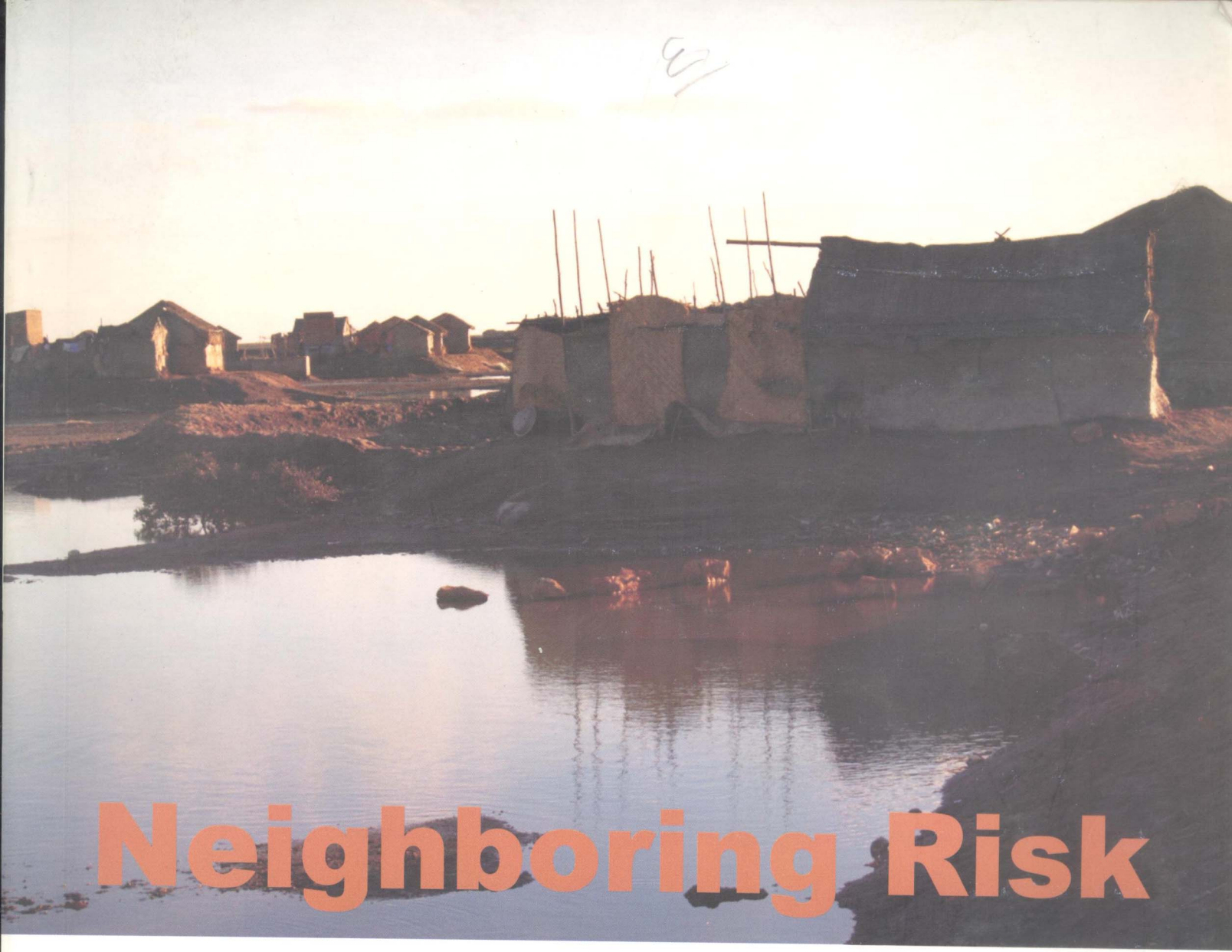
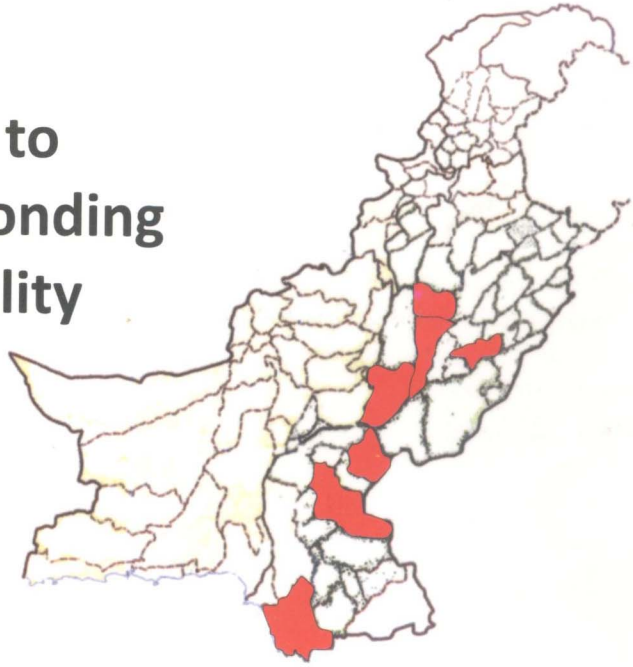


Neighboring Risk

An Alternative Approach to Understanding and Responding to Hazards and Vulnerability in Pakistan



Neighboring Risk: An Alternative Approach to Understanding and Responding to Hazards and Vulnerability in Pakistan

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Neighboring Risk

RDPI
Rural Development Policy Institute

Rural Development Policy Institute (RDPI) is a civil initiative aimed to stimulate public dialogue on policies, inform public action, and activate social regrouping to celebrate capacities and address vulnerabilities of resource-poor rural communities in Pakistan. RDPI undertakes research, planning, advocacy and demonstration of pilot projects in the key thematic areas of disaster risk management, environment, adaptation to climate change, sustainable livelihoods, appropriate technologies, local governance, community media, and basic education.

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'Plan' is an international organization working in Pakistan since 1997. Plan's activities focus on safe motherhood and child survival, children's access to quality education, water and sanitation, community capacity building, income generation and child rights. Plan works in partnership, first and foremost, with children, their families and communities but also with government departments/ agencies and other developmental organizations in addressing the key issues impacting children in Pakistan.

www.plan-international.org

Neighboring Risk

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A hymn in the praise of Indus and its tributaries

1. The singer, O ye Waters, in Vivasvan's place, shall tell your grandeur forth that is beyond compare.
The Rivers have come forward triply, seven and seven.
Sindhu in might surpasses all the streams that flow.

2. Varuna cut the channels for thy forward course, O Sindhu, when thou rannest on to win the race.
Thou speedest o'er precipitous ridges of the earth, when thou art Lord and Leader of these moving floods.

3. His roar is lifted up to heaven above the earth: he puts forth endless vigour with a flash of light.
Like floods of rain that fall in thunder from the cloud, so Sindhu rushes on bellowing like bull.

4. Like mother to their calves, like milch-kine with their milk, so, Sindhu, unto thee the roaring rivers run.
Thou leadest as a warrior king thine army's wings what thou comest in the van of these swift streams.

5. Favor ye this my laud, O Ganga, Yamuna, O Sutudri, Parushni, and Sarasavati:
With Asikini, Vitasta, O Marudvridha, O Arjikiya with Sushoma hear my call.

Rig Veda

1. 'Sindhu' is the ancient and colloquial name of river Indus
2. Cited in *Ravi Kinaray ki Harapai Bastian*, Zubair Shafi Ghori, National College of Arts, Lahore, 2005

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ADB	Asian Development Bank
CCB	Citizen Community Board
CEDAW	Convention on Elimination of all form of Discrimination against Women
CRC	Child Rights Convention
CRPRID	Center of Research on Poverty Reduction and Income Distribution
CSO	Civil Society Organization
CRC	Child Rights Convention
DCO	District Coordination Officer
DDRM	Decentralized Disaster Risk Management
DO	District Officer
DOC	District Officer Coordination
DRM	Disaster Risk Management
DRR	Disaster Risk Reduction
DRSLF	Disaster Resistant Sustainable Livelihood Framework
EA	Economically Active
EAP	Economically Active Population
EDO	Executive District Officer
FAO	Food and Agriculture Organization
FGDs	Focus Group Discussions
GDP	Gross Domestic Product
GIS	Geographic Information System
HDI	Human Development Index
HDR	Human Development Report
HFA	Hyogo Framework for Action
HH	Household
HIV/ AIDS	Human Immunodeficiency Virus/Acquired Immune Deficiency Syndrome
ILO	International Labour Organization
IUCN	International Union for Conservation of Nature
LGO	Local Government Ordinance
MDA	Multan Development Authority
MDGs	Millennium Development Goals
mm	Millimetres
MTDF	Mid Term Development Framework
NDMA	National Disaster Management Authority
NDMF	National Disaster Management Framework
NSDS	National Sustainable Development Strategy
NWFP	North West Frontier Province
PAR	Pressure and Release Model
PDMAs	Provincial Disaster Management Authorities
PSLM	Pakistan Social and Living Standards Measurement Survey
RDPI	Rural Development Policy Institute
SL	Sustainable Livelihood
SLF	Sustainable Livelihood Framework
SOP	Standard Operating Procedures
SPDC	Social Policy and Development Center
sq.km	Square Kilometres
UC	Union Council
UN	United Nations

UN/ISDR	United Nations' International Strategy for Disaster Reduction
UNDP	United Nations' Development Programme
US	United States
USA	United States of America
VIP	Very Important Person
WASA	Water and Sanitation Agency
WB	World Bank
WSC	World Summit for Children
WWF	World Wide Fund for Nature

We are indebted to all individuals and institutions whose contributions, ideas and cooperation have made the completion of this report possible. We are also thankful to all those who remained behind the scene but actively participated in one way or other in carrying out the research and compilation of the report.

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- Saanjh Foundation and HELO, District Muzaffargarh
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- Sewai Foundation and Rural Development Organizations Coordination Council, District Ghotki
- Indus Resource Centre, District Khairpur
- WWF, WHDT Network and Organization for Human Development, District Thatta

We also gratefully acknowledge the cooperation and support of all the district governments and officials in the studied districts who spared time for the consultative meetings, shared very useful documents and gave valuable comments, critique and suggestions.

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This report is an effort to unfold the story of those who neighbor the risks which often silently or forcefully trespass their homes, their fields, their livelihoods, their health, and shatter their dreams and hopes for a safer and prosperous future. These risks have different names; they appear or just stay, in diverse shapes and varying intensity. At some point in time they appear as floods, on other, as droughts. Sometime they take the shape of pest attack hitting the fields or frost biting orchards. Some risks are mere manifestations of Mother Nature. There are others created by the human kind itself, knowingly or unknowingly, in the name of fancy ideas like 'development', 'economic growth', 'efficient natural resource use' or even 'sustenance'.

A natural phenomenon can be good and bad at the same time, depending on the perspective. For most people 'flood' is synonymous with 'disaster'. However in a bid to conveniently live with our own limitations of vocabulary and imagination, we overlook the fact that floods brought about the invention of agriculture, which in turn made it possible for the primitive gatherer and hunter to learn the art of settled life and establish what are now known to us as great river civilizations. The Indus valley civilization thrived in villages and towns established on the banks of river Indus, for instance. Floods still play an important role in replenishing nutrients in the soil and thus sustaining agriculture.

Similarly, drought is generally perceived as a precursor of crop failures, and if prolonged, may result in famine. Many of us have images and stories in our minds of famines that erupted in parts of Africa and Asia (say the famine in Ethiopia or one that is known as the Great Bengal Famine of 30's which took millions of lives). However, this phenomenon can also be seen as the balancing act of Nature, in that it makes the droughts (scarcity of water) follow the abundance (rains and floods) and vice versa, and brings its own rewards in the most unexpected ways. In the course of research for this report, we came across the fact that it was the 'severe' drought of 1999-2000 in parts of Sindh and Baluchistan, which helped recover thousands of acres of agriculture-worthy land in Sindh that was otherwise lying waterlogged.

Amartya Sen, the noble laureate of economics and a living intellectual giant of South Asia, made us know that the loss of life in the Great Bengal Famine was not as much an act of nature as a consequence of abject poverty. Through his research, he found that there was abundant grain stored in the then colonial administration's godowns but the paying capacity of people had been eroded over the years to an extent that they were not able to purchase food.

The phenomena of 'Global warming', 'greenhouse effect' and 'climate change', which have become buzzwords in the present discourse, encompass the ugly reality that in mere two hundred years, we have exhausted our planet's and its atmosphere's capacities (through deforestation and an overzealous use of fossil fuels) that have been sustaining the human species for well over two million years. And all this to fuel the so-called industrial or mass production revolution!

This report (Neighboring Risk) does not blame the risks. Neither does it blame the

people who face these risks. In fact it blames no one. What it actually tries to do is to unveil the attitudinal, societal, economic, political and technological regimes and decisions and priorities that contribute to disturbing the ecosystems and natural balances to an extent that otherwise harmless phenomena turn into disasters. Similarly these very causes make people - especially the poor - too fragile to absorb the shocks of natural and human- induced risks or hazards.

Neighboring Risk tries to highlight the alternative approach to looking at and dealing with risks and hazards, and suggests ways to create an environment where human rights as well as rights of environment are protected and reflected in the development and governance discourses. It emphasises the importance of making children, their communities and local governments the focal point of risk-reduction strategies.

Neighboring Risk is divided into eight parts - a main report and seven detailed district profiles. The main report is further divided into seven sections. Section 1 introduces the research process, policy context of disaster management, and the conceptual framework the report employs for its structure and analysis. Section 2 presents an overview of hazards and vulnerability that prevail especially in the seven districts studied for the report. Section 3 briefly introduces the physical conditions of the sampled districts that determine the nature of physical risks while section 4 brings forth the overall socio-economic conditions of the studied districts.

Section 5 contains the results of household survey and discussions with different sections of communities including children, sampled in the seven districts for a deeper understanding of the situation of at-risk communities. Employing the decentralized disaster risk reduction paradigm, section 6 highlights the capacities of local governments and civil society organizations functional in the studied districts.

The recommendations of the report are contained in section 7 which is divided into three sub sections. Subsection 1 sketches broader principles that should be followed while designing disaster risk management priorities, policies and programs especially at the district level. Subsection 2 proposes some practical measures for improving the disaster risk management practices in the sampled districts. Subsection 3 recommends a framework 'making local governance work for sustainable disaster risk reduction'. This framework is based upon the provisions of incumbent local government system and guidelines of Hyogo Framework for Action and Pakistan's National Disaster Management Framework. This section also highlights the important provisions of these instruments.

Each district profile is divided into two parts. In the first part the prevailing hazards, vulnerabilities and socio-economic development conditions are presented. The second part contains a comprehensive district-and-issue specific action plan by highlighting the issues; strategies to respond to them; and possible actors who should shape and contribute to these strategies. District profiles along with the annexure of the report are continued in the CD enclosed with this report.

Ideas of decentralized and child-centred development and disaster risk management, provisions of Hyogo Framework for Action, National Disaster Management Framework and alternative perspective on disasters are the cross cutting themes of this report.

Overview

A.1. The Context

Pakistan's physical make up and climatic conditions breed a variety of hazards, many of which have been turning to disasters of considerable magnitude in the past and have a potential to sustain these trends in the future. The socioeconomic conditions, environmental degradation, poor governance, absence of land use planning and management controls, and political and power structures prevailing in Pakistan compound the impacts of these hazard and pave their way to turn into outright disasters.

Floods, droughts, cyclones, earthquakes, torrential rains and hill torrent induced flash floods, canal breaches and landslides have not been an uncommon phenomenon in Pakistan. However there are a number of risks and hazards which have a much bigger share in taking or ruining people's lives and disturbing their livelihood systems. These non conventional and human induced hazards include transport and industrial accidents, environmental degradation, terrorism (in recent times) and the looming threats posed by climate change. During last 62 years of country's existence, the floods considered to be the most recurrent hazards, have taken some 8000 lives and inflicted financial losses worth 15 billion US $ (1). Compared to these figures, there are media reports that suggest that since the incident of 9/11 in United States of America, the wave of terrorist attacks in Pakistan has taken more than 5000 human lives (2). According to Pak-US Business Council Report, 2009, the so called war on terror has cost Pakistan losses worth 35billion US$ since 9/11 (3). The environmental degradation is costing Pakistan annual losses to the tune of 365 billion rupees or 6% of its GDP and these costs fall disproportionately upon the poor (4).

The super floods of 1973 and later in 1976 compelled the policymakers and country's managers to think of evolving strategies to control the flood damages. The First National Flood Plan of 1978 and later the Second National Flood Plan of 1988 were some of national level efforts in this regard. In the aftermath of deadliest Kashmir earthquake in 2005, a strong need was felt both in government and non government circles to evolve strategies and institutions that could contribute in reducing the incidences of disasters. For the first time, the hazards which earlier were tried to be controlled rather than managed, were looked at from the angle of risks the impacts of which could be reduced. The constitution of National Disaster Management Authority, promulgation of National Disaster Management Ordinance 2006, and formulation of National Disaster Management Framework are significant steps in this regard.

Despite these encouraging achievements, the dominant perspective and conventional approach of understanding and responding to calamities, still prevails in Pakistan like it does in rest of the world. This approach is obsessed with 'emergency management' and 'reaction' where people affected with

The socioeconomic conditions, environmental degradation, poor governance, absence of land use planning and management controls, and political structures prevailing in Pakistan compound the impacts of hazards and pave their way to turn into outright disasters.

During last 62 years the floods, considered to be the most recurrent hazards in Pakistan, have taken some 8000 lives and inflicted financial losses worth 15 billion US $. Compared to these figures, since September 2001 more than 5000 human lives have been lost in terrorism activities. Each year, environmental degradation costs Pakistan losses worth 365 billion rupees or 6% of its GDP.

disasters are considered mere 'victims' who need to be provided only with relief. The concerned government agencies respond or react only when a disaster situation is developed, meaning disasters are actually waited to happen.

The alternative perspective of looking at disasters; focuses on the social, economic, political and environmental causes that contribute to turning hazards into disasters. It stresses upon the need to address these causes and devise strategies to reduce the disaster risk. It also considers disaster risk reduction as a governance and development agenda and calls for integrating disaster risk reduction into mainstream governance and development policies, plans and actions.

This report employs the alternative perspective and takes stock from the Hyogo Framework for Action, UN Convention on Child Rights, National Disaster Management Framework and Local Government Ordinance 2001 besides incumbent national policies on environment, housing, women and children development to name but a few. The central argument of the report rests on the notion that to integrate disaster risk reduction into mainstream development planning and governance, there is a need to start with analyzing existing development and governance patterns from the angle of risk.

A.2. This Report

This report is an effort by Rural Development Policy Institute (RDPI) and Plan Pakistan to add value to the national and local level disaster risk reduction efforts by promoting and advocating child centred disaster risk reduction approaches and strategies. Taking River Indus as a vulnerability reference line in country's most populous zone-the Indus plains where 77% of country's population reside and are placed all the major towns and industrial units (5); 6 districts- 3 from south Punjab (Layyah, Muzaffargarh and Rajanpur) and 3 from Sindh (Ghotki, Khairpur and Thatta) were sampled besides a district lying along river Satluj (Vehari), for an in-depth assessment. Together the 7 sampled districts make up 9% land area and accommodate 8.32% population of Pakistan. It is estimated that by 2006, the combined population of the districts had reached 13,047,000 (6). There is no doubt in the fact that areas lying along the Indus are among the most fertile ones, but the irony of the fact is that the communities residing in the riverine areas are politically marginalised, physically isolated and deprived of basic social and economic services. Using the alternative perspective; physical, social, economic and political conditions that make these communities vulnerable to hazards/disasters were studied and analysed. Capacities of local governments, civil society organizations and capacities and vulnerabilities of communities were documented to help Plan and its partners evolve district/location, hazard, community and capacities specific strategies for disaster risk management in the identified districts.

The report proposes to reduce the risks of disasters by adopting a multi-pronged strategy. The components of

To integrate disaster risk reduction into mainstream development planning and governance, there is a need to start with analysing existing development and governance patterns from the angle of risk.

The riverine and desert areas are politically marginalised, physically isolated and deprived of basic social and economic services.

this strategy include integrated development and disaster risk reduction planning, preparedness and improving environmental and human development conditions for people currently or expected to be living with risks in these districts. It strongly proposes to make especially children, youth and women part of the disaster risk reduction efforts by first acknowledging their capacities and role in and then enhancing the same for different stages of disaster management cycle including early warning, preparedness, relief, recovery, reconstruction and rehabilitation. All the strategies advocated by this report can be operationalized within existing policy provisions, financial capacities of the governments at different tiers, and institutional arrangements.

A.3. Major Findings

A.3.1. A variety of hazards

Many of the identified prevalent hazards recurrently turn to disasters of varying magnitude in the districts under study while some disasters are in the making and fall in the category of 'slow onset disasters'. These include but not limited to salinity and water logging, rapid increase in the use of chemical fertilizers, widening demand-supply gaps in irrigation-fit water from surface and ground resources, and the looming disaster of climate change which has begun to show its signs in the form of climate variability and uncertain rainfall and temperature patterns. The violence, ethnic tension and terrorism have also turned to a menace threatening the lives and livelihood means of people in many of the sampled districts.

A.3.2. Physical bases of hazards

All the sampled districts have a diversity of physiographic features. The scarcity and abundance of water in these districts run side by side. The diversity of topography or physical features means diversity of environmental conditions and hence natural hazards.

The diversity of topography or physical features means diversity of environmental conditions and hence natural hazards.

A.3.3. The socioeconomic and environmental conditions in the districts

The flood prone areas and coastal communities in general and desert locations in particular are thinly populated, settlements are comprised of fewer houses and are scattered. The population in all the districts is found to be markedly mis-balanced in favor of the males. The higher male population reflects social preferences of society in these districts which continue to favour having and keeping well the male children.

The annual population growth rates in all the districts are higher than the national and provincial averages.

The annual population growth rates in all the districts are higher than the national and provincial averages. All the sampled districts are rural in nature. The proportion of urban population in the sampled districts is much lower than the national and provincial averages. The static proportion of urbanization in sampled districts points to three important trends. First, the districts under study are overshadowed by neighboring urban centers. Second, in the urban areas of these districts, social and economic services could not be developed attractive enough to pull the population from their respective rural homelands. Third, people continue to prefer staying in rural areas and travel to towns and urban settlements as and when a need may arise.

The acute shortage of educational facilities especially for girls in the sampled districts means reduced opportunities for them to pursue their education and social, economic and political development.

The housing stock in both urban and rural areas in terms of use of permanent construction materials

appears to have substantially improved. The household sanitary conditions in terms of availability of latrines inside the houses are also found to have improved. There is marked increase in the rural electrification across all the districts. Piped water supply is made available to a limited proportion of both urban and rural areas in the studied districts. Almost half of the urban houses appear to have installed with motor pumps while these are also making their way in the well-off rural households.

Over last one decade, the school enrolment and literacy figures for the sampled districts appear to have considerably improved. In all the districts the proportion of the population that has actually completed the primary or higher levels of education, on average, falls short of 10 percentage points to that of population considered literate. Likewise the proportion of literacy among women, on average is 1/3rd to that among men. The literacy among rural women is 1/3rd to that among their urban counterparts. The higher level educational facilities do not match at all with the population size. The acute shortage of educational facilities especially for girls in the sampled districts means reduced opportunities for them to continue their education.

The state of primary health care in all the selected districts is dotted with a number of issues that affect especially the lives and health of women and children. Over the years, the number of public health facilities has increased considerably in each district. However people are found unable to make use of these facilities either due to accessibility to or by these services or due to lack of satisfactory care people expect to receive from them. On average, 60-70% patients prefer to consult private services compared to 20-25% who seek health care from the public facilities. The use of mobile health facilities in the shape of lady health workers also appears to be negligible. A very small proportion, especially of rural women manages to receive post natal and prenatal care from a formal health service provider. More than 80% of the deliveries take place at home usually with the assistance of a relative or neighbor women or traditional birth attendants. A very small proportion of pregnant women receive tetanus toxoid injection, both in urban and rural areas. The target of fully immunized children population is far from being achieved.

More than 60% of the population in districts under study relies on agriculture and allied fields to earn their living. The jobs in government and private sectors also cater to the income earning needs of a considerable proportion of households. Almost 3/4th of the population opts for self employment. About 1/5th of population is economically active and unemployment rates range between 10-20%, varying from district to district. Despite being actively engaged especially in the agricultural economy, women and children are not recognized as the economically active population and they are placed in the category of "domestic workers' and normally do not receive monetary compensation for their labor. All the three districts of Sindh-Thatta, Khairpur and Ghotki, are rich in mineral resources. However the natural resource riches of these districts being benefitted by the federal government and private industrial concerns, are not reaching

The expansion in agriculture activity has resulted in bringing even the riskiest of the places like river banks under cultivation. Likewise in the desert regions, considering agriculture as the only productive use of land, the sand dunes have been denuded from the natural vegetation cover and government owned common grazing lands are being encroached.

the local population in the shape of employment opportunities.

All the sampled districts have an agrarian economy that absorbs more than 60% of the economically active population of these districts. The agriculture sector has overtly important linkages with and impacts on environment and is embedded with a number of environmentally significant risks. Agriculture and its sub sectors are most affected by any natural disaster that strikes. Any hazard that strikes agriculture, in fact affects the livelihoods of great majority of the districts' population and local and national economies.

In all the districts the deforestation is going unabated. The river banks once covered with thick riparian forests have been razed to make way for the cultivation. Except Thatta, where 17% area of the district is still under the mangroves, the forest cover in all the remaining districts is far less than the national average.

The expansion in agriculture activity has resulted in bringing even the riskiest of the places like river banks under cultivation. Likewise in the desert regions, considering agriculture as the only productive use of land, the sand dunes have been denuded from the natural vegetation cover and government owned common grazing lands are being encroached. The loss of natural vegetation has various dimensions. In the desert zone of Thal and Nara, where summer cropping is hard to sustain, the land cleared for cropping remains devoid of any vegetation cover. The dust storms and strong winds that are a common summer phenomenon cause wind erosion disturbing the productive soil cover. The loss of natural vegetation has also resulted in loss of habitat for wild birds, reptiles and mammals as well as loss of floral bio diversity. The reduction in natural fodder is now being compensated with stall feeding of animals with fodder crops. The need to grow fodder has produced a competing need on the lands that can otherwise be used for growing crops for human consumption. The razing of riverine forests has resulted in increased river erosion and loss of organic matter that is taken away by receding flood water.

An overall shortage of canal water prevails in every district. The shortfall is being compensated with an increased pumping of ground water through the installation of private tube wells. At many a places outside the Indus plain, the ground water is brackish and when extracted brings with it salts that result in increasing the salinity of soils. The farmers are found complaining of falling water tables. The expansion in agriculture is being fueled with an increasing use of chemical fertilizers and pesticides. In the selected districts, on average, a 10% increase in the use of chemical fertilizers per annum is noted. An extensive mechanization in the form of tractors' use has happened and only few farmers can be seen employing the farm animals for preparing lands, any more. One dimension of the increasing mechanization is the reduced opportunities for farm labourers. The production of minor crops like barley, millet, rapeseed and mustard that are quite resilient to dry conditions, is either static or has declined. The water intensive crops especially sugarcane is widely being cultivated. The issue of water logging and salinity in parts of identified districts has become severe.

A.3.4. The neighbors of risks: State of surveyed communities

All the communities surveyed, reported to have been residing at their

The need to grow fodder has produced a competing demand on the lands that can otherwise be used for growing crops for human consumption.

In the selected districts, on average, a 10% increase in the use of chemical fertilizers per annum is noted.

In the due course of time communities have developed a certain level of resistance and coping mechanisms that are guaranteeing the continuation of their lives and livelihoods, no matter how fragile they have proved to be in these riskiest of the locations.

Damage to houses or shelters is noted to be the most common impact of the hazards followed by damage to crops.

respective locations for generations. These communities have been braving the hazards and living with various risks for long. In the due course of time they have developed a certain level of resistance and coping mechanisms that are guaranteeing the continuation of their lives and livelihoods, no matter how fragile they have proved to be in these riskiest of the locations.

The surveyed communities are affected by a variety of hazards which have serious impacts on their lives, assets and means of livelihoods. Floods, heavy rains, strong winds/storms and frost are among the prominent ones. Most of the communities surveyed are residing at locations that are consistently affected by floods, heavy seasonal rains and storms. The coastal communities in Thatta live with the risks being posed by cyclones, storm surges, high tidal activity and sea intrusion.

Damage to houses or shelters is noted to be the most common impact of the hazards followed by damage to crops. 70% households reported that their houses are affected in case floods, rains, storms or cyclones (Thatta) strike their settlements. 58% households report that their own crops or those grown in the settlements are affected. Some 40% households reported that they find the productivity of their lands declining. Damages to livestock are also reported by considerably high number of households.

Most of the riverine communities or settlements are found to have compact grouping of dozens of houses and larger population sizes when compared to those residing in the desert locations. The desert communities are residing in small clusters of houses loosely grouped together.

The people at all the locations are found favoring large families and preference for having male children. The joint family system is loosening its grip. This trend is reflected in the large number of households reported to have young household heads aging between 20 to 40 years. 48% household heads fall in this age bracket. 98% of the households are headed by males in the surveyed communities. 33% population age 10 years and below while 55% belong to the age group 18 years and below. The average household size in the surveyed locations is noted to be 5.8 persons per household. Like the overall district trends, the male population in all the locations is higher than the female one. There are 119 male children against every 100 female children. This ratio in the age group 18 and below is noted to be 1.17 or 117 male children against every 100 female children/youth.

Most of the housing stock especially at the flood and cyclone (in case of Thatta) prone locations has an architecture of poverty and fear. Locally and cheaply or freely available materials, local climates and hazards, and resource-less-ness of the residents appear to determine the housing conditions at these locations. In the riverine locations and those at the risk of hill torrents, people are found to have constructed their houses with an incremental approach. The housing structures are gradually constructed and improved over the time as and when the perception of risks evades, resources permit and construction materials are available. More than half or 53% of the households in the surveyed communities are living in single room houses, 29% in 2-room while 14% are residing in 3 or 4 room houses. A small

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The housing structures are gradually constructed and improved over the time as and when the perception of risks evades, resources permit and construction materials are available.

proportion of 3.5% households are living in big houses comprising 5 or more rooms.

Most of the households at the surveyed locations opt to defecate in open. The latrines inside or adjacent to housing structures are available to less than 1/5th of the households. More than 4/5th of the households have an access to an in-house water source, generally a hand pump. The rest of the households either bring water from an outside source or purchase it from water suppliers like tankers. This is a particular situation in Thatta. 7% houses have an access to motor pumps. Not a single location has a piped water supply. 41% households at the surveyed locations are living without electricity from the national grid. Only 3% households have an access to the land-line phone facility. Compared to this, 39% households are using mobile phones. 15 % household are owning a TV set or a radio or both.

Almost 1/3rd population in the surveyed communities is economically active (EA) or reported to contribute to the household incomes. The EAP is comprised of 85% males and 15% females. 28.7% of EAP is comprised of children aging 11-18 years. This economically active children population contains 84% boys and 16% girls. 24.4% male and 5.4% female children aging 11-18, at the surveyed locations are economically active. A considerably high proportion of women and girls in Jampur/Rajanpur were reported to have a contribution in the household economies or incomes.

Agriculture is the major livelihood source for half of the households. Menial and seasonal labour inside the village, in the neighbouring towns or other cities of the country is the livelihood option for 1/3rd of the households. The government and private jobs absorb a small portion or 5% of the household heads. 47% households reported to have an ownership of productive or non productive lands while 41% households are landless. Livestock appears to hold an extremely important place in the livelihood and household food security strategies of households. 86% households own some kind of livestock especially buffaloes, cattle, goat and sheep.

The surveyed communities have a dismal state of education and literacy when compared to education and literacy data of their respective districts, provinces and the overall national figures. The literacy among the population aged 10+ has been recorded as 21.6%. 37% males and 8.6% females of this age group are found to be literate. In 8 out of 20 communities, the literacy among the females was found to be zero. While at two locations the literacy in the whole population was noted to be zero. 65% household heads in the surveyed households are illiterate while 18% have completed primary level education.

7.4% males and 7.7% females are caught up in such health disorders/diseases that households consider as being fatal. A worryingly high proportion of households reported to have one or more members suffering from life threatening diseases especially tuberculosis and hepatitis etc. 1/5th and 1/4th of the households complained of these diseases respectively. Seasonal fevers, diarrhoea among infants and children, and pneumonia are also common disorders while skin diseases were found to have an unexpectedly low prevalence.

The lack of services especially of health and education and road connectivity is noted to have been contributing heavily in keeping communities' marginalization, vulnerability and poverty intact.

A.3.4.1. Major Issues

Isolation and Vulnerability: The flood prone communities in general and deltaic and desert communities in particular are physically marginalized. The physical isolation of the hazard prone communities was noted to have transformed into their social,economic and political marginalization which in turn has rendered them unable to reach the centers of administrative and financial powers that be. This was found to have resulted in minimal coverage of these communities by social and economic services available to 'normal' areas. The lack of services especially of health and education and road connectivity was noted to have been contributing heavily in keeping their marginalization, vulnerability and poverty intact.

The most vulnerable of vulnerable: The extremely vulnerable communities were found to be those residing inside the protective bunds that have been constructed on both sides of the river Indus to contain its flood water; those residing at the banks of the rivers (Indus, Chenab and Satluj) or between a river's branches; those residing inside the creeks created between the mouths of river Indus; and those residing deep into the deserts.

***The missing state*:** Some communities surveyed are completely living on their own without any mark of state's existence in terms of its social infrastructure like schools, health facilities, roads or transport and energy infrastructure.

The top priorities: Road, education and health are noted to be among the top priorities of the communities.

***The housing dilemma*:** Housing is noted to be one of the biggest determinants of communities' vulnerability to hazards. At all the sites, most of the housing stock is composed of adobe structures which normally fail to withstand floods, storms, heavy rains and strong winds. Due to risks like floods and cyclones, for instance, communities do not construct permanent housing or improve the existing stock, and due to poor housing their vulnerability increases. The landlessness and fear of eviction are also found to be deterring many households to construct the permanent housing structures.

***Livelihoods and Vulnerability*:** There is a direct relationship between Individuals' and households' livelihood options and vulnerability to disasters/ hazards. The farmers, fishermen, livestock keepers etc were found to be the most vulnerable among all the livelihood groups as their income sources are exposed to a variety of natural and manmade hazards.

***Absence and excess of water*:** Water management for irrigation and drinking is most complex of the complex issues. In the desert, hilly tracts and in the delta, the absence or scarcity of water for irrigation and drinking is affecting people's livelihoods and health, badly. In the flood prone sites and canal irrigated areas the poor water management at the community level and by the state has contributed to the emergence of many issues like falling water tables, contamination of drinking water, and water infrastructure (like spurs, canals) induced flooding.

The politics of water management and 'development' induced disasters (Disaster footprints of development) : At number of sites the political dimension of water management and distribution works are markedly visible. The construction of protective

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The farmers, fishermen, livestock keepers etc were found to be most vulnerable among all the livelihood groups as their income sources are exposed to a variety of natural and manmade hazards.

The rivers normally act as natural physical boundaries between the districts. The communities living along the rivers are thus living on the edges of the districts and are thus away from political and administrative powers/centres.

bunds, drainage programs, water distribution arrangements and mega infrastructure projects like canal, roads and railway tracks have contributed to the issues like flooding, river erosion, water contamination, and degradation etc. The important examples in this regard are deltaic communities suffering in the hands of non compliance of Inter provincial water accord of 1991, Katchi and Ranny canals, and drainage of saline and contaminated water from upstream to downstream etc.

Living on the edges: The Rivers normally act as natural physical boundaries between the districts. The communities living along the rivers are thus living on the edges of the districts and are thus away from centers of political and administrative powers. The riverine locations being isolated are normally found providing safer abodes to criminals. The river being the boundary between the districts also provides easier and shortest possible path to criminals to move between the districts to dodge police. The passage and presence of criminal elements has also contributed to the under development of these communities as outside agencies and service providers (teachers, medical staff/vaccination staff etc) hesitate to travel to these locations.

Engineering Solutions are favoured and engineering miracles are expected: Communities at all the riverine and coastal locations are found favouring the engineering solutions like diversion of river's course, construction of protection bunds, spurs etc. The solutions involving the natural resources' management were generally not suggested.

The social disasters: Tribal conflicts have come forth as one of the major threats posed to communities, especially in Ghotki and Rajanpur. Over the years, tens of precious human lives have been lost throwing the families (especially women and children) of those involved (murderers and murdered, for instance) into abject poverty and consistent social and economic vulnerability. The communities in Khairpur, Ghotki and Rajanpur also complained of the Sardari system as mother of all the ills perpetuating their poverty and underdevelopment.

Absence of non-state actors: At all but couple of surveyed locations, no non government or community based organizations are found working.

Migration-the last resort: The consistent vulnerability to hazards and risk has exhausted some communities' capacities to adapt. They are thus forced to migrate mostly to urban areas. The vulnerability to disasters in rural settlements is thus contributing to urbanization.

Expectations from the government are still alive: At all the surveyed locations communities are found having expectations from the government to step in for improving their living conditions. The hazard protection schemes being expected and proposed by the communities involve heavy investments that only government can proceed with.

Community based disaster risk reduction has a limited scope in some cases: In some cases the sustainable disaster risk reduction needs mega initiatives both structural and non structural involving huge finances. The community based disaster risk reduction approach will not be able to provide the sustainable solutions in such cases.

The passage and presence of criminal elements in the riverine areas has also contributed to the under development of these communities as outside agencies and service providers (teachers, medical staff/vaccination staff etc) hesitate to travel to these locations.

In some cases the sustainable disaster risk reduction needs mega initiatives both structural and non structural involving huge finances. Community based disaster risk reduction approaches will not be able to provide the sustainable solutions in such cases.

Children in the vulnerable communities posses sufficient knowledge and excellent articulation of their community and household social and economic conditions, risks they face and services they need or expect.

A.3.5. Children's voices and contributions are not childish

The discussions with children in the vulnerable communities revealed that they posses sufficient knowledge and excellent articulation of their community and household social and economic conditions, risks they face and services they need or expect.

At all the flood prone locations children told that their memories with floods are dotted with damage to the houses, displacement, insecurity, loss of livestock, food insecurity and economic distress they and their parent have to face in the aftermath of a disaster event.

At all the flood prone locations, children recommended the construction of bunds as a way to arrest flooding. In all the surveyed locations, children are found to have an important role; in household economies as domestic workers or even active income earners, in the evacuation (especially of livestock) and taking care of younger brothers and sisters, in the early warnings, and in the reconstruction of houses, rehabilitation of lands/fields etc. The children at all the locations strongly voiced for provision of schools, health facilities, playgrounds and toys and in some cases economic opportunities for their parents. At the desert site in Layyah, child shepherds recommended/demanded the construction of refuge places/shelters to get protected from the dust storms and installation of hand pumps for them and their livestock.

The child and youth focused disaster risk reduction programs, being maintained at one surveyed location, are found bearing good fruits.

A.3.6. Responding to hazards and disaster: The government and civil society way

DRR is not a priority: In all the districts the 'Disaster Risk Reduction' is noted to be not among the priorities of the local governments. This is reflected from the amount of funds the district governments have allocated in the current budgets for 'emergencies' (without mentioning the 'disaster situations').

Reactive approaches continue to dominate: The main disaster response instrument and strategy of all the district governments in the sampled districts is 'Flood Fighting or Flood Contingency Plans' which are in fact the management strategies, as they outline the resources available with and responsibilities of different departments and officials in case a flood strikes.

A mere routine work: The preparation of Disaster Risk Reduction or Disaster Management Plans as has been asked Local Governments by NDMA, is being taken as a routine official activity imposed from the top having no relevance with the local priorities.

No financial plans: The Flood Fighting Plans and Disaster Management Plans are not supported by the financial plans thus leaving district governments with having vague plan documents. This appears to be one of the reasons why district governments remain unable to allocate sufficient funds for emergencies in their own budgets and in case of emergencies have to resort to cutting the development budgets or look either to Provincial or to Federal Government for the emergency funds and relief operations.

The conventional plan making exercise does not analyse the local situations, needs, risk, capacities, and priorities and are thus remain unable to contextualize the plan with local requirements.

The template approach: Both the flood fighting plans and disaster management plans have been prepared using more or less similar templates. Although there exist strong reasons to do so, the mere following of the certain templates is like adopting 'one size fits all' approach. The conventional plan making exercise does not analyse the local situations, needs, risks, capacities, and priorities and thus remains unable to contextualize the plan with local requirements.

***Institutional barriers*:** In all the districts it was observed that the district governments lack trained and motivated staff to work on Disaster Risk Reduction in a regular manner. In most of the districts, for their being underdeveloped regions, the high local government officials generally do not like to be posted there. The important posts either remain vacant or are filled with officials not motivated enough to adopt and pursue long term development agendas. The non availability of development funds, an overall environment of uncertainty about their future, and untoward interventions in the development decisions by political elite, are also observed to have demoralized the local government officials.

An inconvenient truth: Owing to their being in-charge of land management, the revenue officials are responsible for the preparation, execution and coordination of Flood Fighting and District Disaster Risk Management Plans, and damage assessments etc in all the districts. The police are made in-charge of maintaining law and order situation in case of emergencies and early warnings. It is to be noted that the revenue and police are two of those departments considered most corrupt and inefficient in Pakistan. Further the revenue department does not have a kind of training for land-use planning and situation management in general and disaster management in particular.

Capacities of Civil Society Organizations: The local civil society organizations, with few exceptions, in the surveyed district are small, sometime consisting of only one individual and are voluntary organizations. Many of them have never received funding from any formal agency and are being run on contributions from members or those from philanthropists. Education and health are two key sectors these organizations are found working for. Except few organizations in Thatta, Layyah, Muzaffargarh and Rajanpur, generally the civil society organizations working in the identified districts lack an understanding of disaster management. One possible reason for this is found to be DRR being a relatively very new concept for civil society organizations in Pakistan. This is one of the reasons for their not being working in/with the disaster prone communities.

Inter stakeholder misconceptions, suspicions and lack of trust: A general environment of misconception, suspicion and lack of trust generally prevails among the stakeholders. The local governments in all the districts are found generally not satisfied with the working of the non government organizations and vice versa. The media people are found blaming government and non government organizations for embezzlement of funds and ineffectiveness.

Absence of holistic vision and programs: The incorporation of disaster risk reduction into mainstream development planning and governance is still a distant

dream. The development programs often conflict with one another and designed and implemented in isolation either leaving large areas un-served or creating overlapping and duplication. A holistic document that could have outlined all the hazards in a district and the development schemes having direct or indirect relation with them, is not available.

Sensitization on environment and water: an interprovincial comparison: The discussion with local governments and civil society organizations in Punjab suggests that a general state of oblivion exists among them about the water requirements of the downstream and environmental repercussions of water scarcity on Sindh. In contrast a general perception of being made deprived of their water rights by the upstream (Punjab) prevails among the local governments and civil society organizations in Sindh. The understanding of environmental and political dimensions of inter provincial and inter-district water management was found to be much stronger among civil society organizations and local governments in Sindh compared to their counterparts in Punjab.

Lack of public participation: Ever since coming into being of current political setup at federal and provincial levels, the elected representatives of local governments have been made defunct and the local bureaucracy is in full charge of administration. Neither the Flood Fighting Plans nor are the District Disaster Risk Management Plans presented before or discussed by the district councils. Resultantly the planning exercise has become merely another routine and ad hoc instrument of getting or showing things done.

The capacity building programs are not enough: In various districts the local government officials have attended training programs (mostly arranged by UNDP, NDMA etc). A marked improvement in their understanding of DRR concepts can be observed. However it was also observed that these officials when try to convert their newly got knowledge into practice, they encounter a number of limitations including institutional barriers, lack of funds and above all lack of feedback and support from the high-ups.

A.4. Ideas for Action

More research is needed on issues like non conventional hazards, views and capacities of lower tiered local government officials, local knowledge and coping capacities of communities and different segments (especially women and children).

Consistent support needs to be provided to the Local Governments for the preparation of flood fighting plans and District Disaster Risk Management Plans. This support should be in shape of training, feedback, and working in partnership for the conception, preparation, execution, management, monitoring and evaluation of disaster risk management plans.

Broad based district forums should be established for inter-stakeholder dialogues/communication, coordination and decision making to ward-off misconceptions, suspicions and lack of trust and to bring in place transparency and a culture of cooperation and joint working.

Harness the potential of media and civil society organizations by extensive capacity building programs in the area of disaster reporting, communication,

Neither the Flood Fighting Plans nor the District Disaster Risk Management Plans are presented before or discussed by the district councils. Resultantly the planning exercise has become merely another routine and ad hoc instrument of getting or showing things done.

complaint management etc.

Incorporate DRR in general and child centred approaches in particular into mainstream development planning and projects by developing SOP's and research and planning tools through which it could be ensured that while designing the development schemes at district level, the concepts of child centred disaster risk reduction are incorporated and taken care of.

Channelize some of unspent CCB funds into community based disaster risk reduction by intelligent planning and building coordination mechanism with the district governments.

Long term presence, commitment, patience and an across the board relation building with stakeholders and especially with second and third tiered local government officials is needed to work in the districts.

The response of the high-ups (DCO or District Nazim etc) alone should not be the only factor to select a district for future works by national and international NGOs. A broad based and multi indicator analysis tool that incorporates vulnerability of a district, prevalence of hazards, local governments' existing and future programs, overall state of human development and potential of local civil society organizations to name but a few should guide this decision.

Cooperation protocols need to be established, besides NDMA, with the local governments, relevant provincial government departments like relief commissions, PDMAs and environment protection agencies, local government and rural development departments, and Ministry of Environment et al.

Strategic technical support can be provided, to begin with, to the local governments to improve the existing flood fighting and disaster management plans by incorporating GIS and topographic maps showing the number and locations of vulnerable points and settlements. The existing disaster management plans can be improved with a little effort by documenting the existing physical, social and economic state of vulnerable communities. This target can be achieved by operationalizing the provision in Local Government Ordinance and those provided by NDMA for district disaster management plans.

Turn a challenge into opportunity: The decade's old mind built up of local government officials make them think for ready-made solutions. This challenge can be turned into an opportunity by developing District specific development, hazards, environment and vulnerability profiles/atlases and tools for undertaking a development profiling and development and risk reduction planning.

The development profiling should bring forth inventories of development assets like roads, schools, dispensaries and so on. This development profiling should be supported with maps and should be made available to the public. The development profiles should also help local governments develop their targets (on the patterns of MDGs) and measure their performance. The development profiling will be a useful tool to assess the development density and pockets of underdevelopment within a district and hence will help in the allocation of resources and

The development audit should help local governments develop their targets (on the patterns of MDGs) and measure their performance. The development audit will be a useful tool to assess the development density and pockets of underdevelopment within a district and hence will help in the allocation of resources and development schemes.

development schemes. The development profiling can be undertaken easily as local government hold a lot of information and this information need to be reflected into the planning decisions.

The district specific development guidelines should be evolved which can help in scrutinizing the development interventions for the risks they carry. Planning manuals have already been developed by the provincial Planning and Development Departments. The provisions of these manuals , the guidelines developed by NDMA for district level DRR planning and provisions of LGO 2001, Plan's experiences of Child Centred Community Development etc can be merged to evolve district specific and children sensitive DRR planning manuals.

Idea of integrated development planning needs to be propagated as it is also the message of both HFA and NDMF.

The construction and hydrology related works especially flood management schemes, should be pursed with great caution. The hydrology related interventions should not be taken unless they are studied in a broader spectrum.

Youth/children volunteer group or task forces should be established. The investment on and organization of children and youth task forces will contribute to improve the quality of education, the value they get out of it, and also to institutionalize and direct their potential. The children or youth task forces can be involved in improving early warning systems, plantation at the riverbanks, environmental education, and community work and so on.

Value addition to economic contributions and capacities of women and men in general and children and youth in particular can and should be made by imparting them with useful livelihood earning skills which will contribute to reducing household poverty and thus increasing their options to diversify their livelihoods and reducing their vulnerability.

Tackle the vulnerability with a human development approach by increasing people's choices so they are not left with limited options of staying at dangerous sites and adopt risky construction technologies and livelihood strategies. This is a long term goal that will slowly but surely contribute to sustainable risk reduction.

The strategic entry points for risk reduction include improving house construction technologies, improving people's physical mobility so they could access or be accessed by the social service providers, improving health infrastructure or at least primary health care services, and improving people's livelihoods.

Value addition to economic contributions and capacities of women and men in general and children and youth in particular, can and should be made.

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Section 1: Introduction

1.1. The Context

Pakistan is prone to a multitude of natural and man-made hazards including floods, droughts, cyclones, earthquakes, environmental degradation and climate change, to name but a few. These hazards have been turning to disasters of varying magnitudes in the past, affecting the lives and livelihoods, mainly of the poor. These disasters continue to frustrate the development efforts and built environment, and challenge poor people's and governments' capacities to respond.

1.1.1. Policy and Institutional Environment

A general understanding among the public, politicians, elected representatives and bureaucracy has developed in recent years, of the devastating impacts disasters have a potential to create, especially after the calamitous October 2005 earthquake in Kashmir and NWFP that took more than 73,000 lives, rendered 2.8 million people shelter-less and inflicted losses of more than 5.2 billion dollars (1).

A need was thus felt across the government and non-government quarters to institutionalize disaster response by putting in place disaster-specific institutions, policies and programs. Some important initiatives in this regard include:

1. Pakistan's ratification of Hyogo Framework for Action (HFA), 2005-2015,

2. Promulgation of National Disaster Management Ordinance, 2007,

3. Constitution of the National Disaster Management Council and Disaster Management Authorities on national, provincial and district levels,

4. Formulation of the National Disaster Management Framework (NDMF), and

5. Instructions and guidelines by NDMA for the preparation of national, provincial and district/municipal-level disaster risk management plans.

Besides these disaster-specific initiatives, there are existing policies, plans and programs that have direct relevance to impacting poverty, reducing the vulnerability and disaster risk reduction, hence contributing to sustainable environment and human development. A list of such policies and documents is given in table 1.1

1.1.2. The Real Challenge

Despite these encouraging achievements and availability of a range of policies, the conventional approach of understanding and responding to calamities still prevails in Pakistan, like rest of the world. This approach is obsessed with 'emergency management' and 'reaction' and considers disaster-affected people mere victims who need to be provided only with relief. The concerned government agencies respond or react only when a disaster situation *has* developed; meaning disasters are actually waited to happen.

1.1.3. The Alternative Perspective of Disaster Management

For almost three decades the above-mentioned dominant perspective is being challenged by intellectuals and professionals. They are passionately trying to replace it with an alternative perspective that focuses on social, economic, political and environmental

DRR RELEVANT POLICIES

Table 1.1 DRR relevant policies

Sector	International Covenant/Policy/Program/Documents
Disaster Management	Hyogo Framework for Action:2005-15
	National Disaster Management Framework
	Guidelines for the preparation of District Disaster Management Plans
Environment	National Sustainable Development Strategy NSDS 2009
	National Environment Policy 2005
	National Environment Action Plan 1997
	Convention on Biodiversity 1992, and Biodiversity Action Plan for Pakistan 2000
	Convention on Combating Desertification 1992, National Action Programme to Combat Desertification in Pakistan, 2002
	United Nations Framework Convention on Climate Change 1992, Pakistan's First National Communication on Climate Change 2003
	National Sanitation Policy 2006
	Draft National Drinking Water Policy
Development	Mid Term Development Framework (MTDF), 200510
	Millennium Development Goals and Pakistan's MDG Priorities, National MDG Progress Report 2006
	Poverty Reduction Strategy Paper
	National Housing Policy 2001
	National Women Development Policy
	National Policy for Children
	Tenth Five Year Plan, Approach Paper 2009
	National Health Policy
	National Education Policy
	Vision (2030), 2007

Box: 1.1: Eight principles established in National Disaster Management Framework

1. Promote multi-stakeholder, multi-sectoral and multi-disciplinary approaches,
2. Reduce vulnerability of most vulnerable social groups,
3. Strengthen community and local level risk reduction capacities,
4. Combine scientific and people's knowledge,
5. Develop culturally, socially, economically and environmentally relevant technologies,
6. Strengthen sustainable livelihood practices,
7. Acquire specific capacities in view of the hazard-risk profile of the area and country, and;
8. Work with other countries, and the international community to promote disaster risk reduction.

Source: NDMA, National Disaster Management Framework (2)

causes and dynamic pressures that contribute to turning hazards into disasters and keeping people's vulnerability to these disasters intact.

The alternative perspective emphasizes taking disaster management as an issue of governance and development planning. This perspective is slowly but gradually making inroads into international covenants, declarations, national policies and especially in non-governmental organizations' programs.

The National Disaster Management Framework and the Hyogo Framework for Action clearly spell out the need to make disaster risk reduction part of the overall development planning and programs at national and local levels for attaining the goal of sustainable development.

The local governments being the first responders to any emergency, hold an extremely important place in any disaster risk reduction strategy or program proposed or being implemented. The National Disaster Management Framework stresses the need to formulate district-specific risk reduction plans to make local governments and other stakeholders respond to natural and human induced hazards in an organized, effective and coordinated manner. It also emphasizes the need to be proactive and make institutions and vulnerable communities prepared for any emergency situation.

1.2. This Report

In the backdrop of this policy and institutional environment, Plan Pakistan- a child-centred international development organization, decided to augment the efforts of Government of Pakistan for preparing district-specific disaster risk reduction plans and strategies. Plan intends to add value by promoting and advocating child-risk reduction approaches and strategies. Plan also decided that taking River Indus as a reference line, most vulnerable and underdeveloped districts lying along it in South Punjab and Sindh should be sampled and studied as a first step. Rural Development Policy Institute (RDPI)- a research and policy organization was commissioned to undertake development and vulnerability assessment of these districts.

Box 1.2: Two ways of looking at disasters

Dominant or Conventional Perspective	Alternative Perspective
Disasters/Conflicts are viewed as isolated events.	Disasters/conflicts are seen as part of the normal process of development.
Linkages with conditions in society during normal times are not always analyzed.	Analyzing linkages with society during normal times is fundamental to understanding disasters/conflicts.
Technical/law and order solutions are dominant.	Emphasis on solutions that change relationships/structures in society. The objective is to reduce people's vulnerability and strengthen their capacity.
Centralized institutions dominate in intervention strategies and there is less participation of people, who are treated as 'victims'.	Decentralized institutions dominate in intervention strategies. Participation of people paramount in intervention strategies; people treated as 'partners' in development.
Implementing agencies are less accountable.	Accountability and transparency are given utmost importance.
Intervention is made when a disaster occurs.	Focus is placed on preparedness and risk reduction.
The objective of intervention is to return to the situation that prevailed before the disaster event.	Disasters/conflicts are viewed as opportunities for social transformation.

Source: Duryog Nivaran (3)

Neighboring Risk is an outcome of this assessment. It aims at mapping the natural and human induced hazards prevailing in these districts and understanding people's capacities against and vulnerability to these hazards. It has a special focus on the most affected groups that suffer the most in any disaster event- children, women, the elderly, people with disabilities and marginalized households in a particular community.

1.2.1. The Conceptual Framework

Neighboring Risk employs the alternative perspective and takes stock of the Hyogo Framework for Action, National Disaster Management Framework and Local Government Ordinance 2001 besides incumbent national policies on environment and socioeconomic development as given in table 1.1. The central argument of the report rests on the notion that to integrate disaster risk reduction into mainstream development planning and governance, there is a need to start with analyzing existing development and governance patterns from the angle of risk.

The report proposes to reduce the risks of disaster by adopting a multi-pronged strategy. The components of this strategy include integrated development and disaster risk reduction planning, preparedness and improving environmental and human development conditions for people currently, or expected to be, living with risks. It strongly recommends making children, youth and women part of the disaster risk reduction efforts by first acknowledging their capacities and role in, and then enhancing the same for different stages of disaster management cycle including early warning, preparedness, relief, recovery, reconstruction and rehabilitation. All the strategies advocated in this report can be put in practice within the existing policy provisions, financial capacities of the governments at different tiers, and institutional arrangements.

1.2.2. The Scope

The reader would find Neighboring Risk indicative in its analysis and recommendations. Its scope is restricted to presenting an overview of the natural and human-made hazards and physical/environmental, social, economic, political and institutional conditions prevailing in the studied area. It brings forth broader recommendations that can be narrowed down and specified while preparing actual plans and designing development programs and projects for reducing the risks of disasters. It should thus be taken as a flexible framework to analyze hazards and people's vulnerability and capacities as part of the planning process. The structure of this report matches the one proposed by National Disaster Management Authority for preparing the district-specific disaster risk management plans. The specific scope of the report includes;

1. Developing detailed profiles of the sample districts with special reference to existing and potential hazards. The profiles include, besides other details, poverty/development indicators readily recognized by all concerned.(The detailed district profiles are separately available on the CD rom enclosed with this report).

2. Identification of areas and communities at risk within sample districts. The study highlights the nature of these risks and dimensions of vulnerabilities, targeted communities live with.

3. Identification of the civil society groups and organizations having an experience of or a potential for taking part in disaster management efforts in the targeted districts.

4. Capacity assessment of the incumbent local regimes and civil society/community organizations with special reference to disaster risk management and response.

1.3. The Research Process

An integrated six-step research process was employed to complete the study. The details are shown in fig 1.1. Special care was taken to keep the whole process objective, participatory and consultative. Keeping in view the scope, geographical coverage, context, follow-up interventions that Plan Pakistan intends to make, and deliverables being expected, a flexible research framework was designed. All the 22 districts lying along River Indus in Punjab and Sindh were studied with reference to multiplicity of hazards, level of vulnerability, human development and geographical settings. Three districts each from South Punjab and Sindh were sampled while one district Vehari lying along river Satluj in Punjab was also included for detailed assessment as Plan Pakistan is working on a number of child-centred development projects in the district for nearly eight years.

Having completed the sampling or selection process, consultative meetings were held with civil society organizations, media professionals and respective local governments in each district to draw preliminary hazard maps and a stakeholder capacity assessment. In the light of these consultative meetings, the research tools and framework for community survey were refined and adjusted accordingly. Two to three hazard prone communities in each district were

Fig 1.1: The six step research process

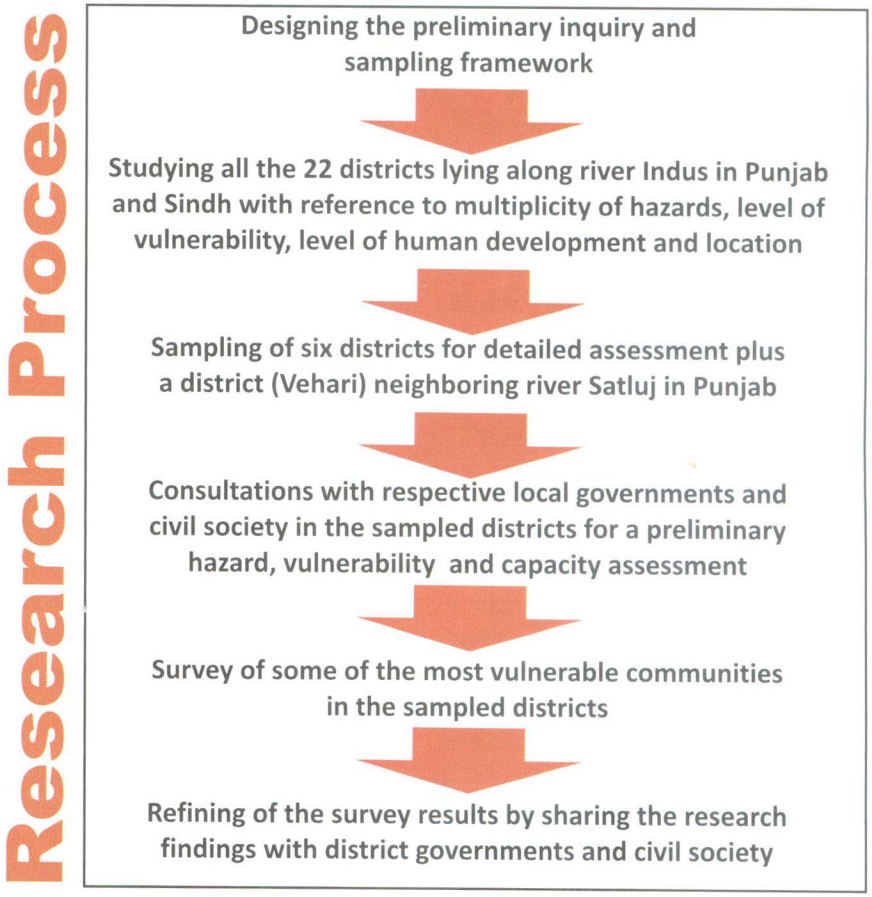
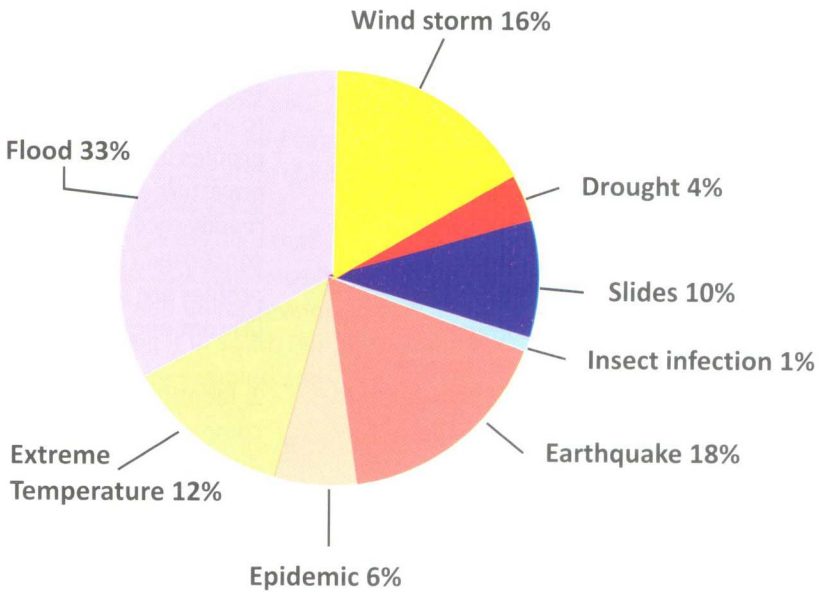


Fig 1.2: Frequency of disasters in Pakistan, 1954 - 2004



Source: SUPARCO (4)

Sampling Process

Table 1.2: The sampling process

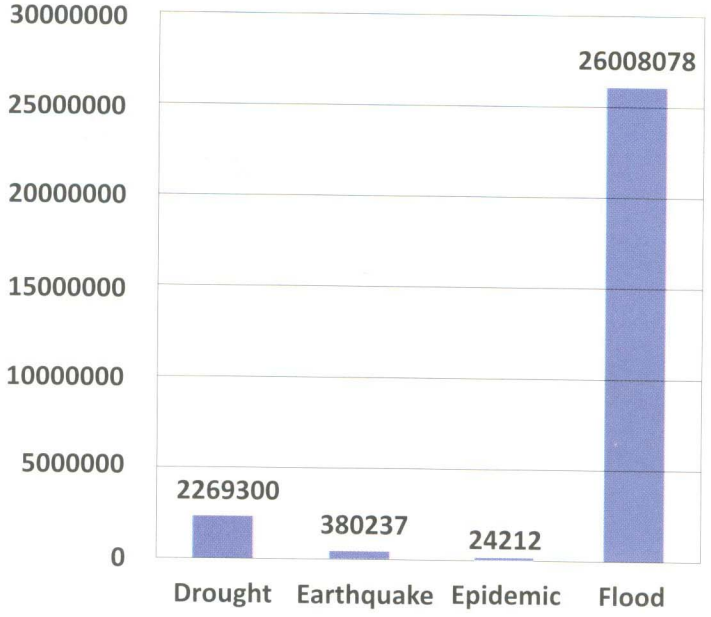
Districts	*Frequency
Mianwali	2
Bhakkar	2
Layyah	3
Muzaffargarh	10
Dera Ghazi Khan	8
Rajanpur	8
Rahimyar Khan	1
Jacobabad**	5
Shikarpur	1
Larkana**	3
Ghotki	2
Sukkur	2
Khairpur	3
Naushahro Feroze	1
Nawabshah	2
Dadu**	4
Hyderabad**	1
Thatta	8
Kashmore Kandhkot***	Data not available
Jamshoro***	Data not available
Matiari***	Data not available
Tando Muhammad Khan***	Data not available

*Frequency of appearing as the most affected/ underdeveloped/deprived/ vulnerable district in different rankings using different sets of criteria

**District recently broken into two or more districts. By rule no such district was sampled owing to foreseeable administrative issues especially data confusions.

***Recently constituted districts. By rule no such districts were sampled/selected owing to non availability of data and foreseeable administrative confusions.

Fig: 1.3. Population affected by disasters in Pakistan



Source: SUPARCO (5)

surveyed. Based upon findings of the consultative meetings, community surveys and review of development and vulnerability indicators, district-specific preliminary reports were prepared and shared with the respective local governments.

1.3.1. The Sampling Procedure

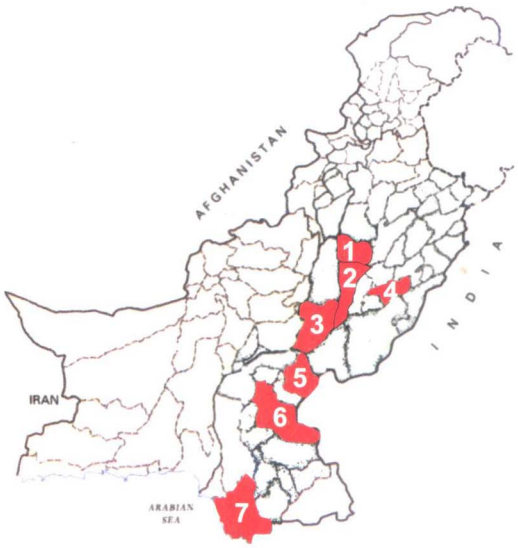
Details of the process adopted for sampling/selection of the districts are given in annexure 3. Ten research reports prepared by government and non-government organizations ranking the districts of Pakistan using different criteria were reviewed. The results for each district were summarized in a way that a comparative situation could emerge as shown in table 1.3 The summary of the whole process is shown in table 1.2.

1.4. Why River Indus and its Neighboring Districts ?

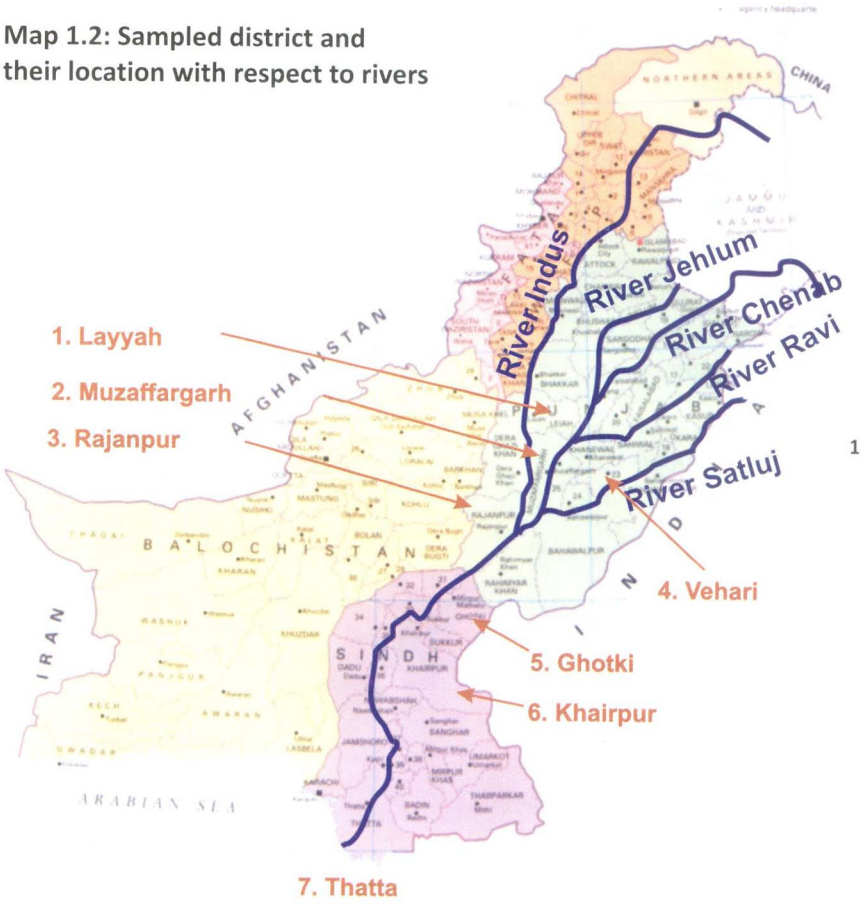
Geographically, Pakistan can be divided into four broader zones: northern mountains, western highlands, eastern deserts and Indus plains containing River Indus and its tributaries. This last-mentioned zone provides most favorable conditions for human habitation and for this fact more than 70 per cent of Pakistan's population resides in this zone (7). Indus is the only river that irrigates Sindh and makes the life line connecting it with Punjab. Flooding in river Indus and its eastern and western tributaries is the recurring natural hazard in this region.

The land along Indus is among the most fertile tracts in the country, but the irony of the fact is that residents of riverside areas are among the most neglected ones. The communities residing in these areas are politically marginalised, physically isolated and deprived of basic social and economic services.

Map 1.1: Sampled districts



Map 1.2: Sampled district and their location with respect to rivers



Source: (Base Map): Oxford Atlas for Pakistan (6)

CONCEPTUAL FRAMEWORK

Neighboring Risk employs the alternative perspective on disasters for its information collection, analysis and recommendations. To proceed with this report, it will be useful for the reader to have an understanding of the key concepts, approaches and models that make up this perspective (8).

Hazard is defined as: "A potentially damaging physical event, phenomenon or human activity that may cause: loss of life or injury, property damage, social and economic disruption or environmental degradation. Hazards can include latent conditions that may represent future threats and can have different origins: natural (geological, hydro-meteorological and biological) or induced by human processes (environmental degradation and technological hazards)" (UN/ISDR Geneva 2004)(9).

Pakistan's National Disaster Management Framework (NDMF) identifies and categorises hazards as natural (avalanches, cyclones and storms, droughts, earthquakes, epidemics, floods, glacial lake outbursts, landslides, pest attacks, river erosion and tsunami) and human-induced (industrial, transport, oil spills, urban and forest fires, civil conflicts and internal displacements of communities) that threaten the society, economy and environment . In terms of their frequency and scale of impact, the NDMF identifies earthquakes, droughts, flooding, wind storms and landslides as high priority hazards.

Taking UN/ISDR's definition, Neighboring Risk also lists down and analyses those latent conditions that may threaten human life, economy/livelihoods and environment in future. Please see table 2.1 for a complete list of hazards identified by this report.

Vulnerability is defined as: "The conditions determined by physical, social, economic, and environmental factors or processes, which increase the susceptibility of a community to the impact of hazards" (UN/ISDR Geneva 2004.) (10) . The vulnerability can broadly be divided into:

Physical Vulnerability that includes human settlements located at dangerous locations like river banks and creeks etc; dangerous livelihood options like fishing in the rough sea, mining etc; lack of access to assets like productive lands and capital; lack of education and access to information; and absence of basic services like schools, health facilities, clean drinking water, sanitation and transport infrastructure etc.

Social Vulnerability that includes lack of social safety nets and institutions; lack of representative and responsive leadership; weaker or repressive social relations and structures (for instance discriminations on the basis of caste, gender, age, occupation, ownership of resources etc); conflicts between communities; no or little participation in making of decisions that affect people's lives; discriminatory gender perceptions and relations etc.

Attitudinal Vulnerability that includes dependency syndromes, resistance to social change, and superstitions etc.

Economic Vulnerability that includes low income, lack of income earning options, unemployment or underemployment, bondage or heavy

indebtedness etc.

Political Vulnerability that includes lack of voice or choice in political decisions, lack of access to power structures and administrative centres, exploitative power relations, poor governance etc.

Poverty and Vulnerability: More often than not, poverty and vulnerability are taken as synonyms. However this should not be the case. The two have a cyclical relationship. Poor people suffer from a complex combination of vulnerabilities which perpetuate their poverty and they become too weak to withstand the disaster risks. Since the poor are far more affected by disasters, they become poorer and their capacity to respond to future disasters becomes even weaker.

Poor people often do not have any choice but to live in fragile environments characterised by less productive or degraded lands, drought-affected areas, riverbanks and areas vulnerable to hill torrents etc. Their poverty restricts their access to education, health services, markets and sources of information.

Resultantly they have few options for their livelihood and often have to resort to dangerous, hard and low-paying occupations. Daily wages and farm labour, and heavy reliance on high-interest loans are the key characteristics of the poor's livelihood. Little or no savings, absence of social safety nets and lack of access to productive resources like land, capital and skills; absence of or limited access to government and non-governmental institutions (including credit agencies) are some of the factors that impact lifestyles and reflect the fragility of the poor's livelihood systems. These conditions translate into a weaker capacity to withstand the impact of hazards.

Fig. 1.4. The spiral of poverty, vulnerability and disaster risk

Source: Gender Dimension in Disaster Management: A Guide for South Asia (11)

CONCEPTUAL FRAMEWORK

Disaster is often taken as a sudden event that takes human life, creates widespread destruction and emergency measures are required to tackle the situation. More than often 'hazards' are confused with 'disasters' and are considered God's will or a punishment from Him for the affected people's perceived misdeeds or sins, or as violent acts of nature. Although hazards have a potential to create widespread destruction, they do not turn into disasters on their own. A disaster is actually a situation created when a natural or human induced hazard strikes a vulnerable community, built-up or natural environment. Till recently disasters have been considered a domain of natural or environmental scientists who analyse hazards from a scientific perspective. This is one of the dimensions of dominant or conventional perspective of disasters. The alternative perspective, in contrast, looks at disasters by analysing different dimensions of people's vulnerability: the physical, social, economic, and political settings that provide favourable conditions for turning hazards into disasters.

For understanding and explaining the relationship between hazards, vulnerability and disasters, the proponents of alternative perspective have developed useful models. Two of these are: the 'Disaster Pressure and Release Model (PAR)' developed by Ben Wisner et al (12), and 'Sustainable Livelihood Framework (SLF)' developed by DFID (13).

According to the PAR model, a disaster is actually an intercourse of two forces. One of them is comprised of factors that make up people's vulnerability while the other is that of hazards. If the risk of disasters is to reduce; the factors contributing to vulnerability must be addressed.

The PAR model employs three major concepts - root causes, dynamic pressures and unsafe conditions. The root causes include the social, political and demographic factors that determine the division of resources among different groups. These factors in turn reflect the distribution of power in a society and also include the prevalent gender relations.

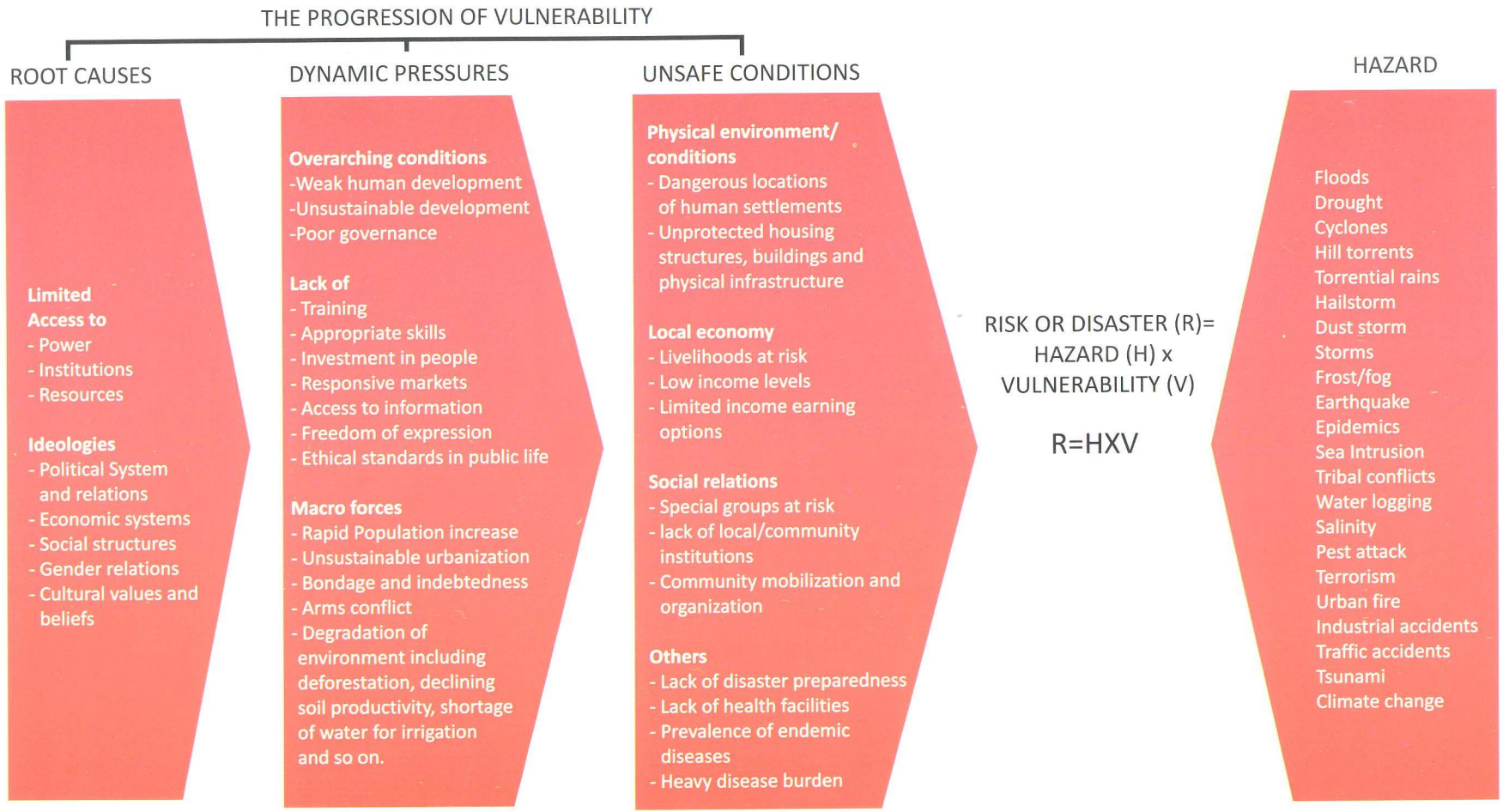
The dynamic pressure is made up of those factors and processes which by coupling with the root causes create vulnerability. Rapid increase in population, expanding urban centres, a country's debts and mechanisms for their return, inflation which causes an increase in the cost of basic services, environmental degradation, and increasing demand for land, compel poor people to reside at dangerous places.

The unsafe conditions are the most visible forms of vulnerability. These can be categorized as fragile physical environment, fragile local economies, and existence of vulnerable groups and communities in a given society or place.

We have updated/adjusted the original PAR model to reflect the situation documented during our assessment for this report. (please see fig. 1.5)

CONCEPTUAL FRAMEWORK

Fig. 1.5. Pressure and Release Model



CONCEPTUAL FRAMEWORK

The Sustainable Livelihood Framework (SLF) takes livelihoods as a combination of activities, skills and assets that one requires to lead his/her life. A particular livelihood option can be termed sustainable only when it has a capacity to sustain or absorb shocks and there are possibilities of improving it without compromising the natural environment. SLF looks at people in the context of vulnerability. This context represents a vulnerable situation most of the world's poor live in. The factors that make up the vulnerability context need to be understood as they determine the availability of assets and livelihood options for people. The SLF categorises vulnerability as: economic, technical, political and demographic trends; shocks like epidemics, natural disasters, conflicts and damages caused to crops and livestock; and seasonality that includes temporary change in the prices of commodities, availability of food, livelihood options and health conditions.

People's skills and capacities can be judged by the state of their productive assets. The livelihood sources keep on changing due to trends, shocks and seasonality.

The factors that determine change in livelihood systems are comprised of institutions, organizations and laws. The importance of these change factors cannot be denied as they can reduce as well enhance the negative impacts on vulnerable people. Under the influence of vulnerability context and change factors, people determine the use of their productive sources and livelihood strategies. This is a complex process and a number of external factors have an impact on this process.

The SLF model helps understand people's selection of their livelihood strategies and factors that affect these choices. It emphasises strengthening of those factors that have a positive impact on increasing people's livelihood options and bringing flexibility in them. The SLF is a useful tool to analyse people's livelihood systems and understanding the vulnerability and disaster risk reduction in the context of livelihoods.

Disasters and Development: During the last century many parts of world developed at a very fast pace in terms of industrialization, urbanization, development of mega infrastructure and modernization of agriculture. No doubt this development brought prosperity for residents who are enjoying high incomes and better living standards. However this development is neither sustainable nor equitable as its fruits could not be equitably distributed among all countries of the world and communities within a particular country. Moreover this development is being fueled by a massive exploitation of natural resources with little care for their conservation and sustainable use. This trend has resulted in the degradation of natural environment.

Since the industrial revolution, fossil fuels are being used to generate electricity, maintain heating systems and keep motor vehicles running etc. The emission of carbon and other greenhouse gases caused by the burning of these fuels, deforestation, and agricultural and livestock activities has resulted in climate change - the deadliest manifestation of modern lifestyles that is threatening the very life support system that guarantees the continuation of life on this planet.

CONCEPTUAL FRAMEWORK

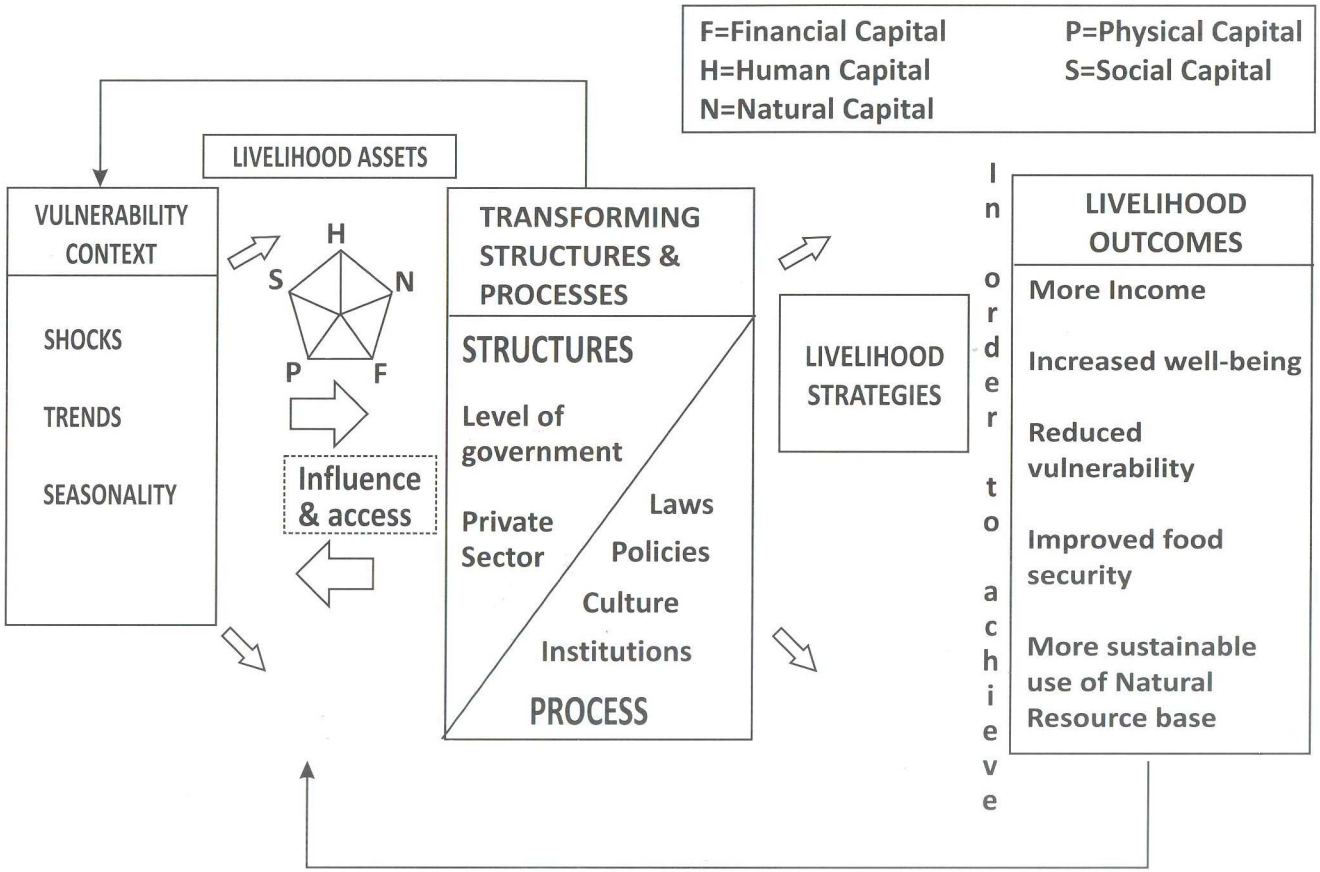


Fig. 1.6. Sustainable livelihood framework

CONCEPTUAL FRAMEWORK

It is now widely recognized that climate change is triggering unpredictability of weather systems and thus climate-induced natural hazards including cyclones, floods, tornadoes, storms, sea level rise, droughts and extinction of many floral and faunal species.

Various development projects like nuclear plants, big industrial units, mega dams, irrigation systems, highways and the so-called green revolution have also resulted in a number of disasters and hazards. For instance the green revolution that needs consistent input of chemical fertilisers, hybrid seeds and pesticides has actually exhausted the productive capacity of agricultural lands in many parts of world including Pakistan. The world's largest irrigation system which Pakistan is always proud of, has created inter-provincial conflicts on irrigation water, resulted in degradation of Indus delta, and has rendered hundreds of thousands of hectares of land waterlogged and salinity hit. The unchecked air and water pollution caused by industrial activity, vehicular emissions and seepage of contaminated water into aquifers is causing a variety of health problems including diarrhoea, various forms of cancers, lung diseases, tuberculosis and so on.

Human Development (14) is defined as a process of enlarging people's choices and enhancing human capabilities (the range of things people can do) and freedoms, enabling them to: live a long and healthy life, have access to knowledge and a decent standard of living, and participate in the life of their community and decisions affecting their lives. Some of the issues and themes currently considered most central to human development include:

Social progress - greater access to knowledge, better nutrition and health services.

Economics - the importance of economic growth as a means to reduce inequality and improve levels of human development.

Efficiency in terms of resource use and availability - human development is pro-growth and productivity as long as such growth directly benefits the poor, women and other marginalized groups.

Equity - in terms of economic growth and other human development parameters.

Participation and freedom - particularly empowerment, democratic governance, gender equality, civil and political rights, and cultural liberty, particularly for marginalized groups defined by urban/rural divide, sex, age, religion, ethnicity, physical/mental parameters, etc.

Sustainability - for future generations in ecological, economic and social terms.

Human security - security in daily life against such chronic threats as hunger and abrupt disruptions. including joblessness, famine, conflict, etc.

Disaster Risk Reduction is the ultimate objective of the alternative perspective. Sustainable risk reduction involves strategies that could reduce people's vulnerability and enhance their capacities to make them sustain shocks created by hazards. This can be understood by a simple equation:

Risk (Disaster) =

$$\frac{\text{Vulnerability (V) x Hazard (H)}}{\text{Capacity (C)}}$$

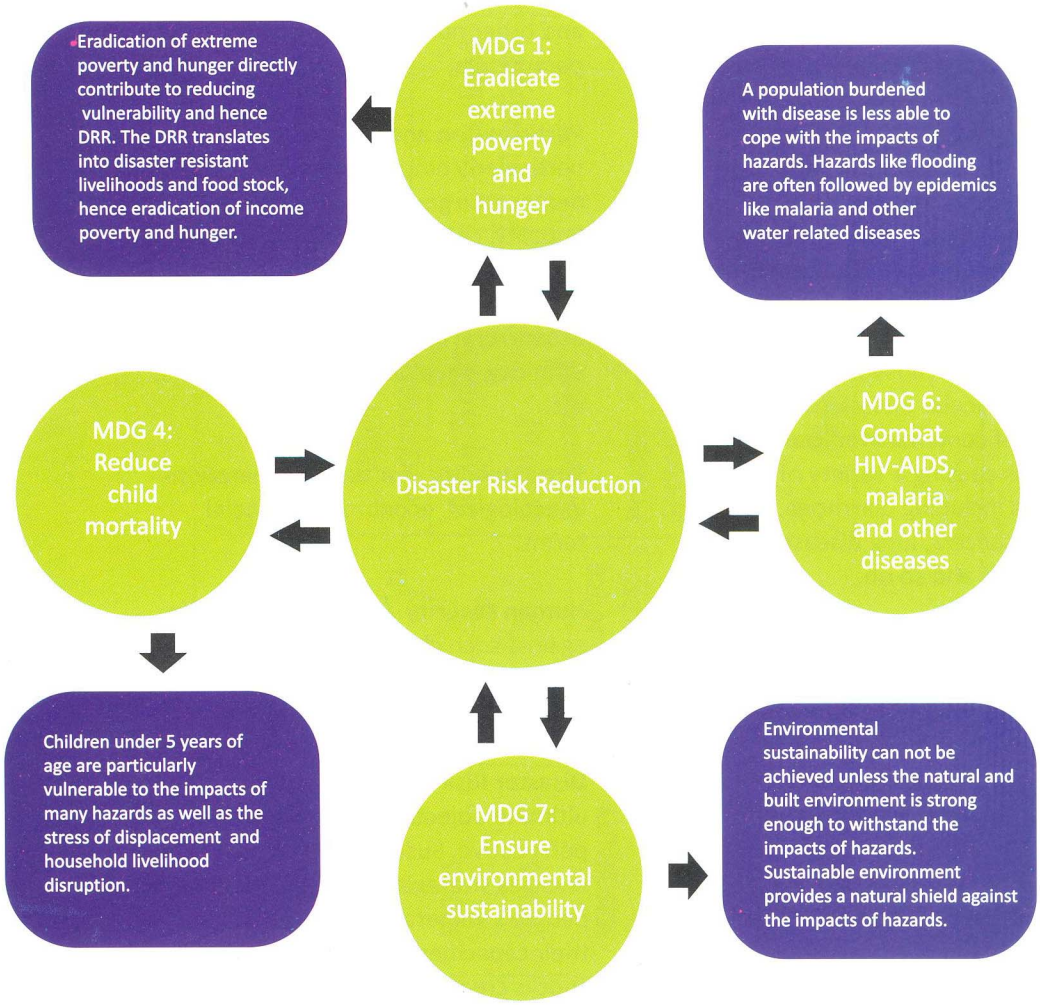
or

$$R = \frac{V \times H}{C}$$

According to this equation the value of 'R' or risk of disaster will be reduced if the value of 'V' or vulnerability is reduced and that of 'C' or capacity is increased.

To reduce the risk of disasters, a combination of strategies is required. The PAR and SLF models and human development approach provide useful building blocks of this strategy. It is important to keep in sight that efforts to reduce the disaster risk directly contribute towards sustainable human and environmental development. Disaster risk reduction also has direct linkages with the attainment of Millennium Development Goals. Fig. 1.7 explains this relationship.

Fig. 1.7. Disaster Risk Reduction and Attainment of MDGs



CONCEPTUAL FRAMEWORK

Children, Disasters and Development: Children and women are among the most affected ones in any disaster situation in terms of death, injury, being lost, violence, abduction, displacement, and distress. This is evident from the accounts of different disasters that have happened in Pakistan or elsewhere in the world. Studies have shown that disasters actually discriminate as they have disproportionately large impact on children and women.

Like the human development approach where all human beings and especially the poor are considered the centre of attention, the 'Child Centered Development' takes child rights and needs as focus of development efforts. This approach dwells upon five major international commitments namely the Convention on the Rights of Child (CRC) 1989, World Summit for Children (WSC) 1990, the 20/20 initiative 1995, Convention on Elimination of all forms of Discrimination against Women (CEDAW) 1979, and Millennium Declaration.

It emphasises upon and strategizes for ensuring that every child irrespective of his/her location, sex, age, race, religion, ethnicity, caste, economic status and abilities/disabilities could enjoy four basic rights of survival, protection, development, and participation in decisions that impact their lives.

The rights of **survival** and **development** imply that these are rights to the resources, skills and contributions necessary for the survival and full development of the child. These include rights to adequate food, shelter, clean water, formal education, primary health care, leisure and recreation, cultural activities and information about their rights. This requirement is not met by simply providing the means to fulfil child rights but also providing access to them. Specific articles of the convention address the needs of child refugees, children with disabilities and children of minority or indigenous groups.

Right to **protection** includes protection from all forms of child abuse, neglect, exploitation and cruelty, including the right to special protection in times of war and protection from abuse in the criminal justice system.

Children are entitled to be free to express opinions and to have a say in matters affecting their social, economic, religious, cultural and political life. **Participation** rights include the right to express opinions and be heard, the right to information and freedom of association.

Engaging these rights as they mature helps children bring about the realisation of all their rights and prepares them for an active role in society.

The **equality** and interconnection of rights is stressed in the convention. In addition to governments' obligations, children and parents are responsible for respecting the rights of others - particularly each other. Children's understanding of rights will vary depending on age, and parents should tailor the issues they discuss, and adopt/discipline methods to the age and maturity of the individual child.

Taking into account the specific vulnerabilities and needs of children which should be addressed for a sustainable disaster risk reduction, and taking inspiration from Child

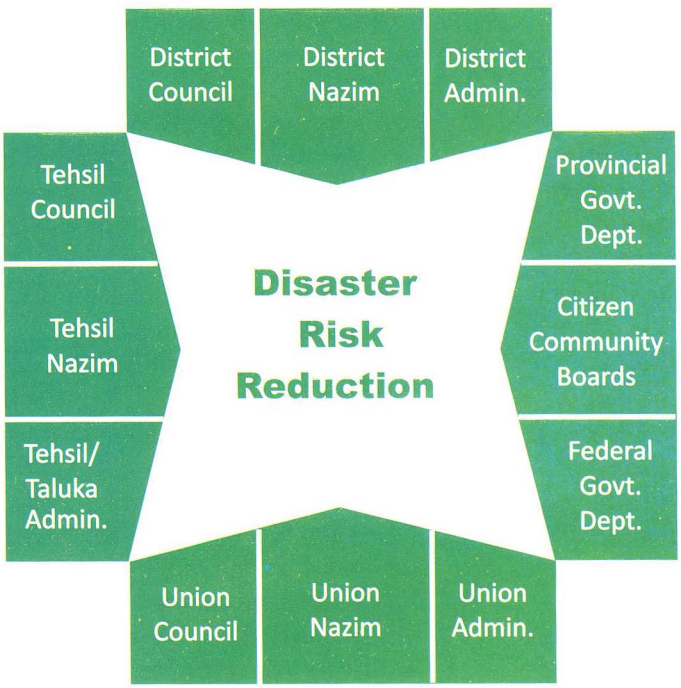
Centered Development approach, a **Child-centred and Child-led Disaster Risk Reduction** approach has been devised. This approach puts children at the core of DRR programs and efforts. This approach emphasises that children should not be looked at as mere 'helpless victims' of disasters. Children possess capacities according to their stage of development which form the basis for their active participation in emergency response, preparedness and mitigation.

Under this approach programs are designed that could provide a nurturing and supportive environment helping children cope with adverse situations, and contributes to building their resilience. The duty bearers like parents, school teachers, government officials and others are made aware of and capacitated to address children's needs and vulnerabilities related to disasters.

Climate Change that is exacerbating the extreme weather events like floods, cyclones, and droughts etc has specific repercussions for children. Fig.1.9. illustrates how climate change impacts children. The child-centred and child-led DRR approach opens avenues for making children part of the climate change adaptation efforts too.

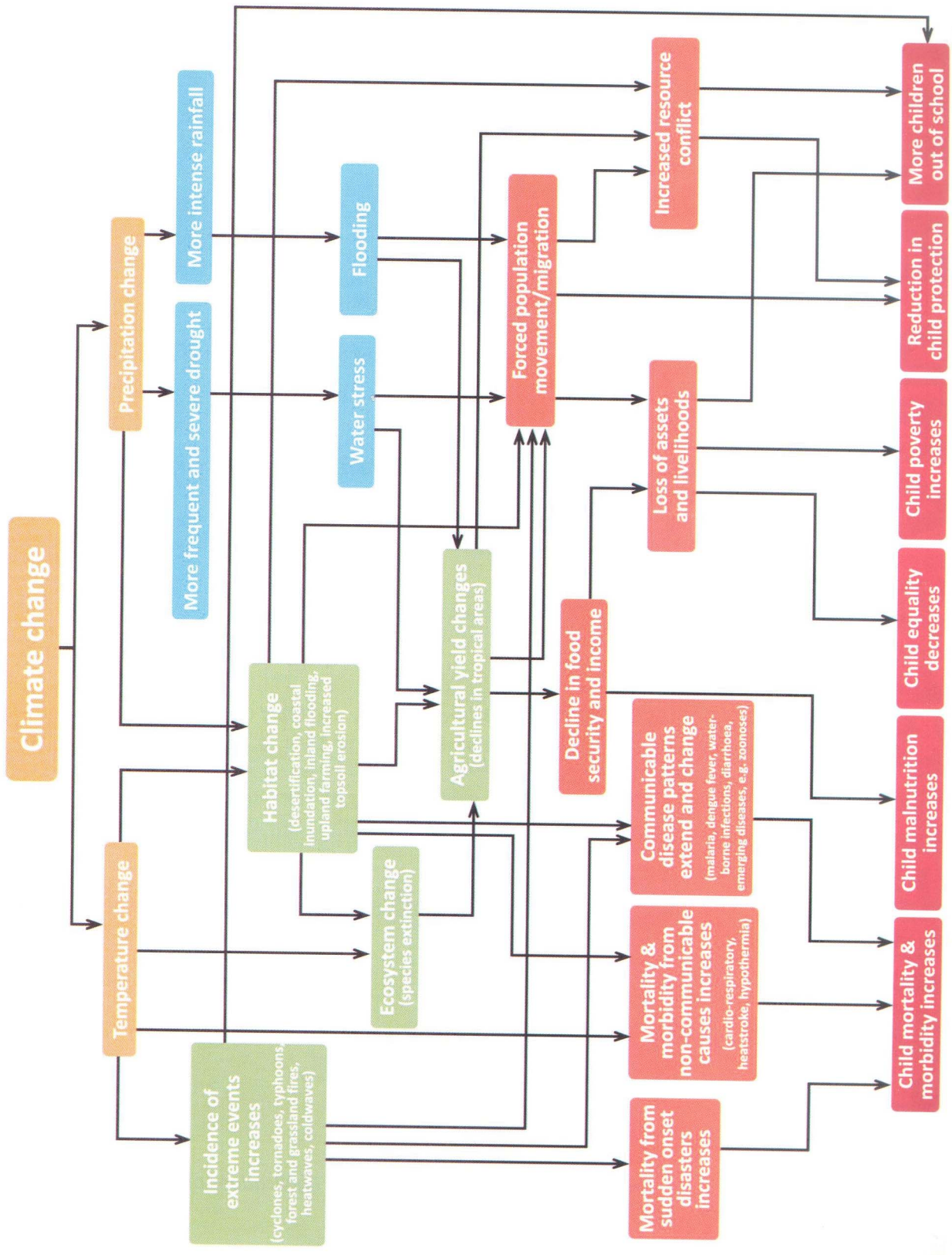
Decentralized Disaster Risk Reduction/Management aims to bring disaster risk management cycle at the level of devolved governance structures (say district and sub district government levels). While doing so, the provision of local government systems are employed to make local government departments along with communities and local civil society organizations part of disaster management at district/local levels. Section 7, subsection 3 of this report presents a model of sustainable decentralized disaster risk reduction in the context of LGO 2001 .

Fig. 1.8. Decentralized Disaster Risk Management



CONCEPTUAL FRAMEWORK

Fig. 1.9. Children and Climate Change



Source: UNICEF (15)

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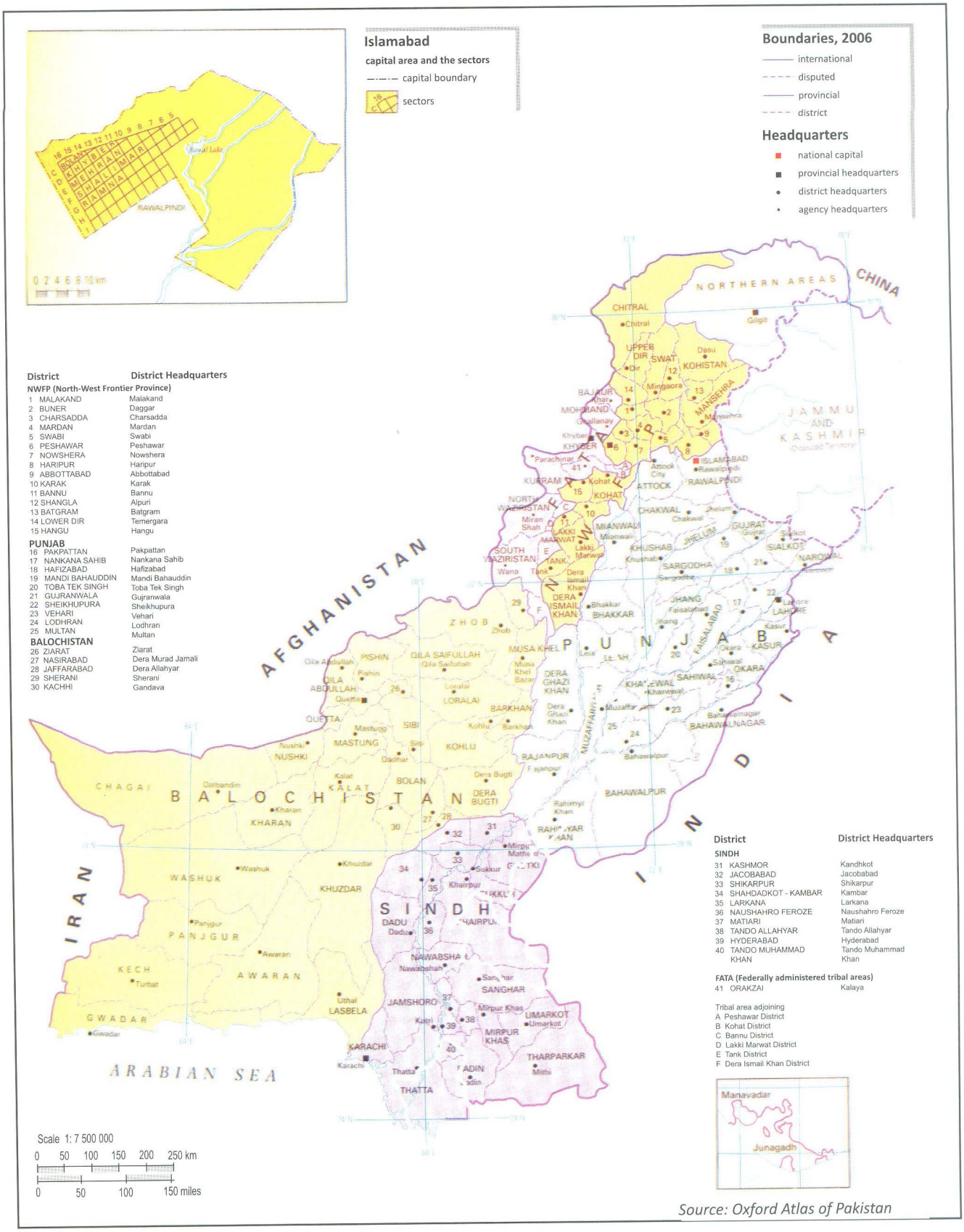
Map 2.1 Administrative Division of Pakistan



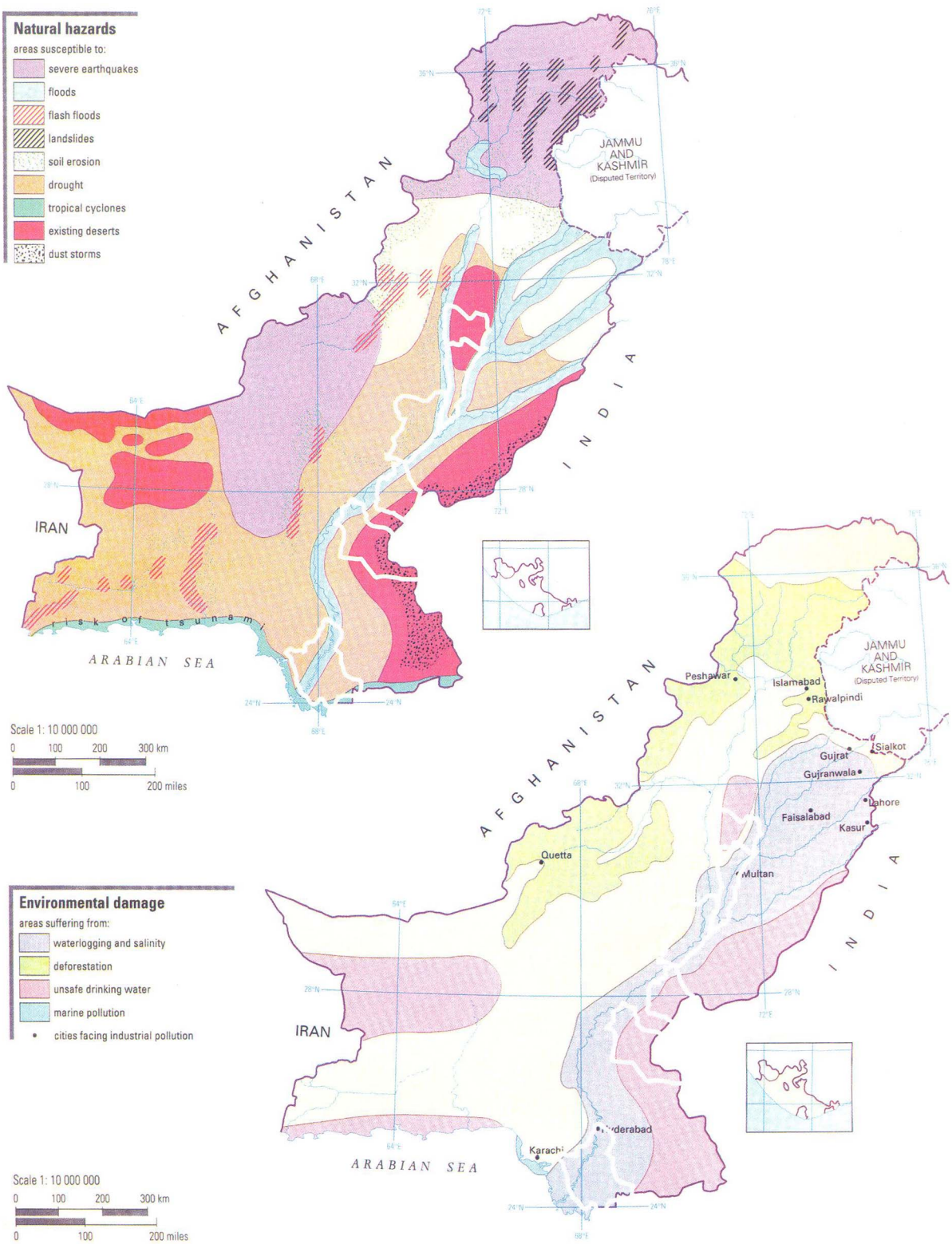
District	District Headquarters
NWFP (North-West Frontier Province)	
1 MALAKAND	Malakand
2 BUNER	Daggar
3 CHARSADDA	Charsadda
4 MARDAN	Mardan
5 SWABI	Swabi
6 PESHAWAR	Peshawar
7 NOWSHERA	Nowshera
8 HARIPUR	Haripur
9 ABBOTTABAD	Abbottabad
10 KARAK	Karak
11 BANNU	Bannu
12 SHANGLA	Alpuri
13 BATGRAM	Batgram
14 LOWER DIR	Temergara
15 HANGU	Hangu
PUNJAB	
16 PAKPATTAN	Pakpattan
17 NANKANA SAHIB	Nankana Sahib
18 HAFIZABAD	Hafizabad
19 MANDI BAHAUDDIN	Mandi Bahauddin
20 TOBA TEK SINGH	Toba Tek Singh
21 GUJRANWALA	Gujranwala
22 SHEIKHUPURA	Sheikhupura
23 VEHARI	Vehari
24 LODHRAN	Lodhran
25 MULTAN	Multan
BALOCHISTAN	
26 ZIARAT	Ziarat
27 NASIRABAD	Dera Murad Jamali
28 JAFFARABAD	Dera Allahyar
29 SHERANI	Sherani
30 KACHHI	Gandava

District	District Headquarters
SINDH	
31 KASHMOR	Kandhkot
32 JACOBABAD	Jacobabad
33 SHIKARPUR	Shikarpur
34 SHAHDADKOT - KAMBAR	Kambar
35 LARKANA	Larkana
36 NAUSHAHRO FEROZE	Naushahro Feroze
37 MATIARI	Matiari
38 TANDO ALLAHYAR	Tando Allahyar
39 HYDERABAD	Hyderabad
40 TANDO MUHAMMAD KHAN	Tando Muhammad Khan
FATA (Federally administered tribal areas)	
41 ORAKZAI	Kalaya

Tribal area adjoining
A Peshawar District
B Kohat District
C Bannu District
D Lakki Marwat District
E Tank District
F Dera Ismail Khan District

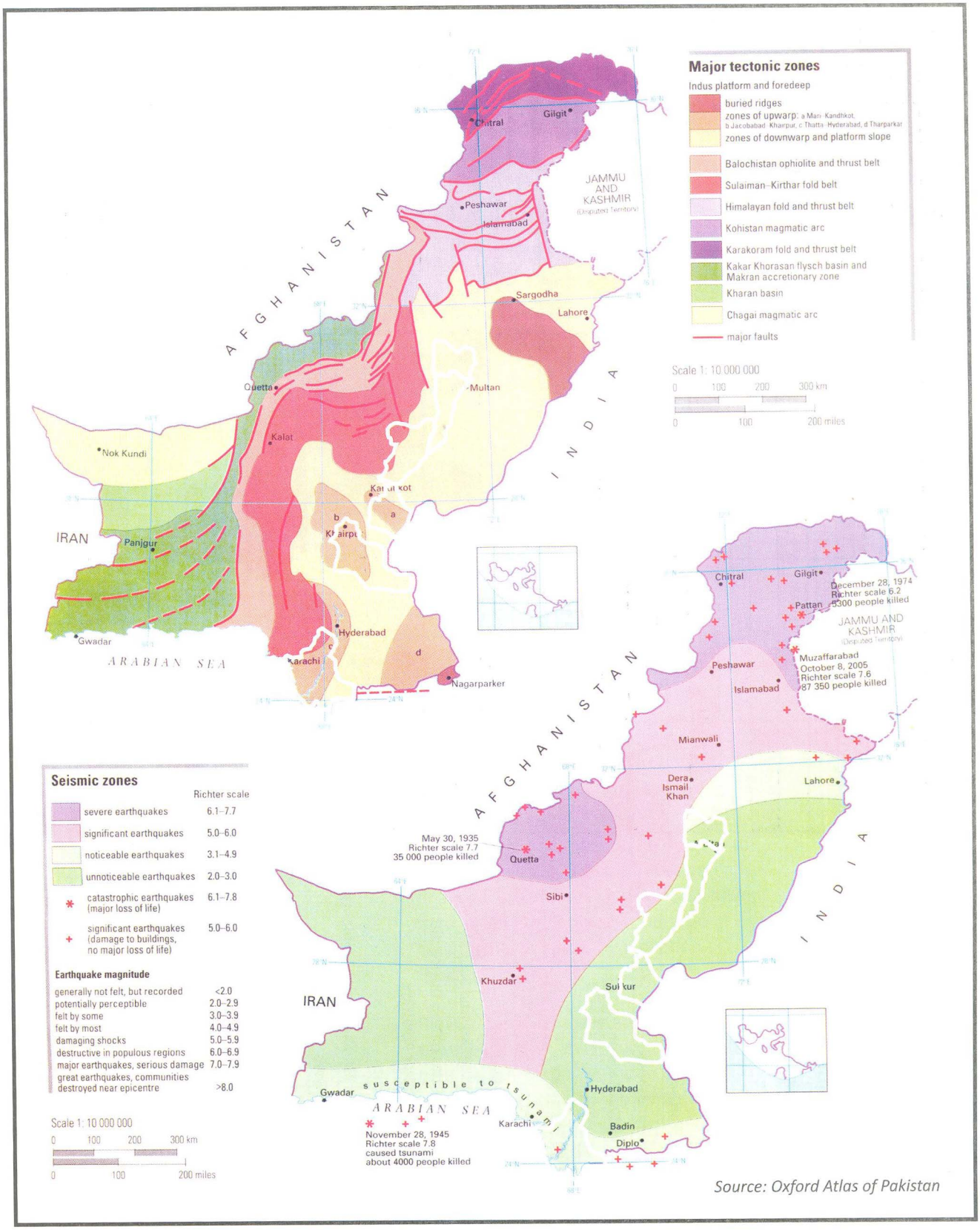
Source: Oxford Atlas of Pakistan

Map 2.2: Natural hazards and environmental damage



Source: Oxford Atlas of Pakistan

Map 2.3: Tectonic and seismic zones of Pakistan



Source: Oxford Atlas of Pakistan

Table 2.1: Hazards and their intensity in the sampled districts

Hazard	Layyah	Muzaffargarh	Rajanpur	Vehari	Ghotki	Khairpur	Thatta
1. Floods	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	Low to medium risk
2. Droughts	High Risk	Low to medium risk	High Risk	Low to medium risk	High Risk	High Risk	High Risk
3. Cyclones							High Risk
4. Hill Torrents			High Risk				High Risk
5. Torrential/Heavy Rains	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk
6. Hailstorms	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk			
7. Dust Storms	High Risk	Low to medium risk			High Risk	High Risk	
8. Storms			Low to medium risk	Low to medium risk			High Risk
9. Frost/Fog	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk
10. Earthquake			High Risk				High Risk
11. Landslides							
12. River Erosion	High Risk	High Risk	High Risk	High Risk	High Risk		
13. Lightning							
14. Epidemics	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk
15. Sea Intrusion							High Risk
16. Tribal Clashes			High Risk		High Risk		
17. Water Logging and Salinity	Low to medium risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk
18. Pest Attack/Crop Destruction	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk
19. Air/Water Pollution	Low to medium risk	High Risk		Low to medium risk	High Risk		High Risk
20. Terrorism	Low to medium risk	Low to medium risk	High Risk		High Risk	High Risk	
21. Urban Fire/Industrial Accidents		Low to medium risk			High Risk		
22. Tornedoes							
23. Unfit/brackish ground water	Low to medium risk	Low to medium risk	High Risk		High Risk	High Risk	High Risk
24. Minning Activity/Accidents					High Risk	High Risk	High Risk
25. Traffic Accidents	Low to medium risk	Low to medium risk			High Risk		Low to medium risk
26. Tsunami							High Risk
27. Climate Change	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk	Low to medium risk
28. Natural Resources Degradation							High Risk
29. Increasing use of Chemical Fertilizers and pesticides	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk	High Risk

High Risk

Low to medium risk

Section 2: An Overview of Hazards and Vulnerability in Pakistan and Sampled Districts

All the districts short-listed or sampled for this study are prone to multiple hazards. Table 2.1 gives an overview of all the hazards and their relative severity mapped out by this research in the sampled districts. These hazards range from the so called natural and conventional hazards like floods and droughts to human-induced risks like environmental degradation, terrorism and road accidents. This mapping of hazards has been undertaken through consultations with local government officials, civil society organizations and vulnerable communities. Also helpful was literature available on the socioeconomic, physical and environmental conditions of the sampled districts.

Many of the identified prevalent hazards recurrently turn to disasters of varying magnitude, while some disasters are in the making and fall in the category of 'slow onset disasters'. These include - but not limited to - salinity and water logging, rapid increase in the use of chemical fertilizers, widening demand-supply gaps between irrigation-fit water from surface and underground sources and the looming disaster of climate change which has already begun to show signs of climate variability and uncertain rainfall and temperature patterns. The violence, ethnic tension and terrorism have also turned to a menace, threatening lives and livelihood of people in many of the sampled districts.

2.1. Physiographic Conditions and Hazards

Physiographically, Pakistan is an extremely diverse country. Topography and climatic conditions have a key role in determining the nature of natural hazards, their impacts and physical vulnerability of people and environment in the country. Pakistan can be divided into four broader and distinct topographical or physiographic zones with internal variations and diversity in each zone. (1)

These are: the northern mountain zone made up of Himalayan range and foothills; western highlands; central Indus plain created by the mighty river Indus and its eastern and western tributaries; and eastern desert zone comprising the deserts of Cholistan in Punjab and Nara and Thar in Sindh. The southern zone of Pakistan lies on the shores of Arabian Sea making an 1, 100 km long coastal belt and a huge Indus Delta.

The young Himalayan mountains are still in the making due to a dynamic tectonic activity. Numerous fault lines pass under the northern mountainous zone and western highlands, jolting these and neighboring areas recurrently with earthquakes of considerable magnitude. These areas are said to be susceptible to earthquakes of higher magnitudes (7 and above on the Richter scale). (2)

Flooding in Pakistan is caused by three major sources - rivers, rains and hill torrents. The water management infrastructure including drainage channels, canals, spurs, embankments and dams etc add the development dimension to these floods. Flooding is considered to be the most recurrent disaster in the country. So far a death toll of more than 8,000 human lives and a financial loss of more than US $ 15 billion is attributed to floods that have been creating havoc since the inception of Pakistan in 1947. (3)

River Indus and its eastern and western tributaries often swell out of their banks creating inundation in the neighboring areas. Heavy rains on the denuded mountains that make up the western border of the Indus plains feed the hill torrents that finally drain into the Indus. The flash floods caused by these hill torrents are of considerable magnitude

damaging human-made structures, crops and infrastructure on their way.

Being largely dry and arid, Pakistan often faces drought conditions. As one moves from north to south the quantity of mean annual rainfall decreases from as high as more than 1,500 mm per year in Murree hills and adjoining areas to no rainfall at all in parts of Balochistan. The western zone largely comprising the least populous Balochistan province and the eastern desert zone are among the worst drought hit areas.

Cyclones and sea storms hit the southern coastal belt in Balochistan and Sindh provinces. Though no Tsunami is known to have hit Pakistan's coastal belt in the recent past, the areas are marked to be vulnerable to this hazard. It has been recorded that in the late 18th century a strong earthquake caused river Indus to change its course. (4)

Map 2.2 presents a broader geographical spread or coverage of each of these and other hazards prevalent in Pakistan.

2.2. Human-induced Hazards

Besides natural hazards, there are a number of environmental issues and human induced hazards that prevails in Pakistan. Map 2.2 shows some major environmental risks the country faces. Human and material losses inflicted by these disasters are much larger than those caused by natural hazards. For instance, it is reported that more than 5,000 people have lost their lives in various parts of Pakistan, since the incident of 9/11 in the USA, in bomb blasts and suicidal attacks alone. (5)

It is estimated that poor law and order situation and rampant acts of terrorism have cost Pakistan's economy US $ 34 billion since 9/11. (6)

The recent acts of terrorism in Swat and its adjoining areas have displaced more than two million people, making it one of the largest internal displacements in the world. Similarly, on average 50-60 persons per district in Punjab die in road accidents per year. (7)

The indoor air pollution sometimes referred to as the 'killer in the kitchen' caused by the burning of biomass fuels (wood, crop residues, cow dung etc) is estimated to take more than 110,000 lives - mostly of women and children - each year in Pakistan. (8)

Likewise, environmental degradation is causing a much bigger loss to national economy annually than that caused by the so called natural disasters. A recent strategic environmental assessment report by World Bank (9) notes that each year, the environmental degradation in its various forms inflicts a loss of 300 billion rupees or 6% of country's GDP to the national economy.

It is pertinent to note that over the years, excepting the October 8, 2005 earthquake in Kashmir and NWFP, the loss of human life caused by natural disasters is decreasing but the loss caused by human-induced disasters and environmental risks is increasing.

2.2.1. Natural and Human-indced Hazards in the Sampled Districts

All the sampled districts are prone to a number of natural and human-induced hazards. River Indus which forms a reference line among the sampled districts (except district Vehari which is located along one of Indus' eastern tributaries - Satluj and Muzaffargarh which is bounded by Chenab and Indus) is the main cause of flooding. Originating in the Himalayas, Indus flows in a narrow and naturally contained course formed by the greater Himalayan mountain range and the Potohar plateau till it reaches Chashma located in north western Punjab. From this point the Indus starts spreading and breadth of its course

increases to many kilometers at some locations. It is interesting to note that all the eastern and western rivers and hill torrents that drain eastward from the western highlands join river Indus on its way to the Arabian Sea.

This natural drainage pattern not only pollutes the irrigation channels with effluent, it also causes inundation. Two of the sampled districts in Punjab - Layyah and Muzaffargarh are located on the eastern bank while one district Rajanpur is located on the western bank of Indus. Further down in Sindh, districts Ghotki and Khairpur are located on the eastern bank while Indus bisects district Thatta before fanning out into its delta. District Vehari is located on the right bank of river Satluj which flows from east to west before it joins Chenab.

All the sampled districts are also part of the arid and dry zone and receive very little rainfall, often causing drought conditions. Parts of Rajanpur and a small portion of Thatta are also hit by hill torrents. Likewise these two districts are prone to earthquakes of considerable magnitude (5-6 on the Richter scale). The rest of the districts lie in a zone susceptible to earthquakes of small intensity (2-3 on the Richter scale).

In all the districts, the areas that are part of Indus' old flood plane are currently being irrigated through canals. In some of these zones flooding, water logging and salinity caused by the canals has become a severe issue. In district Thatta, cyclones in the Arabian Sea have been wreaking havoc on the lives and livelihood of the coastal communities. The following section presents a brief description of hazards and vulnerability in the sampled districts. (For a detailed description of hazard, please see respective district profiles).

Map 2.4: Major physiographic zones of Pakistan

Source (Base Map): Oxford Atlas of Pakistan

Layyah

Layyah is part of Thall desert and is traditionally called the Sindh Sagar Doab as it lies between two great rivers - Indus in the west and Jehlum in the east. However Layyah is not touched by Jehlum, while Indus forms its western border separating it from district Dera Ismail Khan in NWFP and Dera Ghazi Khan in Punjab. Layyah is home to a multitude of hazards and has a history of disasters, especially floods and droughts. Thall is one of the four desert regions of Pakistan but it is unique in that underground water is easily accessible. The underground water in the desert zone is brackish but local communities drink it and also use it for irrigation as it supports selected crops.

Layyah was one of the most affected districts in 2005 by heavy rains/flooding in river Indus when 88 villages; 67, 970 persons; and crops on 159, 992 acres of land were affected. More than 6, 000 houses were partially and 8, 005 houses were completely destroyed (Federal Flood Commission, Punjab Relief Department) (10). According to the Layyah District Flood Fighting Plan, (11) 2008, 64 villages in tehsil Layyah and 25 villages in Karor are vulnerable to flooding in river Indus. Roughly 1/3rd portion of its 2 out of 3 tehsils - Karor Lal Easan and Layyah - lies on the left bank of river Indus. The central part of the district covering rest of Karor and Layyah is irrigated by canals. River erosion is a common phenomenon in the riverine area and has so far swallowed large bulks of agricultural lands.

Frost is also common in the riverine and canal-irrigated zone during the months of December and January affecting people's health, crops and vegetables.

The third tehsil, Chobara, that forms some 44% of the district is largely desert and is very thinly populated. Tehsil Chobara suffers from drought conditions, deforestation (razing of natural vegetation) and levelling of sand dunes to make way, especially for the cultivation of gram that has become a major cash crop of this area but remains a bit of a gamble as it depends on timely and sufficient rains.

Given the changing weather patterns and climate variability, the rain pattern is unpredictable, making locals' livelihood vulnerable.

Dust storms are common in the desert zone during summer.

Muzaffargarh

District Muzaffargarh resembles the shape of a peg with its top in the north where it borders Layyah and Jhang and apex in the south at the confluence of river Indus and river Chenab (Panjnad) approaching from west and east respectively to meet each other. The Thal desert terminates by creeping into the district from its north.

Muzaffargarh can broadly be divided into four zones. The northern zone bordering Tehsil Chobara of District Layyah is part of Thal desert. The strips lying along River Indus and River Chenab are flood plains; the area lying in the south or at the bottom of the district is crisscrossed by the branches of River Indus and resembles Indus Delta. Between these three zones placed is the canal irrigated zone. Two of its southern Tehsils Ali Pur and Jatoi are severely affected by floods in Indus and Chenab. It is home to a multitude of hazards namely recurrent flooding in Chenab and Indus, water logging and salinity, drought and deforestation especially in the northern part (tehsil Kot Addu) that form part of Thal desert, technological risks posed and environmental pollution caused by thermal power plants in Muzaffargarh tehsil.

Muzaffargarh is one of those few districts in the Indian subcontinent where irrigation through flood canals was started in the Mughal era some 500 years ago. The recurrent flooding and water logging caused by the canals and hurdles created in the natural drainage pattern by canals, roads and railway lines are some of the major hazards for Muzaffargarh. The

Muzaffargarh *(Continue from previous page)*

district is also distinct in a way that it is placed between two great rivers and a number of spurs have been constructed to save the major towns. However the construction of these spurs has aggravated the river erosion.

Rajanpur

Rajanpur is located at the bottom of Punjab and forms a point of confluence for Punjab, Balochistan and Sindh provinces. Like DG Khan the district is bounded on its west by a long stretch of tribal area separating the district from Balochistan while on the eastern side river Indus separates it from Rahim Yar Khan and Muzaffargarh. Flooding in river Indus from east and havocs caused by numerous hill torrents from west sandwich the residents of this poor district.

According to the Rajanpur District Disaster Management Plan (12), 76 villages, in Tehsil Rojhan, 38 villages in Tehsil Jampur and 83 villages in Tehsil Rajanpur are vulnerable to flooding. The same document notes that in 1973, 1975, 1978, 1984, 1986, 1989, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2005, and 2006, the heavy rains caused flooding by hill torrents. It also enlists following hazards, besides floods that are prevalent in the district:
Earthquakes, pollution, urban and forest fires, transport accidents, sectarian violence, terrorist activities, drought, hostage taking, civil unrest and sabotage accidents.

Besides these hazards, this research study notes that heavy rains, salinity, canal closure, brackish ground water, soil erosion and frost are some of the other environmental hazard being face by Rajanpur.

Vehari

Vehari is one of the southern districts of Punjab located at the right bank of River Satluj-a tributary of River Indus. Under the Indus Water Treaty between India and Pakistan, India has exclusive rights on the waters of Satluj and only water that is considered excessive is discharged into this river. Satluj remains dry for most part of the year and receives water during the summer monsoon months. As the river remains dry, the communities residing near the river started encroaching the river's right of way or bed. Crops have been grown and temporary housing structures have been constructed. Last year, the river received excessive water which affected the crops and housing structures. However despite being a low-discharge river, the communities residing at its banks can not escape the risk of flooding.

Vehari is quite fertile and major portion of the district remains under year long cultivation and crops are irrigated by canals and tube wells. One of the biggest producers of Cotton in Pakistan, Vehari has been producing 15% of the country's total cotton output. Although flooding has not been of calamitous scale, the riverine areas of the district are affected by the floods. According the Vehari District Flood Fighting Plan, 2008 (13), 43 villages in Tehsil Burewala, 62 villages in Tehsil Vehari and 54 villages in Tehsil Mailsi are vulnerable to river flooding. The same document notes that Mailsi Siphon and Islam Head works are two most vulnerable points.

Besides flooding, pest attack has been a major hazard for the district. According to the locals, the consistent pest attacks especially on the cotton crops have reduced the district's share in country's total production as the farmers were forced to switch to other crops resilient to the pest attacks.

According to the local civil society organizations, unsafe drinking water is causing various water borne diseases and hepatitis is widespread.

Ghotki

District Ghotki together with Jacobabad welcome Indus as it enters Sindh from Punjab. River Indus flows in the upper part of the district from north towards west. The lower portion of the district is under sand dunes. The district can be divided into three distinct parts, Indus flood plains, central plains irrigated by canals and the desert region.
Ghotki is home to a number of famous industrial installations and strategic mining sites including Pak Fauji Fertilizers, Engro Chemicals Pakistan, Qadirpur and Mari Gas fields etc.

According to the Flood Relief Plan, 2008 of Ghotki (14), River Indus flows for 86 kilometres along the north western border of the district. The river Indus has been contained by protective embankments. The eastern embankment falls in District Ghotki. According to the same document some 50,000 population resides between the Indus and its protective bund. This population is affected by floods as the areas lying along the Indus are inundated when the river starts overflowing its banks. The distance between two protective bunds varies from 10-25 km at various points.

Droughts are the recurrent phenomenon especially for the desert zone of the district which makes part the eastern desert zone of Pakistan. This area was severely affected by the country's worst drought in 1999-2002.

Ghotki is facing another extremely severe manmade hazard. The saline water pumped from Rahim Yar Khan has been and is being drained into Ghotki that has caused water logging and salinity over thousands of acres in district's desert zone.

Khairpur

Khairpur is the third vastest districts of Sindh and second most populous district following Karachi. It has a variety of geographical characteristics including a riverine tract along Indus, central canal irrigated zone, the lower/south eastern desert zone and a hilly zone extending from Rohri Taluka of Sukkur that runs for 45 kilometres in Khairpur. The desert portion of the district is very extensive and covers 73% area of the district. The western boundary of Khairpur, Kingri, Sobhodero and Gambat Taluka is formed by the river and is thinly covered with forests.

According to the District Flood Relief Plan, 2008 (15), about 120,000 people live in the riverine areas of the district and is prone to flooding. Khairpur's desert zone forms the great Nara desert and forms part of Pakistan's eastern desert zone. This zone faces recurrent droughts and was one of the most severely hit areas during the 1999-2002 droughts.

Thatta

Thatta is the second last destination of Indus before it joins the Arabian Sea. Before entering the sea, Indus forms a huge delta comparable to those of all great rivers of the world. The delta region spreads over an area of some 8000 sq km in the district. Besides this most important geographical zone, Thatta is home to all the major geographical characteristics of Sindh i.e. a Kohistan tract/Kirthar range in north west, delta and sand dunes in south, irrigated plains etc. Thatta can be termed a wonderland in terms of biodiversity and physical features. 17% area of the district is still covered by the mangrove forests (16).

Thatta

Vulnerable to cyclones, Tsunami and sea level rise, pollution of country's one of the most important fresh water lakes, Thatta can be termed a huge environmental challenge.

The degradation of the Indus delta owing to reduced flow of fresh water in the Indus is one of the biggest environmental challenges Pakistan faces. The reduced fresh water flow in Indus after the construction of dams and barrages on the Indus and diversion of water upstream, has not only degraded the Indus delta, but has also made room for sea to intrude and eat up or render huge lands unfit for agricultural activity. Hundreds of thousands of people from coastal communities who were earlier involved either in the inland river transportation, agriculture or livestock have migrated to neighboring towns or have switched to fishing. The delta region of Indus has so far shrunk to 10% of its original size (17).

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Section 3: The Physical Conditions in the Sampled Districts

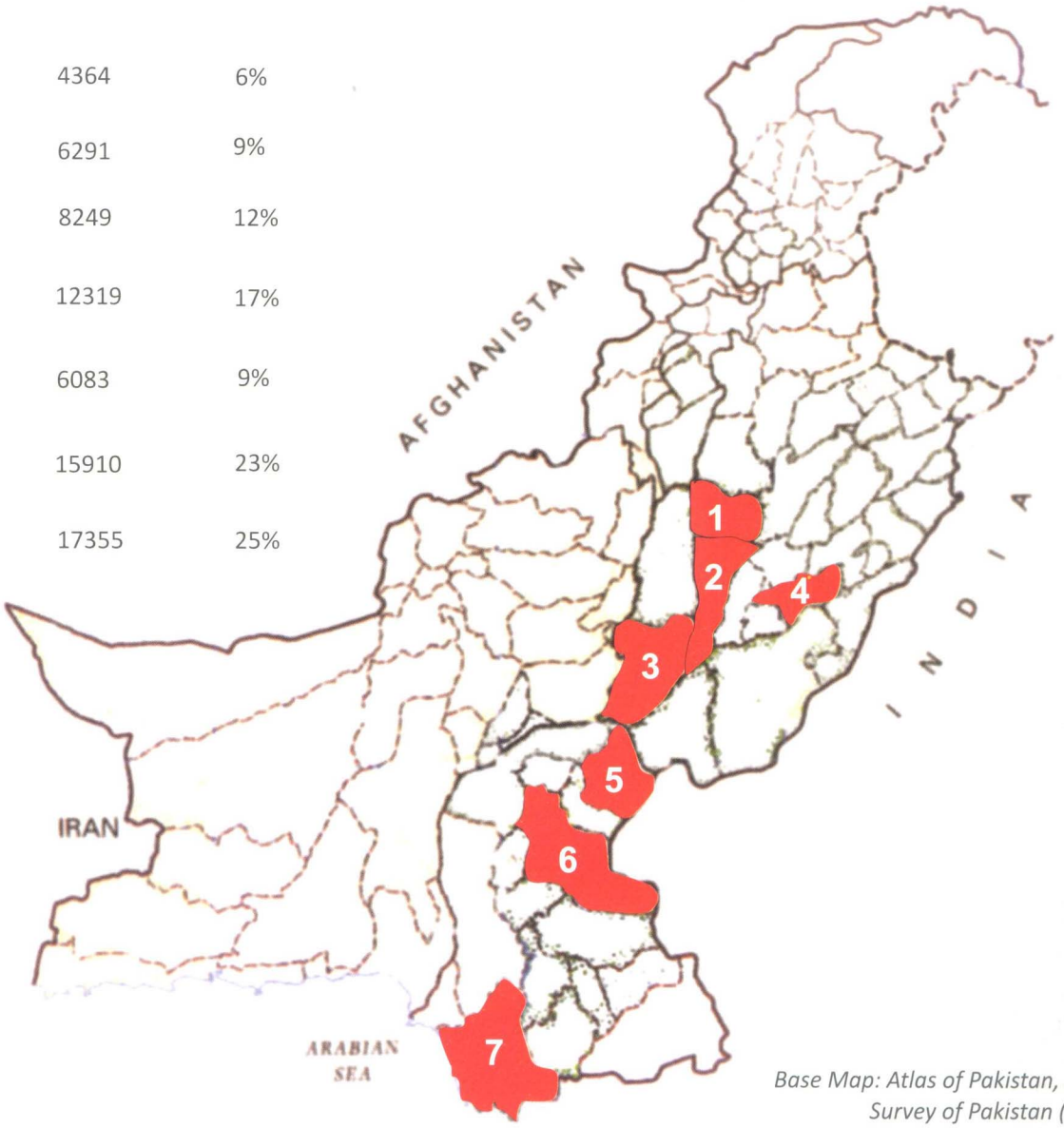
All the sampled districts have a diversity of physiographic features. The scarcity and abundance of water in these districts runs side by side. The diversity of topography or physical features means diversity of environmental conditions and hence natural hazards.

3.1. Area

Together the sampled districts spread over an area of 70571 sq.km or 9% of Pakistan's land area. In terms of area Thatta is the vastest and Vehari is the smallest district among the sampled ones. The percentage area share of each district in the sampled districts is;

4. Vehari	4364	6%
1. Layyah	6291	9%
2. Muzaffargarh	8249	12%
3. Rajanpur	12319	17%
5. Ghotki	6083	9%
6. Khairpur	15910	23%
7. Thatta	17355	25%

Source : (1)



Base Map: Atlas of Pakistan, Survey of Pakistan (2)

3.2. Geology (3)
Geologically, all the sampled districts are made up of sedimentary and volcanic rocks. The mountainous zones in districts Rajanpur, Khairpur and Thatta are similar in geological characteristics to those of western highlands and are formed of sedimentary rocks of tertiary type. The rest of the lands in the sampled district are of quaternary type.

3.3. Climate (4)
Climatically all the districts fall in the hot, arid and dry zone where mean annual rainfall is negligible, summers are long and winters mild. In the coastal zone of Thatta the summer remains mild, thanks to the sea breeze. In all the rest of the districts the summers are extremely hot and temperatures may rise to as high as 50 degrees Celsius in the month of June. The average annual rainfall ranges from less than 125 mm to 255 mm. All the districts receive summer rains during monsoon (July-August) and winter rains in December and January. Sulaiman mountain range in the north west of Rajanpur receives an annual rainfall that may increase to about 500 mm . According to locals this zone remains cool even during the summer and can be turned into a hill resort on the pattern of Fort Manro also lying in the same mountain region.

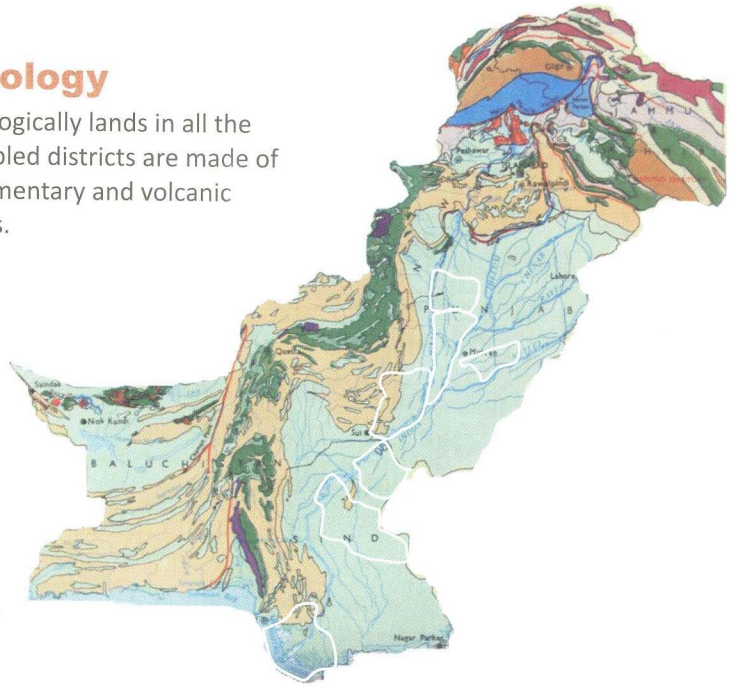
Dust storms and hot winds during the summer months are a common phenomenon especially in the desert zones of Thall where Layyah and some portion of Muzaffargarh lie and in Nara and Thar desert zones comprising parts of Ghotki and Khairpur districts.

The climatic patterns prevalent in the identified districts have shaped the local built environment, especially the housing structures. These structures can be termed climate responsive as they follow the principles of passive heating and cooling without having to

Map 3.1 Geology of the districts

Geology

Geologically lands in all the sampled districts are made of sedimentary and volcanic rocks.

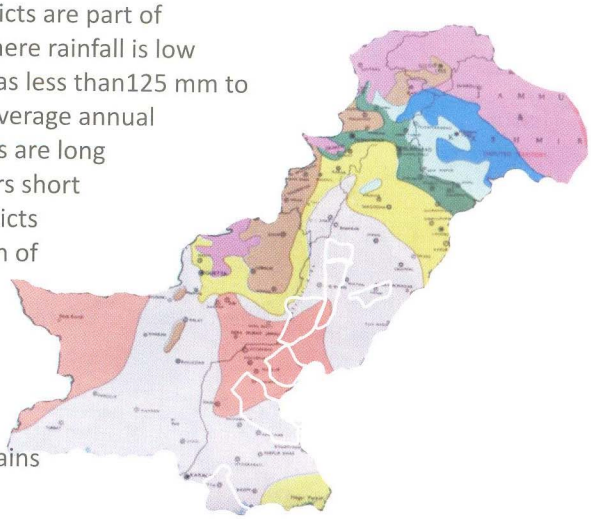


Source (Base Map): Atlas of Pakistan, Survey of Pakistan

Map 3.2 Climate zones

Climate

All the sampled districts are part of hot and arid zone where rainfall is low ranging from as low as less than125 mm to maximum 255 mm average annual rainfall. The summers are long and harsh and winters short and mild. These districts receive major portion of the rainfall during monsoon (June-September). The rainfall can be erratic and sometimes the rains turn violent. Floods, drougrhts and heat waves are recurrent phenomenon.



Mean Annual Rainfall
250-500 mm (minimum summer rains)
125-255mm (Dry)
less than 125 mm (Very Dry)

Source: Atlas of Pakistan, Survey of Pakistan

use artificial sources of energy. Over the last couple of decades the relative affluence seen in some areas has led to concrete construction in the name of improvement of housing stock. Despite these fringe developments, climate continues to shape the housing options especially for the poor in the districts under study.

3.4. Soil Structure (5)
Soil structure is an important determinant of the agricultural conditions, drainage and moisture carrying capacity. The soils in the surveyed districts can broadly be categorized as:

1. Soils along river Indus and Satluj (Vehari) are most fertile and are part of Indus' active flood plain. These are loamy and stratified sandy soils.

2 Next to this zone lies Indus' old flood plain. Soils are also quite fertile here and are currently being irrigated by canals and tube wells. These are loamy and clayey soils.

3. The desert zone is made up of sandy soil which has been found to perform well especially in winter if suitable moisture conditions are made available. For instance, in Thall and Nara extensive agriculture is being practised where irrigation water is available.

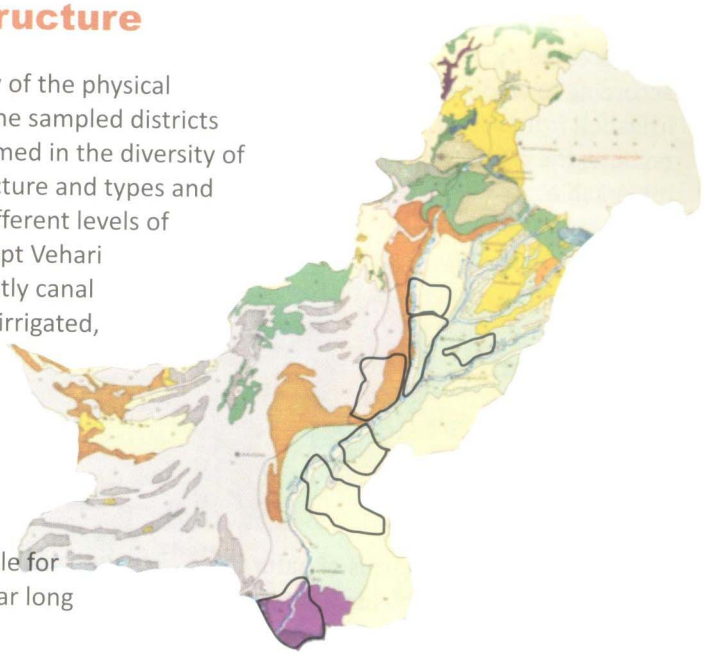
4. A small mountainous portion in the north west of Khairpur district resembles the soil conditions found in the western mountainous region. A very patchy cover of heterogeneous soil materials are found here. This area has thin patches of vegetation cover.

5. In the eastern foothill zone of Rajanpur, loamy and clayey saline soils of piedmont plains are found. According to experts these soils are made of alluvium brought by the water

Map 3.3 Soil structure

Soil Structure

The diversity of the physical features in the sampled districts has transformed in the diversity of the soil structure and types and thus have different levels of fertility. Except Vehari which is mostly canal or tube well irrigated, a big proportion of the land area in the identified districts is not available for extensive/year long agriculture.



Source: Atlas of Pakistan, Survey of Pakistan

Sand of Nara Desert

drained from the mountains and are far more fertile when compared to the Indus soils, provided timely irrigation water is available. This fact is corroborated by the locals in Rajanpur according to whom if water for irrigation from hill torrents is available on time, the crop produce is remarkable.

6. District Thatta is quite diverse in this regard. Besides having soils discussed above, major portion of Thatta is comprised of loamy saline soils of the estuary plains. In the delta zone silty and clayey wet saline soils of tidal plains are found.

3.5. Natural Vegetation (6)
A kind of uniformity in terms of natural vegetation is found in the identified districts. In the areas that are part of Indus' active flood plain and those which are part of Indus's old flood plains, tropical thorny (rakh) vegetation is found. In the desert zone, due to obvious reasons of soil structure and harsh climatic conditions, desertic and semi desertic vegetation is found. In the delta zone of Thatta mangrove forests are spread over a vast area. It is to be noted that despite degradation of the delta, this zone continues to have one of the biggest mangrove stocks in the world. (7).

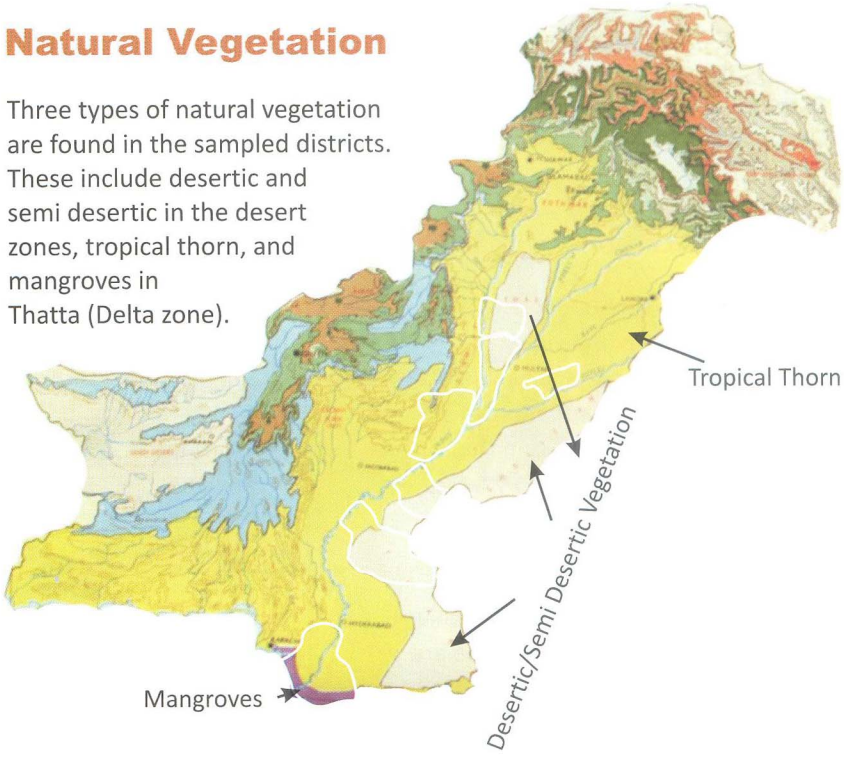
3.6. Landuse (8)
In terms of natural land use four major uses are prominent: the arable agricultural lands, rough grazing lands, non agricultural lands or lands not available for agriculture, and lands covered with forest. Even a cursory analysis of the land use map of Pakistan reveals that major portion of four districts namely Layyah (Thall), Rajanpur (piedmount plain) and Ghotki and Khairpur (Nara/Thar) are rough grazing lands.

In all the districts the areas lying

Map 3.4 Natural vegetation

Natural Vegetation

Three types of natural vegetation are found in the sampled districts. These include desertic and semi desertic in the desert zones, tropical thorn, and mangroves in Thatta (Delta zone).

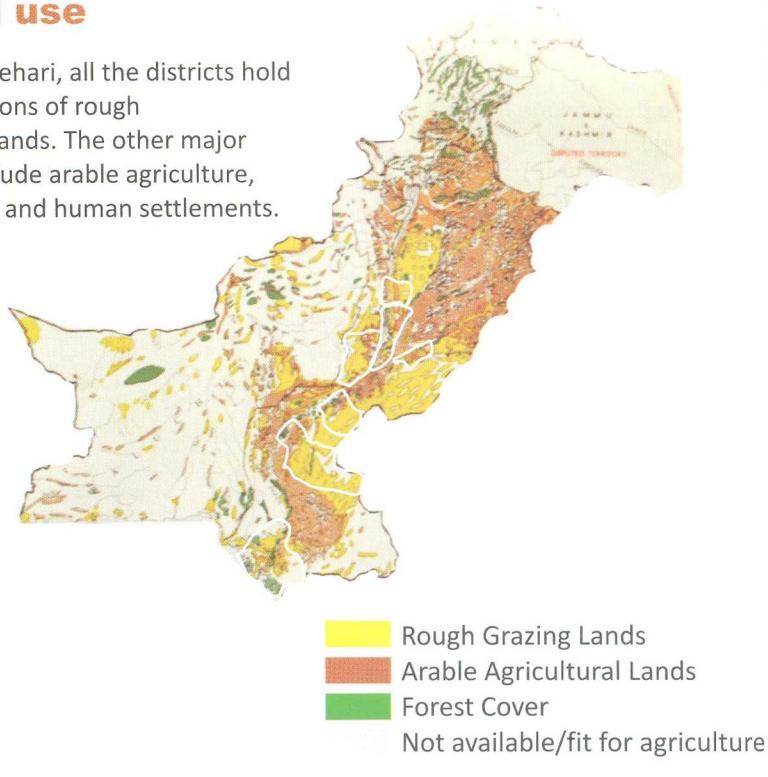


Source: Atlas of Pakistan, Survey of Pakistan

Map 3.5 Land use

Land use

Except Vehari, all the districts hold big portions of rough grazing lands. The other major uses include arable agriculture, forestry and human settlements.



Source: Atlas of Pakistan, Survey of Pakistan

adjacent to river Indus and next to this zone are under arable agriculture. A considerable portion of lands especially in Thatta and Khairpur are denuded of vegetation and not available for agriculture. The riverine areas where once thick forests thrived have been denuded to make way for fields. Small pockets of forest are now left in all the districts except Thatta where 17 % (9) of the lands are still categorized as forest lands. Most of the forest cover in the remaining district is now composed of private tree stocks and linear plantation along canals and roads.

A view of Indus Delta, in Thatta

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Section 4: Socioeconomic Conditions

4.1. Demography

All the sampled districts put together, make up 8.32% of Pakistan's population, as per the recent population estimates.(1) In 1998, this proportion was 8%. The increase in population share over the years is attributable to relatively higher population growth rates these districts are maintaining. A broader analysis of the demographic figures and population's spread/placement reveals some important trends:

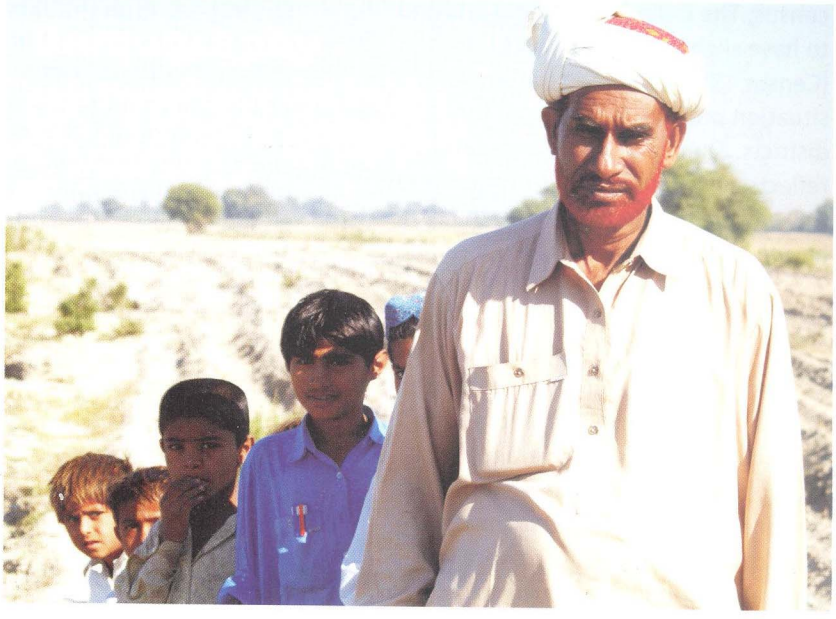
1. Majority of the population is residing in arable areas where all the major towns/urban settlements and compact villages are located. The flood prone areas and coastal communities in general and desert locations in particular are thinly populated, and settlements are comprised of very few and scattered houses.

2. The communities residing in the flood plains, coastal villages and desert locations are found to maintain a clan/tribal/religious and ethnic uniformity. These communities generally belong to a particular clan and prefer to maintain their identity through group living. It is interesting to note that tribal or caste linkages can be traced among the communities residing along the Indus.For instance members of the Mohana community who have traditionally been attached with Inland river transportation are found residing along the Indus both in Punjab and Sindh.

3. According to the 1998 census, 34-35% population on average in the studied districts was below the age of 10 and almost half the population was 18 or below.

4. Populations in all the districts are

Fig 4.1: Demography of the sampled districts



According to census 1998, together these 7 districts had a combined population of 10,581,218 or 8% of the country's population. It is estimated that by 2006, the combined population had reached 13,047,000 or 8.32% of population of Pakistan (15,67,70,000), witnessing an increase of 23.3% in 8 years.

Ghotki	1,210,000	9.3%
Khairpur	1,929,000	14.8%
Thatta	1,388,000	10.6%
Vehari	2,494,000	19.1%
Layyah	1,373,000	10.5%
Mzgrh.	3,286,000	25.2%
Rajanpur	1,367,000	10.5%

Sampled Districts
Estimated Population (2006)*
% population share in the sampled districts

** Population estimates cited in Punjab Development Statistics 2005, Development Statistics of Sindh 2006, and Social Indicators of Pakistan 2007*

found to be markedly unbalanced in favor of males. In districts like Ghotki there used to be 114 males for every 100 females as recorded in the 1981 census. The male-female ratio is found to have slightly reduced to 111.4 (Census 1998). A somewhat similar situation prevails in almost all the districts. The higher male population reflects social preferences of society in these districts which continue to favor having and keeping well the male child, sometimes at the cost of the female child.

5. The annual population growth rates in all the districts are higher than the national and provincial averages. Although in five out of seven districts a decrease in average annual growth rates can be observed, the overall population continues to grow fast in these districts.

6. An inter district population comparison reveals that population in four out of seven districts more than doubled during 25 years between1981-2006. Whereas in Khairpur and Thatta, the average annual growth rates are found to have increased in the period 1998-2006 compared to those recorded for the period 1981-98.

7. All the sampled districts are rural in nature. The official population estimates suggest that there has not been mentionable change in the proportion of urban and rural populations. Khairpur is the most urbanized district with 1/4th of its population found residing in the urban areas. The proportion of urban population in the sampled districts is much lower than the national and provincial averages. The static proportion of urbanization points to three important facts. First, the districts under study are overshadowed by neighboring urban centers. For instance, Thatta neighbors

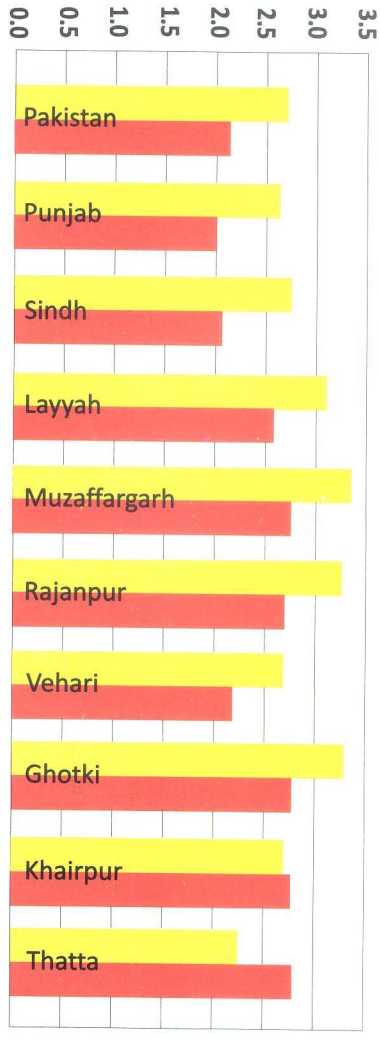
Fig 4.2: Population growth rate in the sampled districts

Like rest of the country the average annual population growth rates reduced during 1998-2006 compared to 1981-98, in all the sampled districts except Khairpur and Thatta where these rates actually increased.

In all the sampled districts the annual average growth rates are higher than the national and provincial average annual growth rates.

Pakistan	2.7	2.14
Punjab	2.64	2.0
Sindh	2.80	2.07
Layyah	3.11	2.57
Muzaffargarh	3.38	2.79
Rajanpur	3.27	2.71
Vehari	2.70	2.23
Ghotki	3.26	2.79
Khairpur	2.71	2.80
Thatta	2.26	2.80

Except in Vehari, Khairpur and Thatta, population has more than doubled in sampled districts during 25 years from 1981-2006. Muzaffargarh is the most populous and fastest grown district. The growth rate is found to be slowest in Vehari when compared to rest of the sampled districts.



Average Annual Growth Rate (1981-98)*

Estimated Average Annual Growth Rate (1998-2006)

** Source:*
Census Atlas of Sindh, 1998
Census Atlas of Punjab, 1998

	District	Pop Census 1981	Pop Census 1998	Pop Est. 2006	Growth 98-06	Growth 81-06
1	Layyah	6,66,517	1,120,951	1,373,000	22.5%	106%
2	Muzaffargarh	1,497,736	2,635,903	3,286,000	24.7%	119.4%
3	Rajanpur	638,921	1,103,618	1,367,000	23.9%	114%
4	Vehari	1,328,808	2,090,416	2,494,000	19.3%	87.7%
5	Ghotki	562,105	970,549	1,210,000	24.7%	115.3%
6	Khairpur	981,190	1,546,587	1,929,000	24.7%	96.6%
7	Thatta	761,039	1,113,194	1,388,000	24.7%	82.4%
	Total	6,436,316	10,581,218	13,047,000	23.3%	102.7%

country's two major urban centers - Karachi and Hyderabad. Second, in the urban areas social and economic services could not be developed enough to pull the population from its respective rural homelands and from other districts. Third, people continue to prefer staying in rural areas and travel to towns and urban settlements as and when a need may arise.

8. The increase in population also means increasing pressure on natural resources, demand to produce more, and increase in the population residing at vulnerable locations.

4.2. Housing

The overall housing conditions in all the sampled districts, in the light of official statistics, are found to have improved considerably in the last decade 1998-2006-07. However, in a few cases the conditions have actually deteriorated in the last couple of years or have improved marginally.

Housing data for this report has been taken from the district census reports and Pakistan Social and Living Standard Measurement (PSLM) Surveys 2004-05 and 2006-07. The PSLM provides comprehensive and segregated district-level data that can be relied upon.

A broader analysis of the housing related statistics reveal following major trends:

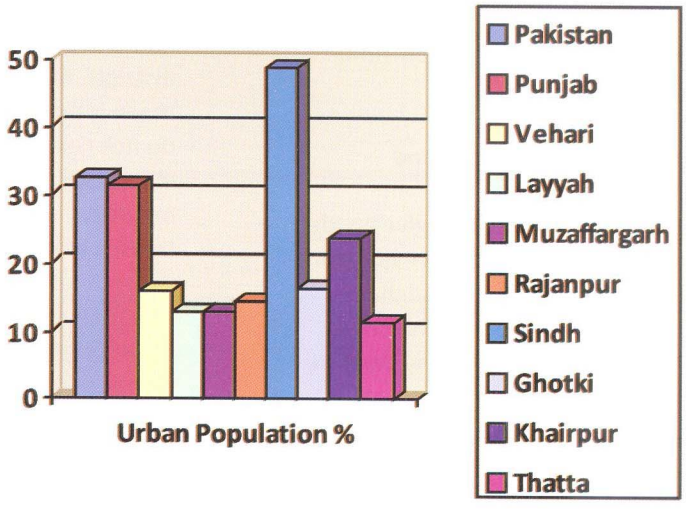
1. Housing stock in both urban and rural areas in terms of use of permanent construction materials, appears to have substantially improved since 1998.

2. Household sanitary conditions in terms of availability of latrine inside the houses are also found to have improved. Non-flush latrines are commonly used in rural areas but the required sewerage system is almost

Fig 4.3: Urbanization in the sampled districts

All the sampled districts are rural in nature as large majority of the population continues to resides in the rural areas. The proportion of urban population is much lower in all the sampled districts compared to the national and provincial averages. The population estimates by respective provincial governments suggest that proportion of urban population has not changed much during last decade.

	Urban Pop. % (Census 1998)
Pakistan	32.5
Punjab	31.27
Vehari	16.05
Layyah	12.86
Muzaffargarh	12.95
Rajanpur	14.51
Sindh	48.75
Ghotki	16.33
Khairpur	23.61
Thatta	11.21



The slow paced urbanization in the sampled districts can be attributed to, inter alia, two major reasons. One, the districts are overshadowed by neighboring urban centers. For instance Thatta by Karachi and Hyderabad; Khairpur and Ghotki by Sukkur; Muzaffargarh and Vehari by Multan etc. Second, the urban areas in these districts could not develop social services and economic opportunities attractive enough to pull their respective rural populations in a big way.

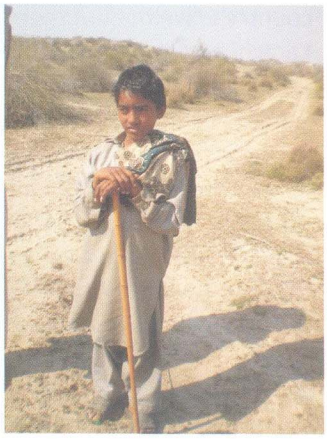
non existent in villages and is poorly planned in urban settlements.

3. There is marked increase in the rural electrification across all the districts. Almost complete coverage has been achieved in the urban settlements but the pace is much slower for rural areas.

4. Piped water supply is available to a limited proportion of both urban and rural areas in the studied districts. Motor pumps extracting ground water have made inroads in urban houses and almost half of the houses appear to have installed motor pumps. Hand pumps are the major source of getting water for household consumption in rural areas whereas motor pumps are making their way into well off rural houses.

4.3. Economic Conditions and Livelihoods

The district census reports give an idea of the livelihood patterns prevalent in the sampled districts. Although the data is now a decade old it is still found relevant. This is largely because of the fact that, as mentioned earlier, there has not been a substantial change in economic patterns and the rural-urban mix of the population in these districts. It is pertinent to note that inflationary trends, rapid increase in population and shrinking economic opportunities in the rural areas have forced many a rural household to opt for labor opportunities in other villages, neighboring towns, big cities and abroad (a small proportion). A recent report by the World Bank on Rural Poverty and Economic Growth in Pakistan (2) notes that almost half of the population residing in the rural areas is no more directly dependant on agriculture. The statistics by the provincial and federal governments on household income patterns also reveal that rural households are



The desert locations in all the sampled districts are thinly populated. Same is the case with delta locations inThatta. However this is not the case with riverine locations.

The official statistics show, that the housing conditions have markedly improved since 1998 in terms of construction material (permanent houses), availability of latrines and rural electrification in all the districts under study. However the fruits of this prosperity do not appear to have reaped by the hazard prone locations researched in the sampled districts. Most of these locations, do not have electricity, majority of the houses are without latrines, and most of the housing stock is composed of adobe structures.

substantiating half of their incomes through non agricultural sources especially remittances by family members working in towns and cities. It is also to be noted that over the last decade there has been a ban on the government jobs and large scale industrial activity has also not attracted labor force in a big way. The construction and transport industry and service sector, on the other hand, have attracted/engaged the labor force substantially. Both the formal sector and non formal sectors have, however not created jobs for unskilled and illiterate womenfolk.

According to census data 1998, more than 60% of the population in districts under study relies on agriculture and allied fields to earn their living. Nearly 10% income earning population is in government jobs while 5% is in private sector jobs. Self employment is also an option for majority of the economically active population to earn their living. Almost 3/4th of the population opts for it. Almost 1/5th of population is economically active and unemployment rates range between 10-20% varying from district to district. Despite being actively engaged, especially in the agricultural economy, women and children are not recognized as economically active and are placed in the category of "domestic workers" and normally do not receive monetary compensation for their labor.

All three sampled districts of Sindh - Thatta, Khairpur and Ghotki - are rich in mineral resources. However the benefits of these natural resource are enjoyed exclusively by the government and private industrial concerns and do not trickle down to the local populations in the shape of employment opportunities etc.

A local carpenter is busy in his work at Kharo Chaan, Thatta.

In all the sampled districts, children in the poor households are found to have an important role in contributing to households incomes.

4.4. Education and Literacy

The education and literacy figures in the selected districts are not encouraging and fall short of provincial and national averages. Literacy among women folk is far less than that among men.

Over the last decade, the school enrollment and literacy figures appear to have considerably improved. However a dissection of literacy related data unfolds a number of male-female, urban-rural and intra-district disparities. The government considers all those who have ever attended school, no matter to whatever level, as literate. In all the districts the proportion of population that has actually completed primary or higher levels of education, on average, fall short of 10 percentage points to that of population considered literate. Likewise the proportion of literacy among women, on average is 1/3rd to that among men.

A comparison of literacy among rural and urban women points to the fact that literacy among the former is 1/3rd of that among the latter.

The number of educational institutions for girls is far less than that for boys. For instance in Ghotki, for a population of 1.3 million, there are only four high schools for girls, and in Thatta - the second biggest district of Sindh in terms of area - there is only one degree college for girls and no post graduate college either for boys or for girls(3).

A common trend among all the sampled districts is that the number of higher level educational institutions decreases with each level. Although this trend is understandable, the higher level educational facilities do not match at all with the population size. The acute shortage of educational facilities, especially for girls, means reduced opportunities for them to pursue their education and hence social, economic

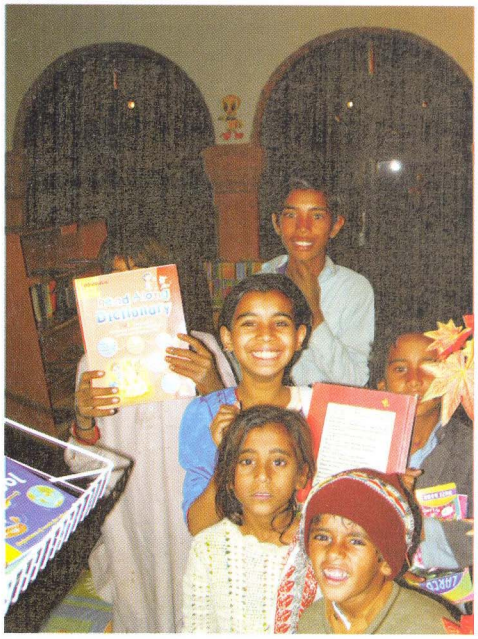


Fig 4.4: Literacy trends in the sampled districts

The labor children are provided free education by Indus Resource Center in the evening at their children library, in Khairpur City

In districts like Rajanpur and three districts of Sindh, the gains made till 2004-05 in the literacy , are being lost. In these districts, the total literacy among population aged 10+, is appearing to be less than that recorded in 2004-05.

District	Lit. In 06-07	lit. In 04-05
Rajanpur	31%	40%
Ghotki	44 %	51%
Khairpur	46%	48%
Thatta	34%	35%

(Source: PSLM 2006-07, Government of Pakistan)

The level of literacy in all these districts, like rest of the, country, is not encouraging. When compared to the total literacy figures, the figures of people actually having completed the primary education, are much lower.

In all the sample districts, the adult literacy (among population aged 10+) is less than that in Pakistan and in the respective provinces.

The female literacy in Rajanpur among the population aged 15+ is lowest (7%) when compared to other sampled districts.

Layyah appears to be most literate district (Total adult (15+) literacy 50%) and Rajanpur the least (Total adult literacy 26%) among the sampled districts.

and political development.

4.5. Health

The state of primary health care in all the selected districts is dotted with a number of issues that affect the lives and health of the population, especially of women and children.

Over the years the number of public health facilities has increased considerably in each district. However, the official statistics show that people are unable to make use of these facilities either due to accessibility issues or due to lack of satisfactory care people expect to receive. This trend is reflected in the proportion of patients consulting private health service providers. In all the districts, on average, 60-70% patients prefer to consult private services compared to 20-25% who seek health care from the public facilities (4).

The use of mobile health facilities in the shape of lady health workers also appears to be negligible. A small proportion, especially of rural women manage to receive post natal and prenatal care from a formal health service provider. More than 80% of the deliveries take place at home usually with the assistance of a relative or neighbor women or traditional birth attendant (5).

A very small proportion of pregnant women receive tetanus toxoid injection, both in urban and rural areas.

The target for fully immunizing the children population(12-23 months) is far from being achieved.

4.6. Agriculture, Environment and Risks

All the sampled districts have an agrarian economy that absorbs more than 60% of the economically active

Fig 4.5: Public health issues in the sampled districts

A considerable proportion of children aged 12-23 months in the sampled districts is yet to be fully immunized.

District	Proportion of children yet to be fully immunized
Vehari	38%
Layyah	33%
Muzaffargarh	76%
Rajanpur	74%
Ghotki	76%
Khairpur	77%
Thatta	67%

(Source: PSLM 2006-07)

In all the sampled districts, like rest of the country, 1/4th or even less than that patients prefer to consult a public facility. On average 60-70% patient prefer to be taken to private health facilities. The use of mobile health facilities like Lady Health Workers, appears to be negligible.

A big proportion of women (averaging 60-70%) in the sampled districts remain unable to receive, pre and post natal care from the formal health facilities.

population of these districts.

Agriculture and its sub fields like fisheries, forestry and livestock hold an important place in the livelihood of the people of these districts. These sectors have overtly important linkages with and impacts on environment and are embedded with a number of environmentally significant risks. A beneath-the-surface analysis of hazards and vulnerability shows that agriculture and its sub sectors are among the sectors most affected by natural disasters. Any hazard that strikes agriculture, in fact affects the livelihoods of a great majority of the sampled districts' population.

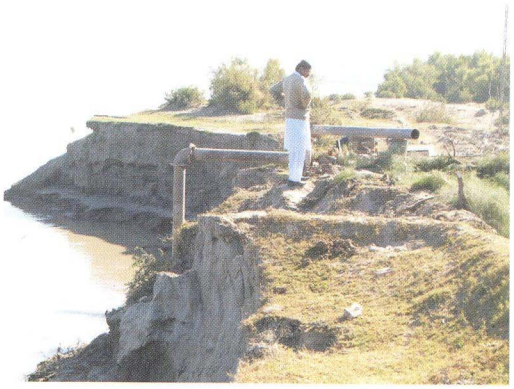
In the agriculture sector, the districts under study have some common but major issues:

1. Expansion in agriculture activity by bringing more and more lands under the plough. This trend has resulted in bringing even the riskiest of the places like river banks under cultivation. Likewise, in Thal and Nara, considering agriculture as the only productive use of land, sand dunes have been denuded of the natural vegetation cover and government owned common grazing lands are being encroached.

The loss of natural vegetation has various dimensions. In the desert zone of Thal and Nara where summer cropping is hard to sustain, the land cleared for winter crops remains devoid of any vegetation cover during summer. Dust storms and strong winds that are a common summer phenomenon, in absence of vegetation cover that otherwise protects the desert lands from being eroded, cause wind erosion disturbing the productive soil cover and hence loss of floral bio diversity.

Reduction in natural fodder production

Ghotki: Riverbanks that once used to be the abodes of thick riverine forests, have been cleared off to accommodate the expansion in agriculture activity by making room for fields.



Ghotki: Irrigation water is lifted from river Indus by installing diesel-run pumps. Farmers at the downstream of rivers and canals in Pakistan are often found complaining about water-theft by farmers at the upstream.

Khairpur: Huge tracts of agricultural lands are severely hit by water logging and salinity.

Rajanpur: Scarcity of irrigation water is one of the most crucial problems being faced by poor farmers in the Pachaad area of the district.

is now being compensated with stall feeding of animals with fodder crops. The need to grow fodder has produced a competing need on the lands that can otherwise be used for growing crops for human consumption. Likewise, the razing of riverine forests has resulted in increased river erosion and loss of organic matter that is taken away by receding flood water.

2. An overall shortage of canal water prevails in every district. The shortfall is being compensated with an increased pumping of ground water through the installation of private tube wells. At several places outside the Indus plain, the ground water is brackish and when extracted brings with it salts that result in increasing salinity of soil. Farmers are found complaining of falling water tables.

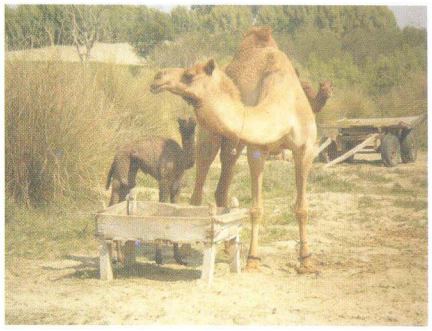
3. Expansion in agriculture is being fueled with an increasing use of chemical fertilizers and pesticides. In the selected districts, on average a 10% increase in the use of chemical fertilizers per annum is noted (6).

4. From 1996-2000, a considerable decline in the number of livestock heads was observed especially in Sindh. Much of this decline can be attributed to the drought conditions that severely hit Sindh along with Balochistan in 1999-2000.

5. In all the districts, deforestation is going on unabated. Riverine areas that were once covered with forests have been razed to make way for cultivation. Except in Thatta, where 17% area of the district is still under mangroves, the forest cover in all the remaining districts largely consists of irrigated plantations, private wood stocks and linear plantation along the roads and canals.

Rajanpur: Shortfall in canal water for irrigation, over the years, has become a recurrent phenomenon in Pakistan, severely undermining the agricultural productions.

Layyah, Thall: Camels are being stall-fed. Huge flocks of camels, just a few decades ago, used to roam the vast grazing lands of Thall that have now been converted to fields. The camel population has decreased manifold since then owing to reduction in natural fodder.



Layyah, Thall: Natural vegetation is being cleared by putting it on fire, to make room for gram cultivation.

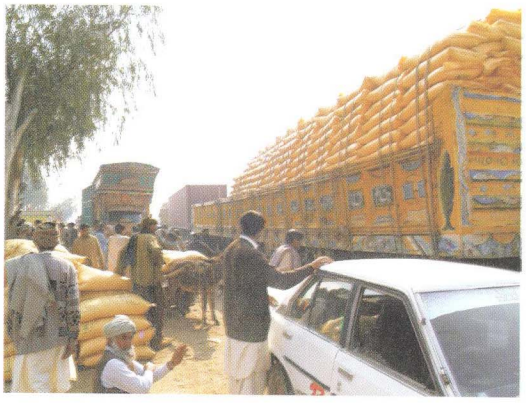
The drought of 1999-2000 that hit especially Sindh and Balochistan, impacted hard the livestock population in these two areas.

The loss of natural vegetation has also resulted in loss of habitat for wild birds, reptiles, mammals and fish (in case of Thatta where degradation of mangorve forests have severely affected fish production as they provide breeding space for fish).

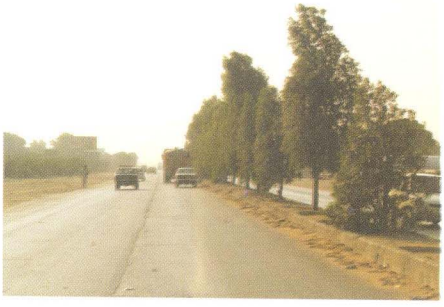
6. As a result of extensive mechanization in the form of tractor use, only a few farmers can be seen employing farm animals for ploughing.

7. Production of minor crops like barley, millet, rapeseed and mustard that are quite resilient to dry conditions is either static or has declined. The water intensive crops especially sugarcane is widely being cultivated.

8. The issue of water logging and salinity in parts of identified districts has become severe. In Muzaffargarh, for instance, 40% area of the district is water logged (7). In Khairpur and Ghotki the lands lying adjacent to roads, railway tracks and canals are severely hit by salinity.



Chowk Azam, Layyah: The use of chemical fertilizers, that fuels the so called green revolution, has become rampant.



Most of the tree stock in the sampled districts is comprised of linear plantation found along roads and canals.

Layyah, Thall: Leaves of trees burnt due to frost. Fruit trees, crops and vegetable are highly vulnerable to frost during winter. Farmers suffer heavy losses due to this phenomenon.

Kot Mithan, Rajanpur: Agriculture in Pakistan is increasingly being mechanized especially in terms of tractor use.

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Section 5. Besides Official Statistics: The State of Vulnerable Communities and Groups

This section presents findings of the community survey undertaken for this research. The survey was aimed at understanding the physical, environmental and socioeconomic conditions, and livelihood patterns of some of the most vulnerable communities residing in the hazard prone locations of the sampled districts. The survey also mapped out various hazards the communities are facing and dimensions of their vulnerabilities to these hazards.

Table 5.1. Summary of the Community Survey

District	Taluka/Tehsil	Union Council	Village /Locality surveyed	# of FGDs with men	# of FGDs with women	# of FGDs with children	# of questionnaire conducted
Ghotki	Daharki	Bairuta	Goth Muhammad Ismail (Mauza Khainjoo)	1	1	1	14
	Ghotki	Qadir Pur	Habib Ullah Chachar (Mauza Kham)	1	1	1	6
	Ghotki	Bagu Dho	Raees Jamal Chachar	1	1	1	18
Khairpur	Gambat	Khaimtia	Gulu Sial	1	1		23
	Gambat	Ripri	Sadaq Kalhoro	1	1		24
Thatta	Thatta	Sonda	Muhammad Yousaf Halaya	1			0
	Thatta	Jhampir	Marak Jakhro	1	1		14
			Hashim Palari	1	1		5
	Kharo Chan	Kharo Chan	Deh Bablo	1	3		24
	Keti Bunder	Keti Bunder	Keti Bunder	2	1		10

Table 5.1: *(Continue)*

District	Taluka/Tehsil	Union Council	Village /Locality surveyed	# of FGDs with men	# of FGDs with women	# of FGDs with children	# of questionnaire conducted
Layyah	Layyah	Lohanch	Lohanch Nasheb	1	1		0
	Layyah	Jhakar	Basti Jhakar	1	1		41
	Karor Lal Easan	Baseera	Basti Maachi (Mauza Baseera)	1	1	1	32
	Chobara	Khaire Wala	Lundi Khoo	1	0		0
		Chobara	Bai Khoo	1	0		0
Muzaffargarh	Ali Pur	Mud Wala	Nalka Adda (Mauza Moazuz Din)	1	1	1	9
	Ali Pur	Langar Wah	Basti Urla (Mauza Misan Kot Buhwa)	1	1	1	28
	Muzaffargarh	Jagat (No 39)	Chah Malik Wala (Mauza Din Pur)	1	1		15
	Muzaffargarh	UC No. 35	Karim Abad	1			0
Vehari	Burewala	Saldera/Shehr Farid	Basti Raju Shah	1	1		23
	Mailsi	Waisi Wahn	Aadli Wala	1	1	1	30
	Mailsi	Fateh Pur	Fateh Pur	1			6
Rajanpur	Rajanpur	Kot Mithan	Basti Bait Mullah Gopang (Mauza Mullah Gopang)	1	1	1	16
	Jam Pur	Harand	Rahim Dad Chanal	3	1	1	46
	Jam Pur	Kotla Dewan	Basti/Mauza Khan Wah	2	2		44
			Total	**29**	**23**	**9**	**428**

5.1. The Community Survey Process

The communities selected for this survey were identified during the initial consultation process with the local governments and the civil society organizations. Both the stakeholders were requested to help the research team map out the areas often hit by hazards, especially flooding, drought, cyclones (in case of Thatta) and other risks worth studying, keeping in sight the scope of this research.

Having identified such areas, the civil society organizations were requested to help the research team identify 2-3 most vulnerable communities residing in the identified areas.

The findings presented here are based on the case studies of 25 communities/settlements in 24 union councils located in 15 tehsils of seven sampled districts. The information was collected through 29 focus group discussions with men, 23 with women and nine with children (less than 18 years of age) at these locations. The living conditions and views of 428 households at these locations were also documented using a comprehensive questionnaire (Please see annexure 4) for the information collection tools employed in the community survey. Out of the 428 respondents of the household questionnaire, 56% were male and 44% female.

Information from the participants of focus group discussions was collected using a research framework containing sets of questions on housing, demography, livelihoods, assets and vulnerability etc.

Information from children was collected using a hazard, vulnerability and capacity matrix. The same matrix was employed with research framework (for FGDs) and household questionnaire.

As the target region is prone to flooding, communities residing in flood prone locations were given priority. However the desert communities residing in Layyah, Ghotki, Khairpur and Thatta (Kohistan) were also studied. The household survey was conducted by the social mobilization/organization staff of the local civil society organizations engaged as volunteers. Senior staff members of these organizations facilitated focus group discussions in the identified communities.

5.1.1. Limitations

Like all the research work, this study too is not free from limitations. The limited time available for the research, extensive traveling involved to reach the communities, security risks attached with traveling back late from the surveyed locations and rains across Punjab and Sindh in December 2008, would leave little time to spend with the communities, hold extensive discussions with various groups and conduct a large number of household questionnaires.

To overcome these limitations, information collection tools were designed in a way to complement each other and provide options to cross check the information. Personal observations and experiences of the core research team and those of facilitating local civil society organizations and activists, and secondary information available was also employed to overcome the shortcomings of the primary information collected in this phase.

Table 5.2: Sex of Respondents (Household Survey)

Sex of respondents	Number	%
Male	239	56
Female	189	44
Total	428	100

Table 5.3: Age groups of respondents (Household Survey)

Age Group	Number	%
18 or below	12	3
19 - 25	66	15
26 - 40	193	45
41 - 50	81	19
51 and above	76	18
Total	428	100

5.2. What the Residents Say: Findings of the Household Survey

5.2.1. Braving the risks for generations

Except three, all the communities surveyed were reported to have been residing at their respective locations for generations. Though documentary proofs and physical marks that could testify these claims were not found in case of most of the communities, there are no reasons not to believe their claims. In Kharo Chaan, Deh Babloo for instance, there still exists the place from which Kharo Chaan taluka derives its name. Likewise, detailed accounts of some locations like Keti Bunder, Nara etc are found in historical records like District Gazetteers (that date back to pre partition of Indian subcontinent), books, topographical maps of Survey of Pakistan, local government's revenue records and district census reports.

Documentary and oral records of the surveyed communities suggest that these communities have been braving the hazards and living with various risks for long. In the course of time they have developed a certain level of resistance and coping mechanisms that enable them to continue their lives and livelihoods, no matter how fragile they have proved to be in these riskiest of the habitats.

5.2.2. Demographic trends

Most of the riverine communities or settlements were found to have compact grouping of dozens of houses and larger population sizes when compared to those residing in the desert locations. The desert communities were found to be residing in small clusters of houses loosely grouped together.

An octogenarian man narrating the stories of good old days of Kharo Chaan when it used to be a bustling trade center in Thatta.

Table 5.4: Size of children population in the surveyed communities

Population aged10+	1648	Population aged 10 and below	837
Male	754	Male	456
Female	894	Female	381

People all over the identified areas were found generally favoring large families with a clear preference for male children. Joint family system was noted loosening its grip. This trend is reflected in the large number of household heads aged 20 to 40 years. The survey results point that 48% household heads fall in this age bracket and 98% of all household heads are males.

The 428 households surveyed for this research are composed of 2,485 souls - 1,210 males and 1,275 females. Of this 33% population was reported to age 10 years and below while 55% was recorded to belong to the age group 18 years and below. The average household size in the surveyed locations was noted to be 5.8 persons. The male female gender ratio in the age group 10 and below was found to be 1.19 or 119 male children against every 100 female children. This ratio in the age group 18 and below was enumerated to be 1.17 or 117 male children against every 100 female children/youth.

5.2.3. Housing

Majority of the housing stock, especially at the flood and cyclone (in case of Thatta) prone locations has an architecture of poverty and fear. Locally and cheaply made or freely available materials, local climate, hazards and resourcelessness of the residents appear to determine the housing conditions at these locations.

At Keti Bunder and Kharo Chaan, for instance, the communities live with a constant risk of being hit by coastal storms or cyclones. Utter poverty and lack of choices, especially for the communities living in creeks and the delta region is reflected in their housing structures constructed of tamarisk wood frames and roofs and

Table 5.5: Size of population, 18 and below

Population Aged 18 and below	1381
Male	746
Female	635

Table 5.6: Age group of household heads

Age group of the household head	Number	% age
18 or below	4	1
19-25	43	10
26-40	164	38
41-50	95	22
51 and above	122	29
Total	428	100

Table 5.7: Total population of the surveyed communities

Total Population	2485
Male	1210
Female	1275

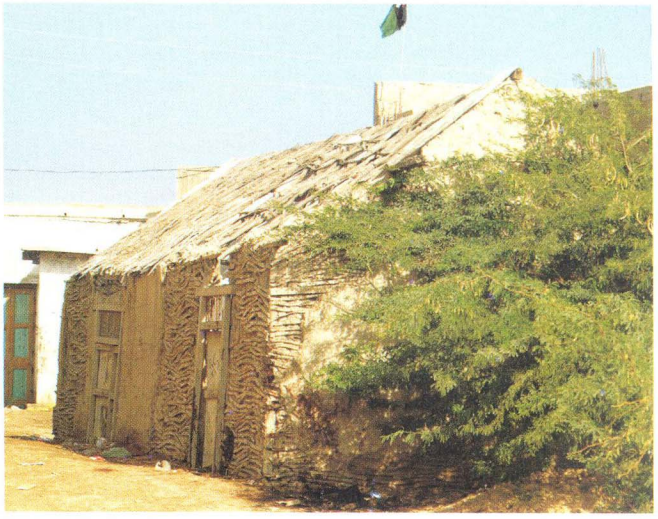
walls of grass mats (chitai).

Similarly in the Kohistan area of Thatta people are living in temporary shelters or huts reflecting their landlessness and fear of migration. At majority of the riverine locations, houses are constructed on raised platforms or low lying mounds (normally made of debris of houses collapsed in the previous floods).

In the riverine locations of Punjab and Sindh and those at the risk of hill torrents, people are found to have constructed their houses with an incremental approach. The housing structures are gradually constructed and improved over time as and when the resources permit and construction materials are available. Most of these houses are either mud (katcha) structures or semi pacca houses (built of brick and mud mortar or half katcha and half pacca).

More than half or 53% of the households in the surveyed communities are living in single room houses, 29% in 2-room houses while 14% are residing in 3 or 4 room houses. A small proportion or 3.5% households are living in big houses comprising 5 or more rooms.

Most of the households at the surveyed locations opt to defecate in the open. Latrines inside or adjacent to housing structures are available to less than one fifth of the households. More than 4/5th of the households have access to an in-house water source, generally a hand pump. The rest of the households either bring water from an outside source or purchase it from water suppliers. A peculiar example is Thatta where almost all the houses surveyed at Marak Jakhro, Keti Bunder and Kharo Chaan were found purchasing water from commercial suppliers/water



Kharo Chaan, Thatta: A traditional housing structure.

Table 5.8: Housing space

Number of rooms	Houses	% age
One Room	227	53
Two Rooms	125	29
Three rooms	34	8
Four Rooms	27	6
5 or more rooms	15	4
Total	428	100

Table 5.9: Housing Facilities

Facility	Number of Houses	%age
Latrines	76	18
Source of water outside the house	73	17
Motor Pumps	29	7
Electricity	251	59
Mobile Phones	167	39
Landline Phone Facility	12	3

tankers.

Motor pumps for extracting ground water have been installed by a small number of households. Seven per cent houses were found to have access to this facility. Not a single location was found to have piped water supply.

41% households at the surveyed locations are living without electricity from the national grid. It was noted that where electricity was supplied to a location most of the households were availing the facility. At eight locations (2 in Thall, Layyah, where household survey could not be conducted) electricity is not available at all.

Only 3% households were found having access to the land-line phone facility. The landline phone facility is available to 4 settlements. Compared to this, 39% households are using at least one mobile phone while 15 % households own a TV set or a radio or both.

5.2.4. Livelihood patterns

The household survey results throw light on the economic conditions and livelihood options and strategies of the surveyed communities/households. A large proportion especially of the male population is contributing in some way to the household income.

More than 30% population in the surveyed communities is economically active (EAP) or reported to contribute to the household income. The EAP includes 15% females. Children aged 11-18 years have a considerable share in the EAP, making up 28.7% of which 84% are boys and 16% girls. Overall, 24.4% male and 5.4% female children between the ages of 11 and 18 are economically active. A considerably

Kharo Chaan, Thatta: Traditional transport modes provide livelihood to many poor households

Table 5.10: Economically active children (11-18 years)

Economically Active Children	216
Male	182
Female	34

Table 5.11: Livelihood Source of the Household Heads

Livelihood Source	Number of Households	% age
Agriculture	216	50.5
Fishing	18	4.2
Government Jobs	13	3.0
Private Jobs	8	1.9
Trading	15	3.5
Services	18	4.2
Construction	1	0.2
Transport	2	0.5
Labor	137	32.0
Total	428	100.0

high proportion of women and girls in Jampur/Rajanpur was reported to have a contribution in the household economies or incomes.

Agriculture is the major livelihood source for half the households. Menial and seasonal labor inside the village, in the neighboring towns or other cities of the country is the livelihood option for 32% households.

Government and private jobs absorb a small portion or 5% of the household heads. Fishing was noted to be the main livelihood source for majority of the households in Thatta's coastal communities at Kharo Chaan and Keti Bunder.

The land ownership patterns are also consistent with the trends reflected in the households' options to earn their livelihoods. As many as 47% households reported to own productive or non productive lands while 41% households are landless.

Livestock appears to hold an extremely important place in the livelihood and food security strategies of households with 86% households owning some kind of livestock, especially buffaloes, cattle, goat and sheep.

5.2.5. Education and literacy

The surveyed communities have a dismal state of education and literacy when compared with education and literacy data of their respective districts, provinces and the overall national figures.

Literacy among the population aged 10+ has been recorded as 21.6% of which 37% are male and 8.6% female. A further analysis of the education and literacy related data unveils the fact that there are at least eight

Table 5.12: Economically active population

Economically Active Population	Number	Percentage
Male	642	85.3
Female	111	14.7
Total	753	100%

Table 5.13: Education level of household heads

Education Level	Number of HH	%age
Illiterate	277	64.7
Below Primary	14	3.3
Primary	77	18.0
Primary but below Middle	3	0.7
Middle	30	7.0
Middle but non matriculate	4	0.9
Matriculate	15	3.5
Intermediate and above	8	1.9
Total	428	100.0

Table 5.14: Proportion of literate population

Literate Population Aged 10+	356	21.6%
Male	279	37.0%
Female	77	8.6%

communities where literacy among females is zero. These include Basti Raju Shah (Vehari/Bahawalnagar), Khanwah and Basti Chandya (Rajanpur), Basti Habib Ullah Chachar and Jamal Din Chachar (Ghotki), Gulu Sial and Sadiq Kalhoro in Khairpur. In Basti Chandiya, and Marak Jakhro, literacy among men/boys is also noted to be zero. As many as 65% household heads in the surveyed areas are illiterate while 18% have completed primary level education.

5.2.6. Health

The household survey results reveal that 7.5% population (7.4% male and 7.7% female) are caught up in health disorders/diseases that are considered fatal.

A worryingly high proportion of households reported to have some member suffering from life threatening disease. One fifth of the cases relate to tuberculosis and 1/4th hepatitis.

Seasonal fevers were reported to be the most common ailment with 80% of the households complaining of these. Diarrhea among infants and children and pneumonia are also common disorders while skin diseases were found to have an unexpectedly low prevalence.

5.2.7. Vulnerability to hazards

The households reported that they were affected by a variety of hazards which have serious impacts on their lives, assets and means of livelihood. Floods, heavy rains, strong winds/storms and frost are among the prominent ones.

Most of the communities surveyed are residing at locations that are consistently affected by floods, heavy seasonal rains and storms. The coastal

Table 5.15: Common Health Disorders

Common Diseases	Number ofHH complained	% age of HH
Fever	341	79.7
Loose Motion	139	32.5
Diarrhea	149	34.8
Hepatitis	103	24.1
Eye ailments	123	28.7
Tuberculosis	86	20.1
Asthma	97	22.7
Pneumonia	88	20.6
Skin diseases/ailments	14	3.3

Table 5.16: Population suffering with fatal diseases

Population Suffering with Fatal Diseases	188
Male	90
Female	98

Basti Raees Jamal Chachar,Ghotki: A young boy having his leg affected by polio. People here complain that due to remoteness of their village, vaccination teams do not visit their village.

communities in Thatta live with the risk posed by cyclones, storm surges, high tidal activity and sea intrusion.

Damage to houses or shelters is noted to be the most common impact of these hazards followed by damage to crops. 70% households reported damage to their dwellings caused by floods, rains, storms or cyclones (Thatta), while 58% said their own crops or those grown in their settlements are affected.

Some 40% households reported that they find the productivity of their lands declining. Damage to livestock is also reported by considerably high number of households.

The role of outside agencies like government departments and non-government organizations appears to be non existent when it comes to provision of assistance in an emergency/disaster situation, with 97% households subscribing to this claim. Only 13 households or three per cent of the total (most of them residing in Keti Bunder and Kharo Chaan) acknowledge to having received some kind of government assistance in the past.

Table 5.17: Impacts of disasters

Impacts of Disasters	Number	% age
Death	32	7.5
Injury	7	1.6
Disability	6	1.4
Damage to house	296	69.2
Damage to livestock	141	32.9
Damage to Agriculture Land	182	42.5
Reduction in the productivity of the land	170	39.7
Damage to crops	248	57.9
Damage to household items	139	32.5
Damage to public infrastructure and services	58	13.6

Boundary wall of a house collapsed due to heavy rains in Muzaffargrh, is being repaired.

5.3: Findings of the Community Survey

5.3.1. Who are the most vulnerable?

The flood prone communities in general and deltaic and desert communities in particular are physically marginalized. The extremely vulnerable flood prone communities in Sindh were found to be those residing inside the protective bunds that have been constructed on both sides of the river Indus to contain its flood water. The main course or bed of river Indus in Sindh is higher than the surrounding lands due to which water over-flown from its banks during flooding cannot return to the river. These communities bear heavy losses in case of very high or super floods. Even during normal times when water level rises in the river, these communities have to face flooding like situation as they are trapped inside man-made enclaves inundated with water.

In Punjab the most vulnerable communities were found to be those residing at the river banks or between a river's branches. One such community is Bait Mullah Gopang in Rajanpur the residents of which were found to have a minimal physical, social and economic link with the outside world. They move along the river in search of freely available lands to cultivate for their sustenance.

The most vulnerable deltaic or coastal communities were found to be those residing inside the creeks created at the mouth of river Indus. Mere existence of some of these communities is unknown to local government officials.

Likewise, the communities residing deep into the deserts are considered too far and too scattered to be accessed by the concerned agencies.

The physical distance involved in reaching these communities deters officials, government servants like school teachers, mobile health staff, agriculture extension workers, relief providers (in case an emergency situation is created), and even non government organizations as logistical convenience, road bias and security concerns dominate their day to day working.

Physical isolation of the hazard prone communities was noted to have transformed into their social, economic and political marginalization which in turn has rendered them unable to reach the centers of administrative and financial powers that be. This was found to have resulted in minimal coverage of these communities by social and economic services available to 'normal' areas. Lack of services, especially in the areas of health, education and road connectivity, was noted to have been contributing heavily in keeping their marginalization, vulnerability and poverty intact.

5.3.2. The missing state

Some communities surveyed are

completely living on their own without any mark of state's existence in terms of infrastructure like schools, health facilities, roads or transport facilities. In Basti Raju Shah located in district Vehari on the border with district Bahawalnagar, there is no road, no school, no dispensary or any other facility the state is responsible to provide. Here the people complain that both district administrations in Bahawalnagar and Vehari consider this area in the jurisdiction of the other and hence the residents are denied even the basic amenities and live in complete isolation. A similar case was found in Mullah Gopang and same in communities residing deep in the deserts or in the creeks.

5.3.3. Education and health services on top of the wish list

As mentioned earlier, the literacy figures are extremely low among the surveyed communities, and in some cases approaching zero. It was found that where functional schools are available within or near the settlements, people do benefit from them. For instance, Basti Jakhar which is the center of the union council, appears to have much improved literacy figures and a considerable number of men and women is educated, some landing the prized government jobs. Across all the communities where education and health facilities do not exist at all, people demand forcefully for the provision of at least these basic facilities.

5.3.4. Too weak to protect, too risky to improve

Housing is one of the biggest determinants of communities' vulnerability to hazards. At all the sites, housing is found to be dominated by adobe structures and shelters termed temporary by outsiders but are permanent for their occupants. These structures normally fail to withstand floods, storms, heavy rains and strong winds. The housing issue of these communities is complex and has multiple dimensions. For instance, due to floods communities do not construct permanent housing or improve the existing stock, and due to poor housing they are quite vulnerable to flooding.

The housing issue also needs to be looked at in the context of rural housing problems where lack of entitlement of the residents on their existing housing lands, poverty, primitiveness of existing structures and poorly conceived new construction technologies, make the issue quite complex.

5.3.5. Livelihood and vulnerability

There is a direct relationship between individuals' and households' livelihood options and vulnerability to disasters/hazards. Farmers were found to be most vulnerable among all the livelihood groups as their income sources are exposed to a variety of natural and man-made hazards. For instance, besides flooding, the crops are recurrently damaged whenever there are heavy rains, storms, heat waves, frost, droughts and pest attacks. The market chains of their produce also do not normally function in their favor and they stand dually disadvantaged. For instance poor transport infrastructure available to these communities increases the cost of transporting agriculture inputs and produce and keeping in touch with say agriculture and livestock departments and credit institutions.

5.3.6. Absence and excess of water

Water management for irrigation and

drinking is most complex of the complex issues. In the desert, hilly tracts of Thatta, and piedmont plains of Rajanpur, the absence or scarcity of water for irrigation and drinking is badly affecting people's livelihood and health. In the flood prone sites poor water management has created an alarming situation. Water tables are falling owing to heavy dependence on ground water. Especially in Sindh, the lands are affected by water logging and salinity while in the delta region, the absence of Indus's sweet water and silt it brings is inviting sea to take the place left by the river.

5.3.7. The political overtones of water management and distribution works

At a number of sites the political implications of water management and distribution works are clearly highlighted. For instance in Khairpur and Rajanpur the communities reported that the flood protection work carried out to save the lands of influential ones, has made their own lands vulnerable to floods as the natural drainage patterns have been disturbed. In Muzaffargarh, the construction of spurs has technical faults and shortcomings. These spurs constructed primarily to arrest river erosion and protect important towns, are contributing directly in causing flooding and increasing river erosion for poor communities. In Layyah, the older community members at Lohance Nasheb maintain that before the construction of protective bunds along river Indus, the overflow of water had a large area to spread over. With these bunds, the overflow has been restricted to a smaller area and therefore the height of water during floods is much more than it used to be, damaging the communities residing inside the bund areas.

5.3.8. Active but neglected

Women, children and youth are found to be active contributors to household economies especially in agriculture, livestock and fishing sectors. However there is an outright neglect of this fact in official statistics and programs.

5.3.9. Living on the edges

The physical boundaries between the sampled districts are determined by rivers: Chenab and Indus in case of Muzaffargarh, Satluj in case of Vehari and Indus for remaining districts. The communities living along the rivers are thus living on the edges of the districts. The riverine locations in both Punjab (especially Rajanpur and Vehari) and Sindh (especially Ghotki and Khairpur) provide safer abodes to criminals. Being the boundary between districts, rivers provide criminals with easier and shortest possible path to cross into neighboring districts to dodge police. The passage and presence of criminal elements has also contributed to the underdevelopment of these communities as outside agencies hesitate to travel to these locations. In Ghotki and Khairpur, communities report that police raids and encounters have become a routine, roads are not safe, and service providers like teachers, health staff et al are reluctant to be appointed in these areas.

5.3.10. Engineering solutions are favored and engineering miracles are expected

Communities at all the riverine and coastal locations were found favoring engineering solutions like diversion of river's course, construction of protection bunds, spurs etc. At not a single location the solutions involving natural resources' management were suggested. For instance, it is now well

known and documented that heavy deforestation at river banks and in the mangrove forests has increased the damages caused by rivers in the former and cyclones in the latter case. Likewise, the razing of natural vegetation and increasing livestock population in the desert zones has contributed to micro climate changes, soil erosion and loss of biodiversity to which communities have a direct contribution.

5.3.11. The social disasters

Tribal conflicts have come forth as one of the major hazards posed to communities especially in Ghotki and Rajanpur. Over the years these conflicts have claimed scores of precious human lives and the affected families thrown to abject poverty and consistent social and economic vulnerability. Communities in Khairpur, Ghotki and Rajanpur also complained of the Sardari system as mother of all the ills and a sustainer of their poverty and underdevelopment.

5.3.12. Absence of non state actors

Not a single non government or community based organization was found working in the surveyed locations except two. In Keti Bunder the WWF is maintaining its 'Indus For All' program under which one of the major activities is to form youth groups and launch mangrove plantation campaigns. At Kharo Chaan and Marak Jakhro, PAIMAAN, a local NGO was found to have constructed school buildings. However these are not functional.

5.3.13. Migration is the last resort for some

The consistent vulnerability to hazard and risk has exhausted some communities' capacity to adapt. They are thus forced to migrate, mostly to urban areas. The vulnerability to disasters in rural settlements is thus contributing to urbanization. Karimabad in Muzaffargarh, coastal communities in Kharo Chaan and Keti Bunder and Mullah Gopang in Rajanpur are examples in this regard.

5.3.14. Disaster footprints of development works, communities are paying the price

The communities and settlements in Rajanpur's hill torrent zone, those residing in Keenjho, Ghotki, and in the delta region and along Keenjhar lake are facing the disaster footprints of mega development works. In Rajanpur the under construction Katchi canal is planned to take Indus's water to Balochistan. Recently, the canal proved obstructive to the natural drainage pattern of hill torrents and exacerbated the flooding caused by them. Similarly communities in Ghotki fear that the under construction Ranny canal planned to take water downstream to Sanghar and Tharparker will contribute to the water logging of the area. These communities are already facing the disastrous outcome of saline water being pumped from upstream Sadiqabad/Rahimyar Khan, Punjab, into the desert zone of Ghotki. This saline water has swallowed thousands of acres of desert that were previously used as grazing land for livestock and contained natural ponds to store rainwater. Water tables have risen to dangerous levels and a severe water logging issue has developed. Hundreds of livestock is reported to have perished in the marshes developed by this stray water.

The communities residing along Keenjhar forcefully complain to have lost considerable fish stock owing to pollution of the lake caused by

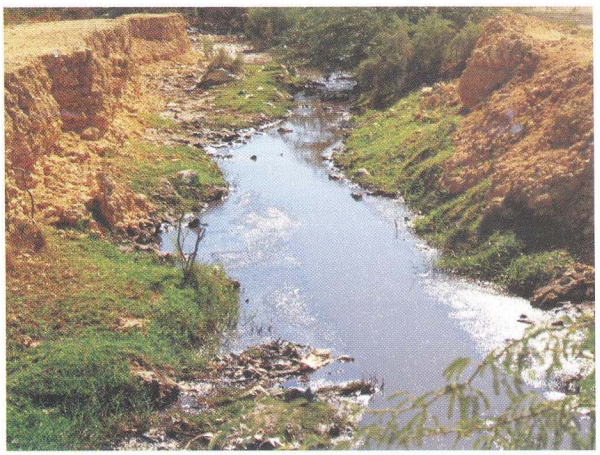
upstream Nooriabad industrial estate. Similarly the coastal communities are the victims of barrages, dams and water distribution works on Indus that have obstructed the river from flowing downstream Kotri barrage and push back the intruding sea.

5.3.15. Expectations from the government

At all the surveyed locations communities were found with expectations from the government to step in for improving their living conditions. The hazard protection schemes expected and proposed by the communities involve heavy investments that only governments can proceed with. For instance in Kharo Chaan the communities repeatedly emphasized their need to get protected from sea intrusion. They demand construction of a circular bund on the pattern of one constructed around Keti Bunder some years back which provides a degree of protection from sea intrusion and inundation.

5.3.16. Community based disaster risk reduction has a limited scope in some cases

In some cases sustainable disaster risk reduction needs mega initiatives, both structural and non structural, involving huge finances. A community based approach will therefore not provide sustainable solutions. For instance, in case of Thatta the sea intrusion has so far claimed hundreds of thousands of acres of land in the district. Non availability of sufficient water in downstream Indus is considered to have contributed to sea intrusion, destruction of mangroves and scarcity of both surface and underground sweet water sources. In Muzaffargarh and elsewhere river erosion has increased manifold due to ill planned construction of bunds/spur and embankments. In Rajanpur, the management of hill torrents requires new water works (construction of structures etc) and reengineering of water schemes (Katchi canal that has resulted in obstructing the drainage pattern of hill torrents). In Vehari, the communities are residing and cultivating right in the midst of the bed of river Sutlej. A sustainable solution requires resettlement of these communities in safer places.



Chemical laden waste water from industries in Nooriabad Industrial Estate is causing pollution in Keenjhar Lake- one of the most significant fresh water lakes of Sindh.

The under-construction Katchi canal in Rajanpur is being blamed by many as a human induced disaster.

VOICES OF THE VOICELESS

5.4. Voices of the Voiceless

This study has a special focus on children - not merely to collect information about them but to get information from them. Nine focus group discussions were held with children and youth using a hazard and vulnerability matrix. The same matrix was employed for discussions with older men and women and also for collecting information from households.

In all the group discussions with children, it was noted that they posses sufficient knowledge of their community and their household's social and economic conditions. They could very well articulate the local living conditions, risks they face and services they need or expect. Still, the communities felt strange about the inclusion of children in the discussions, and about the fact that kids were asked the same questions that were put to adults.
The focus group discussions were held with young children (around 10 years of age) and with youth (18 or below).

The research matrix contained questions about hazards faced by the communities, their season of occurrence, impacts they cause and ways to mitigate those impacts. In due course children were also asked about their development needs.

5.4.1. State of children in the surveyed districts and communities:
According to the 1998 census, on average 35% population of the districts is below the age of 10 and almost half of the population is 18 years or below. This trend also reflects in the demographic information collected from the communities.

All the selected districts stand lower on the human development ladder. Their performance on children and women related human development indicators are not encouraging. Low levels of literacy, absence of social services, especially schools, and poor quality of education delivery are some of them. In the health sector, pre and post natal care from a formal health facility is available to a very small

VOICES OF THE VOICELESS

proportion of women, especially in rural areas. A large proportion (in some cases as high as 40%) of children (12- 23 months) is yet to be fully immunized.

5.4.2. Children's views and suggestions
Here is a précis of the discussions held with children.

Fears of losing shelter, running out of food stock and perishing of the livestock are uppermost in the minds of the young. At all the flood prone locations children's memories of floods are dotted with damage to the houses, displacement, insecurity, loss of livestock and food shortages.

In Vehari, for instance, a group of children told us: "In the rainy season we remain fearful of floods. In the most recent flood this year (2008) a kid who was our friend drowned in the river. We have also lost an old man whom all of us called grandfather. He would come to our village by crossing the river on a clay pitcher. He used to tell us stories and everything that we were curious about. Few days back he drowned in the river while crossing the river. A woman had come from Multan to see her relatives in our village. She died of snake bite. When there is high flood our houses are damaged. Our parents are poor and so we are not able to construct pacca houses. When our houses were destroyed, we moved in with our relatives who live in Fatehpur (a nearby town). The displacement makes us very sad as we are detached from our friends."

Responding to a question on loss of livestock, one kid said: "Animals are our family members. When any of them dies, it's like losing a family member." Children at all the locations said they love livestock and happily feed them and take care of them. The same group of children said they were not fearful of river in normal times as they take bath in it and take their buffaloes for washing, "but after the flood we are fearful".

In Layyah, during a focus group discussion, the children said they did not like rains in winter. Giving reasons they explained that whenever there is heavy rain, water spreads everywhere. "If it is in winter, the temperature drops, mud tracks become marshy and we are unable to reach school. If we manage to reach school, the class rooms are too cold to sit in. We suggest that if you (research team) want to do something for us, provide us boiled eggs in winter which relieve the cold" they added.

In Rajanpur and Ghotki where flood prone locations are also considered unsafe due to festering tribal conflicts and heavy movement of criminals, the youth was especially found fearful and affected with these conflicts. The children and youth at these locations reported that often the tribal clashes linger on and the situation goes from bad to worse. "People are attacked and mobility is extremely restricted."
In Ghotki children said when there is a severe conflict, their schools are closed. "Last time our school remained closed for more than three months as the teacher was unable to travel safely".

In Vehari, explaining the impact of conflicts, children said they are among the most affected when an elder male member is killed or caught by police, as they (children) and their mothers are left to fend for themselves.

Children at all the locations strongly voiced their need for schools. The urge to get education was found to be quite strong especially among the girl children. "We need school and

playground," children in Ghotki demanded.

Children in Rajanpur and Ghotki reported that vaccination teams do not visit their villages.

At all the locations it was noted that children are not mere victims as they take active part in early warning, evacuation, reconstruction and rehabilitation when a hazard strikes.

In response to the question as to why rivers bring flood, children at all the locations were found to be of the view that when glaciers melt or India releases water, it causes inundation in the river.

At all the flood prone locations, children recommended the construction of bunds as a way to arrest flooding. In Vehari the girl children were of the view that if it was up to them, they would construct a protection bund on their own.

About the impact of floods and heavy rains, children said they hate to fall sick but in the rainy season many children get sick. They were found to remember many stories of damages inflicted by flooding and heavy rains.

In Layyah, the young ones said when there are storms or strong winds, kids get lost and at least once some women slipped into the river.

In Thall desert, the shepherd children said they are fearful of dust storms. "We are afraid of dust storms, as we get lost and sometimes our sheep and goats too. We would suggest you to construct shelters in the desert where we could take refuge."

Child marriages are found to be common in much of the surveyed area. Children as young as 3-4 years of age are sometimes engaged/married.

Kids were also found to be concerned about the economic woes of their parents in the wake of a calamity. At various locations children said their parents went under debt after sustaining losses at the hands of a calamity.

About early warning systems and relief work, the children reported that government teams do not visit their village. In Vehari, a group of kids told us: "During the recent flood two soldiers came to the high school in Fatehpur but never bothered to visit our village. They provided relief to only those who were least affected by the flood."

When asked about their needs, the unanimous response of children was to provide them with toys, play ground and schools. It is to be noted that at most of the locations surveyed, schools either do not exist or they are non-functioning due to widespread teacher absenteeism. Children at all the locations are fond of mobile phones and anxious to get one.

The household survey results reveal that male children hold an important place in maintaining the family order and carrying the family name. For instance a very small number of women were found heading households. When further probed it was learnt that if a widow has a male child, the household is recognized by his name.

Female children and youth were found to be active contributors to the household economy by working in the fields and taking care of younger siblings. The survey results also show that children aged 10+ are becoming part of the labor force and contributing

in one way or another to the household income.

In Thatta and Keti Bunder youth groups were found to be front runners in protecting the environment. WWF has launched a mangrove plantation campaign in these areas which is being spearheaded by the local youth. When asked about the outcome of their efforts, one of the youth answered: "We don't see this work as something that may or may not succeed. We know only one thing, it has to be successful."

During the research process we also came across children challenged with disabilities. In Marak Jakhro, Thatta, a child with polio was found to have been abandoned. It was told that his father had died and his mother is unable to take care of him. Being abandoned, the child gradually turned mentally retarded.

In Rajanpur and Ghotki a number of children were observed suffering with polio. It was told that polio vaccination teams do not visit these areas.

Section 6: Responding to Hazards: Responses and Capacities of Local Governments and Civil Society Organizations

6.1. Research Process

The second phase of the research was reserved for collecting information primarily from the respective district governments, civil society organizations (especially local ones) and the media. A flexible research framework was prepared based upon the Local Government Ordinance 2001, National Disaster Management Framework, Guidelines by National Disaster Management Authority for preparing District Disaster Management Plans, Hyogo Framework for Action (HFA), the alternative perspective of disaster management proposed by Duryog Nivaran (www.duryognivaran.org), inception report prepared for this study and RDPI's own experience.

Separate set of questions were framed to be asked of district government officials/elected representatives (district nazims), civil society organizations and the local media. A list of essential documents to be collected from the stakeholders was prepared. These documents include but not limited to:

From Local Governments:
1. District Disaster Management Plan (if prepared)
2. Flood Fighting/Contingency Plan (prepared by the local governments in flood prone districts)
3. Public Sector Development Program/Annual Development Plan(s)
4. District Budget Brief
5. List of functional non government organizations and Citizen Community Boards registered with District Social Welfare/Community Development Department.
6. District Profiles (if prepared/available)
7. Medium and Long Term Development Plans (if prepared)
8. Any other useful but relevant documents/maps.

From Civil Society Organizations:
1. Organizational profile
2. Useful but relevant project documents (if they agree to share)
3. Documents or reports prepared on aspects related to disaster management (if available).

From Press Clubs:
1.Features/news items on local disaster events

Request letters for meeting were sent to district coordination officers and district nazims in all the districts requesting them to facilitate the process and meetings with heads/representatives of the concerned departments. A list of officials/elected representatives to be met in each district was prepared. These officials included but not limited to:

1. District Nazim
2. District Coordination Officer (DCO)
3. District Officer (DO)/Deputy District Officer (DDO) Coordination (whatever may be the case)
4. Executive District Officer (EDO) Revenue
5. EDO, Finance and Planning
6. EDO, Works and Services
7. EDO, Agriculture and Livestock
8. EDO, Social Welfare/Community Development
9. EDO Health
10. Executive Engineer/Sub Divisional Officer Irrigation
11. District Officer Civil Defense.

Lists of local organizations registered with the Social Welfare/Community Development Departments were taken

and meetings were held with some of the active organizations. Preference was given to meeting organizations having a track record of working on some aspects of disaster management or environment. However where such organizations could not be found, meetings were held with the organizations working in other social sectors. Besides these local organizations, in some districts meetings were also held with national or international organizations currently working in the districts under study. In addition to relying on the information provided by Social Welfare/Community Development Department, information about the active civil society organizations was also collected from other sources. For instance the flood fighting plans normally contain, besides other details, the names and contact details of the local civil society organizations. Please see annexure 10 for a list of local government officials, civil society organizations, political representatives and journalists contacted for this research.

The broader research questions included:

1. The major hazards/risks in the district
2. Underlying causes of these hazards/risks
3. History of major disaster events
4. The impacts of identified disasters
5. Location of vulnerable areas and communities (hazard mapping)
6. Response mechanism of local government, civil society and media in the disaster events
7. Early warning systems conventionally employed or being employed
8. Human and financial resources available for Disaster Risk Reduction
9. Suggestions for reducing disaster risks
10. Other major development issues prevalent in the district and their ranking.

During the course of interaction with respondents, a capacity assessment in terms of their understanding, response mechanism, capacities and gaps, and priorities etc was also undertaken.

The last phase of the research was reserved to share the broader and relevant findings with the local governments and civil society organizations. Six consultative meetings in this phase were organized - one at each district except Vehari where DOABA Foundation was tasked to do it as it has undertaken a localized and detailed study on the same subject in Vehari, commissioned by Plan Pakistan.

6.1.1. Limitations

The information presented in this report is based upon:

- Interaction with respective district government officials, representatives of civil society organizations, political figures and the media.

- Documents collected from the local governments (especially the district disaster management plans, flood fighting plans, budget briefs etc)

- Observations and assessments of the research team.

As mentioned earlier, requests for meeting were made to the respective district nazim (Elected Head of District Government) in each district. However at none of the districts the research team could see the respective nazim mainly due to their non availability. The reason was found to be a separation of district nazims from the mainstream local government affairs/administration owing to a strategy of the current

provincial governments that prefers to run local government affairs through District Coordination Officers and rest of the local bureaucracy rather than the elected representatives.

In some districts like Khairpur, Layyah and Muzaffargarh, meetings with local media could not be arranged.In some districts due to non availability of concerned officials (owing to their being on leave or positions being vacant) the research team could not record their views and collect required documents. For instance in Rajanpur three executive district officers are posted against 11 positions and each EDO is taking care of three to four departments. In some districts the required documents were either not available or were promised to be provided later.

Except from Khairpur and Ghotki, all the DCOs and relevant EDOs participated and shared their programs and priorities with respect to their districts in the last phase of the study. They also shared their concerns and suggestions on the research work and its findings which have been accommodated in this report.

Rajanpur: A consultative meeting with district administration. The District Coordination Officer is in chair.

6.2: Major Findings

6.2.1. Both conventional and non conventional hazards and risks are prevalent

Besides the prevalence of conventional hazards like floods and droughts in all the districts, the respondents in each district also identified non conventional and persistent risks threatening the lives and livelihoods of the communities. For instance, in all the districts respondents identified the non availability of clean drinking water as a major threat to human life and health.

Especially in districts like Ghotki, Khairpur and Rajanpur, the respondents also identified tribal clashes, sectarian killings (especially in Khairpur) and insecurity as major threats to citizens' lives, freedom to move freely and fully harness their livelihood options. The environmental risks like desertification, destruction of mangroves (in Thatta), shrinking availability of irrigation water, falling water tables, salinity and water logging, pest attacks, pollution caused by industrial units etc, were also identified by the respondents as major threats to the natural resource base on which majority of the population's livelihood options depend in the identified districts.

Respondents from the civil society and media in almost all the districts identified the development induced causes that have created or are creating disasters. In all the districts except Layyah and Vehari, the mega water works and irrigation schemes like construction of barrages (the perception recorded in Sindh), spurs, dykes, embankments (in Muzaffargarh) and canals (like Katchi canal in Rajanpur), were identified as the main sources of converting natural phenomenon/hazards into persistent disasters for the communities.

6.2.2. Disaster Risk Reduction is not among the priorities of the local governments

In all the districts 'Disaster Risk Reduction' was noted to be not among the priorities of the local governments. An important indicator for making this preliminary judgment is the funds the district governments have allocated in the current budgets for emergencies (without mentioning the 'disaster situations'). None of the district governments was found to have allocated mentionable funds in this head. For instance, in Vehari the district government has allocated only one million rupees for emergencies compared to an amount of 5 million rupees reserved for the VIP visits. Similarly, in Thatta and Rajanpur (the two top hazard prone districts) the district governments have allocated 3 million and no funds respectively for emergencies.

The research team also got this impression from the discussions held with district government officials. It is however to be noted that some district governments were found to have started working on development schemes that can contribute to reducing the disaster risks. In Rajanpur, for instance, the district government has started clearing the natural paths of hill torrents and restoration of farms destroyed by hill torrents. The district government has allocated 22,000 bulldozer-hours to the affected communities free of cost.

In Thatta, the district government has initiated a program in which GIS maps of the whole district are being prepared. According to the DCO, the

local government Thatta intends to make use of this mapping exercise in bettering the planning and development process in the district. Likewise, the district government Ghotki has undertaken a research study to document the causes, impacts and response strategies for dealing with water logging in the desert zone of the district, caused by the pumping of saline water by irrigation authorities in Punjab.

Further research is needed to note the development schemes launched by the local governments for reducing disaster risks or which can contribute in this regard.

6.2.3. 'Reactive Approaches' still dominate local governments' disaster response

The main disaster response instrument and strategy of all the district governments was found to be the 'Flood Fighting or Flood Contingency Plan'. These plans are in fact the management strategies prepared by the district governments and outline the resources available with and responsibilities of different departments and officials in case a flood strikes. Discussions with the local government officials in all the districts also reveal this fact as only a couple of officials in Muzaffargarh (DO Civil Defense etc) were found to have an understanding of the difference between 'emergency response' and 'disaster risk reduction'.

6.2.4. 'Disaster Risk Management Plan' for the sake of having a 'Plan Document' only

Discussions with the local government officials reveal that the preparation of 'Disaster Risk Reduction or Disaster Management Plan' is taken as a routine official activity imposed from the top, having no relevance to the local priorities. The DCO Vehari, for instance, remarked that conventional response mechanism coordinated through the Provincial Flood Commission is more effective than doing the same through National Disaster Management Authority and there is no need to prepare a Disaster Management Plan in the presence of Flood Fighting Plan.

In Rajanpur, it was found that the post of EDO Revenue is vacant and the DCO has the additional charge of this post. The District Officer Coordination (DO Coordination), Rajanpur who is holding the additional charge of a number of departments, has managed to prepare the 'District Disaster Management Plan' for Rajanpur.

The 'District Disaster Risk Management Plan Layyah' is found to have been prepared in haste. Whosoever has prepared this document, it appears, has copied the details from some other plan without adjusting them to the situation in Layyah. For instance, the plan has identified earthquake, sectarian violence, civil unrest and crowds & stampede, besides others, as prevalent disaster risks in the district and has outlined no strategies to reduce and respond to these risks. At another place the same document mentions 'MDA and WASA' as the responsible agencies for carrying out repair and maintenance of water supply affected by disasters. It is to be noted that no agency with the name of MDA (possibly short for Multan Development Authority) exists in Layyah and the Water and Sanitation Agency (WASA) operates only in the city districts like Lahore, Multan, Rawalpindi, Faisalabad etc.

Despite these deficiencies both flood fighting and disaster management plans contain good stock of relevant local

information. The District Disaster Management Plan Rajanpur is one such example where the document seems to have followed the guidelines of NDMA and contains very useful information. Flood fighting plans in all the districts also contain useful information like identifying villages likely to be affected and the vulnerable points. It is also interesting to note that none of these plans are supported with maps. Only a general map of the district is attached to the document.

A notable exception is Ghotki, where it was found that DO Health has managed to develop some useful maps manually showing locations of health facilities and the vulnerable populations. In Rajanpur and Vehari, it was also noted that the EDOs had been asked by their finance departments/Disaster Management focal persons to prepare disaster management plans of their respective departments.

6.2.5. District Flood Plans without financial plans

In none of the districts studied, the Flood Fighting Plans are supported by the financial plans which could give an idea of financial resources a district government may need to put into operation its flood plans when the need arises.

This arrangement leaves district governments with vague planning documents which only outline the responsibilities and reporting lines, contact details etc. This appears to be one of the reasons why district governments are unable to allocate sufficient funds for emergencies in their own budgets and in case of an emergency, have to resort to cutting development budgets or look to provincial or federal government for funds and relief operations.

6.2.6. 'Flood Fighting Plans' as the 'District Disaster Risk Management Plans'

Even a cursory look at the Disaster Risk Management Plans of the districts under study (plans have been prepared for Layyah, Muzaffargarh, Rajanpur and Thatta) reveals that these plans are no more than slightly improved versions of conventional flood fighting plans. In Thatta when the research team showed the copy of District Disaster Management Plan to EDO Revenue, he remarked that only the cover of the Flood Fighting Plan Thatta has been changed to make it appear as the District Disaster Management Plan. It is to be noted that EDO Revenue Thatta is the focal person of District Disaster Risk Management (DDRM) in the district and has recently taken charge of his post. Thatta and Badin are two districts where UNDP's Disaster Management Cell has appointed its focal persons to help respective district governments prepare their Disaster Risk Management Plans.

6.2.7. Allocations for emergencies are negligible

The local governments in all the districts under study were found to be financially starved and struggling with a shrunk financial flow. Under such a situation these governments allocating minimum or no funds for emergencies is quite understandable. In Rajanpur, for instance, the officials complained that the government does not have funds even to pay salaries and there are a number of departments without any funds for development. In the same district the DCO reported that no funds are available for emergencies this year whereas in previous years normally one million rupees would be allocated for this head. The situation in other districts was found no different.

6.2.8. Institutional barriers (inter and intra agency coordination, lack of staff/vacant posts, lack of interest)

In all the districts it was observed that local governments lack trained and motivated staff to work on Disaster Risk Reduction in a regular manner. In Thatta, it was noted that UNDP is finding it difficult to motivate the higher level district bureaucracy to participate in the capacity building programs/events for Disaster Risk Reduction, organized by the agency. (However in the second consultative meeting the concerned UNDP representative claimed their plans are running smoothly in the district.)

In Rajanpur, most of the posts of executive district officers are vacant (three EDOs are taking care of 11 departments). The non availability of development funds and an overall environment of uncertainty about their future were also observed to have demoralized the local government officials. In Vehari, the DO Budget remarked that planning is a systematic activity that requires continuation of plans and policies towards well defined goals. Unfortunately, he added, in Pakistan 'planning' is taken as something dictated by one who is in control of affairs. It was observed in all the districts that majority of the top management (EDOs and DCOs especially) is only a few months old in their present positions, and gradually building their understanding of the local issues.

6.2.9. An inconvenient truth

Owing to their being in-charge of land management, the revenue officials are responsible for the preparation, execution and coordination of Flood Fighting and District Disaster Risk Management Plans, and damage assessments etc in all the districts. The police are made in-charge of maintaining law and order situation in case of emergencies and early warnings. It is to be noted that the revenue and police are two of those departments considered most corrupt and inefficient in Pakistan. Further the revenue department does not have a kind of training for land-use planning and situation management in general and disaster management in particular.

6.2.10. Capacities of local civil society organizations

The local civil society organizations, with few exceptions, in the surveyed district are small, sometime consisting of only one individual and are voluntary organizations. Many of them have never received funding from any formal agency and are being run on contributions from members or those from philanthropists. Education and health are two key sectors these organizations are found working for. Except few organizations in Thatta, Layyah, Muzaffargarh and Rajanpur, generally the civil society organizations working in the identified districts lack an understanding of disaster management. One possible reason for this is found to be DRR being a relatively very new concept for civil society organizations in Pakistan. This is one of the reasons for their not being working in/with the disaster prone communities.

6.2.11. Inter stakeholder misconceptions, suspicions and lack of trust

During the course of this research meetings were held primarily with district governments, non government and community based organizations, and media. Each stakeholder was asked about the performance of the other two. It was found that an environment of misconception, suspicion and lack of trust generally prevails. For instance, the local governments in all the districts were found to be dissatisfied with the working of the non government organizations and vice versa. The media people blamed both the government and non government organizations for embezzlement of funds and ineffectiveness.

6.2.12. Holistic vision and programs where DRR could be incorporated in the mainstream development planning and governance are absent

The quest for incorporating disaster risk reduction into mainstream development planning and governance is still a distant dream. Discussions with stakeholders in all the districts further strengthen this finding.

6.2.13. Sensitization on environment and water: an interprovincial comparison

The discussion with local governments and civil society organizations in Punjab suggests that a general state of oblivion exists among them about the water requirements of the downstream and environmental repercussions of water scarcity on Sindh. In contrast a general perception of being made deprived of their water rights by the upstream (Punjab) prevails among the local governments and civil society organizations in Sindh. The understanding of environmental and political dimensions of inter provincial and inter-district water management was found to be much stronger among civil society organizations and local governments in Sindh compared to their counterparts in Punjab.

6.2.14. Participation of people and their representatives in Disaster Management is missing

Ever since coming into being of the current political setup at center and in the provinces, the elected representatives of local governments have been made defunct and the local bureaucracy is in full charge of administration. In Punjab the old commissioner system has been reinstalled and the district coordination officer is also holding the responsibilities of district nazim.

Neither the Flood Fighting Plans nor the District Disaster Risk Management Plans are presented before or discussed by the district council. Resultantly the planning exercise has become merely another routine and ad hoc instrument of getting or showing things done. Even the public and stakeholder consultations made mandatory by the guidelines of NDMA for the preparation of District Disaster Management Plans, have not been conducted in letter and spirit.

6.2.15. Huge funds are lying unspent under the CCB heads in each district

The district budget documents show that hundreds of millions of rupees are lying unspent under the CCB head in all the districts and very few schemes have so far been awarded to the CCBs. There are dozens of CCBs registered in each district but the current administration is not satisfied with the way the CCBs were allocated funds in the past.

6.2.16. The capacity building programs with a conventional approach are not enough

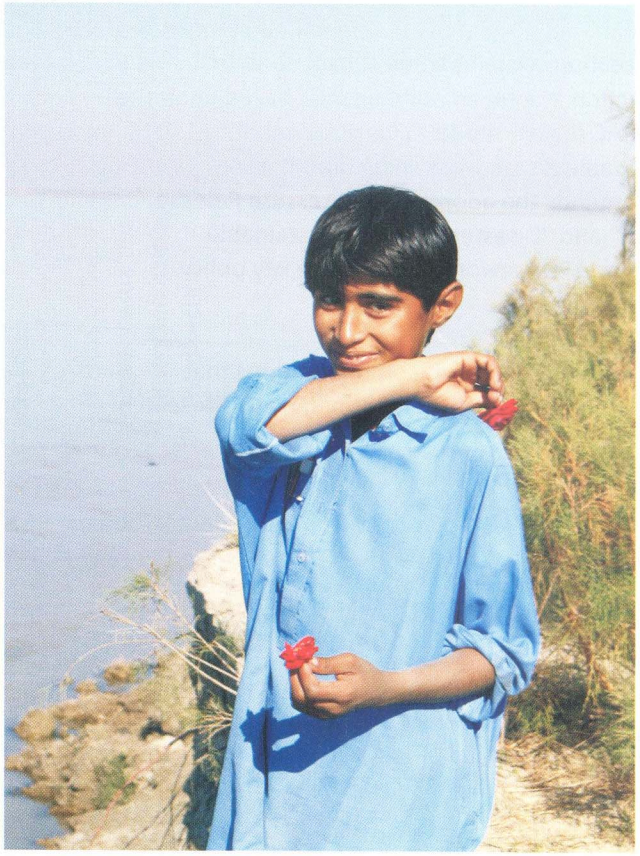
In various districts the local government officials have attended training programs (mostly arranged by UNDP, NDMA etc). A marked improvement in their understanding of DRR concepts can be observed. However it was also observed that these officials when try to convert their newly got knowledge into practice, they encounter a number of limitations including institutional barriers, lack of funds and above all lack of feedback and support from the high-ups.

6.2.17. Local civil society organizations in the surveyed districts, with few exceptions, have a minimal presence

The local civil society organizations, with few exceptions, in the surveyed district are small, sometime consisting of only one individual and voluntary organizations. Many of them have never received funding from any formal agency and are being run on contributions from members or from philanthropists. Education and health are two key sectors these organizations are found working in.

Section 7. Towards a Safer Future: Building Capacities, Reducing Vulnerabilities

One cannot resist acknowledging the fact that Pakistan has successfully managed to frame policies, draw action plans, enact laws and design programs that have direct relevance to sustainable development. However there persist conventional and longstanding unresolved issues of understanding, interpretation, integration and putting into action of these policies, plans, and programs.



These are gigantic challenges and require vision, creative thinking, financial and human resources and social and political will on part of all those who take, implement and face decisions (politicians, bureaucracy and technocrats at different tiers of governance and communities that consistently live with hazards, poverty, and vulnerabilities).

Recommendations given in this section are based upon the notion that there is no dearth of policies, institutions and even indigenous resources. There are institutions both in the government and non government sectors that have human resources and experience to address many of the issues brought forth by this report. However if there is a dearth, it is of realization of people's capacities, sympathetic understanding of issues, and pro-poor and pro-environment thinking, planning and programs.

These are serious deficiencies and need serious consideration and will on part of all those who desire and strive to build a safer tomorrow where people and government and civil society institutions have capacities to better respond to natural hazards and

have vision and practical strategies to shape a development that is equitable and responsive both to the needs and rights of people and their environment.

This section contains three subsections. In subsection 1, a seven point agenda based upon the CARDIAC (heart) model (1) is proposed for a sustainable disaster risk reduction. It also recommends the adoption of "Pressure Release Model" and "Disaster Resistant Sustainable Livelihood Framework" besides the key policy principles.

Subsection 2 contains recommendations that correspond to the issues identified by this research vis-à-vis the vulnerable communities, local governments and civil society organizations.

Subsection 3 introduces a 'framework of local governance and disaster risk reduction' based upon the provisions of local government system 2001 and National Disaster Management Ordinance 2007. This framework highlights all the key actors, areas and strategic entry points that must be taken into account for a decentralized and integrated disaster risk reduction strategy. (*The* framework is *attached as a separate sheet with this report*)

The blue column titled 'Policy Space' highlights some key provisions of important international and national policy initiatives.

Subsection 1

7.1.1. A Seven-Point Agenda for Sustainable Disaster Risk Reduction

Recommendations	The CARDIAC Model (1)
Help communities, local governments , practitioners and civil society organizations including media and people's representatives understand, analyze, articulate and communicate natural and man-made hazards, vulnerabilities to these hazards, and level of response capacities	C=Communicate understanding of vulnerability 1.Understand and communicate the nature of hazards, vulnerabilities and capacities
	A=Analyze vulnerability 2.Conduct risk assessments by analyzing hazards, vulnerabilities and capacities
Adopt comprehensive programs including research, planning, advocacy and demonstration projects to understand and address root causes, dynamic pressures and	R=focus on Reverse of PAR model 3.Reduce risks by addressing root causes, dynamic pressures and unsafe conditions
Make sustainable development the goal of disaster risk reduction efforts.	D=emphasize sustainable development 4.Build risk reduction into sustainable development
Adopt livelihood-centered disaster risk reduction approaches say Disaster Resistant Sustainable Livelihood Framework (DRSL)	I=Improve livelihoods 5.Reduce risk by improving livelihood opportunities
Take disaster recovery as an opportunity to 'build back better and safer' environment.	A=Add recovery 6.Build risk reduction into disaster recovery
Focusing children, make 'DRR' part of school syllabus/training/extra-curricular activities so a new culture of safety could emerge.	C=extend to culture 7.Build a safety culture

Fig 7.1: The release of 'pressure' to reduce disasters: progression of safety (3)

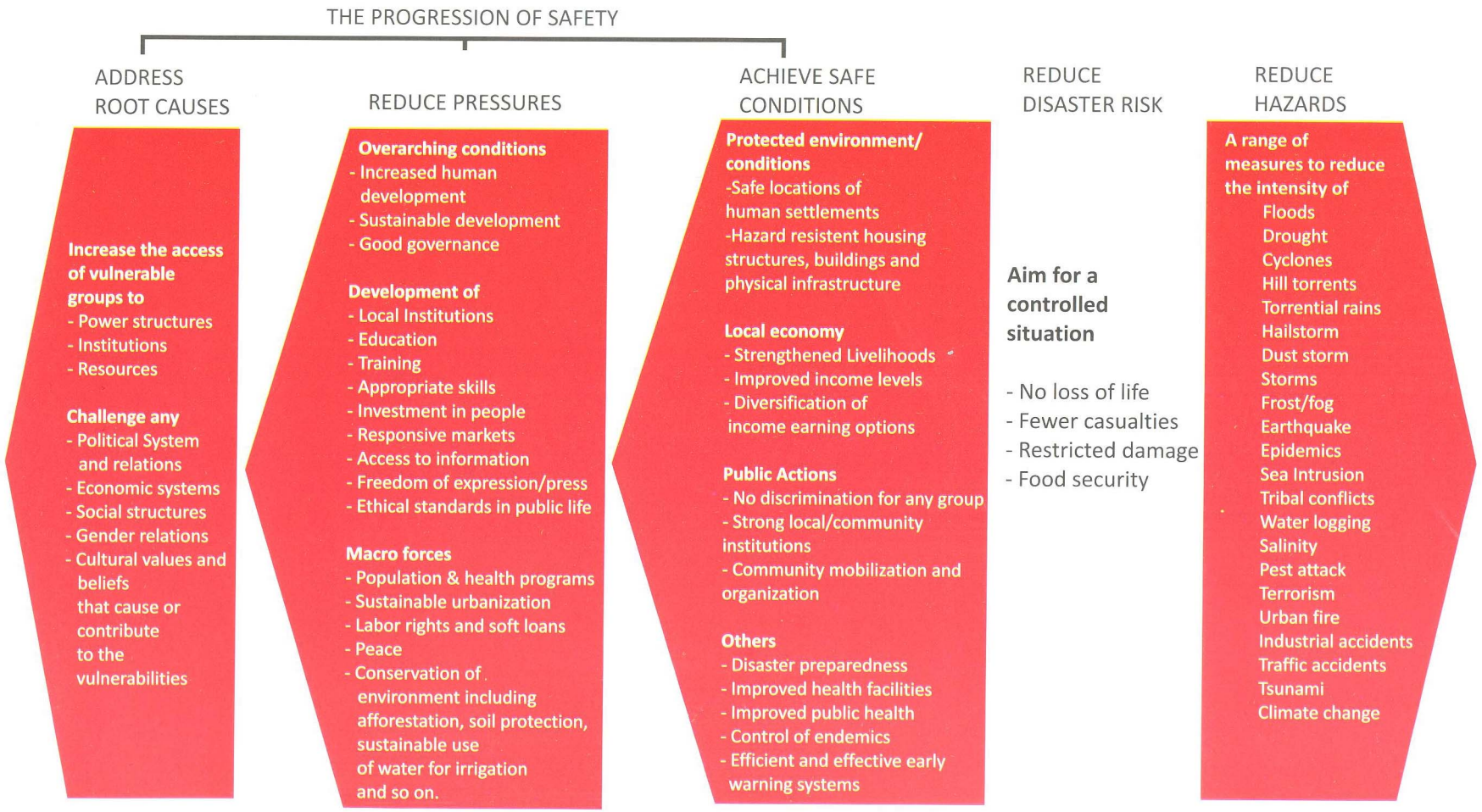
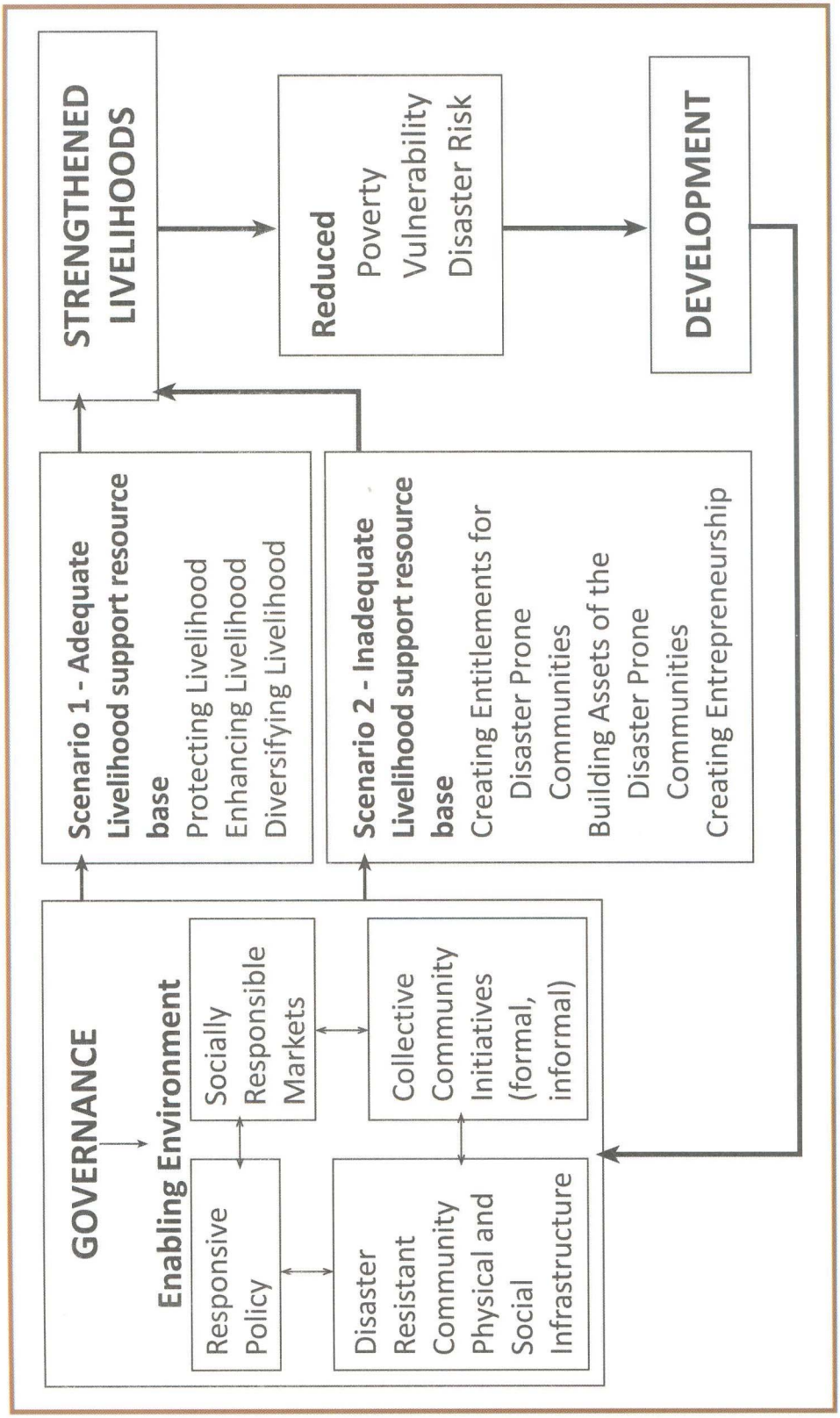


Fig 7.2: Disaster Resistant Sustainable Livelihood Framework (4)



Box. 7.1. Four Broader Planning Principles (5) for a Disaster Sensitive Development

I. Planning and development must take into account and respect the ecology of the region it is meant for.
II. The land use plans should keep environmental and social considerations above the land values and economic cost/benefit figures.
III. "Development democracy" i.e. development should benefit the majority without compromising the basic rights of minority- the majority here means those who are marginalized, poor and are resource less.
IV. Keep the development's feet clean so as to avoid disaster footprints.

Box. 7.2. The five Policy Principles

I. Disasters should be taken as a part of ecology and should be 'managed' rather than 'controlled'.
II. Disasters should be treated as issues of development and governance and the state should be made responsive, sensitive and accountable to the demands, needs and rights of disaster prone communities and areas.
III. Disaster management policies should be redirected towards poverty and vulnerability reduction instead of mere compensation and relief responses.
IV. Disaster Management strategies should integrate structural measures (construction of embankments, dykes, disaster resistant buildings etc) with non structural measures such as enhancing the entitlements and negotiating power of the most vulnerable communities and subordinate social groups.
V. Disaster prone communities should be engaged equitably into the process of disaster related decision making and development planning.

Source: Duryog Nivaran, Practical Action, RDPI (6)

Subsection 2

7.2.1.There are a number of issues which need in-depth research/investigation

This research has been undertaken in a very short span of time (the field work in all the seven districts was to be completed in one month). Due to this time constraint, deeper research or investigation was not possible. Thus a more focused and detailed research is needed, especially in the following areas:
- Non conventional hazards and risks, since these have not been documented from an angle of their being hazards and risks.
- Capacity assessment of civil society organizations.
- The views of lower tiered local bureaucracy who have a closer interaction with the people and local issues.
- Local knowledge of the communities, their technologies and coping and adaptation mechanisms need proper documentation and thorough research before designing or initiating any intervention aimed

Policy Space

Each State has the primary responsibility for its own sustainable development and for taking effective measures to reduce disaster risk, including for the protection of people on its territory, infrastructure and other national assets from the

Integrate risk reduction, as appropriate into development policies and planning at all levels of government including in poverty reduction strategies and sectors and multi sector policies and

An integrated, multi-hazard approach to disaster risk reduction should be factored into policies, planning and programming related to sustainable development, relief, rehabilitation, and recovery activities in post-disaster and post-conflict situations in disaster prone countries. *(HFA)*

at disaster risk management or risk reduction.
- This research notes that children are not mere 'minors' as they are contributing to household economies and possess very useful knowledge, experiences, concerns and suggestions for improving their lot. All these aspects need to be further researched and documented.

7.2.2. The local governments need consistent support in preparation of conventional flood fighting plans and District Disaster Risk Management Plans

All the local governments in the surveyed districts prepare and update their flood fighting plans. Despite all the shortcomings of these documents and limitations of the local government staff, it must be appreciated that the governments are managing with these instruments. These documents and local governments' practices can be taken as the foundation to build upon.

The existing planning documents and the planning exercises do not match the real spirit, concepts and demands of the planning discipline. The governments thus need support in shape of training, feedback, and working in partnership for the conception, preparation, execution, management, monitoring and evaluation of disaster risk management plans.

7.2.3. Great scope for multi stakeholder, broad based forums

The prevalent inter stakeholder misconceptions, suspicions and lack of trust is primarily the result of lack of communication and transparency. One possible option for enhancing truer people's participation and better cooperation and coordination, is to open and support avenues for public dialogue in the shape of broad based, multi stakeholder forums where all the stakeholders could share their plans, projects, and performance, and get feedback. The idea when discussed with the stakeholders got considerable appreciation. One may argue that the district disaster management authorities should be taken as these proposed forums. However, the existing shape and institutional arrangement of these authorities is more on paper than in actual existence.

7.2.4. There is a need to harness the great potential of media and civil society through extensive capacity building programs

Like the local governments, civil society organizations and media also need support in the shape of training and constructive engagement. For instance it was observed that the local press clubs do not have required facilities and journalists who are often not paid by their employers have to rely on their own resources for receiving and dispatching news items. Capacity building programs aimed at improving disaster communication can also considerably improve the way disaster events are reported. It was also observed that the misbalance between resources

An integrated, multi-hazard approach to disaster risk reduction should be factored into policies, planning and programming related to sustainable development, relief, rehabilitation, and recovery activities in post-disaster and post-conflict situations in disaster prone countries. *(HFA)*

A gender perspective should be integrated into all disaster risk management policies, plans and decision making process including those related to risk assessment, early warning, information management, and education and training. (HFA)

Cultural diversity, age and vulnerable groups should be taken into account when planning for disaster risk reduction, as appropriate. (HFA)

Both communities and local authorities should be empowered to manage and reduce disaster risk by having access to the necessary information, resources and authority to implement actions for disaster risk reduction. (HFA)

and facilities available to local government, established local organizations, and media also contributes to misconception. Through supportive efforts this misbalance can be reduced.

7.2.5. Consistent efforts are needed to promote the idea of incorporating DRR into mainstream development planning and projects

There is a need to develop SOP's and research and planning tools through which it could be ensured that while designing development schemes at district level, the concepts of disaster risk reduction are incorporated and taken care of.

7.2.6. There are possibilities of channelizing some portion of unspent CCB funds into community based disaster risk reduction by intelligent planning and building coordination mechanism with the district governments

There are few examples worth considering for a judicious use of unspent CCB funds. For example in Vehari, the district government is found to have initiated a mega eye hospital project using the CCB funds. A philanthropic organization showed its willingness to spend ten million rupees for construction of an eye hospital in the district. Some district officials advised the organization to get a CCB registered and submit the proposal to the district government. The district government is now contributing 40 million rupees as matching grant for the construction of this hospital.

7.2.7. There exists a huge scope of development work in all the sampled districts

The underdevelopment of sampled districts as shown by different development ranking criteria which this study also employed; a welcome response and urge from the local governments to work in partnership with civil society organizations that are currently working in these districts, provide an excellent opportunity to work development and DRM agenda in these districts.

7.2.8. The decision to partner with a particular district government should not solely be made on the response of the high ups (DCO or District Nazim)

A broad based and multi indicator analysis tool that incorporates vulnerability of a district, prevalence of hazards, local governments' existing and future programs, overall state of human development and potential of local civil society organizations to name but a few should guide this decision.

7.2.9. Cooperation Protocols

Besides having a cooperation protocol established with institutions like NDMA, there is a need to forge similar protocols with the local governments, relevant provincial government departments like relief commissions, PDMAs and environment protection agencies, local government and rural development

Recognize the importance and specificity of local risk patterns and trends; decentralize responsibilities and resources for disaster risk reduction to relevant sub national or local authorities, as appropriate. (HFA)

Promote community participation in disaster risk reduction through the adoption of....strategic management of volunteer resources.... (HFA)

Develop, update periodically and widely disseminate risk maps and related information to decision makers, the general public and communities at risk, in an appropriate format. (HFA)

Develop early warning systems that are people centred, in particular systems whose warnings are timely and understandable to those at risk, which take into account the demographic, gender, cultural and livelihood characteristics of the target audiences, including guidance on how to act upon warnings, and that support effective operation by disaster managers and other decision makers (HFA)

departments, and Ministry of Environment et al.

7.2.10. The local governments need technical support and if provided strategically, fruitful results can be achieved without investing heavily. For instance the existing flood fighting plans can be further improved by incorporating maps showing the number and locations of vulnerable points and settlements. The existing disaster management plans can be improved with a little effort by documenting the existing physical, social and economic state of vulnerable communities. This target can be achieved by putting in operation the provision in Local Government Ordinance which requires each union council to collect development related information. Templates for Union Administration and revenue department's field staff can easily be developed to collect the required information.

7.2.11. The decades old mindset of local government officials makes them think of ready made solutions. This challenge can be turned into an opportunity by developing district-specific development, hazards, environment and vulnerability profiles and tools for undertaking a development audit. The development audit should bring forth inventories of development assets like roads, schools, dispensaries and so on. This development audit should be supported with maps and should be made available to the public. The development audit should also help local governments develop their targets (on the patterns of MDGs) and measure their performance. The development audit will be a useful tool to assess the development density and pockets of underdevelopment within a district and hence will help in the allocation of resources and development schemes. Designing the development audit and profiling tool shouldn't be difficult as local governments hold a lot of information that needs to be reflected in the planning decisions.

7.2.12. Engaging the district governments, development guidelines can be evolved which can help in scrutinizing the development interventions for the risks they carry. Planning manuals have already been developed by the provincial Planning and Development Departments. The provisions of these manuals, the guidelines developed by NDMA for district level DRM planning and provisions of LGO 2001 can be merged to evolve district-specific DRM planning manuals.

7.2.13. There is a strong need to push the idea of integrated development planning. This is a herculean task in Pakistani context. However the difficulty of a task should not frustrate one to abandon the idea. The local governments can be encouraged to buy the idea. Further, the sustainable disaster risk reduction, as outlined by the planning principles, can not be achieved unless it is made part of overall development

Institutions dealing with urban development should provide information to the public on disaster reduction options prior to the constructions, land purchase or land sale (HFA)

Promote the inclusion of disaster risk reduction knowledge in relevant sections of school curricula at all levels and the use of other formal and informal channels to reach youth and children with information; promote the integration of disaster risk reduction as an intrinsic element of United Nations Decade of Education for Sustainable Development (2005-2015). (HFA)

Promote the engagement of media in order to stimulate a culture of disaster resilience and strong community involvement in sustained public education campaigns and public consultations at all levels of society. (HFA)

process - and this is the message of both HFA and NDMF.

7.2.14. Non government organizations should go for construction related work, especially flood management schemes, with great caution.
Hydrology related interventions should not be taken unless they are studied in a broader spectrum. The experiences of many organizations submit to this finding.

7.2.15. Harness the potential of children and youth
As the district demographic records and household survey results reveal, a large proportion of population consists of children and youth. The community survey results show that the potential of children can be harnessed. There are successful experiences where school children and community youth were engaged in Natural Resource Management projects and successful results were achieved. The idea of forming youth/children volunteer groups or task forces can be banked upon. These interventions will surely match the local governments' priorities in which improving education and health are at the top (as is claimed). The investment in and organization of children and youth task forces will contribute in improving the quality of education, the value they get out of it, and also to institutionalize and direct their potential. The children or youth task forces can be involved in improving early warning systems, plantation at the riverbanks, community work and so on.

7.2.16.Keep in sight children's economic role
The household survey results show that 25% male and 5% female children aged 11-18 are economically active. These children can be imparted with useful livelihood earning skills along with education which could contribute to reducing household poverty and thus increasing their options.

7.2.17. Adopt the Human Development Approach for enhancing people's capacities and reducing their vulnerabilities
This study strongly recommends tackling vulnerability with a human development approach i.e. increasing people's choices so they are not left with limited options of staying at dangerous sites and adopt risky technologies. This is a long term goal and will slowly but surely contribute towards sustainable risk reduction.

7.2.18. Identify and use strategic entry points for disaster risk reduction
The community survey results show key strategic entry points for risk reduction. These include improving house construction technologies, improving people's physical mobility so they could access or be accessed by the social service providers, improving health infrastructure or at least primary health care services, and improving people's livelihoods. There are available some successful case studies where these options were put in practice. For instance housing technologies in the coastal belts can be improved by introducing

Promote food security as an important factor in ensuring the resilience of communities to hazards, particularly in areas prone to drought, floods, cyclones and other hazards that can weaken agriculture-base livelihoods. (HFA)

Strengthen the implementation of social safety net mechanisms to assist the poor, the elderly and the disabled and other populations affected by disasters. Enhance recovery schemes including psycho-social training programs in order to mitigate the psychological damage to vulnerable populations, particularly children, in the aftermath of disasters. (HFA)

Promote diversified income options for population in high risk areas to reduce their vulnerability to hazards, and ensure that their income and assets are not undermined by development policy and processes that increase their vulnerability to disasters. (HFA)

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