A Livelihood Centred Approach to Disaster Management
A Policy Framework for South Asia

ITDG South Asia
Rural Development Policy Institute




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ITDG is an international development agency that promotes appropriate technology options around the world. It was begun by E.F. Schumacher, the famous economist and author of the widely read book *Small is Beautiful*. ITDG has been in operation in Sri Lanka since 1989. ITDG South Asia currently works in the thematic areas of Reducing vulnerability, Making markets work for the poor, Improving access to infrastructure services, and Responding to New technologies.

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, training and advocacy endeavours to streamline appropriate and people-centred rural development.

Duryog Nivaran is a network of individuals and organisations working in South Asia who are committed to promoting an alternative perspective on disasters and vulnerability as a basis for disaster mitigation in the region. The network's aim is to reduce the vulnerability of communities to disasters and conflicts by integrating the alternative perspective at conceptual, policy and implementation levels of disaster mitigation and development programmes in the South Asian region.

Acronyms and Abbreviations

AUDMP	Asian Urban Disaster Mitigation Program
CAPs	Country Assistance Plans
CBO	Community Based Organisation
CCBs	Citizen Community Boards
CRF	Central Relief Fund
CBDRP	Community Based Drought Response Programme
DFID	Department for International Development
DRSL	Disaster Resistant Sustainable Livelihoods
DCO	District Coordination Officer
GO	Government Officials
GSDP	Gross State Domestic Product
HPC	High Powered Committee
ICECD	International Centre for Entrepreneurship and Career Development
IFRC	International Federation of Red Cross
ISDR	International Strategy for Disaster Risk Reduction
IWMI	International Water Management Institute
JCDP	Jamuna Char Integrated Development Project
LODRR	Livelihood Options for Disaster Risk Reduction in South Asia
MDGs	Millennium Development Goals
MAF	Million Acre Feet
NGO	Non Governmental Organisation
NTFP	Non Timber Forest Produce
ODG	Overseas Development Group
OVHA	Orissa Voluntary Health Association
PDMP	Participatory Disaster Management Programme
PRI	Panchayet Raj Institutions
PPP	Pakistan Participatory Poverty Assessment
PRSPs	Poverty Reduction Strategy Papers
SAARC	South Asia Association for Regional Cooperation
UNDP	United Nations Development Programme
VDCs	Village Development Committees
VHAI	Voluntary Health Association of India
WCDR	World Conference on Disaster Risk Reduction
WDR	World Disaster Report
WSSD	World Summit on Sustainable Development

Foreword

'A Livelihood Centred Approach to Disaster Management: a Policy Framework for South Asia' captures research and operational experience gained by Duryog Nivaran network members led by ITDG South Asia over a five year period.

Research and interactions with communities, CBOs, local and national governments, international organisations and donor agencies across the region have clearly brought out the inextricable, dynamic and mutually reinforcing inter-linkages between disaster risk, poverty, and livelihoods. This work has most convincingly demonstrated that secure livelihoods can effectively address both poverty and vulnerability to disasters.

The main aims of the document are to convey the interrelationship between poverty, disaster risk and livelihoods at the conceptual and application levels, and to demand the required changes in policy, investment and practice from national governments in South Asia and international relief and development donors.

The concept and the application modalities of a livelihood centered approach to disaster risk and poverty reduction are captured in the conceptual framework entitled **'Disaster Resistant Sustainable Livelihoods (DRSL)'** which forms the central element of this document. The conceptual analysis of DRSL has been guided by DFID's Sustainable Livelihoods Framework, but has moved a step forward by applying it within the social, economic and political realities of the South Asian subcontinent with special reference to disaster risk and livelihoods.

The DRSL framework is a most timely response to the disaster risk and poverty issues the sub continent is currently grappling with. DRSL addresses the issue of 'paradigm shift' from emergency management to disaster risk management, and presents ways and means of making it a reality.

While the DRSL framework is ready for application within the current governance, institutional and policy frameworks in the sub continent, it is a framework which belongs to the future, given the development priorities identified by the Millennium Development Goals, national government and international donors alike. We hope this policy framework will lead the way towards creating a policy environment conducive to achieving disaster resistant sustainable livelihoods.

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We appreciate the contribution to the discussions on the content and the shape of the document made by Mr. N.M. Prusty, Director-Emergency and Rehabilitation, Care India, Mr. Madhukar Gupta, Divisional Commissioner, Bikaner, Rajasthan, Mr. Ali Ahamed Awan, District Nizam, Hafizabad District, Pakistan, Mr. Basil Fernando, former Director, National Disaster Management Centre, (NDMC) Sri Lanka, Mr. Manish Gangal, Regional DM Co-ordinator, and Mr. Eelko Brouwer, Regional Response Delegate, of International Federation of Red Cross and Red Crescent Societies (IFRC), New Delhi, Ms. Kiran Soni Gupta, Commissioner Command Area Development and Colonisation, Bikaner, Rajasthan.

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INTRODUCTION

Bringing Livelihood Concerns into Disaster Management Policy in South Asia

This policy document is aimed at international disaster, relief and development organisations, multilateral and bilateral donors, and national governments in South Asian Countries. It links disaster management issues with sustainable livelihoods, within the context of governance in the region.

On the basis of these linkages, the document provides policy guidelines and identifies good practice to make disaster management more effective and efficient in South Asia. It also looks for ways of optimising opportunities such as Poverty Reduction Strategy Papers (PRSPs), disaster risk reduction programmes led by the United Nations Development Programme (UNDP) and other donors' initiatives in the best interests of the region's at-risk communities.

The core objective of the policy framework is to guide the redirection of emphasis in disaster management towards vulnerability reduction instead of emergency response. The framework is based on first-hand information from a recent regional programme, 'Livelihood Options for Disaster Risk Reduction'.

Livelihood Options for Disaster Risk Reduction

South Asia is one of the most disaster-prone regions in the world. Natural hazards hit the poorest and most vulnerable hardest. Those households and communities that are worst affected have meagre assets, little power and few opportunities – in other words, their livelihoods are fragile. Those who have relatively more social and economic control over their livelihoods are in a better position to cope with such shocks and their recovery is more rapid.

Poor people suffer greater losses from a disaster, become poorer and more vulnerable, and therefore are at an even greater risk of another disaster. Poverty, vulnerability and disasters are therefore tied in a reciprocal and reinforcing relationship. Any effort to reduce vulnerability to disasters requires intervention to reduce poverty and vulnerability more generally. Disaster management should be linked to development and promote livelihood patterns, structures and opportunities that could empower disaster-prone communities to cope with hazard shocks as well as macro-economic down-turns.

A recently completed five-year regional programme, 'Livelihood Options for Disaster Risk Reduction in South Asia' (LODRR), brings this debate to the fore. The programme was co-ordinated by the Intermediate Technology Development Group (ITDG) South Asia, and supported by the UK Department for International Development (DFID).

LODRR aimed:

- To explore the impact of disasters on livelihoods across the South Asian region.
- To identify the position of disaster risk within the livelihoods of 'at risk' communities, and their risk management strategies.
- To identify livelihood options that could enhance disaster risk management capabilities.
- To assess needs and opportunities for strengthening and diversifying livelihoods
- To test and demonstrate identified disaster risk reduction options for wider dissemination.

The LODRR programme covered Bangladesh, India, Nepal, Pakistan and Sri Lanka, where a series of research projects were carried out to explore the links between disaster risk and livelihoods. The studies looked at situations where people were living with drought (Rajasthan and Gujarat in India, Putlam and Hambantota in Sri Lanka, and Tharpakar in Pakistan), floods (Chitwan in Nepal and Greater Faridpur in Bangladesh), landslides (Kandy, Sri Lanka), cyclones (Orissa, India), and arsenic poisoning of drinking water (Faridpur, Bangladesh). Subsequently, the programme also interacted with communities affected by multiple hazards in Kutch (Gujarat): earthquake, drought and cyclone.

The findings of the research reveal that most disaster-prone communities live in rural areas and urban peripheries on marginal lands and under constant threat of one form of hazard or another. Few livelihood options are available to them, and the most detrimental damages from disasters are to their livelihood assets, which are sometimes permanently weakened or destroyed. These findings challenge common perceptions of disasters, which largely focus on damage to life and physical structures.

On the basis of the research findings, and interactions with a cross-section of key stakeholders in the region,[1] the LODRR programme formulated strategies to enhance livelihood options, enable communities to cope with disaster risk better, and integrate disaster issues into local and district development plans.

Pilot demonstrations were carried out in 11 locations with communities living with drought, floods, landslides and earthquakes, to demonstrate how the capacities of communities and local/ national institutions could be enhanced to cope with disaster risk more effectively through improved livelihoods and natural resource management:

- Flood preparedness – Kamra, a village in Jhang district, Punjab, Pakistan
- Drought preparedness – Mithrio Charan, a village in Mithi, Tharparkar, Sindh, Pakistan
- Drought preparedness – Lalwadi in Tonk District, Rajasthan, India
- Drought preparedness – Surendranagar and Koyba in Kutch, Gujarat, India
- Earthquake and drought preparedness – Lakhapar and Navagam in Kutch, Gujarat, India
- Drought preparedness – Usgala, Hambantota District, Sri Lanka
- Drought preparedness – Navagattegama, Putlam District, Sri Lanka
- Landslide preparedness – two locations in Nawalapitiya Municipality Council area, Kandy District, Sri Lanka

1 i.e. regional bodies such as the South Asia Association for Regional Cooperation (SAARC), national governments, provincial governments, local governments, organisations focused on disaster management and relief, at-risk communities, the media, academic institutions and development researchers.

The results of the community-level demonstrations supported the research hypothesis: a strong livelihood assets base, and diversified livelihoods, are essential for effective disaster management.

The programme's experience strongly suggests that incorporating livelihood enhancement measures in disaster response policies is essential if effective and sustainable solutions are to be achieved.

A set of policy recommendations is therefore proposed to implement a 'livelihood centred approach' to disaster response and disaster management in the South Asian region. The document suggests five policy principles for merging disaster management and poverty reduction goals in South Asia:

1- Disasters should be looked at as a part of ecology and they should be *managed* rather than *controlled*.
2- Disasters should be treated as issues of development and governance; and states should be made responsive, sensitive and accountable to the demands, needs and rights of disaster-prone communities and areas.
3- Disaster management policies should be redirected towards poverty and vulnerability reduction instead of mere compensation and relief responses.
4- Disaster management strategies should integrate structural measures (construction of embankments, dykes, resistant buildings, etc.) with non-structural measures such as enhancing the entitlements and negotiating power of the most vulnerable communities and subordinate social groups.
5- Disaster-prone communities should be engaged equitably into the process of disaster-related decision-making and development planning, implementation and monitoring.

1. Background and Context – South Asia

1.1 Geography of South Asia

South Asia contains seven nations: India, Pakistan, Bangladesh, Nepal, Bhutan, Sri Lanka, and Maldives. It is made up of three topographic regions:

- the Himalaya, Karakorum, and Hindu Kush mountain ranges and their southern slopes
- the Indo-Gangetic plain, and
- the Deccan plateau

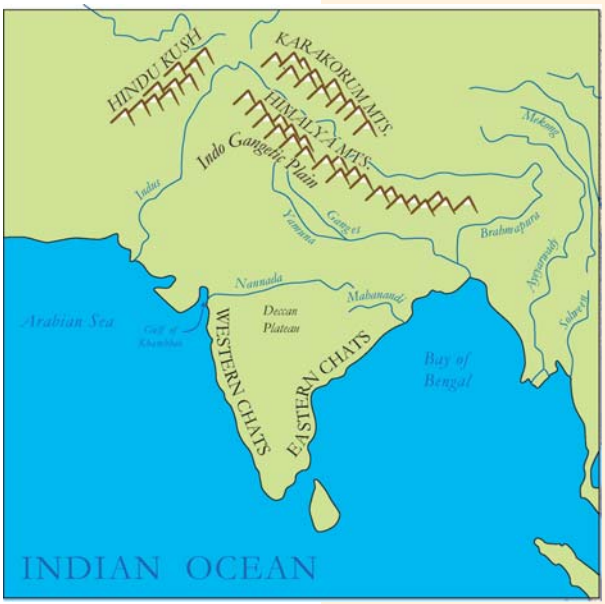


Figure 1.1: The Geography of South Asia[1]

1 Based on http://www.cet.edu/earthinfo/sasia/SAgeo.html

1.2 Population and Land Use

South Asia has an area of 4.5 million sq km and hosts 22% (1.36 billion) of the world's population, 30-40% (about 476 million) of whom live below the poverty line.[2] The area under cultivation is 204.8 million ha.

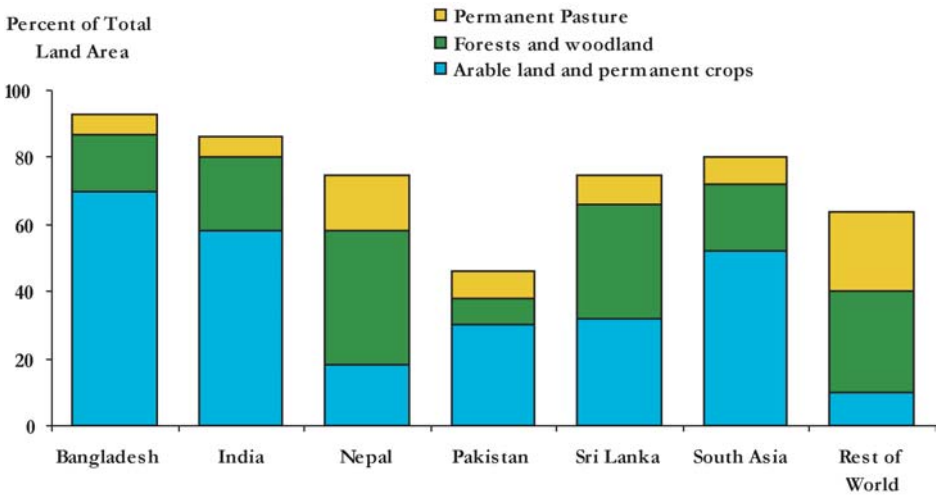


Figure 1.2: South Asian Land Use by Category[3]

Population pressure on agricultural land is considerable and continues to grow. The level of arable land per capita has declined dramatically in South Asia during the past 20 years, from 0.23 ha to 0.16 ha. The increased demand for food has largely been met by productivity increases.[4] However, some reports maintain that South Asia has exhausted its land reserves and is already farming soils that are not suitable for cultivation.[5] Severe land degradation now affects 35% of productive land.[6] As a result of population growth,

2 *Human Development Report* 1992, New York: The World Bank and Oxford University Press. Subba B, *Himalayan Waters; Promise and Potential, Problems and Politics,* 2001, Kathmandu: Panos South Asia, p.11.

3 Source: Calculated from Food and Agriculture Organization of the United Nations, World Food Model. Rome, 1993.

4 Harmsen K, 'Economic Development and Natural Resource Management in South and East Asia' www.gisdevelopment.net/proceedings/mapasia/2002/keynote/key002pf.htm

5 *World Development Report* 2003, New York: The World Bank and Oxford University Press, p. 87.

6 *World Development Report* 2003, New York: The World Bank and Oxford University Press, p. 65.

inappropriate land use and the absence of land zoning and effective regulation, large areas of the sub-continent are coming under the threat of prolonged dry periods and desertification, and the incidence and severity of seasonal and flash floods is increasing.

Box 1.1: Why People Live on Fragile Lands

Half a billion people in developing countries live in arid regions with no access to irrigation systems. Another 400 million are on land with soils unsuitable for agriculture, 200 million in slope-dominated regions, and more than 130 million in fragile forest ecosystems.

These areas, covering 73% of the earth's land surface, have limited capacity to sustain growing populations. They are particularly vulnerable to degradation, erosion, floods and landslides.

East and South Asia have the most people on fragile lands. Even now, rural population growth rates remain higher in countries where 30% or more of the population live on fragile lands. Many work such land because of overcrowding on better land. Refugees and displaced persons have also been forced there, because they have lost their homes – to floods, fires, hurricanes, conflict, civil war, or high urban unemployment.[7]

7 *World Development Report* 2003, New York: The World Bank and Oxford University Press, p. 61.

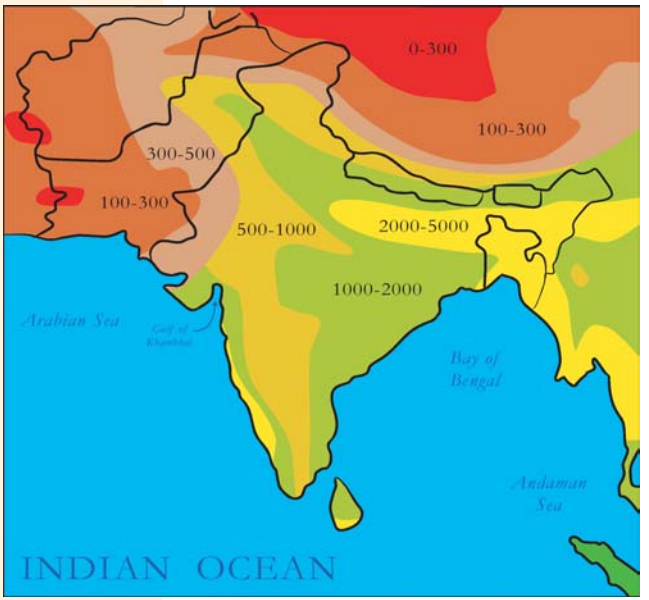


Figure 1.4: Rainfall Patterns in South Asia[8] (mm)

1.3 Climate

South Asia's climate encompasses arctic temperatures in the high mountains, a temperate environment in the foothills and on the Indo-Gangetic plain and tropical conditions on the Deccan plateau.

The climate is influenced by the monsoon (seasonal wind), which brings alternating periods of wet and dry weather. In summer, monsoon winds primarily blow in from the sea and bring moisture: this period is called the wet monsoon. During the winter, winds blow out from the centre of the continent towards the sea and convey much less moisture: this is the dry monsoon.

The total rainfall varies widely in different parts of the region, from an annual average of over 5,000 millimeters in parts of North-East India to almost zero in the arid, semi-desert north-western part of the basin.[9]

1.4 Water Resources

The region has a network of rivers and streams, supplied by rainfall and snowmelt. There is a wide fluctuation in river flows during wet and dry seasons. The peak is in the monsoon and during snowmelts (July-September), while the flows recede in the dry season, particularly in winter.

8 Based on http://www.harpercollege.edu/mhealy/g101ilec/sasia/ssd/ssmon/ssmonfr.html

9 Subba B, 2001, *Himalayan Waters; Promise and Potential, Problems and Politics*, Kathmandu: Panos South Asia, p 84.

The South Asian region has a good sweet-water aquifer. In addition, it has a large brackish ground water profile. In most countries, it is common to supplement canal-water irrigation through subsurface water supplies, pumped through shallow wells or deep tube wells or turbines for industrial, potable and agricultural purposes, by public and private sectors.

Water recharging is important, especially in the arid and semi-arid areas where the water table has been lowered substantially, in many cases to 40-50 feet deep. In some places, farmers have been drawing water from depths of 800-1000 feet.[10]

South Asia has water scarcity amidst abundance. Water use is distributed between agriculture (94%), industry (3%) and domestic use (2%).[11] 40% of the cropped area is irrigated and 60% is still rain fed.

The World Commission on Water predicts that water use will increase by 50% across the globe over the coming 30 years, and that four billion people – half of the world's population – will live under conditions of severe water stress by 2025.[12] According to the International Water Management Institute (IWMI), water withdrawals already exceed environmental limits due to over-extraction creating stress on water resources in Pakistan, and will exceed limits in India by 2020. Irrigation already exceeds recharge rates in India's northwest plains. Conflict over land and water is also expected to worsen in South Asia.

10 Hanif M, *Management of Water-Resources In South Asia* http://www.comsats.org.pk/latest/m_hanif.pdf

11 Subba B, *Himalayan Waters; Promise and Potential, Problems and Politics*, 2001, Kathmandu: Panos South Asia, p. 15.

12 *World Development Report* 2003, New York: The World Bank and Oxford University Press, p. 86.

1.5 Forests and Biodiversity

Forests are important for timber and other forest products, but also as storehouses of biodiversity, for protection of the soil and the storage of water, and many other purposes. The net annual loss of forest in South Asia is still 889 sq km per year. The extent of forest land per person in the region (about 0.07 ha) is one of the lowest levels in the world.[13]

South Asia region is highly disaster prone. A combination of factors such as geographical placement; topography; a wide range of climatic conditions; and the social and economic dynamics between the growing population and land, forest and water resources, create conducive conditions for the presence of a variety of hazards and vulnerable communities in the region.

13 *World Development Report* 2003, New York: The World Bank and Oxford University Press.

2. HAZARDS AND DISASTERS

2.1 Impact of Disasters

The South Asian region is extremely prone to a variety of natural hazards which include floods, drought, earthquakes, cyclones, landslides and glacial bursts. These affect most communities living in vulnerable locations and fragile ecologies.

An estimated 97% of natural disaster related deaths each year occur in developing countries.[1] Besides the loss of human lives, such hazards bring extensive damages to standing crops, livestock, housing, roads and infrastructure, and therefore to the livelihoods of the people. These damages translate into colossal economic and social costs that reach far beyond the immediate destruction they cause. Disasters decrease

1 *World Development Report* 2000-1, New York: The World Bank and Oxford University Press, p.170.

growth prospects, increase unemployment and play havoc with the lives of the poor and vulnerable.

2.1.1 Human Impact

As many as 55,000 people on average are killed and 7.2 million affected each year by disasters and conflicts in South Asia. Between 1993 and 2002, 97,010 people died from natural disasters in South Asia (15.5% of the world total). In India and Bangladesh over 802 million and 73 million people respectively were affected by disasters during this period.

Table 2.1 Human Impact of Natural Disasters in South Asia[2]

Country	No. of people killed 1993-2002	No. of people affected 1993 -2002	No. of people killed 2002	No. of people affected 2002
India	77,125	802,063,399	3,185	342,021,333
Pakistan	6,037	8,989,631	291	192,343
Nepal	3,894	1,147,785	633	266,072
Sri Lanka	590	4,675,163	25	907,100
Bangladesh	9,132	73,368,083	1,232	1,671,640

2.1.2 Economic Impact

The economic cost of a natural disaster can be massive. For example, in 2001 the estimated output losses in the state of Gujarat following the Bhuj earthquake amounted to 2-3% of Gross State Domestic Product (GSDP) and forced a change in federal fiscal planning. In the aftermath of the event, which caused losses estimated at Indian Rs. 212,620 million,[3] the Government of India imposed an additional surcharge of 2% on regular taxes paid to the government to finance the losses due to the earthquake.

2 Source: *World Disasters Report 2003,* Geneva, International Federation of Red Cross and Red Crescent Societies
3 http://gujarat-earthquake.gov.in/ (1 US Dollar: 47.00 Indian Rupees)

The drought in Rajasthan in 2001-2 affected 40 million cattle and a cropped area of 89.47 lakh ha. The loss of agricultural production was estimated at 12.1 lakh tonnes of food grains and 2.04 lakh[4] tonnes of oil seeds. The drought resulted in the Central Relief Fund having to release Rs 168.18 crores[5], which was Rs 12.93 crores more than the share allocated to the state of Rajasthan for 2000-2001.[6] Floods in Pakistan during the decade 1991 to 2001 caused an estimated damage of over Rs 78,000 million to property.[7]

The most expensive disasters of the 20th century in South Asia were in India and Bangladesh. Cyclones, floods and storms alone caused losses of US $20 billion in India and Bangladesh during the period from 1988 to 1998[8].

2.1.3 Implications for Livelihoods

Usually, macro-economic indicators are employed to assess the economic impact of disasters. Damages to the livelihoods of household economies are not recognized in conventional disaster damage estimates.

Poor and vulnerable communities living on marginal resources lose their livelihood resource base in the wake of disasters. For example, livelihoods suffer from damage to agricultural plots and production tools, loss of seeds and death of livestock. Irrigation structures and wells are damaged by floods, landslides and earthquakes, while prolonged drought depletes water tables, bringing the threat of salinity. Family savings in the form of cash, household utensils and jewellery are spent to recover from the immediate impacts of disasters. Once such damages are caused to the livelihood resource base, livelihood recovery becomes extremely difficult. There are many instances of people migrating or becoming destitute owing to collapse of livelihoods in the aftermath of disasters[9].

4 Hundred thousand Rupees
5 Ten million Rupees
6 http://www.un.org.in/UNDMT/states/rajas/statsdata.htm
7 http://www.pakistan.gov.pk/water-power-division/informationandservices/flood-08.html (1 US$: 60.00 Pakistani Rupees)
8 EM-DAT; The OFDA /CRED International Disaster Data base, Brussels: Universite Catholique de Louvain, http://www.em-dat.net/
9 See Kafi SA, *Disaster and Destitute Women, twelve case studies,* Bangladesh Development Partnership Centre, Dhaka:1992
Wiest RE, A comprehensive perspective on household, gender, and kinship in relation to disaster *in 'The Gendered Terrain of Disaster- Through Womens Eyes'* Enarson E, Hearn Morrow B, Praeger, 1998, p 69
ITDG Bangladesh, 'Supporting Communities affected by river erosion in Gaibandha district', unpublished report, 2004

2.2 Hazards

2.2.1 Tropical Cyclones

Tropical cyclones occur frequently in South Asia. Some 15% of the world's tropical cyclones originate in the Bay of Bengal and cause severe flooding and devastating tidal surges along the East Coast of India and Bangladesh. South Asian countries have extensive coastlines: 580 km in Bangladesh, 7000 km in India, 1046 km in Pakistan, 644 km in Maldives and 1585 km in Sri Lanka. Low-lying islands and coastal areas everywhere are exposed to flooding and storm damage: Bangladesh is particularly at risk. Salt water intrusions, and more severe dry seasons, reduce freshwater availability in coastal areas.

Cyclones cause heavy damages to the livelihoods of coastal communities. The 1991 cyclone in Bangladesh caused economic damages totalling US$ 1.78 billion. A cyclone that hit the coastal districts of Thatta and Badin in Sindh Pakistan in May 1999 wiped out 73 settlements, 328 people lost their lives and 11,000 cattle perished. It destroyed 1,800 small and big boats and partially damaged 642 boats, causing a loss worth 380 million Pakistani Rupees. The losses to infrastructure were estimated at Rs750 million.[10]

The 1999 cyclone in Orissa, India affected 15 million people. The official number of deaths was nearly 10,000. It destroyed livelihoods by killing 315,886 cows and bullocks, 316,372 goats, sheep, and pigs, and 1,883,468 poultry. The cyclone caused heavy damage to standing crops: 13 lakh ha of kharif paddy crop, 2.5 lakh ha of other crops and 1.76 lakh ha of vegetables and fruits were damaged. Due to salination caused by the tidal waves, much of the agricultural land has been rendered infertile.[11]

10 http://www.sindh.tk/articles/migration.html
11 http://www.rrlbhu.res.in/envis/Super_Cyclone.htm

2.2.2 Floods

Flooding is identified as the single most destructive type of natural disaster that strikes humans and their livelihoods around the world.[12] All South Asian countries are prone to severe flooding, which is a seasonal phenomenon for riverine communities. UNDP (2004)[13] identifies 147 countries with populations exposed to floods: India, Bangladesh, and Pakistan are amongst the five countries with the highest annual average numbers of people physically exposed to floods. This is owing to large populations living in extensive river floodplains.

- *India.* In India, 40 million hectares of agricultural land are at risk from flooding. The average annual damage has been estimated at US$ 240 million. The Central Water Commission of India has conceded that 32 million out of 40 million ha of flood-prone land could reasonably be protected.[14]

- *Bangladesh.* In Bangladesh, 80 million people are vulnerable to flooding each year. In 1998, 67.9% of the total land area was affected by floods causing US$ 2 billion in financial losses and killing 1,050 people. In 1988, more than 2,300 people died in floods that caused a loss of US$ 330 million.[15] A recent study predicts that by 2030 an additional 14.3 percent of Bangladesh will become extremely vulnerable to floods caused by increased rainfall.[16] A 10-centimetre increase in sea level would permanently cover 2% of the country.

12 United Nations, Guidelines for Reducing Flood Losses, 2004, www.unisdr.org

13 UNDP, '*Reducing Disaster Risk: A challenge for development*3', February 2004, Geneva: Bureau of Crisis Prevention and Recovery UNDP, pp. 40-41.

14 Singh NJ, 'Floods in South Asia, India country profile', in *Disaster Dispatch* Between Development Devil and Deep Flood waters ; South Asian perspectives on flood preparedness, Special Issue, December 2003, Islamabad, Rural Development Policy Institute for Duryog Nivaran, p6

15 Rahman A, 'Flood Forecasting Warning and Response in Bangladesh' in *Disaster Dispatch*, Between Development Devil and Deep Flood Waters; South Asian perspectives on flood preparedness, Special Issue, December 2003, Islamabad, Rural Development Policy Institute for Duryog Nivaran, p8

16 http://wbln1018.worldbank.org/sar/sa.nsf/Attachments/ch2/$File/ch2.pdf

- *Pakistan.* In Pakistan in 1992, floods killed 1,008 people and affected 13,208 villages; 15,140 sq miles were submerged; damages amounted to US$ 1,400 million. In 1998 floods cost Pakistani Rs 1,844 million and 7,545 villages were affected. The floods in Dhadhar, Nulla Leh and Badin during 2002-2003 caused enormous loss of life and livelihoods among people living in fragile mountainous and low-lying areas. During a flood in 2003 in Badin, a coastal district of Pakistan, wooden houses collapsed, livestock died, farmland was submerged by the sea water, crops of rice, chilli, bananas and sugarcane were destroyed, and fishing nets, boats and engines were drowned. The local fishing communities had to largely rely on meagre relief resources that could not restore their livelihoods base.

- *Nepal.* In Nepal, apart from the great flood disaster of 1993 in which 1,336 people lost their lives, records from 1995 to 2000 reveal that on average 250 people lost their lives annually in water-induced disasters. From 1983 to 2001, more than 6,000 lost their lives to floods and landslides.[17]

- *Sri Lanka.* In Sri Lanka during the 2003 floods which affected six districts in the South and South West of the country, there were more than 300 deaths and a further 700 people went missing. The number of families affected was estimated at 162,000, and 120,000 people had to be evacuated to schools and temples. Thousands of houses and farms were destroyed or damaged, large numbers of livestock were lost, power and communication lines were cut and many roads became inaccessible.

Floods have a direct impact on the livelihoods of affected communities. They break communication networks, disconnect communities from markets and neighbourhoods, destroy standing

17 Goutam NP, in *Disaster Dispatch* Between Development Devil and Deep Flood Waters; South Asian perspectives on flood preparedness, Special Issue,December 2003, Islamabad, Rural Development Policy Institute for Duryog Nivaran, p 10

crops and kill livestock. Most crop cultivation (rice, wheat, sugar cane) is in river basins and flood plains, which suffer damage from river erosion and floods every year. The cost of land reclamation rises after floods, making small farmers the worst-affected as they have to find additional resources to bring their lands back under cultivation. In severe floods, mud houses and cattle sheds are washed away, leaving flood victims shelter-less for months and even years. The recovery of livelihoods after floods becomes an expensive venture for the vulnerable and sometimes forces household members to migrate to urban areas to work in order to meet their households' needs.

2.2.3 Drought

Drought is an intermittent problem in all the countries of the region. Droughts affect water sources, leading to severe water and food scarcity. Because of lack of water for irrigation, crops perish, resulting in a fall in production and consequent loss of income and livelihoods to farmers. This year India and Pakistan are entering their fifth consecutive year of drought. Over the last 125 years, moderate to severe droughts have occurred in the two countries in at least 40 years. One thousand sq km of land (about the size of Mumbai) are declared drought-affected every year in India.[18] The Indian areas and states most vulnerable to drought are western Rajasthan, eastern Rajasthan, Gujarat, western Utter Pradesh, Tamil Nadu, Kashmir and Andhra Pradesh.

In Gujarat, a loss of Indian Rs 40 billion was reported during the drought of 2000. The worst hit are farmers whose livelihoods are solely dependant on subsistence farming. A major drought during the main cropping season (e.g. the droughts in Rajasthan in India and Balochistan and Thar in Pakistan in 2001, and in six districts in the Dry Zone in Sri Lanka in 2002) can destroy the year's crop production.

18 Singh K and Vishwa B, 'Incidence, Impacts, and Management of Droughts in India: An Overview', 2002, paper presented at the Saci Waters Workshop, Sustainable Livelihoods and Drought Management in South Asia: Issues, Alternatives and Futures, Oct 2002, Islamabad, Pakistan

Bangladesh, best known as a flood-prone country, also suffers from drought annually, especially in the western districts. In 1983, 20 million people were affected. The country experienced consecutive droughts in 1978 and 1979, 1981 and 1982, and 1994 and 1995. The 1973 drought was labelled 'the worst in recent history,' and the 1994-95 drought 'the worst in this century'. The total loss of rice production due to drought in 1982 was 52,896 metric tons. This accounted for about 41% of the total damage caused by all types of environmental hazards (cyclones, hailstorms, heavy rains, floods, and drought) that occurred in that year. During the 1973-87 period, crop losses to drought were almost as severe as the losses attributed to floods. About 2.18 million tons of rice were damaged due to drought in the above period. The corresponding flood loss was 2.38 million tons.[19]

In Sri Lanka, one third of the land area is in the Dry Zone, where seasonal and long-term droughts are common. In 2001 approximately 370,000 families in the Dry Zone were affected by drought. In 2004, 14 districts were affected and an estimated 80,000 ha of crops were reported to be destroyed.[20]

Crop failures caused by droughts affect economic life, intensifying the suffering of small farmers. They lead to deterioration in people's health, add to debt burdens, and compel locals to sell livestock, ornaments, utensils and other individual assets at give-away prices. Drought has also led to increased drop-out from schools, and has caused social unrest and increased violence and family tensions over sharing of resources. Drought often leads to widespread migration as many male members of households take their cattle to find other pasture, leaving women behind to deal with household needs and emergencies[21].

19 Paul BK, 'Quick response report #76 Farmers' and public responses to the 1994-95 drought in Bangladesh: a case study' http://www.colorado.edu/hazards/qr/qr76.html#4

20 www.divaina.com, 18-08-2004

21 ITDG South Asia, 'Research reports from Rajasthan, Gujarat, India, Tharpakar Pakistan, Hambantota Sri Lanka carried out for the LODRR programme', 2000-2001

2.2.4 Seismic Activity

Many countries in the region, especially India, Pakistan and Nepal, suffer from periodic earthquakes. The devastating earthquakes in 2001 in Bhuj (Gujarat, India) and Thar (Sindh, Pakistan) are recent examples.

The Gujarat earthquake in 2001 left 20,000 people killed and 12,000,000 homes destroyed. An estimated 100,000 individuals lost their livelihoods, and economic activity worth Rs 1,500 crores was lost.[22] The earthquake damaged irrigation systems, bore wells and power supplies. Livestock suffered greatly and milk production fell, depriving families of a valuable source of nutrition and cash income. The impact of the earthquake had serious implications for salt workers: cracks in the earth and the shock of the earthquake itself affected the crystallization process in the large salt pans, and many of the bore wells and pump sets were damaged. Handicraft production also declined significantly since workshops were lost and market links were snapped. All this had a drastic effect on livelihoods.

2.2.5 Landslides

Landslides, which are common in the hills and mountainous areas of the region, occur frequently in India, Nepal, Sri Lanka and Pakistan. Although topography is the primary cause, human activities such as deforestation, cultivation and construction destabilise already fragile slopes. In India landslides in 1995 and 1998 affected 1,100,000 and 200,000 people respectively.[23] As many as 12,000 landslides occur in Nepal each year as a combined result of heavy rainfall, land use patterns and seismic activity.

Landslides also damage human settlements, agricultural lands, natural resources and economic infrastructure. The degree of impact of landslides on different sectors varies. People living in rural areas are mostly affected by loss of their cultivated lands and property. In the estate sector in Sri Lanka (tea and rubber plantations) daily wage earners are affected by loss of livelihood opportunities. Landslides often deny access to the workplace for a long time, and cause damages to workplaces and/or estate housing. In urban areas, the number of fatalities and cost of damages may be much higher due to the higher density of population and physical structures.

22 'Disasters and Livelihood Options in India, *Disaster Dispatch*, February 2002, Islamabad: Rural Development Policy Institute for Duryog Nivaran, p.15.

23 http://www.em-dat.net/disasters/Visualisation/profiles/natural-table-emdat_disasters.php?dis_type=Slides&Submit=Display+Disaster+Profile

2.2.6 Urban Disasters

South Asia is experiencing a major demographic transition. During the last fifty years, India's total population has more than doubled, while the urban population has grown by more than five times. In 1996, the urban population in Bangladesh was 23 million. By 2020, it will increase to 58 million. The urban population in Nepal, during the same period, will grow from 2.6 million to 7.7 million, and in Sri Lanka it will double to more than 8 million.[24]

In South Asia more than half of the urban population is living in illegal or un-serviced neighbourhoods. Some 50-60% of residents in Delhi and Mumbai live in informal settlements.[25] Poor or non-existent sanitation, high unemployment and under employment, deficient health and education services, insecure land tenure, crime and violence and other factors configure everyday risk in urban areas.

The increased incidence of floods, flash floods, landslides, erosion and debris flow is being generated by the urbanization process as the city configures its own risk scenario.[26] In Calcutta and Baroda, a project by the Asian Urban Disaster Mitigation Program has identified numerous manufacturing and hazardous material storage sites that magnify natural hazards in densely populated urban areas.[27]

Hazard-prone locations in urban centres are often inhabited by the poor to gain greater accessibility to urban services and work opportunities, even at the cost of high risks. In central Delhi a squatter settlement in the floodplain of the Yamuna River has been inhabited for more than 25 years. It gets flooded annually, but this is seen as the price to pay for living in the centre of the city at low cost.[28]

24 Making Cities Work, South Asia Brief, http://www.makingcitieswork.org/urbanWorld/south-asia
25 http://unhabitat.org/habrdd/global.html
26 Zevallos O, 'Cities at Risk: Environmental Degradation', in Fernandez MA *Urban Risk and Disaster,* 1996, Lima: La Red.
27 http//www.adpc.net/audmp/India.html
28 Sharma A. and Gupta M. 'Reducing Urban Risk," India, TDR Project Progress Report', 1998, Delhi: SEEDS India.

Migrants to the cities are often at high risk from disasters. The functioning of property markets and inability of land-use planning to cope with rapid population growth means migrants are frequently settled in hazard-prone locations. In South Asian countries city governments have often proved ineffective in regulating the process of urban expansion through land-use planning and building codes. Unregulated low income settlements, where land values are lowest, often occupy the most hazard-prone locations.[29]

The meagre livelihood opportunities of the urban poor are often based on casual labour, and there is no protection against loss. Floods, cyclones and earthquakes damage the fragile slums and dwellings, which are often also workplaces for home-based wage activities. After disasters, there are often long gaps before livelihood opportunities are re-constructed.

2.2.7 Climate Change

Global warming is projected to raise sea levels by as much as 0.8 metres this century, and is therefore particularly threatening to coastal areas (where most of the mega-cities in developing countries will be located by 2025); heavily populated areas of low lying land in Southern Bangladesh, and low lying stretches of the coastline in Pakistan are under threat. Global warming is also causing more extreme droughts, flooding and storms. This in turn is contributing to further deterioration of environmental resources, particularly land and water.

Climate change increases the uncertainty faced by vulnerable communities through a widening range of future climate variations and hazards. This is not a hypothetical risk to be addressed several decades into the future, but a real increase in risk that is presently threatening lives and livelihoods. As local climate becomes more unstable, farmers have greater difficulty knowing what and when to

29 UNDP, *Reducing Disaster Risk: A challenge for development*, February 2004, Geneva: Bureau of Crisis Prevention and Recovery UNDP, www.undp.org/bcpr, p. 60.

plant and harvest. The risk of crop, and hence, livelihood failure increases. While rural communities may have adapted their livelihoods over centuries and developed sophisticated coping strategies to deal with local risks, unexpected hazards such as un-seasonal storms or drought invalidate those strategies and increase risk.[30]

Weather changes related to global warming are already creating flash floods and drought conditions affecting the livelihoods of the poor, impacting on their food and water security. In Pakistan droughts experienced in recent years in Baluchistan and Sindh provinces are reported to be the worst in the country's history. Flash floods in Sri Lanka in 2003 affected the infrastructure and crops in 6 administrative districts.

2.2.8 Development-Induced Disasters

Recent studies have termed natural disaster as a *cause* and *product* of failed development. UNDP (2004) highlights the point that while disasters impact on development, development itself shapes disaster risk. Countries with similar patterns of natural hazards have widely varying levels of disaster risks, and these risks have been shaped through development plans and processes.[31]

There is an emerging trend of development-induced disasters in South Asia. For instance, there are many situations where a combination of ill-planned human settlements, road and railway construction, and apparently well-intentioned flood control measures have made the impact of floods more severe and longer-lasting.

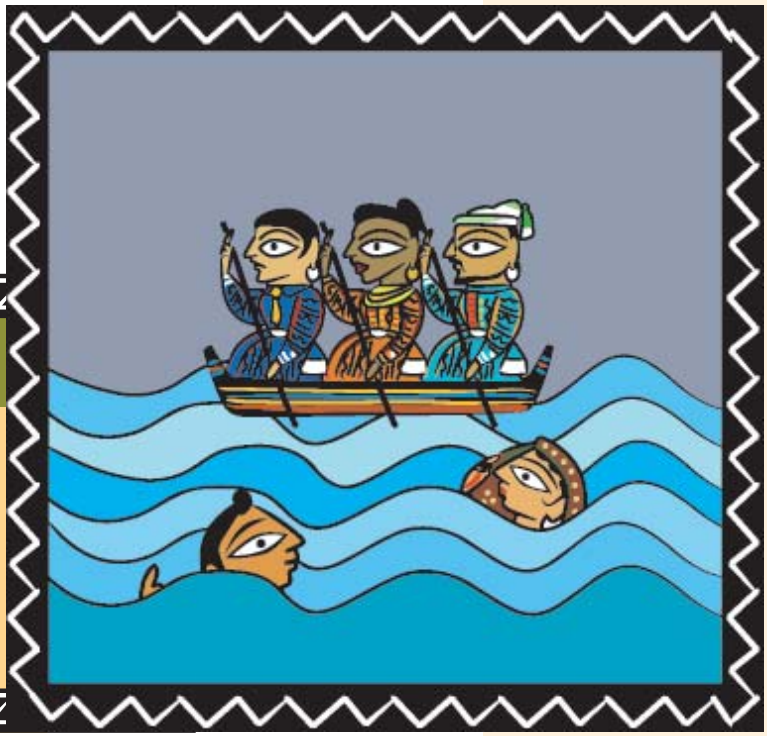
A fact-finding team sent by the Indian government to investigate a massive flood in Assam in the mid-1980s, reported that 'the drainage of the valley is seriously hampered' by highways, railways, bridges and human settlement in areas drained by the Brahmaputra and its tributaries.[32]

Mangrove areas in Bangladesh have been cleared to expand shrimp culture. As a result, the risk and exposure of the coastal communities to cyclones, and storm surges has increased.

These examples indicate that the development choices made by countries, communities and individuals can pave the way for unmediated disasters. Chapter 3 presents a detailed discussion of this issue.

30 ibid. p. 71.
31 ibid. p. 9.
32 Subba B, *Himalayan Waters, Promise and Potential, Problems and Politics,* 2001, Kathmandu: Panos South Asia, p.147.

3.
SOCIAL DIMENSIONS OF DISASTERS



3.1 Poverty-Vulnerability Nexus

Disasters are a result of natural hazards impacting on people who are vulnerable – physically, economically and socially. Analysis of the causes of disasters clearly indicates that the root causes of vulnerability to disasters are the social and economic processes leading to poverty.

Some major social and economic linkages associated to the occurrence of disasters in South Asia are discussed in the sections below.

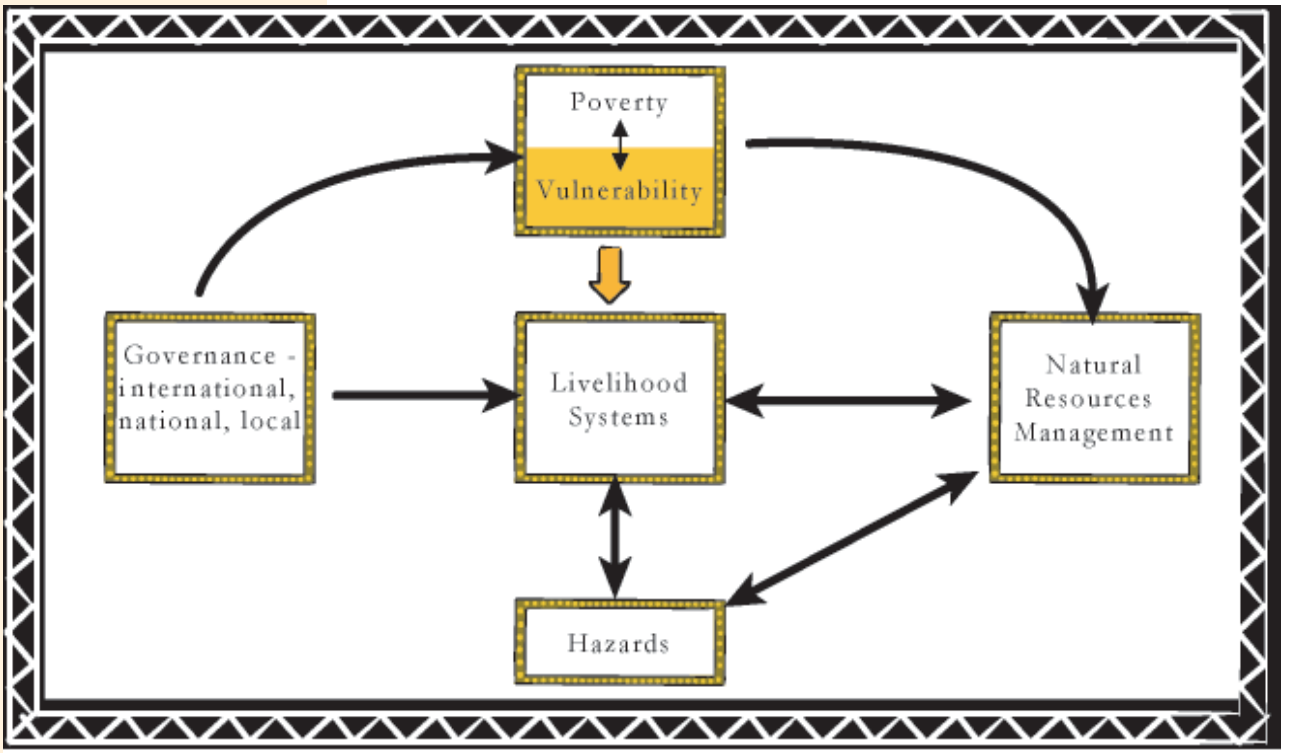


Fig. 3.1 Dynamics of poverty, livelihoods and disasters

South Asia is one of the poorest regions in the world: it hosts nearly 40% of the world's poor people. More than one third of its 1.4 billion people live on less than US$1 a day. In 2000 the total population of South Asia was estimated as 1,354.5 million, out of which 330 million people (24.4%) were living on fragile lands.[1]

Most of the poor live in semi-arid areas, deserts and flood-prone areas, depending on meagre resources and subsistence economies. In the absence of social protection, savings and access to insurance they have few options to build their resilience against hazards and seasonal shocks.

1 The Centre for International Earth Sciences Information Network (CIESIN) quoted in World Development Report, 2003 (World Bank): 61

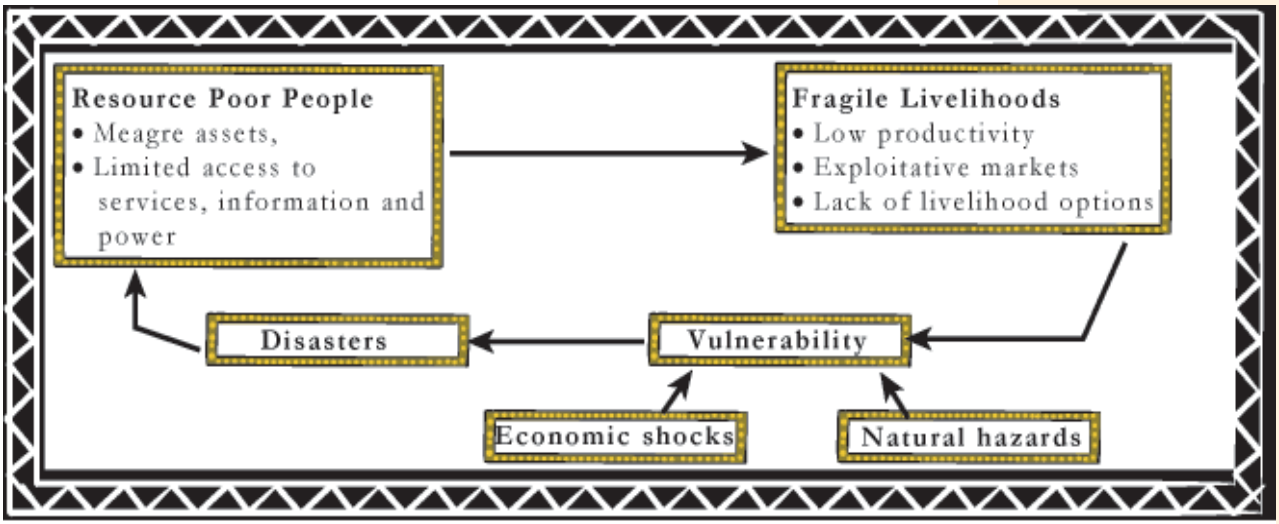


Fig 3.2 Poverty- Vulnerability Nexus

Box 3.1: The Hazard-Poverty Cycle

Poverty drives people to live in areas such as flood plains, mountain slopes and arid areas where disasters strike more often. The LODRR research studies (see Introduction for details) showed that vulnerabilities in disaster-prone communities were a structural outcome of the existing land ownership patterns.

For example, in Kot Murad, a flood-prone village in Pakistan where farming is the main source of livelihoods, 87% of households are landless. In Sri Lanka, the main source of income during normal years for 72% of the population in drought-prone Andrawewa and 56% of the population in Mahameddawa is subsistence agriculture. The saltpan workers in Kandla, India, were not left with any livelihoods opportunity after the Gujarat cyclone in 1998.

During the severe flash flood of 1993 in Nepal an embankment on the Rapti River was damaged and water gushed into the buffer zone communities neighbouring the Chitwan National Park. Flood waters brought an influx of debris which damaged the lands of farmers living downstream. Caught in the web of disaster-induced poverty they had to sell their lands to wealthy town dwellers at give-away prices. Once the emergency was over they were left with no land or livelihood option and, in the absence of any other income-earning opportunity, they had to start working on the lands they had sold as wage labourers or sharecroppers.

3.2 Natural Resources-Livelihood Nexus

In South Asia, the natural resource base which supports the livelihoods of a sizeable population is trapped in a vicious cycle. There is a clash between current consumption for immediate livelihood support needs and conservation and preservation for the future.

For instance, at the local level forest areas are cleared in order to meet the immediate needs for habitat and food production. Input-intensive farming practices, largely influenced by the green revolution regimes, utilise ground water heavily, contributing to the alarming rate of depletion of ground water levels across the subcontinent. The continuous and extensive use of chemical fertilisers and pesticides pollutes rivers, lakes, canals and other sources of fresh water. The continuing process of deforestation, ground water depletion, soil erosion and destabilising of slopes creates conditions for intensified drought, floods, landslides and other hazards.

Fig 3.3 Natural Resources-Livelihood Linkages

At the macro level, national governments are pressurised to create new settlements, job opportunities and infrastructure, expand the area under agricultural production and invest in rapid industrialisation. Again, conservation and the efficient use of natural resources clash with immediate demands for consumption. Further, there are global pressures to replace traditional food crops by cash crops, and to expand the area under cultivation systems designed for high productivity. These policies are rapidly contributing to degradation of natural resources and intensified conditions for disasters.

3.3 Livelihoods-Disaster Nexus

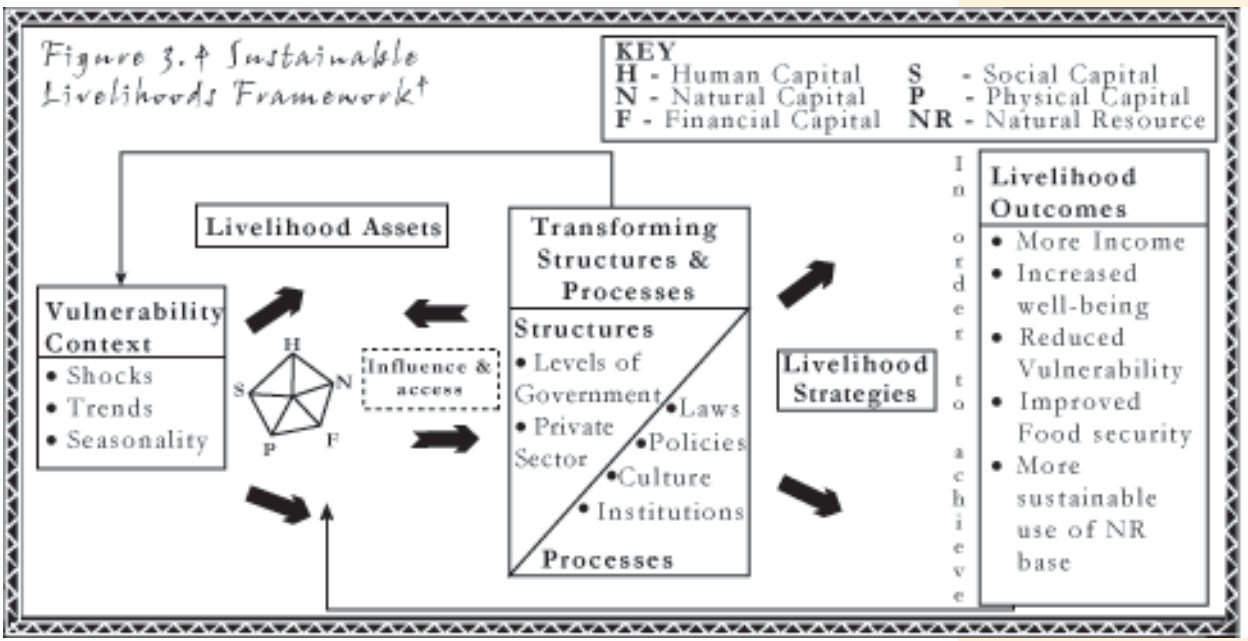
3.3.1 Overview

Poor people's livelihoods depend on their assets. There are five categories of livelihood asset: [2]

- Human – e.g. skills, physical strength, health
- Social – e.g. social support systems such as the family and kinship, access to political power
- Natural – e.g. land, water
- Physical – e.g. production tools, livestock, infrastructure
- Financial – e.g. credit, capital, insurance

The level of access to these assets determines the extent to which a particular community group, household or individual is vulnerable to external trends, shocks and seasonality. There are institutions, policies and legislation that determine access to and use of these assets.

Operating within the vulnerability context, using their livelihood assets and under the considerable influence of transforming structures and processes, poor people choose and implement livelihood strategies,[3] as presented in the illustration below.



2 *Sustainable Livelihoods Guidance Sheets* (1999-2000), Department for International Development (DFID) www.livelihoods.org
3 Twigg J, *Sustainable Livelihoods and Vulnerability to Disasters,* Disaster Management Working paper 2/2001, Benfield Hazard Research Centre http://www.benfieldhrc.org
4 Sustainable Livelihoods Framework- DFID 1999

The goal is to achieve a sustainable livelihood. 'A livelihood is sustainable when it can cope with and recover from stresses and shocks, and maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base'.[5]

3.3.2 Assets

Land, forest, water and livestock are major assets which support the livelihoods of the rural communities in South Asia. The lack of such assets and the fragile and unstable nature of the economies of many rural livelihoods is one of the key factors that configure risk to hazards such as floods and drought. Landless labourers are first to reach a critical stage of asset depletion and are forced either into publicly funded emergency programs or into migration. Small landholders are often forced into selling their land to pay off debts created by the deficit in production and to buy food and basic necessities.[6]

Disaster-prone communities in South Asia lack access to financial assets such as savings, credit, pensions and insurance. In the absence of formal support systems they have to depend on exploitative informal money-lending facilities. Disaster-prone communities live on poor diets, which contribute to physical weakness, affecting their capacity to work and their resilience to illness.

Box 3.2: Disaster - induced Debt Trap

Mehrban is the eldest of four brothers living in Adinzai, Balochistan in Pakistan. They used to own about 200 cattle and many camels, which enabled them to lead an affluent life. Four years ago during the prolonged drought, their livestock suffered from disease and died. In their efforts to save the animals and meet family expenses the family has got into debt having borrowed about Rs. 300,000 from various sources. Now Mehrban and his brothers are earning only enough to buy bread. They have to face the consequences if they can not repay. Drought has devastated the family's asset base, leaving them helpless and vulnerable.

Source: *Between Hope and Despair, Pakistan Participatory Poverty Assessment*, National Report, Planning Commission, Government of Pakistan, Islamabad, 2004

5 http://www.livelihoods.org/info/guidance_sheets_pdfs/section1.pdf

6 UNDP: *A Global Report, Reducing Disaster Risk, a challenge for development* 2004, Geneva: Bureau for Crisis Prevention and Recovery, UNDP. www.undp.org/bcpr p.66.

3.3.3 Services

The poor in South Asia lack good access to basic services such as household energy, water and shelter. They often have to travel long hours daily to fetch water and fuel wood. Their dwellings are often fragile structures and extremely susceptible to the vagaries of the weather and other hazards. The poor availability of basic public facilities such as health and education is a major problem faced by these communities. Many areas are isolated, without transport links which would enable communities to expand their economic activities through increased mobility.

3.3.4 Political Marginalisation

In the absence of collective public interest forums in disaster-prone communities there is widespread political manipulation of low-caste and poorer sections of society by the powerful and affluent. There is no voice for the marginalised groups, and no mechanism to reach the decision makers in state institutions. As a consequence, district and local governments de-prioritise marginal areas, arguing that it is a waste of resources to establish services and infrastructures that are likely to be destroyed in the event of disasters. The remoteness and powerlessness of many disaster-prone communities make them extremely vulnerable to both natural disasters and political processes.

These circumstances present two critical challenges to the communities living on marginal assets. First, it is a struggle to protect their fragile livelihoods from the threats of natural hazards. Second, it is a struggle to secure an income from a poor livelihood base to provide basic needs (such as food and shelter) and access to basic services (health, education, etc.).

3.4 Disaster-Development Linkages

Disasters are linked with development in two ways. First, hazards turn into disasters where there is low level of physical and social development. For instance, in some cases floods happen because of the absence of necessary flood management or counter-disaster infrastructure such as embankments and drainage channels.

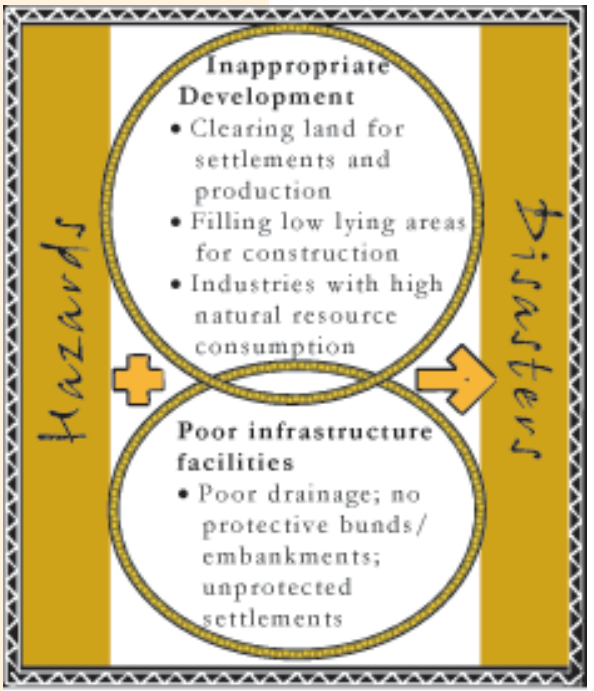


Fig. 3.5 Development - Disaster Linkage

Second, in some cases development of such infrastructure can itself be the cause of disaster. It is not uncommon that embankments constructed to protect areas and structures of economic importance become the cause of flooding for low lying villages. UNDP[7] states that: 'hazards are being reshaped and new hazards introduced by contemporary development trends. For example, the conversion of mangrove coasts into intensive shrimp farming pools in many low-lying tropical coastlines in Southeast Asia and South America has increased the level of local hazard through coastal erosion and the loss of the coastal defence provided by the mangrove stands. The introduction of new technology such as chemicals into local agriculture, rising energy demands of urban centres and the international trade in hazardous waste, are all processes that have increased the complexity of hazard'.

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7 UNDP *'A Global Report, Reducing Disaster Risk, a challenge for development'*, Bureau for Crisis Prevention and Recovery, UNDP, New York, 2004

Box 3.3 Development-induced disaster: A Case of a Chashma Right Bank Irrigation Canal, Pakistan

The Chashma Right Bank Irrigation Canal (CRBIC) Project is an extensive irrigation project, involving the constructing of a 274-kilometer canal along the Indus River, with 72 distribution canals, 68 cross-drainage structures, 91 bridges and it runs through two districts in the Punjab and Northwest Frontier Provinces.

The project aims to provide a dependable perennial irrigation supply; ensure efficient distribution of water; provide necessary drainage and flood relief; improve access within the area, and to strengthen the agriculture support services.

Lok Sath (people's tribunal) on Chashma has documented different categories of adverse effects of the canal. Social and environmental impacts include flooding, land degradation, deforestation, influx of outsiders, involuntary displacement, disruptions in life style and community networks, market links and constraints in mobility. There are compensation disputes, and a severe lack of transparency and consultation with the affected people for the planning and implementation of the project.

Project induced flooding has already become a reality; about twenty-two villages in the west side of the main canal and more than fifty villages in the Indus riverine belt are facing project induced flooding and displacement. Approximately fifty thousand acres of land are now seasonally submerged by blocked floodwater in the west side. Consequently, local farmers are not able to grow their crops, their only means of income and livelihood. The water level of the west side will continue to rise up steadily because of high sediment deposition and will thereby not only create further threats to the human settlements but will pose a grave danger to the safety of the main canal itself and other related engineering structures.

Local communities of the Chashma project area living along the Indus riverine belt are sandwiched between the continuous riverbank erosion and project-induced flooding. More than fifty villages are now not able to grow seasonal cotton crops in the monsoon season and are increasingly becoming impoverished and vulnerable. Flooding and subsequent massive sediment deposition is causing changes in river flow patterns.

Source: Extracts from the correspondence between Asian Development Bank and Chashma Lok Sath, Islamabad.
http://www.chashma-struggles.net/resources/report/end%20of%20accountability.htm

Recent international debates on the issue have concluded that sustainable development will remain out of reach as long as disaster prevention and risk reduction continue to be ignored by development planners and managers. Disasters have implications for achieving all the Millennium Development Goals. The resolutions adopted at the World Summit on Sustainable Development (WSSD) in 2002[8] identify natural hazards as a severe threat to sustainable development, and express commitment to develop programmes for mitigating extreme natural events. Evidence shows that every US$ 1 spent on mitigation can save US$ 4-10 in the cost of recovery from disasters.[9] Some of the micro-level case studies from South Asian countries have also shown that minor investment in community physical infrastructure along with supportive livelihoods management measures can effectively reduce the threat of floods and drought.[10] Such interventions at the micro level reduce dependency on relief and external support and raise income levels by creating assets, contributing to poverty reduction among at-risk households.

Box 3.4: Disaster-Resistant Community Physical Infrastructure:

The LODRR programme has found that appropriate structural interventions at local level can deliver positive results for communities and the environment, often eliminating the need for larger-scale structural measures. The LODRR approach towards the choice of infrastructure puts emphasis on analysis and identification of locally appropriate infrastructural requirements by the community.

For instance, the inhabitants of the drought-prone village of Lalwadi in Rajasthan, India identified construction of an anicut[11] in a selected location, with strengthened embankments for rainwater harvesting and

8 United Nations, *Report of the World Summit on Sustainable Development 2002*, New York.
9 *Development at Risk*, 2002, Action Aid, UCL, CRED
10 See case study by ITDG South Asia 'Dealing with Drought: Livelihood Options for Drought Risk Reduction in Tharpakar, Sindh, Pakistan, Rajasthan India, Hambantota Sri Lanka' in *CBDM Participants Guide 2003*, Bangkok: Asian Disaster Preparedness Centre.

conservation as a priority. In Mithrio Charan, a drought-prone village in Sindh, Pakistan, construction of rainwater harvesting tanks in all 119 households was proposed. In flood-prone village Kamra, Pakistan a culvert, in Chitawan, Nepal a community early warning tower and in Faridpur, Bangladesh flood-resisting houses were introduced as the result of discussions with the hazard-prone communities. These structures have brought tangible results in the form of improved water security, improved early warning, increased social mobility, and secure living for the at-risk communities. The monsoons of 2003 raised the groundwater levels of the Lalwadi village wells by 12-15 ft, enabling the cultivation of a second crop, and providing a secure source of water for drinking. All 119 households in Mithrio Charan store and preserve rainwater at their doorstep for drinking during the annual dry spell. The basic structure of the houses in Faridpur remains intact during the floods, requiring only the replacement of the thatched areas with local reeds. Villagers in Kamra provide an example of community mobilisation for flood management (see case study in Box 4.2).

11 A dam or mole made in the course of a stream for the purpose of regulating the flow of water

3.5 Governance-Disaster Linkages

Wherever they live, disaster-prone people have an inalienable right to security of life and livelihoods. Governance systems – whether they are global, national or local – have to ensure the security of their citizens.

Disasters are important issues of governance in South Asia. Historically, colonial governments attempted to control, manage and overexploit the region's natural resources. This approach often denied local communities their traditional rights or access to rivers, forests and other natural resources. By alienating communities, it led them to abandon their responsibility for ecological management and paved the way for environmental degradation. Post-colonial states inherited the same mindset as colonial administrations.

The failures of urban planning, building regulation, environmental control and regional development can all be described as governance failures. It is being increasingly recognized that disaster risk management at the local level is a key element in any viable national disaster reduction strategy, building on the quality of community networks, the social fabric and effective municipal governance.[12]

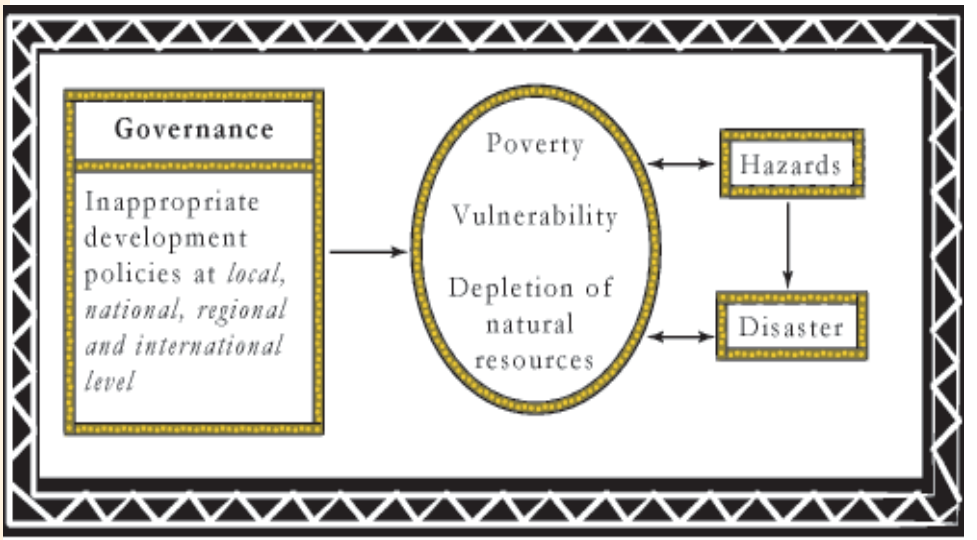


Figure 3.6 Governance - Disaster Linkages

Analysis of the linkages between disasters, development and livelihoods throws further light on the dynamics between these inter-related issues, and their relationship with governance. The analysis strongly points towards the need to approach disaster management and livelihood security through a rights-based perspective. This essentially means that it is a right of every citizen to lead a secure life, and it is a responsibility of the state to provide this security. Thus it is an issue of governance to ensure people at risk have a secure livelihood asset base to reduce risk at the community level, and are provided with safety nets beyond the community level.

12 UNDP: *A Global Report, Reducing Disaster Risk, a challenge for development* 2004, Geneva: Bureau for Crisis Prevention and Recovery, UNDP

4.
Disaster Risk, Development and Livelihoods Integration

Given the strong poverty-vulnerability interconnections in South Asia, a livelihood-based approach to disaster management is most appropriate. The livelihoods approach sits at the crossroads between disasters and development, and therefore can be the gateway to reduce both disaster risk and poverty. It reflects the fact that risk and disasters are part of everyday life, and shows that both poverty and disaster risk can be managed effectively with a strong livelihood basis.

The LODRR's micro-level studies in South Asian countries have substantiated the view that strong livelihoods increase people's resilience to shocks and their ability to recover from disasters; reduce state expenditure on relief and rehabilitation; and lessen the possibility of people sinking further into poverty and vulnerability. [1]

1 ITDG South Asia, 'Livelihood Options for Disaster Risk Reduction in South Asia, A Research and Demonstration Project (1999-2003) - Project Completion Report ', March 2004

4.1 Livelihood Approach to Disaster Management: Key Returns

4.1.1 Stable and diversified livelihoods reduce vulnerability.

Communities and households who have better access to income and work options and who possess a variety of assets, are less vulnerable to crippling shocks and hazards. In contrast, those who have to rely on a single source of livelihood are the worst affected by hazards, and it takes longer for them to recover. UNDP's global report (2004) endorses this position, stating that the loss of adaptive capacity to disasters often comes from socio economic structures that restrict flexibility in livelihood systems.[2]

A sound and diversified livelihood base can shield communities against both economic downturns and natural disasters, acting as a protective dyke against hostile externalities. Security of primary livelihood assets (human, social, natural, physical and financial) makes livelihoods sustainable, leading to the reduction of vulnerability and poverty. Securing livelihoods means securing lives both from poverty and disasters.

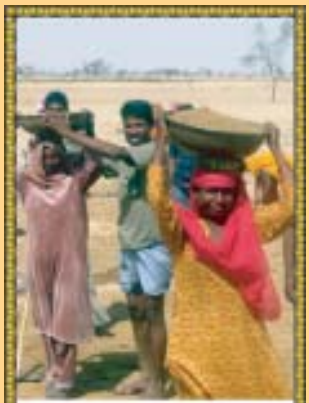
Recent research on drought affected Gujarat, India[3] confirms this. The findings highlight the importance of non-agricultural livelihood sources where frequent droughts limit the viability of agriculture as a primary source of income. Research which covered selected villages in Satlasana, Mahesana District, in Bhiloda, Sabarkantha District, and in Bhuj, Kutch District, found that non-farm livelihood systems centred around animal husbandry, handicrafts, tourism and trade were central to the ability of families to maintain their income levels during the drought periods.

2 *A Global Report, Reducing Disaster Risk, a challenge for development* 2004, Geneva: Bureau for Crisis Prevention and Recovery, UNDP, p. 66. www.undp.org/bcpr

3 Moench, M. and Dixit, A., *Adaptive Capacity and Livelihood Resilience ; Adaptive strategies for responding to floods and drought in South Asia*, 2004, Katmandu: The Institute for Social and Environmental Transformation, Boulder, Colorado, USA and Nepal.

UNDP (2004) highlights the need for rural development initiatives which introduce rural micro-finance, co-operative production and marketing, add value to rural production through local skill training and generally foster livelihood diversity to address the gaps in adaptive capacity to cope with disasters.[4]

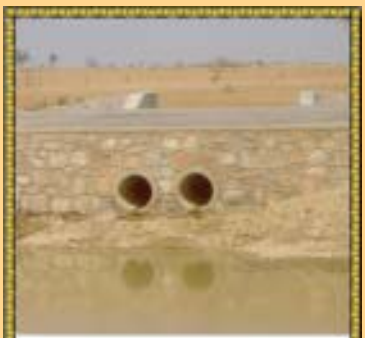
Box 4.1 Infrastructure Support to face Drought Conditions



Villagers work on constructing the anicut

The village of Lalwadi south-west of Jaipur, Rajasthan, is subject to frequent dry periods and periodic severe droughts. Most families in the village depend on cultivating a single crop as the primary source of income. Recurring droughts significantly decreased their incomes, forcing people into a hand-to-mouth existence.

An anicut constructed to capture rainwater (average annual rainfall is 300-500 mm) has re-charged the groundwater, raising its level by 10-15 ft in the 105 village wells during the 2003 monsoons. 10-15 hectares of land has come under irrigation and the farmers are now able to cultivate both kharif and rabi crops, instead of the previous single crop.



The completed anicut, providing water security for the community

During the 2003 winter season people were able to diversify crops, expand livestock production, and increase fodder production in the village. There is sufficient water in the wells and in the anicut for domestic purposes and for animals to last till the next monsoon. Villagers are confident that they can face the next drought season better with the increased production from two crops, and improved livestock production.

Source: LODRR project monitoring reports and discussions with community members.

4 *A Global Report, Reducing Disaster Risk, a challenge for development* 2004, Geneva: Bureau for Crisis Prevention and Recovery, UNDP, p 66, www.undp.org/bcpr

4.1.2 Location-specific social and physical infrastructure protects livelihoods and contributes to effective disaster prevention.

Social and physical infrastructure, if designed according to local needs, brings two tangible deliverables to hazard-prone communities. First, it increases hazard mitigation capacity; second, it protects life and livelihoods from disasters.

For instance, construction of a culvert in a flood-prone village, Kamra, in Pakistan protected the village from seasonal flooding, thereby enhancing the local community's mobility, protecting their crops and livestock, providing access to information and markets, and doubling the cash value of their land. The community in Lalwadi, Rajasthan, enhanced its capacity to protect livelihoods by constructing a structure to re-charge ground water.
(see Boxes 4.1 & 4.2).

Another example comes from Bangladesh, where the Jamuna Char Integrated Development Project (JCDP) supports communities living on the *chars* (islands) in the Jamuna River. One of JCDP's main risk reduction activities has been to give financial and technical support to farmers to plant a particular kind of reed. The reeds, which can grow as high as 20 feet, are an indigenous species well suited to the sandy soils of the *chars*. They are useful in hazard mitigation because they collect sediment swept down by the river, thereby adding to the land and helping to protect riverbanks. They support livelihoods because the stems can be used for fuel, roofing and in making fences, while the leaves can be eaten by domestic animals. Land planted with them becomes fit for cultivation by some other crops within 2-3 years. Reeds grown on the chars are also sold to buyers from other parts of the country. [5]

5 Twigg J, 2004 *Disaster risk reduction: mitigation and preparedness in development and emergency programming*, Good Practice Review 9, Humanitarian Practice Network, p.162. http://www.odihpn.org/publist.asp

An intervention by the Vietnam Red Cross provides further evidence in support of livelihood protection infrastructure.[6] Since 1994, it has planted and protected nearly 12,000 hectares of mangroves in the north of the country. These submerged coastal forests are effective buffers against the winds and sea surges generated by typhoons (cyclones) and storms. They now protect 110 km of the 3,000 km sea dyke system that runs along the coastline.

Planning and protecting the mangroves has cost $1.1m, but has helped reduce the cost of dyke maintenance by $7.3m per year. When Typhoon Wukong struck in October 2000, there was no damage to the dykes behind the mangrove forests, whereas in the past waves would often breach coastal dykes and flood poor families' land.

The Vietnam Red Cross also estimates that the livelihoods of 7,750 families have benefited from the project. Poor households are chosen to plant and protect the mangroves, each being allocated 1-5 hectares to manage. The mangroves grow to 1.5 metres in height within three years. Once the forests are established, the families involved earn money by selling the crabs, shrimps and molluscs that live there.

Small scale early warning systems have the potential to protect local livelihoods from disasters. The specific advantages of such systems are they can focus on the local hazard situation, can be managed by the community members, and can take advantage of inexpensive, appropriate technology options (see Box 4. 2). In Usgala, Hambantota District Sri Lanka, people have begun to collect rainfall data without depending on the government weather stations, aiming for more accurate information on their own location. The rainfall information is used by the community members as a guide to the quantities of water in the rainwater harvesting tanks, and for a better understanding of the changing nature of dry periods in the area.

6 ibid., p. 163.

4.1.3 Livelihoods-based interventions forge collective community action.

When hazard-prone communities are organised along a livelihood enhancement approach, this brings community members together to identify, analyse, design and implement counter-disaster measures and livelihood initiatives collectively. These endeavours could re-energise latent social capital at the local level through voluntary collective response. Community-based disaster risk reduction initiatives mobilise communities to realise their collective strength. Awareness raising and building of leadership qualities during the process guide and motivate them to work on other aspects of community development and demand the services due to them from local government (see Box 4.7).

The Overseas Development Group, UK,[7] in an analysis of 'What disaster risk reduction can contribute towards meeting the Millennium Development Goals', indicates that collective action to reduce risk by households and communities provides entry points for women and other marginalised social groups to organise for other purposes too, providing a catalyst for economic and social empowerment.

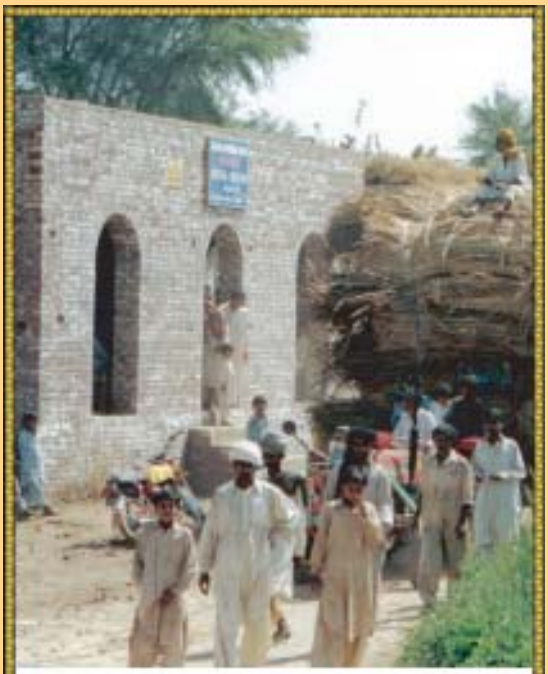
7 *Disaster Risk Reduction, a development concern: scoping study on links between disaster risk reduction, poverty and development,* 2004.Overseas Development Group, University of East Anglia, UK.

Box 4.2 Becoming a Model: Community Managed Flood Preparedness Project.

The 'Kamra model' of community-based flood preparedness is being replicated in 10 villages in Athara Hazarri Union Council by OXFAM Pakistan under its new flood management programme. By demonstrating its effectiveness in a cluster of village communities, it is hoped to exert pressure on the District Administration to adopt community-based and livelihoods-centred disaster mitigation programmes

The term 'Kamra model' was born when a team from OXFAM Pakistan visited Kamra and a number of other flood-prone villages in the Jhang river belt to extend support. When they explained their purpose to the villagers of Kamra, the villagers responded by saying that the village and its community were 'flood prepared' and had no need of any relief or support. This is the story behind Kamra's empowerment.

Kamra lies in an upstream area in Jhang District in Punjab. The village is bordered by the river Jhelum and a flood protection bund. Due to the river changing its course during floods, the village has shifted twice. The villagers are smallholder farmers. Agriculture and livestock are the two main sources of income. Kamra can be described as a physically and socially marginalized low-income community, with high population growth and infant mortality, low literacy levels, gender-based differences in terms of literacy, mobility and cultural seclusion, and almost no health facilities.



The Community Hall - a focal point for interaction

Floods occur seasonally, displacing thousands of people in the area and depriving them of their livelihoods for a considerable period of time. Villagers can generally cope with seasonal floods but in extreme situations crops and livestock are washed away, and dwellings are destroyed. Existing flood management strategies focus only on emergency relief and superficial rehabilitation of structural damage.

Villagers constructing the culvert

The river's flood control mechanisms at the Trimmu Head Works are geared to protect the city of Jhang from floods. Opening the flood gates in order to protect the city often results in the inundation of smaller villages, and Kamra has suffered in this manner for years. Official information, even when it reached the village, did not permeate down to every resident, and the often technical nature of warning messages could not be easily understood by illiterate or semi-literate villagers. Last-minute panic sometimes ensued when villages noticed the rising flood waters and had to hurriedly evacuate to higher ground.

To prepare themselves, at the onset of each rainy season, villagers stocked the necessary food and fodder. In high/medium floods, people shifted their families to relatives' houses or to open space at higher elevations. Household utility items were placed on the roofs of the houses. When the villagers arrived back at their flood-devastated homes the process of rehabilitation began. Most families were forced to sell personal belongings like jewellery, household items or domestic animals to find money for rehabilitation and medical treatment. Poor families would sometimes borrow from landlords to reconstruct houses. The rehabilitation process sometimes took several months; until then people were compelled to live outdoors. There was also the loss of mobility due to the flooding, with villagers unable to access hospitals, schools and markets. Economic losses were severe.

To arrive at a better state of flood preparedness, the community of Kamra proposed the following key measures: a culvert to drain stagnant water and

improve mobility; more livelihood options to strengthen families' economic capacity to cope with floods and their after effects; and building capacity to manage floods, including a community managed early warning system. Doaba Foundation, a local NGO, coordinated activities through community mobilisation, awareness building, and training.

Flood-resistant physical infrastructure

The culvert/bridge (constructed with nearly 40% of the cost contributed in kind by the villagers) benefits 485 people living in the village, giving them mobility throughout the year. Now vehicles are able to reach the village, villagers can access markets and visit relations, and village children are able to attend the primary school in Jhang city. Mobility has raised land prices in the village, and increased households' cash income from the sale of sugar cane, handicrafts and vegetables. The biggest triumph for Kamra was when a candidate from the Kamra Village Organisation was elected to the local government. He was able to convince the local government to commit Rs 10,000 for the construction of the culvert on the basis that the village had organized to help itself.

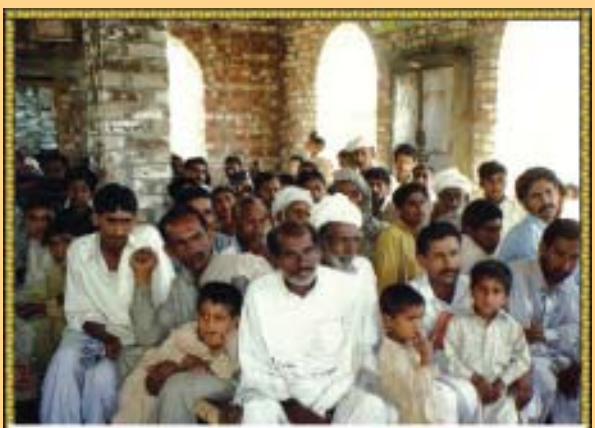
Flood-resistant social infrastructure

A community hall built in the highest point of the village serves the dual purpose of livelihood support (training in agriculture and animal husbandry, crafts and health clinic) and flood shelter. A state of cohesion within the community has been achieved. People are now collectively organised to prepare for floods as opposed to earlier individual/family level organization.

A community-managed early warning system accesses flood information from the Trimmu Head Works authorities and shares it through the mosque in non-technical language. This has contributed hugely to more organized evacuation and controlled panic.

Expanded livelihood options

Livelihood options have been broadened. Sugarcane, a flood-resistant cash crop, could not be cultivated earlier due to restricted mobility and market access. Today cane cultivation and threshing is more organized. Selected community members have been trained to administer livestock vaccinations: they now offer the service on a commercial basis to outside villages as well, handling 250-300 cases during the first two years.



CBO meeting in the community Hall

Production of 'feed blocks' using a local technology developed by the community was ideal for supporting cows and buffalos during floods. (a single block feeds one buffalo for a week) This has also reduced the number of men migrating with livestock during the floods. The feed blocks are now in demand from other flood-prone areas in Punjab. More training has been given on livestock management: milching, fattening, vaccination, breeding and de-worming, and on improved feed blocks.

Wider options and empowerment for women

Improved mobility has expanded livelihood options for women. They now weave mats with local reeds to sell in the market. Introduction of fuel-efficient stoves has helped to resolve the issue of accessing fuel wood during floods. The stove design requires much less fuel wood than open earth cooking. A health centre has been established in the community hall, where a health worker visits regularly. Toilets built for women are an added benefit, as they face much hardship during floods due to lack of proper sanitation facilities and privacy. Most importantly, a women's CBO formed for the purpose of the project has enabled them to participate in all stages of project planning and implementation. The CBO is now aiming to get a doctor to visit the health clinic.

Source: LODRR project reports.

Becoming a model for the flood belt

Kamra village has become a model for 'scaling-up' by the local government and other NGOs. Local government officials from nearby flood-prone areas have made 'exposure visits'. Two out of the seven Union Councillors who visited Kamra are setting up disaster management committees in their own areas. Kamra's village organisation has developed a good rapport with the local authority which enables the village to have a voice in other developmental activity. Two villagers have been elected to the local council since the project began.

The Kamra initiative stands out in demonstrating that a combination of appropriate social and physical infrastructure and diversified livelihoods can succeed in improving flood preparedness and creating an empowered community who move forward to achieve broader community development.

Culvert providing protection from floods and mobility to villagers during the monsoons

4.1.4 A livelihood approach creates self-confidence

Livelihood-centred planning reduces external dependency and empowers communities to look at disaster preparedness with a longer-term vision. It largely relies on exploring local solutions to local problems by regulating local resources. For communities living in hazard-prone locations, risk management is part of their livelihood management: they have accumulated relevant skill and knowledge through their experience of living with risk, yet this knowledge is not recognised by outsiders and remains at the periphery of mainstream disaster management systems. Locally generated and mutually shared awareness is a local resource which provides a firm basis for appropriate actions and responses to address regular, seasonal disasters.

Local communities are rich with knowledge of the local landscape and resources. A livelihood centred approach provides opportunity to build on local and indigenous knowledge and experience. There are many examples where top-down interventions have resulted in the waste of public resources. In 2000 under the Khushhal Pakistan Programme, the Government of Pakistan built a number of *tobas* (water reservoirs) in the drought-hit Thar area. In the rainy months however, two *tobas* remained empty whilst water accumulated in an area nearby. Locals complained that the engineers did not consult them in identifying the most suitable natural depressions for the construction of *tobas*. In contrast in Lalwadi, Tonk District, Rajasthan, when the village drought mitigation plan was prepared, it was the community, guided by past experience and knowledge, who identified the most suitable location to construct an anicut to block rainwater run-off to support crops and livestock. Local government engineers who visited the location later confirmed that there could not have been a better place in the village to build the anicut.

Technology transfer to re-build Gujarat after the earthquake: a completed quake resistant "Quincha" house

Earthquake proof 'community center' in Navagam, Kutch, Gujarat

After the 2001 earthquake in Kutch, Gujarat, large-scale housing re-construction programmes were undertaken by the government and many international NGOs. All those formally registered in the damage assessments as displaced were included in these programmes. However, in Navagam and Lakhapar villages in Kutch there were people who missed this opportunity. The LODRR programme introduced a proven low-cost earthquake-resistant housing technology from Peru, South America – *quincha*. An Ahmedabad-based organisation, the International Centre for Entrepreneurship and Career Development (ICECD), mobilised community groups, local technicians and engineers to adapt the *quincha* housing technology to the particular hazard conditions and the local construction materials available in Kutch. The community's skills and knowledge of local hazards and livelihood support resources were pooled to make the locally appropriate adaptations.

The community, guided by experiences, added two new features: a rainwater harvesting tank on the roof to meet drinking and domestic water needs during drought, which is the most frequent hazard affecting the area, and changes to the roof structure to withstand cyclones. Therefore the ten individual houses and two community centres built in this style include features to mitigate triple hazards.

The idea of community centres came from the locals who identified the importance of having a common roof for non-agricultural livelihoods such as craft making, embroidery, and other home-based activities which are the only options during the long dry periods. Most importantly, people feel confident of them withstanding the frequent minor tremors in the area. In addition, compared to more common brick and concrete structures, the houses provide a cooling effect in the extremely hot summer months when temperatures rise to over 42 degrees centigrade, owing to the nature of the building materials. It has been estimated that the summer temperature in these houses is 5 Celsius degrees less.

4.1.5 Livelihoods link natural resource management issues at the grassroots level.

Since the livelihoods of many disaster-prone communities are based on agriculture and depend on natural resources such as land, water and bio-diversity, it is important for them to protect and preserve this base. However, a major factor leading to natural resource degradation in such areas is the conflict between poor people's immediate livelihood support needs and longer-term preservation objectives. Traditionally people in South Asia managed their productive activities in harmony with the natural resources. With the colonial powers and subsequently the post-colonial state taking ownership of natural resources, the mutually nurturing relationship between livelihoods and natural resources has been somewhat lost over time.

Ill planned development interventions and settlements have led to irrecoverable environmental damages in some instances. The consequences of the degradation of the natural resource base are visible in reduced forest cover, increased frequency and intensity of floods, landslides and droughts, and decreasing amounts of water available for drinking and production.

Women, who carry the prime responsibility of ensuring food and water security for the family during disaster and 'non-disaster' times, play a vitally important role in natural resource management. Krishna (2004)[8] notes how women's access to natural resources was reduced, and women's knowledge and expertise in natural resource management has been marginalised in the swift transformation of production systems, land use and livelihoods in recent decades. This has placed severe constraints on the livelihood opportunities of women in disaster prone areas whose earnings are vital for coping with disasters, and for family survival.

8 Krishna, S (ed), *Livelihood and Gender - Equity in Community Resource Management*, 2004, New Delhi: Sage Publications, p. 44

While acknowledging that natural resource management concerns are complex, diverse, and entail many layers, taking a livelihoods entry point facilitates the vital linkages required to restore the lost environment resource base (see Boxes 4.3 and 4.4).

Box 4.3 Livelihoods Approach for Natural Resource Management

Usgala is a relatively new settlement in the Dry Zone of Sri Lanka. Land pressure in other parts of the island has driven people to settle there, on marginal lands in semi-arid conditions. Annual rainfall is about 1000 mm, but nearly eight months of the year are dry. The village water harvesting tank (a man-made structure in a natural depression fed by monsoon rain and the local catchments) is unable to hold much water due to siltation.

Villagers manage drought mainly through male family members migrating in search of paid work. When the problem reaches crisis levels, the authorities respond by distributing water, dry rations and other relief goods.

The community in Usgala was introduced to the techniques of rainwater harvesting from the roof top (for drinking and other domestic purposes), and from run-off (to support agricultural activities as part of an integrated drought preparedness plan for the village). Locally appropriate erosion control measures, such as terracing and mulching, drought-resistant crop combinations, soil moisture preservation techniques, water-saving irrigation methods, and village-level watershed management were part of the immediate and medium-term measures proposed to mitigate the effects of drought.

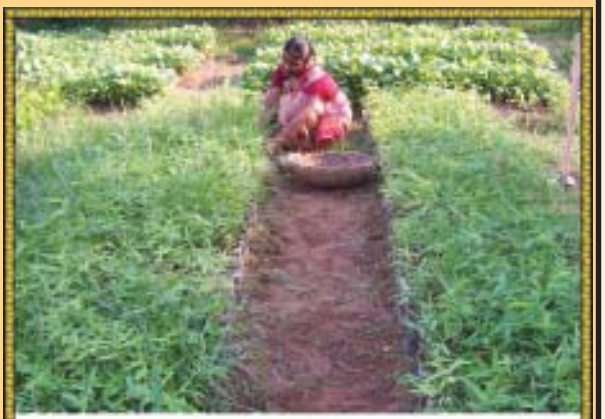
This integrated approach, while expanding crop cultivation options, has also improved the availability of water, the quality of the soil and its moisture content. People are active in increasing the overall tree cover by planting trees and bushes in home gardens, hedges and fences. The community is able to observe and experience the connection between agricultural livelihoods and conserving water, protecting soil from erosion.

Drinking water for the family at the doorstep during dry periods

Source: ITDG LODRR project monitoring reports; discussions with community members.

Box 4.4 Nurturing Natural Resources for Risk Reduction:

Kandhmal District in Orissa has been experiencing changes in rainfall pattern and recurring droughts over the last decade. Many tribal areas in Orissa are dependent on agriculture. The tribal culture is known for managing the natural resource base (land, water, forests) in a harmonious, symbiotic relationship to maintain their livelihoods. Kandhmal District, inhabited by Kondh tribes, is a rich tribal belt protecting this tradition zealously. However, the rich forest has been exploited by greedy locals, and denuded to a large extent, affecting livelihoods and bringing untold misery to the tribe.



Crops flourishing with the revival of neglected water bodies.

The drought of 2002 forced many to migrate in search of work. However, since women in the Kondh tribe usually do not migrate, they had to remain and face the hardships brought by the drought. Hardly 10% of the lands are in the plains; the rest are on higher ground, which is primarily rain-fed. The failure of the monsoon resulted in distress migration. Loss of vegetation, soil erosion, and the low productivity of the land forced people to go out of their habitat in search of livelihood. The tribal habitat was no longer a self-sustaining ecosystem.

To address these problems, the Community Based Drought Response Programme (CBDRP) programme led by Care India took an innovative, sustainable livelihood based approach; that is promotion of the main livelihood, which is agriculture, within the existing ecosystem harnessing natural resources in a sustainable manner, integrated with the protection of the forest.

The Sarpanch (leader) of Taladandikia of Phiringia Block of Kondhamal,, Lal Mohan Pradhan says 'we are not working only for food and cash; we rediscovered a process of relearning to protect our land, water bodies and forests'. The district administration was fully involved in providing timely food supplies and supporting putting up water harvest structures. The Panchayat was able to bring about a convergence of thinking in planning and execution to revive degraded land and neglected water bodies. Taladandikia village participated

in a capacity building exercise attended by community members, 17 Gram Panchayats and other Panchayat Raj Institution/NGO representatives. Appropriate modern techniques and scientific methods in soil and water conservation were introduced during the process.

With the revival of water harvesting structures, crop diversification increased. Collecting Non Timber Forest Produce (NTFP) provided a livelihood option for women. 'We are consciously trying to design and improvise, incorporating our own knowledge tempered with modern scientific process to ensure water conservation and thereby the second crop', says Lal Mohan Pradhan, the Sarpanch. 'We are committed to create sustainable water conservation structures which would see us through bad times,' and others in the village nod in affirmation.

Source: Social Welfare Agency and Training Institute (SWATI) and Care India

4.1.6 Public investment in livelihood assets creates savings

Creating livelihood assets and support services for disaster-prone communities leads to savings in emergency expenditure. Investment in assets and support services on a regular basis enables communities to withstand emergencies using their own resources, and the agencies to face unpredicted changes arising from disasters. Evidence from the micro-level demonstrations across the region has shown that investments in infrastructure and services enabling greater livelihood options contribute to long-term development and reduce the need for relief substantially. Communities and households with stronger livelihood resource bases become less burdensome to the government and other relief agencies in emergencies. Investment in livelihoods is investment for the future (See Boxes 4.5, 4.6).

Research on the flood situation in the Rohini and Bagmati river basins in Nepal indicates that people cope better where there is a higher presence of and degree of access to high-level organizations which support livelihoods in different ways. In the Rohini basin, some villages have access to numerous government organisations and other institutions such as banks and self-help groups. These organisations provided credit and other support for reconstruction following floods. Secondly, people cope better where there are good transport and communication systems enabling them to commute longer distances in search of work and enabling goods and services to flow easily into and out of the areas.[9] These services enabled people to have diversified livelihood options which were a combination of agriculture, wage work of different kinds, services, business and skilled occupations. Thus, people in the Rohini basin had a higher capacity to cope with floods and recover from them.

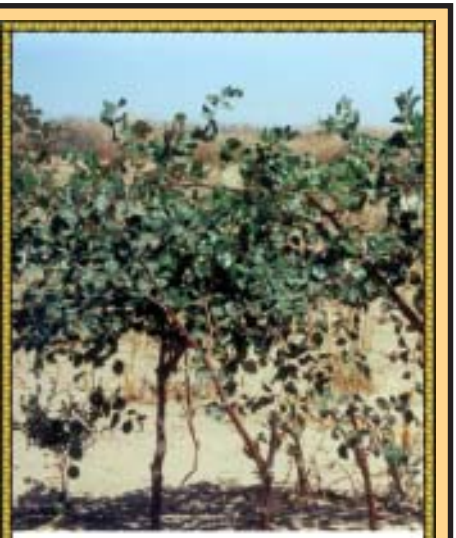
Box 4.5 Livelihood Assets to counter Relief

In Mithi, Tharpakar, Pakistan, a 'model farm' to mitigate drought was demonstrated in 2001. The farm demonstrated rainwater harvesting and storage in underground tanks, cultivation of drought-resistant improved crop varieties such as gourd, neem and fodder varieties, and cumin (which can withstand salinity) as a cash crop. At the family level individual rainwater harvesting and storage tanks for drinking water and kitchen gardens were introduced to 119 households. During the 2002 drought homes with water harvesting tanks had fewer problems in accessing drinking water and were less dependent on external sources, while other families had to travel 4-5 km a day to fetch

Rainwater harvesting tank which collects and preserves each precious drop of rain

9 Moench, M. and Dixit, A., *Adaptive Capacity and Livelihood Resilience; Adaptive strategies for responding to floods and drought in South Asia* 2004, Katmandu: The Institute for Social and Environmental Transformation, Boulder, Colorado, USA and Nepal, pp. 130-131.

water. Also, the kitchen gardens supported the family diet well into the long dry period. The model farm approach was adopted by six other farmers in surrounding areas.



A crop of grafted Beri plant in the model farm

In Lalwadi, Rajasthan, India, the community used to depend on government drought relief frequently, most recently in 2002. At a meeting held to plan an anicut for re-charging the depleted water table and other drought management activities, the Panchayat leader stated that 'all we need is to get the groundwater level in the village raised. With that we can take care of our animals and ourselves'. The local government invested Indian Rs 100,000 from drought relief funds as 'food for work', part of which was spent on the construction of the anicut. This investment has borne fruit already, increasing availability of water.

Source: ITDG South Asia, LODRR project monitoring reports; discussions with community members.

Box 4. 6 Rebuilding livelihoods after disaster

After the October 1999 cyclone in the Indian State of Orissa, two Indian NGOs - Voluntary Health Association of India (VHAI) and Orissa Voluntary Health Association (OVHA) – established a community-based disaster management initiative in which livelihood support played a central part.

The initiative supported a wide range of income-generating groups: women's groups involved in dry fish processing, mat-weaving and broom-making; artisans, including bamboo-basket makers, masons, carpenters, toy makers and weavers; small traders; and women-headed households (through poultry and animal husbandry). It also supplied fertilizers and seeds, renovated wells, ponds, latrines and salt pans and built water-harvesting structures. Village volunteers were trained in disaster preparedness and health care.

The type of support varied according to the activity. For example, fishermen were offered equipment under a long-term repayment scheme. Each newly formed cooperative group of five received a boat, net and radio worth Rs. 16,000 ($350) and agreed to pay back half of the value within 18 months.

Members shared the money received from selling their catch; one group interviewed some months later reckoned each member was earning about Rs 150 ($3) a day on average. Two women's groups were trained in literacy and small enterprise management, enabling them each to secure a loan of Rs. 20,000 ($440) to fund fruit processing; in their first three months of operation, each enterprise earned a profit of over Rs. 7,000 ($155).

Twigg J., 2004 *Disaster risk reduction: mitigation and preparedness in development and emergency programming.* Good Practice Review 9, Humanitarian Practice Network, p.325. http://www.odihpn.org/publist.asp, citing J. Keve and P.K. Mohanty, 'From Disaster to Development; how people can help themselves', in T. Palakudiyil and M. Todd (eds) 2003, *Facing up to the Storm. How Local Communities can cope with Disaster: Lessons from Orissa and Gujarat.* New Delhi/London: Christian Aid.

4.1.7 Marginalised groups can be mobilised through livelihood enhancement

The process of collective livelihood enhancement at the community level gives space for marginalised groups within communities such as women, the disabled and the low caste to join the planning processes. It also creates awareness within communities of differences in strengths and capacities, as well as vulnerabilities and needs, between social groups, and of the rights of the most vulnerable.

The LODRR pilot demonstrations in Kot Nizam, Hafizabad, Pakistan and Navagettegama and Usgala in Sri Lanka have shown that collective action combined with appropriate community mobilisation techniques creates space to draw different village groups into action, and opens up opportunities for groups who are otherwise dormant and dominated by the relatively more powerful to enter into discussions and planning processes. The Village Organisations constituted in each of these locations to plan and implement flood and drought mitigation activities represent various groups within the villages.

4.1.7.1 Addressing gender considerations

The livelihood-centred approach has the potential to create work options specific to women's skills and capabilities, and to provide space to enhance their skills. It will not automatically address gender relations, but taking a livelihood approach makes women's contribution to disaster management more visible, and identifies the areas where interventions are necessary to bring about gender equity, improve women's access to livelihood assets, and expand the sphere for decision making and leadership.

Gender and livelihood issues should be addressed since overall community and participatory approaches tend to miss the dynamics of gender relations and the resulting implications for livelihoods. The specific vulnerabilities and capacities of men and women, and the social dynamics of disaster situations which have implications for gender relations are often not obviously visible. Detailed

livelihood analysis exposes these often subtle, but vital considerations. Gender-based inequalities interact with social class, race and ethnicity, and age to put some women and girls especially at high risk. Gender inequalities with respect to enjoyment of human rights, political and economic status, ownership of land and housing, exposure to violence, education and health make women more vulnerable before, during and after disasters.[10]

The knowledge, skills and capacities for coping with and managing risk carry gender-based differences and specificities. Due to gender divisions of labour in society, men and women possess specialised skills and strengths in risk and crisis management. Yet women's roles as sustainers and re-builders are largely unrecognised, even though their contributions at the household and community levels are crucial.

In disaster-prone areas in South Asia women play a particularly significant role in the subsistence economy where time, effort and incomes are used to sustain families within the social restrictions and the limited access to productive assets.

Research in South Asia show that contrary to the popular perception that women are not involved in productive work, that they are only 'helpers', they work on family and other people's land, and engage in a variety of livelihood activities such as crop production and processing, tending cows and poultry, and craft making.

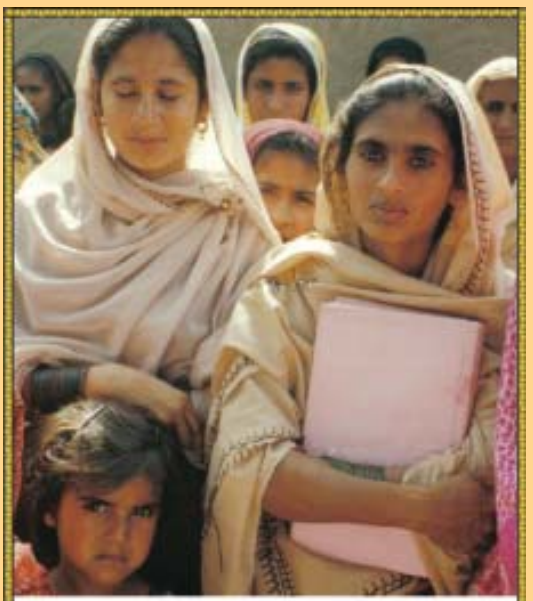
Floods and drought destroy women's meagre assets such poultry, goats and milch cows, and they lose livelihood opportunities for long months. Loss of livelihoods due to floods, landslides and earthquakes destroying land and habitats where women carry out home-based economic activities denies earning opportunities to women, thereby impacting on family subsistence and making them depend on relief schemes. When women are deprived of these jobs and incomes the loss of this revenue impacts on the overall recovery of the community after a disaster.

Women affected by the 1993 flash flood in Chitwan, Nepal, spoke of their limited livelihood options for recovering from the floods.[11] In Gujarat, soon after the 2001 earthquake, women in the affected areas were demanding that the relief agencies restored livelihood activities to expedite recovery.[12]

10 Ariyabandu, M.M., Wickramasinghe M., *Gender Dimensions in Disaster Management, a Guide for South Asia*, 2003,Colombo: ITDG South Asia, Duryog Nivaran, p. 44.
11 ibid., p. 62.
12 Enarson E., 'We want work: Rural Women in the Gujarat drought and earthquake', 2001, www.colorado.edu/hazards/qr/qr135/qr135.html

Box 4.7 Enhancing the Role of Women

In Kot Nizam and Kamra, where cultural norms of *purda* restrict male/female social interactions, separate women's CBOs were formed and entered into the planning and implementation process. This facilitated women's engagement in flood-related problem analysis and contributions to all the stages of flood management interventions. The problem analysis gave insights into the causes of women's specific vulnerabilities, and highlighted the capacities, skills and knowledge women possess in flood management. Similarly, landless groups in the village Kot Nizam who were in the grip of the local landlord could enter into the village development process, become more aware of their rights, gain confidence to challenge the landlord's authority and enter into negotiations with the local government authorities (see Box 4.9).



Office bearers of the women's CBO, Kamra, Pakistan

Based on OXFAM India's interventions in drought management in Orissa, Mishra *et.al.*[13] state that in spite of the difficulties, women saw drought years as opportunities for their own development, for changing existing gender roles. In the absence of men who migrate in search of work during prolonged drought, women are left to maintain household livelihoods.The opportunities to interact with markets for selling and purchase increased their know how about the markets as a structure, and developed their skills in operating in the market. Their knowledge about government programmes increases during drought years which enables them to demand their rights, ask for transparency in operations, and seek grievance redress against field-level officials. Women also gain more decision making power (in the absence of men), in land and other asset management. This new-found independence and the ability to make decisions on their own remain even after the disaster has abated.

13 Mishra, P. K., et al, 'Gender and Disasters, Coping with drought and floods in Orissa'. In Krishna S. (ed) *Livelihood and Gender - Equity in Community Resource Management*, 2004, New Delhi: Sage Publications, pp. 235-236.

Box 4.8 Improving Livelihood Assets of Women Leading to Better Flood Preparedness

Hameeda Bibi is a resident of Kamra village, Union Council Athara Hazari, Tehsil & District Jhang in the Punjab province of Pakistan. Kamra is situated at the western bank of the River Jehlum where it merges with the River Chenab near Trimmu. The village is prone to floods, which sometimes are quite devastating. People's livelihood is mainly agriculture and livestock, with some paid work usually outside the village, and some self-employment in the form of mat making from the local *kundara* material.

Hameeda Bibi giving finishing touches to the mats before sending to the market

In 2001, a pilot demonstration project to reduce the risks of flood was implemented by Doaba Foundation and ITDG (see Box 4.2 for the complete case study). The demonstration consisted of strengthening people's livelihoods through appropriate resource management, extending micro-credit to families without resources or capital to diversify livelihood options, and constructing local flood resistant infrastructure.

Hameeda Bibi belonged to a family whose livelihood assets were negligible. Her family consists of five members: herself, her ailing husband (suffering from asthma) and their three children. Hameeda's husband worked at a mat-making factory on a paltry monthly wage of 750 Rupees. The family owns a very small landholding of three kanals (3/8 of an acre), which is far too small to fulfil its annual grain needs. They have no cattle of their own and Hameeda tended others' cattle on a share basis to meet the daily domestic milk

requirement. To supplement the family income she used to make mats, and also sought occasional work in others' fields. All these income sources were temporary, except for her husband's regular income, but the major portion of his pay had to be spent on his medicines. Thus even providing two daily meals for her family was very difficult. She was unable to send her children to school due to not having enough resources to spend on clothes, shoes and books.

This hand to mouth existence was disrupted during the months of annual flooding, when few work opportunities were available. Every flood season made the family poorer and more vulnerable.

With the initiation of the project, Hameeda obtained a loan from the micro-credit scheme to start an independent enterprise. She bought two lambs, tended them well and fattened them. Within a period of six months she sold them for Rs 4000 and re-paid the loan, using the profit of Rs.1000 to start a small enterprise making mats, for which the raw material was available in the village. She bought a second-hand small mat-making machine and the family is now able to make 30-35 mats a month, and earn up to Rs 3000. This income is supplemented by cattle rearing and her land.

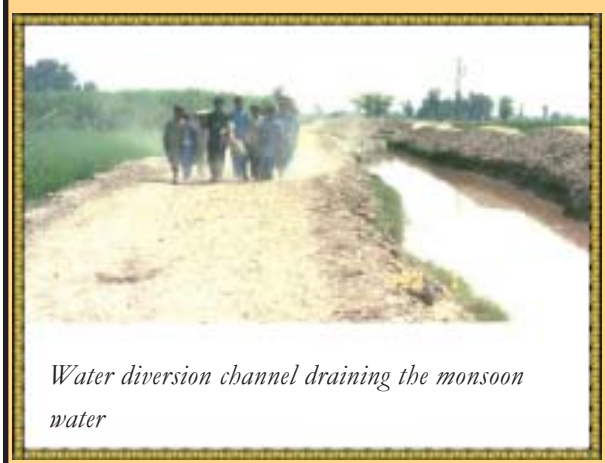
With the improved income, her nine-year-old son has just started going to school. Hameeda says that she can afford to celebrate different social occasions; she can forge relations on reciprocal basis. 'Now I face life with more confidence in a more organised manner' says Hameeda. Elaborating this further, she added that timely announcement of flood warnings from the loudspeaker of the mosque permits her to secure her belongings, collect the crops from her smallholding and make the necessary stockpiles for the flood period. This intervention made me free from the economic dependence, and built my confidence to prepare for and face floods'.

Source: Doaba Foundation, Islamabad.

Box 4.9 Flood Preparedness through Community Action

Village houses surrounded with stagnating monsoon water

Kot Nizam, a village in the Hafizabad district of Punjab province in Pakistan, celebrated last year's monsoon rains. In the past, rains were rarely welcomed in this village, which is in a low-lying location barricaded by water, roads, embankments and spurs in all directions. The village seemed to be the most convenient storage spot for untamed flood waters gushing in from the mighty Chenab river in the west and monsoon rain waters from upstream in the north. A dyke, constructed a few decades ago to protect neighbouring roads and cities in the east, and a motorway constructed in 1995 in the south, increased the plight of this farming community: previously, flood and rainwater flowed back into the riverbed through natural drainage routes, but these were permanently blocked by the two constructions.



Water diversion channel draining the monsoon water

The village community gathered under one tree to discuss how normal life could be brought back to the men, women and children in Kot Nizam. Long discussions, arguments and counter arguments resulted in a plan. The locals suggested the construction of a 5 km water drainage channel, 1.7 km brick surface road and a multi-purpose shelter. Groups of men and women were formed to execute these activities. People volunteered their land, labour and hospitality while the project intervention provided them with the required financial and technical inputs. Later, the local government and adjoining villages joined them in this venture.

It took less than 12 months for things to change. The water diversion channel, brick road, and multipurpose shelter were constructed as planned. The girls' school in the village, which had been closed for years due to stagnant monsoon waters, was re-opened. A medical dispensary was set up in the shelter, and Kot Nizam was linked once again to its surrounding communities and services. 'This is the first time in my life that I am walking

Community Center serving multiple purposes: meetings, cultural activities, training programmes.

without pulling my *Dhoti* [traditional cloth used as skirt] up to my knees in the rainy season', said an elderly woman resident.

The construction of the road and water channel also brought social and cultural life back to the village. In May 2003, after a five year gap, a festival was organized by the villagers to commemorate the anniversary of the death of a local saint. People from adjoining villages also participated in the festival.

Previously, 1,300 acres of arable land belonging to a number of families had become barren due to stagnant water. The first harvesting season after the intervention saw about 50 acres brought back under cultivation; this amount is to increase gradually with each coming harvesting season. Some of the small farmers irrigated their paddy crops from the water channel during the last monsoon.

The community in Kot Nizam has reached and convinced local and provincial government officials: the District Executive Officer for Hafizabad, and officials in the Office of Disaster Relief Administration, Punjab. These officials have used the Kot Nizam example to convince their superiors in arguing the case for a change in the approach to disaster management. Kot Nizam's Village Organisation has been invited by the district government to contribute as a resource organisation to preparations for a five-year flood management plan for Hafizabad district.

Improved mobility with the village link road

UNISDR, *Living with Risk, Turning the tide on disasters towards sustainable development*, World Disaster Campaign 2003, Geneva

The Kot Nizam community-based flood preparedness project was jointly implemented by the Intermediate Technology Development Group (ITDG South Asia) and Rural Development Policy Institute (RDPI) Pakistan, and financially supported by the DipECHO South Asia Flood Preparedness Programme.

4.1.8 Creating assets enhances coping capacities.

Assets such as farming tools, land, livestock, jewellery, and savings serve as a buffer against destitution and starvation in times of severe emergency. Assets are also essential for households and communities to sustain livelihoods in emergencies and recover from them.

Understanding the composition of the asset base held by disaster-affected people is the key for both vulnerability and capacity assessments.[14] A livelihood approach supports the gradual development and strengthening of this asset base.

Research in the drought-affected state of Rajasthan, India concludes[15] that households who mortgaged key assets to moneylenders to meet immediate consumption requirements often lacked the resources to migrate and obtain productive employment, and they also lost key assets when they were unable to repay mortgages. Research on the Rohni and Bagmati river basins in Nepal indicates that assets are the last link in the chain of options in recovering from floods. The initial options for restoring income sources following major flood losses include accessing irrigation where available to grow a winter crop, finding jobs within the village or at a viable commuting distance, and migration to nearby towns or cities. For those who cannot move to other places or find jobs, selling land and gold ornaments are the last resort, jewellery is sold frequently but families avoid selling land.[16]

Following the super-cyclone that devastated India's Orissa state in 1999, DFID piloted a livelihoods-based approach to rehabilitation. Financial assets were strengthened through cash-for-work

14 Lautze S, *Saving Lives and Livelihoods*: *The Fundamentals of a Livelihood Strategy*, 1997, Feinstein International Famine Centre, Tufts University.

15 Moench M, Dixit A, 2004, *Adaptive Capacity and Livelihood Resilience Adaptive strategies for responding to floods and drought in South Asia* , Katmandu: The Institute for Social and Environmental Transformation, Boulder, Colorado, USA and Nepal, pp. 116.

16 ibid. pp 129-130

programmes, while cyclone-resistant reconstruction projects enhanced the communities' physical asset base. Significantly, however, non-tangible assets were also developed, such as skills training to improve earning opportunities, raising awareness of vulnerable people's rights, building the capacity of self-help community groups, and strengthening the involvement of the poor in the decision-making process.

5.

Framework for Disaster-Resistant Sustainable Livelihoods

On the basis of previous discussions and insights, this document presents a framework for policy and practice for the application of a livelihood-centred approach to disaster risk management in South Asia. The framework is aimed at disaster management and development policy-makers and practitioners (government, NGO) in the region, and at international donors. It takes DFID's Sustainable Livelihoods Framework as a starting point, and moves a step further to become a framework of application specific to the geo-physical, socio economic and political considerations of the sub continent.

5.1 Disaster Resistant Sustainable Livelihoods (DRSL)

This framework (see Figure 5.1), captures the major issues for consideration in achieving sustainable disaster risk reduction and poverty reduction. The framework recognizes that assets (natural, physical, financial, social and human) are the foundations of livelihood **strategies** and **outcomes**. It outlines that in South Asian countries there are two major scenarios observed in relation to livelihood assets:

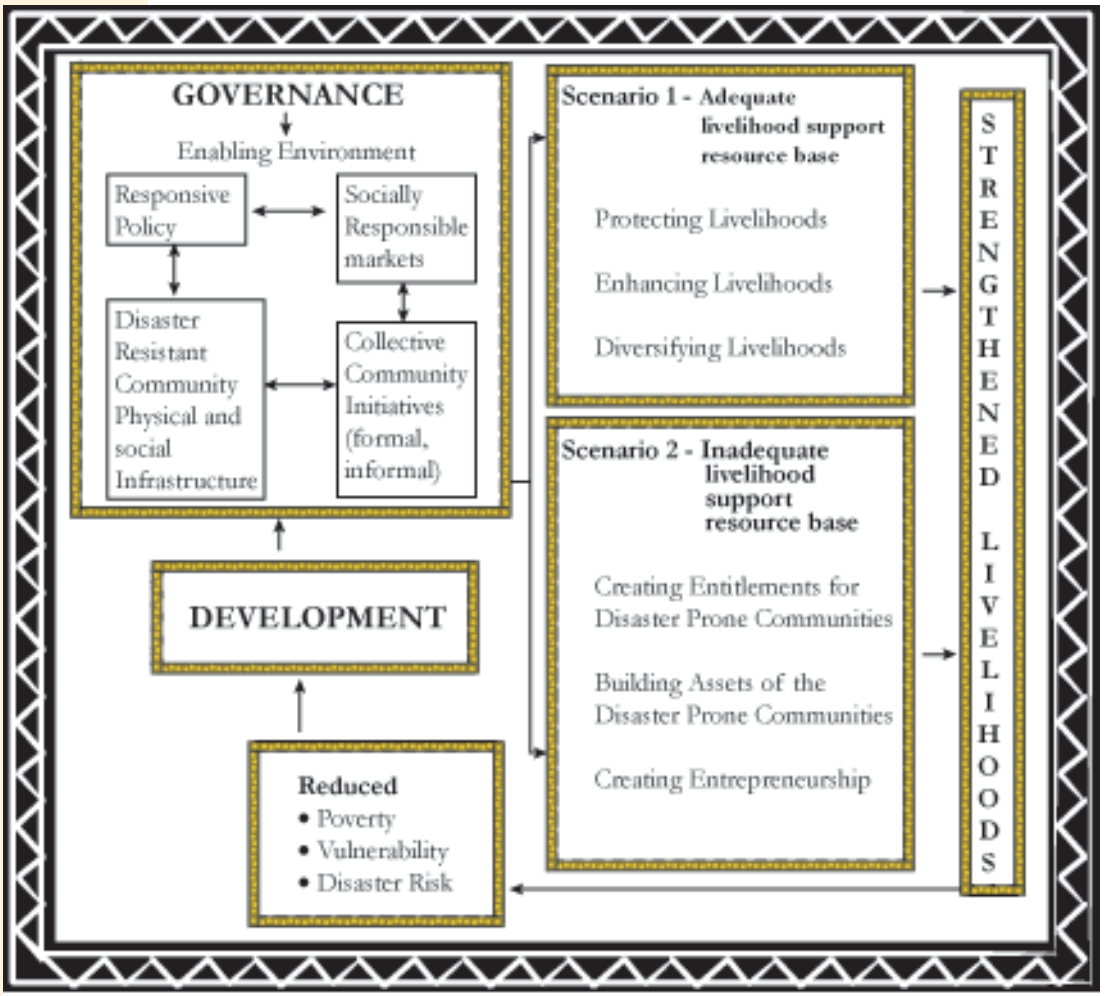


Figure 5.1 Disaster Resistant Sustainable Livelihoods (DRSL)

Scenario 1:

Among communities, households and individuals who have access to assets such as land, water, skills and whose assets are functional in terms of carrying out various livelihood activities, and have the potential to generate livelihood outcomes.

During disasters, the assets and livelihood outcomes come under threat. If remedial measures are not taken in time, the asset base can collapse. In such a scenario there is a need to:

- Protect livelihood assets
- Strengthen livelihood assets, and
- Diversify livelihood options

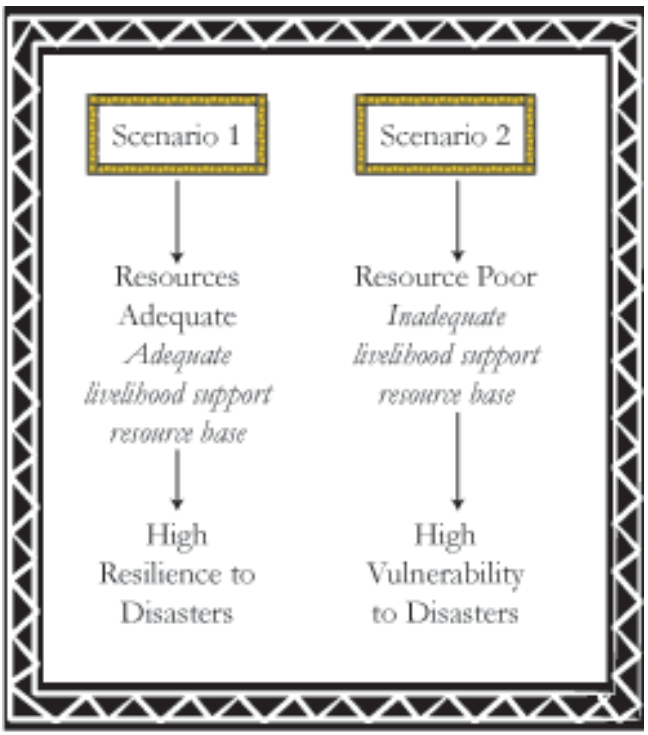


Figure 5.2 Livelihood Asset Scenarios

Scenario 2:

Among communities, households and individuals who possess minimum assets, who are deprived of an adequate livelihood base and where livelihood options are too marginal to support subsistence.

During disasters they become extremely vulnerable. In this scenario there is need to:

- Create entitlements
- Build assets
- Encourage diversified livelihood options

Most importantly the DRSL framework notes that assets do not turn into livelihoods automatically. An ***enabling environment*** is essential for this. For instance, the availability of land and the skills possessed by an individual do not ensure household livelihood security unless the land is arable and brought under productive use by employing the requisite skills.

There are four pre-requisites for creating the desired 'enabling environment' in the context of South Asia:

1- ***Disaster-resistant physical and social infrastructure:*** Physical infrastructure includes culverts, bridges, water structures, drainage channels and roads. Social infrastructure includes knowledge/information, life-saving services, access to productive resources, marketing and social networks.

2- ***Collective interest community institutions:*** These are formal and informal groups and networks aimed at articulating the community's interests and demanding governments' accountability. They include kinship, family, faith groups, ethnic groups, political organisations, welfare organisations, local government bodies, NGOs and CBOs.

3- ***Responsive governance:*** It should be emphasised that a mere mobilised community or a self-help group may not be able to win back its basic rights (entitlements to assets, land rights, health, education and other services) unless governance structures are sensitive to its needs and responsive to its demands. Governance principles, polices and practices are the most fundamental element in ensuring an enabling environment that turns assets into livelihoods.

4- ***Socially responsible markets:*** Monopolistic and discriminatory market mechanisms negatively affect agricultural economies. The livelihoods of rural communities who are connected to the global economy are vulnerable to fluctuations in world commodity prices. When low commodity prices coincide with natural hazards, rural livelihoods come under high stress. Fluctuations can be felt directly by those who extract a livelihood from the sale of primary resources (farmers, fishermen and foresters), but also by the rural landless who are reliant on selling their labour and may be the first to suffer in an economic downturn.[1] Therefore, market regulations in favour of agricultural economies are required to stabilise rural livelihoods.

1 UNDP, *Reducing Disaster Risk: A challenge for development*, February 2004, Geneva: Bureau of Crisis Prevention and Recovery UNDP p. 66.

5. 2 Application of the DRSL Framework

Application of the framework within the context of South Asia can be realised by:

1. approaching disasters through livelihoods
2. approaching public policy through communities

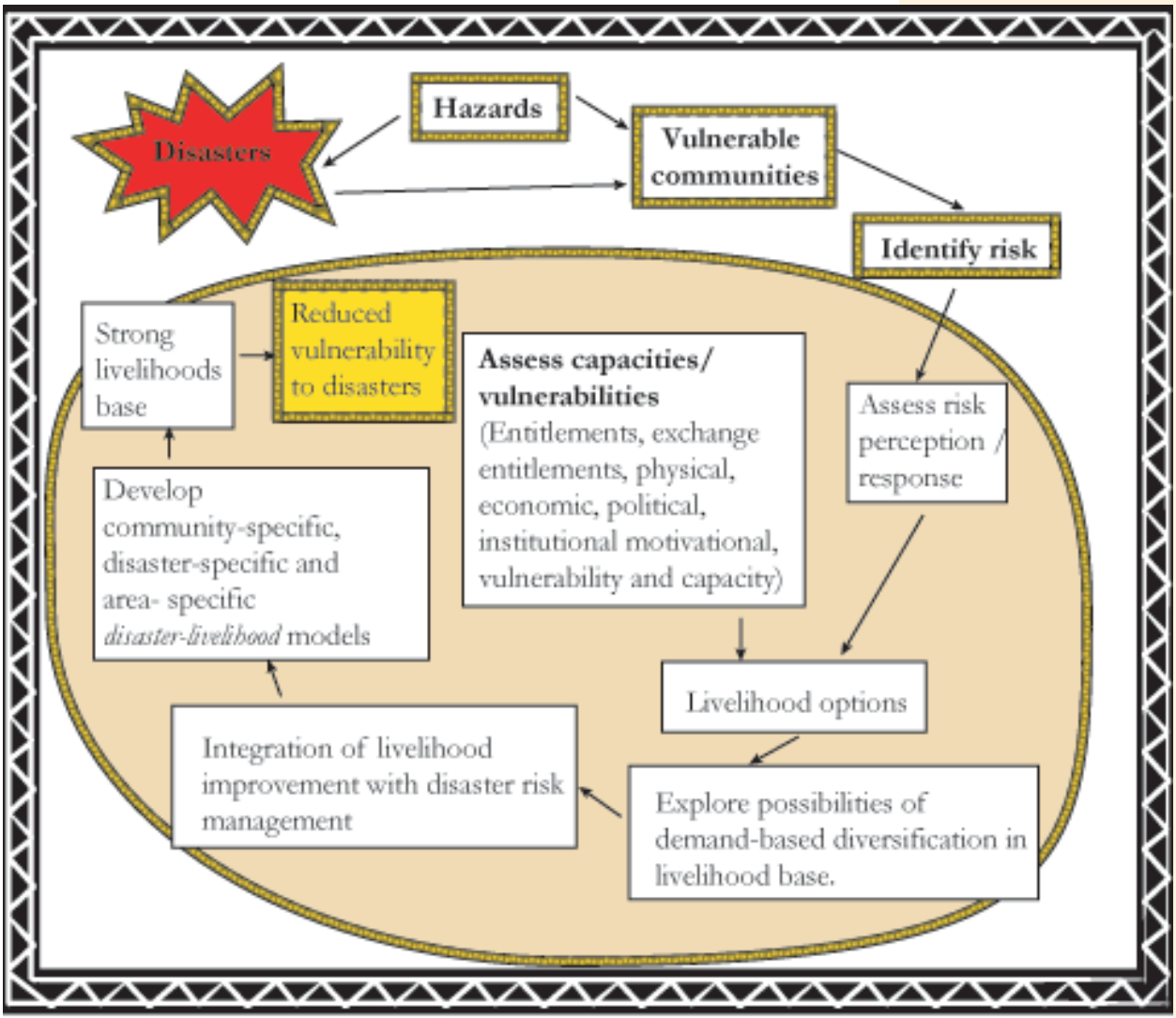


Figure 5.3 Approaching disasters through livelihoods

5.2.1 Approaching disasters through livelihoods

The LODRR programme experience suggests a fundamental change in the way disasters are analysed and addressed. It advocates a process-based analysis, where the problem of disasters is approached with the analysis of hazards, risk, resources and asset bases, vulnerabilities and capacities within the socio-economic context at the community level, with the engagement of the communities throughout the process. The analysis must be location and hazard specific, providing the basis for identifying the most suitable livelihood options for given locations, hazards, resources and communities. It has the potential to reduce levels of risk and poverty by being specific and appropriate (in terms of both physical and social infrastructure), opening avenues for the expansion of communities' asset bases and diversified livelihood options, thereby expanding resilience and reducing poverty.

The LODRR programme has applied this approach in designing and implementing pilot demonstrations in 11 locations in South Asia. The lessons from the micro level are sufficiently valid and powerful to apply at a larger scale, and to call for changes at the policy level. Current policy and governance changes taking place in the region (decentralisation of governance structures, community-based poverty reduction strategies, PRSPs, etc. – see Chapter 6) open windows of opportunity for the application of this approach.

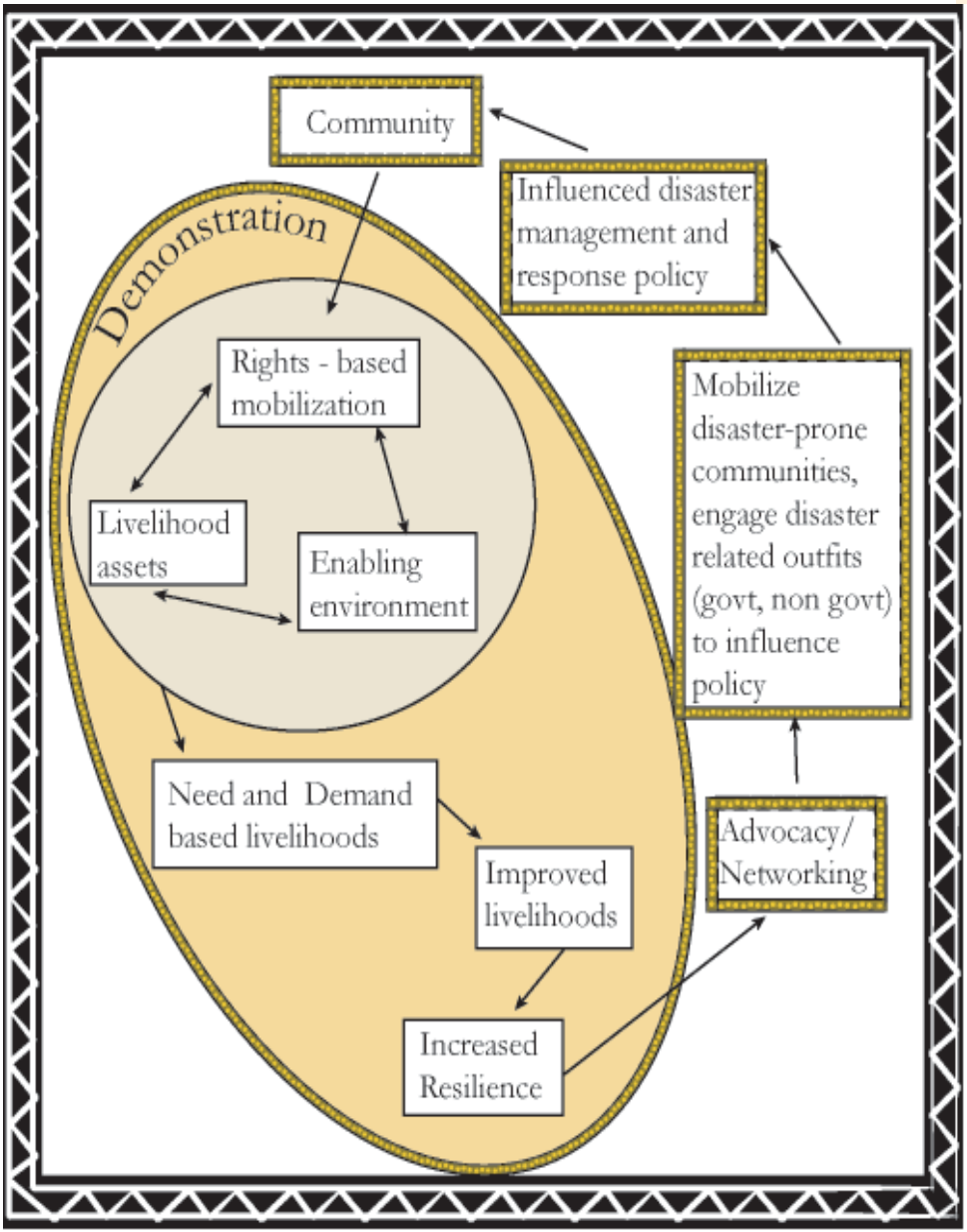


Figure 5.4 Approaching Policy through Communities

5.2.2 Approaching public policy through communities

The experience of the LODRR programme calls for a change in the policies and processes of disaster management. This changed scenario places livelihood issues at the centre of disaster management programmes. Given the political realities of governance patterns in South Asia (dominated by top-down administration and officials who are comfortable following familiar systems) these changes can be prompted effectively by undertaking community-specific, area-specific and hazard-specific demonstrations of livelihood-centred disaster risk reduction programmes. These demonstrations, when developed as a learning model in coordination with local governments, have the potential to generate policy response at higher levels.

The LODRR programme has also found that government institutions in South Asia are not receptive to new ideas or different approaches unless they are backed by tangible dividends. To adjust to the perceptual preferences of decision makers it is appropriate to start by prompting communities to identify needs, get into mobilised groups, enhance their negotiating power and build local leadership to influence public policy at the local level. The programme experience is that policy changes from above without the participation of first respondents (the community) will not bear the desired fruits and will face complications in implementation. Therefore the suggestion is that to make any substantial change in the way disasters are managed, and for the 'paradigm shift' from emergency management to disaster risk management to take place in practice, policy reviews and revisions should be approached through pressure/demands from the community level.

This requires disaster management interventions to take at-risk communities as the starting point, enabling the preparation of plans which reflect the dynamics of local disaster risk, local resources and asset bases, and the livelihood scenario, and then link it up with the procedural regimes of governance. Communities should be empowered and local leadership should be strengthened to take up disaster risk- poverty-livelihood issues with local, district, state/ provincial and national governments to negotiate for the required support.

Community mobilisation in disaster risk reduction, when translated into public action, makes political and government institutions more responsive and accountable and also helps to challenge and change stereotyped disaster responses from the government.

Here, the starting point is local government institutions and officials, with whom the mobilised communities can forge interactions to achieve a win-win situation. The new form of community-government liaison is mutually beneficial for both parties: for communities by getting disaster risk and poverty issues addressed, and for the local government officials as an opportunity to affirm their position through the dynamics of interactions and the positive outcomes of the investments. The rest of the upward convincing of district, province and national level institutions and policy can then be a combined effort of communities and local governments through the demonstrated evidence.

6.
Livelihood Centred Disaster Management in South Asia: Gaps and Opportunities

The following section briefly presents a critical appraisal of existing disaster management policies and processes, and attempts to identify strategic entry points in parallel initiatives on disaster management and poverty reduction in South Asia. Apart from identifying gaps, the aim here is to inform policy decisions about how to integrate disaster risk reduction into livelihood enhancement and poverty reduction goals, within the current policy and planning environment.

6.1 Policy Mapping: National Governments

6.1.1 Critical Observations

Disaster policy in South Asia exhibits the following features:[1]

- Within disaster management bodies in South Asian countries there is a shortage of knowledge and information about hazard identification, risk assessment and management, and linkages between livelihoods and disaster preparedness. Disaster management policy responses are not informed by concepts, methods and tools for cost-effective and sustainable interventions. For instance, despite establishing new institutional structures for disaster preparedness, India, Bangladesh and Sri Lanka lack frameworks for integrating disaster management, poverty and livelihood issues.

- The states' perception of disasters in South Asia is, for the most part, influenced by the archetypes of event-driven emergency which leads to *ad hoc* and inconclusive policy responses. The mainstream relief delivery system is based on 'compensation' of victims and survivors. Losses and re-building livelihoods hardly feature in the responses.

- In some countries there are no long-term, inclusive and coherent institutional arrangements to address disaster issues with a long-term vision. For example the Emergency Relief Cell in Pakistan is mandated to deal only with post-disaster scenarios.

- Disasters are viewed in isolation from the processes of mainstream development and poverty alleviation planning. There are numerous examples of large-scale development projects bringing new forms of disaster and adding to the

1 These observations are based on the research and demonstration projects undertaken in South Asia by Duryog Nivaran and ITDG- South Asia (1998-2003)

vulnerability of at-risk communities (see Box 4.9).The number of people internally displaced in India as a result of development projects is said to be between 21 and 33 million - but could be as high as 50 million. In 1994, the Government of India reportedly admitted that 10 million internally displaced people had not been rehabilitated. *Adivasis* – or tribal people – account for 8% of the country's total population but constitute 40-50% of the displaced.[2]

- Disaster management, development planning and environmental management institutions operate in isolation despite the significance of livelihoods to all three; integrated planning between these sectors is virtually absent, and there are intra-institutional conflicts and lack of coordination within and between organizations.

- Despite the fact that South Asian countries share deserts, river basins, mountain ranges and coastlines, there is poor trans-boundary coordination on issues of natural disasters and environmental degradation.

- State-level disaster preparedness and mitigation measures are heavily tilted towards structural aspects, and undermine non-structural elements such as the knowledge and capacities of local people, and the related livelihood protection issues.

- Applied disaster management policy sometimes carries strategic biases that are aimed at protecting locations and infrastructure of greater economic and political significance at the cost of areas and communities with less political influence and economic importance.

2 Fernandes, W. *Pawns in the 'Development' Game in India Disasters Report Human-Instigated Disasters*; Parasuraman, S. and Unnikrishnan, P.V., (ed), Oxford University Press: India http://www.db.idpproject.org/Sites/idpSurvey.nsf/%28wViewCountries%29/036F1FD1EF3D7FDAC1256A9400383D3D

6.1.2 Disaster and Emergency Management Legislation[3]

In all five South Asian countries, existing legislation is inadequate for effective disaster management. Although current frameworks may be useful in terms of general planning, they have not been framed with a view to institutionalising preparedness, disaster response with a long-term focus and making the inter-linkages with development and poverty reduction.

For instance, Nepal and Pakistan continue to operate within legal frameworks and provisions enacted a few decades ago. The Natural Disaster Relief Act in Nepal dates back to 1982, while in Pakistan the National Calamities (Prevention and Relief) Act is from 1958. The focus of these is on emergency management, and any provisions for incorporating preparedness action are absent. In Nepal, there is no specific constitutional provision for disaster management. National policies on related issues address disaster concerns: these include policies on protection of the environment, development of science and technology, and increasing the pace of rural development. In Pakistan, the National Calamities (Prevention and Relief) Act provides the framework for disaster management, conferring special powers on provincial Relief Commissioners that enable them to respond during emergencies. Disaster and emergency related laws have become obsolete or dormant and are not invoked proactively by citizens or the administration.

In South Asian countries, issues related to natural disasters are covered under the legal frameworks for environment, land use, water resources, human settlements, etc. Many of these have not been drafted to take disaster management concerns into account, but are expected to cover this area due to the lack of any better option. However, the existing legal frameworks are inadequate for integrated plans and action. In addition, there is a vast number of bodies (departments, centres, boards and committees) with the authority to enforce legislation and regulations, whose functions often overlap, creating confusion and implementation bottlenecks.

3 Bhatti, A. Ariyabandu, M.M., *Disaster Communication: A Resource Kit for Media*, 2002, Islamabad: ITDG South Asia for Duryog Nivaran, p. 149.

6.2 Winds of Change: Promises and Opportunities

Some developments at the global and national levels provide opportunities for a livelihood-centred approach to enter into disaster management policy and implementation.

6.2.1 Legislative Measures

Recent situation assessments carried out in Bangladesh, India and Sri Lanka clearly point to the need for appropriate legislation for implementing effective disaster mitigation measures.[4] The Government of Bangladesh has identified legislation as an important part of its non-structural mitigation measures and a Disaster Mitigation Legislation Act has been drafted.

India also identifies the importance of an operational framework for disaster prevention integrated with development, where legislation has a key role in developing a disaster-free country. There are individually relevant acts such as the Environment Protection Act and Public Liability Insurance Act, but there is no enactment either at the Union or State Government level dealing with disaster management in a comprehensive manner which would provide scope for integrating it with long-term poverty reduction programmes. In the absence of such an enactment, the government's High Powered Committee (HPC) on Disaster Management formed in 1999 has proposed such an act to ensure efficiency and effective management, greater coordination and responsiveness with respect to the prevention and mitigation of disasters.

4 Bhatti, A. Ariyabandu, M.M., *Disaster Communication: A Resource Kit for Media*, 2002, Islamabad: ITDG South Asia for Duryog Nivaran, p. 149.

Sri Lanka's draft National Plan for Disaster Management (2000) points out the necessity of replacing existing *ad hoc* measures and suggests taking stock of these and bringing them under the purview of a general Disaster Management Legislation and Relief and Rehabilitation Policy.

6.2.2 Millennium Development Goals (MDGs)

MDGs are now taken guiding the mainstream global development agenda. There is no direct mention of disaster risk and livelihood linkages in the MDGs. However, it is now widely acknowledged that natural disasters are a serious threat to attaining them (e.g. in the final report of the World Summit for Sustainable Development (WSSD) and the UN ISDR's call for the forthcoming World Conference on Disaster Risk Reduction). A recent analysis by the Overseas Development Group points out how disaster risk reduction can contribute towards meeting MDGs, indicating that disaster risk reduction and MDG 1 ('Eradicate Extreme poverty and hunger') are interdependent, since reducing livelihood vulnerability to natural hazards is key to eradicating income poverty and improving equity, improving food security and reducing hunger. It further notes that disaster risk reduction and MDG 1 share common strategies and tools. The link with the MDG 7 ('Ensure environmental sustainability') is made in terms of risk reduction partnerships that include community-level actors and concerns which will offer more sustainable infrastructure planning leading to reducing disasters (see Section 3.2 for the LODRR programme experience on this).[5]

6.2.3 Poverty Reduction Strategies in the South Asian Countries

A number of countries in the region have developed Poverty Reduction Strategy Papers (PRSPs) identifying strategic directions towards development and poverty alleviation. In response to critiques of structural adjustment, which have often led to high

5 Overseas Development Group, University of East Anglia, August 2004, *Disaster Risk Reduction, a Development Concern: Scoping Study on links between disaster risk reduction, poverty and development*, UK p. 27.

levels of social dislocation and exacerbated inequality and poverty, the World Bank has repackaged its development aid lending strategy through national Poverty Reduction Strategy Papers (PRSPs).[6] The implications of PRSPs for disaster-livelihood development relationships have yet to be explored in depth, but the early stage of an evolving development approach is an appropriate time to consider more seriously the role of disaster in development and particularly poverty reduction.

The PRSPs of Nepal, Bangladesh, Sri Lanka and Pakistan, and DFID's country strategy paper for India contain the following main common features in their poverty reduction strategies:

- decentralisation of administration, and the related transfer of planning and decision-making powers to local governments
- improving governance, particularly at the local level
- local needs-based planning
- empowerment of communities by building their capacities and engaging them in the planning process
- public-private-civil society partnership
- creation of income generation and employment opportunities for the poor

Despite each country having a large number of poor people living in highly disaster-prone locations, a common gap in all the PRSPs is the absence of any linkage to disaster risk in the poverty analysis (except in the Bangladesh PRSP, and the Pakistan PRSP which makes reference to the link between disasters and macro economic performance). This indicates that the conceptual links between poverty, development and disasters have not been fully understood or accepted. In addition, the PRSPs do not contain any discussion of livelihood asset building strategies and options in the context of particular natural hazard risks.

6 http://www.prspsynthesis.org/connections9.pdf

Similarly, there is an absence of any systematic attention to disaster risk issues in DFID's Country Assistance Plans (CAPs). The CAP for Bangladesh mentions the negative impact of disasters on development, but there is no explicit incorporation of disaster risk reduction issues in the country risk analysis or in DFID's priorities in relation to the country's interim PRSP.[7]

Participatory Poverty Assessment (PPA) Pakistan, [8] is a recent example where poverty - livelihood linkage analysis made. In the PPA 2004, access to land and water emerged as very high priorities for the poor. The document highlights the need to increase access to assets and institutions for self-reliant livelihoods. Land, forests, water and livestock are identified as major assets for the livelihoods of poor communities.

6.2.4 Decentralisation

The ongoing process of government decentralisation in the region and the emphasis given in the PRSPs to engaging communities in the development planning process create space and opportunity to integrate the livelihoods approach into disaster risk reduction and development planning. The decentralisation process is based on five principles:

- devolution of power;
- decentralisation of administrative authority;
- decentralisation of management functions;
- diffusion of the power-authority nexus; and
- resource distribution at district level.

Planning functions are delegated to lower and micro units of administration: blocks, union councils, thana, etc., allowing local livelihoods needs and demands to be incorporated in planning and resource allocation. For instance, in Pakistan, the Local Government Ordinance 2001 promotes the principles of bottom-up planning to ensure the participation of local communities in development planning as their legal right. These provisions could be used to bring about livelihood-based disaster management at community level.

Community institutions like Citizen Community Boards (CCBs) in Pakistan, Panchayat Raj Institutions (PRIs) in India, Village Development Committees (VDCs) in Nepal, Union Parisads in Bangladesh, and Pradeshiya Sabha in Sri Lanka also provide useful entry points to initiate and strengthen community-based

7 Overseas Development Group, University of East Anglia, August 2004, *Disaster Risk Reduction, a Development Concern. Scoping Study on links between disaster risk reduction, poverty and development*, UK p. 40

8 *Between Hope and Despair, Pakistan Participatory Poverty Assessment (PPA), National Report,* Planning Commission, 2004, Government of Pakistan, Islamabad,

and needs-based disaster management programmes and projects at local level.

As the LODRR pilot demonstration experience from a number of locations in India, Pakistan, Sri Lanka and Nepal[9] suggests, plans developed by communities focus on two common elements:

- managing the regular hazards they have to live with
- securing livelihoods in the context of particular hazards.

Box 6.1 Livelihood Approaches and Local Governments

Although livelihood-based development concepts are new to local government officers, exposure to the concept and seeing the demonstration of a community-based flood preparedness project in Kot Nizam in Pakistan (see Box 4.7) has changed the outlook and resource allocation policy of Nazim District on development planning for flood-affected areas.

Previously, roads, bridges, schools and other infrastructure were not planned for flood-prone areas on the argument that they would be washed away. However, the local government administration of Hafizabad has recently changed this outlook, recognising the need to introduce livelihood-centred flood preparedness. It has made the flood-prone areas a priority for resource allocation and invested more in the district's riverine belt. Schools have been opened and link roads, culverts and drainage channels built in flood-prone and low-lying villages with the financial support of the local government.

Similarly in Sri Lanka, government officials in Hambantota District have been sensitised by demonstrations of the livelihoods approach to the need for long-term and medium-term development initiatives for drought areas based on livelihood improvements, and the potential and possibility of community-based rain water harvesting techniques to meet water security demands in managing regular dry periods. District officials began preparing disaster preparedness plans for 12 sub divisions in September 2004.

In 1999 the Himachal Pradesh Government made it compulsory for all new building owners to build structures for collection of rainwater from their roof tops, through introducing an amendment to the building bye-laws of the State. The order will be applicable to all government, institutional and commercial buildings with a plinth area greater than 1,000 square metres.

Source: ITDG South Asia, LODRR project monitoring reports

9 Reports from the 'Livelihood Options for Disaster Risk Reduction in South Asia', a Research and Demonstration Project coordinated by ITDG- South Asia (1999-2003).

Box 6.2 Entry Points for Decentralised Disaster Management: The Case of Pakistan

With the promulgation of the Local Government Ordinance 2001, strategic entry points with reference to disaster management have emerged in Pakistan. There are a number of relevant provisions which could be invoked for introducing effective disaster management systems at district level integrated with poverty, development and livelihood issues.

Section 18 (k) of the Ordinance empowers the District Nazim (District Chief Executive) to take charge, organize and prepare for relief activities in disasters and natural calamities.

Chapter IV sets out the functions and powers of the Zila Council, which include reviewing measures for flood relief and storm water drainage

Chapter IV also sets out the functions and powers of the Tehsil Municipal Administration. These include: preparing spatial plans for the Tehsil in collaboration with Union Councils (such as plans for land use, zoning and other functions for which the Tehsil Administration is responsible); and improving municipal services and infrastructure including storm water drainage

The Article 97 of the Sixth Schedule linked to the drainage of low lying areas reads:
'The concerned local government may take such steps with regard to the excavation or re-excavation of tanks and ponds and the reclamation of low-lying areas as it thinks fit for, as the case may be [provincial] Government directs.'

The Sixth Schedule of the Ordinance touches upon the role of local governments with special reference to floods. The particular clause reads:
'For the fighting of floods, rescuing of people from the flood-affected areas, and affording relief to flood-stricken people, the concerned local government shall provide such boats, appliances and equipment as may be specified by Government.'

According to Schedule 2 of the Ordinance, which deals with the Distribution of Business among Group of District Offices_the responsibilities of the District Coordination Officer (DCO) include:

- Taking preventive and protective measures against floods and rains
- Recommendation seeking an area to be declared as calamity hit
- Distribution of relief funds and goods to the calamity affectees and maintenance of accounts regarding such distribution
- After an area is declared calamity affected, exercise of delegated powers under section 4 of the Natural Calamities (Prevention and Relief Act) 1958

Citizen's Community Boards (CCBs): The provision of Citizen's Community Boards (CCBs) in the Local Government Ordinance 2001 may be an innovative entry point. CCBs are organized on a system of matching grants in which for any infrastructural project the community raises 20% of the total budget and Government provides 80%. CCBs can be mobilized to identify disaster management as the number one priority in development planning at the village, union council, tehsil and district level. Hazard-prone areas can be given priority in resource allocation and local bodies can be mobilized to design and implement location-specific interventions aimed at disaster risk reduction.

In Districts Jhang and Hafizabad districts, lying in the flood belt, the district administration which had traditionally taken a relief approach has initiated a process to prepare five-year flood management plans for the first time. The main impetus for this change has come from the field level demonstrations at Kamra, and Kot Nizam (see Boxes 4.2, 4.9).

6.2.4 UNDP disaster risk management initiatives

UNDP is actively promoting the need for integrating disaster risk reduction with development globally.[10] It has launched major programmes with a disaster management focus in Bangladesh, Nepal, India and Pakistan.

In Sri Lanka, following the flooding in June 2003, new initiatives on flood management are being introduced by UNDP. Key features of the country-level programmes include: moving from emergency management towards disaster risk management, and making links to poverty reduction for effective disaster management. It is expected that the link with livelihood centred interventions will be made in attaining these goals.

The 2001- 4 Participatory Disaster Management Programme (PDMP)[11] supported by UNDP in operation in six districts of Nepal (Bardiya, Chitwan, Makawanpur, Sindhuli, Syangja and Tanahun) aims to improve disaster preparedness and management capacity at the local and national levels. It also aims to influence development organisations to deal with disasters as a regular development activity.

At the request of the Government of Pakistan, UNDP has agreed to assist in the development of a National Disaster Management Programme by undertaking a comprehensive review of the existing capacity of the governmental sector and civil society for disaster preparedness and management, and preparing a full-scale project proposal for technical cooperation. This will include a detailed plan of action for implementation leading to the establishment of a mechanism for a responsive early warning, preparedness, coordination and mitigation capacity in the country. In addition, the

10 UNDP, *Reducing Disaster Risk: A challenge for development* , February 2004, Geneva: Bureau of Crisis Prevention and Recovery UNDP, www.undp.org/bcpr

11 http://www.undp.org.np/projects/nep99014.htm

Programme includes proposals for integrating disasters into national sectoral development policies and plans.[12]

The Government of India with support from UNDP has launched national-level programmes covering 167 hazard-prone districts of the country in 17 'multi-hazard prone' states which include Orissa, Gujarat and Assam. The Ministry of Home Affairs in India and the UNDP recently signed a US$ 20 million agreement to conduct a Disaster Risk Management Programme that involves community-based approaches. This programme extends assistance for community-based disaster preparedness and re-establishing sustainable livelihoods in areas recovering from major calamities.

These programmes contain isolated elements of income generation, involving women and other marginalized groups, but overall livelihood concepts are still lacking.

6.2.5 Individual and multilateral donors

Many individual and multilateral donors direct their aid efforts mainly towards relief assistance and rebuilding damaged infrastructure, not people's livelihoods. As a result, reconstruction efforts after major disasters where large amounts of resources are spent don't lead to recovery. In its annual look at global emergency relief, the International Federation for Red Cross found that 53% of aid projects focussed on rebuilding infrastructure while only 10% went toward components of economic recovery.[13] The *World Disasters Report* further noted that a failure to understand the economic and social realities facing disaster victims leads to poorly designed aid efforts which don't help protect people from the impact of future disasters. In Bangladesh for example, 60% of the

12 http://www.un.org.pk/undp/crisis_p/crisis_overview.html
13 *World Disasters Report 2001,* Geneva, International Federation of Red Cross and Red Crescent Societies, p 36

funds spent on the Flood Action Plan between 1990 and 1995 did not stay in the country but were used to pay foreign consultants. Other common approaches to aid and assistance which undermine local economies, including tied aid, and the funding gap between emergency, rehabilitation and development programmes, were also criticized.[14]

"Aid needs to be used to rebuild local economies and communities. To do that, donors need to understand the links between relief, rehabilitation and development and to involve local people more in determining the kind of help they need. So the way aid programmes are funded has to change," demanded the *World Disasters Report.*

Status and access to resources will not be improved by an infrastructural approach to recovery. New ways of measuring the value of aid inputs are needed. Resources cannot be assumed to regenerate post-disaster communities until they can be demonstrated to have expanded the basis for sustainable livelihoods, and not displaced other local activities.

Relief and development donors are increasingly being pressurized to incorporate disaster risk reduction as a major element of funding. There is much discussion at the highest levels in the UN and DFID on the strategies for linking disaster risk issues with development programmes. These developments can be seen as windows of opportunity to bring in a livelihoods perspective.

14 *World Disasters Report 2001,* Geneva, International Federation of Red Cross and Red Crescent Societies, p 37

7.

Operationalising the Disaster Resistant Sustainable Livelihoods Framework:

Who Can Do What?

This concluding chapter outlines ways of operationalsing the Disaster Resistant Sustainable Livelihoods (DRSL) framework.

These are tentative tracks along which practical strategies and interventions can be aimed, according to the specificities of country, area, hazards and communities. However, the running theme is to understand the strength of existing institutions and structures, identify windows of opportunity, and make strategic inroads into such structures and processes.

7.1 Regional Level

- The geographical characteristics of the South Asian countries demand a regional perspective and co-operation (see Chapter 1). This is necessary in order to address cross-border concerns with regard to shared river basins, coastal zones, mountain ranges and deserts, forests, weather-related information sharing, and the implications of irrigation and power projects - issues which have direct implications for disaster risk reduction and the agriculture-based livelihoods of millions.

- Regional networks and SAARC in particular have a mandate and capacity to engage national governments in a regional policy dialogue on disaster management with a special focus on paradigm shift, disaster preparedness and livelihood enhancement. This would necessarily address:
    - The existing mechanisms of weather-related information sharing between countries that share mountain ranges, river basins and deserts should be revised, improved and streamlined in the light of a poverty and disaster risk reduction framework.
    - Bilateral issues related to water sharing and natural resource management in the region should be brought to summit discussion and a negotiated approach based on the principles of equity should be employed to resolve and mediate riparian conflicts. The arrangements for trans-boundary river basin management at South Asian level would serve as a basis for regional co-operation in natural resource management.

- Networks and organisations with a regional mandate and outreach such as the World Bank, DFID, IFRC, UNDP, CARE and ITDG have the potential to bring about a stronger regional perspective by generating synergy between their respective organisational contributions to the issues of livelihood enhancement and disaster risk reduction.

- Establish a regional forum on disaster management and a joint policy and common strategy to address integrated issues of natural disasters, natural resource management and livelihoods.

- Establish a regional media forum to discuss, debate, and ensure public accountability regarding regional aspects of natural resource sharing and management, related issues of natural disasters and vulnerability of mega development projects with implications for more than a single country, and information sharing between countries.

- Introduce research and training packages to collect, authenticate and analyse disaster and livelihoods-related data in order to initiate and facilitate informed decision making in relation to disaster management and development planning.

- Inter-country learning on livelihoods and vulnerability issues, and information sharing and replication of good practices should be encouraged through various forums, given the similar poverty and vulnerability contexts in the region.

7.2 National Level

- Risk reduction is a pre-requisite for any financial investment in business, development, and economic stabilisation at national level. Legislative and institutional arrangements should be put in place and strengthened to bring about a shift in applied disaster management policy: from emergency management to livelihood-based risk reduction.

- In the case of both water management and land management, two principles should apply. First, governments must anticipate and attempt to prevent resource management problems before those problems generate severe environmental degradation leading to aggravated hazard conditions and disasters. Second, where possible, allocation of rights to land and water should favour resource poor people as a means for asset building (see Figure 5.1)

- Ensure that non-market environmental values are protected as the economic frontier advances and that economic assets are put in the hands of poor people, developments that are favourable for the environment and for the evolution of local, regional and national institutions.[1]

- Raise awareness among development planning and disaster management officials and professionals about the concepts of paradigm shift, livelihood-based integrated poverty reduction and disaster risk reduction planning and implementation.

- Incorporate the approaches and mechanisms of 'managing' rather than 'controlling' hazards by appropriate combinations of structural and non-structural measures.

1 *World Development Report* 2003, New York: The World Bank and Oxford University Press.

- Incorporate livelihood-disaster risk linkages into MDG related national poverty reduction strategies and PRSPs to provide a broader framework for effective disaster risk reduction.

- Develop operational linkages between disaster risk reduction and emergency management with an emphasis on preparedness and development planning.

- Introduce the necessary procedures and legislation to make environmental impact assessment and risk assessment focused on livelihood gains and losses mandatory for any mega or micro development project within the jurisdiction of national government.

- Operationalise and strengthen the process of decentralisation of administrative and fiscal power for effective local-level disaster management. Local government tiers should be mandated and geared to undertake livelihood-based disaster management initiatives at the local level (see Box 6.2).

- Policy advocacy guided by a rights-based approach to disaster management to ensure government accountability in disaster management initiated and supported in all South Asian countries.

- Introduce research and training packages to collect, authenticate and analyse disaster and livelihoods-related data in order to initiate and facilitate informed decision making in relation to disaster management and development planning at the national level.

- Develop and apply monitoring mechanisms to measure the progress of preparedness-based disaster management

- Streamline co-ordination between different ministries, planning commissions, departments and bureaux to integrate disaster risk reduction with short-term, medium-term and long-term livelihoods development and poverty reduction planning.

- Strengthen early warning systems and put in place effective mechanisms of information dissemination to provide timely information to local governments and communities to protect livelihoods from the vagaries of weather.

7.3 Local Governments

- In the wake of the decentralisation drive in the region, local governments in some countries (Sri Lanka, Pakistan and India) have relatively more autonomy to take counter-disaster initiatives at the local level. Local governments should grasp these opportunities and incorporate disaster risk reduction and livelihood enhancement in local-level village, town and area development planning (see Box 7.1).

- Local government structures provide an opportunity to link disaster management issues with local governance. These structures, and the processes of devolving power should be utilised to bring about overall community development by taking disaster risk reduction as a basic entry point for the development of at-risk communities (see Boxes 6.1, 6.2).

- District disaster coordination committees should be formed aimed at engaging all stakeholders in risk and emergency management, livelihood enhancement and poverty reduction.

- By-laws related to land zoning, land regulation and spatial planning should be enforced to prevent localised rural and urban disasters disrupting livelihoods.

- Environmental impact assessment and risk assessment with a focus on livelihood gains and losses should be made mandatory for any mega or micro development project within the jurisdiction of local government.

- Local area development plans for hazard prone areas to focus on creating livelihood assets and enabling environment to strengthen and diversify livelihoods (see Box 7.2).

- Disaster-related development research and training should be conducted at local level to enhance the knowledge base and improve the managerial capacity of disaster management and development officials.

- Initiate awareness campaigns using locally appropriate communication methods to inform the public about disaster risks and its role in mitigation and preparedness.

- Introduce and replicate integrated, community-led disaster risk reduction, mitigation and livelihood enhancement schemes at the local level (see Box 7.1).

- Encourage community-to-community interaction and exchange on local best practises as part of empowerment and confidence building.

Box 7.1 Key Infrastructural Indicators of Livelihood Protection in Flood Areas

- **House Construction:** Raised plinth heights, cement or baked brick instead of mud walls, and flat roofs on which temporary or permanent protective structures can be built play a major role in enabling households to cope. Secure flat roofs are of particular importance as places to store assets (grain, farming tools, etc) away from flood waters. Similarly, house designs which are a mixture of concrete poles and locally available material such as bamboo poles and treated jute sticks (a design adopted in Faridpur, Bangladesh) can withstand seasonal flooding.

- **Island design for villages:** Throughout the Ganga basin, increasing village heights above normal inundation levels is a traditional response to floods. This approach was mentioned by villagers in many case study areas and presented in direct contrast to approaches relying on the building of embankments.

- **Construction of water supply systems that are resilient to contamination:** Sealed wells accessible by hand pumps at roof level.

The need to construct structures to meet local flood conditions

- **Flood drainage systems (or the lack thereof):** In many cases, villagers in flood-affected areas identified poor drainage as a major factor contributing to flooding and the negative impacts associated with it. It is important to develop designs for roads, railways and other infrastructure that encourage drainage rather than restrict it.

- **Construction of structures which meet local flood conditions:** Often simple structures such as small culverts, bridges and drainage canals at the village level can regulate seasonal, monsoon flooding. The investment for such structures is not high, and the villagers have the basic knowledge of construction and design.

Faridpur, Bangladesh - a model house built to withstand seasonal flooding

- **Construction of irrigation systems that are resilient to flood damage:** In many areas, damage to permanent diversion structures is difficult to repair and can cause streams to shift. Traditional systems often use structures such as brushwood dams, which, while they easily get damaged, are also easily repaired and do not cause permanent changes in stream morphology.

- **Manufacture of feed blocks to maintain cows and buffaloes with minimum fodder:** Feed blocks made out of locally available produce (which includes sugarcane residue and molasses**)** can be stored for use during floods. The blocks can support a few animals for a week or so in the absence of fodder.

- **Community managed early warning systems** which are specific to the local flood situation, and information relayed in ways easily understood by the community

Adopted from: Moench M, Dixit A, 2004, *Adaptive Capacity and Livelihood Resilience ; Adaptive strategies for responding to floods and drought in South Asia* , The Institute for Social and Environmental Transformation, Colorado, USA and Nepal pp 158-171
ITDG Bangladesh, 'An Attempt on Application of Alternative Strategies for Community Based Flood Preparedness in South – Asia' October 2002, unpublished paper, and the project reports of ITDG South Asia's LODRR programme

Box 7.2 Key forms of livelihood diversification

- Create options for at least one family member to be in a secure, preferably local, non-agricultural occupation
- Development of permanent non-agricultural based livelihood sources within villages as primary occupations
- Shifting the structure of natural resource based livelihood activities to accommodate flood and drought impacts, for example increasing the role of livestock in drought situations
- Temporary and permanent migration
- Selection of adaptable crop varieties and crop combinations which are more resilient
- Mixing crop combinations with food and cash crops
- Mixed and alternative livelihood avenues suitable for different climatic seasons of the year (agriculture, livestock, home based activities such as crafts, wage labour, processing food items for sale)

Adopted from: Moench M, Dixit A, 2004, *Adaptive Capacity and Livelihood Resilience ; Adaptive strategies for responding to floods and drought in South Asia* , The Institute for Social and Environmental Transformation, Colorado, USA and Nepal pp 158-171
ITDG Bangladesh, 'An Attempt on Application of Alternative Strategies for Community Based Flood Preparedness in South – Asia' October 2002, unpublished paper, and the project

7.4 Individual and Multilateral Donors

- Make planning based on disaster risk analysis mandatory in allocating finances for development.

- Donors investing in disaster response and relief should direct their resources towards re-building livelihood assets and options in their aid policies and plans.

- Include livelihood – disaster risk components in country assistance strategies in South Asia. A consortium could be developed for coordinated investment in people's livelihoods.

- Introduce checks and balances to ensure that investments in rehabilitation and reconstruction are integrated with development plans, with a focus on sustainable disaster risk management measures.

- Provide technical and financial support to governments with a core objective of mainstreaming livelihood approaches and practices in disaster management.

7.5 International and National Policy Research Forums

- Policy research forums should conduct further studies to highlight the links and dynamics of livelihood enhancement and disaster risk reduction in South Asia.

- Develop planning methods and tools for preparation and application of integrated disaster risk reduction and poverty alleviation plans.

- Initiate a series of macro and micro case studies of disaster preparedness, risk reduction and livelihood-centred disaster management to inform regional and national policies and decision making processes.

- Develop monitoring methods and tools to ascertain the costs and benefits of livelihood-based development and disaster risk reduction programmes at local level.

7.6 Community Groups and NGOs

- Undertake research, project demonstration and advocacy at micro level to build tangible examples of livelihood-centred disaster management.

- Build awareness of livelihood-centred disaster management concepts and practice among NGOs, CBOs, government officials, the media and other stakeholders.

- Develop demonstrations guided by the DRSL framework (Figure 4.1) and use success stories to influence local government policies and action.

- Utilise local governance structures to ensure the mobilisation and participation of especially vulnerable groups within communities, such as women, the low caste, landless and disabled in disaster risk reduction activities.

- Utilise local governance structures to build people's awareness, and empower them to demand disaster risk reduction and livelihood asset building as a development right.

- Mobilise community groups to facilitate their active participation in local governance processes.

- Conduct 'performance audits' to assess the effectiveness of approaches, strategies and expenditure on disaster risk reduction and livelihood diversification.

- Undertake and strengthen the process of public action to make governments accountable to disaster-prone communities.

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