basis from his shop, which they return in kind from their share of harvest.

Zafarabad also is the home of four Mallah households. Before the flood, these were responsible for maintaining a fish-pond close to the village area that is owned by the landlord too. Here a sharefishing system is in place quite similar to that encountered by the field team in Thatta. In Zafarabad, fisherfolk need to pay for all inputs needed for fish breeding on dictated credit terms. All profit has to be shared on 50-50 basis with the landlord. Similar to agricultural sharecroppers, the loss of investment of 40,000 Rs taken before the flood to prepare the ponds for a new season have to be compensated for by the Mallah. To cope with the situation of currently not being able to breed fish themselves, the members of the Mallah households started working on much less profitable daily wage basis in fish farms in surrounding villages. Here, they receive 100 Rs per 40 kg of fish. Working on their own ponds, they earned three times the amount.

The amounts of credits needed for life-cycle events such as weddings or for health expenses are mostly accessible only from landlords too, which further increases their dependencies.

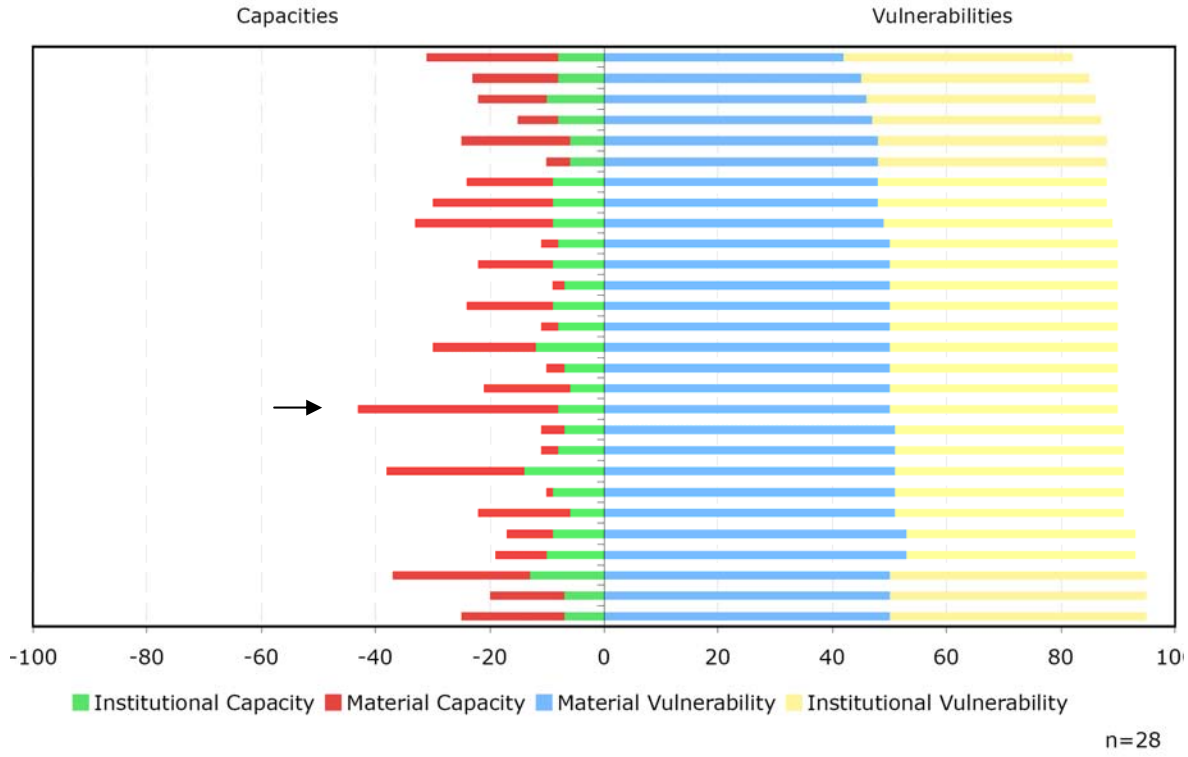
Nearly 80% of the households in Zafarabad are bound into such credit arrangements, but the situation intensified significantly after the flood. With the autumn harvest already-gone, many sharecropping households lost the spring harvest of 2011 too because many fields are still flooded and not cultivable.

Source: photograph © Wibke Ott, February 25, 2011

**Fig. 5.53: People on their way to a wedding in Zafarabad**

### 5.3.4.1 The VC Index in Zafarabad

The VCI chart for Zafarabad is displayed in Fig. 5.54. The vulnerability values are extremely high and fluctuate between 82 and 95 and in this way representing the dire situation prevailing in the village. This is only partly compensated by a few households that have a hold on material capacities, such as cows or buffalo, which have been taken into account when assessing the overall VCI values. However, most remaining livestock is currently in a very weak state and in need of care and high maintenance. Their possibility for contributing in reducing household vulnerability levels are questionable at this stage, as it is not clear if people can bring their livestock through the hot season.




Source: data recorded by ZELF team, Freie Universität Berlin, February – March 2011

**Fig. 5.54: Household of M. Qasim within the VC Index of Zafarabad**

**Box 22: Struggling with disaster**

Mohd. Quasim lives with his wife Wazera, his five sons and his daughter depend on agriculture to sustain their livelihoods. They work as sharecroppers cultivating wheat and rice on 20 acres and after deducting the expenses for farming inputs are usually able to keep 30-40% of their harvest, which is then used both for own consumption and marketing purposes. Because of the lost flood harvest, this ratio will likely decrease and most of the upcoming spring harvest will have to be delivered to their landlord. The household has approximately food expenses of 8,000 Rs/month, an amount that can not be generated at the moment because of them being burdened to compensate for the investments in the lost harvest. Accordingly, their indebtedness worsened significantly, also because they had to suffer great material losses during the flood where they lost their house and almost all their large livestock perished. The health situation in Mohd. Qasims household worsened too after the flood, and half of the household suffers from hepatitis. The situation will remain problematic because all of the eight members live in a small self-made dwelling where the disturbing heat and exposure to insects and snakes makes live a hardship. The only relief is that the smallest daughter found refuge at her uncle's house in Sita where the situation is slightly more favourable. However, medical treatment is not affordable at the moment and the household is in dire need of support for house reconstruction, accessing healthcare, and debt relief.

Source: photograph © Wibke Ott, February 25, 2011

**Wazera Solengi and her housing situation after the flood**

#### 5.3.4.2 Measures for improving the situation

The pressing needs of the community thus refer to the quick provision of shelter, whereby the use of locally adapted materials and community-based labour to provide cash income for work on their own housing would address the severe lack of cash circulating in the community. People estimated the costs for a simple mud house being 60,000 Rs, and introducing feasible ways to help people in the reconstruction proves on a large scale are very much necessary.

In terms of facilitating agricultural production to address debt relief and food security, support in the procurement of farming inputs is needed. Possibly a large scale shelter reconstruction programme could partly even work on the basis of 'seeds-fertilizer for work'. Likewise, the provision of animal healthcare to weak animals and ensuring sufficient availability of fodder could support people in saving their little remaining livestock. Packages to increase the overall livestock population as one of the important livelihood assets for vulnerable households need to be thought over too. There is also the need to repair the fishpond to generate an appropriate income source again.

The adverse health situation needs to be addressed, possibly by installation of a dispensary building that could also serve surrounding villages. A solid building in which medical supplies and vaccines against hepatitis would be available could also serve as a focal point of an early warning scheme where villagers will be provided with trustworthy information on pending hazards, measures to follow, and routes to safe havens for people and livestock. With little effort display boards could be fixed that explain all these measures in terms that can be understood by illiterate people. Another medium that inform about the advantages and disadvantages of large families, the importance of education and health could be a theatre play surrounding the village to reach women as well men.

Currently, a mobile health unit of the PRCS visits the village roughly on a monthly basis, but this appears to be not sufficient given the bad health situation unfolding in Zafarabad. To further improve health conditions the quick provision of local hand pumps for the village is required. The pressing need for cash needs to be addressed in order to help facilitate agricultural production. The packages that address these needs should be made accessible through a transparent process of identifying and selection of the beneficiaries. The process needs local monitoring and facilitation through a community council. The required village-based institutions have to be established with external support and then given further responsibilities to provide project ownership to the community.

# 6 Conclusions: vulnerability assessments informing development practice

How can development practice benefit from the systematic assessment of rural vulnerability in interior Sindh after the flood event in 2010? Mustafa et al. (2011, 65) provide a partly answer to the question: "Vulnerability research has added nuance to our understanding of the linkages between everyday life and hazards, and of the parallels between geographies of injustice, poverty and exclusion and the geographies of damage from hazard events". The truth of this becomes quite clear when looking at the major findings of the research in Sindh that highlighted the need for people to engage in permanent adaptation to hazard and the high degree of social inequalities contributing to heightened vulnerability. Translating this better understanding of reality into concrete livelihood packages aimed at contributing to DRR and improved capacities for adaptation may well built on the VCI for targeted intervention at the local scale.

The index clearly points at the adversities faced by the rural population after the flood and facilitates the identification of gaps in need to be addressed for supporting people in their endeavours to recover from the disaster. The major areas for livelihood intervention as derived from the VCI results relate to establishing access to infrastructure, supporting people in restocking their productive assets and diversify their income, thinking about measures to increase capacities for debt relief and to build capacities and enable social organisation to support rural communities in better coping with hazards.

## 6.1 Access to infrastructure

The need to help in the reconstruction of housing in the flood areas (Thatta and Dadu) and to establish access to safe drinking water (in all three districts) is obvious. In all villages strong deficiencies in access to services contribute to heightened vulnerability. Repairing and reconstruction of houses is an urgent priority as the current shelter situation in the flood-affected areas is not sufficient and will lead to many avoidable health problems if nothing is being done. For the construction of shelter it will be important to assess local priorities and use locally available and adapted materials and not reproduce the mistakes that were made in designing the governmental model villages. Further, the reconstruction programme should be designed in the form of cash for work initiatives, where local labour force is being used to work on housing in their own villages to generate some monetary income at the same time. The use of middlemen should be kept to a minimum in order to ensure financial efficiency and avoid corruption.

Provision of local handpumps that are available at very reasonable rates in local markets should commence quickly. Those simple constructions reach 35 feet deep and provide quick solutions to the emerging water crisis in the studied villages, where most existing handpumps have ceased to work after the flood. This would improve the drinking water quality immediately.

Arrangements for rebuilding of infrastructure for disaster risk reduction should be made. This essentially refers to the construction of protective bunds in Badin to protect villages and their agricultural fields from intruding ocean water, seasonal flooding, and spilling of water from drainage canals. As a major infrastructural initiative, such programming would not only increase agricultural productivity and avoid loss of arable land but also generate jobs and income when locally available labour force is used on terms of cash for work. Rebuilding infrastructure also refers to the repairing and maintenance of access roads and irrigation canals. Such activities link to the already existing DRR-activities of the GRC/PRCS while at the same time enhancing the productivity of local livelihood activities.

In terms of accessing healthcare most villages face problems, which are also evidenced through the high levels of bad health encountered during the assessment. Vaccination campaigns to combat water-borne diseases and high incidences of hepatitis are needed to protect children. Mobile health units should be implemented that use increased frequencies to access villages without healthcare services.

## 6.2 The critical importance of productive assets

The flood caused widespread loss of productive assets, especially livestock and agricultural machinery and agricultural inputs, but also tools for fishing and home-based industries. People are not in the position to restock those assets on their own for the critical lack of cash resources at disposal. In fact, those assets that were saved during the flood in most cases had to be disposed off for prices way below market values in order to manage basic household survival. The loss of such key assets for recovery in the aftermath of disaster (cf. Mustafa 1998) is a major contributing factor to the high vulnerabilities encountered in the sample, and will likely further threaten rural livelihood systems in Sindh in case nothing is being done.

As such, supporting people with the procurement of productive assets is mandatory. This is a pressing need, as currently most people are not in the position to execute their professions for lack of cash or materials. Initially, this could work out through provision of conditional cash transfers that recently have gained some popularity in development cooperation when dealing with the effects of disaster. Implementation and effects of such cash transfer programmes have been largely evaluated positively (cf. Rawlings and Rubio 2005, Gore and Patel 2006, De Janvry and Sadoulet 2006) and would represent a suitable strategy in the context of recovery from flood-induced losses in Sindh. The GRC and the ICRC have already gained largely positive experience in livestock restocking after the earthquake in Kashmir (cf. Kreutzmann and Schütte 2009, Schütte and Kreutzmann 2011). Although the complexity of such projects makes for difficult implementation, it would be advised to provide the means for people to regain livestock and engage in animal husbandry as an important livelihood activity in the context of rural Sindh. If a restocking programme is not

perceived as an option, conditional cash transfers aimed at increasing livestock numbers and especially water buffaloes would clearly represent an alternative.

In a longer term strategy, the establishment of access to non-exploitative credit facilities that would enable access to cash resources should be thought over. Lessons learned from the many experiences made through the Aga Khan Rural Support Programme in Pakistan should be observed in such endeavour (cf. Khan 2008).

Thinking further along those lines, the facilitation of production cooperatives could provide a longer term option to enhance rural livelihood security. Keeping in mind the possible contradiction in ideology and practice of cooperatives and the challenges they pose in reaching the rural poor effectively (cf. Mustafa and Gill 1998 on experiences in the Punjab), supporting self help and grass-roots participation could be developed into a feasible strategy for rural development in Sindh. Possible fields refer to the provision of equipment for the marginalised fisherfolk in Sindh, e.g. by means of cooperative workshops, and facilitating the inclusion of women in agricultural cooperatives (cf. Prakash 2003).

### 6.3 Income diversification

Diversity and regularity of income represent important elements of rural livelihood security, and the shape of income sources are a major driver of rural vulnerability in Sindh. Immersion in bonding sharecropping arrangements and the insecurity of erratic incomes generated by rural wage labour or through fishery contribute to the high VCI values of most households. This insecurity of income also contributes to the enormous cash deficit that hinders investments into agricultural production, animal husbandry and home-based industries. Significantly, those few households in the sample with access to a regular income source (e.g. teachers, army personnel) are also those that show lower or even negative index-values.

It follows that measures for income security are mandatory to facilitate rural development and recovery from the flood. The recommended focus on cash for work initiatives already mentioned in the context of infrastructural activities thus becomes doubly important: as a means to reconstruct housing and infrastructure needed for DRR, and to provide households with a regular income source for a period of time and provide them with access to cash resources. Even if such programmes do not run indefinitely they would generate predictable incomes for a time and could be used for productive investments or debt relief. Evidence from other contexts indicates that even some predictability of income represents a major means that enables vulnerable households to cope better with conditions of livelihood insecurity (cf. Schütte 2006).

Again, a focus on livestock restocking would provide another source of household income. Milk products for instance are used to heighten household food security while providing a marketable resource at the same time. The viable local milk market that existed before

the flood in Ahmed Sorjho, for instance, provides a perfect example as to how animal husbandry works as an important element in rural livelihood strategies.

The fisherfolk (Mallah, Dhandel, Pareli, Mohana) deserve special attention in re-enabling them to execute their profession after the flood. However, in addition in supporting those communities to restock lost fishery equipments their experience in agriculture and animal husbandry should be used to help people access supplementary sources of income and diversify their livelihoods. This could also include programmes that aim at professional fish-breeding in village-based ponds for which many especially among the Mallah in Dadu have shown considerable expertise.

### 6.4 Debt relief

Immersion into bonded labour arrangements that are almost impossible to escape abound in the household sample and contribute to high VCI values, most notably so in Dadu. This is especially true for sharecroppers (*hari*), but also for the fisherfolk from the Mallah community in Thatta. Improved conditions for debt relief are in dire need, not only to address the shortage of monetary funds but also to loosen the stark dependencies of vulnerable villagers to influential landlords. It can be assumed, too, that in order to cope with the effects of the flood many households will be driven into conditions of bonded labour as a an adversary coping strategy. Evidence to this fact in relation to other livelihood shocks has been reported (cf. Heltberg and Lund 2009).

Now, addressing the problem of bonded labour is a difficult issue given the power relations that prevail in interior Sindh and their deep entanglements with provincial and national politics. A livelihood programme will not be able to solve the issue, but may incorporate elements that improve the situation of the *hari*. In any way it is important to target households affected, as those are amongst the most vulnerable and will hardly find a way out of their situation without any support. The extensive report on bonded labour from Hussein et al. (2004) provides an overview for Sindh and Balochistan, and some of their suggested actions may prove feasible in the context of supporting rural livelihoods. One way would be to "… improve the negotiating position of the *hari* vis à vis the landlord. Improvement in record-keeping and a mechanism for oversight by a third party would be some protection against the arbitrary record-keeping of the *zamindar*. Most *haris* claim that inaccurate record-keeping is the major culprit in the high debt that they accumulate. However, in view of the low rates of literacy among the *haris* and the intricacy of the *hari*-landlord relationship, it will not be easy to identify who would exercise such oversight" (Hussein et al. 2004, 31). This suggestion might be translated into action by virtue of community based organisations, but would require capacity building. The problem is however widespread and has been witnessed by the assessment team too, when envoys of a landlord entered the village of Mehrab Qambrani, Dadu, during the assessment and merely notified households about the levels of debt they accumulated, without providing any proof or records.

Most effectively, the problem could be addressed by widening livelihood opportunities to enable improved debt relief as suggested above. However, the problem remains that any sort of asset-building or provision of additional income sources might be siphoned off by the landlord. A larger programme of debt conversion in villages where livelihood packages are to be implemented could provide solutions, either on terms of provision of institutional credit for debt conversion, or through cash grants that are conditioned for debt relief. Probably a renewed focus on rural Sindh in the context of disaster recovery and facilitation of rural development could provide the needed impetus to commence what Hussein et al. stated by way of conclusion: "… without fundamental changes in the macro-economic situation, improvement in the social indicators of development and the implementation of existing legislation, the impact on the *hari*-landlord dynamic will be limited" (Hussein et al. 2004, 32).

It has to be noted, however, that not all debt relations assume conditions of bonded labour. There are hardly any households in the sample that are not indebted to some degree, and access to credit can serve as an important livelihood ingredient to bridge times of difficulties or to engage in productive activities. This is why it remains important to widen the credit sources available to farmers and fisherfolk on fair terms, and to make sure that packages are designed that build on the substantial experience that exists in Pakistan with micro-finance schemes in rural areas including Sindh, e.g. provided by the Aga Khan Development Network (AKDN) and the Aga Khan Rural Support Programme (AKRSP).

### 6.5 Shared disaster – capacity building and social organisation

The importance of capacity building for improved social organisation represents a cross-cutting issue in respect to all what has been said to this point. There exist established forms of civil society and social organisation in the villages of Sindh, and the assessment team found that in most locations there is some sort of village council present already. These bodies need to be made a partner for generating project ownership and to channel the selection of beneficiaries for any form of activity. The establishment of community organisations that can represent a whole village would give people a shared voice when cooperating with the government or dealing with the landlord, and would make representation of interests, practices of local disaster management and access to common goods easier. In practical terms, development cooperation can be facilitated easier through such village institutions and the feeling of project ownership would heighten the chances for a successful implementation of project packages.

However, while building inclusive community organisations with sufficient capacity to represent the interests of all groups in a village is not an easy task, the wide experiences made by the AKRSP and NRSP in Pakistan are an important basis to build on here. Those organisations are certainly not a silver bullet for the betterment of vulnerable households, but they can go a long way in improving conditions as the evaluation of the AKRSP activi-

ties was able to show (World Bank 2002). In terms of facilitation of agricultural or productive cooperatives, the existence of functioning community organisations are a precondition. Also, in terms of overseeing and recording debt levels to landlords the capacity of those bodies might be build in a way that improves the negotiating power towards the landed classes.

Also, in terms of preparedness and DRR the facilitation of acknowledging and coping with a 'shared disaster' assumes critical importance and involves community representation. The lessons learnt refer to the collection and recording of local knowledge in coping with disaster and their present strategies to search for security. The experiences of local communities such as those of the Mallah in Wali M. Laghari could lead the roadmap for engagements in designing the required displays of information and suggestions how to reach safe havens. It also refers to combining this knowledge with governmental approaches and procedures to establish coherent and shared disaster management systems that can be accessed at trustworthy focal points. In practical terms, this would mean to furnish for instance poster campaigns that provide information through simple illustrations that indicate where to go when disaster strikes, which escape routes should be followed, or how household assets such as livestock can be saved. Such endeavours can be supported externally by providing the needed infrastructure, e.g. in terms of constructing solid village-based buildings that could serve a multipurpose function by being information centres for DRR, by providing shelter in times of disaster, or by providing venue for community meetings and discussion with external agents from Government, NGOs or others.

All the points mentioned relate to complex social realities and are embedded in diverse social inequalities and power relations. Under the conditions that prevail in rural Sindh, efforts to establish transparency and close monitoring of activities by able and experienced community mobilisers are of critical importance. This is also true with respect to controlling middlemen that are often used for procurement of goods and services for vulnerable populations and that exploit this position for personal gain. Evidence points to the enormous waste of development resources that are generated by using such intermediaries. The somewhat more strenuous road of procurement by using community organisation rather than businessmen could lead to more effective implementation of livelihood packages that reach a wider population.

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