# ‘THE DIVINE HIERARCHY’: THE SOCIAL AND INSTITUTIONAL ELEMENTS OF VULNERABILITY IN SOUTH INDIA

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LEE BOSHER

Flood Hazard Research Centre
School of Health & Social Sciences
Middlesex University
England

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Dedicated to....

To the victims of the 1996 and 1999 tropical cyclone disasters in Andhra Pradesh and Orissa respectively, and to all those who strive in the face of adversity to exist, and endeavour not to be the victims of future disasters.

## ABSTRACT

Studies over the last twenty years show that understanding the social and economic forces that govern societies and create vulnerability should have the same emphasis as understanding the physical causes of vulnerability. This enquiry investigates what social networks and institutions are available (created or imposed) to people that enable them to cope with large scale crises, such as tropical cyclones, and 'everyday' problems such as poverty and illness. The social institutions prevalent in villages in coastal Andhra Pradesh, south India, have been assessed regarding which variables appear to be the most and least successful in contributing to the reduction of people's vulnerability and aiding the coping mechanisms of individuals and households.

Using a mixed methods approach, quantitative and qualitative data were collected from over 300 respondents in twelve villages, enabling an assessment to be made of each respondent's access to resources as indicators of levels of poverty, marginalisation, resilience and social power. Data was obtained using questionnaires, village cartographic surveys, sociograms and semi-structured interviews. The sociograms used throughout this research were developed during the fieldwork. They were adapted to suit the requirements of the research focus and thereby facilitate the assessment of the types and strengths of social networks used by the respondents in both 'everyday' and 'crisis' situations. A contextual analysis was conducted to locate concepts such as 'community' and 'risk' within the discourse appropriate to the respondents. From this analysis it became apparent that the village level respondents perceive risk in terms of recurring 'everyday' occurrences such as low crop yields and the lack of basic needs, and not high impact but infrequently occurring events such as tropical cyclones or floods. The village level respondents, government officials and NGO employees typically perceive the concept of 'community' as defined by caste classifications.

The main variable explaining access to resources is caste. Caste is the dominant social institution that influences social networks and hence (with poverty) levels of vulnerability. This is because it not only influences levels of vulnerability directly, through levels of poverty, but also restricts the ability of some respondents to change their circumstances through enduring caste-defined inequalities with regards to accessing the resources that might help them to reduce their levels of vulnerability. Given this finding, and because caste is not predominately an economic phenomenon, vulnerability reduction initiatives that focus on economic advancement alone are unlikely to usurp patterns of caste discrimination and thereby are unlikely to reduce endemic levels of vulnerability for the most vulnerable members of society: they are treating symptoms, not causes. In contrast, social networks are also important: while the 'lower' castes are the most marginalised, powerless and poorest members of the case study areas they attempt to address this by accessing socio-economic resources that can, and marginally do, increase their resilience to frequent small scale crises, typically via social networks with informal social institutions such as NGOs, CBOs and kinship networks.

In view of the dearth in empirical evidence associated to inequalities related to caste in rural India, this thesis adds to the limited contemporary evidence that suggests that caste defined disparities persist. Consequently, practitioners involved in vulnerability reduction need to gain a better understanding of the communities and the 'political realities' in which they operate, so that future interventions will be better targeted and ultimately be more appropriate and sustainable that they have been in the past.

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| | |
|---|---|
| **AP** | Andhra Pradesh |
| **APCHMP** | Andhra Pradesh Cyclone Hazard Mitigation Project |
| **APDMU** | Andhra Pradesh Disaster Management Unit |
| **BC** | Backward Caste (GOI classification) |
| **BJP** | Bharatiya Janata Party |
| **CBO** | Community Based Organisation |
| **CCPA** | Cyclone Contingency Plan of Action |
| **CDMC** | Indian Government's Cyclone Distress Mitigation Committee |
| **DFID** | UK Government's Department for International Development |
| **DWCRA** | Development of Women's and Children's Rural Agency |
| **EBC** | Economically Backward Caste (GOI classification) |
| **FAO** | Food and Agriculture Organisation of the United Nations |
| **FEMA** | Foreign Exchange Management Act |
| **GP** | Gram Panchayat (Village Panchayat) |
| **GOI** | Government of India |
| **ICZM** | Integrated Coastal Zone Management Plan |
| **IDNDR** | International Decade of Natural Disaster Reduction (1990-2000) |
| **IILS** | International Institute for Labour Studies |
| **INGO** | International non-governmental organisation |
| **MLA** | Member of the Legislative Assembly |
| **MP** | Member of Parliament |
| **MPTC** | Mandal Parishad Territorial Constituency |
| **MRO** | Mandal Revenue Officer |
| **NGO** | Non-governmental organisation |
| **OC** | Other Caste; Ordinary Caste (GOI classification) |
| **PAR** | Pressure and Release Model (Blaikie et al 1994) |

| | |
|---|---|
| **PRA** | Participatory Rural Appraisal |
| **RAI** | Resource Accessibility Index |
| **Rs.** | Indian Rupees |
| **SC** | Scheduled Caste (GOI classification) |
| **SEWA** | Self Employed Women's Association |
| **SGSY** | Swarna Jayanti Swarna Rogajar (Government anti-poverty programme) |
| **ST** | Scheduled Tribe (GOI classification) |
| **TDP** | Telugu Desam Party |
| **UN** | United Nations |
| **UNDP** | United Nations Development Programme |
| **UNOCHA** | United Nations Office for the Coordination of Humanitarian Affairs |
| **WHO** | World Health Organisation |
| **ZPTC** | Zilla Parishad Territorial Constituency |

| | |
|---|---|
| **Aquaculture** | Generic term that typically refers to the farming of shrimps (prawns) in tanks that are constructed in earth and containing brackish water. |
| **Caste** | A rank in society based on the *Varna* system combined with a specific occupation and ritual associations. It is a position that one is normally born into and broadly defines the group within which one can marry, although the reality can be much more complex. |
| **Crore** | Equal to the number 10,000,000 |
| **District** | Administrative section of a *State*, there are 23 Districts in Andhra Pradesh |
| **Dominant Caste** | M.N. Srinivas (1955, 1962) proposed the term 'dominant caste' for a caste group considered superior in a particular locality. The dominant castes in Andhra Pradesh are the landowning peasant castes (Shudras) of the Kammas, Kapus and Reddis. |
| **Gram Panchayat** | Committees of villagers elected to represent the whole village or groups of villagers within a village. |
| **Harijans** | Literally (children of God) are people that are considered to be outside the Hindu *Varna* caste system. Also referred to as 'untouchables' and 'dalits' (the down trodden). Harijans are classified as a Scheduled Caste (SC). |
| **'Janmabhoomi'** | The basic structure of this government programme is one in which the government resource distribution system meets the grass roots at its smallest cell, the household. Literally means 'motherland' in Telugu |
| **Jati** | The subcaste of a *caste* |
| **Kutcha** | Poor quality, such as huts, typically made from mud and branches with thatched roofs. |
| **Lakh** | Equal to the number 10,000 |
| **Mandal** | Administrative section of a *District*, there are 57 mandals in East Godavari District and 1104 in Andhra Pradesh. May also be referred to as Taluk or Taluka. |
| **Panchayat** | Administrative section of a *mandal* |
| **Pukka** | Term refers to any structure perceived to be 'well made'; for housing, typically refers to framed or non-framed concrete constructions |
| **Rupee** | The currency of India. Exchange rate £1 = 69 Rupees (29th March 2002) |
| **Sarpanch** | Elected *Panchayat* President |
| **Service castes** | Typically refers to the *castes* involved in occupations that provide services to the village; such as Chakkali (washerfolk), Vishwa Brahmana (barbers) and Nai Brahmana (metal and wood workers). |
| **State** | In Indian terms this refers to an administrative section of the country with its own legislative assembly. |
| **Varna** | Literally this is the fourfold 'colour' system derived from the myth of the bodily dismemberment of the god Purusha. His mouth gave rise to the Brahmins (priests and people of learning), his arms to the Kshatriyas (rulers and warriors), his thighs to the Vaisyas (traders) and his feet to the Shudras (cultivators, occupational and serving *castes*). |
| **Zilla Parishad** | The interface between village level and *State* government. |

## GLOSSARY OF CASTES

| | |
|---|---|
| **Adi-Andhra** | Literally means the original people of Andhra; a term used by a section of the *Dalits* in coastal Andhra Pradesh to describe themselves |
| **Adivasi** | Generic term for a tribal person |
| **Agnikulakshatriya** | (BC) A caste of traditional fisherfolk (other fisherfolk castes include Besta, Pattapu and Mutrasi). |
| **Brahmin** | The highest rank in the four-fold *Varna* hierarchy |
| **Chakkali** | (BC) 'Washer folk' service caste involved with laundry related activities. |
| **Dalit** | Generic term for untouchable castes, literally means 'the down trodden' |
| **Girijan** | Derived from the name *Harijan* literally means, 'child of God'; name given by M.K. Gandhi to the untouchables |
| **Golla** | (BC) Cattle breeder and backward peasant caste; Gollas are also called Yadavas |
| **Gowda** | (BC) Toddy-tapper caste |
| **Jambuvulu** | (SC) Untouchable caste |
| **Kamma** | (OC) A dominant peasant caste in coastal Andhra Pradesh |
| **Kapu** | (OC) A dominant peasant caste in coastal Andhra Pradesh |
| **Kshatriya** | Ruler or warrior *Varna*; the second *Varna* in the four-fold Hindu *Varna* |
| **Madiga** | (SC) Untouchable leather worker caste |
| **Mala** | (SC) Untouchable agrarian labour caste |
| **Nai Brahmana** | (BC) Barber caste |
| **Naidu** | (OC) A dominant peasant caste in parts of Andhra Pradesh |
| **Pattapu** | (BC) A caste of traditional fisherfolk |
| **Raju** | (OC) Former 'warrior' caste in coastal Andhra Pradesh |
| **Reddy** | (OC) A dominant peasant caste in the Telangana region of Andhra Pradesh |
| **Setti Balija** | (BC) 'Backward' peasant caste, typically involved with agriculture |
| **Shudra** | The lowest rank in the four-fold *Varna* system |
| **Untouchables** | Those outside the *Varna* system, may also be referred to as Dalits (the down trodden), Harijans (children of God), achchuuta (the polluted) or Chandala (from the Sanskrit word çandaala a term that means those who are not allowed to dwell within the limits of a town or village). |
| **Vaishya** | Trader caste; the third *Varna* in the four-fold Hindu *Varna* system |
| **Vishwa Brahmana** | (BC) Refers to a caste cluster comprising Kamsali (goldsmith), Kanchari (brass-smith), Kammari (blacksmith) and Vadrangi (carpenter) |
| **Yadava** | (BC) Cattle breeder and backward peasant caste; also referred to as Gollas |
| **Yenadis** | (ST) A semi-nomadic community of rat-catchers (also referred to as Girijan) |
| **Yerukula** | (ST) Semi-nomadic tribal community involved in basket making and pig-rearing (also referred to as Erukala) |

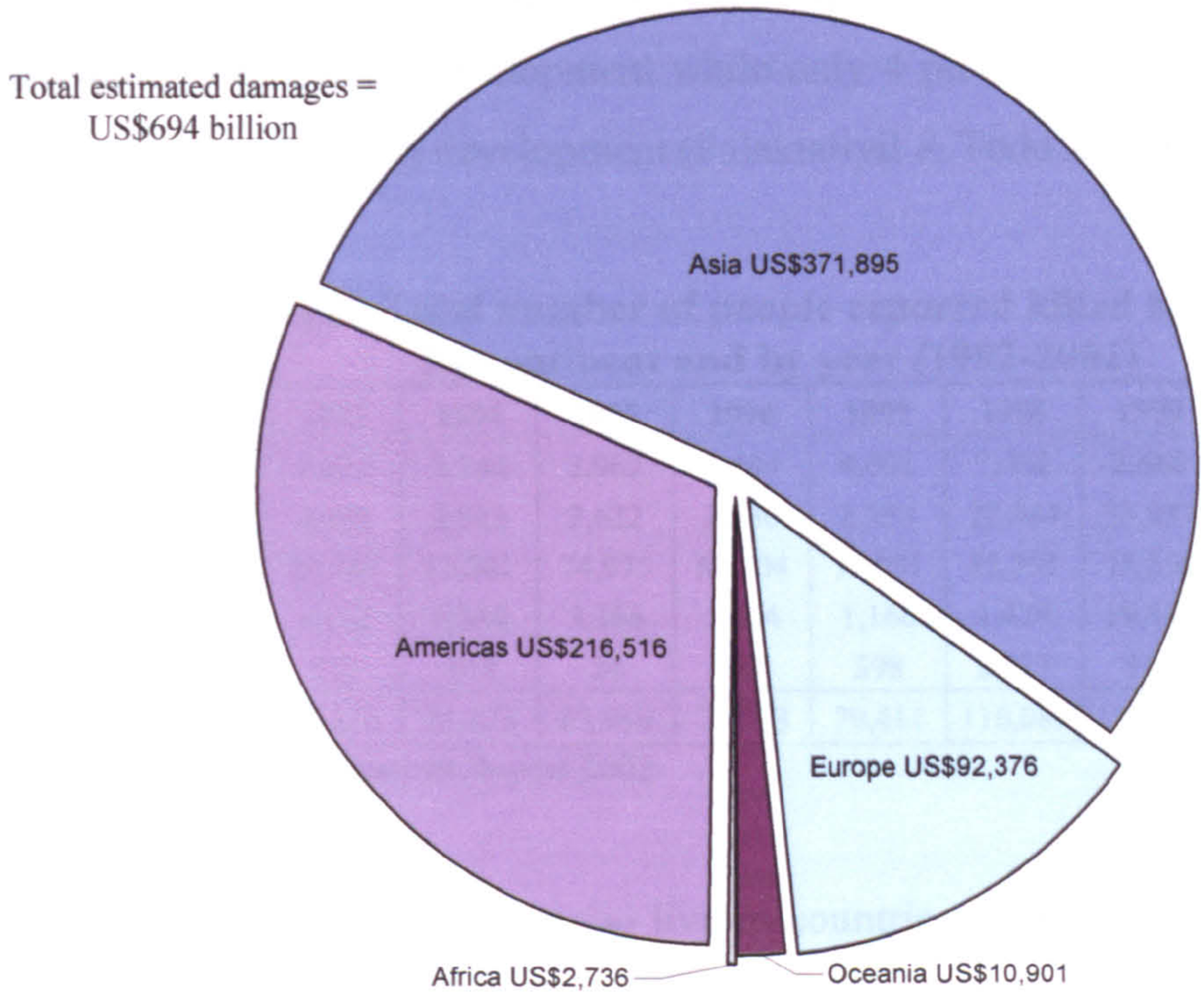
Documented increases in the occurrence of small to medium scale disasters such as those associated with tropical storms and flood hazards have combined with theoretical developments to necessitate a fresh approach to hazard management. Emphasis has moved away from relief and disaster preparedness, towards a more sustainable approach incorporating hazard mitigation and vulnerability reduction elements. This movement can be seen as part of a wider paradigm shift in which top down, 'expert-led' (and often capital intensive) proposed solutions are being rejected in favour of 'bottom-up', community based and sustainable developmental initiatives. This change in focus is particularly significant, as it is an approach advocated by the World Bank and the British Government's Department for International Development (DFID) along with other organisations involved in vulnerability reduction programmes.

The typical conundrum for Governments and agencies involved in dealing with natural hazards has been regarding how they can enable people to live alongside the hazards that nature poses. Threats such as earthquakes, tropical storms (cyclones, hurricanes and typhoons), volcanoes and riverine flooding have been relatively unpredictable occurrences on Earth for millennia but the surge in the human population over the last few hundred years has placed more and more people in environments where natural hazards are likely to cause disasters. Geologists, geomorphologists, meteorologists, and the like may regard these natural hazards as natural processes that contribute towards shaping the planet and providing the environment that all humans require to exist. However, the anthro-centric disciplines of economics, politics, business, sociology, psychology and medicine view natural hazards as threats to humankind's ability to develop economically and socially.

## 1.1 WHY RESEARCH VULNERABILITY?

Natural hazards may not only threaten the lives of those unfortunate to become affected by them but these hazards can also threaten economies, businesses and in some cases political regimes, draining millions of dollars every year in relief, rehabilitation, reconstruction and insurance costs for many nations. Figure 1.1 illustrates the huge figures related to the estimated damages caused by disasters by continent and by year. Over the decadal period between 1992 and 2001 the total estimated damages totalled US$694 Billion, with the worst hit continent being Asia (WDR 2002). The costs of these damages average US$69 billion per year and can have a particularly devastating effect upon the economies of underdeveloped nations and their development strategies (WDR 2002).

**Figure 1.1: Total amount of estimated disaster related damage by continent (between 1992-2001): Figures in US$ Millions**




*Source*: World Disasters Report 2002

However, the economic costs of disasters due to natural hazards are only one part of the problem, with the impacts on human life being the most fundamental and distressing elements of the effects of natural disasters. Millions of people every year are affected by the ravages of 'mother nature', a point illustrated by Table 1.1. On average, between the years of 1992 and 2001, 20 million people per year were affected by disasters (WDR 2002). Disasters, both natural and technological, ravage nations irrespective of a country's wealth or resources but invariably it is the least developed nations that suffer the most.

**Table 1.1: Total number of people affected by disasters, by continent and by year (1992-2001) in thousands**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Africa** | 21,747 | 16,500 | 11,234 | 9,533 | 4,282 | 7,136 | 10,738 | 14,362 | 23,043 | 18,378 | 136,953 |
| **Americas** | 3,429 | 1,970 | 2,722 | 1,027 | 2,200 | 2,170 | 18,180 | 5,008 | 1,348 | 11,225 | 49,279 |
| **Asia** | 50,894 | 162,254 | 168,145 | 256,863 | 207,141 | 56,229 | 315,006 | 188,605 | 229,636 | 140,067 | 1,774,840 |
| **Europe** | 372 | 1,380 | 909 | 8,220 | 30 | 679 | 621 | 6,549 | 2,907 | 777 | 22,444 |
| **Oceania** | 1,849 | 5,158 | 5,194 | 2,682 | 652 | 1,230 | 328 | 151 | 7 | 32 | 17,283 |
| **TOTAL** | 78,292 | 187,262 | 188,923 | 278,325 | 214,305 | 67,444 | 344,873 | 214,675 | 256,941 | 170,478 | 2,001,518 |

*Source*: World Disasters Report 2002

A recent Christian Aid report (Palakudiyil & Todd 2003) makes the observation that during the decade between 1992 and 2001, countries with low human development averaged the loss of 1,052 lives per disaster; while the average deaths per disaster for countries with medium or high human development were 145 and 23 respectively

(Palakudiyil & Todd 2003). In addition, of the total number of people reported killed by disasters during the same period 75 percent of the deaths were in Asia and 67 percent were in nations of low human development while only 4 percent of the deaths were in nations with high levels of human development (Palakudiyil & Todd 2003) (Table 1.2).

**Table 1.2: Total number of people reported killed by disasters, by continent and by year (1992-2001)**

| | 1992 | 1993 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | 2000 | 2001 | TOTAL |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Africa** | 4,981 | 1,637 | 3,144 | 2,962 | 3,484 | 4,003 | 7,092 | 2,688 | 5,610 | 4,475 | 40,076 |
| **Americas** | 1,748 | 4,606 | 2,925 | 2,622 | 2,530 | 2,753 | 22,944 | 33,957 | 1,759 | 3,449 | 79,293 |
| **Asia** | 13,414 | 22,787 | 13,361 | 74,975 | 69,704 | 71,091 | 82,391 | 75,890 | 11,087 | 28,981 | 463,681 |
| **Europe** | 2,115 | 1,162 | 2,340 | 3,366 | 1,204 | 1,166 | 1,429 | 19,448 | 1,605 | 2,159 | 35,994 |
| **Oceania** | 6 | 120 | 103 | 24 | 111 | 398 | 2,227 | 116 | 205 | 9 | 3,319 |
| **TOTAL** | 22,264 | 30,312 | 21,873 | 83,949 | 77,033 | 79,411 | 116,083 | 132,099 | 20,266 | 39,073 | 622,363 |

*Source*: World Disasters Report 2002

The figures indicate that people who live in countries in Asia with a low level of human development are (on a global scale) the most likely to be affected and to be killed by a disaster. For example, the London based Disasters Emergency Committee (DEC) believes that because of its geographical location, climate and geological setting, India is one of the most vulnerable countries to natural disasters in the world (DEC 2001). When these geophysical elements are tied in with the relatively low levels of human development, India is indeed one of the most vulnerable countries to the deleterious affects of natural disasters. To illustrate this point, the damages caused due to natural disasters in India are summarised in Table 1.3.

**Table 1.3: Damage due to natural disasters in India (1992-2001)**

| Year | People Affected | Houses & buildings partially or totally damaged | Cost of property damage/loss (Rs millions) |
|---|---|---|---|
| **1992** | 1,909,000 | 570,969 | 200.5 |
| **1993** | 2,624,000 | 1,529,916 | 508.0 |
| **1994** | 2,353,000 | 1,051,223 | 108.3 |
| **1995** | 5,435,000 | 2,088,355 | 407.3 |
| **1996** | 5,499,000 | 2,376,693 | 504.3 |
| **1997** | 4,438,000 | 1,103,549 | n.a. |
| **1998** | 5,217,000 | 1,563,405 | 7.2 |
| **1999** | 5,017,000 | 3,104,064 | 10,209.7 |
| **2000** | 5,943,400 | 2,736,355 | 8,000.0 |
| **2001** | 7,881,900 | 846,878 | 120,000.0 |

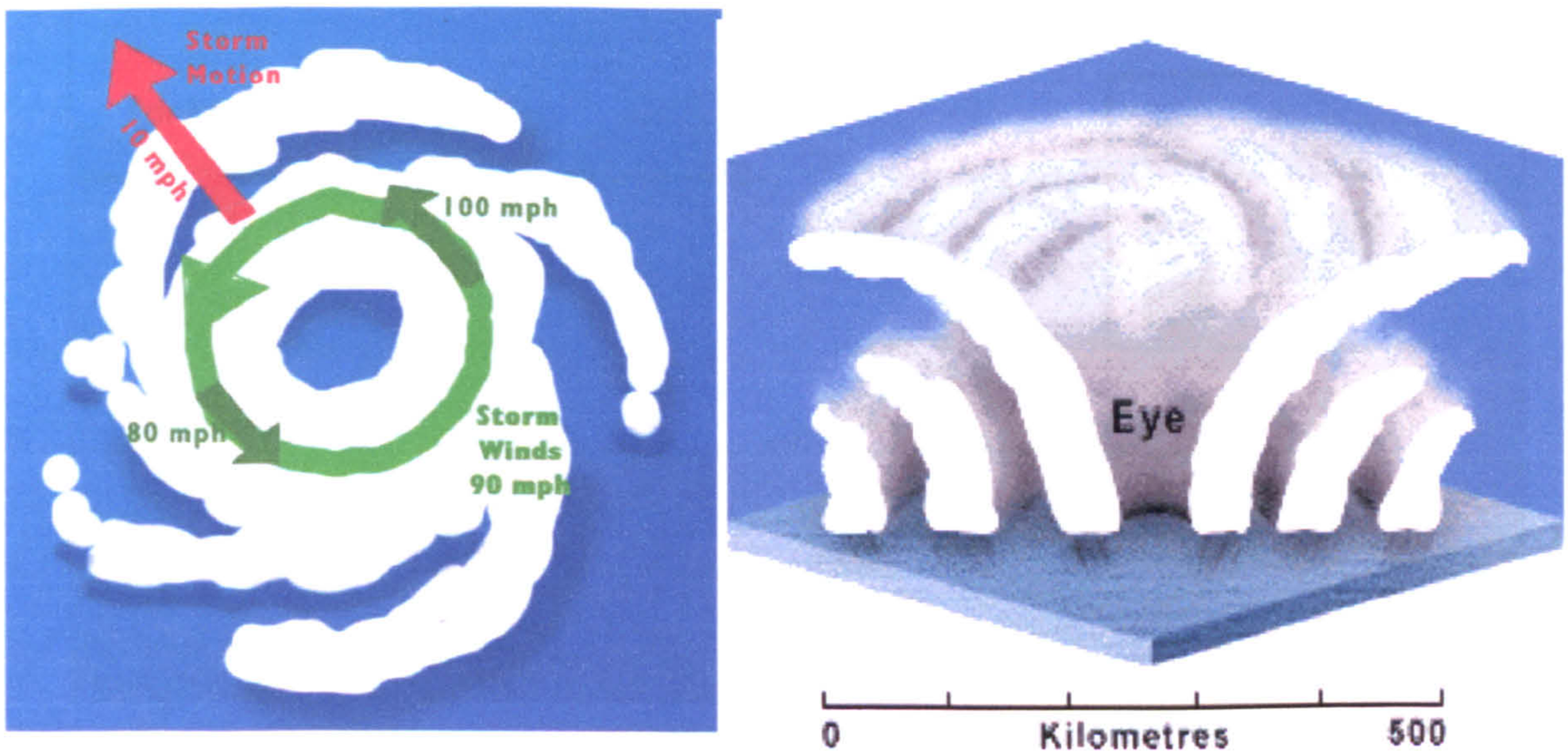
*Source*: Annual Report, Natural Disaster Management Division, (Government of India 2002)

More than anything, the figures displayed in Table 1.3 highlight the severe financial and human impacts of natural disasters in a country that can ill afford such losses. Between 1992 and 2001 on average 4.6 million people per year were affected by catastrophes in India, costing US$1.9 billion per year in damages to housing, crops and infrastructure (Palakudiyil & Todd 2003). Inevitably, when it is the poor who are the worst hit, their capacity to recover from a disaster is limited by their social, economic and political situation (Blaikie et al. 1994; Palakudiyil & Todd 2003). However, before the social elements are discussed in more depth, it would be useful to explain the physical elements that contribute towards people's vulnerability. Natural hazards of varying degrees affect India, from relatively small scale everyday crises to large scale disasters associated with floods and tropical storms. The most high profile disasters to affect the coastline bordering the Bay of Bengal have been caused by tropical storms, therefore a summary of the anatomy of a typical tropical storm will be provided, highlighting their effects upon the coastline of India.

## 1.2 THE PHYSICAL PROBLEM - TROPICAL CYCLONES

India has a coastline of 5,700km, most of which is exposed to tropical storms, particularly in the Bay of Bengal and to a lesser extent in the Arabian Sea. Palakudiyil & Todd (2003) state that India is threatened by five to six tropical storms every year and that the east coast experiences a major storm every two to eight years with the most recent one to date occurring in 1999 in the state of Orissa[1].

**Figure 1.2: Anatomy of a Tropical Cyclone: Typical dimensions, in plan and cross section views**

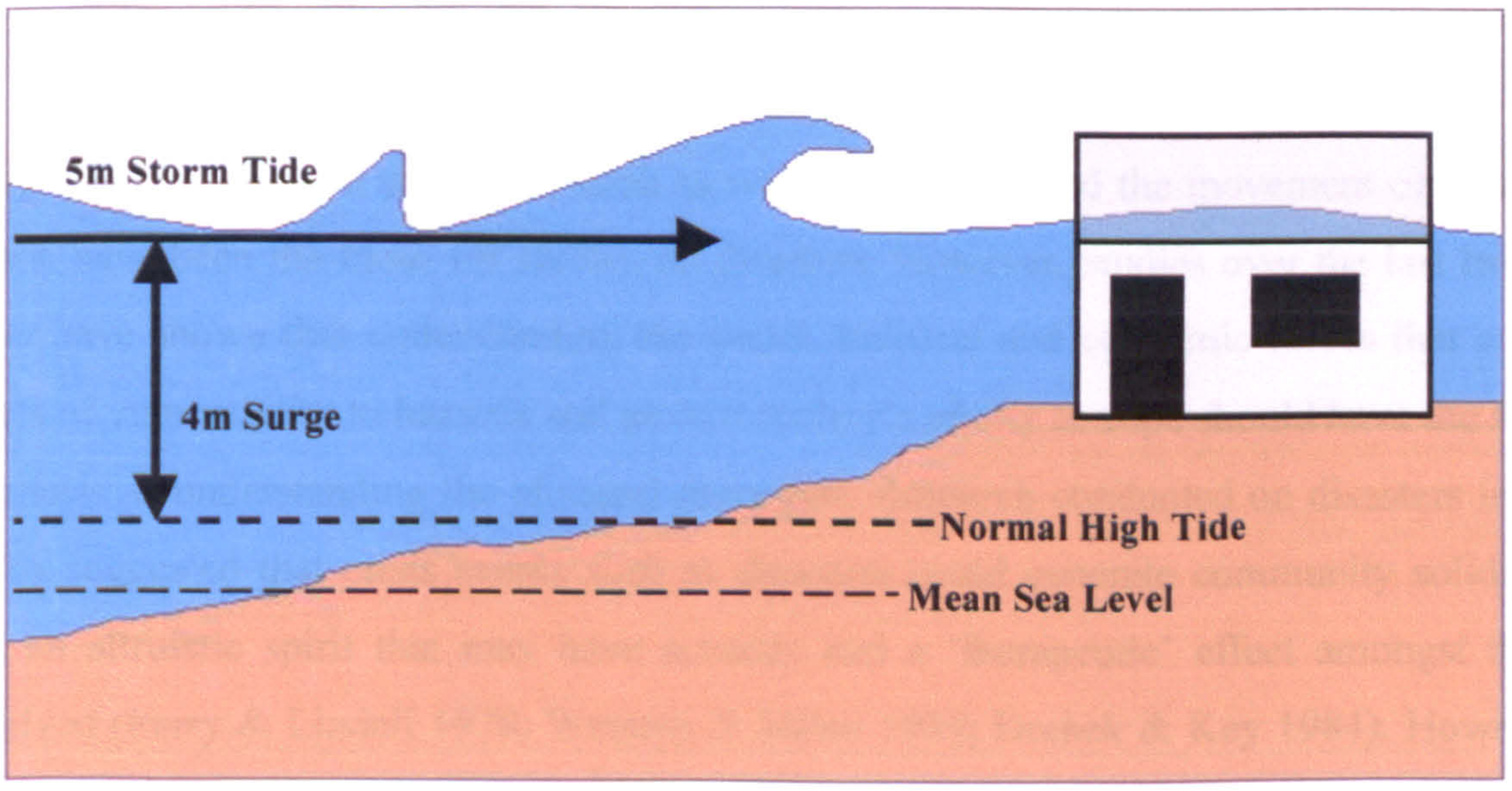



[1] The 'super cyclone' that struck Orissa between 29th and 30th October 1999, affected 15.6 million people and killed nearly 10 thousand people (Palakudiyil & Todd 2003)

Tropical storms such as cyclones[2] form during the hottest months of the year as moisture evaporates from warm oceans such as the Bay of Bengal, located in the calm doldrums near the equator. The humid air rises, cools, and condenses to form thunderclouds, while a current of air rushes inwards to replace the rising air. As the winds strengthen, they begin to gyrate around a low-pressure centre called the eye of the storm[3] (see Figure 1.2). From the edge of the storm towards its centre, the atmospheric pressure drops sharply and the wind velocity rises. Tropical storms drift westwards with the 'trade winds', gaining strength as they accumulate moist air. Over the ocean, the storms create violent winds, torrential rains, and high seas. The storms begin to dissipate after they reach land, because they are cut off from their source of ocean moisture.

Tropical cyclones can be very damaging to low-lying coastal areas such as the deltas of the Godavari and Krishna Rivers in Andhra Pradesh, south India, causing widespread destruction from storm surges, flooded rivers, and high winds. They can also cause mass erosion along coastlines, destroying homes and businesses and decimating livelihoods. The most destructive features of severe cyclones are the storm surges (Figure 1.3) that sometimes accompany the storms resulting in a rapid rise in sea level that quickly inundates low-lying coastal regions (Dube et al 2000). Storm surges account for more than 90 percent of loss of life and property (FAO 2000) although the high winds and heavy rains that typically accompany cyclones can be equally as damaging to crops and infrastructure (O'Hare 2001).

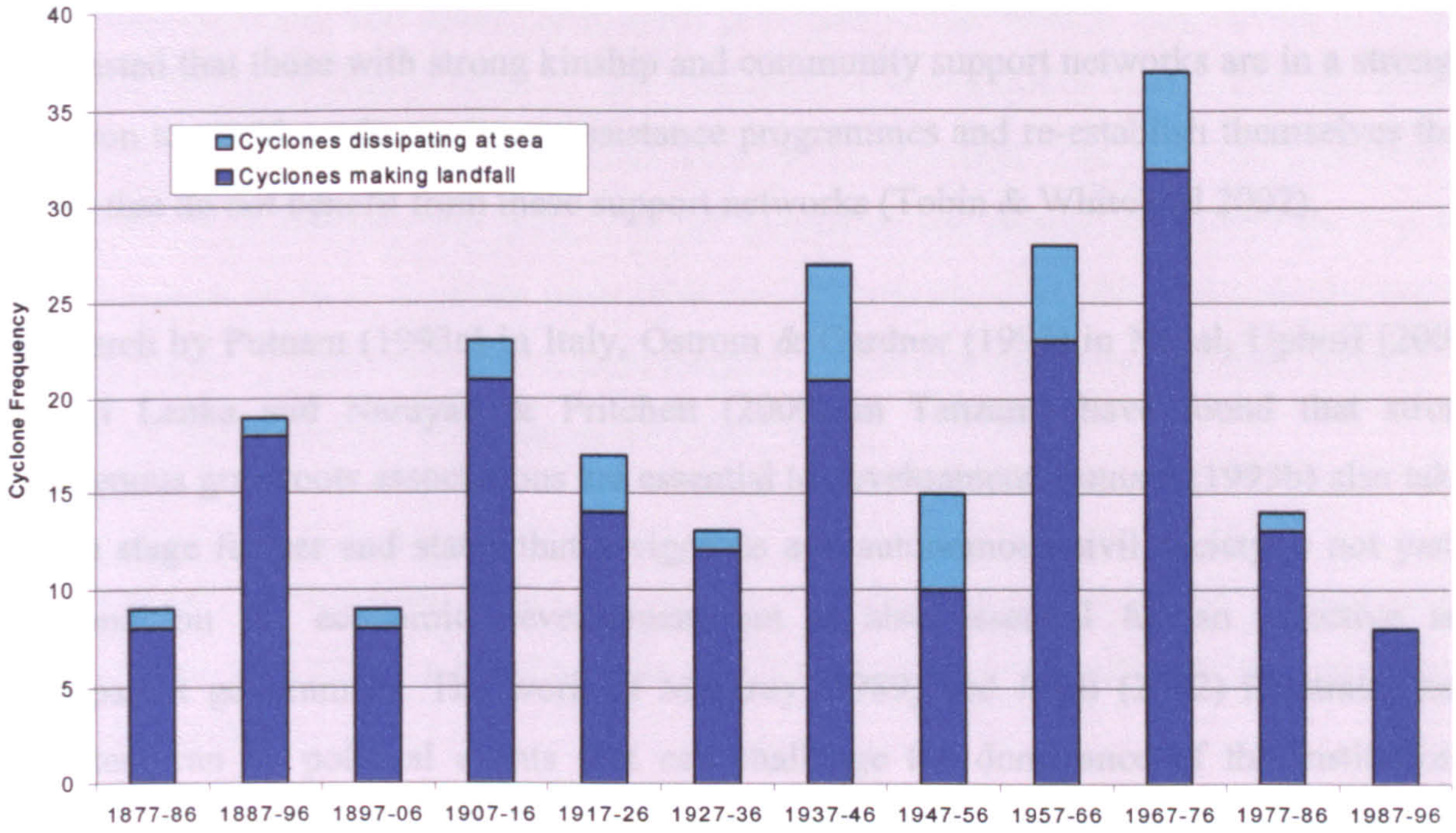
**Figure 1.3: Illustration of a storm surge and the potential impact upon land**




[2] Tropical storms are also referred to as hurricanes (north Atlantic & Caribbean) and typhoons (south-east Asia & Japan).
[3] Cyclones rotate anticlockwise in the northern hemisphere and clockwise in the southern, a result of the earth's rotation.

The Bay of Bengal is a breeding ground for tropical storms and between 1877-1996 219 severe storms were generated (see figure 1.4), with 188 making landfall in India, Bangladesh or Burma while 31 dissipated at sea (O'Hare 2001). The ideal conditions for tropical storm generation in the Bay of Bengal have made the coast of Andhra Pradesh one of the most cyclone prone regions of India, being struck by 25 severe tropical cyclone storms in the last two decades (O'Hare 2001). The low-lying coastal areas of Andhra Pradesh are also prone to extensive flooding during the high precipitation that accompanies tropical storms and the annual monsoonal rains.

**Figure 1.4: Decadal Frequency of Severe Cyclonic Storms in the Bay of Bengal 1877-1997[4]**




## 1.3 THE SOCIAL ELEMENTS OF THE PROBLEM

In the past the physical processes, such as weather patterns and the movement of tectonic plates, have been the focus for studies on disasters. However, studies over the last twenty years have shown that understanding the social, political and economic forces that create levels of vulnerability to hazards and govern society's ability to cope should have the same emphasis as understanding the physical processes. Research conducted on disasters in the 1970s suggested that crisis events such as disasters could generate community solidarity and an altruistic spirit that may have actually had a 'therapeutic' effect amongst those involved (Perry & Lindell 1978; Western & Milne 1979; Drabek & Key 1984). However, more recent research has indicated that when this 'bonding' period exists it can be

[4] Decadal frequency of severe cyclonic storms (wind speed 28-33 $m/s^{-1}$) and cyclones (wind speed >33$m/s^{-1}$) making landfall in the Bay of Bengal. Sources: 1877-1976 Mooley 1980; 1977-1996 O'Hare 2001

extremely fragile and can be followed by conflicts within the social systems (Raphael 1986; Gordon 1990; Bolin et al. 1998). These conflicts can develop due to pressures over access to limited resources; with the most marginalized members of society being the least able to cope and the hardest affected by the crisis (Peacock & Ragsdale 1997; Yelvington 1997).

For example, Mileti et al. (1991) have described how the people displaced from the 1985 eruption of Nevado del Ruiz in Colombia were largely undereducated and poor, and the disaster merely exacerbated the prevailing problems in the communities. Therefore, economic and social marginality affects the ability of communities, families and individuals to survive a disaster and to recover after a disaster. However, it has been suggested that those with strong kinship and community support networks are in a stronger position to avoid a reliance upon assistance programmes and re-establish themselves than those that do not benefit from these support networks (Tobin & Whiteford 2002).

Research by Putnam (1993a) in Italy, Ostrom & Gardner (1993) in Nepal, Uphoff (2000) in Sri Lanka and Narayan & Pritchett (2000) in Tanzania have found that strong indigenous grassroots associations are essential to development. Putnam (1993b) also takes this a stage further and states that a vigorous and autonomous civil society is not just a precondition for economic development but is also essential for an effective and transparent government. The work of Maskrey (1989) and Jalali (2002) illustrates how disasters can be political events that can challenge the dominance of the institutional powers of governments. This final statement highlights how important the roles of social institutions and government are in the context of a disaster, for successful development, for appropriately targeted vulnerability reduction programmes and in some cases for the overall stability of the government.

The influence of social institutions can be critical in the effectiveness of vulnerability reduction programmes, particularly from the viewpoint that social institutions define and limit the choices of individuals in Indian society (Dhesi 1998). In view of this, the research will focus specifically on those social institutions that encompass:

- family and kinship ties, and
- caste affiliations, and
- political affiliations

This focus will be set within the broader framework of: community service organisations, governmental and legal institutions and Non-Governmental Organisations and the extent to which the selected social institutions influence the vulnerability reduction and disaster mitigation initiatives of cyclone prone regions of Andhra Pradesh.

## 1.4 AIMS AND OBJECTIVES

Despite efforts by policy makers and development agencies over the past two decades the vulnerability of some coastal communities in Andhra Pradesh has not been significantly reduced (Winchester 2000; O'Hare 2001). Fundamentally, this enquiry enables the investigation of what social networks and institutions are available (created or imposed) to people that enable them to cope with natural hazards and how these social networks and institutions operate. The social institutions prevalent in the villages that are the most and least successful in contributing to the reduction of vulnerability and aiding the coping mechanisms of individuals and families will also be assessed. The research conducted in this thesis is explorative and inductive, not normative and deductive. Therefore, it is the aim of this research to ascertain what roles social institutions do play and possibly should play in reducing vulnerability to a wide range of random or regularly recurrent threatening events by addressing the following areas of inquiry;

**Contextual understanding**

- How do the respondents and key social institutions a) perceive risks from tropical cyclones and risks in general and, b) what are their perceptions of the concept of community?
- To what extent do a) the perceptions of risk and, b) concept of community held by key social institutions reflect the perceptions of risk and concept of community held by the respondents?

**Empirical and theoretical understanding**

- How do the respondents and social institutions interact during everyday scenarios and crisis events?
- How do networks with formal and informal social institutions increase or decrease the coping capabilities of the respondents during everyday scenarios and crisis events?

With the present paradigm shift to community based developmental and disaster reduction initiatives, this research should throw valuable light on the part social networks with social institutions could and should play in the total mitigation process. This is now particularly important as it is believed that, rather than just asking how much vulnerability reduction

we should be providing, we need to ask to whom we should provide assistance (Boyce 2000) and in what ways the assistance should be provided.

## 1.5 EXPECTED SIGNIFICANCE OF THE RESEARCH

This study is predominately a provisional study or an overview of the key issues regarding the social and institutional elements of vulnerability in coastal Andhra Pradesh and it is expected that the research will be important for a number of reasons:

- **Theoretical contribution** - this research aims to advance thinking around the social, non-physical, non-material aspects of vulnerability through an investigation into the social institutional influences on access to key resources that can aid the reduction of vulnerability.

- **Adding to empirical evidence** - providing new empirical data to better understand the role of social networks and institutions in determining coping capabilities and relative vulnerability in Andhra Pradesh.

- **Methodological contribution** - the use of 'sociograms' during this study is methodologically unique within this field of research, as is the nature in which the sociograms have been adapted for this context. It is expected that the sociograms can be an effective tool for better understanding the strength, resilience and types of individual social networks in disaster contexts.

The ultimate intentions of this research are to enhance the effectiveness of development agencies, such as the Department for International Development (DFID) in their efforts to reduce vulnerability. Longer-term impacts of the research will ideally provide useful guidance and input to development agencies as well as disaster management and aid agencies working with communities that posses high levels of vulnerability to high impact but infrequent crises and also smaller impact crises that occur on an everyday basis. It is expected that the analysis of social institutional roles and interactions from a local perspective will give these agencies and practitioners a better understanding of the 'political reality' and the resilience of the communities with whom they work so that the interventions they initiate will be more appropriate and sustainable.

## 1.6 STRUCTURE OF THESIS

The above discussion provides a brief overview of the arguments explored within this thesis. The following chapters incorporate the theoretical and conceptual foundations in Chapter Two before providing the contextual background of the research in Chapter Three and a contextual analysis of the background data collected in Chapter Five while the methodology and research methods utilised, some of which are contextually unique, are discussed in Chapter Four. The contextual analysis in Chapter Five provides essential foundations related to respondent discourse and perceptions of the key concepts used throughout this thesis. From Chapter Six the thesis examines the analysis of the data by focusing on the factors that influence levels of vulnerability before examining in Chapter Seven the influence of social institutions on increasing or reducing access to the key resources required to reduce levels of vulnerability. The conclusions and policy recommendations along with suggestions for further research are discussed in Chapter Eight.

## 2.1 THEORETICAL & CONCEPTUAL FRAMEWORK

This chapter outlines the conceptual and contextual framework of the research. It will describe and assess what part social institutions that encompass family and kinship ties, caste and political affiliations may play in reducing vulnerability to cyclone and flooding hazards and in mitigating some of their effects. The thesis as a whole is based on theories and concepts that focus on social institutions and networks within the context of disasters and vulnerability that will throw light on the emerging importance of local social institutions and social networks in the effectiveness of vulnerability reduction in 'community' level Indian society (DFID 1999; Winchester 2000; O'Hare 2001). Central to the analysis of social institutions is the process by which power and choices are influenced by interactions with various formal and informal actors and institutions and the effects these have on social change (IILS 1996; Williams 1999; Gaiha et al 2001). Social change does not occur in an isolated context but within a 'political reality' that in India is governed by the impact of the ruling or dominant caste on politics and political factionalism (Reddy & Sastry 1992; Mendelsohn & Viczainy 1998; Jayaraman & Lanjouw 1999; Robbins 2000; Shitole 2001). Ultimately, the complex web of theories and concepts that provide the foundations for this investigation require a suitable analytical framework in which social networks and institutions influence vulnerability reduction.

### BACKGROUND

Disaster Management has moved away from relief and disaster preparedness, towards a more sustainable approach incorporating hazard mitigation and vulnerability reduction elements (United Nations 1994). This change in focus is particularly significant as it is advocated by the United Nations and the British Government's Department for International Development (DFID) along with other organisations involved in vulnerability reduction programmes.

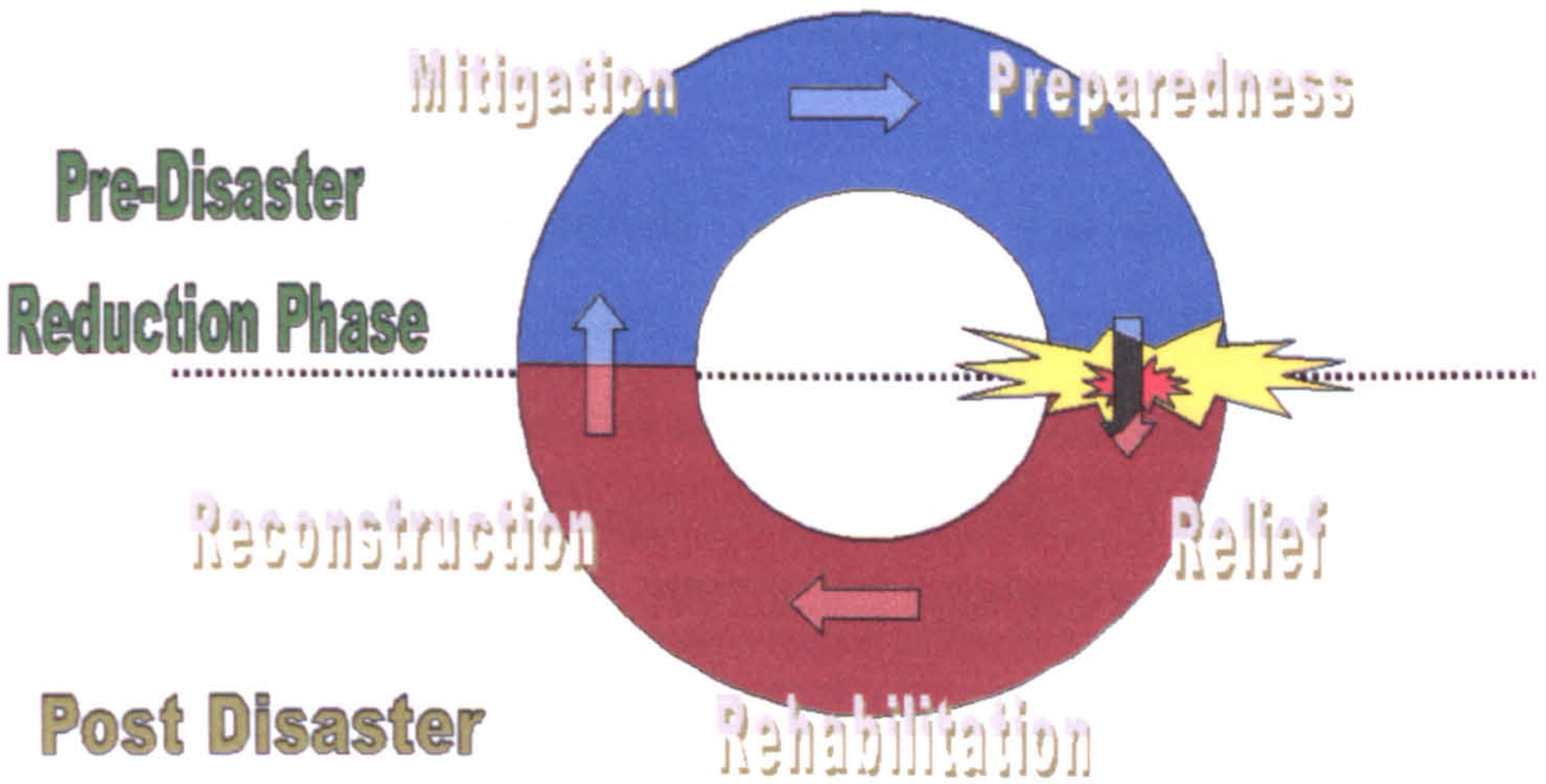
It is apparent that the social institutions that encompass family and kinship ties, caste affiliations and religious custom can play some part in reducing vulnerability (World Bank 1999) but the extent of the roles that these institutions play in reducing cyclone vulnerability or in mitigating the effects of natural and manmade hazards is relatively unknown in coastal Andhra Pradesh (Winchester 1992, 2000; O'Hare 2001). Thereby, research carried out in coastal Andhra Pradesh into the role of social institutions as a coping resource for natural and manmade hazards would complement earlier research into vulnerability (Chambers 1983; Maskrey 1989; Winchester 1992, 2000; Blaikie et al. 1994; Schmuck-Widmann 1996; DFID 1999; World Bank 1999; O'Hare 2001). Before

proceeding, it is important to ground the concept of the social institutional analysis into the context of vulnerability as it is a concept that recognises an individual's or group's susceptibility to the effects of hazards. However, vulnerability has a temporal dimension and the discussion of vulnerability will be aided by placing it into the context of disaster phases.

## PHASES OF DISASTERS

Vulnerability reduction within the activity of disaster management corresponds broadly with the three phases of cyclone and or flood disasters – before, during and after the event. Since the 1994 Yokohama World Conference, the offices of the United Nations have adopted a concept of disaster management that combines responses over all three phases (United Nations 1994)[5]. The key phases, namely preparedness, relief and rehabilitation/reconstruction correspond with administrative activity, but are phases that to some extent overlap, (figure 2.1). The argument underlying the combining policies focused on mitigation and preparedness at the same time thereby lessening the damaging effects of future events can be borne out by a specific example from Andhra Pradesh. The number of lives lost to cyclones in Andhra Pradesh since 1977 has been reduced through efforts to mitigate and prepare for cyclones via initiatives to improve housing, infrastructure and emergency response (Reddy et al 2000).

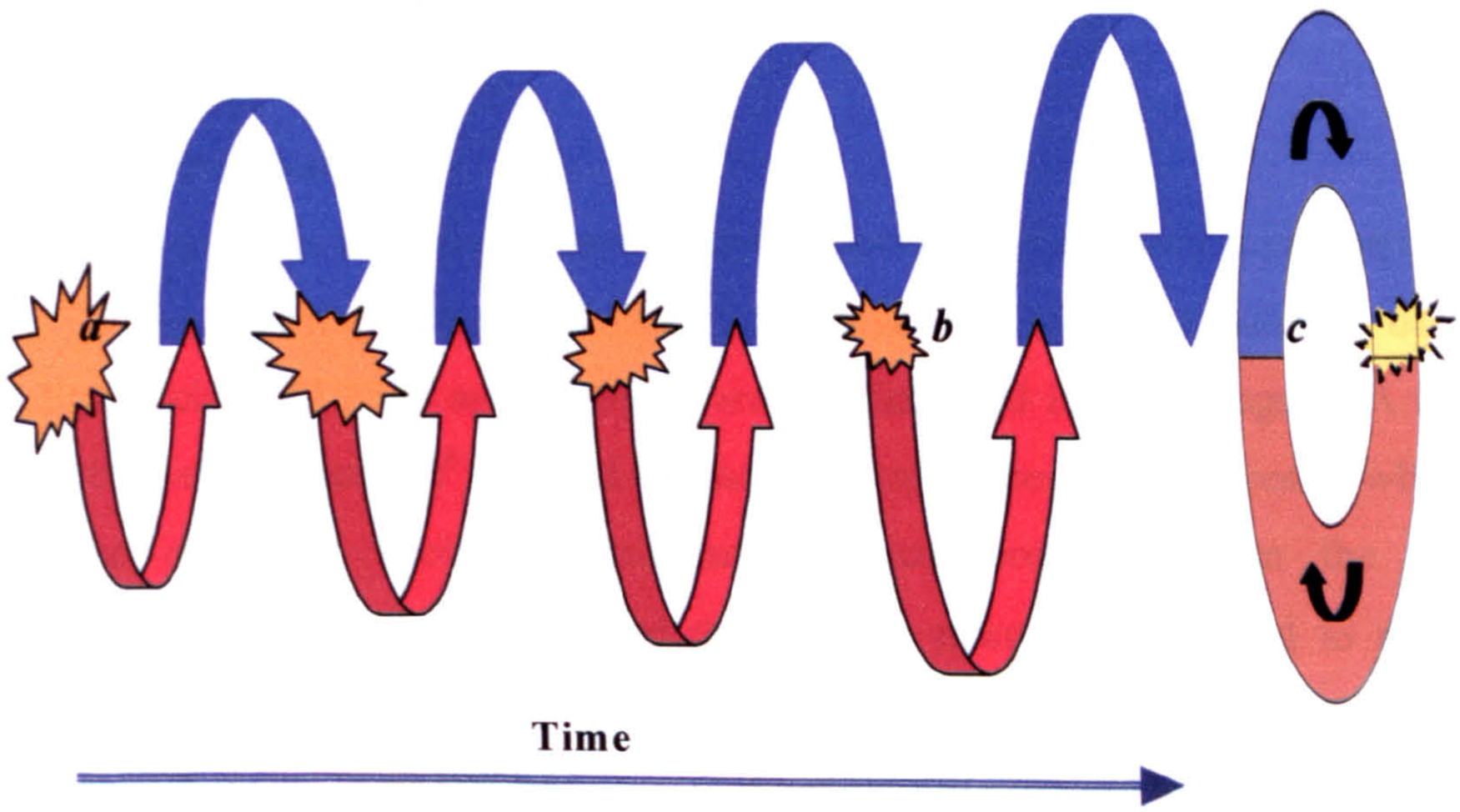
**Figure 2.1: The Phases of Disaster** (adapted from UNOCHA 1997)




[5] The three phases are sometimes expanded to five phases, incorporating; 1. pre-disaster preventive and mitigating actions, 2. formulation of emergency plans and preparedness activities, 3. disaster relief interventions, 4. short-term recovery and rehabilitation, and 5. longer-term reconstruction (UNOCHA 1997).

The phases of a disaster illustrated in figure 2.1 are a two dimensional concept that would benefit with the inclusion of the temporal dimension of time as illustrated by the 'Disaster Helix' (figure 2.2.) The disaster helix shows the phases of disaster stretched through time (unspecified) with concurrent 'disaster events' occurring as time progresses. The illustration shows the progress after the initial event (*a*) and through the post-disaster recovery stage (red) onto the pre-disaster risk reduction stage (blue) that should ideally reduce the magnitude of the event (*b*) with the eventual elimination of the risk and the reduced likelihood of an event occurring in the future (*c*). To date, no specific model has been constructed to explain the 'phases of disaster' as a concept that includes the dimension of time, in such a way as that illustrated by the disaster helix.

**Figure 2.2: The Disaster Helix**




## VULNERABILITY

Studies and policy over the last twenty years show that understanding the social and economic forces that govern societies and create vulnerability should have the same emphasis as understanding the physical processes. Before these processes and factors can be discussed it is important to provide some definitions of vulnerability. Westgate & O'Keefe were forward thinking in the 1970's and coined a popularly quoted definition of vulnerability;

> *"The degree to which a community was at risk from the occurrence of extreme physical or natural phenomena, where risk refers to the probability of occurrence and the degree to which 'socio-economic and socio-political factors' affect the communities capacity to absorb and recover from extreme phenomena."* (1976:65).

Another useful, but not typically cited definition of vulnerability, is by Warmington;

> *"(A) condition or set of conditions which adversely affect people's ability to prepare for, withstand and/or respond to a hazard."* (1995:1)

This definition is particularly appropriate because it encompasses the pre-disaster phases as well as the intra- and post-disaster phases and will be the definition of vulnerability used in this thesis. It should be noted at this stage that vulnerability and poverty are often associated and used as synonyms but these terms are not necessarily interchangeable because *"poverty is essentially a static concept; in contrast, vulnerability is more dynamic, capturing the multi-dimensional aspects of socio-economic status"* (Moser & McIlwaine 1997:16). The key processes of change affecting vulnerability can be classified into the following two broad categories:

- **Physical Processes**

This category includes natural and environmental phenomena and their immediate physical effects. Longer-term processes of climatic change and recurrent patterns of climate variability, such as El Nino and La Nina, are also included in this category. A dominant view in the field of hazards[6] focused on the physical processes and events, while at the same time excluding socio-economic and political processes from the analytical framework. This view that dominated thinking for many years tended to divorce the "disaster events" from "everyday life" thus missing the links between such events (White 1964; Dynes & Quarantelli 1977; Burton et al 1993).

- **Socio-economic/Political Processes**

The principal contributors to a paradigm shift from the physical process focus were Gilbert White and his colleagues (White 1961, 1964; Kates 1962; Burton et al. 1993; Hewitt & Burton 1971). Their concepts made an important distinction between the hazard and the actions of humans in the phenomena of hazards. However, their view has been criticised for perpetuating misconceptions about the unpredictability of hazards by their focus on high energy, high impact events and a rather ethnocentric approach. Sociologists, such as Quarantelli & Dynes (Dynes et al. 1967; Dynes & Quarantelli 1977) have maintained that crises occur at all levels of human activity and that disasters are typically 'social crisis periods'. Britton (1987), for example, refers to three types of social crisis period –

[6] K. Smith (1996) and E. Bryant (1991)

accidents, emergencies and disasters - which help to bring the subject to an 'everyday level' in contemporary societies that are not typically homogeneous.

Other theorists such as Maskrey (1989), Blaikie, Cannon, Davis and Wisner (Blaikie et al. 1994), and Winchester (1992, 2000) have taken these theories a stage further by focusing on the underlying social, economic and political factors of hazards. This view of vulnerability has recognised that the social and economic processes within societies needs to be considered with the same emphasis as devoted to understanding the physical processes.

**Determinants of Vulnerability**

The concept of vulnerability is multi-faceted, dynamic and constitutes a number of factors that can determine the extent of vulnerability, with particularly important factors being:

- **Geographical proximity and exposure to hazards:** Those with little access to resources will typically have restricted access to land (particularly high quality land) and tend to be based in hazard prone areas, such as flood plains, low lying coastal regions and unstable hillsides (Smith 1996; Blaikie et al. 1994).
- **Magnitude and temporal elements of natural events:** The physical scale and time scale of a hazard event can determine levels and patterns of vulnerability (Chambers 1983). The seasonality of a hazard event can exacerbate the underlying vulnerability of communities, particularly in rural areas. For example a cyclone and storm surge that occurs during the growing season when labour needs are highest and food stocks are low will place increased strains upon the resilience of communities (Chambers et al. 1981; Chambers 1983).
- **Poverty:** Vulnerability is considered to be closely linked to asset ownership; the more assets people have the less vulnerable they are (Sen 1981; Swift 1989; World Bank 1990 and Putnam 1993a, 1993b). There are strong linkages between poverty and vulnerability, in spite of this poverty is not always the predominate factor in determining levels of vulnerability but can reinforce some of the other factors listed here (Chambers 1983).
- **Exclusion/marginalisation:** Those lacking access to socio-economic resources, such as credit, employment, health services and legal representation can be expected to have less capacity to manage and control decisions and events affecting them. Elements such as ethnicity (Peacock et al 1997), caste (DFID 1999; O'Hare 2001), class (World Bank 1999), religion (Betancourt & Gleason 2000), age (Blaikie et al 1994) and gender

(Beck 1995; Agarwal 1997; Enarson 2000) can relate to the levels of access to socio-economic resources individuals and families experience. Interestingly it is believed that in India it is not exclusion from society that affects poverty but rather inclusion in a society based on strict hierarchical structures (IILS 1996).

- **Power:** Winchester (1981, 1992, 2000, 2001) has measured power in terms of access to physical, economic and social resources. Those with greater access to these resources may loose more in relative terms but less in absolute terms than those with limited access to the resources.
- **Individual and social resilience:** Survival strategies such as livelihood strategies, coping mechanisms and traditional knowledge can provide effective measures in reducing levels of risk and vulnerability (Agarwal 1990 refer to Box 2.1; Schmuck-Widmann 1996; Schmuck 2000; O'Hare 2001).

**Box 2.1: Survival Strategies**

Agarwal (1990) illustrates five main survival strategies used by the rural poor in India, being;

1. Diversifying sources of income, including seasonal migration;
2. Drawing upon communal resources;
3. Drawing on social relationships including kinship, patronage, friendship and informal credit networks;
4. Drawing upon household stores and adjusting current consumption patterns; and
5. Drawing upon assets.

Aspects of these broad factors can be applied to the understanding of disaster management and coping strategies of the rural poor in India and for the coastal communities of Andhra Pradesh. The determinants of vulnerability will be investigated during this thesis with the aim of assessing which are the most or least important factors in determining levels of vulnerability in the case study villages in Andhra Pradesh.

Nonetheless, community level survival strategies provide a level of resilience, but without support from civil society the plight of the rural poor may never improve and this is the philosophy behind contemporary initiatives in targeting the most vulnerable members of vulnerable communities (DFID 1999; World Bank 1999; Hearn-Morrow 1999; Buckle et al. 2000; Boyce 2000). Some Governmental and non-governmental organisations (NGOs) focus on vulnerability reduction in cyclone prone areas and have to work within the context of the interrelationships between the main determinants of Indian social institutions that include 'caste ties and affiliations' and 'family and kinship ties'.

At the same time these organisations also have to work within the prevailing "political realities"; these are to some extent determined by social institutions but are also determined by the phenomena of the impact of the *dominant caste* on politics and political factionalism and the effects of social institutions on these realities, and vice versa. A 'political reality' can be defined in the context of this research as the structural, situational and cognitive 'zone' where social networks, involving the social institutions that encompass family/kinship, caste and political affiliations, converge. The central thrust of this research is to examine the nature and varying roles of social institutions in the field area of Andhra Pradesh relative to the affiliations determined by politics, caste and kinship.

## 2.2 SOCIAL INSTITUTIONS

The influence of the social institutions that constitute civil society can be paramount in the effectiveness of vulnerability reduction programmes (World Bank 1999). The shift in emphasis in policy governing how aid for development is channelled to less-developed countries (DFID 1999) focuses on the increasing importance of local social institutions as means of development assistance. This analysis will focus on the types of social institutions prevalent in the field area and some of the major issues concerning their strengths and weaknesses in vulnerability reduction. Social institutions can be defined as,

> *"An institution is not simply any social arrangement, but one whose members acknowledge its moral claims over them, and are prepared to submit to its demands, at least some of the time, even when they find those demands unreasonable."*
>
> (Béteille 1992:18).

These institutions as defined above can be seen to fit into the following five overlapping categories (Abercrombie 2000:180);

- **Economic institutions** – that produce and distribute goods and services
- **Political institutions** – that regulate the use of and the access to power
- **Stratification institutions** – that determine the distribution of positions and resources
- **Kinship institutions** – that deal with marriage, the family and the socialisation of the young
- **Cultural institutions** – that are concerned with religious, scientific and artistic activities

Typically, these institutions can be formal or informal[7], with formal institutions referring to the structural elements such as roles, rules and procedures, whereas informal institutions

[7] Formal and informal institutions can be alternatively labelled institutional & relational (Krishna 2000) or structural & cognitive (Uphoff 2000)

refer to *"values, attitudes, norms and beliefs that predispose individuals towards collective action"* (Dhesi 2000:202). Dhesi (2000) also suggests that when a formal institution attempts to work with informal institutions traditional roles and rules of decision-making may come into conflict. Therefore there is a need for voluntary compliance between these institutions otherwise the formal institutions will be weak and ineffective; with a consequence that community action becomes difficult (Dhesi 2000). For example, the marginalized members of society will not embrace formal civil society and its institutions and therefore the opportunities for their involvement are considerably minimised (Davies & Hossain 1997).

Putnam (1993b) believes that there are links between the membership of civic associations and democracy and development, which is a theory that relies on an intermediate explanation involving *social capital* and 'generalised trust'. Critics of this theory (Foley & Edwards 1998) have noted that *cross-country data from outside the US shows little reliable correlation between trust in government, associational, and generalised trust.* Therefore, the transferability of the concept across cultures has been questioned but despite such criticism, the theory of social capital has been embraced by the World Bank and receives copious treatment in the World Development Report (2000)[8]. The report (ibid) includes one particular chapter, 'Building Social Institutions and Removing Social Barriers', that makes a threefold distinction between the forms of social capital that can be found, being;

i. Bonding Social Capital – the strong ties within homogenous groups, families, small communities
ii. Bridging Social Capital – horizontal, cross-cutting or weak ties between people of roughly equal status, such as workplace colleagues, members of civic organisations, business associates
iii. Linking Social Capital – vertical ties linking people of unequal status, such as political elites and the poor

The chapter also hypothesises that this affects the poor because they will typically possess a plentiful supply of bonding social capital, a modest amount of bridging social capital and almost no linking social capital[9]. The vertical and horizontal bonds associated with social capital and highlighted by the World Development Report (2000) reinforce the findings of

[8] Prakash (2000) has criticised the report for using social capital in a rather 'decorative way', and that it neglects to tackle the complex and embedded roots of social processes that lead to poverty.
[9] For a further in-depth discussion of these forms of social capital refer to pages 128-130 of the World Development Report (2000)

Elliott's (1986) research in Andhra Pradesh, where the vertical ties become an important element in the achievement of a secularised society while they are also typically combined with caste determined horizontal ties which are attributed to traditional Indian society. Portes & Landolt (1996) believe that collective social capital cannot simply be the sum of individual social capital. If social capital is a resource available through social networks, the resources that some individuals claim come at the expense of others therefore social capital for some implies social exclusion for others. The idea is that new institutions are open to anyone, irrespective of caste, class, religion, positions of respect and responsibility but in reality are restricted to a narrow social base (Béteille 2000). On the other hand, some aspects of social institutional control are resistant to change, especially those, which perpetuate social exclusion (Davies & Hossain 1997).

> *"Institutions matter because they determine who is included or excluded and because they define the differing domains of control in state-society-community relations"*
>
> (Davies & Hossain 1997:12).

This view is supported by Dhesi (1998),

> *"It is the institutions –formal as well as culturally embedded informal – that define and limit the set of choices of individuals by shaping human interaction and structure of incentives. As institutions are pervasive, they should be added to the traditional constraints on choices."* (Dhesi 1998:1033-34)

If the membership to social institutions is restricted to those of the 'right' type of caste, class, age and/or gender, then the implications for the success of, or appropriateness of, vulnerability reduction initiatives could be significant, particularly if it results in forms of social exclusion that will increase vulnerability for some sections of society.

As mentioned earlier, these social institutions have to work within the context of the interrelationships between the main determinants of Indian social institutions that include caste affiliations and family and kinship ties. Likewise, the social institutions also have to work within prevailing "political realities"; these are to some extent determined by social institutions but are also determined by the phenomena of the impact of the *dominant caste* on politics and political factionalism and the effects of social institutions on these realities. For example, (Palakudiyil & Todd 2003) have noted that the poor and marginalised people cannot be guaranteed access to decision-making and participation with institutions merely through good planning.

> *"Ensuring that the views and needs of poor and less powerful people are heard demands considerable skill and commitment on the part of the external agency. Selecting the most needy in a community through group meetings and discussions, and enabling their involvement in rehabilitation efforts, despite the existing unequal power relations, will remain the biggest challenge for all external agencies."*
>
> (Palakudiyil & Todd 2003:59)

Therefore, it is apparent that factors influenced by social status and relationships with social institutions may play a significant role in how effective vulnerability reduction is. It is on these grounds that some of these issues related to affiliations based on caste, family and politics will now be analysed.

## 2.3 SOCIAL STRUCTURES & NETWORKS

Social networks typically refer to the pattern of structure and the range of interaction between individuals and groups (Abercrombie 2000) and the analysis of such networks could prove invaluable in assessing the existing structures, types of leadership, and the power relationships at a local level. Vulnerability reduction and sustainable developmental approaches that are targeted at the 'grassroots' level of society need a structure at local level through which the project activities can be implemented (DFID 1999; World Bank 1999).

To identify the most suitable structure, the potential and limitations of existing local structures must be assessed and decisions made as to whether any of these would be appropriate, or whether a new structure should be established. This choice depends on many factors, notably the local context, the functioning of existing structures, the tradition of community participation, the prevailing types of leadership and the degree of local conflict and inequality.

Power relationships that are manifest in Indian society can result in locally powerful communities and persons that can shape, and sometimes dictate, the performance of institutions of the state (Mendelsohn 1993; Jayaraman & Lanjouw 1999). Despite the Government of India's secular constitution, academics such as Kohli (1990) and Dhesi (1998, 2000) maintain that inequalities in Indian society are maintained by historical power holding families and certain castes in the political arena. For example, the caste

composition of the local police force has become a contemporary means of powerful groups maintaining control of their vested interests, as the following quote illustrates;

> *"Often the caste composition of the police force will reflect regional patterns of caste power, and this composition is bound to have some effect on police behaviour. So powerful caste communities have been able to adapt to the loss of local autonomy by influencing institutional behaviour at local or higher levels."*
>
> (Mendelsohn 1993:832)

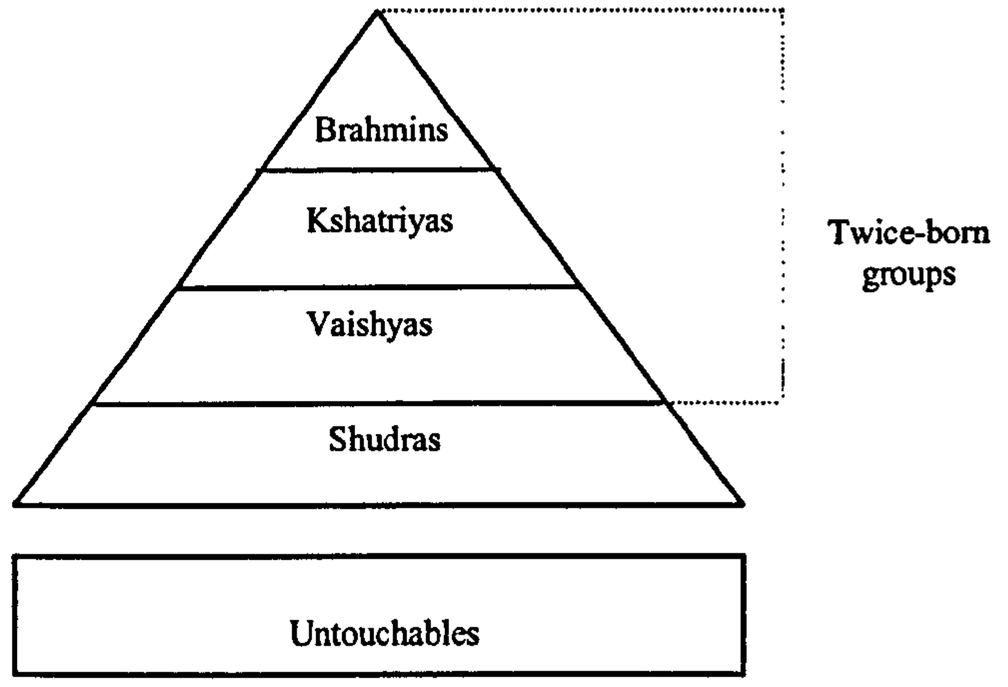
The domination of these power holding families and castes can have a detrimental impact on the effectiveness of poverty alleviation programmes (Williams 1999; Jayaraman & Lanjouw 1999 Gaiha et.al. 2001) because as Foucault (1980) observed, the state can only operate on the basis of other, already existing power relations. Likewise, at community level there has been evidence that powerful elites will take destructive action against micro activities of the poor if they believe that their vested interests are threatened (Chambers 1983; Johnson & Rogally 1997; Winchester 1981, 2000). In view of this and the context of Indian society, DFID have highlighted in their 'India: Country Strategy Paper' that one of the most pervasive social problems in India is the caste system; as it contributes to systematic discrimination in the allocation of resources (DFID 1999). The caste system is so fundamental to the nuances of Indian society that it justifies a detailed explanation and analysis.

### THE CASTE SYSTEM

Theoretically, caste is a rank in society combined with a specific occupation and ritual associations (Gough 1960). It is a hierarchical rank in society that one is normally born into and broadly defines the group within which one can marry, although the reality may be more complex (Cohn 1971; Fuller 1992; Kinsley 1993). Several Hindu myths relate the origins of castes in a fourfold Varna (literally 'colour') system. The most famous is the myth about the bodily dismemberment of the god Purusha: his mouth gave rise to the Brahmins (priests and people of learning), his arms to the Kshatriyas (rulers and warriors), his thighs to the Vaishyas (traders), and his feet to the Shudras (cultivators, occupational and serving castes) (Kinsley 1993). The conventional Hindu Varna ideology is illustrated in figure 2.3 and considers the three 'higher' castes - Brahmins, Kshatriyas and Vaishyas -

as spiritually twice born and outside of this Varna system are the 'Untouchables'[10] (Kinsley 1993). These are the people conceived as 'ritually polluting' and engaging in polluting occupations, such as the barber, sweeper and leather-worker.

**Figure 2.3: The Varna System (Kinsley 1993:154)**




While 'Untouchables' are marginalized within the Varna system, both the 'twice born' and the 'untouchables' groups are mutually dependent on each other for it is the 'Untouchables' that maintain the purity[11] of the higher castes by removing polluting substances from the social system (Mendelsohn & Viczainy 1998). Conversely, some studies state that the importance of ritual purity and impurity in everyday life is negligible, particularly in the urban environment where it is difficult (if not impossible) for high caste Hindus to avoid contact with persons from lower castes (Searle-Chatterjee & Sharma 1994).

In practice, each Varna is composed of a group of castes and sub-castes that are referred to as *Jatis*[12] (Srinivas 1962; Mayer 1965; Ghurye 1969), which show variations in different localities. Hindu ideas about castes also broadly define the castes who can dine, exchange food, water and services with each other. For instance, it is expected that a high-caste Brahmin does not receive cooked food or water in an earthenware pot from someone who is of a lower caste, if ritual pollution and social disapproval are to be avoided.

A prominent scholar of the Hindu caste system, Louis Dumont, argued in his book 'Homo Hierarchicus' (1980), that Hindu religious ideas about caste dominate all other aspects of

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[10] Untouchables may also be referred to as Dalits (the down trodden), Harijans (children of God), achchuuta (the polluted) or Chandala (from the Sanskrit word çandaala a term that means those who are not allowed to dwell within the limits of a town or village).

[11] It should also be noted that some academics view the purity and impurity factors of caste as rather contradictory, for example a Brahmin (normally ritually pure) can become impure via death within the family (Deliége 1999) and through birth and menstruation (Eichinger Ferro-Luzzi 1974).

[12] Mayer (1965) and Ghurye (1969) believe that it is these subcastes that are predominately recognised by individuals rather than the broad Varna defined hierarchy.

society. A hierarchy of castes was therefore legitimate in traditional Hindu thought, contrary to Western ideas about equality. Academics such as Berreman (1979), Srinivas (1984), Gupta (1991), Mencher (1991) and Deliége (1999), have reappraised Dumont's views. Some argue that he has confused Hindu theory with practice, while others hold that he has given the dominant view of the Brahmins to the neglect of the lower castes. They accuse him of distorting and over-mystifying Hindu society to present a picture of a totally different and timeless place, thereby confirming somewhat 'Orientalist' assumptions (Mencher 1974). Historical perspectives reveal that Hindu caste organisations were largely systematised by colonial administrative practices under British rule (Madan 1979). Such analysts argue that colonialists 'imagined' caste as a system of racial typology, which they could use as a label to categorise and govern the Indian people[13].

M.N. Srinivas (1955, 1962) proposed the term 'dominant caste' for a caste group considered superior in a particular locality, and 'Sanskritization' to describe the aspirations of caste groups to raise their status in the eyes of society. 'Sanskritization' could be affected by such measures as refraining from impure practices like drinking alcohol and meat consumption. With reference to the idea of 'Sanskritization' it should be noted that Béteille (2000) questions the importance of the concept and suggests that 'secularisation' is a more appropriate concept in contemporary India. Secularisation is a concept where modernity (some would call this 'Westernisation') affects various aspects of Indian society; the following definition explains the idea concisely;

> *"Secularisation does not lead to the elimination of religion, but to a state of affairs in which some ideas, practices and institutions cease to be regulated by religion."*
>
> (Béteille 2000:90)

In the context of Indian society (rather than Hindu society) it is possible that a term like Sanskritization, which carries a religious emphasis on Hinduism, may underestimate the influence of the many other religions that proliferate to varying degrees throughout the subcontinent. Hinduism may be the predominant religion in India but Muslims, Buddhists, Sikhs, Jains, Parsis, Christians and Jews play an important part in the fabric of Indian society. Therefore, the concept of secularisation is an aspect that should be taken into account when studying modern Indian society.

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[13] The British colonialists viewed some ancient scriptures such as the *Manusmrti* or the 'Laws of Manu' as a basis for Hindu law, that still exists to some extent today as the basis for the Hindu marriage code. For more information regarding the 'Laws of Manu' and its Brahmincentric and somewhat misogynistic views refer to The Laws of Manu (translated by Doniger W, & Smith B.), New Delhi, Penguin Books

The role of secularisation is particularly pertinent in the case of political authority in Andhra Pradesh. Brahmins have not traditionally dominated politics in Andhra Pradesh; the dominant castes have been powerful peasant landowners, such as the Reddis and Kammas[14] that have formed vertical ties[15] with other castes (Elliott 1986; Kohli 1990) with the result that few castes have felt the need to Sanskritise (Elliot 1986:151). Therefore, in the context of contemporary Indian society and particularly in Andhra Pradesh, the issue of secularisation is pertinent.

Mukherjee (2000) provides another point of view, in that the 'dominant caste' theory has perpetuated a false consciousness of social reality by focusing on caste rather than class and goes on to state that it is caste within class that is manifest in political allegiances. Similarly, the concept of 'dominant caste' has also been questioned by Mendelsohn (1993) in as far as that when Srinivas initially expressed the notion its influence was already waning and states;

> *"(T)he decline of the dominant caste at village level has been part of an economic, social, and political integration of villages into larger units under the aegis of the modern state. This has not yet resulted in any tidy pattern of power or authority throughout India as a whole – the institutions of the state have not simply succeeded to functions previously discharged by the dominant caste. Nor can it be said that the apparatus of the state has been perfectly captured by the castes which were once dominant in the villages. It is true that these castes have often successfully organised at territorially more inclusive levels over the period since independence, but their success in the face of stiff competition has been far from invariable."* (1993:835)

In India, religious and political attempts have been made to eradicate the ideology of caste, for the inequalities it demonstrates, both historically and today. Industrialisation and democratisation have had considerable impact on the caste system, particularly this century (Srinivas 1962; Cohn 1971; Bhatt 1975; Béteille 1992). The mobility of class divisions based on economic achievements has cut across traditional caste occupations and hierarchies to a certain extent. Yet caste considerations continue to have great influence in Indian daily life, especially in the selection of marriage partners, allocation of temple priests, and in the political arena where, despite efforts to promote equality, positive

[14] The Reddis and Kammas are 'peasant' castes of the *Shudra* Varna (Elliott 1986:150)
[15] These vertical ties can be an important element in the achievement of a secularised society and are typically combined with caste determined horizontal ties which are attributed to traditional Indian society (Elliott 1986)

discrimination favouring the position of 'Untouchables' in society has inadvertently led to a reinforcement of caste system allegiances (Srinivas 1962; Béteille 1991; Deliége 1999).

In an attempt to encourage social equality, and in a way emancipate the previously under-represented low castes and tribals, the Government of India introduced the policy of public sector job reservations for Scheduled Castes (SC) and Scheduled Tribes (ST)[16]. Amongst other things[17], the policy has been criticised for contributing to increased public sector inefficiency, while the proposed gains in equality are still uncertain (Upadhyaya 1998). Mendelsohn and Viczainy (1998) take this a stage further and suggest that despite 'positive discrimination' in the allocation of public sector jobs for low castes and tribals, the plight of politically marginalised caste groups and non-Hindus have not been improved, suggesting that the Indian Government indirectly contributes towards the continued poverty and oppression of low castes and non-Hindus by 'masking' traditional discrimination. Robert Deliége (1988, 1992, 1993, 1999) has studied the 'untouchable' communities of India extensively and states that the future of untouchables (and the poor in general) does not look encouraging and that policies such as 'positive discrimination' have accentuated caste differences (Srinivas 1962), resulted in violence (Yagnik & Bhatt 1984) but has contributed towards the 'caste' becoming a political force (Béteille 1991; Deliége 1999).

Despite the predominance of Hinduism as a religion in India, it would be pertinent to include non-Hindus in this discussion, for in a way they are both within and outside the caste system. Non-Hindus can be faced with the discriminations and the inequalities that Untouchables are open to and in some cases they actually subscribe to the ideologies of the caste system (Caplan 1980; Ahmed 1991)[18]. Therefore, it is possible that in practise the caste system is actually more a socio-cultural phenomenon than a purely religious phenomenon, that transcends across religions but finds its foundations on the Indian subcontinent. What is difficult to grasp with the complicated subject of caste in India, are the myriad facets of interrelationships between religion, tradition, politics and society. In

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[16] Article 15 of the Indian Constitution prohibits any discrimination on the grounds of creed, race or caste. The equality of all citizens is confirmed by Article 16, paragraph 3, which also stipulates that the state nevertheless has the right to adopt various measures in favour of 'backward classes'. Article 17 is rather contradictory; it abolishes 'Untouchability' but then states that various measures will be taken to protect the interests of the untouchables, which theoretically have just been abolished. The idea of 'positive discrimination' with employment reservations for the under-represented was intended to emancipate but has in a way politically legitimated the hierarchy structures that it proposes to abolish (Deliége 1999).

[17] The policy has generated much social dissension and political strife and some believe it was a major contributory factor in the downfall of the national government in 1990 (Béteille 2000).

[18] This subject has been investigated in detail by Caplan (1980) while researching the Christian communities of South India and by Ahmed's (1991) studies of Muslim communities in Allahabad, north India.

view of this, Jodhka (2004) believes that caste is almost dead as an ideology but persists as an identity. One the most popular questions that is asked in many of the books and articles that have been discussed here is, 'what is the future of Hinduism in an increasingly modernising world?' At this stage it would be particularly apt to use a quote from an Indian political scientist;

> *"No society lives without traditions and the essential challenge of modernity is not the destruction of tradition but the traditionalisation of modernity itself."*
>
> (Kothari 1986:23)

With a secular constitution and more open institutions the religious hierarchy of old may be slowly diminishing in India, particularly in Andhra Pradesh where the dominant peasant castes have historically held more power than the Brahmins (Elliott 1986; Kohli 1990). On the other hand, the dilution of the religious hierarchy may not necessarily result in a reduction in inequalities because traditional divisions of caste and community can be well entrenched resulting in low trust, little goodwill and the inefficiency of institutional activities (Béteille 2000). There is little doubt that privileged access to key resources is a recurring theme in the maintenance of inequalities in society, particularly when the power holders can confirm their position through the use of class, caste and family affiliations. For example, Robbins (2000) has conducted studies in Latwara, Rajasthan, focusing on corruption in natural resource allocation. The conclusion of his article highlights the 'privileged access to resources for elites' and provides us with a useful insight into the power of dominant institutions in rural India.

> *"Corruption is an institution, not the absence of one. In Latwara, as elsewhere in the world, corruption represents the transformation of equitable rules of resource management into inequitable ones through the establishment and reproduction of persistent institutions along strong networks of cooperation between elites and officials. Authority over resources is established through formal law but the structure of obligations is reformed along axes of classed, casted, and gendered social power."* (Robbins 2000:439)

Therefore, *"The reduction of local tyrannies does not necessarily entail the emergence of a whole social and political order significantly more attuned to the interests of the most subordinate Indians"* (Mendelsohn 1993:841), or in other words this reiterates the conclusion that despite challenges to the dominant elites, a new era of equality has not been heralded. With this in mind it may be appropriate to consider the view of Biswas

(1998) who believes the solution of many problems must come through political channels, which may not bode well for the future because he believes no state economy, even those that are technically sound, can work for the good of all unless there is harmony in all classes of the people.

It is important to highlight at this point that there appears to be disagreement in much of the literature that has been published over the last fifty years on issues pertaining to inequality, levels of development/underdevelopment, access to resources and opportunities in rural India, as to whether caste or class is the key factor that determine 'who has' and 'who does not have'. This has been noted by Abercrombie, Hill & Turner (2000) who acknowledge that there is dispute in academia as to what extent caste affects class in Indian society.

In the rural Indian context the key factors that determine inequality, levels of development/underdevelopment, access to resources and opportunities are generally attributed to distinctions along caste or class lines. On some occasions the authors suggest that caste and class are intertwined, with a person's caste status affecting their economic or class status with the higher castes being generally wealthier than lower castes who are most likely to be the poorest (Mencher 1974, 1991; Venkateswarlu 1986; Ramachandran 1990; Searle-Chatterjee 1994; DFID 1999; Robbins 2000; Sen Sharma 2000; Kabeer 2002). However, Quigley (1999) and the British Government's Department for International Development (1999) believe that while caste can determine a person's economic status it should not be taken for granted that caste and class always coincide.

Considering that caste has been an integral part of Indian society for many years there is a surprising paucity of empirical studies on how caste status affects people's economic status (Agrawal 2004). This is a point supported by the Minority Rights Group International (2004) who have stated that international organisations such as the United Nations and the International Labour Organisation have seriously understated the socio-economic problems associated with caste disparities in rural India.

In recent years a number of researchers have been reporting about inequalities in rural India along the lines of class distinctions with caste being relegated in many analyses in purely decorative terms (by authors such as Bhalla & Lapeyre 1997; John 2000; Lal & Aggarwal 2000; Gaiha et al 2001; Das 2004; World Bank 1997, 1999, 2001). This

portrayal of class over caste typically disassociates potentially important links that may be present between the two phenomena (Deshpande 2003). For example, some authors suggest that the poor are poor because of their traditional occupations (FAO 2000; Geetha & Kiran Kumar 2001) because people involved with certain occupations have been restricted in the workplace through lack of alternative training, skills or opportunities (Searle-Chatterjee 1994). Many commentators on the topic of caste in rural India accept that traditionally a person's occupation has been largely governed by their caste (Kinsley 1993; Deliége 1992; 1999; FAO 2000). Literature that is now somewhat dated (Gough 1960; Cohn 1971; Bhatt 1975) suggested that in an ever modernising Indian society these occupation related barriers would be weakened by increasing economic growth attained through free market policies. However, the idea that occupation related barriers would weaken has been rarely reasserted in recent years (other than by authors such as Walker & Ryan 1990; Béteille 2000), possibly because the proposed free market policies have not achieved much success due to poor governance (Roy & Tisdell 1998) and the persistence of caste related traditions and practices in the arena of Indian business (Gopalkrishnan 1999) that have enabled the vested interests of dominant castes to be maintained (Robbins 2000). In view of this it is surprising that those who talk in terms of occupation restricting employment opportunities, and therefore the potential to increase their economic status, typically do not acknowledge the influence of caste related restrictions in employment opportunities. This is an example of how what are fundamentally caste related disparities could become understated through the use of alternative taxonomies related to a globally recognised concept such as class as a substitute for caste.

This discussion raises the question of whether in contrast to accepting that caste related inequalities are becoming weakened in what the central government states is an progressively egalitarian India, we should be empirically investigating whether these inequalities persist and whether disparities are being masked by the increasing trend by researchers and policy makers to refer to inequalities in India occurring along class lines. What some of the most recent literature on poverty, marginalisation and power in India consistently lacks is any type of understanding or analysis of how contemporary caste related inequalities persistently affect poverty, marginalisation and power. Given the paucity of data (in contrast to a wealth of assumption) on caste issues, interventions in the field should be preceded by both qualitative and quantitative analysis of the target or participating populations, to ensure that resources are not being concentrated among already privileged groups.

Therefore, it is important to disassociate caste and class unless a correlation is proven, because caste is not a purely economic phenomenon (Gupta 2004; Sahay 2004). Consequently it is possible that economic advancement alone will not cancel out patterns of caste discrimination (Gupta 2004). Nonetheless, from the evidence presented, it would appear that caste related inequalities are becoming more diluted over time as the influence of class continues to take a more prominent position in Indian society, particularly in urban India, but it is worth noting that there is some agreement that inequalities persist in India despite efforts to promote equality (Lanjouw & Stern (eds.) 1998). Caste may be one of many determinants that affect the inequality of resource distribution and thereby vulnerability, so it is necessary to look at other factors such as the politicisation of caste (Béteille 1991; Deliége 1999) and the political affiliations prevalent within society in India and Andhra Pradesh.

### POLITICAL AFFILIATIONS

There are concerns as to the transparency and governability of local, regional and national government structures (Kohli 1990) that can be fundamental in maintaining inequalities and are typically constricted via a bureaucracy that hampers social change (Kothari 1986; Narayanasamy et al. 2000)[19]. For example, Shankari (1991) conducted studies in the Chittoor District of Andhra Pradesh, regarding problems with minor irrigation schemes and found that bureaucracy was at best apathetic and at worst actively cooperated with the powerful and the influential sections of the village. Jeffrey (2000) claims that there is a clash between the state's aim (policies) and real functioning and concludes that there is an emphasis on nurturing political and legal networks by elites as a strategy to maintain and increase their power. It is possible that this power the elites strive for and typically achieve may be aided because there can be problems with achieving solidarity for opposition parties in Indian politics, particularly with reference to low-caste political mobilisation.

With reference to the Guntur district of Andhra Pradesh, Kohli (1990) states that the past dominance of the Reddi and Kamma castes has waned but political mobilisation by the 'backward castes'[20] has been unpredictable and unstable. Despite the fact that these so called 'backward castes' constitute nearly half of the town population, the heterogeneity of

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[19] Regarding potential constraints attributed to bribery (*baksheesh*), Myron Wiener believes that "*but for the flexibility introduced by baksheesh, India would have been paralysed with administrative rigidity*" (quoted in Narayanasamy et al. 2000)

[20] 'Backwards caste' (BC) is a Government of India designated classification that falls second in the hierarchy of caste classification behind, Ordinary castes (OC) and above Scheduled castes (SC) and Scheduled tribals (ST). These categories will be used throughout this thesis, as they are the accepted nomenclature when referring to caste classification in the Indian Government and current sociological literature.

the 20 *Jatis* (subcastes) that make up these castes has made it difficult for any party to organise stable social alliances (Kohli 1990). Elliott (1986) believes that the alliances needed for this type of political mobilisation would require new kinds of ties that have seldom been achieved in Andhra Pradesh because they are not based on traditional caste relationships. Without the cohesive political alliances between different castes and Jatis it can be difficult to challenge local, regional and state hegemony. Even in the cases where low-caste politicians have achieved positions of power[21] conflicts can occur between what they feel they should do and what they feel they have to do. On one hand they are required to act on behalf of the party organisation, which may be to the chagrin of their militants; on the other hand if they articulate the demands of their caste, they may be considered communalist and liable to the charge of maintaining vested interests from fellow party members (Kohli 1990).

A report by Nagesh Kumar (2000) on the opposition to the Andhra Pradesh Chief Minister Chandrababu Naidu's ambitious *Janmabhoomi* [22] scheme (see Box 2.2) highlights other issues. Opponents to the *Janmabhoomi* scheme (such as Congress (Indira), the Communist Party of India (Marxist), the Communist Party of India and various student led groups such as the Joint Action Committee) believe there is a pro-World Bank bias to the projects and that it will be Telugu Desam Party (TDP) sympathisers who will be the beneficiaries.

**Box 2.2: Five Core Areas of 'Janmabhoomi'**

1. Primary education
2. Primary healthcare
3. Family welfare
4. Environmental conservation
5. Responsive governance

*Source*: Reddy et al 2000

Therefore, there is a dilemma for opposition parties; they are unable to boycott the programme because of the potential to serve the public directly but they fear that if they participate in them it may be construed that they are supporting the TDP (Nagesh Kumar 2000). In a similar vein there has recently been a constant flow of newspaper reports in Andhra Pradesh accusing the incumbent government of mishandling 'Food for Work' programmes (The Hindu 2002b), pandering to the World Bank (The Hindu 2002d) and

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[21] Refer to the case of Andhra Pradesh's former Chief Minister, D. Sanjivayya, being a Harijan he allegedly used his position on behalf of Harijan interests in government services and consequently lost his position because of his actions (Elliott 1986:165-166).

[22] The basic structure of this government programme is one in which the government resource distribution system meets the grass roots at its smallest cell, the household. Literally means 'motherland'

choking the work of the voluntary sector (The Hindu 2002c). To further exacerbate these issues, Shitole (2001) has highlighted some of the inherent weaknesses of local governmental structures, such as conflicts between Mandal and Village levels of the Panchayati Raj[23] in Andhra Pradesh. These weaknesses, when in league with traditional inequalities, may contribute towards ineffective programme implementation (Narayanasamy et al. 2000), examples of which have been found in coastal Andhra Pradesh. For example, Winchester (1992, 2000) and O'Hare (2001) have concluded from their research into cyclone vulnerability (in Krishna and East Godavari respectively) that despite vulnerability reduction programmes, the social, physical and economic conditions of some vulnerable communities have not yet been significantly improved. In addition to these issues, it is believed that the process of post disaster relief distribution also suffers from politicised elements (Reddy & Sastry 1992).

After the May 1990 cyclone that hit Andhra Pradesh, Reddy & Sastry (1992) found that the role of the Panchayat Raj, the mainstay of grassroots level administration, was negligible during relief measures. The typical roles of the Panchayat Raj were usurped during the relief stage of the disaster, causing resentment between the Panchayat Raj leaders and the local legislators and revenue officials (Reddy & Sastry 1992). Along with the feelings of resentment caused by the under-utilisation of the Panchayat Raj Institutions, Reddy & Sastry (1992) also discovered that political leaders belonging to the Telugu Desam Party (TDP) and the Congress Party *"vied with each other in trying to corner short term political gains. Thus the entire rehabilitation work took the shape of partisan politics and the bureaucracy, which is apolitical, became the 'eye of the storm' in the process"* (Reddy & Sastry 1992: 129). A highly experienced expert on disaster responses in India, A.V.S. Reddy, believes that political interference cripples relief administration, stating that:

> *"We must stop ministers and other VIPs [from] rushing into affected areas to distribute relief. They bring nothing but confusion and contradictory agendas into areas and situations where they are not necessary, more so if a cyclone occurs just before elections"* (Interview with A.V.S. Reddy, in Parasuraman & Unnikrishnan (eds.), 2000:197).

[23] System of rural local government with three ascending tiers, viz., Gram Panchayat (village), Panchayat Samithi (mandal) and Zilla Parishad (district)

Therefore, politicisation is viewed as a potential constraint to the effectiveness of vulnerability reduction and the distribution of relief. Affiliations manifested in politics and caste allegiances may determine to some extent the types and strength of social networks that can contribute to the levels of vulnerability experienced by the individual, the family and the community but the influence of affiliation bonded by family and kinship also play a part in determining who has strong and widespread social networks and who does not.

## FAMILY & KINSHIP TIES

Research has likened the family network to that of the extended tentacles of an octopus (Drabek & Key 1976) that reach out and connect to other social units. Some family networks are stronger than others during everyday scenarios and can secure more help during and after a crisis event (Morrow 1997). It is claimed that the characteristics of a family, such as ethnicity, class and the age of members, can influence the actions of the family regarding compliance to warnings and actions undertaken during a crisis (Taylor 1978; Perry 1987; Nigg & Perry 1988; Perry & Lindell 1991). Fundamentally, in the post disaster recovery phase, the social and economic status and connections of the family within the larger community can be critical factors in determining the coping ability of the family (Drabek et al. 1975; Bolin 1982; Drabek & Key 1984; Agarwal 1990).

Throughout Indian society, the role of family and kinship ties[24] can be a key factor in determining levels of social mobilisation, particularly in the context of political relationships (Kothari (ed.), 1986). Béteille (1992, 2000) claims there is a culture in favour of established castes and classes, but it is actually the family that is the most dominant institution and is prominent in the maintenance of social inequality and vested interests. In contrast, the importance of families in contemporary Indian society is questioned by Sen Sharma (2000), who believes that through pressures of urban migration, the influence of families has reduced due to a breakdown of traditional joint family structures with a concurrent reduction in moral values and tolerance of Hindu society. Conversely, the work of Elliot (1986) in rural Andhra Pradesh suggests that kinship can be an important determinant in maintaining the vertical ties in village communities that can allow the social mobility that challenges the traditional hierarchy of caste. Elliot (1986) also highlights the role of kinship ties as the main factor in the organisation of the political alliances of the dominant castes that can be strong enough to traverse district boundaries.

[24] The social relationships that are derived from blood ties (real and supposed) and marriage are collectively referred to as kinship (Abercrombie et al. 2000)

In particular, the strength of kinship ties in southern India is strengthened by the common practise of marrying within the family (Elliot 1986). Those who are in a position to draw upon a higher number of the 'octopus's tentacles', which reach out further than others, will be in a position to maximise the social relationships and opportunities that others may not have access to. Agarwal (1990) supports this position with reference to the five coping strategies adopted by rural families in India, particularly the third coping strategy of 'Drawing upon Social Relationships and Informal Credit Systems'; in that families with strong and wide-ranging networks potentially have a broad pool of resources to assist them in times of need. In contrast, the ability of a household to draw upon wide ranging and diverse resources in times of need can be constrained if family and kinship networks are minimal. For example, the consequences of divorce and bereavement can marginalise divorced women and widows from their earlier kinship networks (Fernandes & Menon 1987; Agarwal 1990).

Béteille (2000) believes that the role of kinship ties in modern India is so ingrained with the traditional hierarchy of caste that it is difficult to make a case for the influence of kinship alone without regarding the overriding influence of caste. Generally households can be a source of security but they can also be a source of internal gender inequalities in relation to access, use and control over resources (Sen 1990; Agarwal 1991). Many academics concur that women in India, in comparison to men, have been traditionally oppressed and lack opportunities for social mobilisation (Gupta 1991; Agarwal 1997, 2001; Beck 1995; Moore 1998; Deepa et.al. 2000; Robbins 2000; Menon-Sen & Shiva Kumar 2001).

### GENDER RELATED POWER

The issue of social stratification in India based on caste has already been discussed, but Gupta (1991) believes that social stratification along caste lines coexists with occupational, sexual, linguistic and religious stratification. The status of women in India, and particularly in rural areas, is considered to be an important problem and organisations such as the World Bank (1999), the Department for International Development (DFID 1999; Norton & Bird 1998), and the United Nations (Menon-Sen & Shiva Kumar 2001) have all advocated the support of women and women's groups in their development policies.

On many occasions young Indian women are seen as a burden for the family due to the traditional arrangements of marriage. Traditionally, when the daughter gets married, it is

expected that her family will pay a *dowry* to the groom's family. The practise of *dowry* is not encouraged by the governmental and legal institutions in India and some consider the practise to be illegal (Menon-Sen & Shiva Kumar 2001), however the practise is widespread and can be a huge financial burden for the bride's family. An additional burden for the bride's family is the expectation that she will leave her parental home and move to the home of her husband's parents. As a consequence of this many women do not receive the levels or types of education that their male siblings may obtain because it is perceived that investments in education (costs and time expended in school by the child) will ultimately be investments reaped by the in-laws (Menon-Sen & Shiva Kumar 2001). Moser (1989, 1993) and the World Bank (1993a) have highlighted some of the different roles undertaken by low-income women, compared to those undertaken by men; these roles are outlined in Box 2.3.

**Box 2.3: Gender Roles**

Gender planning methodology identifies a triple role for low-income women in most societies. Women generally undertake activities in their *reproductive*, *productive* and *community managing* roles, while men primarily undertake activities in their *productive* and *community politics* roles.

**Reproductive role:** Childbearing and child rearing responsibilities and domestic tasks carried out mainly by women to guarantee the maintenance and reproduction of the labour force.

**Productive role:** Work done by both men and women for cash or kind including both market and home or subsistence production

**Community managing role:** Work undertaken primarily by women at the community level to ensure the provision and maintenance of such collective goods as water, health care and education.

**Community politics role:** Formal political organising undertaken primarily by men at the community level.

*Source*: Moser (1989 & 1993); World Bank (1993a) cited in Moser & McIlwaine (1997:61)

The disadvantaged positions that many women hold in Indian society can result in practises such as female infanticide (the wilful murder of unwanted female children) and female foeticide (the 'termination' of a healthy but unwanted female foetus), both are sensitive issues and consequently little has been published on these subjects (Menon-Sen & Shiva Kumar 2001:28). Menon-Sen & Shiva Kumar, (2001:11-13) have suggested that acts of female infanticide and foeticide have contributed to a drop in the Indian female/male population ratio of 933/1000 in 2001 compared to 972/1000 in 1901 (Census of India 2001:87)[25]. The authors (Ibid 2001) do go on to state that it is not as straightforward as that, with constraints over access to health care, education and political systems for women

[25] Biologically, women are the stronger sex. In societies where women and men are treated equally, women outlive men, so that there are more women than men in the adult population. Typically, one can expect to find 103-105 women for every hundred men in the population (Menon-Sen & Shiva Kumar 2001:11). Unfortunately, Sudha & Rajan (1999), believe that the female demographic disadvantage is unlikely to improve in the near future due to the lack of impact of policy measures addressing societal female devaluation.

contributing to lower life expectancy, lower literacy[26] and lower political participation for women in comparison to men in India. The observations of Menon-Sen & Shiva Kumar (2001) are supported by the latest Indian Census figures (Census of India 2001) that are related to these discrepancies. These issues are compounded by very high maternal mortality rates of 407 deaths per 100,000 live births in India compared to 130/100,000 in Sri Lanka and 65/100,000 in China (World Bank 2000).

The inequalities that women experience manifest themselves in the decision-making arena of the family and the village. Moore (1998) has highlighted the way in which women are traditionally excluded from the Panchayat Raj system of village level government and how this is particularly restrictive for them in issues over legal restitution, as women will typically require the services of a man to represent them. Additionally, social networks and social institutions have a gendered element as it is considered that men's networks tend to be more formal since they are more often involved in formal employment. Male networks include more co-workers and fewer kin than women's networks (Moore 1990). Alternatively, women's networks tend to be informal (Neuhouser 1995) and include more kin relative to men's networks (Moore 1990). Women become accustomed to informal networks partly in response to their lack of participation in formal work organisations (Neuhouser 1995).

The exclusion of women from traditional institutions (Agarwal 2001; Beck 1995; Moore 1998; Robbins 2000) and the newly created 'participatory' institutions (Agarwal 1997; Deepa et. al. 2000) can be different from state to state. To support this point, Agarwal (1990) points out that women play a significant role in the establishment and maintenance of social relationships for the family but the availability of kinship networks (especially natal kin) is wider for women that live in southern (which includes Andhra Pradesh) and north-eastern India than in other parts of the country.

A number of studies related to the roles of women in the context of disasters conclude that traditional gender related experiences could be replicated during a crisis period (Peacock et al. (eds.) 1997), thus limiting the effectiveness of disaster response (Drabek 1986; Neal et al. 1982). Therefore, if this is the case in India, the roles of women in Indian society and specifically the villages of Andhra Pradesh may be an important factor in assessing how

[26] On average 76% of Men and 54% of Women are literate in India, however these figures can vary greatly from state to state. (Census of India 2001)

effective development and disaster management policies and programmes have been. Also it is crucial to investigate how women cope at times of crisis. Research conducted by Rashid (2000) and Rashid & Michaud (2000) has highlighted the problems related to family cohesion, and the lack of privacy for women during times of crisis, specifically in relation to floods in Bangladesh.

In spite of the issues discussed, it would be misleading to cast women in India as the perennial victims. The previous discussion has highlighted many issues regarding the inequalities and constraints placed upon the average Indian woman, but it is important to bring to focus the active and proactive roles of women in attempts to reduce poverty and inequality and in mobilising the relatively untapped power of women's self help groups. For example, Drabek & Boggs (1968), Turner et al (1981) and Neal et al. (1982), have concluded from studies on household evacuation decisions that women are more likely to seek consultation regarding warnings and are also more likely to believe and heed warnings than men. In a similar vein, Fordham (1998) believes that the resilience and resourcefulness of women could be incorporated into community-based mitigation. However, many of the gender related studies discussed in this section have been undertaken in the context of countries that are arguably more developed than India and possess differing social systems and it has not yet been empirically verified whether these conclusions are also relevant for women in India.

The Indian context provides us with evidence of the successful organisation and mobilisation of self-help groups that are directed at women and ideally initiated by women (Enarson 2000; Palakudiyil & Todd 2003). For instance, an organisation called the Self Employed Women's Association (SEWA) observed poor women hit by drought in the Gujarat region of India working long hours on the relief sites under scorching sun selling unique handicraft samples (Enarson 2000). SEWA devised a strategy to market the handicrafts with the aim of helping the women to generate a reliable income and thereby preventing the depletion of women's valuable domestic assets, and protecting the cultural legacy of a disaster-impacted people. These initiatives have also been designed to develop women's leadership and non-traditional skills by challenging gender-based assumptions about appropriate work (Enarson 2000; Menon-Sen & Shiva Kumar, 2001). Women's groups have been involved in affirmative actions for women's political participation, the implementation of major poverty alleviation programmes and the review of laws and regulations to ensure women's equality all demonstrate that recognition at the political

level and at the level of policy are on the increase for women (Menon-Sen & Shiva Kumar 2001; Palakudiyil & Todd 2003).

Menon-Sen & Shiva Kumar (2001) believe that the issue of women's rights is a central tenet of modern political and development discourse in India and that this view is supported by tangible proof of the relevance and effectiveness of Indian women's movements. Organisations such as the Department for International Development (DFID 1999; Norton & Bird, 1998), and the United Nations (Menon-Sen & Shiva Kumar, 2001) have advocated the support of women and women's groups in their development policies. Nonetheless, the issues documented in this discussion have highlighted that the huge inequalities experienced by women in India persist.

## INEQUALITIES LEADING TO MARGINALISATION

Over the last few decades Indian and non-Indian academics and organisations have published their findings on the influential factors that determine the distribution of wealth, social status and access to community resources in India with many concluding that there are distinct inequalities within Indian society and many sections of society are socially excluded (Srinivas 1962; Venkateswarlu 1986; Mendelsohn 1993; Gopalkrishan 1999; Robbins 2000; DFID 1999; World Bank 1999, 2000). Nonetheless, there is a lack of consensus as to the main factors that dictate the types of social exclusion experienced. Typically the factors involved in social exclusion incorporate socio-political-economic interrelationships that are based around traditional caste, class, gender, and family status.

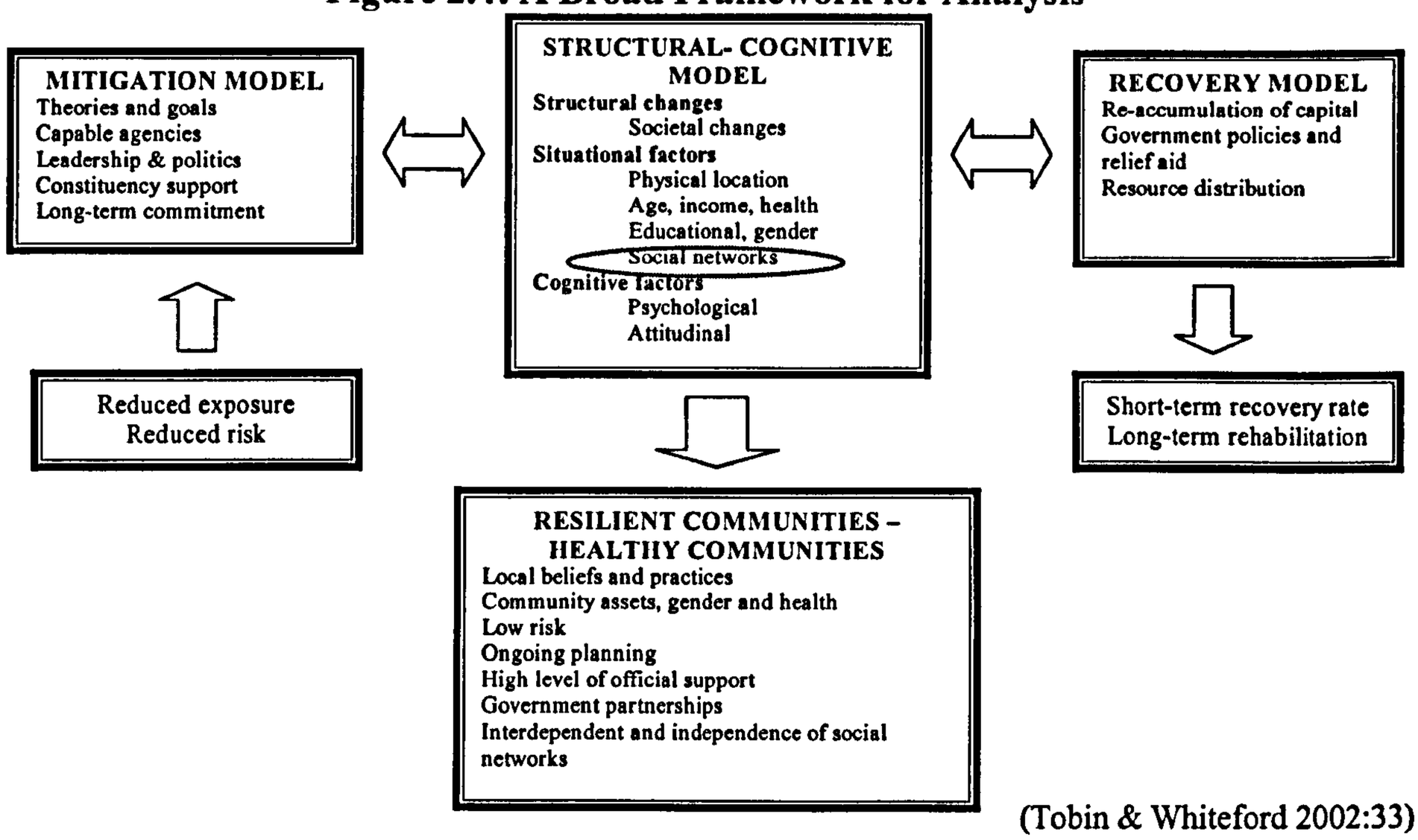
A report by the International Institute for Labour Studies (IILS 1996) on behalf of the United Nations Development Programme (UNDP) highlights that using a concept of social exclusion based on a European context is complex when applied elsewhere such as India. One of the observations of the report is that in India it is not exclusion from society that affects poverty but rather inclusion in a society based on strict hierarchical structures (IILS 1996). This statement by the IILS is supported to some extent by this analysis that has discussed the issues in Indian society that have legitimised social inequalities, through the caste hierarchy (and class within caste), political affiliation, family and kinship ties and the traditional role of women.

These traditionally embedded social inequalities, that can compound problems of social exclusion, may significantly contribute to the ineffective efforts to reduce poverty and

vulnerability in Andhra Pradesh[27]. Some of the issues discussed here have arisen from the work into the causes of cyclone vulnerability in Andhra Pradesh (Winchester 1992, 2000; Reddy et al 2000; O'Hare 2001). Therefore, in the context of this analysis, it is pertinent to question how these issues of inequality could relate to the fieldwork findings that will be discussed later in the thesis.

Issues related to how social institutions interact, who possesses social networks with whom, and how factors such as social status, caste, gender and affiliations with political parties can influence factors such as levels of poverty, individual and social resilience, power and exclusion/marginalisation and overall levels of vulnerability are all key to this analysis. Initially, before these issues can be addressed, it is necessary to explore the analytical framework that will be used during this thesis.

**Figure 2.4: A Broad Framework for Analysis**




(Tobin & Whiteford 2002:33)

## 2.4 FRAMEWORK FOR ANALYSIS

Initially it may help to approach the analytical framework with a broad perspective, which is based on the recent work of Tobin and Whiteford (2002) that identifies the different models that combine to influence the levels of vulnerability, or what Tobin and Whiteford refer to as 'Resilient and Healthy Communities' (see figure 2.4)[28]. This broad framework

[27] Inefficiencies that have been reported in the work of a number of academics who have studied cyclone vulnerability in Andhra Pradesh, such as Winchester 1992, 2000, 2001; Reddy et.al. 2000; Sreeram 2001; O'Hare 2001

[28] However it is worth noting that Twigg & Bhatt (1998:6) believe that "*Vulnerability is too complicated to be captured by models and frameworks. There are so many dimensions to it; economic, social, demographic, political and psychological*"

has been constructed using the 'mitigation model' proposed by Waugh (1996), the 'recovery model' put forward by Peacock and Ragsdale (1997) and the 'structural-cognitive model' devised by Tobin and Montz (1997). This broad framework is interdisciplinary and raises the theory of conflict, structural-functional views, competition for resources and other anthropological and geo-sociological principles (Tobin & Whiteford 2002). This research is predominately concerned with the area of the Structural-Cognitive model that has been circled in figure 2.4, with 'social networks' an integral element of the activities of myriad social institutions.

Therefore this framework is too broad for the context of this investigation so it is necessary to increase the focus and develop a more appropriate framework. The analytical framework that follows is one that enables the analysis of the influence of social networks and institutions on vulnerability reduction by using the determinants of vulnerability discussed earlier in this chapter and highlighted below. This analytical framework (figure 2.5) shows the links between the physical and the socio-economic processes with a specific focus on the influence of social institutions and networks.

**Figure 2.5 The Influence of Social Networks and Institutions on Vulnerability**

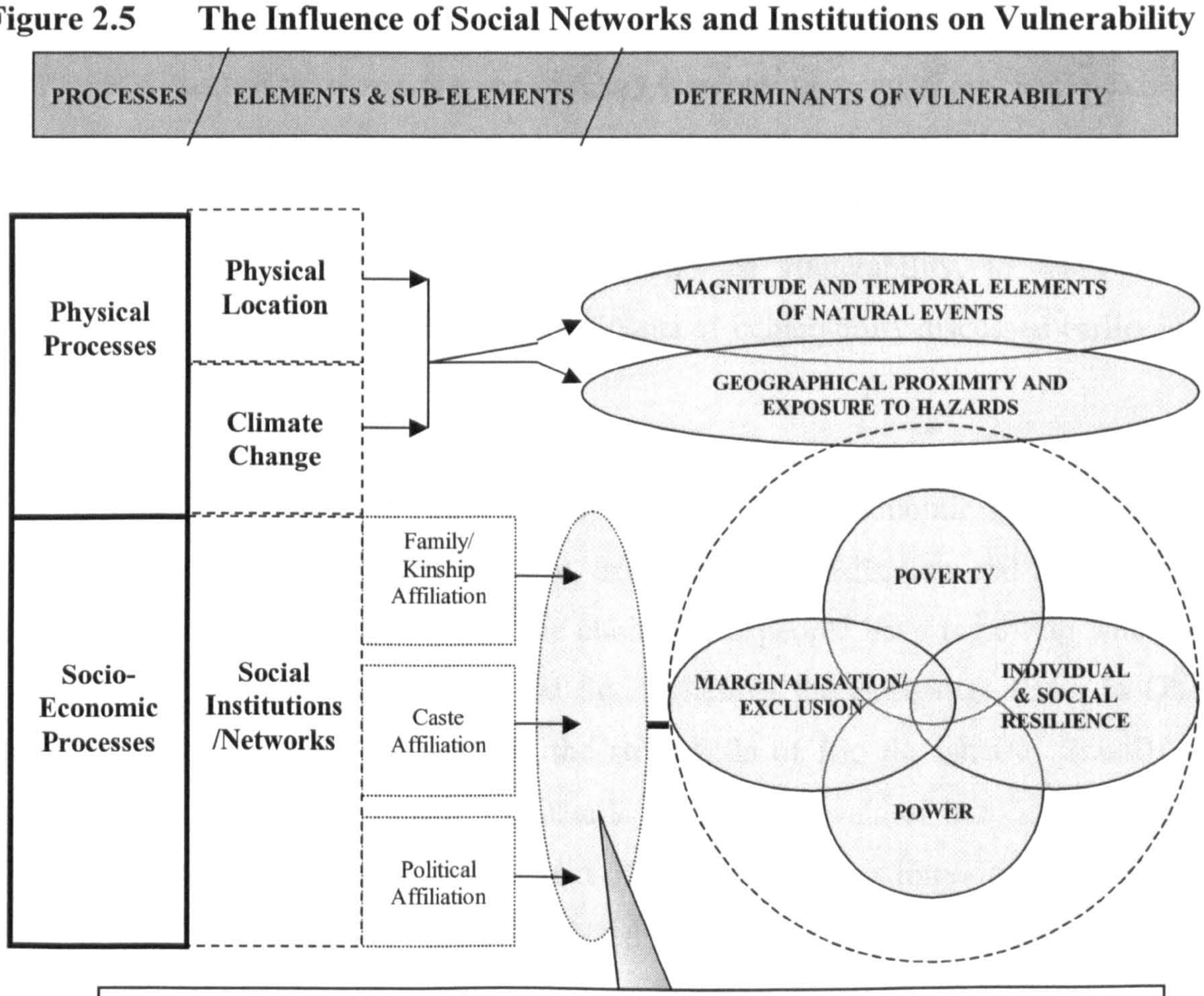


Figure 2.5 highlights what can be referred to as the arena of 'political reality'. The arena of 'political reality' is where social networks involving the social institutions that encompass family/kinship, caste and political affiliations converge. This 'political reality' is where the Government and NGOs operate and potentially influences the effectiveness of vulnerability reduction. By focusing on this area we can assess how the institutions and networks affect the determinants of vulnerability.

## PHYSICAL PROCESSES

The physical processes involved in this model are largely divorced from the influences of the socio-economic processes but affect the determinants of vulnerability through natural and environmental phenomena such as earthquakes, cyclones and global climatic change. The magnitude and temporal scale elements of natural events are largely uncontrollable but geographical proximity and exposure to hazards is a determinant of vulnerability that can be influenced by many factors related to socio-economic processes such as poverty, exclusion/marginalisation and power. The influence of socio-economic processes on the determinants of vulnerability will now be looked at in more detail.

## SOCIO-ECONOMIC PROCESSES

Social institutions and networks are one of many elements that constitute 'Socio-Economic Processes', such as the macro/micro economic, macro/micro political and macro/micro natural resource elements. Within this research, social institutions and networks will be those hypothesised to influence the determinants of vulnerability, in ways that are highlighted below with relation to the determinants of vulnerability discussed earlier in this chapter.

**Geographical proximity and exposure to hazards:** Socio-economic factors that affect this determinant can be related to poverty, exclusion/marginalisation and power because these factors will have an influence of the choices that people have regarding where they can live (i.e. the landless squatter on the flood plain of the Buriganga River in Dhaka, Bangladesh and the *favelas* situated on the steep hills of Rio de Janeiro, Brazil). Also geographic proximity and exposure to hazards will affect levels of individual and social resilience (Blaikie et al 1994). In the context of this research it is important to assess what influence social institutions have on this determinant, because the literature suggests that affiliations related to caste and politics may have an effect on where people can live.

**Poverty:** The poor will typically have few assets and little choice about where they live and how they live (Sen 1981; World Bank 1990). For example, landless squatters will typically live on marginal land that may be located in hazardous areas. For the scope of this study, poverty is best assessed in terms of access to key assets such as land ownership, income generating equipment and savings.

**Exclusion/marginalisation:** It has been observed in this chapter that in India it is not exclusion from society that affects poverty but rather inclusion in a society based on strict hierarchical structures (IILS 1996). For example, the victims of the 'super cyclone' that hit the coastal state of Orissa in October 1999, displayed different degrees of vulnerability related to marginalisation tied to caste and occupation (Palakudiyil & Todd 2003). Consequently, marginalisation is a determinant that could be strongly influenced by social institutions and networks. If the marginalisation of certain members of a village exists the extent of this marginalisation can be assessed in terms of their access to key public services, such as safe drinking water, medical care, education and protection from storms.

**Power:** Winchester (1992, 2000, 2001) has measured power in terms of access to physical, economic and social resources. Inequalities based on socio-political structures and traditional roles are influenced by social institutions that in some cases have been accused of corruption and nepotism. Does 'membership' to the 'right' social institutions increase the power of villagers in coastal Andhra Pradesh? Are these 'memberships' open to women? To answer these queries, power is best assessed in terms of access to key institutions such as State/District Government, Mandal officials and the Panchayat.

**Individual and social resilience:** Referring back to the five main survival strategies mentioned in Box 2.1 (Agarwal 1990), it will be possible to question what influence social institutions and networks have on these 'coping strategies'. The types of social institutions and the strength of individuals and families social networks may influence strategies such as 'drawing upon communal resources' and 'drawing on social relationships'. Resilience will be assessed in terms of individual's access to non-governmental organisations, family members within and outside their village, the power of their caste within the village and whether the household has a good or bad dependency burden[29].

[29] A good dependency burden occurs when there are more people earning a wage within the household, than those who are not earning a wage (i.e housewife, school aged children and the elderly or infirm). A bad dependency burden occurs when there is possibly only one wage earner and two or more non-wage earners.

This framework can fit into the broader framework of Tobin and Whiteford (2002) and allows the analysis to be scaled down to a more fixed and purposeful focus. This analytical framework illustrates how intertwined the determinants of vulnerability are, each impacting the other to differing extents. It is apparent that the arena of 'political reality' is the area where social networks involving the social institutions converge. The previous discussion has indicated that many of the inequalities found in India are replicated in Andhra Pradesh, such as social, political and economic exclusion. The influence of elites on the access to resources and the maintenance of inequalities is still a huge issue in Indian society therefore the area of 'political reality' may be a critical area that contributes towards determining levels of vulnerability. An investigation into how differential vulnerability can be determined by family, caste and political affiliations is an essential component of assessing how vulnerability can be, and should be, reduced.

## 2.5 SUMMARY

Awareness of the influence of local civil society, social institutions and social networks in the effectiveness (or ineffectiveness) of vulnerability reduction in 'community' level Indian society has grown in importance over recent years. This discussion has explained the conceptual and contextual framework of the research insofar social institutions that encompass family and kinship ties, caste and political affiliations can play some part in reducing vulnerability. It has been important to ground the concept of the social institutional analysis into the context of disaster phases and vulnerability, the growth of vulnerability as a concept and highlight some of the processes and factors that affect vulnerability.

The discussion has focused on this key subject, highlighting the 'political reality' of vulnerability in Indian communities that are often constrained by inequalities. Typically the factors involved in social inequality in India incorporate socio-political-economic interrelationships that are based around traditional caste, class, gender and family status. The discussion has also highlighted the dispute in academia regarding the influence of caste on socio-economic status. From the discussion it appears that the inequalities in Indian society may be difficult to counteract in a society where social inequality and exclusion have to some extent been a traditional norm. This discussion has also indicated that many of the inequalities found in India are replicated in Andhra Pradesh, such as social, political and economic exclusion or marginalisation, and that these inequalities

have, to varying degrees, been blamed for the inefficiency of vulnerability reduction initiatives throughout India.

The analytical framework has been explained and illustrates how intertwined the determinants of vulnerability are, each affecting the other to differing extents. In the context of this analysis, this raises the question 'have the perceived underlying inequalities in Indian society also influenced the effectiveness of vulnerability reduction programmes within the case study areas?' From the preceding discussion, it is a possibility that to improve the effectiveness of such programmes, the factors that may contribute towards the skewed distribution of resources will need to be analysed, an assertion also made by Jaspers & Shoham (1999).

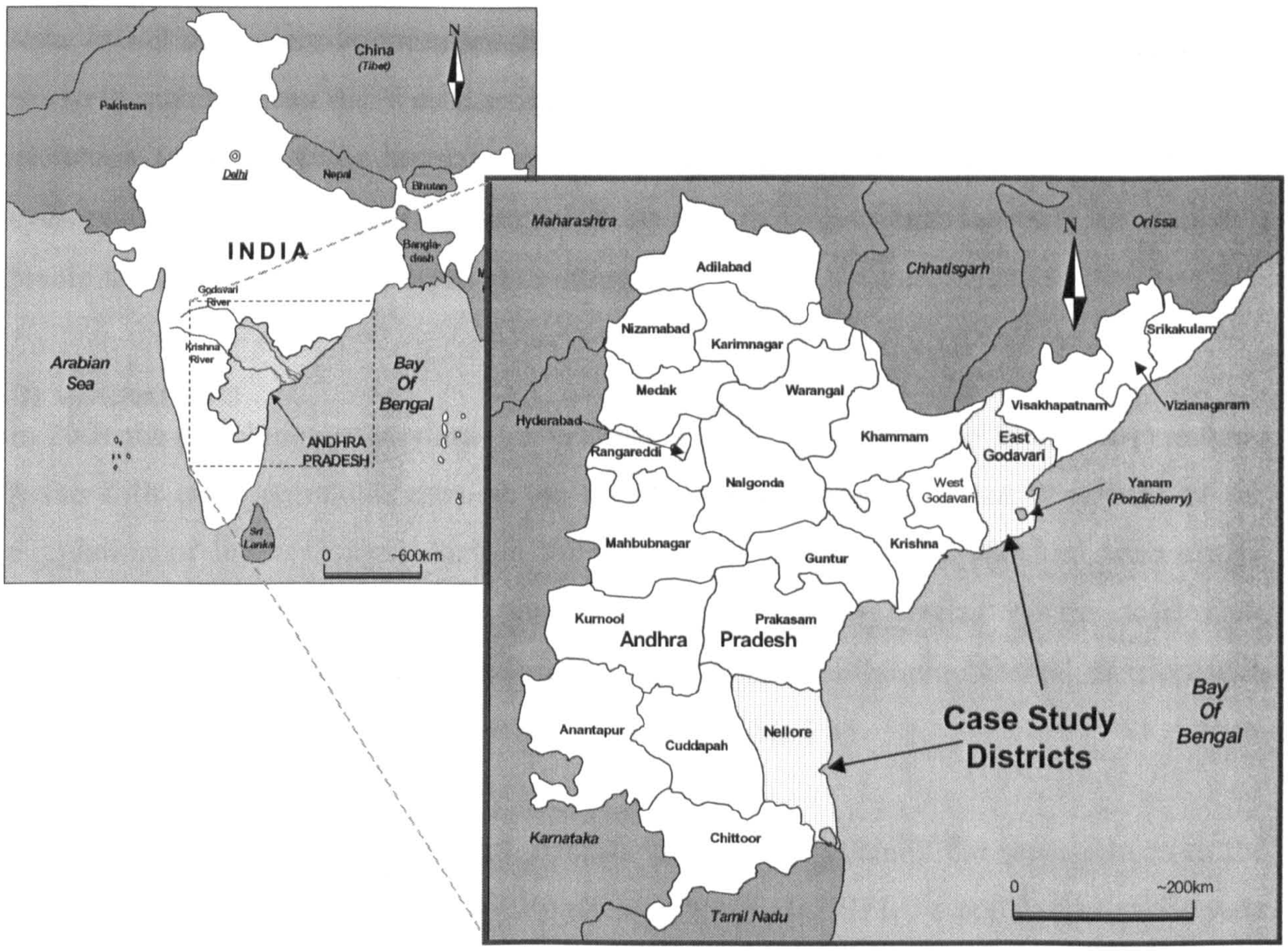
> *"The socio-economically vulnerable can only be identified by community representatives who are under pressure to favour particular groups.... This is because they are vulnerable at least in part because they are excluded from existing community networks, whether traditional social support networks or local administration."* (Jaspers & Shoham 1999:370)

Therefore,

> *"Knowledge of political vulnerability is essential to develop targeting methods that ensure that the most vulnerable are reached."* (ibid 1999:370)

This chapter will provide a background review of the case study areas as a platform before looking at some of the underlying aspects of the socio-economic situation of the case study districts and mandals. The recent history of cyclones and cyclone mitigation programmes in Andhra Pradesh will be discussed and the advantages and disadvantages of the current Cyclone Contingency Plan of Action will be highlighted. Finally, a summary of the individual case study mandals and villages will be presented, as the research context at the micro-level.

**Map 3.1: Location of Andhra Pradesh and the Case Study Districts**




## 3.1 ANDHRA PRADESH

Andhra Pradesh is the third largest state in India covering 275,068 km², and is located on the eastern coast bordering the Bay of Bengal. Andhra Pradesh is divided into 23 districts (map 3.1) consisting of three distinct geographical regions: Telangana (the inland areas in the north of the state) Rayalaseema (the inland areas in the south of the state) and Coastal Andhra, consisting of 9 districts. The coastal districts are Srikakulam, Vizianagaram and Vishakapatnam (comprising the Northern Region); East Godavari, West Godavari, Krishna and Guntur (comprising the Central Region) and Prakasam and Nellore[30] (comprising the

[30] From the start of 2003 Nellore District has been known as Pottisriramulu District but will be referred to in this thesis as Nellore to avoid confusion

Southern Region). These coastal districts cover 34 percent of the total land area of the state; and of these Prakasam has the largest geographical area (17,626 km²) and Srikakulam has the smallest (5,837 km²).

## PHYSICAL CHARACTERISTICS

The three geographical zones in Andhra Pradesh: are (1) the **Coastal Plains** that lie along the Bay of Bengal and between (2) the **Eastern Ghats**, and to their west (3) the **Peneplains** (Reddy et. al. 2000). The ground level generally slopes from west to east and rarely exceeds 150 metres above sea level in the coastal plain with the flat delta plains level at 1-2 metres above mean sea level. The Godavari and Krishna Rivers pass through the state running from the Western Ghats located in Maharashtra and flowing into the Bay of Bengal. The low-lying topography of this region makes the inhabitants susceptible to cyclones (particularly when accompanied by storm surges) and seasonal (monsoonal) precipitation that causes widespread flooding.

## DEMOGRAPHICS

In 2001 the population of Andhra Pradesh was 75,727,541 (Census of India 2001) making it the fifth most populous state in the country, accounting for about 8 percent of the population of India. Coastal Andhra Pradesh covers an area of 92,906 km² with a total population of nearly 29 million, being approximately 40 percent of the total state population. Population numbers and densities vary between the nine coastal districts with the highest densities being found in the two deltas (Table 3.1).

The population levels of the coastal districts have grown at about the same rate as in the rest of India over the last 30 years (Winchester 2001). In 1971 the population of the state was 43.5 million, in 1981 it was 53.6 million, in 1991 it was 66.5 million, and in 2001 75.7 million (Census of India 2001). The decadal growth rate of Andhra Pradesh has been 20.9 percent (1961-71), 23.1 percent (1971-81) and 24.2 percent (1981-91) but the rate has dropped to 13.9 percent between 1991 and 2001 (Census if India 2001). Population growth per annum is highest in Vishakapatnam district (2.5 percent) and East and West Godavari districts (2.1 percent) (Winchester 2001).

**Table 3.1: Coastal District Population Distribution: District densities, Scheduled Tribal & Scheduled Caste ratios and irrigated land**

| Coastal District | Area (Km²) | Population (1,000s) | | | Population /Km² | ST & SC (% of District) | Irrigated area (Hectares) | Roads (Km) | |
|---|---|---|---|---|---|---|---|---|---|
| | | Rural | Urban | Total District | | | | | |
| Srikakulam | 5,837 | 2,250 | 278 | 2,528 | 433 | 15.1% | 198,000 | 4,712 | |
| Vizianagaram | 6,539 | 1,833 | 412 | 2,245 | 343 | 19.4% | 157,000 | 3,560 | |
| Vishakapatnam | 11,161 | 2,277 | 1,511 | 3,789 | 339 | 22.1% | 153,000 | 5,680 | |
| East Godavari | 10,807 | 3,736 | 1,136 | 4,872 | 451 | 22.1% | 441,000 | 6,025 | Deltas |
| West Godavari | 7,742 | 3,048 | 747 | 3,796 | 490 | 20.2% | 592,000 | 5,791 | |
| Krishna | 8,727 | 2,852 | 1,365 | 4,218 | 483 | 19.1% | 465,000 | 6,540 | |
| Guntur | 11,391 | 3,174 | 1,231 | 4,405 | 387 | 18.4% | 366,000 | 7,006 | |
| Prakasam | 17,626 | 2,588 | 466 | 3,054 | 173 | 23.6% | 208,000 | 8,325 | |
| Nellore | 13,076 | 2,056 | 603 | 2,659 | 203 | 30.8% | 298,000 | 6,725 | |
| **TOTALS** | **92,906** | **23,814** | **7,749** | **31,566** | | | **2,878,000** | **54,364** | |
| **Means** | | | | | **367** | **21.1%** | | | |

*Sources*: After Reddy, Sharma & Chittoor, (2000); Andhra Pradesh Government (2003b)

Levels of urbanisation have risen in Andhra Pradesh, particularly during the 1970s and 1980s; the urban population of 19 percent in 1971 increased to 23 percent in 1981 and 27 percent by 1991, a figure that was maintained in 2001. The districts with the highest percentage increases are Vishakapatnam (40 percent), Krishna and Guntur districts (36 percent), and the lowest being in Prakasam (16 percent) and Srikakulam districts (13 percent) (Winchester 2001). The latest Census figures (Census of India 2001) show that the population densities are a little lower in Andhra Pradesh (275 persons/km²) than elsewhere in India (324 persons/km²) but are higher than the State average in the coastal districts (367 persons/km²). There are wide variations in population densities between coastal districts (refer to Table 3.1) that can be attributed to population concentrations in the highly irrigated areas and the delta regions of the Godavari and Krishna Rivers.

**Literacy Rates**[31]

The literacy rates in Andhra Pradesh are 70.85 percent for males and 51.17 percent for females, averaging at 61.11 percent for the population (refer to table 3.2). The literacy figures for the rural areas of Andhra Pradesh clearly show that the disparity between male and female literates is increased with men at 66.1 percent and women at 44.4 percent, averaging at 55.3 percent for the rural population (Andhra Pradesh Government 2003b). The literacy rates published for Andhra Pradesh compare unfavourably against the national

[31] It should be noted that some socio-political commentators have aired concerns regarding the measurement of educational attainment based on literacy rates unless it is linked with the praxis of conscientisation and social mobilisation as advocated by Brazilian educator Paulo Friere (1972) in his book 'Pedagogy of the Oppressed'.

average of 65.4 percent, and particularly against States such as Kerala (90.9 percent) and neighbouring Tamil Nadu (73.5 percent) (Census of India 2001).

**Table 3.2: Population and literacy rates by State, District and Mandal**

| | Population | | | Literacy Rates 2001(%) | | |
|---|---|---|---|---|---|---|
| **STATE/District/Mandal** | **Persons** | **Males** | **Females** | **Persons** | **Males** | **Females** |
| ANDHRA PRADESH (Total) | 75,727,541 | 38,286,811 | 37,440,730 | 61.11 | 70.85 | 51.17 |
| *Rural* | 55,223,944 | 27,852,179 | 27,371,765 | 55.33 | 66.13 | 44.36 |
| *Urban* | 20,503,597 | 10,434,632 | 10,068,965 | 76.39 | 83.21 | 69.34 |
| East Godavari District (Total) | 4,872,622 | 2,445,811 | 2,426,811 | 65.49 | 69.97 | 61.00 |
| *Rural* | 3,735,908 | 1,877,779 | 1,858,129 | 62.52 | 66.85 | 58.15 |
| *Urban* | 1,136,714 | 568,032 | 568,682 | 75.11 | 80.08 | 70.16 |
| Tallarevu Mandal (Total) | 79,943 | 40,330 | 39,613 | 69.39 | 73.03 | 65.69 |
| Katrenikona Mandal (Total) | 73,208 | 36,772 | 36,436 | 60.39 | 68.03 | 52.67 |
| Nellore District (Total) | 2,659,661 | 1,341,192 | 1,318,469 | 65.90 | 74.45 | 57.24 |
| *Rural* | 2,056,027 | 1,036,295 | 1,019,732 | 62.13 | 71.62 | 52.53 |
| *Urban* | 603,634 | 304,897 | 298,737 | 78.58 | 83.96 | 73.12 |
| Thotapalligudur Mandal (Total) | 49,104 | 24,733 | 24,371 | 61.46 | 67.66 | 55.20 |

*Source*: Andhra Pradesh Government (2003b)

## NATURAL RESOURCES & LAND USE

Andhra Pradesh is the largest maritime state in India with a coastline of approximately 1,030kms. The coastal region of Andhra Pradesh contains an abundance of natural resources along the shoreline and in the immediate hinterland (up to 5km inland). The shoreline is utilised economically through salt extraction activities, brackish water fisheries (prawn cultivation known locally as aquaculture) and forestry. The hinterland region is endowed with mangrove swamps, creeks, estuaries, river mouths and beaches that generate economic activity through fishing, aquaculture and biomass production used for fuel.

Nevertheless, it has been acknowledged that many of these natural resources are being depleted as a result of the population pressures in many of the coastal areas (Reddy et al. 2000), in tandem with increases in aquaculture activities (Haybin & Bundell 2000). Coastal mangrove forests are important natural barriers against the ravages of cyclones as they absorb the impacts of high winds and tidal surges. Therefore, the routine denudation of these coastal mangrove forests in Nellore, Krishna, Srikakulam and East Godavari is considered to be an issue of high concern (FAO 1999; Reddy et. al. 2000). Offshore, the Krishna-Godavari delta is the source of large natural gas reserves that have recently been tapped, providing the catalyst for growth in natural gas related industries in the port of Kakinada (Srinivas & Barman 2002).

**Agriculture & Irrigation**

Agriculture that is located inland is widely diversified and a rich variety of crops are grown. The most widely cultivated crops are: paddy, maize, groundnut, chillies, tobacco, cotton, castor, sugarcane, redgram, greengram, sesamum, tumeric, jowar, bazra, ragi, and a wide variety of fruits and vegetables (Winchester 2001). The shoreline areas provide poor quality soils that predominately support coconut plantations that are important for the local economy (Radhakrishna 1996) and cashew nut cultivation. The last decade has witnessed a proliferation of brackish water fisheries used for prawn cultivation, with a result that many coconut and cashew plantations have diminished in size (Haybin & Bundell 2000).

Coastal Andhra is heavily dependent on irrigation for agricultural production. The large Krishna and Godavari rivers are the sources of substantial economic benefits to the entire state through the generation of hydro-electricity. The two rivers also provide the principal source of irrigation in the deltas regions and to some extent in the northern and southern regions of the coast, via an extensive network of canals that run along the hinterland (such as the Buckingham Canal in Nellore). There are three major sources of irrigation in coastal Andhra being; canals, tanks and lift irrigation. The Godavari and Krishna deltas have the highest percentage of canal irrigation, the area north of the deltas has the highest percentage of tank irrigation and the southern region of coastal Andhra Pradesh has the highest percentage of lift irrigation (Winchester 2001).

**Industrialisation**

Vishakapatnam is the most industrially developed district in coastal Andhra Pradesh with large-scale industries such as Hindustan Petroleum Corporation, Coromandal Fertiliser, Hindustan Shipyards, Bharat Heavy Plates and Vessels, Hindustan Polymers, Hindustan Zinc Plant and Vishakapatnam Steel Plant all located there (Winchester 2001). Vishakapatnam is located in a natural harbour and provides India with its major iron ore exporting port to Japan and other countries and is also home to approximately 500 mechanised trawlers (FAO 2000). Further south, the natural harbour of Kakinada is another busy port in coastal Andhra Pradesh that is protected from the ravages of the sea by a 12km long sand bar known as Hope Island. Kakinada is endowed with industries related to natural gas supplied from the Godavari delta, numerous agro-chemical factories and 600 mechanised non-traditional fishing boats (trawlers) (FAO 2000). Elsewhere, in cities such as Machilipatnam, Ongole and Nellore, there are many large and medium sized industries producing and exporting agro products, oil, tobacco, cotton, and textiles, all providing employment for thousands (Winchester 2001).

## 3.2 LOCAL POLITICAL STRUCTURES

Andhra Pradesh in general is politically different to many states of India because unlike many regions (particularly in the northern states) Brahmins have not traditionally dominated the political scene (Kohli 1990). The dominant castes in Andhra Pradesh have been powerful peasant landowners, such as the Reddis and Kammas. However, as discussed in Chapter Two, the 'backward castes' constitute a large proportion of the population but the heterogeneity of the numerous *Jatis* (sub-castes) that make up these castes has made it difficult for any party to organise stable social alliances (Kohli 1990). Elliott (1986) believes that the alliances needed for the type of political mobilisation would necessitate new kinds of ties that have seldom been achieved in Andhra Pradesh because they are not based on traditional caste relationships. Without these cohesive political alliances it can be difficult to challenge local, regional and state hegemony.

The incumbent political party in Andhra Pradesh is the Telugu Desam Party (TDP), led by the charismatic Chief Minister Chandra Babu Naidu. In recent years the Chief Minister has redeveloped the *Panchayati Raj* and instigated the *Janmabhoomi* scheme aimed at improving amenities in the underdeveloped regions, and reducing poverty throughout the state. Mr. Naidu has made huge promises in recent years, claiming that the Government aimed to uplift the 26 percent of the population below the poverty line to ensure there were none below the poverty line, stating that "*By 2004, every village will have a protected water scheme and by 2005, all people below the poverty line would have pukka houses. By 2007 there will be a road for every village*", (The Hindu 2002a).

Despite making claims that may be impossible to attain, the *Janmabhoomi* scheme has contributed, together with the 'Food for Work' and 'Clean and Green' programmes, to improvements at village level related to road improvements and drinking water supplies. Conversely, opponents to the *Janmabhoomi* scheme (such as Congress (Indira), the Communist Party of India (Marxist), the Communist Party of India and various student led groups such as the Joint Action Committee) believe there is a pro-World Bank bias to the projects and that it will be TDP sympathisers who will be the beneficiaries through the misappropriation of funds and resources (Nagesh Kumar 2000). Although it is difficult to substantiate these claims it is clear that the Chief Minister has adopted a development policy that requires extensive loans from the World Bank (The Hindu 2002d, e, f) imposing a severe debt burden upon the state.

Similarly, the 'Food for Work' programme has been criticised by the former Chief Minister and Member of Parliament, N. Janardana Reddy. Reddy has charged that the state government had opened the "flood gates of corruption" through its mishandling of the food for work programme, and has stated that the implementation of 'Food for Work' in the state was a "criminal waste" and that the rice was directly going to business people rather than poorer sections of society (The Hindu 2002b). Claims of inefficiency and misappropriation by the incumbent and opposition political parties are particularly rife during times of post-disaster relief (Reddy & Sastry 1992) to the extent that it has been stated that undue political interference during the relief phases of cyclones in 1977 (Krishna District) and 1990 (Guntur District) contributed towards the inefficiency of the relief's administration (Reddy & Sastry 1992).

## LOCAL GOVERNMENTAL ADMINISTRATION

The British conceived the *Panchayati Raj* in 1909 as a form of self-government in the rural areas to allow decisions affecting the everyday lives of villagers to be taken at village level instead of at national and state level (Shitole 2001). Their intention was to make villages semi autonomous with a measure of self-governance within the large structure of national and state government (Narayanasamy et al. 2000). The *Panchayati Raj* has constitutional status through the 73rd Constitutional Amendment 1974 and as such can play a prominent role in micro-level planning so that the processes contained within the *Panchayati Raj* institutions become integrated in the State and Union Plans (Shitole 2001). The roles of the local administrative structures are summarised in table 3.3.

The Panchayati Raj in Andhra Pradesh is divided into two strata, being the Mandal and Village levels. The district Panchayati Raj Officer controls the Divisional Panchayati Raj Officer and Extension Officer, while Gram Panchayats come under the administrative control of Rural Development Extension Officer. The Mandal Parishad falls under the administrative control of the Mandal Development Officer but has no jurisdiction in the Panchayati Raj. The member of the 'Mandal Parishad Territorial Constituency' (MPTC) is an ex-officio of his/her respective Gram Panchayat and the Sarpanchas (presidents) are the Ex-officio members of their respective Mandal Parishads. Neither of these two officers has voting rights or specific roles and responsibilities (Ram Reddy, 1977). Committees in the Gram Panchayat consist of people directly elected by the villagers and vary in size (5-17) with reservations for women, scheduled caste and scheduled tribes. Members usually serve for five years but their term of service may be extended by the state government for one extra year (Ram Reddy, 1977).

## Table 3.3: The Roles of Local Administrative Structures

| REPRESENTATIVE | RESPONSIBILITIES |
|---|---|
| **Zilla Parishad**<br><br>The interface between village level and the state governments. The overall representative coordinating body with limited executive functions at district level | **District and higher level**<br>Responsible for<br>▪ Examining and approving Panchayat Samiti budgets.<br>▪ Distributing funds allotted to the district by Central and State Governments<br>▪ Raising local taxes<br>▪ Supervising the overall activities of Panchayat Samiti<br>▪ Advising government on development activities; publishing statistics<br>▪ Establishing and maintaining secondary, vocational and industrial schools<br>▪ Implementing programs prepared for infrastructure development (roads anc bridges) Implementing statutory or executive orders |
| **Samiti Mandal/Panchayat**<br><br>Principal representative executive body at Mandal level responsible for supervising the implementation of medium scale development programmes | **Mandal level**<br>Responsible for<br>▪ Selecting beneficiaries for anti poverty and employment programs<br>▪ Supervising the implementation of the Primary Health Centres; Elementary schools programmes<br>▪ Setting up and supervising the activities of the Mahila Mandals (Women Groups)<br>▪ Setting up and supervising the activities of employment and produce cooperatives, cottage industries, child and women's welfare institutions<br>▪ Managing local trusts and self help groups<br>▪ Assisting with post disaster emergency relief activities, collecting primary statistics relative to disaster events |
| **Gram Panchayat**<br><br>Committees of villagers representing the whole village, or group of villages or groups of villagers within villages taking charge of decision making at village level | **Village level: Gram Sabha**<br>Responsible for<br>▪ Sanitation and waste disposal; maternity and child welfare facilities and services; supply of safe drinking water; access to agricultural inputs; construction and maintenance of roads, drains, bunds and bridges, establishment of Akharas, organization of voluntary labours, fair price shop, propagation of family planning, maintaining postal services<br>▪ Promoting best communal practice of forestry and equitable access to forestry products, animal husbandry, dairy and cooperative farming and minor irrigation |

*Source*: Shitole (2001)

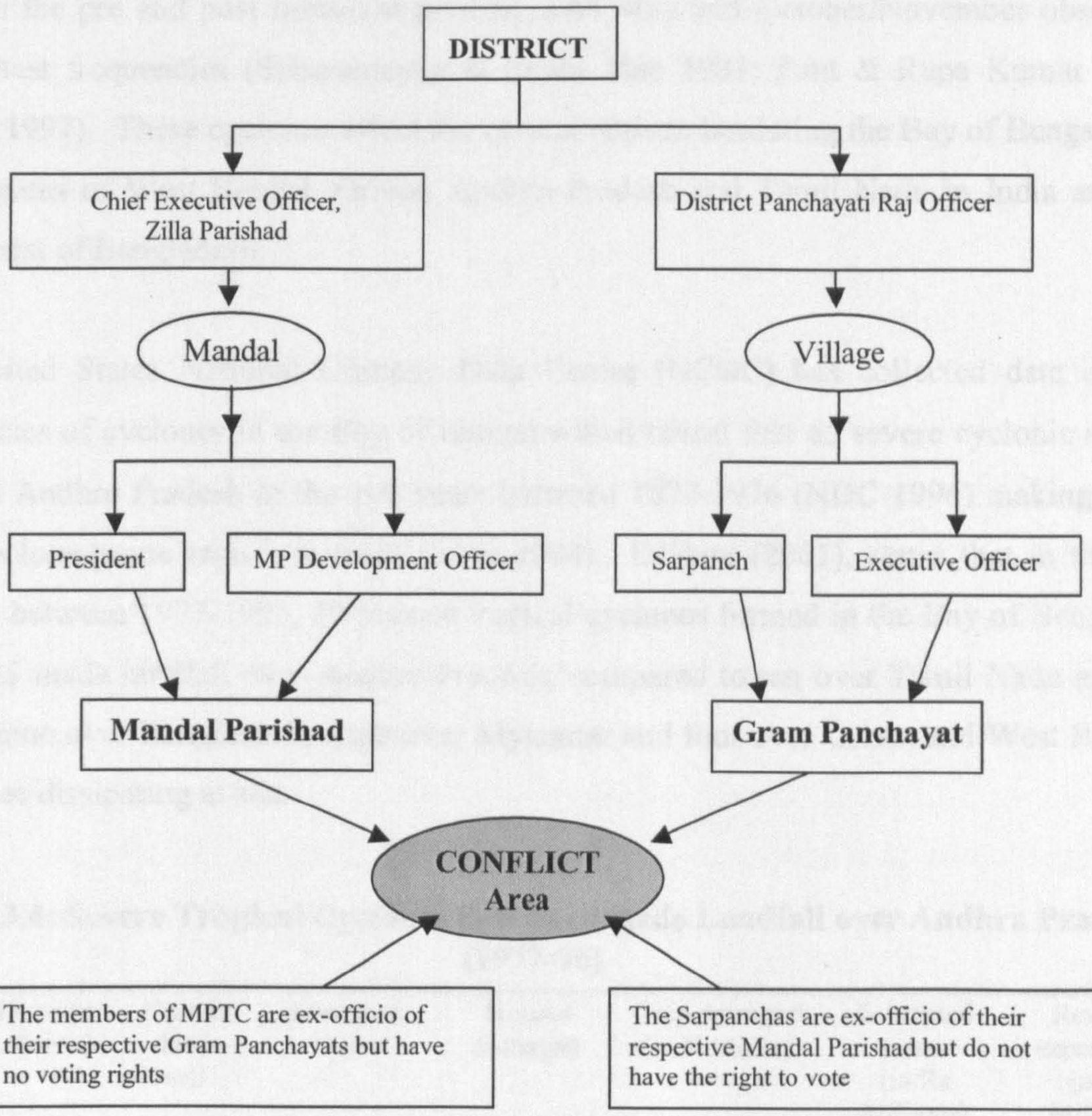
The Panchayati Raj has provided the opportunity for people at village level to make planning decisions and get their priorities incorporated within the planning process but also generated a wider awareness of linkages between activities within and between villages. This increased awareness has in some cases led to direct participation in local planning activities and has ultimately succeeded in raising the level of people's consciousness of their rights and responsibilities but Shitole (2001) highlights that despite this, the main objectives of the Panchayat Raj have largely been ineffective;

> *"Within the context of existing political and social realities the system of rural self-government Panchayati Raj is still regarded as the most appropriate institution through which target groups can receive the varied benefits of development to improve their standards of living. The major negative conclusion about Panchayati Raj is that programme performance measured by achieving objectives has been poor. The result has been that the people who were intended as "active*

*participants" have become instead "passive beneficiaries" and economic disparities between classes have widened, particularly in rural areas."*

(Shitole 2001:7 emphasis added)

**Figure 3.1: Inherent weaknesses of local government structures (Shitole 2001)**




The same author has also highlighted some inherent weaknesses of local governmental structures such as the inactivity of the Gram Sabha and the conflict between Mandal and Village levels of the Panchayati Raj in Andhra Pradesh (see figure 3.1). The effectiveness of the Panchayat Raj will be developed on later in this thesis with a view to assessing how these conflicts can, and possibly do, have an effect upon the vulnerability of the case study villagers, and their ability to cope.

## 3.3 CYCLONES IN ANDHRA PRADESH

For centuries the Bay of Bengal has been the breeding ground for tropical cyclones of varying scales. One of the earliest reported catastrophes was in 1679 when it is believed that nearly 20,000 people were killed by a tropical storm in the Machilipatnam region of the Krishna delta in Andhra Pradesh (Winchester 1992). The majority of these cyclones occur in the pre and post monsoon periods, with May and October/November observing the highest frequencies (Subaramayya & Subba Rao 1981; Pant & Rupa Kumar 1997; O'Hare 1997). These cyclones affect the coastal regions bordering the Bay of Bengal such as the states of West Bengal, Orissa, Andhra Pradesh and Tamil Nadu in India and the south coast of Bangladesh.

The United States National Climatic Data Centre (NCDC) has collected data on the frequencies of cyclones in the Bay of Bengal which reveal that 65 severe cyclonic storms affected Andhra Pradesh in the 100 years between 1877-1976 (NDC 1996) making it the most cyclone-prone region in India (Nath 1994). O'Hare (2001), states that in the two decades between 1977-1995, 59 intense tropical cyclones formed in the Bay of Bengal, of which 25 made landfall over Andhra Pradesh, compared to ten over Tamil Nadu and Sri Lanka, nine over Bangladesh, eight over Myanmar and four over Orissa and West Bengal; with three dissipating at sea.

**Table 3.4: Severe Tropical Cyclones that have made Landfall over Andhra Pradesh (1977-96)**

| Year | Districts affected | Human death toll | Livestock losses | Houses damaged | Crop damaged (in Hectares) | Estimated losses (in Rs Millions) | Revenue expenditure (in Rs Millions) |
|---|---|---|---|---|---|---|---|
| 1977 | 8 | 9,941 | 43,176 | 1,014,800 | 3,336,000 | 1,720 | 531 |
| 1979 | 10 | 638 | 25,082 | 609,400 | 73,000 | 1,800 | 782 |
| 1984 | 4 | 575 | 90,650 | 320,000 | 207,000 | 949 | 493 |
| 1985 | 7 | 16 | 0 | 3,196 | 106,000 | 243 | 262 |
| 1987 | 12 | 119 | 0 | 110,553 | 961,000 | 1,265 | 507 |
| 1989 | 5 | 69 | 7,117 | 149,112 | 62,000 | 408 | 118 |
| 1990 | 14 | 976 | 5,170,301 | 1,439,659 | 480,000 | 22,478 | 1,386 |
| 1994 | 7 | 172 | 512 | 79,220 | 397,000 | 6,259 | 297 |
| 1996 | 3 | 1,077 | 19,856 | 609,628 | 511,000 | 21,428 | 3,082 |
| **Total** | | **13,563** | **5,745,304** | **4,335,568** | **8,715,000** | **56,550** | **8,357** |

*Source*: Andhra Pradesh State Government Memoranda on Cyclones, Relief Department, quoted in Sharma (1998)

## CYCLONE RELATED DAMAGES

The extent of damages sustained from cyclones is the result of the interaction between their size and intensity, local topography and the demographic and socio-economic characteristics (land uses and occupations) of the area affected (Blaikie et al 1994; Winchester 1992; O'Hare 2001). The most destructive features of the severe cyclones are the storm surges that invariably accompany them resulting in a rapid rise in sea level that quickly inundates the low-lying coastal regions (Dube et al 2000). Storm surges account for more than 90 percent of loss of life and property (FAO 2000) although the high winds and heavy rains that typically accompany cyclones can be equally as damaging to crops and infrastructure (O'Hare 2001).

In one of the most deadly cyclones, which took place in the Krishna delta of Andhra Pradesh during 1977, 9,941 people died (Reddy et al 2000). Since 1977, the state has taken steps to improve its emergency preparedness and response capabilities which have been attributed to reducing the number of lives lost in more recent cyclones (Reddy et al 2000; Winchester 2001). Economically, the May 1990 cyclone, with a death toll close to 1,000 people (refer to Table 3.4), caused nearly US$1.25 billion in damage (World Bank 1997). The cyclone of November 1996 accounted for a death toll of 1,077 people. Between June and December 1996, a total of 1,689 people died in heavy rains, floods, and cyclones with the total economic loss estimated at US$2 billion, with the cyclone alone accounting for US$1.5 billion (World Bank 1997).

### Loss of human life

One of the most dreadful problems with intense cyclones, plus related storm surges and heavy precipitation, are associated with the loss of human life. The loss of a family member can be extremely traumatic with potentially long lasting psychological problems for the bereaved but this problem can be increased if the person who died was the family's main wage earner. This problem may be exacerbated if the family member's body cannot be found, resulting in an application for compensation being stalled or even rejected. Similarly, injuries to key family members that result in disability could be construed to be even more problematic; with loss of income the initial concern with the added issue of a non-wage earning mouth to feed as well as any related medical costs to attend to. Compensation can be obtained from the Government but the receipt of compensation is not always easy because it can be difficult to prove the death of a family member without the corpse of the deceased (Reddy et al 2000).

**Loss of land, crops & livestock**

The immediate affects of cyclones can result in the complete loss of crops such as paddy and coconuts plantations that are essential to local economies (Radhakrishna 1996); through the loss of the crops themselves but also through the loss of income for the people who would have been employed to harvest the crops (Winchester 1992). The coincidence of the main cyclone season with the harvest season has resulted in the development of crop varieties in the 1930s that could withstand the effects of cyclones (Winchester 1992). Damages related to the land also include the aquaculture businesses that have proliferated in recent years, via the use of tanks used to farm the shrimps, which suffer from substantial damages that can be particularly problematic for the owner if loans obtained for the construction of the tank remain outstanding. There are also potentially longer-term impacts for the land through salinisation and 'sand casting' (Winchester 1992), which can have a deleterious affect upon drainage and the productivity of agricultural crops in the future.

Some Scheduled Tribal castes, such as Erukala, rely for a large part of their income generation on the breeding of pigs and the loss of livestock such as this would be particularly damaging for these sections of the community who are typically poor and undereducated. Animals such as buffalo and goats are also important sources of income and are assets in themselves, so the loss of animals used for 'milking' and 'draught' will ultimately be a twofold loss. The extent of these problems will invariably be increased if natural mangrove forests have been denuded prior to the event, as mangrove forests can act as a natural barrier against the worst affects of the cyclone and storm surge (FAO 2000; Haybin & Bundell 2000).

**Loss of homes and domestic assets**

In coastal Andhra Pradesh the loss of ones home is tied with the loss of ones domestic assets. The loss of a relatively low cost *kutcha* hut will be economically less problematic than the loss of the items contained within, as the hut may be easier to replace than the contents (Winchester 1992). Domestic assets such as food stocks, electrical goods, cooking utensils, jewellery (sometimes a means of saving for families without access to a bank account) and personal documents can be difficult or even impossible to replace. Even the loss of 'everyday' items such as water carrying utensils and cooking pots can make recovery from a disaster difficult (if not impossible) for a family. Other assets related to income generating activities, such as nets and boats for fisherfolk can be very difficult to replace if damaged of destroyed, particularly if the village relies on fishing as the main

means of income generation (such as the Agnikulakshatriya caste). The loss of a fishing boat and nets will not only affect the owner, but possibly other people who lease the boat and also the 'service' castes, such as the washerfolk (Chakkali), who rely on a thriving village economy for their livelihood.

Economically, the biggest damage to occur would be to an engineered *pukka* type of house, but *pukka* houses are considered to be the safest types of housing and most damage typically occurs to non-engineered *kutcha* housing (Shanmugasundaram et al 2000). The poorer constructed thatch and tiled *kutcha* type housing in villages such as Balasuthippa and Bhairavapalem in East Godavari bore the brunt of the 1996 cyclone (FAO 2000).

**Damage to infrastructure**

The 1996 cyclone disaster left many homes, roads, bridges, irrigation systems, crops and livestock destroyed (Reddy et al 2000). Factors contributing to the high degree of devastation included the lack of mangrove and tree shelterbelts, poor quality construction of housing and infrastructure in high-risk zones and inadequate maintenance of infrastructure (World Bank 1997).

Damage to the infrastructure will result in the immediate loss of electricity (if the village is connected), water supplies, communications and roads for evacuation and the transportation of relief supplies. The longer-term recovery of the villages may be further impeded through the lack of educational establishments, health care provision, inter-village/town transportation, resulting in a negative impact on business/trade in the village, the region and possibly the state.

## 3.4 CYCLONE MITIGATION

One of the historic duties of ruler or the state in India was to relieve the effects caused by natural calamities but it was not their duty to try to avert the inevitable suffering of such calamities (Winchester 2001). This attitude led to the introduction of the Famine Codes in the mid 19$^{th}$ century by the British colonial powers, and in some respects this attitude prevails today (Parasuraman & Unnikrishnan 2000; Winchester 2001). Consequently, the concept of famine relief extended into the policies of cyclone relief with an emphasis on the relief of suffering through handouts to the recipients rather than the mitigation or reduction of the risks; a point highlighted by Winchester (2001).

> *"Cyclone mitigation policy was based on short-term relief (the disposal of bodies and carcasses, the provision of drinking water, restoration of irrigation channels,*

*repair of breached bunds and short-term financial assistance to farmers who had lost their crops)"* (Winchester 2001:9)

The policy could be referred to as proactively reactive, a situation were one plans to 'shut the door after the horse has bolted'. Still, this policy prevailed until 1971 when the Cyclone Distress Mitigation Committee (CDMC) was established by the Government, partially as a reaction to adverse publicity from two severe cyclones, each accompanied by a storm surge, that struck Andhra Pradesh in 1969 and Orissa in 1971 (FAO 2000).

### CYCLONE MITIGATION PROGRAMMES

The CDMC comprised meteorologists, engineers and administrators and the purpose of the committee was to examine how to avoid such disasters in future (Parasuraman & Unnikrishnan 2000). The CDMC recommended that cyclone mitigation had to advocate a more proactive approach that concentrated on action before the event rather than after the event. The principal recommendations made by CDMC were;

- Constructing community cyclone shelters within a 20km zone from the shoreline and planting shelterbelts as additional protection in the same zone
- Improving communications between storm warning centres in Visakhapatnam (Andhra Pradesh), Madras (Tamil Nadu) and State government (Hyderabad) and thereby enhance the cyclone warning system
- Improving evacuation measures
- Preparing hazard location maps to facilitate search and rescue operations
- Enhancing community preparedness through mass education programmes in cyclone prone areas (Winchester 2001)

The recommendations of the CDMC became the foundations for the Cyclone Contingency Plan of Action (CCPA) that set out the duties and responsibilities of all administrative levels (Andhra Pradesh Government 1981a,b). The CCPA was updated in 1987 and is still the plan of action that is used today (Winchester 2001). Some of the key achievements of the CCPA and the work of the CMDC are related to improvements in forecasting, warning and evacuation procedures that have reached standards unequalled in India (Winchester 2001). In spite of this, the 1996 cyclone provided examples of how the dissemination of cyclone warnings can fail through the long chain of communication required for warning dissemination, the lack of radio receivers for vulnerable communities (such as fisherfolk) and the ineffective use of the Armed Forces (FAO 2000) (refer to Table 3.5 for more details).

## Table 3.5: Advantages and Disadvantages of the Cyclone Contingency Plan of Action (CCPA)

| Advantages of the CCPA |
|---|
| Systematic plan |
| Control room at various levels |
| Multi departmental involvement |
| Precautionary/preparedness measures at various levels |
| Armed forces used for aerial surveys and wireless communication |
| Village evacuation and use of cyclone shelters in low lying villages |
| Community preparedness at village level and role of different officials in the warning dissemination system |
| **Disadvantages of the CCPA** |
| Very long chain of communication |
| Seriousness of messages can get diluted down the line |
| All advanced communication systems are ineffectively used |
| Preparedness at Mandal level and below is very poor |
| Equipment at MRO levels is not kept in readiness |
| Means of fast communication to the villages is very weak |
| Officers hardly work to 'All India Radio' Bulletins |
| Television is hardly mentioned in the CCPA as a means of dissemination |
| Village telephones are almost always non-functional |
| Role of the Police in the cyclone warning dissemination is hardly addressed |
| Role of Department of Fisheries in cyclone warning dissemination is minimal |
| Armed Forces are not involved in warning dissemination to fisherfolk at sea |
| Unpredictability of cyclones results in apathy towards the serious of warnings by villagers |
| Little reference to community preparedness in villages is mentioned in the CCPA |
| Accurate maps of low-lying villages are not available to officers |

*Source:* (FAO 2000)

Despite some of the shortcomings of the CCPA, it is believed that the effectiveness of cyclone forecasting and warning has been a large factor in the reduction of deaths from cyclones (Reddy et al 2000; O'Hare 2001). The effectiveness of the warnings and evacuation procedures can be illustrated if we make a comparison between the 1977 cyclone in Krishna when nearly 10,000 people died, with a cyclone of similar size that affected the same region in 1990 but caused the deaths of 967 people (Reddy et al 2000; Parasuraman & Unnikrishnan 2000).

Following the November 1996 cyclone, the Government of Andhra Pradesh quickly realised the need for short-term reconstruction and longer-term mitigation measures to stave off destruction in the event of future environmental disasters and moved swiftly with the World Bank to prepare the project. The Andhra Pradesh State Government launched a massive cyclone recovery and mitigation program in response to the effects of the

November 1996 cyclone with US$150 million in assistance from the World Bank (World Bank 1997).

The project's objectives were to assist the state government with the implementation of a hazard management system to prevent and mitigate the damage caused by cyclones, floods, and drought; to rebuild public infrastructure according to hazard-resistant criteria so that infrastructure would withstand future disasters; and to enhance the government's cyclone early warning capacity via the following components (World Bank 1997):

- Hazard Management Program—to promote selected state- and centrally-sponsored prevention, mitigation, and preparedness activities. These included cyclone and flood management studies to develop action plans; local cyclone warning, communication and response, awareness raising, education and community involvement in hazard reduction activities; and the enhancement of the central government's early cyclone warning systems.

- Infrastructure Restoration—to repair and reconstruct electric power facilities, irrigation drains and flood-banks, roads, and bridges according to enhanced design and construction standards. This component also financed watershed management, the planting of tree shelterbelts, and the repair of existing and the construction of new cyclone shelters.

- Technical Assistance—to finance operating costs of project management and implementation; consultancies, training, and equipment; and capacity building of state government agencies, public education, and increasing awareness.

The Andhra Pradesh Cyclone Hazard Mitigation Project (APCHMP) has undertaken some of the work related to these components. The APCHMP was commissioned to develop a new flood warning system for the state, utilising Geographical Information Systems (GIS), real time data collection and rainfall-runoff and hydraulic modelling. An element of the APCHMP has been the Integrated Coastal Zone Management Study, which has incorporated facets of vulnerability such as hazard mapping and the social recovery potential (APCHMP 2001).

The Government of Andhra Pradesh has also established a vulnerability reduction fund, which would provide funds to districts to encourage communities to undertake hazard

reduction activities at the local level. The government also worked to mobilise existing *Swarna Jayanati Swarna Rogajar*[32] (SGSY) and Janmabhoomi programs which combine the traditions of self-help with the development of a micro-planning capacity to design and execute small but significant interventions, such as reforestation programs, which enhance self-reliance and sustainability.

## NON-GOVERNMENTAL INITIATIVES

Non-governmental organisations (NGOs) are typically non-profit, non-official organisations that are actively involved in the process of socio-economic development and relief aid (Tisch & Wallace 1994). Non Governmental Organisations (NGOs) can offer an alternative approach to resource allocation and distribution and held some advantage over Government agencies due to their perceived disengagement from local socio-political power relationships (Winchester 2001).

While 'Northern' NGOs have been attempting to consolidate and specialise in becoming 'knowledge agencies', Southern NGOs have proliferated and gained importance; the donor agencies have also played a part in these changing roles. There has been a shift from Northern governments funding Southern governments, to Northern governments funding Northern NGOs and more recently Southern NGOs (Economist 2000). The idea has been that NGOs would use funding in a more effective and less bureaucratic way than many of the Southern governments (some of whom have been accused of corruption). However, this idea has been challenged;

> *"NGOs may be assumed to be less bureaucratic, wasteful or corrupt than governments, but under scrutinised groups can suffer from the same chief failing, they can get into bad ways because they are not accountable to anyone."*
>
> (Economist 2000:28)

With many Southern NGOs having a high reliance on official aid and foreign sources, it is important for the donor agencies to find NGOs that they feel show accountability to the recipients of aid. The initiatives of NGOs can be restricted at the grassroots level if they fall into conflict with people who control the local political economies. Consequently, the success of a NGO will depend has much on their relationship with the local power structures than the suitability of their initiatives (Hartmann & Boyce 1983; Beck, 1995).

---

[32] The SGSY program is a follow up to the earlier Development for Women and Children in Rural Areas (DWCRA) programme that was founded in 1982 (Winchester 2001).

The work of some NGOs may be viewed with scepticism by the local power holders, especially on the back of experiences in the early 1980's when some NGOs in India promoted social activism and civil rights as an alternative to providing economic resources (Sheth 1987; Lewis 1991). Likewise, this attitude is one that can prevail at the highest levels of Government. The Foreign Exchange Management Act (FEMA) has been introduced which restricts the receipt of foreign funds for development projects to Indian NGOs. Some representatives of Non-Governmental organisations (NGOs) and voluntary bodies feel that the Government is attempting to choke the voluntary sector by tightening the flow of foreign funds for development projects in the country (The Hindu 2002c).

**Box 3.1: Activities of three NGOs in East Godavari & Nellore**

**Capacity Building Programme**
- Formation of 'women's groups'
- Adult and Non-Formal Education
- Leadership Training
- Health Education
- Thrift and Savings Schemes
- Environmental Awareness (special emphasis on Marine ecology)
- Mandal level and district level federations
- Awareness of sustainable aqua culture practices through cultural (local) media

**Disaster Preparedness Programme**

Facilitating preparedness among the vulnerable communities regarding the threat of cyclones and floods through;
- Training, orientation and drills on cyclone warning systems.
- Rescue operations and relief camp management.
- First aid.
- Rehabilitation and reconstruction of communities and livelihoods
- Development of 'Task Force Committees' on disaster preparedness at each village level.

**Health Care**
- Health education on preventive medical cares.
- Mobile health services to remote villages with qualified medical teams.
- Development of "Village Health Guides" in each village
- Health sanitation awareness through "KALA JATHA"
- Child development Programmes (child labour and street children Rehabilitation)

**Cyclone Rehabilitation Programme**
- Provide financial assistance on revolving fund basis.
- Provision of fishing equipment, iceboxes, mopeds and cycles for fish vendors on revolving loan basis.
- Community based fish marketing by fisher women using three-wheeler vehicles.
- Construction of cyclone resistant houses.

Sources: ACTION, Sravanti & Jagriti NGOs

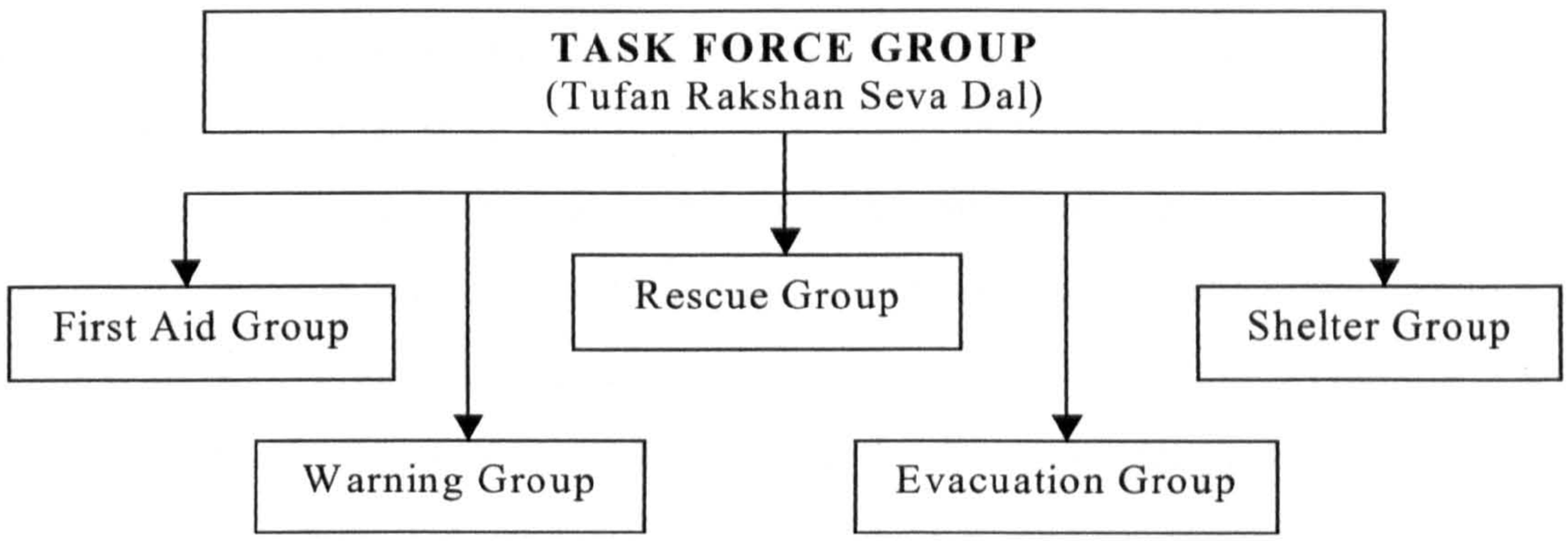
Despite some uneasy relationships between various levels of Government and NGOs, particularly the way in which NGOs and the State *"fall in and out of love with each other"* (Sen 1999:346), NGOs proliferate and many undertake important and appropriate work. Jain (2000) has highlighted the potential roles of NGOs in disaster reduction, being;

- Address disaster vulnerability
- Engage local people in disaster reduction
- Recognise potential of NGOs and other organisations
- Harness traditional knowledge and approaches
- Build-up local community capabilities
- Recognise the multi-disciplinary approach

- Cope with disasters in line with sustainable development

A number of NGOs involved with the case study villages have initiated programmes aimed at facilitating the collective action of fisherfolk (mainly Agnikulakshatriya) in projects including capacity building, health care, disaster preparedness[33] and cyclone rehabilitation (refer to Box 3.1 for details). An example of one of the key disaster preparedness initiatives has been the formation of 'Task Force Groups' (see figure 3.2).

**Figure 3.2: Disaster Preparedness 'Task Force Groups'**




**Box 3.2: Roles and Responsibilities of 'Task Force Group' members**

**First Aid Group**
Providing basic first aid in the event of a disaster and ensuring that first aid boxes are appropriately stocked. Also responsible for training other villagers in basic first aid skills.

**Warning Group**
On a daily basis should check 'All India Radio' weather reports, maintain transistor radios and ensure stocks of batteries (if necessary) are available. Ultimately, are responsible for the dissemination of warnings to everyone in the village.

**Evacuation Group**
Responsible for evacuating villagers, particularly elderly, disabled or otherwise immobile villagers to safe areas such as cyclone shelters, pukka houses or inland villages.

**Shelter Group**
Responsible for keeping the village 'vulnerability identification' maps up to date and in the event of a disaster should liase with the warning and evacuation groups to identify most appropriate shelters.

**Rescue Group**
In the event of a disaster, members of this group (typically males) will search for lost villagers and rescue villagers in trouble. Rescue group members are trained in basic manual handling and body retrieval methods using locally available material.

[33] Benson C., Myers M. & Twigg J., (2001) have acknowledged the increase of NGOs involved with Disaster Mitigation and Preparedness projects in villages throughout India

The 'task force groups' have been formed as a means of helping the villagers threatened by cyclones, to help themselves, before, during and after a high impact crisis event. The training provided by the NGOs offers villagers education regarding awareness of the threats of cyclones and floods, practical first aid training (along with basic medical equipment) and cyclone warning dissemination at the village level. The roles and responsibilities of each group that constitutes the 'task force groups' are outlined in Box 3.2.

The major beneficiaries of the work that the NGOs undertake are the fisherfolk, such as the Agnikulakshatriya and the Pattapu castes. The explanation for this is provided by the NGOs themselves, who state that funding is available for NGOs who wish to work with fisherfolk, as they have been designated as particularly vulnerable due to the location of their villages and the nature of their occupation. These assertions have arisen in a report, published by the 'Food and Agriculture Organisation of the United Nations' (FAO) in partnership with the Government of India and the State Government of Andhra Pradesh, which highlights how the economically and geographically marginalized members of coastal Andhra Pradesh were those who suffered the most deaths from the 1996 East Godavari cyclone (FAO 2000). Those particularly affected were the fisherfolk working at sea in mechanised boats (569 deaths) and 'shrimp seed' collectors (830 deaths), who recorded high death rates due to the lack of warning receiving equipment (such as transistor radios) and their exposure to the hazard (FAO 2000).

The discussion in Chapter Two highlighted that inclusion for some will inevitably mean exclusion for others, and thereby the comparison between the levels of vulnerability experienced by different castes is likely to prove interesting. Additionally, it will be pertinent to assess how villages that benefit from the work of NGOs compare to those who do not have such support. It is on the basis of these types of intra-village, intra-mandal and intra-state comparisons that the case study selections have been made.

## 3.5 CASE STUDY PROFILES

In total, twelve village surveys were undertaken in February – April 2002 in East Godavari and in August and November 2002 in Nellore to establish some background demographic data and information regarding village amenities and community based organisations (CBO). The data obtained from the village surveys were augmented with unpublished 'Indian Census 2001' data (refer to Chapter 4 for more details). The data collected from the village surveys are the basis for the outlines of the case study villages that follow[34]. The research has attempted to study a representative selection of villages so it was decided to investigate a range of villages based on levels of development and NGO activities. Therefore four villages in each mandal were studied based on the four different categories highlighted below. A stratified random sample of respondents was undertaken in each village, based on the five types of housing outlined in the next chapter.

1. Village with long term NGO activity
2. Village with recent NGO activity only
3. Village with no current NGO activity
4. Village with relatively good amenities but no NGO activity

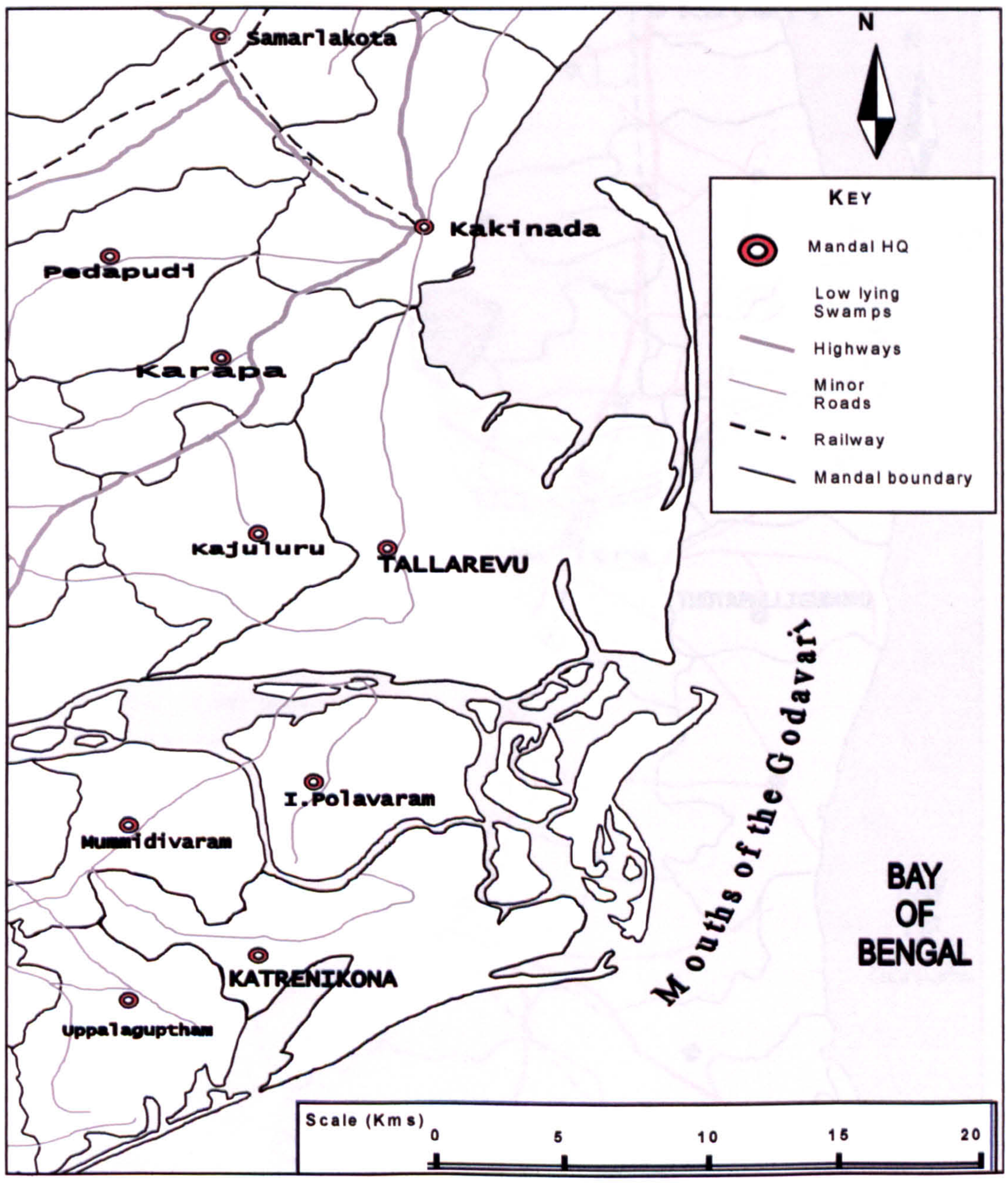
### EAST GODAVARI DISTRICT

The East Godavari District of Andhra Pradesh (see map 3.2) lies between 16°40' N and 17°30' N along 177 km of the Andhra Pradesh coastline. East Godavari shares the low-lying Godavari delta that has been created by sedimentary deposits from the Godavari River, with the West Godavari district and lies on the Coromandel coastal plain of Peninsula India. The district is the fifth largest of the coastal districts with an area of 10,807 km² but is the most populated with over 4.8 million people with a decadal growth rate of 22.7 percent (Andhra Pradesh Government 2003a). The population density of this district is one of the highest in Andhra Pradesh with 451 people/km²; a density that is similar to the relatively high densities experienced in other districts located on the Godavari and Krishna river deltas. The district is extensively covered by irrigated land amounting to 441,000 ha (refer to Table 3.1); accounting for 4.1 percent of the total land area in East Godavari. The district is predominately rural with 76.7 percent of the population inhabiting rural areas and literacy in East Godavari is 65.49 percent, which compares favourably with the State average of 61.11 (Andhra Pradesh Government 2003a).

[34] For further information regarding the case study villages and detailed village maps please refer to the 'Case Study Village Surveys' in Appendix A.

With reference to cyclone activity in East Godavari, the district has not been one of the most affected districts in the state but was affected by a large cyclone in November 1996. The cyclone hit the coastline of East Godavari late at night towards the end of 6th November, along the boundaries of Tallarevu, I. Polavaram and Katrenikona mandals. The district-wide damage caused by the cyclone and storm surge affected over 4.5 million people, left 1,077 people dead, 1,683 people missing, 257,000 houses damaged and 25,335 hectares of crops damaged (FAO 2000; Reddy et. al. 2000) accounting for an economic loss of US$1.5 billion (World Bank 1997).

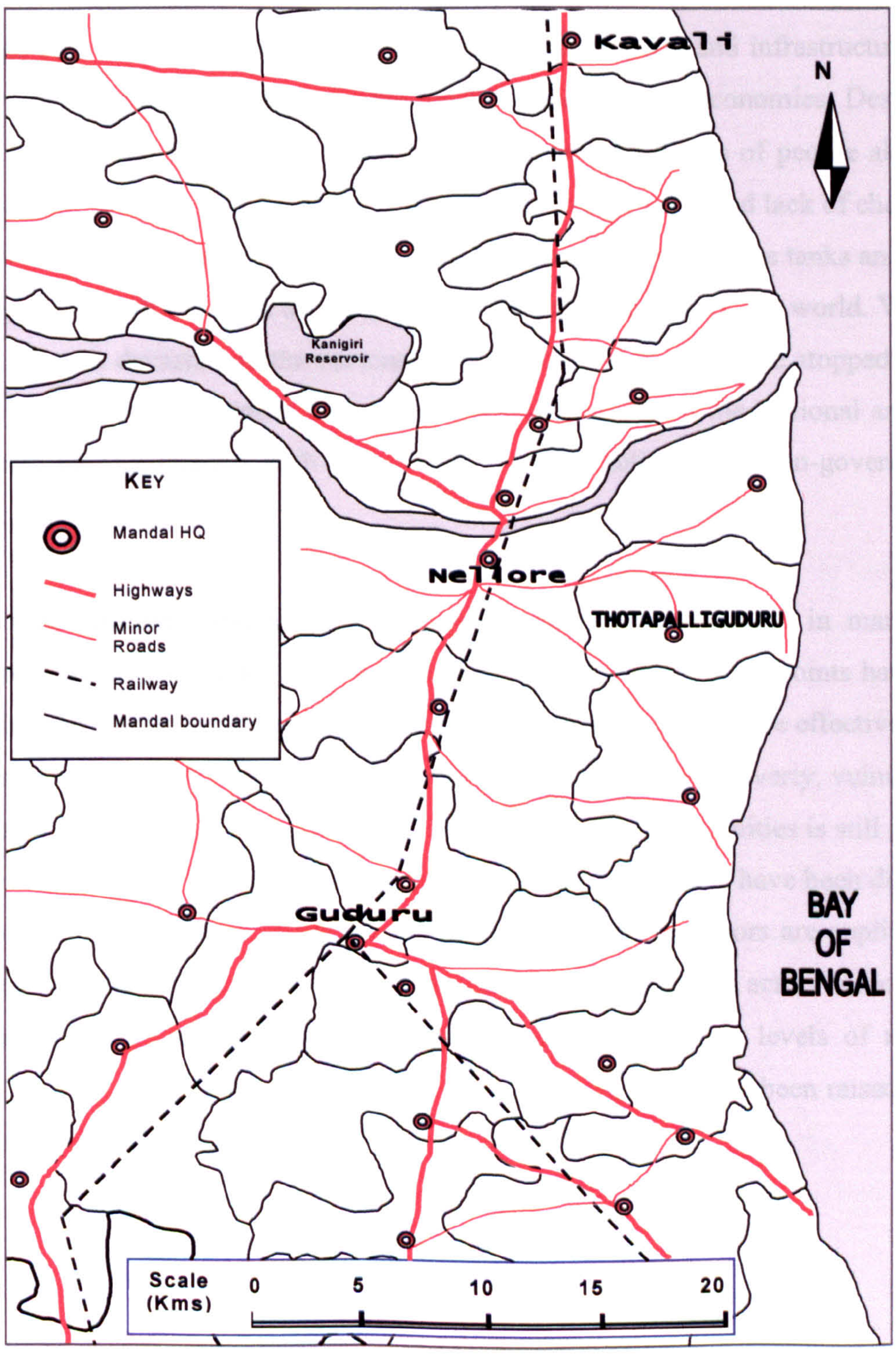
**Map 3.2: East Godavari District showing the Tallarevu & Katrenikona case study Mandals**



## NELLORE DISTRICT

The Nellore District of Andhra Pradesh lies between 13°30' N and 15°05' N along 174 km of the Andhra Pradesh coastline (see map 3.3). The district is the second largest of the coastal districts with an area of 13,076 km² but is relatively sparsely populated with 2.6 million people and a decadal population growth rate of 18.7 percent (Andhra Pradesh Government 2003a). The population density of this district is one of the lowest in Andhra Pradesh with 203 people/km². The district is lightly covered by irrigated land amounting to 298,000 ha, with irrigated land accounting for 2.3 percent of the total land area in Nellore.

**Map 3.3: Nellore District and Thotapalligudur case study mandal**



Historically, Nellore is the district that has been affected by the most cyclones; between 1892 and 1977 the Nellore coast was struck by 15 cyclones out of a total of 56 cyclones that struck Andhra Pradesh during the same period (Reddy et al. 2000). However, it should also be noted that the last cyclone of any significance that actually crossed the Nellore coastline was in November 1989. Nellore has recently been affected a number of floods in 1999 and 2001 caused by monsoonal rains and by a moderate cyclone in November 2002 that did not cross the coast but skirted along the coast in a northerly direction causing wide spread and heavy precipitation.

## 3.6 SUMMARY

The historical relationship between Andhra Pradesh and tropical cyclones has proved to be one of large-scale losses of human life, livestock, crops, property and infrastructure, with the concurrent deleterious affects upon the localised and national economies. Despite the threats of cyclone and flood to the livelihoods and lives of millions of people along the Andhra Pradesh coastline, many inhabitants persist, through poverty and lack of choices, in eking out a living in the mangrove swamps, brackish rivulets, aquaculture tanks and paddy fields along the coastline of one of the most cyclone-prone regions of the world. With the potentials for such devastation, the cyclone events of the future cannot be stopped but the effects of them can be minimised through the concerted efforts of the National and State Governments in coordination with the village level institutions and non-governmental organisations.

The case study mandals and villages display the characteristics found in many such villages and provide a vignette of life in coastal Andhra Pradesh. Some points have been raised during this discussion regarding the distribution of resources and the effectiveness of governmental and non-governmental programmes aimed at reducing poverty, vulnerability and in disaster preparedness. It appears that the maintenance of inequalities is still an issue in Andhra Pradesh society. Factors that affect inequality in rural India have been discussed in Chapter Two and it will be important to assess whether these factors are applicable to the case study villages. The area of 'political reality' that appears to act as some sort of 'filter' may be a critical area that contributes towards determining levels of resource allocation and concurrently levels of vulnerability. The issues that have been raised during this chapter will be investigated in more detail later in this thesis.

This chapter will discuss the philosophies behind the methodologies used in the investigation of this thesis. It will go on to describe the research design and explain and justify the research methods used, with a particular emphasis upon the combined use of qualitative and quantitative methods and the use of *triangulation* to facilitate rigorous data collection. The role of the researcher and the various researcher biases that one can be susceptible to whilst undertaking research will be highlighted. These research biases can be particularly problematic for a white European male undertaking research in a developing country; therefore this chapter will discuss the various measures that should be considered if these biases are to be accommodated. The methodological limitations involved in the research due to cultural, social and gender related constraints will also be highlighted. The chapter will conclude by discussing the methodological lessons learned from undertaking the research and how, with hindsight, the quality of data collection could have been improved.

## 4.1 METHODOLOGICAL CONSIDERATIONS

Research should be conducted through appropriate methods that are objective, logical and systematic methods of analysis of phenomena, devised to permit the accumulation of reliable knowledge (May 2001). Knowledge is gained whenever an old postulate is modified or discarded as a result of new facts or a fresh interpretation of already known facts is made (Hakim 1987).

In philosophy, epistemology is a concept that is used to describe the theory of knowledge and the theory of how people obtain knowledge. However, the concept of epistemology is used in looser terms in the discipline of sociology and social sciences in general, being used to describe the methods of scientific procedures utilised to acquire sociological knowledge. For example a sociology founded on *Realism* would have a different epistemology to that founded on *Positivism*. Broadly, these differing epistemologies are referred to as methodologies and these can differ dependent upon ones ontological stance. Therefore, it should be noted that ones ontological stance and epistemological approach are fundamental factors in the methodologies that one chooses to utilise in the investigation of knowledge related to nature and 'reality'.

> *"Methodologies provide the user with a framework for selecting the means to find out about, analyse, order and exchange information about an issue. They define what can be known or exchanged, how that should be represented and by and for whom this is done."* (Cornwall et al. 1994:98)

Therefore, the types of research methods adopted in an investigation replicate the researcher's perspectives on 'social reality'. For example, the Kuhnian philosophy is based on the idea that research methodologies are individual and separate paradigms that are exclusive entities due to their incompatible epistemological foundations (Kuhn 1970). Alternatively, some social scientists believe that methodologies are not epistemological at all but are technical constructs (Bryman 1988) that provide a variety of methods to a variety of investigations, of which the most appropriate methods should be used for certain types of investigation (Silverman 1985). This approach is referred to as 'Methodological Pluralism' (Haralambos & Holborn 1991) and it is this technical perspective that has been embraced during this research rather than the epistemological perspective.

## QUANTITATIVE RESEARCH

Historically, quantitative research has been the prominent paradigm in social research (Guba 1990) and has been labelled as positivist[35] (Giddens 1976, 1984), rationalistic (Guba & Lincoln 1981) and even 'scientific'. Quantitative research is characterised by a concept of science that is encapsulated in the 'social reality' of the natural science model (Bryman 1988). This view of 'social reality' also influences quantitative discourse and governs the epistemologies and techniques that underpin this methodology. Quantitative research is embedded in the philosophy that:

- Nature is orderly
- We can know nature
- All natural phenomena have natural causes
- Nothing is self evident
- Knowledge is derived from the acquisition of experience
- Knowledge is superior to ignorance (Nachmias & Nachmias 1996:5-7)

Quantitative research has largely been concerned with concepts that are founded from within theoretical frameworks that allow for the generation of hypotheses. These hypotheses can then be tested by the use of indicators that are transformed into variables for inclusion in the design of the research (Ford 1995). A particular criticism of using quantitative methodologies, such as social surveys, in social science are related to the notion that such methods '*may impose a meaning on social relations which fails to pay proper attention to participant's meanings*' (Silverman 1985:3) due to the belief that quantitative research by definition is pre-defining 'social reality'.

---

[35] Positivism is a theory driven perspective that's objectivity is defined by natural science and thereby social life can be explained in the same way as natural phenomena (May 2001). Consequently, research undertaken using this method of investigation can be said to produce 'covering laws' or in other words, a set of true, wide ranging but precise laws (May 2001).

Bryman (1988) adds that quantitative research is preoccupied with simplification due to causality, generalisation, replicability and individualism; concepts that provide the core of a quantitative logic based on positivism. *Causality* refers to the process of exploring why things are the way they are and what causes them, through the definition of independent and dependent variables. *Generalisation* is achieved via the use of random sampling procedures and is intended to fulfil the potential extrapolation of findings to either wider populations or differing political or social contexts (Nachmias & Nachmias 1996). The process of *replicability* is based on the theory that research conducted by one person could be conducted by another person with the two sets of results being the same. Replicability can be used to verify the generalisability of research with the intention of checking against researcher error and improving data reliability. The concept of *individualism* refers to the way that quantitative research is typically aimed at the individual (Bryman 1988) resulting in an inability to study social groups and organisations *per se*. Consequently, the image of 'social reality' is derived from the 'disparate individuals' who provide the data (Bryman 1988).

## QUALITATIVE RESEARCH

Qualitative research is a methodology with roots in the philosophical works of Weber (1949) and Schultz (1962, 1964), which focuses on the meaning, complexity and connectivity of social phenomona (Silverman 1993). Qualitative methodologies have been labelled as holistic, inductive and naturalistic (Patton 1990:40-41) and Marshall & Rossman (1989) have stated that there are six categories of qualitative methodological approaches, namely;

1. Human Ethnology
2. Ecological Psychology
3. Holistic Ethnography
4. Cognitive Anthropology
5. Ethnography of Communication
6. Symbolic Interactionism (Marshall & Rossman 1989)

In an attempt to reduce ambiguities and to increase standardisation qualitative research is typically categorised as either ethnography (Hammersley & Atkinson 1983) or field research (Burgess 1990). Qualitative research can be summarised as a methodology that must be undertaken in a natural context rather than a context that is artificially constrained (Marshall & Rossman 1989) and can be defined as;

> *"An approach to the study of the social world which seeks to describe and analyse the culture and behaviour of humans and their groups from the point of view of those being studied."* (Bryman 1988:46)

Qualitative methods utilise techniques such as unstructured and semi-structured interviews, biographical narratives, participant observation, focus groups and case studies. By using such techniques it is possible for the qualitative researcher to study 'social reality' from the informants' perspectives, experiences and knowledge. This approach is in contrast to the 'natural science' ethos of quantitative methodologies, therefore qualitative methods are preferred for different types of social research, such as;

- For describing, contextualising and analysing the subjects interpretation of 'social reality' from within a natural setting. (Bryman 1988, Hammersley 1990)
- When emphasising the process and complexity of 'social reality' as opposed to the static constructed approach of the quantitative logic. (Bryman 1988: 65-66)
- In its flexibility and lack of structure characterised by case study research requiring an emphasis on the issues of reliability and validity. (Bryman 1988: 66-68; Silverman 1993:24)
- For the generation of theory and concepts apparent in the philosophy of grounded theory as advocated by Glaser & Strauss (1967) where 'generating grounded theory is a way of arriving at theory suited to its supposed uses' (1967:3) such that theory is generated from the data obtained.
- In its concern with the meaning and function of social action within a 'micro' setting (Hammersley 1990); and
- As a rejection of the natural science model with a focus on meaning rather than numbers (Hammersley 1992).

Qualitative research methods have become increasingly important tools of inquiry in many areas of research and for social science research in particular (Marshall & Rossman 1989). There is a vast array of qualitative methods that have, to differing extents, been criticised for their lack of validity and reliability, an issue that has been referred to as the 'truth value' (Lincoln & Guba 1985:290). Therefore, it has been accepted that it is particularly important for qualitative research methods to be systematic but in a way that does not constrain the types of inquiry required (Hammersley 1992). However, despite some criticisms of the methods of qualitative research it is widely accepted that qualitative inquiry has added much depth to the type of research that has been undertaken and such methods have become particularly useful investigative tools (Marshall & Rossman 1989; Hammersley 1992). The approach used for the research in this thesis is based on the combined use of quantitative and qualitative methods in the research design. Having already discussed the differing philosophical stances of quantitative and qualitative methodologies it will now be appropriate to analyse their use in combination.

## COMBINING QUALITATIVE AND QUANTITATIVE METHODS

Proponents of the natural science and positivist genre view qualitative and quantitative methodologies as polar opposites. However, as Bryman (1988) and Silverman (1985) suggest, this perceived polarity does not necessarily mean the combined use of these methodologies is not possible, but the combination is largely dependent upon the type of research being conducted.

> *"Nobody would now dispute that the cultural world has different properties from the natural world and that this implies that some different methods of investigation are appropriate. However, it is also an increasingly accepted view of science that work becomes scientific by adopting methods of study appropriate to the data at hand"*
>
> (Silverman 1985:20)

It is possible that by combining quantitative and qualitative methods in research we can help to bury the impasse about the polarity of these methods. The *need* to choose between quantitative and qualitative methods is a point questioned by Silverman (1993).

> *"Why should we assume, for instance, that we have to choose between qualitative and quantitative methods? Why can we focus on only 'meanings' but not 'structure' or on 'micro' but not on 'macro' processes? Why should case study researchers assume that there is something intrinsically purer in 'naturally occurring' data?"*
>
> (Silverman 1993:23)

The combination of quantitative and qualitative methods has become part of the logic of triangulation and finds its roots in the work of Weber (Webb et al 1966; Denzin 1970). This combination allows the researcher the opportunity to investigate observations and to also find the meanings or reasons behind the observations, thus making the approach suitable for this type of research investigation.

## THE USE OF TRIANGULATION

The use of triangulation was characterised by Burgess (1984) as a way of implanting methodological rigour to research through the use of cross checking and cross referencing utilising multiple methods, data sources, theories and investigators. The four types of triangulation that Burgess (1984:145) identifies are;

- **Data triangulation** includes data collected over time, space and by different people or organisations.
- **Investigator triangulation** involves the use of more than one researcher.
- **Theory triangulation** requires the use of competing theories; and
- **Methodological triangulation** incorporating the combination of different but appropriate research methods.

Triangulation that encompasses multiple methods in the research design contributes towards methodological rigour (Patton 1990:18) and is an approach that is recommended in many research methods textbooks (Patton 1990; Burgess 1984, 1990; Silverman 1985, 1993; Bryman 1988; Marshall & Rossman 1989). Triangulation does not provide the answers to the epistemological debates within social science but it is an approach that does allow for a multi-perspective approach to the investigation of questions[36]. In the context of this research the multiple methods and triangulation approach encourages a complex but multi-disciplinary perspective on the issues observed in the field and can also mitigate for possible cultural and methodological biases. Triangulation is an approach that is used throughout the research undertaken in this thesis because it enables the study of social institutional structures and networks and the reasons and meanings behind the structures and networks observed. Of these four suggested components of triangulation, three have been utilised during the research of this thesis, the component that has not been used is theory triangulation.

**Investigator triangulation** was achieved by using a team based approach to data collection[37] that also considered cultural issues regarding gender sensitivities. **Methodological triangulation** was achieved using multiple data collection methods, surveys and interviews incorporating repetitive but re-worded questions. The cross-checking of multiple sources of evidence such as the Government of India 2001 Census, accounts of villagers, Non-Governmental Organisation executives and field staff, Government officials at Mandal and District level and previous research helped to achieve **Data triangulation**[38].

[36] A multi-perspective approach that uses triangulation is also a good foundation for a multi-disciplinary 'team' approach to research that is typically beyond the scope of research undertaken for a Doctoral Thesis.
[37] The research team were involved in all the elements of data collection, including village surveys and mapping, questionnaire surveys, semi-structured interviews and sociograms.
[38] Data triangulation was also achieved by undertaking the research over a period of one-year (time) and across 12 villages located in two districts of Andhra Pradesh (space).

## 4.2 RESEARCH DESIGN

This chapter has so far discussed the logic of adopting combined methods of research but it is necessary to articulate the importance of a transparent and logical research design (refer to Box 4.1). Given the complexity of the conceptual framework of this research it was essential to formulate a research design that was rigorous but allowed for flexibility.

**Box 4.1: Research Design**

GENERAL LITERATURE REVIEW

PROBLEM IDENTIFICATION & FORMULATION OF INQUIRIES

PROJECT CASE STUDY SELECTION

CASE STUDY LITERATURE REVIEW

REDEFINING OF PROPOSAL

DESIGN OF DATA COLLECTION PROTOCOL

SELECT UNITS OF ANALYSIS

CONDUCT FIELDWORK

ANALYSE, INTEGRATE & COMPARE FINDINGS

DEFINE POLICY IMPLICATIONS

GENERALISE TO THEORY

DISSEMINATION OF FINDINGS

*(Adapted from Yin 1984)*

This flexibility was aided by using a broad approach to the problem identification, originally based on the literature, which was then brought to a narrower focus based on the preliminary data obtained from the field. The preliminary data helped to ground the focus of the research towards the actual issues and discourse of the villagers, rather than relying on the perceived issues highlighted in the literature, a point that is raised by Srinivas, Shah and Ramaswamy (1979);

> *"...the fieldworker cannot anticipate the developments in the field which will inevitably guide the course of his investigations. Hypotheses formed without regard to these considerations may turn out to be trivial if not banal. Almost no contributor to this volume has been guided by hypotheses, and some confess that their theorising was*

*only post factum. What most fieldworkers do is to go to the field with a grounding in the theory of the discipline, especially in the sub-area of their interest, and with as much knowledge of the region as can be derived from secondary material. The field then takes over, and the outcome depends on the interaction between the fieldworker and the field"* (Srinivas et al. 1979:8)

This statement is one that is espoused by the author and has allowed the development of the sociogram whilst in the field, a development that will be discussed in more detail later in this chapter. The research conducted in this thesis is explorative and inductive, not normative and deductive. It is acknowledged that research is an evolving process that is '*fundamentally non-linear*' (Marshall and Rossman 1989:21) but this evolving process does fit within the larger research framework that uses multiple methods and triangulation in the context of a case study design.

## THE CASE STUDY APPROACH

A case study approach was chosen because it fits closely with the analytical framework of this thesis, focusing on the individual (villagers), the group (family, villages, communities and castes 'as and when appropriate'), institutions (Government and non-Government/informal and formal) and the local/state political and economical contexts.

Therefore, the case study is suitable because it is an empirical inquiry that;

- Investigates a contemporary phenomenon within its real life context; when
- The boundaries between phenomenon and context are not clearly evident; and in which
- Multiple sources of evidence are used. (Yin 1984:23)

Yin (1984) also states that case study research is used when the researcher is attempting to:

- EXPLAIN casual links
- DESCRIBE real life contexts
- ILLUSTRATE intervention
- EXPLORE intervention and outcomes (Yin 1984:25)

The research focus that has been outlined in Chapter One and the theoretical and contextual framework discussed in Chapter Two, along with triangulation using mixed methods, that has been explained in this chapter, are appropriate foundations for a case study based research strategy. Nonetheless, it is worthwhile to recognise some of the criticisms that have been directed at the case study research design.

One of the main criticisms of case studies is regarding the extent to which the individual cases can be generalised to wider populations (Patton 1990). It is the aim of this study to

use generalisations with care and only when accompanied by context specific analysis. However, a well-cited response to the generalisability of case studies is provided by Yin;

> *"The short answer is that case studies, like experiments are generalisable to theoretical propositions and not to populations or universes. In this sense, the case study, like the experiment, does not represent a 'sample' and the investigator's goal is to expand and generalise theories."* (Yin 1984:21)

## 4.3 CASE STUDY SELECTION

As detailed in Chapter Three, Andhra Pradesh is the third largest state in India covering 275,068 km², and is located on the eastern coast bordering the Bay of Bengal. The geographical location of Andhra Pradesh bordering an active tropical cyclone region, along with the coastal topography that includes two large low-lying river deltas that have become sources of income for agricultural workers and fisherfolk are amongst a number of factors that have made the population and the land of the state prone to the worst affects of tropical cyclones (Winchester 1992). Consequently, the coastal districts of Andhra Pradesh are some of the most cyclone prone regions of the Indian coastline (Nath 1994), experiencing 69 cyclones between 1892 and 1996 (Reddy et al. 2000). During 1996, two cyclones and associated heavy rains affected East Godavari between June and December, a total of 1,689 people died with the total economic loss estimated at US$2 billion (World Bank 1997). The choice of the two case study Districts of East Godavari and Nellore, in Andhra Pradesh, will now be briefly explained outlining the history of cyclone activity in the districts.

### DISTRICT LEVEL

### East Godavari

With reference to cyclone activity in East Godavari, the district has not historically been one of the most affected coastal districts in the state but was affected by a severe cyclonic storm in November 1996[39]. The district-wide damage caused by the cyclone and storm surge affected over 4.5 million people, left 978 people dead, 1,683 people missing, 257,000 houses fully damaged and damaged 25,335 hectares of crops (Reddy et al. 2000). The research intended to investigate the actual accounts of villagers, regarding the events before, during and after the cyclones so it was important to find a case study area that was recently affected by such events. East Godavari district was chosen as one of the case study districts because it had been extensively affected by the 1996 cyclone (as well as two other

[39] Out of a total of the 69 cyclones that affected Andhra Pradesh between 1892 and 1996 only ten cyclones affected the district of East Godavari, three of which were experienced in 1996 (after Reddy et al. 2000).

cyclones in June and December of the same year) and therefore the events were relatively recent. The two mandals of Tallarevu and Katrenikona were chosen because they had been affected by the 1996 cyclone and were areas in which the Andhra Pradesh State Government had constructed 'Cyclone Resistant Housing' as part of their cyclone hazard mitigation initiatives and where NGOs were involved with Disaster Preparedness programmes.

**Nellore**

Nellore was chosen as a case study area because historically, it is the district that has been affected by the most cyclones; between 1892 and end of 1996 the Nellore coast was directly struck by 22 cyclones out of the total of 70 cyclones that struck Andhra Pradesh during the same period (Reddy et al. 2000). Nellore has been affected by 11 cyclones of varying intensities between 1977 and 1996[40]. The mandal of Thotapalliguduru was chosen because it had relatively recently been affected by a number of floods in 1999 and 2001 caused by monsoonal rains and by a moderate cyclone in November 2002 that did not cross the coast but skirted along the coast in a northerly direction. Thotapalliguduru mandal has also been the scene of Government programmes related to vulnerability reduction and many of the coastal villages are supported by the work of local NGOs.

**VILLAGE SELECTION**

An important criterion when selecting the villages was that the villages had not been extensively researched before. This was deemed important because it was the intention of the research to be aware of, and minimise 'project bias' (refer to research biases later in this chapter). Some villages such as Balusuthippa and Vasalathippa in Katrenikona mandal of East Godavari were severely affected in the 1996 cyclone and have been extensively researched to the extent that a) the villagers find researchers with clip boards and tape recorders tiresome and b) by focusing research on a few select villages it is possible to place the favoured villages in a position where they are envied by other villagers that were also affected by the event but have not received the resources[41]. As a consequence it was decided that the research should target villages that had not been extensively researched and ideally have not been researched before, without compromising the validity of the research.

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[40] It is worthwhile noting that although some cyclones have not crossed the Nellore coastline, the district has been affected by cyclones that have crossed the coastlines of other districts, such as the cyclones of October 1994 and June 1996. The last cyclone that crossed the Nellore coast was in November 1989.

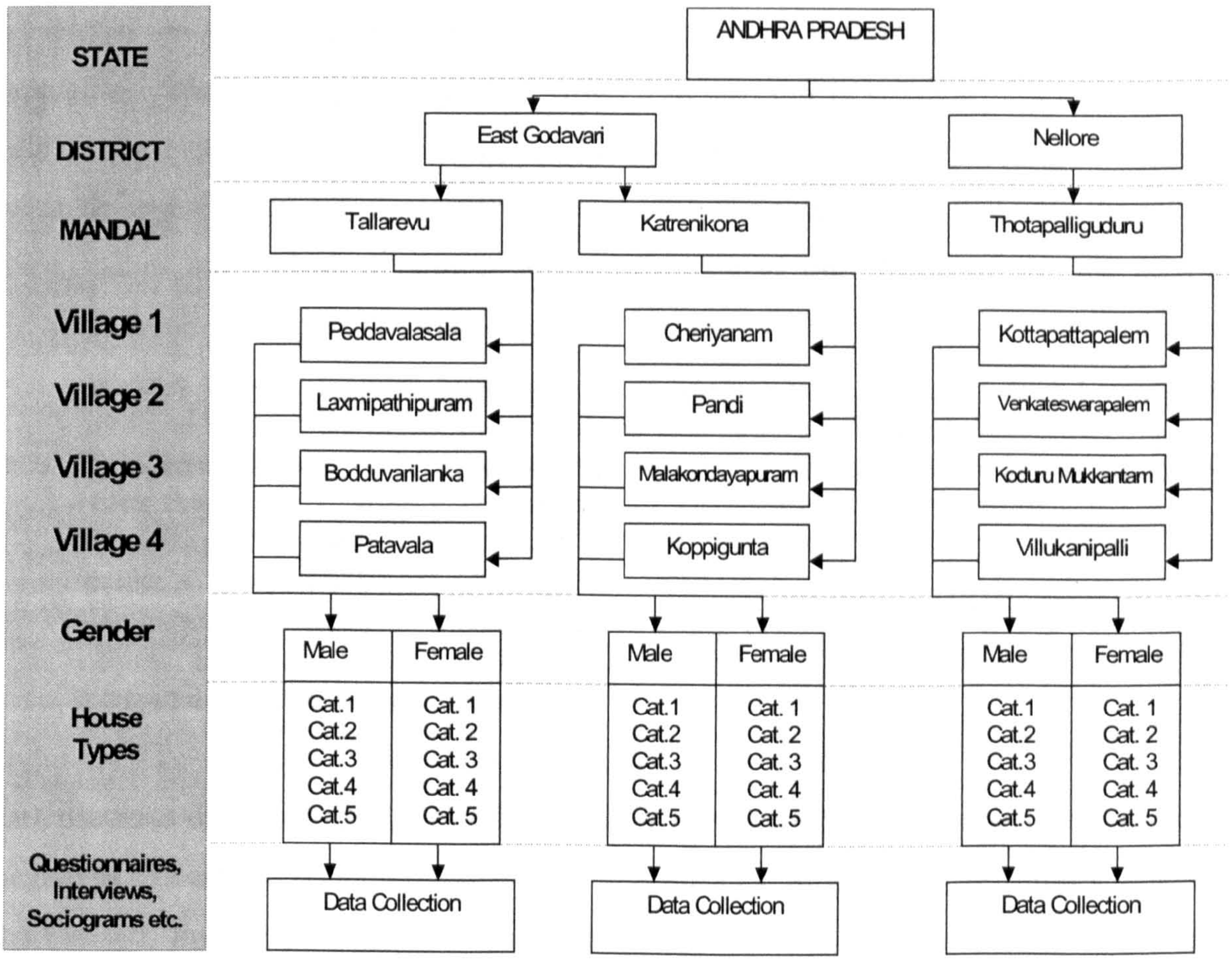
[41] It is also possible that when villagers and village elders become accustomed to the workings of the research community, it is possible for them to say what they think the researchers want to hear, rather than say what is true or accurate. This can particularly be the case if the villages believe that if they exaggerate their plight, the potential rewards from the government and NGOs will be increased.

It was decided that it would be most appropriate to study a range of villages based on levels of development and NGO activities. Therefore four villages in each mandal were studied based on the four different categories highlighted below.

Village 1. Village with long term NGO activity
Village 2. Village with recent NGO activity only
Village 3. Village with no current NGO activity
Village 4. Village with good amenities and services but no NGO activity

The categorising of the villages would allow the research to make comparisons within the mandals, such as how villages with NGO support compare to those without, or how relatively underdeveloped villages compare to more developed villages. These categories may also allow the research to investigate why some villages are developed and others are not, and why some villages have NGO support while others do not; investigations that may indicate how the meso level networks are related to the micro (village) level networks (refer to figure 4.1).

**Figure 4.1: Distribution of the research**



## 4.4 ROLE OF THE RESEARCHER

When undertaking research as a white European male in a culturally different scenario it is essential to be aware of the negativity of being a 'cultural outsider' (Chambers 1983). However, being a 'cultural outsider' is not always seen as a negative (Johnson 1999) and although this point was not explicitly enunciated by the respondents during this research it became apparent that as a 'cultural outsider' it was possible to be viewed as an impartial entity and thereby the research could be viewed as an opportunity for the villagers, NGOs and Government officials to air grievances. Consequently, there are potential benefits to being seen as a 'cultural outsider' because it can be possible to uncover information that may otherwise have been unavailable due to a myriad reasons such as fears of retribution and a lack of trust in authority (Johnson 1999). Although, it should be added that this is not a given, because it is important that before conducting research the 'cultural outsider' must learn about the culture, language, history, politics, societal and governmental structures and ultimately gain the trust of the informants[42].

Another issue regarding the role of the 'cultural outsider' concerns the effect of the researcher on the research design and the consequent investigations. Silverman has recognised *"that no simply neutral or value free position is possible in social science"* (Silverman 1993:172) and the values of the researcher will typically be ingrained in the research investigation and the research design. What is important is that we acknowledge these values and reduce or eliminate the influence of our 'baggage' on the research findings. Actions that can be taken to achieve this are;

- Attempt to gain internal legitimacy from communities, agencies and Government involved to gain 'Respectability' in a way that does not compromise objectivity.
- Utilising a 'Grass Roots' approach to research style, guided by local perceptions rather than agency, Non-Governmental and Governmental perceptions.
- Flexibility of research focus, to aid 'cultural awareness' against the potential for an insider's 'cultural blindness'.
- Use a holistic, iterative, locally evaluated approach, to reduce one's own cultural values. Honesty, research transparency, openness and where possible flexibility in the research process is advocated.

### RESEARCH BIASES

The previous discussion has highlighted how the research was designed to minimise the negatives of being a 'cultural outsider' and to negate the influence of researcher values on the research findings, but as mentioned earlier we must also address the other biases that the researcher may be prone to. These researcher biases (refer to Box 4.2) have been

[42] A stance advocated by Malinowski (1967) when he stated that 'you do not need to be one to know one'.

articulated by Robert Chambers (1983) and will now be discussed, particularly with reference to how this research has attempted to mitigate them.

**Box 4.2 Research biases (Chambers 1983:13)**

- Spatial Bias – has the research stuck to the easy path, following roads and avoiding the isolated villages? Was a cross section of villages included in the case studies?
- Project Bias - has the area been extensively studied earlier? If so, what subject, which villages and are they sick of people walking around with questionnaires and tape recorders?
- Person Bias – are the respondents from a cross section of the communities? Rich and poor? Men and women? Influential and non-influential? Empowered and oppressed?
- Dry Season Bias – was the research only undertaken during the periods of nice weather? Were the difficult periods of the year, when the monsoon was present, included?
- Diplomatic Bias – were people influenced by the researchers' 'elevated' position in society as a professional? Were the researchers viewed as 'officials' making the respondents wary of telling the truth? Were gendered issues a consideration of the research and the researchers?
- Professional Bias - was the research focused on all actors, not just the professionals?

**Spatial Bias** was minimised by undertaking research in two different districts of Andhra Pradesh, encompassing three mandals (administrative regions within a state) and twelve villages, some of which are considered to be in remote locations. The remoteness of the village was not a prerequisite for the choice of the villages but it transpired that when the villages were chosen, based on the four villages types discussed earlier, a number of the villages were in relatively isolated locations, away from main transport routes and administrative centres[43]. **Project Bias** was addressed by making a concerted effort to undertake the research in villages that had not previously been involved in research. Later in the research it became apparent that one of the villages in East Godavari had been visited for a week by some researchers in 2001 that were involved in investigating the alternative income generation activities of 'fisherfolk'. Despite this revelation it would be pertinent to state that this research does not suffer from 'Project Bias' as it has generally been conducted in villages with minimal prior research experiences.

**Person Bias** was another important bias that was addressed during this research and was part of the research design and the stratified random sampling used. The stratified random sampling used in the villages will be discussed in more detail later in this chapter but was fundamentally important in obtaining a cross section of the communities investigated. The stratified random sample was based on five housing types and provided a socio-economic cross section of the village, particularly when the sampling was spatially distributed across the homogeneous villages and the sub-communities located within the heterogeneous

[43] Out of the 12 villages, 8 were accessible by motorable road, 3 by dirt tracks and one by boat (although a *kutcha* road has subsequently been constructed)

villages. The addressing of this particular bias was aided by the village demographic and mapping surveys that were conducted in an attempt to gain local knowledge as to whether those involved in the research were from a broad section of the community. Gender representation in the research was an important criteria and the random stratified sample was split into two sections to enable a 1:1 male to female ratio.

When obtaining information related to local knowledge and economic practises it was apparent that the case study villages were dependent upon fluctuations in the seasons based on the changing fishing practices and cropping patterns and their influence upon fishing and crop yields. Therefore, the research was designed to incorporate as many months (and seasons) of the year as possible; this also meant that **Dry Season Bias** was not an issue for this research. An initial recognisance visit was made between July and September 2001 and was followed by the main fieldwork visit between February and June 2002. A final visit was made to Andhra Pradesh for four weeks during November 2002. Despite my absence from the region between mid-June and the start of November 2002, the research continued, to include one of the significantly high periods for cyclone threats in the region. In total, eight months were spent in the field and the fieldwork encompassed eleven months of the year, the only month when research was not conducted was January (a busy month for employment such as crop threshing and fishing).

**Professional Bias** was accommodated by focusing on all 'actors' involved, not just professionals. By the very nature and focus of the research it was key that all opinions were valuable, irrespective of occupation, gender, caste or social status. Finally, any **Diplomatic Bias** was minimised by gaining the trust of the informants and making it clear that the interviewers were not Government/NGO employees. Despite these efforts it is always difficult for a white person to walk into a village without being perceived as a rich foreign donor who will grant every villager's wishes. Therefore, it was necessary to make a balance between the white foreigner being in the village every day 'causing unnecessary commotion' and alienating oneself from the fieldwork. This was achieved by using a two person (one male and one female) interview team of Telugu speaking locals who were knowledgeable of the research areas (but did not reside in the villages) and who could undertake some elements of the research (under the author's supervision) without causing undue fuss. It was also important that these assistants were aware of the need to minimise the researcher biases that have been discussed and to also be made aware of the need to maintain ethical research standards.

### ETHICAL CONSIDERATIONS

The three interviewers involved in this research project were briefed to understand and demonstrate knowledge and an understanding of the Social Research Association Ethical Guidelines and trained to understand the need for ethical principles for the benefit of future research in the region. In particular, all the interviewers involved in this project agreed to abide by the following considerations as recommended by the Economic & Social Research Council (ESRC);

- Honesty to research staff and subjects about the purpose, methods and intended and possible uses of the research, and any risks involved.
- Confidentiality of information supplied by research subjects and anonymity of respondents.
- Independence and impartiality of researchers to the subject of the research.

The ethical considerations of the research project were reviewed as the project progressed, while addressing ethical concerns whenever they arose. It should be added that the interviewers employed in India were paid an appropriate wage for the duties that they undertook, commensurate with India's academic salary scales.

## 4.5 VALIDITY & RELIABILITY

The research design that has been employed attempts to ensure validity through the use of multiple sources of data, achieved through literature (official and non-official, and practical and academic), Government census data, informal observation, semi-structured interviews, stratified random surveys and sociograms. The gathering of multiple sources of data allows the researcher to adopt a discourse that is the accepted nomenclature for the focus of the research topic that when ultimately linked with the field studies helps to provide a workable discourse that can standardise the working definitions used in the research. Research must be valid and reliable if it is to be rigorous and credible. In the context of this research it is apt to refer to the following definitions of validity and reliability.

> *"[Reliability] refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions."* (Hammersley 1992:67)

> *"[Validity can be defined as] the extent to which an account accurately represents the social phenomena to which it refers."* (Hammersley 1992:57)

Research must be credible, transferable, dependable and confirmable (Lincoln & Guba 1985) and to achieve this it is essential to strive for research that is valid and reliable.

Research should be both valid and reliable, where validity refers to the concept of measuring what one intends to measure and where reliability refers to the ability to obtain the same result from the same measurement taken at different times (May 2001). Validity and reliability can be aided via the use of multiple methods of triangulation with quantitative methods providing greater reliability and the qualitative methods providing greater validity (Haralambos & Holborn 1991). Nonetheless, it should be noted that the use of multiple methods and/or triangulation does not itself ensure reliable and valid research (Baxter & Eyles 1997). The methods for data collection will now be explained in detail.

## 4.6 DATA COLLECTION TECHNIQUES

This research has utilised a mixture of primary and secondary data collection techniques that are summarised in Table 4.1, which encompass quantitative and qualitative methodologies. Because the research is focused specifically on social networks in the context of cyclone and flood vulnerability in the Indian State of Andhra Pradesh it was apparent that there was not a vast array of literature related directly to this topic. Despite this it was possible to obtain literature and official reports by the Government of India and the State Government of Andhra Pradesh, related to issues and experiences of cyclones in Andhra Pradesh that provided invaluable for gaining insights into the general issues[44]. It was then necessary to review the Indian sociological literature[45] to gain an insight into how social networks and links with the social institutions behave, but of course it is then imperative to take the foundations of this specified knowledge to the field.

**Table 4.1 Summary of data collection techniques**

| METHOD USED | TYPE OF DATA COLLECTED | |
|---|---|---|
| | Quantitative | Qualitative |
| Literature Review | v | v |
| 2001 Census data | vv | |
| Village Demographic Survey | vv | |
| Village Mapping Survey | v | v |
| Stratified Random Questionnaire | vv | v |
| Semi-structured Interviews | | vv |
| Sociograms | v | vv |

v - Produced limited data
vv - Most productive methods

[44] Such as publications by the Andhra Pradesh Government 1981a,b; Andhra Pradesh Cyclone Hazard Mitigation Project 2001; Department for International Development 1999; Food & Agricultural Organisation of the United Nations 2000; National Climatic Data Centre (US) 1996; O'Hare 2001; Reddy & Sastry 1992; Reddy et al 2000; Shitole 2001; Winchester 1992, 2000

[45] Such as Agarwal 1900, 1991; Béteille 1991, 2000; Bhatt 1975; Deliége 1992, 1999; Dhesi 1998; Elliot 1986; Gupta (ed.) 1991; Jeffrey 2000; Kohli 1990; Kothari 1986; Mendelsohn & Vicziany 1998; Moore 1998; Robbins 2000; Srinivas 1966, 1976, Srinivas et al (eds.) 1979; Williams 1999.

## VILLAGE DEMOGRAPHIC AND MAPPING SURVEY

Census figures from the 2001 Indian Census were augmented and cross-checked via village surveys that recorded the amounts of houses and categorised the house types (see below). Village amenities such as schools, meeting places, cremation grounds and temples were also recorded and documented on simple village maps that were plotted my the author during a number of village visits and transect walks. These maps were useful as a spatial record of the distribution of the stratified random sample survey and the distribution of the 5 house types throughout the village (see Table 4.2).

**Table 4.2 Summary of Stratified Random Sample Framework – Based on five house types**

| | | VILLAGE HOUSE TYPES AND SAMPLING (ANDHRA PRADESH) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | House type 1 Framed Pukka | | House type 2 Basic Pukka | | House type 3 Tiled House | | House type 4 Kutcha House | | House type 5 Kutcha Hut | |
| **Mandal** (a) | Number of Houses | No. | % | No. | % | No. | % | No. | % | No. | % |
| Tallarevu Villages | 1229 | 23 | 2% | 283 | 23% | 393 | 31% | 400 | 33% | 130 | 11% |
| **Sample size** | **105** | **4** | **4%** | **24** | **23%** | **29** | **28%** | **33** | **31%** | **15** | **14%** |
| Katrenikona Villages | 571 | 10 | 2% | 128 | 22% | 101 | 18% | 292 | 51% | 40 | 7% |
| **Sample size** | **103** | **1** | **1%** | **14** | **14%** | **12** | **12%** | **64** | **61%** | **12** | **12%** |
| Nellore Villages | 456 | 28 | 6% | 243 | 53% | 3 | 1% | 74 | 16% | 108 | 24% |
| **Sample size** | **100** | **4** | **4%** | **59** | **59%** | **1** | **1%** | **10** | **10%** | **26** | **26%** |
| | | | | | | | | | | | |
| **Total for AP Survey** | 2256 | 61 | 3% | 654 | 29% | 497 | 22% | 766 | 34% | 278 | 12% |
| **Sample size** | **308** | **9** | **3%** | **97** | **31%** | **42** | **14%** | **107** | **35%** | **53** | **17%** |

Note: (a) Four villages surveyed per Mandal

The stratified random sample was largely devised to provide a socio-economic cross section of the villages researched. The scale of the house types, with 'house type 1' being the highest and 'house type 5' being the lowest in the scale, was based on the estimated construction costs of the buildings and their apparent resilience to cyclonic storm damage[46]. For example, a 'house type 1' building would typically be the most expensive to construct and should provide the safest shelter during a cyclone, alternatively, a 'house type 5' building can be constructed relatively inexpensively but offers little or no protection from cyclones[47]. Where appropriate the areas of low-lying land that are prone to flooding due to high tides or precipitation were indicated. The larger villages such as Patavala and Koppigunta also displayed the segmentation of villages based along caste lines. For examples of these maps please refer to Appendix A.

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[46] Refer to Shanmugasundaram J., Arunachalam S., Gomathinayagam S., Lakshmanan N. & Harikrishna P., (2000), *"Cyclone Damage to Buildings and Structures – A Case Study"*, Journal of Wind Engineering & Industrial Aerodynamics, Vol.84, pp369-380

[47] Refer to Appendix F for estimated costs of each house type and associated photographs

**Stratified Random Sample** – samples were stratified by house types, which were placed into five categories, being;

1. **Large Pukka** (framed concrete housing)
2. **Basic Pukka** (basic cell type concrete housing, usually constructed with the assistance of Government and/or NGOs)
3. **Traditional style tiled housing** (typically constructed of mud brick with clay tile roofs)
4. **Kutcha houses** (basic houses with walls constructed of wood and mud with thatched roofs supported by wooden poles)
5. **Kutcha huts** (poorly constructed with no/minimal load bearing walls).

## QUESTIONNAIRE SURVEY

The questionnaire was designed to provide a 'factual and explanatory survey' that could collect descriptive information but also test theories and hypotheses (Haralambos & Holborn 1991). The questionnaire survey was developed late in 2001, after the provisional field visit and prior to the main fieldwork period. However, an integral element of the design was to renegotiate the development of the questionnaire to ensure the relevance of questions dependent on how the research progressed. The questionnaire design contained both open and closed questions in an attempt to validate quantitative data versus official data and test some of the theories regarding the influence of social institutions and networks in vulnerability reduction. A number of questions were repeated in a rephrased manner throughout the questionnaire to cross-check the data provided by the respondents. Particular attention was paid to the phrasing of questions in the questionnaire in an attempt to avoid ambiguities in the subsequent translation into Telugu. Any remaining ambiguities in the questionnaire were addressed once it was possible to consult the qualified English/Telugu translator in India.

The translated version of the questionnaire was checked by an independent translator (qualified translator not involved with the research project) for grammar and meaning which was an essential consideration to allow for local and colloquial requirements After two weeks of intensive training[48] the surveys were administered under the supervision of the author by two assistants, one man and one woman, thus allowing for gender related sensitivities and in facilitating investigator triangulation. During this 'pilot' stage errors of recording the information and inputting the data were checked and addressed on a daily basis.

[48] The training consisted of role-playing exercises that highlighted best practises related to administering the questionnaire surveys and in accurately recording responses in ways that maintained the highest of ethical standards and guaranteed respondent confidentiality.

Initially 38 pilot questionnaires were undertaken in two villages in Tallarevu mandal of East Godavari district. However, when the completed questionnaires were reviewed it was apparent that the areas of enquiry were not focused sufficiently on the key research questions. For example the initial questionnaire focused too much on the underlying socio-economic status of the respondents and villages services whilst neglecting issues related to perceptions of 'community' and 'risk' and the interrelationships of villagers with NGOs. In particular an attempt to obtain reliable figures related to respondents' daily incomes was unsuccessful. For example, a number of landowners that lived in large pukka houses and admitted to possessing extensive landholdings and income generating equipment (such as water pumps, ploughs, and auto rickshaws) stated that they typically earned 50 rupees per day (the same income as an agricultural labourer or fisherman). As a consequence the questionnaire was significantly reformatted and many questions that were unproductive or not related to the aims and objectives of the research were reworded or deleted.

The reformatted questionnaire included questions that were more focused on the research aims and objectives, particularly regarding the areas of inquiry that had been neglected in the initial questionnaire. Therefore, from a data collection point of view the pilot questionnaires were of limited use, however, from a methodological perspective the lessons learnt from the pilot study helped to focus the questionnaire and provided an indication that the case study villagers were more than willing to air their points of view. It was also apparent after the completion of the pilot studies that if the questionnaires were to be used to gather data from village level respondents, as well as NGO staff and Government officials, it would be necessary to use two different questionnaires.

**Box 4.3 'Category 1' questionnaire**

*Categorised into the following sections;*

- Personal details
- Household demography
- Village amenities
- Definition of 'community'
- Risk perception
- Experiences of cyclones/floods
- Community support
- Government programmes
- Decision making
- Participation/cooperation
- Coping mechanisms

**Box 4.4 'Category 2' questionnaire**

*Questions for NGOs only*

- Risk perception
- Village level problems
- Village decision-making
- Cooperation & participation of villagers/villages
- Effectiveness/appropriateness of Government cyclone and flood disaster management programmes
- Village level institutions and their participation

*Questions for Government officials only*

- Efficiency of NGOs
- Government actions in the 3 stages of disasters
- Insight into village coping mechanisms

*Questions for NGOs and Government officials*

- Efficiency of village level institutions
- Concept of community
- Risk perceptions
- Government actions in the 3 stages of disasters

As a result the refined village level household questionnaire (referred to as the Category One questionnaire) was restricted for the use of village level, non-NGO and non-Government official informants. A shorter questionnaire was developed for the use of obtaining related information from NGO staff and Government officials (referred to as the Category Two questionnaire). The Category One (village level/household) and Category Two (Government and NGO) questionnaires are summarised in Box 4.3 and Box 4.4 and copies are provided in Appendix B. In total 308 'Category One' questionnaires were undertaken, 208 of which were administered in East Godavari District and 100 in Nellore District. The sampling procedure for the 'Category One' survey was based on a stratified random sample that was structured on the basis of the five housing types that were classified in the village surveys (refer to sampling summary in Table 4.2) and in a way that allowed for a 1:1 gender representation[49] by interviewing either the senior male or senior female of the household.

There was good cooperation from the villagers that participated in the 'Category One' survey, as they typically viewed it as an opportunity to air their opinions and criticisms. The only restrictions on informant response were related to unavailability and absences from the villages due to work related seasonal migration and family commitments or due to illness. Nonetheless, the time scale of the research programme allowed for flexibility in data collection and typically it was possible to arrange appointments with the randomly selected informants, which suited their commitments. It was an intention of the research to reduce the impact of a research team in the villages by fitting in with the routines of the informants, rather than expecting them to fit in with the research teams routine.

There were also a total of 23 'Category Two' questionnaires undertaken by the author; 13 were conducted in East Godavari and 10 in Nellore; eight conducted with NGO staff, 14 Government officials and one politician. Unfortunately it was not possible to achieve a 1:1 gender representation in the 'Category Two' surveys because it appears that women are not well represented in local government or in the staff of Non-Governmental Organisations, thus 20 men were surveyed in the 'Category Two' questionnaires compared to only three women.

[49] Every person sampled agreed to undertake the questionnaire surveys; there were no non-responses.

It was necessary to check the reliability of the questionnaires using the re-test method and by cross-checking during the interview process. This was done by rephrasing questions included in the questionnaires and by the reiteration of key points raised in the questionnaire by the respondent. Because the questionnaire surveys provided both quantitative and qualitative data, the data was analysed using either SPSS version 11 (quantitative) or NUD.IST (qualitative).

## SOCIOGRAMS

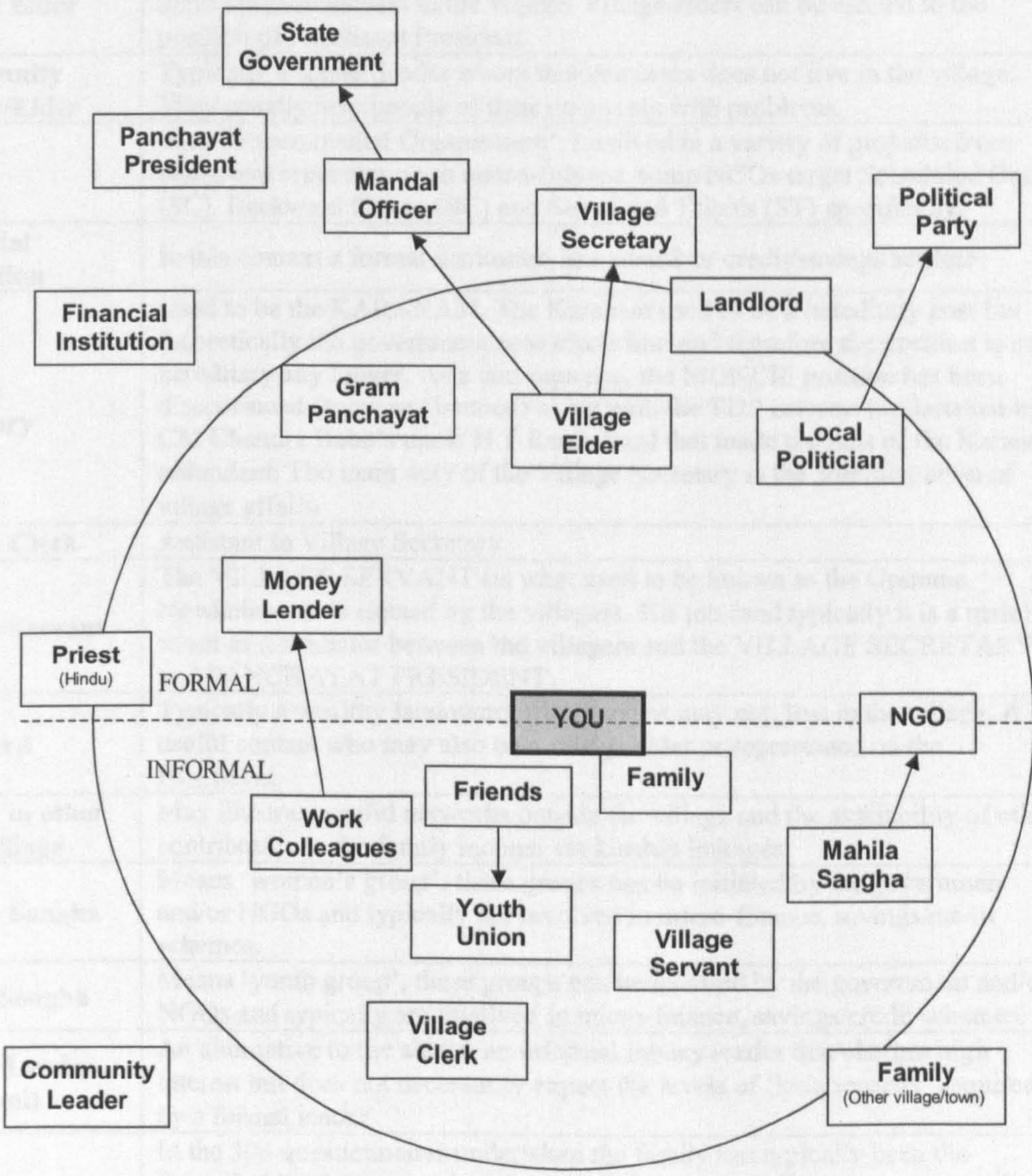
The sociograms used during this research have been adapted from the work of social psychologist J.L. Moreno in the 1940s, whose studies are seen as a precursor of modern network analysis[50] (Abercrombie et al 2000). The sociograms used throughout this research developed during the data collection and were adapted (by the author) to facilitate the recording of types and strengths of social networks experienced by the respondents. The sociogram is used to indicate the types (formal/informal) and strength of relationship between the respondent and the various institutions and organisations accessed inside and outside the respondent's village. The 'parties' that the respondent holds a relationship with are placed within the circle if the relationship is made at village level. The nearer the card is placed to the 'YOU' card, the stronger the relationship. Cards placed outside the circle indicate a weaker relationship that is conducted outside the village. When the network with a certain institution was not direct (i.e. when the network was via a family member or an organisation), this was indicated by an arrow (see figure 4.2 for an example).

The categories used in the sociograms were derived from the Indian sociological literature and were verified (and in a number of cases established) during the fieldwork through interactions with the villagers, NGOs and Government officials. The sociograms were administered during the questionnaire surveys, by using small cards that were written in Telugu, which were placed onto a blank sociogram sheet and then recorded by the research assistants. Because a large proportion of the respondents were illiterate this element of the data collection could have been improved by using symbols on the cards to represent the institutions rather than writing in Telugu. One of the problems related to the development of assessment tools while in the field is that once the data has been collected it is possible that with retrospect the quality of the data collected could have been improved via the use of symbols to represent the institutions instead of writing on the cards. Nonetheless it should be acknowledged that using symbols to represent the social institutions would not

[50] For more details about modern network analysis please refer to J Scott (1992), "Social Network Analysis", London, Sage

necessary have been an improvement upon the use of written cards (that are explained by a research assistant) because in both cases there could be issues regarding interpretation. Consequently, the research assistants were trained over a two-week period to undertake the sociograms to the required accuracy and to be aware of how to undertake the sociograms when dealing with respondents who could not read, with the intention of minimising possible misinterpretations and/or inaccuracies. The sociograms typically took a few minutes to administer, but the important point was that no time constraint was applied, thereby allowing for detailed explanations by the research assistant to the respondent when the task put before them was not clear.

**Figure 4.2 Example of an 'everyday' Sociogram**



## Table 4.3: Sociogram Categories

| INSTITUTION | WORKING DEFINITION | SCORE |
|---|---|---|
| **State Government** | Andhra Pradesh State Government, not National Government | **10** |
| **State Minister** | Minister for AP State Government | **10** |
| **MLA** | Member of Legislative Assembly, State Govt | **10** |
| **MPTC** | Mandal Parishad Territorial Constituency member | **8** |
| **Mandal Officer** | Mandal is an administrative section of a *District*, there are 57 mandals in East Godavari District and 1104 in Andhra Pradesh. The Mandal officer or Mandal Revenue Officer (MRO) is in charge of the revenues of the entire mandal. | **8** |
| **Political Party/Leader** | Main parties in AP are Telugu Desam Party (TDP, presently in power), the Congress (Indira) Party (the main opposition party), the Bharatiya Janata Party (BJP, allies of TDP) and Communist Party (I) (also an opposition party) | **7** |
| **Local Politician** | In the village context this person is only a member of a political party that canvasses for votes. | **6** |
| **Panchayat member/ President** | Committees of villagers representing the whole village. Typically the Panchayat representatives are selected from cohort of village elders. President (Sarpanch) is elected by the members | **6** |
| **Village Elder** | Chosen by a select few villagers (usually powerful villagers/landlords) are the main decision makers in the village. Village elders can be elected to the position of Panchayat President. | **6** |
| **Community Leader/Elder** | Typically a 'caste' leader whom in some cases does not live in the village. They usually help people of their own caste with problems. | **6** |
| **NGO** | 'Non-Governmental Organisation', involved in a variety of projects, from mangrove regeneration to micro-finance, some NGOs target Scheduled Castes (SC), Backward Castes (BC) and Scheduled Tribals (ST) specifically. | **6** |
| **Financial Institution** | In this context a formal institution like a bank or credit/savings scheme. | **4** |
| **Village Secretary** | Used to be the KARANAM. The Karanam used to be a hereditary post but theoretically the government now elects him and therefore the position is not hereditary any longer. As a consequence, the MUNCIF position has been discontinued (some say banned) along with the TDP reforms (undertaken by CM Chandra Babu's uncle N T Rama Rao) that made the post of the Karanam redundant. The main duty of the Village Secretary is the administration of village affairs. | **4** |
| **Village Clerk** | Assistant to Village Secretary | **4** |
| **Village Servant** | The VILLAGE SERVANT (is what used to be known as the Gramma Nowkalu) and is elected by the villagers. His job (and typically it is a male) is to act as a mediator between the villagers and the VILLAGE SECRETARY and PANCHAYAT PRESIDENT. | **4** |
| **Landlord** | Typically a wealthy landowner who may, or may not, live in the village. A useful contact who may also be a village elder or represented on the Panchayat. | **4** |
| **Family in other town/village** | May illustrate useful networks outside the village and the availability of other contributors to the family income via kinship linkages. | **4** |
| **Mahila Sangha** | Means 'women's group', these groups can be initiated by the government and/or NGOs and typically are involved in micro-finance, savings/credit schemes. | **4** |
| **Youth Sangha** | Means 'youth group', these groups can be initiated by the government and/or NGOs and typically are involved in micro-finance, savings/credit schemes. | **4** |
| **Money Lender (informal)** | An alternative to the above, an informal money lender that charges high interest but does not necessarily expect the levels of 'loan security' required by a formal lender. | **3** |
| **Family** | In the 308 questionnaires undertaken the family has typically been the 'household' with one nuclear or extended family unit living in one household. The questionnaires highlight the exceptions to this. | **2** |
| **Friends** | Associates that are not encompassed by other categories in this list | **2** |
| **Priest/ Clergyman** | Typically a Hindu priest or a Christian 'father' (Roman Catholic) | **1** |

The 'everyday' sociograms were taken a stage further when what will be referred to as 'crisis period' sociograms were undertaken to aid the comparison between the 'everyday' networks and those experienced during a 'crisis period'. The crises in this case were typically the November 1996 cyclone that affected many of the case study villages in East Godavari and the floods that affected Nellore in 1999 and 1996. The 'crisis period' sociograms were administered in the same way as the 'everyday' sociograms but were put into the context of the last 'crisis' the respondent had experienced. In total there were 294 'crisis period' sociograms undertaken, fourteen could not be undertaken due to the unavailability of the respondents, in one case due to a refusal to cooperate.

**Sociogram Scoring Categories**

The scoring factors are a subjective sliding categorical scale, in that the various institutions have been allocated scores that are based on the discussions in Chapter 2 and the fieldwork interactions, regarding the ability of the institutions to increase the coping resources of the respondents through the provision of physical and financial assistance. For example, if an elderly widow requires a new house (because the previous one was destroyed during a cyclone) she may turn to her family and friends, who may be able to provide only limited help (because they may have also suffered from the cyclone to some extent). However, if the elderly lady can turn to the village elder, he may be able to provide a different kind of assistance that may not directly help in providing a new house, but through the village elder's contacts with politicians and government officials may help to obtain some compensation. To take this a stage further, if the widow is on good terms with the Mandal Revenue Officer (MRO), or a Member of the Legislative Assembly (MLA) she may find it relatively easier to obtain similar levels of assistance. Of course, these examples are, like the scoring factors (see Table 4.3), based on the assumption that those that have the highest scores have the greater influence on how much help one can obtain.

The 'everyday' and 'crisis period' sociograms were scored on the basis of institutional type (listed in table 4.3) and strength of relationship based on how close to the 'YOU' card the institutional card was placed, these sociogram scoring cards can be found in Appendix C. The scoring factors given to the institutions ranged from 1 – 10, with 1 indicating an institution with relatively little influence on the respondent's social status and ability to cope during an everyday and crisis situation, while 10 indicates an institution with a potentially strong influence on the respondent's social status and ability to cope with 'everyday' and 'crisis' situations.

The scoring system derived for the sociograms can be utilised in a quantitative manner which allows for statistical comparisons between individuals, between 'everyday' and 'crisis' periods, from village to village and mandal to mandal. Consequently, these sociograms provide a quantitative element has well as a qualitative element to the research.

### SEMI-STRUCTURED INTERVIEWS

Thirty-four semi-structured interviews were undertaken by the author and interviewers, across a range of villagers of socio-economic status appropriate to the needs of the research. Each interview was tape-recorded, with the consent of the respondent, to ensure that information was not lost and to cross-check the accuracy of translation. The duration of the interviews was between 30 minutes to one hour. The key informants used in this case were not randomly chosen but were chosen based on their survey results to provide a cross section of respondents and attitudes. The points of inquiry used in the semi-structured interviews were based on the research questions that have been discussed in chapter one but used a discourse that was appropriate for the respondents.

All the interviews were conducted in a private environment that considered gendered sensitivities and provided the opportunity for the respondent to air their views in confidentially. The interviews were conducted at the convenience of the respondent as to avoid disruption of their daily routines, to ease the atmosphere and to minimise interruptions. The tape-recorded interview was then transcribed into Telugu before being translated into English by an independent translator. However, it is acknowledged that the detail of responses can be lost in interpretation and the major problem with attempting this type of research through the use of research assistants and/or interpreters became apparent when the transcripts were translated into English and it became clear that opportunities to ask probing questions were occasionally missed. The semi-structured interviews were coded and analysed using NUD.IST.

### DIRECT OBSERVATION

Non-participant direct observation was possible through liaison with NGO staff, Government officials and local community members during leisure, work and village surveys. During my provisional visit to Andhra Pradesh in 2001 the NGOs of Sravanti and ACTION acted as gatekeepers to some of the villages that they were involved with in East Godavari. However, it was important to make my position clear and to make the focus of

my research explicit, as I was concerned that some stakeholder agencies might try to influence the research.

The NGOs provided good access to a diverse range of villages that had been affected by cyclones and/or floods to varying degrees. The diversity of NGOs involved in Disaster Preparedness in the case study areas and the nature of the research, which also targeted villages without NGO activity allowed for the selection of villages based on 2001 Census data as well as the knowledge obtained via the NGOs. This approach helped to reduce any potential manipulation of the research by stakeholder agencies, such as the NGOs themselves, who may have tried to direct the research to villages that suited their agendas (i.e. by avoiding villages where their projects had not been successful). The fieldwork was conducted by the author and the two assistants without the direct involvement of NGOs and this allowed the respondents to not just air their grievances regarding the Government or village leaders, but also the practices of the NGOs.

The author's use of direct observations provided an insight into the everyday workings of the villages, the interactions between the villagers (such as those between men and women, adults and children, village elders and non-village elders, and NGO staff or Government representatives with adult villagers). The observations provided useful indications of the roles of women in the villages, how they interact with other villagers, the involvement of women in village meetings and what non-paid work they undertake. Similarly the observations allowed comparisons between 'official' information regarding village services and what really happens. For example, do the children attend school? Can all the villagers use the wells or standpipes to draw water? How many men in the village do not work but spend the day getting drunk? And how often does public transport actually reach the village?

However, this research is not an anthropological study but is a multi-disciplinary approach to research that may include some elements of anthropological and ethnographical research. The use of direct observations may not necessarily provide valid and reliable data that is fundamental to the research analysis but importantly these observations can allow the researcher of culturally diverse societies to assess or verify the quality of information that is based in the literature and furthermore supported by the data that has been collected by more rigorous research methods.

## 4.7 METHODOLOGICAL CONSTRAINTS

Many of the research methods used have distinct advantages and disadvantages and these are summarised in table 4.4 but it is intended that by making the most of each method's advantages and minimising the disadvantages through the use of mixed methods it is possible to maximise the assets that each method can offer.

**Table 4.4 The Advantages and Disadvantages of the research methods summarised**

| METHOD | ADVANTAGES | DISADVANTAGES |
|---|---|---|
| LITERATURE REVIEW | Can provide the official stance on an issue<br>Clarifies applicable concepts and theories<br>Wide range of publications available<br>Highlights voids in knowledge<br>Encourages the requirement of critical analysis | Non-peer reviewed publications |
| INDIAN 2001 CENSUS DATA | Large datasets in MS Excel format<br>Relatively contemporary data collection<br>Measured variables<br>Can provide a nationally accepted discourse for use in the research | Concerns regarding the reliability & validity of official statistics<br>Time lag between data collection and publication of results<br>Difficult to obtain village level statistics |
| VILLAGE MAPPING SURVEY | Provides useful spatial element to data<br>Gives a good overall perspective of village amenities<br>Enables unstructured observations of social interactions<br>Can provide researcher with opportunity to access parts of village that they view as being interesting, not just the areas the villagers think you are interested in | Time consuming for researcher<br>Maps that are constructed will quickly become out of date<br>Difficult for observations (i.e. house types) to be consistent unless all surveys conducted by same person |
| STRATIFIED RANDOM QUESTIONNAIRE | Relatively large and representative sample<br>Provides background demographics of respondents<br>Allows verification of answers by addressing same questions in different ways<br>Administered by assistant to minimise problems related to low literacy<br>Directs researcher towards informants with a 'story to tell'<br>Can be 'scientifically' analysed through statistics using SPSS | Questions need to be carefully worded and translated sympathetically<br>Subjectively stratified<br>Time consuming process<br>Does not account for differences between attitudes and actions<br>Coding can be subjective<br>Statistical analysis reliant upon subjective generalisations |
| SEMI-STRUCTURED INTERVIEWS | Enables the respondents to say what they feel they need to say<br>Provides depth of information<br>Respondent can provide information with relatively little guidance from interviewer<br>Provides respondent with an opportunity to voice their true opinions when privacy and confidentiality is ensured<br>Transcripts 'back translated' to ensure accuracy of translation | Time consuming for respondents<br>Issues over problems with understanding between interviewer and interviewee<br>Concern over accuracy of interpretation of questions/responses by respondent and interviewer<br>Difficult to achieve reliability in data collected<br>Data is difficult to analyse 'scientifically'<br>Missed opportunities for probing<br>No guarantee of obtaining the truth |
| SOCIOGRAMS | Indicators of social network types<br>Indicators of social network strengths<br>Indicators of resilience of social networks to crisis events<br>Institutions defined by respondents<br>Quick to undertake<br>Provide quantitative and qualitative data | Untested in the context of disaster scenarios<br>Subjectively scored (but based on literature)<br>Misunderstandings regarding what is expected of the respondent can lead to misleading results |

The main limitation of the research was imposed by the loss of depth of information due to language constraints. Although it was possible to obtain a basic aptitude in Telugu, competence levels fell short of acceptability for conducting sufficiently in-depth interviews. This resulted in reliance upon interpretation and translation, thereby possibly affecting the depth of data obtained from the qualitative methods used in the semi structured interviews. Questionnaires, interview transcriptions or correspondences that needed translation were crosschecked using the 'back-translation' method by a local and independent translator to ensure the accuracy of the translations. However it would be pertinent to say that if a local Telugu speaker had conducted the research, with a thorough insight into the research focus, the depth of the qualitative data may have been improved but other problems or biases may have occurred.

### 4.7.1 Quantitative Analytical Techniques

A number of bi-variate statistical tests were undertaken during the quantitative analysis. Initially simple descriptive tests were used and these were augmented by the use of cross tabulations and Chi-Square non-parametric tests. These tests helped to identify the statistically significant correlations between at least two variables. A number of multi-variate tests were undertaken in an attempt to make sense of the myriad interconnections between certain variables that appeared significant from the bi-variate analysis. The appropriateness of these multi-variate tests, such as simple linear regression, multiple regression, LOGIT and factor analysis, were constrained by the complexity of the topic (refer to figure 7.6 in Chapter Seven for an illustration of the complexity) because a large proportion of the variables were significantly interrelated to each other. Therefore, the scope for cross correlations throughout such a broad topic diluted the suitability of multi-variate statistical tests for the analysis of the data. However, it should be noted that multi-variate analysis could be useful if the topic was narrowed, i.e. with a specific focus on women's social networks with NGOs, or if specifically studying female headed households. Because this study has predominately been a provisional investigation or an overview of the key issues regarding the social and institutional elements of vulnerability in coastal Andhra Pradesh, the data could be useful for the future in-depth analysis of some of the key issues that arise from this research.

### 4.7.2 Qualitative Analytical Techniques

The best qualitative analysis investigates causation and reasons and therefore requires an intensive dialogue between the interviewer and the interviewee, which irrespective of linguistic issues requires a significant level of interpretation on the part of the interviewer.

When linguistic problems are considered, such as those related to the interviewers lack of fluency in the interviewee's language, issues related to interpretation can be compounded. Despite efforts, it became clear when the interview transcripts were translated that the data collected via the semi structured interviews failed to get past the superficial issues, thereby affecting the quality and depth of qualitative data collected. The inability of the interviewer to probe past the superficial issues raised by the interviewees was predominately due to lack of training or experience regarding interviewing techniques. In view of the apparent lack of depth in the qualitative data, the use of the data within the overall analysis has been restricted to selective quotes that illustrate key responses broached by the respondents related to key issues that have arisen during the study.

The methodological constraints that have been discussed could have been eliminated in the ideal scenario, nevertheless, the idea of undertaking research is to add to knowledge in some way and it would be apt to state that it is as applicable for one to learn from the negatives of the research as much as it is to learn from the positives of the research.

## 4.8 SUMMARY

This chapter has discussed the philosophies behind the methodologies used in the investigation of the thesis. It has also highlighted the research design and explained the research methods used, with a particular emphasis upon the combined use of qualitative and quantitative methods and the use of *triangulation* to facilitate rigorous data collection. The research focus that has been outlined in chapter one and the theoretical and contextual framework discussed in chapter two, along with the use of triangulation using mixed methods, that have been explained in this chapter, are appropriate foundations for a case study based research strategy.

The role of the researcher and the various researcher biases that one may be guilty of whilst undertaking research in a developing country have been highlighted, discussing the various measures that should be considered if these biases are to be avoided. During this chapter the ethical issues related to a white European male undertaking research in a poor under-developed part of India and the methodological limitations involved in the research due to cultural, social and gender related constraints have been discussed. The village and questionnaire surveys used in this investigation contribute towards the structural understanding while the qualitative data obtained from the sociograms and interviews provide depth and meaning. The adaptation of the sociogram has grown during the

fieldwork due to a need for an appropriate research tool for the assessment of individual social networks. Likewise, the methods of data collection and the validity and reliability of such methods have been discussed. The use of such methods has provided extensive data to analyse but is useful for enabling the analysis to be conducted at various spatial scales, macro, meso and micro. This chapter has finally discussed the methodological lessons learned from undertaking the research and how, with hindsight, the quality of data collection could have been improved.

## 5.1 CONTEXTUAL ANALYSIS

The foundations of this thesis regarding the conceptual, theoretical and methodological nuances have been discussed in the preceding chapters. Similarly a basic contextual analysis has also been provided, focusing on the Andhra Pradesh political, economic and social structures prevalent within the state but it is necessary to provide a contextual analysis of the case study areas and particularly the twelve case study villages. Along with the contextual analysis related to the demographics of the case study villages this chapter will also attempt to gain a perspective of concepts such as 'risk' and 'community' associated with the discourse of the case study villages. All the data analysed in this chapter has been obtained from the village surveys and the qualitative semi-structured interviews conducted by the author during the fieldwork periods between February – June 2002 and November 2002 (unless otherwise cited).

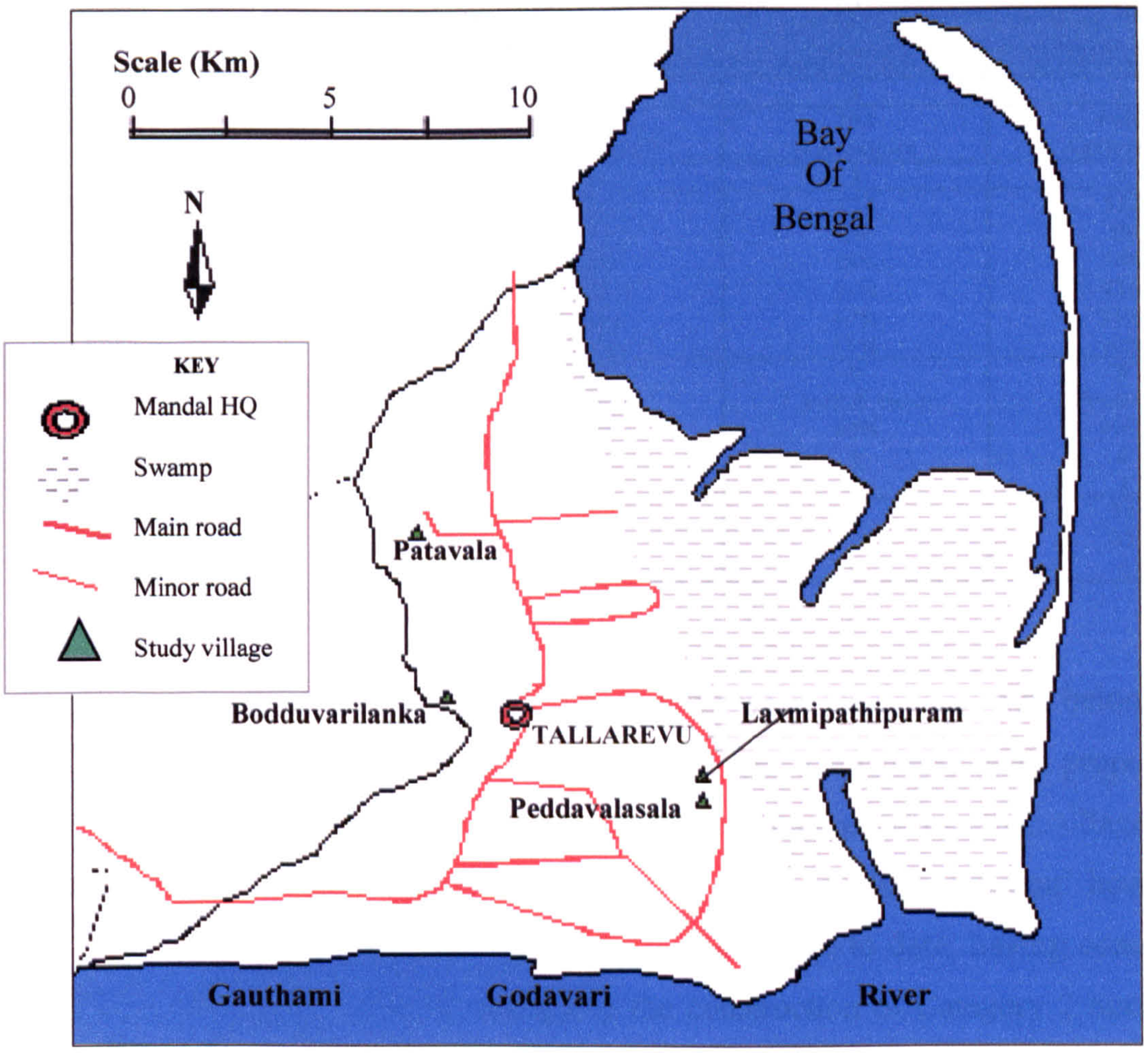
A demographic analysis of each case study village was required to appreciate how the macro (International and National) and meso level (State and Mandal) activities impact upon the micro level (Panchayat and village) structures and activities. This chapter will provide demographic information on each case study village to provide an insight into the economic and socio-political realities of the villages before discussing some of the key similarities and disparities between the case study villages.

## 5.2 CASE STUDY PROFILES

### EAST GODAVARI DISTRICT - TALLAREVU MANDAL

Tallarevu was the location of one of the most destructive cyclones in Andhra Pradesh's history, which hit Korangi (*Corangi*) in 1679 and killed 20,000 people (Winchester 1992). Tallarevu was also severely affected by the November 1996 cyclone, particularly regarding the loss of coconut plantations, aquaculture tanks, crops, poultry sheds and fishing boats. O'Hare (2001:33) states that Tallarevu suffered proportionally less deaths than neighbouring I. Polavaram and Katrenikona mandals but suffered on a similar scale regarding the loss of housing. The mandal (see map 5.1) is topographically very low-lying but has a large expanse of mangrove forest (Satyanarayana et al. 2002) that can provide natural protection from the worst affects of cyclones (Reddy et al 2000). The social and ecological importance of the Korangi mangroves have been recognised by the state government to the extent that protection and reforestation programmes are underway in the region.

**Map 5.1: Tallarevu Mandal and case study villages**




This mandal has a population of 79,943 people (Andhra Pradesh Government 2003a) and based on Government of India 2001 Census figures that were obtained in the field, full time workers account for 30.3 percent of the adult population, marginal workers 10.7 percent and non-workers (unwaged) 58.9 percent (unpublished data provided in Appendix E). Tallarevu is classified as an entirely rural mandal, with no large-scale towns and the literacy rate of 69.4 percent is well above the average for the state's rural average of 55.3 percent. The details of the villages studied in this investigation are summarised in Table 5.1[51], outlining each village's population, number of houses and types, number of castes and village amenities such as cyclone shelters, drinking water and electricity supply and the types of CBO activity, such as the work of groups involved with the 'Development of Women's and Children's Rural Agency' (DWCRA).

[51] Note: some percentage figures may not total 100% due to the rounding up/down.

## Table 5.1: Tallarevu Mandal Villages

| | EAST GODAVARI DISTRICT | | | |
|---|---|---|---|---|
| | Tallarevu Mandal | | | |
| | Peddavalasala | Laxmipathipuram | Bodduvarilanka | Patavala |
| **Village category** | **1** | **2** | **3** | **4** |
| **Population** | 1935 | 1393 | 704 | 4006 |
| **Village type** | Fishing | Fishing | Agriculture | Agriculture |
| **No. castes** | 1 | 2 | 3 | 9 |
| **No. houses** | 280 | 223 | 174 | 552 |
| Type 1 houses | 1% | 2% | 2% | 3% |
| Type 2 houses | 33% | 24% | 16% | 19% |
| Type 3 houses | 20% | 21% | 31% | 43% |
| Type 4 houses | 38% | 39% | 40% | 25% |
| Type 5 houses | 8% | 14% | 11% | 10% |
| **Cyclone shelter** | 1 | 0 | 0 | 0 |
| **Drinking water** | Protected | Protected | 1 well & canal | Protected |
| **Electricity** | 50% | 40% | 50% | 90% |
| **Schools** | 2 | 1 | 1 | 2 |
| **Community hall** | 1 | 0 | 0 | 1 |
| **DWCRA gps.** | 11 | 10 | 5 | 20 |
| **Youth gps.** | 2 | 4 | 2 | 12 |
| **NGOs** | 1 | 1 | 0 | 0 |

### Peddavalasala

Peddavalasala is a fishing village of nearly two thousand inhabitants that belong to the Agnikulakshatriya caste (fisherfolk[52]). The village has a relatively high proportion of Category 2 (Basic pukka) housing at 33 percent when compared to other villages in the mandal and district. The high number of these so called 'cyclone resistant' houses may reflect the nature of Sravanti (NGO) activities in the village to date, having concentrated on disaster preparedness activities, especially the construction of Category 2 houses with the support of Oxfam. The village has one cyclone shelter that is relatively good condition and water is supplied via communal standpipes that are fed by an elevated tank (located in neighbouring Laxmipathipuram). The village was severely affected by the 1996 cyclone and it has been stated by the present Village Elder that ten people died as a consequence, the village was also affected by cyclones in 1977 and 1969.

### Laxmipathipuram

This village is very similar to Peddavalasala, although slightly less populated with 1,393 persons. The village is mainly inhabited by the Agnikulakshatriya caste other than one Chakkali (washerfolk) family. Sravanti has been working in the village since 2000 and is involved in Credit/Savings schemes with women's groups, Disaster Preparedness awareness and Cyclone Task Force Groups, Mobile Health Clinics and income generating activities such as fish curing and pickling. The village was severely affected by the 1996 cyclone in which 18 people died, the village was also affected by cyclones in 1977 and 1969 (nine deaths).

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[52] Referring to families involved in fishing activities as 'fisherfolk' is the accepted nomenclature in Governmental and sociological texts within India, as is the case for washerfolk (families involved in laundry related activities).

**Bodduvarilanka**

This mixed caste village is predominately an agricultural village of 704 inhabitants. The village is composed of Kamma (OC), Setti Balija (BC) and Mala and Madiga (SC) castes that live in communities based on their caste classification. The main occupations of the village are related to agricultural work, such as land owning farmers and agricultural labourers. The drinking water facilities in this village are meagre, with one drinking water well that has restricted access, which does not allow SC castes to draw water from it. The most common source of drinking and cooking water are the irrigation canals that circle the village. The village was affected by the 1996 cyclone when four people that were fishing at sea were killed. The village was also affected by heavy flooding in 1977 and 1986 (10 deaths).

**Patavala**

This multi-caste village is a large agricultural village of 4006 inhabitants that is mainly composed of Raju and Kapu (OC), Setti Balija (BC), Mala and Madiga (SC) and Yerukulas (ST). There are also a small number of 'village serving' castes such as Chakkali (washerfolk), Nai Brahmana (Barbers) and Vishwa Brahmana (Metal-smiths and Carpenters) that all belong to the 'Backwards Caste' (BC) classification. The villagers typically live in 'communities' based on their caste categories (i.e. BC community and OC community). The village does not have a cyclone shelter but has one community hall that is solely for the use of SC castes. The villagers stated during the research that they would seek shelter from a cyclone in category 1 or 2 pukka houses or the school buildings. The village was affected by the 1996 cyclone when ten fishermen were drowned.

**EAST GODAVARI DISTRICT - KATRENIKONA MANDAL**

Katrenikona (see map 5.2) has a total population of 73,693 inhabitants (Andhra Pradesh Government 2003a) and based on Government of India 2001 Census figures (unpublished data provided in Appendix E), the adult population is constituted of 37.7 percent full time workers, 9.7 percent marginal workers (part-time) and 52.5 percent non-workers. Katrenikona is also classified as a rural mandal with a literacy rate of 60.4 percent, which is lower than the Tallarevu average but higher than the rural average for Andhra Pradesh of 55.3 percent. The details of the villages studied in this investigation are summarised in Table 5.2.

## Map 5.2: Katrenikona Mandal and case study villages

## Table 5.2: Katrenikona Mandal villages

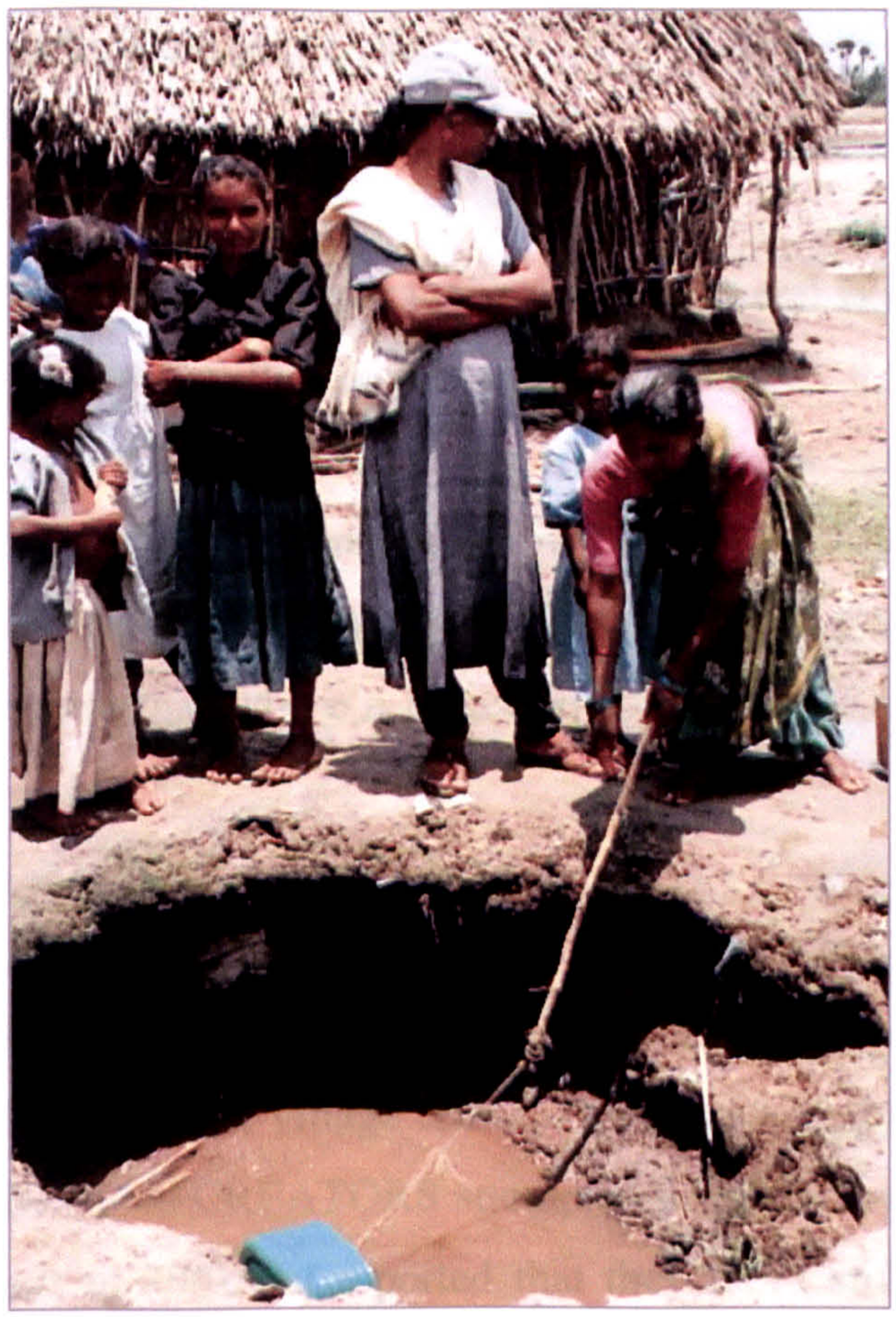
| | EAST GODAVARI DISTRICT | | | |
|---|---|---|---|---|
| | Katrenikona Mandal | | | |
| | Cheriyanam | Pandi | Malakondayapuram | Koppigunta |
| **Village category** | **1** | **2** | **3** | **4** |
| **Population** | 450 | 500 | 450 | ~2000 |
| **Village type** | Fishing | Fishing | Fishing | Agriculture |
| **No. castes** | 1 | 1 | 1 | 4 |
| **No. houses** | 100 | 59 | 82 | 330 |
| Type 1 houses | 0% | 0% | 0% | 3% |
| Type 2 houses | 16% | 2% | 1% | 33% |
| Type 3 houses | 0% | 17% | 1% | 28% |
| Type 4 houses | 74% | 71% | 93% | 30% |
| Type 5 houses | 10% | 10% | 5% | 6% |
| **Cyclone shelter** | 1 | 1 | 0 | 0 |
| **Drinking water** | Shallow wells | Shallow wells | Shallow wells | Protected |
| **Electricity** | 60% | 25% | 25% | 95% |
| **Schools** | 1 | 0 | 0 | 1 |
| **Community hall** | 0 | 0 | 0 | 0 |
| **DWCRA gps.** | 10 | 6 | 3 | 17 |
| **Youth gps.** | 2 | 0 | 0 | 3 |
| **NGOs** | 1 | 1 | 0 | 0 |

### Cheriyanam

Cheriyanam is a small fishing village of 450 inhabitants located in the Cheriyanam Panchayat on a spur of low-lying land that juts into the Bay of Bengal. All the families in the village belong to the Agnikulakshatriya (Fisherfolk) caste (BC). The government has built an elevated water tank in the village but in November 2002 supplies to the communal taps were not finalised so most of the villagers obtained drinking water from shallow wells that provide turbid brackish water (see photograph 5.1). The main occupation in the village

is fishing using shared sailed fishing boats. Typically the women undertake non-paid housework but also augment the family incomes by working as fishing and agricultural labourers. The village has one primary school that is located in the village's cyclone shelter, although many children work rather than attend school. A NGO called ACTION has been working in the village since 1996 and is involved in Credit/Savings schemes with women's groups, Disaster Preparedness awareness and Cyclone Task Force Groups and income generating activities such as fish curing and pickling. The village was severely affected by the 1996 cyclone when eight people died.

**Photograph 5.1: Shallow well**



**Pandi**

This small village was originally inhabited by pig breeding families (*Pandi* is the Telugu word for 'Pig') but is now a fishing village that has 500 inhabitants that all belong to the Agnikulakshatriya (Fisherfolk) caste (BC). Only 25 percent of the village houses are connected to electricity and only two households are connected to telephone lines. The villagers obtain their drinking water from shallow wells that provide turbid brackish water or travel to the neighbouring village of Palam where a protected water supply is located.

Pandi shares one cyclone shelter with neighbouring Palam, the shelter is in moderate condition. Village meetings are conducted in the main temple as there is no community hall in the village. There are no youth groups in the village and six DWCRA groups, one of which as been established by the local NGO ACTION. ACTION has been working in the village since the start of 2002 and is involved in Credit/Savings schemes with women's groups, Disaster Preparedness awareness and Cyclone Task Force Groups and income generating activities such as fish curing and pickling. The NGO has reported that they faced stiff opposition from the village elders with respect to establishing women's groups

in the village and that alcoholism is a social problem amongst the fishermen. The village was severely affected by the 1996 cyclone in which ten people died.

**Malakondayapuram**

This village is also located in the Palam Panchayat near coastal mangrove forests and is a fishing village that has 450 inhabitants. All the families in the village belong to the Agnikulakshatriya (Fisherfolk) caste (BC). Only 25 percent of the village houses are connected to electricity and there are no telephone line connections in the village. The villagers obtain their drinking water from shallow wells that provide turbid brackish water or travel to the neighbouring village of Gandhinagar where a protected water supply is located.

The village does not have a school so most children attend work rather than go to school. Pandi does not have a cyclone shelter and does not have a community hall so most village meetings are conducted in the main temple located in the village centre. There has been no recent NGO activity in the village, but a NGO called CREATORS attempted to establish a rapport with the Malakondayapuram villagers in 2001 but reported that they faced stiff opposition from the male villagers with respect to establishing women's groups and that like Pandi, alcoholism is a social problem amongst the fishermen. The village was severely affected by the 1996 cyclone in which most houses were destroyed but no people died.

**Koppigunta**

Koppigunta is a large multi-caste agricultural village of over a 1000 inhabitants located in the Koppigunta Panchayat approximately 6kms from the coast and 3.5 kilometres east of Katrenikona. The village is mainly composed of Setti Balija (BC), Mala and Madiga (SC), Jambuvulu (SC) and Yerukulas (ST). Approximately 95 percent of the village houses are connected to electricity and approximately 8 percent of houses are connected to a telephone line. The main occupations of the village are related to agricultural work, such as land owning farmers and agricultural labourers. Typically the adult women undertake non-paid housework but also work as agricultural labourers to augment the family income. The Yerukulas families are typically involved in the breeding and rearing of pigs.

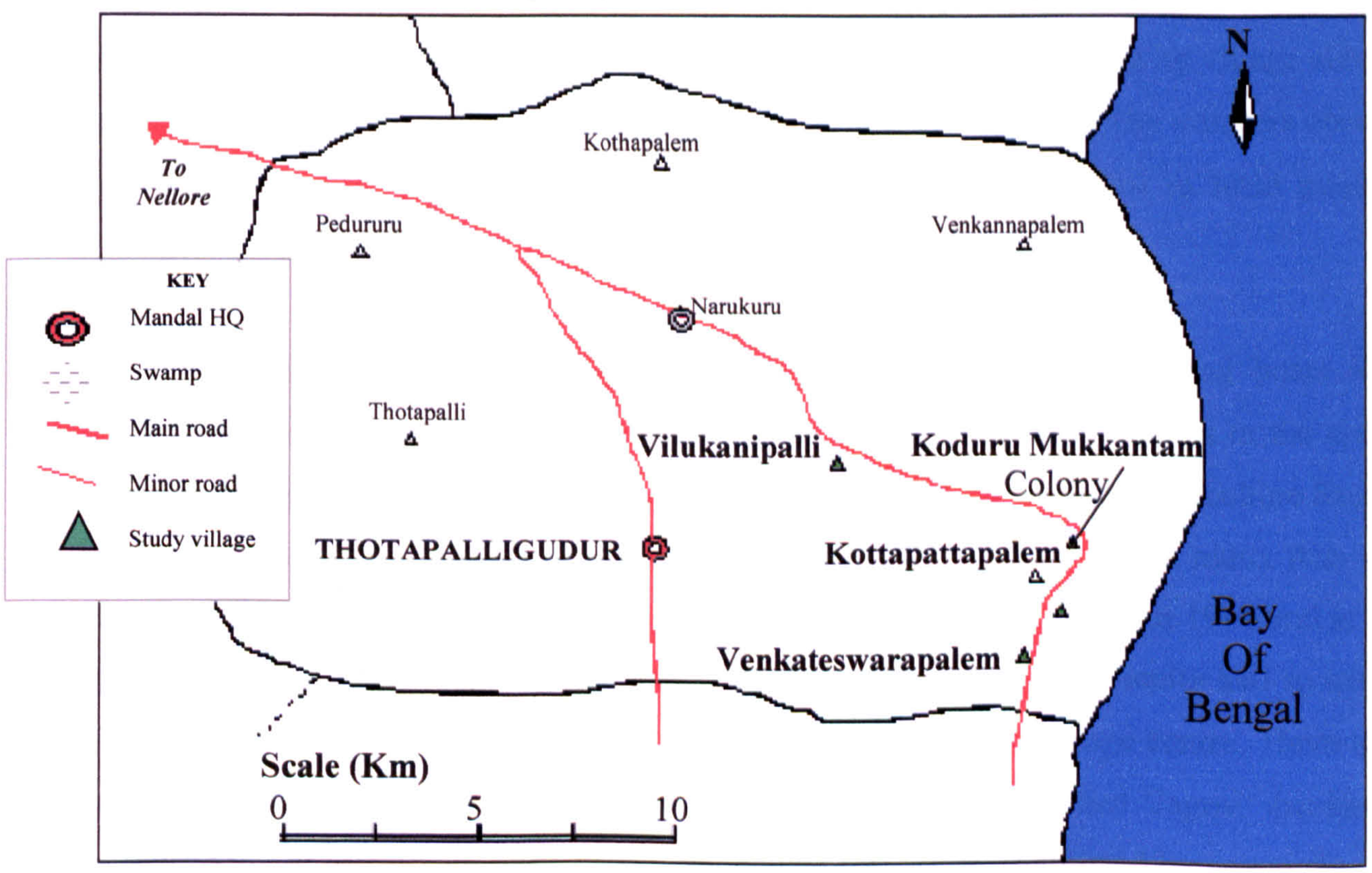
The village has one elementary school and a modern medical centre. The drinking water facilities in this village are adequate, with large elevated tanks supplying common hand pumps that are situated throughout the village. The village does not have a cyclone shelter

or a community hall and village meetings are conducted in the main temple. The villagers stated during the research that they would seek shelter from a cyclone in category 1 or 2 pukka houses or the school buildings. There are three youth groups and 17 DWCRA groups established in the village. There has never been any NGO projects or assistance in this village. The village was moderately affected by the 1996 cyclone when no people died but the heavy rains and flooding damaged houses and the infrastructure.

## NELLORE DISTRICT - THOTAPALLIGUDUR MANDAL

Thotapalliguduru mandal (map 5.3) is a relatively sparsely populated coastal area that has been the scene of Government programmes related to vulnerability reduction with many of the coastal villages supported by the work of local NGOs. This mandal has a total population of 49,104 people (Andhra Pradesh Government 2003a) and like the other mandals in this survey is classified as a rural mandal with a literacy rate of 61.5 percent, which is lower than the Nellore average but higher than the rural average for Andhra Pradesh of 55.3 percent (Andhra Pradesh Government 2003b). The details of the villages studied in this investigation are summarised in Table 5.3.

**Map 5.3: Thotapalligudur Mandal and case study villages**



## Table 5.3: Thotapalligudur Mandal villages

| | NELLORE DISTRICT | | | |
|---|---|---|---|---|
| | Thotapalligudur Mandal | | | |
| | Kottapattapalem | Venkateswarapalem | Koduru Mukkantam | Villukanipalli |
| **Village category** | **1** | **2** | **3** | **4** |
| **Population** | 200 | 430 | 466 | 1000 |
| **Village type** | Fishing | Mixed | Mixed | Agriculture |
| **No. castes** | 1 | 1 | 1 | 8 |
| **No. houses** | **90** | **114** | **70** | **182** |
| Type 1 houses | 0% | 4% | 0% | 13% |
| Type 2 houses | 89% | 70% | 43% | 15% |
| Type 3 houses | 0% | 0% | 0% | 16% |
| Type 4 houses | 0% | 9% | 0% | 35% |
| Type 5 houses | 11% | 18% | 57% | 21% |
| **Cyclone shelter** | 1 | 1 | 0 | 0 |
| **Drinking water** | Protected | Protected | Protected | Protected |
| **Electricity** | 90% | 90% | 90% | 100% |
| **Schools** | 1 | 1 | 1 | 1 |
| **Community hall** | 0 | 0 | 0 | 1 |
| **DWCRA gps.** | 3 | 3 | 3 | 10 |
| **Youth gps.** | 2 | 0 | 0 | 0 |
| **NGOs** | 1 | 1 | 0 | 0 |

### Kottapattapalem

This small fishing village has 200 inhabitants that belong to the Pattapu (Fisherfolk) caste (BC). The village consists of 150 young children (below 6 years of age) and only 50 people above the age of six, with approximately 30 of these being adults, therefore a noticeable factor of the village demographics is the child/adult ratio. All of the 'category 2' houses are connected to electricity but none of the 'category 5' houses are supplied. There are no telephone line connections in the village but it has been suggested by village elders that some connections were due to be established by the end of 2002. The villagers obtain their drinking water from a protected water supply that is distributed to hand pumps throughout the village.

The main occupation in the village is fishing using shared sailed fishing boats but aquaculture has gained an increasing influence on employment opportunities in the area, therefore many villagers supplement their incomes from fishing through aquaculture based labouring. The village does not have a school so most children attend work rather than go to school. Kottapattapalem has one cyclone shelter that was constructed in 1994 and is in good condition (see photograph 5.2). The village does not have a community hall so most village meetings are conducted in the main temple located in the village centre. There are two youth groups in the village, three women's groups and a NGO called 'Jagriti' that have been working in the village since 1985. The village has not been affected by any cyclones in recent years but the heavy rains that accompanied a cyclone, which skirted the Nellore coast, in November 2002 caused extensive flooding, as did the November 1996 cyclone.

The villagers have complained that the village typically gets flooded during the monsoonal rains, which exacerbates health problems and damage the aquaculture tanks.

**Photograph 5.2: Kottapattapalem Cyclone Shelter**

## Venkateswarapalem

This village is adjacent to the British built 'Buckingham Irrigation Canal' and a number of small creeks, which connect the village to the sea, located approximately 300 meters away. All the 450 inhabitants belong to the Pattapu (Fisherfolk) caste (BC) but are involved in a mixture of income generation activities, such as fishing, aquaculture, agriculture, labouring and rickshaw drivers. The housing in Venkateswarapalem is relatively well developed and 90 percent of the houses in the village are connected to electricity, some villagers have telephones and the inhabitants have access to a protected water supply that is distributed via shared hand pumps. The 'Jagriti' NGO started undertaking projects at the beginning of 2002, related to disaster preparedness (task force groups, first aid training and warning dissemination) and alternative employment strategies (fish smoking and pickling). Like Kottapattapalem the village has not been affected by any cyclones in recent years but the heavy rains that accompanied the cyclone, which skirted the Nellore coast, in November 2002 caused extensive flooding, as did the November 1996 cyclone. Similarly to Kottapattapalem, the village typically gets flooded during the monsoonal rains, which also exacerbates health problems and damages aquaculture tanks.

**Koduru Mukkantam Colony**

This colony was relatively recently established in the early 1990s, as a community for Yenadis caste members. The Yenadis are Scheduled Tribals (ST) and are alternatively referred to as *Girijans*, a name derived from *Harijan*. The village is inhabited by 466 people and is set out in a grid pattern with 70 permanent dwellings, of which 30 are 'category 2' houses and 40 are 'category 5' basic kutcha huts. The quality of the 'category 2' housing is poor with many showing the signs of concrete erosion resulting in at least four houses of this type that have been abandoned. The villagers are involved in whatever income generation activities they can find, such as fishing, agricultural and aquaculture labouring, prawn 'seed' collecting and *toddy* (local liquor) making. Ninety percent of the houses are connected to electricity but there are no telephones no community hall and no cyclone shelter. The colony has one primary school for the village children who are taught on a part-time basis by the village elder who is an experienced primary teacher. The water is supplied via a piped system to shared hand pumps but the nearest post office and medical centre are two kilometres walk away. There are three women's groups active in the village but no youth groups have been established to date, there has never been any NGO activity in the village. Like the previous two villages, the village has been marginally affected by cyclones but has suffered many problems from flooding caused by heavy cyclonic rains and monsoonal rains.

**Villukanipalli**

Villukanipalli is a heterogeneous village that is inhabited by a mixture of castes from the OC (Ordinary Castes), BC (Backward Castes), SC (Scheduled Castes) and ST (Scheduled Tribals) caste classifications. The population of over 1000 people is distributed throughout the village in three distinct geographically separate 'communities' being;

**OC community** – Naidu & Reddy – higher proportion of 'category 1' houses

**BC community** – Gowda, Chakkali & Yadava – higher proportion of 'category 5' huts

**ST & SC community** –Yerukulas, Yenadis (ST) & Mala, Madiga (SC) – higher proportion of 'category 4' houses

The level of development in the village is indicated by the fact that there are 24 'category 1' houses located in Villukanipalli, although it should be noted that 21 of these are located in the OC community. The income generation activities are largely related to agricultural practises although there is a rice mill, a complex of shops and some small industrial units located on the main road, which passes through the centre of the village. Telephone

connections are extensive and the entire village is connected to electricity supplies. Village amenities include, a post office, a large primary school, a community centre and a water supply system that is distributed to all communities but the village does not have a cyclone shelter thereby village meetings are usually conducted near the main temple in the village. There are ten women's groups in the village, some of which are linked to DWCRA groups, but there are no youth groups. Like the other villages in this area, the village has been marginally affected by cyclones but has suffered many problems from flooding caused by heavy precipitation.

## 5.3 SIMILARITIES AND DISPARITIES

The previous village summaries have highlighted some of the demographic and physical attributes of the case study villages. As mentioned earlier in this chapter, the villages were selected based on the four levels of development and NGO activity that are summarised below (table 5.4). Chapter four of this thesis has explained the other factors involved in the village selection, such as the intention to minimise 'project bias', 'spatial bias' and to achieve a cross section of villages throughout the research.

**Table 5.4: The villages in the Andhra Pradesh Coastal Survey**

| | EAST GODAVARI DISTRICT | | NELLORE DISTRICT |
|---|---|---|---|
| **Type of village** | **Tallarevu Mandal** | **Katrenikona Mandal** | **Thotapalligudur Mandal** |
| Village with long term NGO involvement | Peddavalasala *(f)* | Cheriyanam *(f)* | Kottapattapalem *(f)* |
| Village with recent NGO involvement only | Laxmipathipuram *(f)* | Pandi *(f)* | Venkateswarapalem *(m)* |
| Village with no NGO involvement | Bodduvarilanka *(a)* | Malakondayapuram *(f)* | Koduru Mukkantam C. *(m)* |
| Relatively developed village with no NGO | Patavala *(a)* | Koppigunta *(a)* | Villukanipalli *(a)* |

Notes: *(f)* Indicates the village is predominately a fishing village (typically homogenous)
*(a)* Indicates the village is predominately an agricultural village (typically heterogeneous)
*(m)* Indicates the village is a mixed occupation village

### CASTE COMPOSITION OF VILLAGE

By the nature of the research design, the case study villages display differences and similarities based on the four types of village selected. One key difference is the sociological element related to whether the village is single caste or multi-caste. The notes that accompany table 5.4 make a simplified distinction that is based on the village surveys and the attitudes regarding perceptions of 'community' provided by the informants. This will be discussed in more detail in the following chapters but an early assessment of the effects of homogeneity and heterogeneity on the village level social networks suggests that

it is easier to find harmony and consensus in the single caste villages than those that are multi-caste. This will be analysed later in this thesis with a view to assessing how much of an influence homogeneity and heterogeneity have on the strength of social institutions and networks and the consequential impact of this on levels of vulnerability.

## LEVELS OF BASIC NEEDS

Access to safe drinking water, safe housing, clothing, education, health care and communications are considered to be every person's basic needs (WHO 2000). With this as a benchmark, we can assess what levels of basic needs have been achieved in the case study villages. During the research it was verified that some of the key issues that arose were related to the lack of basic needs, such as poor drinking water quality, non-existent sanitation, lack of teachers and inequitable resource allocation during relief and rehabilitation. With reference to access to safe drinking water two of the three villages that have not had any NGO activity rely on shallow wells that produce poor quality brackish water supplies. These villages are also without medical facilities and lack good quality housing. The exception to the rule in this case is the village located in the Thotapalligudur Mandal in Nellore, which is representative of the relatively high levels of amenities available throughout the mandal. All of the villages in Tallarevu and Thotapalliguduru case study mandals have at least a primary school, while only two of the four villages in the Katrenikona case study possess primary schools. The two villages that do not possess schools in Katrenikona have in one case not had any NGO support and in the other case had only recent and minimal NGO support.

This information indicates that the role of NGOs in advocating the need to provide basic needs to rural and remote villages is important and may have largely been successful. If we compare the three mandals on the basis of the levels of basic needs achieved in the case study villages, it appears that Thotapalligudur (in Nellore) is the most developed while Katrenikona (in East Godavari) is the least developed of the mandals. This is a generalisation, but provides an insight into the levels of development found in the case study villages.

## DISTRIBUTION AND ACCESS TO RESOURCES

During this research many villagers complained about the inequality of resource distribution and were adamant that the cause of this was due to the unchallenged power of the village elders. Complaints about the honesty of the village elders were voiced on a number of occasions during the research.

*"In this village there are only three families in my caste, the remaining people belong to B.C and O.C castes which are the higher castes in the village. They are the dominating people in this village, there are some S.C people also living in this village but typically they are poor folk. The village elder helps rich people only".*

(Interviewee 14: 25-year-old woman (ST) from multi-caste village)

However, in contrast to this statement, the village elder in question stated;

*"Basically, some communities will utilise Government Programmes more than others will. Some communities don't know that how to use the Government programmes, like some SC, BC, ST people, they are just beggars. For example, they receive a Government loan to construct a house, but then when they want the house whitewashed they want more handouts without contributing a single rupee to the costs, how can this be possible? That is why these folk are not developed. Those who are willing to work hard are the people and communities that are developed."*

(Interviewee 17: 49 year old male (OC) is a Village Elder)

Nonetheless, concerns have also been voiced by villagers regarding the distribution of resources after a crisis event, particularly the 1996 cyclone in East Godavari.

*"Village elders are only useful for influential persons. The village elders are only interested in not helping the poor people, they didn't distribute the relief equally."*

(Interviewee 2, 33-year-old woman (BC) in single caste village)

*"In my village there are lots of village elders involved in fraud; they are like devils. They ignore my suggestions about village issues, and I asked the village Karanam for some compensation for the damage to my house. But he didn't give me any money."*

(Interviewee 8, male MPTC (BC) in single caste village)

*"The village elder didn't help me, because I belong to the Congress Party."*

(Interviewee 18, 50-year-old male in single caste village)

In many cases the village elders have not been elected and their position is hereditary, typically belonging to a powerful land-owning/wealthy/politically/numerically strong caste or family from the village (Narayanasamy et al. 2000). This can be a problem in multi-caste villages but also in single caste villages because in some cases the village elders may be from a certain sub-caste (*Jati*) that is traditionally a stronger element of the caste[53].

NGOs have claimed that in some villages, the establishment of 'self help groups' has been constrained by the village elders, because these groups may challenge the *status quo* and the traditional dominance of the village elders. This situation could be referred to as the 'political reality' that can cause difficulties for NGOs in becoming involved in community development, because ideally their projects require the endorsement of the village elders who may view the motives of NGOs very sceptically. Situations such as this can be exacerbated when the 'self help groups' are established for women, because there are signs that indicate there can be an attitude against the empowerment of women from certain sections of the male community.

*"When the women are leaving the village for outside meetings, we don't know what they are doing. This is not a problem with good women but some of the women are getting involved in bad things."*

(Interview N3, male (BC) village elder in single caste village)

However, it should be added that some of the concerns regarding the involvement of women in meeting with NGOs and self help groups may be related to the practicalities of women's traditional home and child care responsibilities.

*"In my view it is not a good thing, once the woman leaves the house to go to these meetings, who will take care of my children, that is just my personal opinion, but women are going to these meetings anyway."*

(Interviewee N6, male (OC) Panchayat President in multi caste village)

These issues again highlight some of the problems that can occur in the 'political reality' of village life and are issues that to varying degrees are supported by the literature. These issues will be investigated in more depth during the later chapters of this thesis.

[53] Mayer (1965) and Ghurye (1969) believe that it is these subcastes that are predominately recognised by individuals rather than the broad Varna defined hierarchy.

## 5.4 RESPONDENT DISCOURSE

During Chapter Two of this thesis, definitions were provided regarding the concepts of vulnerability, social institutions and political realities. These concepts are an integral element of this thesis but were not integral elements of the actual collection of data in the field where a different discourse was required that was not alien to the respondents. It is important for the researcher in the field to gain a local perspective of matters related to discourse (Chambers 1983) and thereby to ascertain what the perceptions of the respondents are regarding working concepts such as 'risk' and 'community', both being concepts that were utilised during the collection of data in the field but may not have been appropriately translated from the western academic discourse to the rural Indian scenario. As Buckle, Marsh and Smale (2003) state, it is important to know how terms such as 'community' and 'risk' are defined in the field.

> *"(T)here is agreement that community is a core disaster management concept, but whether in practice this refers to issues such as community as locality, community as interest group or community as demographic group (gender or age, for example) is often not clear. Second, the linkages and interactions between these core concepts are not well understood, either. How do communities (however defined) define and deal with risk?; How does risk translate to vulnerability (or vice versa)?"*
>
> (Buckle et al 2003:81)

Consequently, an important element of the research process was to obtain an insight into the views of the respondents regarding feelings and experiences related to concepts such as 'risk' and 'community'. This element of the research is particularly critical as a respondent's perception of their 'community' may influence whom they possess social networks with. In a similar vein, the respondent's 'risk' perception may also influence whom they possess social networks with. Of course, causality may be an issue here; with the respondent's perceptions of 'community' and 'risk' actually being influenced by whom they possess social networks with. These issues of causality will be discussed in the following chapters. The following information was obtained via data collected during the questionnaire surveys and semi-structured interviews conducted in 2002.

### CONCEPT OF COMMUNITY - VILLAGE LEVEL PERCEPTIONS

The respondents were asked a number of open and closed questions related to what their caste was, who they turned to in times of need, where they went to worship, where their 'group' congregated for village meetings and which 'community' they affiliated with. It was important to make the distinction during the translation of the Telugu version of the

questionnaire between the Telugu words for caste (*kulamu*) and community (*tega*), as sometimes the word for caste (*kulamu*) is used as a synonym for both caste and community. This idiom may be illustrative in itself as an indication to how the concept of community is defined by the respondents but it was essential to ascertain for certain via the use of a range of open and closed questions.

The majority (63 percent) of the respondents based their concept of community on caste or caste classification. All the OC castes based their concept of community on caste/caste classification. Additionally, 31 percent of the respondents based their concept of community on occupation, which is also intrinsically linked with the caste system because it is extremely rare for respondents to identify themselves with occupations that transcend caste boundaries (in the case study area, fisherfolk are all BC and washerfolk are all BC). Respondents that chose a concept of community based along family & kinship lines (only three percent) will also be intrinsically linked with caste, as it is extremely rare for people to marry outside their caste. A concept of community based on geography (i.e. a neighbourhood, village, town etc.) was only stated by one percent of the respondents (all belonged to the Backwards Caste (BC) classification and lived in single caste villages). These responses were verified by referring to other questions related to where the respondents congregated for village meetings and whom they perceived their community leaders to be.

Therefore, a vast majority (94 percent) of the respondents based their concept of community on caste/caste category, which may (i.e. a single caste village) or may not (i.e. part of a multi-caste village) equate to the whole village geographically[54]. This is important to acknowledge when undertaking research in Indian villages, especially heterogeneous (multi-caste) villages, as a community based organisation (CBO) may only cater for a selective section of the village in which it operates, thereby some will be included in the CBOs projects and invariably some will be excluded. It is important to not only recognise that CBOs may not involve everyone who lives in the village, but it is particularly important to understand why some are included and why some are excluded.

[54] A dictionary definition of 'community' makes the distinction between the **geographic** concept (all the people living in a particular district, city etc.) and the concept based on **affiliation** (a group of people living together as a smaller social unit within a larger one and having interests, work, etc. in common). Collins Concise Dictionary of the English Language (1980)

## CONCEPT OF COMMUNITY – NGO & GOVERNMENTAL PERCEPTIONS

As discussed in Chapter Two, Governmental and non-governmental organisations (NGOs) focus on vulnerability reduction in cyclone prone areas and have to work within the context of the interrelationships between the main determinants of Indian social institutions that include caste ties and affiliations and family and kinship ties. These organisations also have to work within the prevailing "political realities"; that are to some extent determined by social institutions but are also determined by the phenomena of the impact of the *dominant caste* on politics and political factionalism and the effects of social institutions on these realities, and vice versa. It is therefore important to ascertain what perceptions of concepts like risk and community these important institutions hold. Any possible differences in the perceptions held by the villagers and the Government and NGOs that work in those villages may highlight fundamental problems with the ways in which these organisations have designed their vulnerability reduction initiatives.

### NGO Perceptions

Eight NGO employees (from four different NGOs) were asked what they thought their working definition of community was and also which communities they worked with. Five NGO employees stated that their concept of community was based on caste classification and the other three believed that 'communities' were defined by occupation type. In all the cases when NGO employees defined communities by occupation type, they were referring to 'fisherfolk', being the Agnikulakshatriya or Pattapu castes (BC). From the data it appears that the working definition of community is based on caste classification or occupation type. Therefore, as we have already discussed, caste and occupation are typically interlinked and consequently the definitions of the NGO employees are very closely linked to those of the village level respondents in that in the majority of cases, the perception of a community is based on caste or caste related determinants.

This compatibility between the perceptions of community by the villagers and the NGOs is to some extent to be expected, especially if attempts at community level participation have been anywhere near successful. However, this compatibility may also be symptomatic of the ways in which 'needy' groups are classified. For example, a personal correspondence with the Executive Secretary of a NGO stated that the central Indian government and the Andhra Pradesh State government provide their funding towards developmental assistance and vulnerability reduction to communities in terms of targeting 'fisherfolk' and Scheduled Tribals (ST), rather than specifically assessing the most vulnerable. The Executive

Secretary in question wished to remain totally anonymous because he said such statements may jeopardise any future funding his organisation applied for but he did go on to state the following.

> *"Of course, running a NGO is a business and I have my duties to secure the employment of my staff and to feed my family. Consequently, if funding is available to work with the 'fisherfolk' for example, this is what we will endeavour to do, even if those particular people are not the most needy people in the region. Also 'fisherfolk' villages tend to be single caste villages and if we are to achieve the targets expected of us to obtain future funding, it is these single caste villages that we will work with because we do not then have the inter-caste related barriers to contend with, that you would find in any mixed caste village."*
>
> (Comments in Questionnaire Survey by Executive Secretary of a NGO)

In view of this it is particularly interesting to note that in this study, the six villages where NGOs operate are all single caste 'fisherfolk' villages. Concerted attempts were made during the course of the research to find multi-caste villages where NGOs operated but none were found in the case study areas. This observation may highlight a fundamental flaw in not just the way many NGOs operate in this region through the targeting of possible 'easy cases', but more importantly it may mean that the most vulnerable members of multi-caste villages do not receive support from NGOs. This important issue will be discussed in more depth later in this thesis.

**Governmental Perceptions**

Eleven Governmental employees (eight Mandal level and three from the Zilla Parishad[55]) were asked what they thought their working definition of community was and also which communities they worked with. Eight of these Government employees (73 percent) stated that their working concept of community was based on caste classification and the other three employees (27 percent) believed communities were defined by occupation type. In all the cases when they defined communities by occupation type, they were referring to 'fisherfolk', being the Agnikulakshatriya or Pattapu castes (BC). From the data it appears that the working definition of community is based on caste classification or occupation type. Therefore, as earlier discussions have highlighted, caste and occupation are typically interlinked and consequently the definitions of the Governmental employees (like the NGO employees) are very closely linked to those of the village level respondents in that in the

[55] The Zilla Parishad is the interface between the village and District level government

majority of cases, the perception of a community is based on caste or caste related determinants.

## CONCEPT OF RISK - VILLAGE LEVEL PERCEPTIONS

Rather than asking the respondents what they perceived the concept of risk to be (it was deemed that this would be akin to putting words into their mouths) it was necessary to ask a number of open and closed questions in the questionnaire survey that were related to problems in the respondent's village and what they felt the biggest threats were to their livelihoods. Livelihood issues are important factors, particularly in villages and communities where the main occupations can be seasonal, being affected by factors such as Government imposed restrictions (such as fishing rights) immigration of workers and growing seasons influenced by the climate.

### Threats to livelihood

When asked an open question related to what they perceived as being the largest threats to their livelihoods, a relatively high proportion of the respondents (57 percent) stated that they believed low yields (related to poor crops or fish catches) were most damaging to their livelihoods. However, a substantial amount (33 percent) believed that cyclone related damages were the greatest threat to their livelihoods and 6 percent believed it was the lack of basic needs. However, when asked a closed question and given the choice between the worst effects of low yields or cyclone and flood related damages, a vast majority of the respondents (89 percent) stated that the failure of crops/fish catches were more damaging to them than the effects of cyclones/floods. Overall, this indicates that the biggest concerns for the respondents are the day-to-day factors that affect their lives, whereas cyclones and floods are perceived as rare but damaging occurrences. This view was substantiated to some extent when the respondents were asked what they or their communities could do to prepare for the next possible cyclone. The majority (85 percent) of the respondents stated that they could do nothing to prepare for the next cyclone because it is a natural calamity and it cannot be stopped (82.5 percent) or that it was seen as 'an act of God' (2.5 percent). It appears that there is a somewhat resigned view to how people and communities as a whole can prepare (and mitigate) for hazards such as a tropical cyclone. In contrast, problems related to everyday needs such as village related problems and issues regarding low yields, such as low fish catches and poor crops, can be resolved by the institutions such as the Government and NGOs or even the villagers themselves.

The village level and non village level respondents were also asked a number of open questions related to problems that they as individuals and their village faced. Table 5.5

highlights a) how the household and non-household institutions perceive the biggest problems in the villages and b) displays the disparity between the perceptions of the villagers (household) and non-household institutions, such as the Government and NGOs, regarding these perceptions.

**Table 5.5: Household and non-household perceptions of village level problems**

| The worst problems in the villages | | |
|---|---|---|
| **Type of Problem** | **Villagers' response (%)** | **Govt/NGO Response (%)** |
| Basic needs related | 54% | 22% |
| Cyclone related | 21% | 9% |
| Employment related | 12% | 39% |
| Other | 13% | 30% |

*Notes:* Basic needs = drinking water, sanitation, education, health care, electricity and roads/transport
Cyclone related = cyclone threat, no/poor cyclone shelter, no/cyclone resistant housing
Employment related = No jobs, aquaculture problems, mechanised trawlers, poor nets/boats
Other = N/A, Don't know

What is particularly interesting to note in Table 5.5 is not so much the emphasis upon problems related to 'everyday' situations such as the lack of basic needs and employment, but the disparity between the perceptions of the villagers and the NGOs and the Government respondents. The villagers clearly place more importance upon problems related to the lack of provision of basic needs within their villages than the Government and NGO respondents do. The Government and the NGOs are more concerned with problems related to unemployment and competition from mechanised trawlers and problems related to aquaculture. With reference to cyclone related problems the village level respondents actually perceive such hazards as a bigger problem (21 percent) than the Government or NGOs (9 percent).

**Risk = Hazard + Vulnerability**

Blaikie et al (1994) base their concept of risk on the equation 'risk equals hazards plus vulnerability (R=H+V)'. When using this equation as the basis for the concept of risk and from the previous discussion, the villagers believe that the biggest threat (hazard) to them and their livelihoods are low yields related to crops and fish catches. The concern about low yields is an 'everyday' hazard for most villagers and can be affected by macro-forces (such as climate change, increases in the number of mechanised trawlers, the denudation of mangroves and the effects of cyclones and floods). The threat of low yields can also be affected by micro-forces (such as ill-health disabling the main workers in the family[56], increases in underemployment due to increases in amounts of migrant workers and general wear and tear to fishing or agricultural equipment). Therefore the hazard, in this case

[56] Chambers defines this as ablebodiedness, or the ability to use labour power effectively (Chambers 1989: 4)

being 'low yields', is an everyday threat and not an infrequent occurrence like a flood or cyclone.

When looking at vulnerability it is useful to scrutinise the determinants of vulnerability discussed in Chapter Two. The villagers stated that the lack of basic needs was the main problem with the villages in which they live therefore the determinants that are particularly pertinent for the villagers are the determinants of poverty and individual and social resilience. The lack of basic needs is an issue that is affected by levels of poverty to the individual but also the village, the mandal and possibly the District. Low levels of basic needs will also invariably affect how the individual and society can cope with a crisis event, so it appears that the main influence of the villagers levels of vulnerability is the lack of basic needs, therefore this is again a problem that affects people on an 'everyday' basis. A concept of risk based on the equation R=H+V and related to the concerns and experiences of the village level respondents indicates that Risk = the threat of low yields (hazard) + the lack of basic needs (vulnerability). Therefore, risk for the village level respondents is an everyday concept rather than one related to relatively rare but devastating events such as cyclones and floods.

### CONCEPT OF RISK – NGO AND GOVERNMENTAL PERCEPTIONS

Table 5.5 highlighted a) how the household and non-household institutions perceive the biggest problems in the villages and b) displayed the disparity between the perceptions of the villagers (household) and non-household institutions, such as the Government and NGOs, regarding these perceptions. The villagers placed more importance upon problems related to the lack of provision of basic needs within their villages than the Government and NGO respondents did. The Government and the NGOs were more concerned with problems related to unemployment and competition from mechanised trawlers and problems related to aquaculture.

#### Threats to Livelihood

Regarding the greatest threats to the villagers' livelihoods Table 5.6 shows that the Government perceives the possible problems associated with aquaculture businesses, such as the destruction of paddy fields to construct tanks and the increasing problems with diseased prawns and the immunity of the diseases to antibiotics, are a huge problem along with low fish catches and crop yields. These perceptions fall in line with the 'everyday' nature of the threats that the village level respondents highlighted. The NGOs also

perceive the threats to villagers' livelihoods as everyday problems such as aquaculture, poor yields, unemployment and unsustainable practices such as prawn seed collection methods and destruction of mangrove forests. Therefore, generally the Government, the NGOs and the villagers themselves perceive the threats to the villagers' livelihoods as being everyday occurrences a point that is supported by the fact that none of the non-village level respondents perceived tropical cyclone related problems as being a threat.

**Table 5.6: Non-village respondents' perceptions of the threats to the villagers' livelihoods**

| | Organisation | | | |
|---|---|---|---|---|
| **Threats to villagers' livelihoods** | **Government** | **Local council/elder** | **NGO** | **Total** |
| **Aquaculture** | 57% | 100% | 13% | 44% |
| **Poor yields (fishing/crops)** | 43% | - | 25% | 28% |
| **Unemployment** | - | - | 13% | 6% |
| **Unsustainable practices** | - | - | 13% | 6% |
| **Basic needs related** | - | - | 36% | 16% |

**Risk = Hazard + Vulnerability**

As discussed earlier, Blaikie et al (1994) base their concept of risk on the equation 'risk equals hazards plus vulnerability (R=H+V)'. When using this equation as the basis for the concept of risk and from the previous discussion, the NGOs believe that the biggest threat (hazard) to the villagers and their livelihoods are due to problems related to the lack of basic needs. The concern about the lack of basic needs is an 'everyday' hazard for most villagers. The threats of low yields, and problems with unemployment and aquaculture are also everyday problems, not relatively rare occurrences like tropical cyclones. Therefore the Government and the NGOs perceive the main hazards to be everyday threats and not infrequent occurrences like a flood or cyclone event.

Consequently, the concept of risk based on the equation R=H+V and related to the concerns and experiences of the NGO respondents indicates that Risk = the threat of low yields, aquaculture problems and unemployment (hazards) + the lack of basic needs (vulnerability). Therefore, the NGOs views risk for the villages in which they operate as an everyday concept rather than one related to relatively rare but devastating events such as cyclones and floods. Likewise, the Government also views risk for the villages as an everyday concept rather than one related to cyclones and floods, but for some reason view the problems associated with aquaculture to be the biggest issue, while neglecting to acknowledge that the lack of basic needs in villages and unemployment are also huge threats to the livelihood of the villagers.

## 5.5 IMPLICATIONS OF THESE PERCEPTIONS

Regarding perceptions of the concept of community there appears to be a consensus between the village level respondents and the NGO and Governmental employees, in that community is largely defined by caste classification and in nearly all cases by caste related factors (such as occupation). The prominence of caste as a definer of communities is an important one to be aware of, particularly for International Non-Governmental Organisations who may believe the rhetoric that caste is a mere relic of the past and plays no part in modern India, as some commentators such as Bhatt (1975) and Mukherjee (2000) espouse.

If caste is so prominent a factor in how individuals and communities are viewed and possibly targeted by NGOs and the Government, what importance is placed upon the family and kinship related ties? This query is answered by Béteille (2000) who believes that the role of kinship ties in modern day India is so ingrained with the traditional hierarchy of caste that it is difficult to make a case for the influence of kinship alone without regarding the overriding influence of caste. Therefore, like the types of occupations individuals and families pursue in rural India, family and kinship are fundamentally governed by caste. The main concern for the context of this thesis, is if the hierarchical caste system is so pervasive in the predominately Hindu regions of coastal Andhra Pradesh, is this hierarchy reproduced in the ways that people can access the resources they require to reduce their vulnerability? This concern will be analysed in the following chapters, but first it is necessary to assess the implications of how the perceptions of risk from village, through NGO and to Governmental levels of society compare.

From the previous discussion it appears that the village level respondents (household level) have a perception of risk based on everyday regular occurrences such as low yields and the lack of basic needs (to prepare for and cope with crisis events). Importantly, the key non-household institutions such as the Government and the NGOs appear to have similar perceptions of the concepts of community and risk. However, the previous discussion has raised a number of issues related to the lack of basic needs in the villages, something that is not acknowledged by the government respondents or the village elders but is recognised by the NGOs.

The lack of basic needs is an issue that the respondents have to deal with on an everyday basis and it would be interesting to ascertain what institutions the respondents feel should be resolving these problems. Table 5.7 illustrates that the perception of the household level respondents is that the provision of basic needs in villages is the main responsibility of the Government. In contrast the respondents do not feel that improvements to basic needs are the responsibility of CBOs.

**Table 5.7: Institutions the villagers believe should resolve the problems related to basic needs[57]**

| | Type of Institution | | | | | |
|---|---|---|---|---|---|---|
| Village category | Government | NGOs | Village Elders | Political leaders | CBOs | Villagers |
| Category 1 | 69% | 1% | 8% | 16% | - | 6% |
| Category 2 | 66% | 4% | 9% | 21% | - | - |
| Category 3 | 61% | - | 7% | 32% | - | - |
| Category 4 | 74% | 1% | 3% | 22% | - | - |
| Average | 68% | 2% | 6% | 23% | 0% | 1% |

Note: Basic needs = drinking water, sanitation, education, health care, electricity and roads/transport

Similarly, it is interesting to note that it is only some of the Category 1 villagers (in villages with long-term NGOs) who felt the villagers themselves were responsible for addressing problems related to basic needs. This may reflect the initiatives of the NGOs who attempt to encourage the villagers to help themselves. The Category 2 villages place a slightly higher onus onto NGOs than villages in the other categories, which may indicate a higher expectation on NGOs to address problems related to basic needs. Category 3 villages (villages with very basic amenities and no NGO) place a larger reliance upon political leaders to resolve problems related to basic needs provision. The implications of this are that the Governmental Departments are perceived as the 'beasts of burden' when it comes to addressing the lack of basic needs that are fundamental requirements for humans. If the government wish to change perceptions related to the responsibility for addressing improvements in basic needs, it could be in their interests to encourage NGOs that advocate the idea of helping the villagers to help themselves.

The concerns about low yields related to fish catches and agricultural crops are more difficult to address, being affected by macro and micro-forces. It is difficult to ascertain at what level of the agricultural and fishing 'communities' these low yields are the most destructive. One argument would be that the people that own the land for growing crops and own fishing boats may lose more in relative terms than those they employ to work on

[57] Statistics: $?^2 = 20.703$; P= .055/NS

the fields or rent their boats to. However, many farmers carry insurance to cover lost crops and can also utilise adaptive strategies, such as reducing the amount of people they employ in harvesting their crops, resorting to only using family members to work in the fields, and even constructing aquaculture tanks on their land. Likewise, people that rent out fishing boats may increase rental charges (putting the poorer fishermen under increased financial pressures) or insist on an increased proportion of the fish catch in lieu of rentals that cannot be paid.

Invariably the poorer agricultural workers who work as labourers for the land owners and fishermen who have to rent boats will be most affected by low yields, losing less in relative terms but more in absolute terms. In the most simple of terms the people that rely on the more powerful land owners and boat owners act as a buffer between the worst effects of low yields and the impact upon the more powerful members of their communities. Typically the poor will be the ones that suffer first and most in absolute terms but this is more of a problem for castes involved in 'traditional' occupations that are tied to their caste (i.e. Agnikulakshatriya & Pattapu (fishing), Setti Balija (agricultural labour) Yadava (cattle breeders) and Chakkali (laundry) as it is possibly more difficult for them to diversify their occupations than some other castes because their identity is somewhat entrenched in their occupation. In contrast to this is how many of the lower castes (SC & ST) such as Erukala (pig breeders), Mala (general labour), Madiga (leather workers), Yenadis (rat catchers) may still undertake their traditional occupations, that can sometimes be very specific and restrictive in terms of income generation, but have consequently learnt the need to diversify their income generating activities as a strategy to exist.

The issues raised here concerning some of these low castes are particularly problematic when we refer back to earlier in this chapter regarding the comments by the Executive Secretary of a NGO and the ways in which vulnerable communities are targeted[58]. If these comments are a true reflection upon how in practise funding from the central and State governments are directed, then low caste communities that live in multi-caste villages may be excluded from the benefits of developmental assistance and vulnerability reduction initiatives. If this is the case, some of the poorest, powerless and most marginalised sections of society along the Andhra Pradesh coastline may never reduce their relative

[58] The statement of the Executive Secretary of the NGO has been substantiated to some extent via informal discussions with other people involved with NGOs in India and other Asian countries.

vulnerability, thereby being forced to adopt their own everyday coping strategies that they utilise during a tropical cyclone as their only means of survival.

From this contextual analysis it appears that factors such as caste, occupation and the heterogeneity or homogeneity of a village may have a bearing upon what types of resources (that can help reduce levels of vulnerability) are made available in villages in coastal Andhra Pradesh and possibly of most importance, who in society does and does not have access to these resources. The following chapters will analyse how factors such as these, along with social institutions and networks, can influence cyclone vulnerability reduction with a particular focus upon the key socio-economic determinants of vulnerability.

## 6.1 FACTORS THAT INFLUENCE LEVELS OF VULNERABILITY

As discussed in Chapter Two, there are four main socio-economic determinants that affect levels of vulnerability, being; 1) poverty, 2) marginalisation, 3) power, and 4) individual and social resilience. This thesis is concerned with how social networks with institutions can influence vulnerability reduction; therefore it is necessary to find the key factors that constitute each of the four main socio-economic determinants. There are many factors that can constitute each determinant but it was important to make these factors specifically appropriate to the context of the case study areas and relevant for the hazards the respondents faced based on the literature and the previous contextual analysis. Once these factors were established it was possible by using the collected data to measure each respondent's access to each of the factors and thereby to each of the four main determinants (refer to Table 6.1).

**Table 6.1: Four main socio-economic determinants of vulnerability and the factors that constitute them**

| DETERMINANT | FACTORS | SOURCE |
|---|---|---|
| **Poverty** | 1. Does the respondent own livestock? | Q, O |
| | 2. Does the respondent own or lease land? | Q, S, O |
| | 3. Does the respondent have savings/access to credit? | Q, I |
| | 4. Does the respondent own income generating equipment (e.g. boat, pump)? | Q, O |
| | 5. Does the respondent own other assets (e.g. bicycle, scooter)? | Q, O |
| **Marginalisation** | 6. Does the respondent have access to protected drinking water? | Q, S |
| | 7. Does the respondent have access to (own) a cyclone resistant house? | Q, S, O |
| | 8. Does the respondent have access to a cyclone shelter? | Q, S, O |
| | 9. Does the respondent have access to a Medical Centre within 5kms? | Q, S |
| | 10. Does the respondent have higher than primary level education? | Q, S |
| **Power** | 11. Does the respondent have networks with the State/District Government? | Soc., I |
| | 12. Does the respondent have networks with Mandal Officials? | Soc., I |
| | 13. Does the respondent have networks with the Panchayat/Village Elders? | Soc., Q, I |
| | 14. Does the respondent have networks with a Community Leader? | Soc., I |
| | 15. Does the respondent have networks with a Political Party/Leader? | Soc., Q, I |
| **Individual & social resilience** | 16. Does the respondent have a good worker/dependant ratio? | Q |
| | 17. Does the respondent have family members in the same village? | Q, Soc. |
| | 18. Does the respondent have links with family members outside the village? | Q, Soc. |
| | 19. Is the respondent's caste in the majority within the village? | Q, S, I |
| | 20. Is the respondent actively involved with a NGO/INGO? | Q, S, I |

Note: Each factor is numbered to aid cross-referencing in the ensuing analysis
*Sources of data –*
Q= questionnaire; S= village mapping survey; O= observations; I= interviews; Soc.= sociograms

**Poverty:** As discussed in Chapter Two, the poor will typically possess few assets and have little choice about where they live and how they live (Sen 1981; World Bank 1990). For example, landless squatters will typically live on marginal land that may be located in hazardous areas but more importantly they will have few assets. Information related to respondents' daily (and typically informal) income was unreliable, a problem experienced in the pilot questionnaires (refer to page 86 in Chapter Four). Poverty is difficult to measure objectively; therefore for the context of this study, poverty is best assessed in terms of access to key assets such as land and livestock ownership, income generating equipment and savings, thereby providing a 'triangulated' perspective of poverty. Respondents with the least access to these resources are relatively the poorest members of society.

**Marginalisation:** It has been observed in Chapter Two that in the case of India it is not exclusion from society that affects poverty but rather inclusion in a society based on strict hierarchical structures (IILS 1996) resulting in degrees of marginalisation. Consequently, marginalisation is a determinant that could be strongly influenced by social institutions and networks. If the marginalisation of certain members of a village exists the extent of this marginalisation can be assessed in terms of their access to key public services, such as safe drinking water, medical care, education and protection from tropical storms (such as cyclone shelters and cyclone resistant housing). Members of the community with the least access to these key physical public resources are those that are the most marginalised in terms of this research.

**Power:** Winchester (1992, 2000, 2001) measured power in terms of access to social resources (as well as physical and economic resources). In the context of this study, power is best assessed in terms of access to key institutions such as State and District Government, Mandal officials, the Panchayat, Community leaders and political representation because inequalities based on socio-political structures and traditional roles are influenced by social institutions that in some cases have been accused of corruption and nepotism (Davies & Hossain 1997; Dhesi 1998; Robbins 2000). Those with the least access to these five key public service officials are likely to be those with the lowest levels of relative power.

**Individual and social resilience:** Referring back to the five main survival strategies (Agarwal 1990) highlighted in Chapter Two (Box 2.1), it will be possible to question what influence social institutions and networks have on these 'coping strategies'. The types of social institutions and the strength of individuals and families social networks may influence strategies such as 'drawing upon communal resources' and 'drawing on social relationships'. Resilience will therefore be assessed in terms of the individual's access to non-governmental organisations, family members within and outside their village, the numerical dominance of their caste within the village and whether the household has a good or bad worker/dependant ratio[59]. Those with the least access to these important coping strategies will be those deemed to display the lowest levels of individual resilience.

The questionnaire surveys, observations, interviews, village surveys and sociograms undertaken during the fieldwork in Andhra Pradesh provided multiple sources of data related to how much access to each of the factors listed in table 6.1, each respondent and category of respondent (i.e. based on gender, caste classification, occupation) possessed. The respondents with most assets (low levels of poverty), those that are not marginalised (low marginalisation/exclusion), those with high access to key social institutions (potential power) and those with good access to the factors related to resilience (high levels of individual & social resilience) will be 'relatively' the least vulnerable. The relative aspect of the vulnerability is important because in the local 'grassroots' context it is critical to pinpoint those that are the most vulnerable. For example, in the Indian context, it could be perceived that the majority of people that live along the coastline bordering the Bay of Bengal are vulnerable to tropical storms, and in a way that perception is not wrong. However, in the arena of disaster management, where resources are finite, it makes good practise to initially target the most vulnerable.

## 6.2 RESOURCE ACCESSIBILITY INDEX

The dataset was structured to measure the respondents' access to the factors that constitute the four main determinants of vulnerability. The original dataset was based on a range of open and closed questions that provided a range of nominal, categorical and scale quantitative data and also detailed text qualitative data. Chapter Four discussed the way in which the research design made it possible to cross-check all the key responses provided by respondents. This cross-checking process was achieved by making the same inquiries in a number of different ways (observations, and open and closed questions) and in a number

[59] The dependency ratio is defined here as the ratio of the total number of family members, unadjusted by age, to the total number of working members within the household (see World Bank 1993b: 356)

of different mediums (mapping and questionnaire surveys, interviews and sociograms). The appropriate data was simplified to a basic binary level that consisted of straightforward 'yes' and 'no' responses to the factor questions listed in table 6.1. This redevelopment of the data provided the basis for the development of a 'Resource Accessibility Index' (RAI).

The resource accessibility index provides a means to gauge an individual's levels of access to the vulnerability factors. The matrix developed for the resource accessibility index consists of the four determinants of vulnerability and their individual factors as discussed above, providing a total of 20 factors in all (five factors per determinant). Thereby, if a respondent possessed access to all the factors he/she would score one point for each factor that they have access to, scoring a maximum of 20 points for their resource accessibility index. In fact, the highest score on the index was 13, with 3 being the lowest score on three occasions. The mean score on the resource accessibility index was 8.01. The resource accessibility index scores for each respondent were calculated using MS Excel (the spreadsheet used for the complete resource accessibility index is provided in Appendix D) which were then entered into SPSS (version 11) thereby allowing the mean score for each determinant (and the total index) to be calculated based on the potentially key factors that influence levels of vulnerability. Using the resource accessibility index as a guide it has been possible to gauge how much of an influence factors such as socio-economic status, caste, gender, and age play in determining an individual's access to the resources that can reduce their levels of vulnerability.

### RAI Correlation Observations

The Resource Accessibility Index (RAI) merely provides a means to assess the levels of key resources accessible to each of the respondents but it should also be noted that the correlations observed here are not necessarily pure correlations. The way in which the RAI has been constructed will mean that in a number of cases some variables will be cross tabulated with themselves, for example when 'levels of education' is cross tabulated with the RAI because one of the twenty factors that constitute the RAI is related to whether the respondent has attained more than a primary level of education. Other examples of this will occur when one or more of the twenty factors that constitutes the RAI are cross tabulated with the RAI because they could, in themselves, be significant influences on whether the respondents access the other factors in the RAI, such as involvement with a NGO, networks with Government officials and links with family members in other villages, to name a few. What is critical to acknowledge is that the RAI provides a basis for assessing

the factors that influence access to the key resources and invariably there will be influences and factors that overlap depending on the causality of the relationships (causality will be analysed in depth in Chapter Seven). The RAI enables this assessment by not looking at each individual factor but by initially looking at the RAI as a whole and/or by looking at the four key determinants of vulnerability. Therefore, the potential for skewed results due to cross tabulating variables that are also included in the RAI is acknowledged and taken into account when the in-depth analysis is undertaken later in the chapter.

## 6.3 THE KEY FACTORS

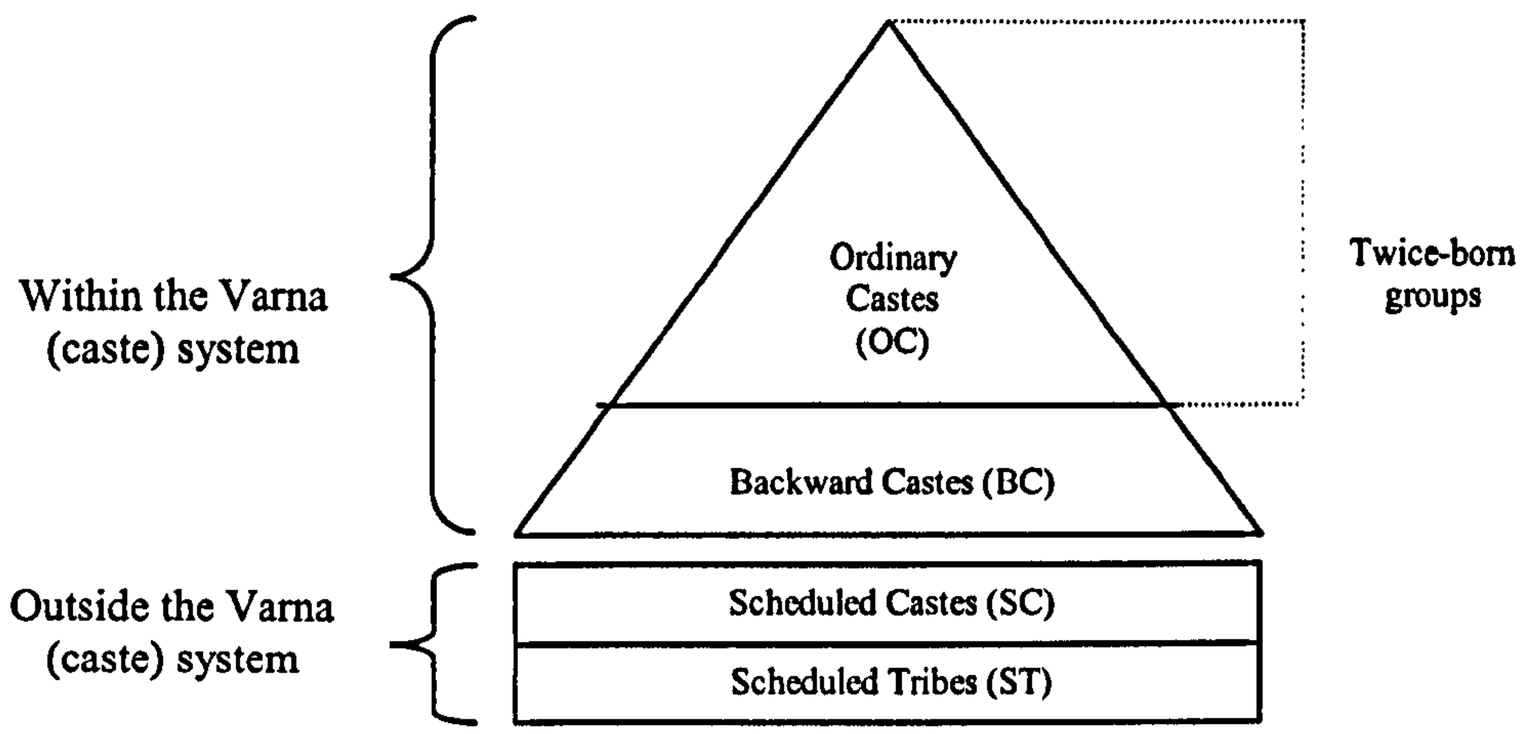
### CASTE

India has a secular constitution and increasingly modern institutions that do not necessarily subscribe to the traditional hierarchy of the caste system. However, the discussion in Chapter Two and the contextual analysis undertaken in Chapter Five highlights that attempts to dilute the influence of the caste system may not have necessarily resulted in a reduction in inequalities because traditional divisions of caste and community in rural India can be well entrenched resulting in low trust, little goodwill and the inefficiency of institutional activities (Béteille 2000). The contextual analysis in Chapter Five raises the concern that factors such as caste, occupation and the heterogeneity or homogeneity of a village may have some bearing upon what types of resources (that can help reduce levels of vulnerability) are made available in villages in coastal Andhra Pradesh.

The literature and the contextual analysis illustrates that privileged access to key resources is a recurring theme in the maintenance of inequalities in society, particularly when the power holders can confirm their position through the use of class, caste and family or political affiliations. Additionally, assessing how caste influences levels of vulnerability and access to resources is even more critical because it appears from the contextual analysis in Chapter Five that both the village level respondents and the Government and NGOs conceptualise community through caste or caste classification. The main concern for the context of this particular analysis is, if the hierarchical caste system is so pervasive in the predominately Hindu regions of coastal Andhra Pradesh then is this hierarchy reproduced in the ways that people can access the resources they require to reduce their vulnerability? The following analysis attempts to analyse to what extent caste is a factor in determining the people who do and do not have access to the key resources needed to reduce levels of vulnerability.

It would be useful at this point to remind the reader of the working classifications of caste that are typically utilised by the central Indian and Andhra Pradesh State Governments. Broadly, the classifications are a hierarchy, with Ordinary Castes (OC) at the top followed by Backward Castes (BC) and Scheduled Castes (SC) with Scheduled Tribals (ST) at the bottom of the scale. For administrative purposes some of these caste classifications have subcategories such as Economically Backward Castes (EBC) but for the context of this study the standard classifications are most appropriate. Figure 6.1 illustrates the hierarchy based on the caste classifications and can be compared to the Varna System illustrated by Kinsley (1993:154) in figure 2.3 of Chapter Two.

**Figure 6.1: The Caste Classification System**




In assessing how the caste system influences the four main factors that determine levels of vulnerability, the mean scores from the resource accessibility index were calculated by each respondent's caste classification (see Figure 6.2). This graph shows the percentage of respondents that possess relatively low, average or high access[60] to the key resources required to reduce levels of vulnerability in coastal Andhra Pradesh. Figure 6.2 shows that the highest caste classification (OC) has the highest proportion of respondents with high access to the key resources, while the lowest caste classification (ST) has the highest proportion of respondents with low access to the resources. The graph suggests that there is a 'sliding scale', regarding access to resources by caste classification, in that the higher the respondent's caste (OC & BC) the higher their access to the key resources, while the lower castes (SC & ST) possess the lowest access to the key resources, as illustrated in the following quote.

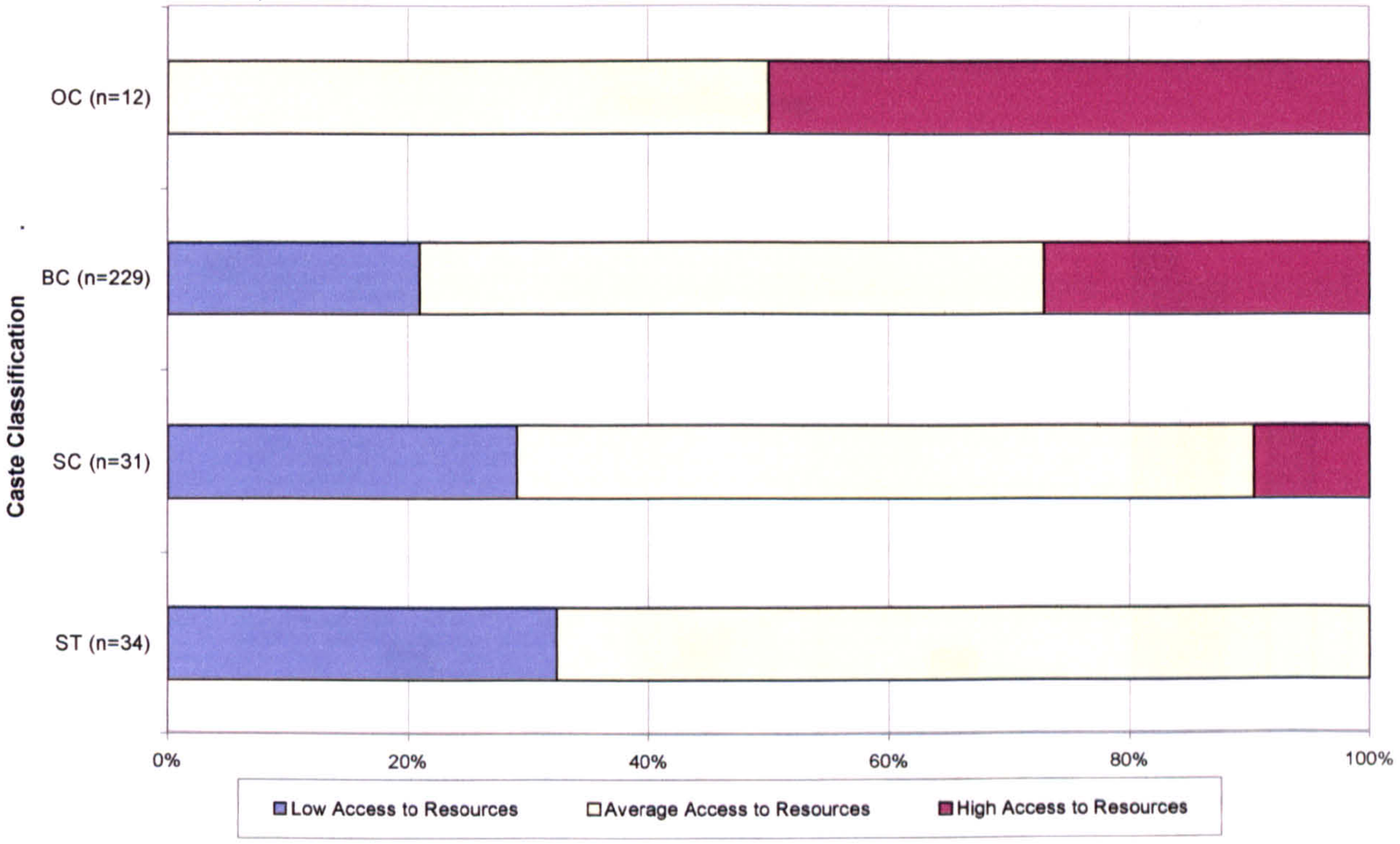
*"Village Elders don't help me for various reasons. Setti Balija (BC) people are only interested in their own opinions, and their own community, and they look out for their future only. All Setti Balija people are selfish people. The MLA, MP, MRO and*

[60] The resource accessibility scores are derived from the data provided by the Resource Accessibility Index. These scores were categorised on the basis of 33.3% percentiles of the range of 2- 20 (18).

*the Panchayat President are only interested in helping rich people only. The MRO will only help influential people. This is not only my experience; it is the case for all the people in my community. Setti Balija people are the ones that receive the most benefits from the Government's programmes."*

(Interviewee 9, 38-year-old (SC) woman from multi-caste village)

**Figure 6.2: Type of access to vulnerability reducing resources by caste classification**




This suggests that there is possibly not only a hierarchy of castes but there could also be a hierarchy of vulnerability that appears to be correlated with the caste system. Upadhaya (1997) suggests that those within the caste system (OC & BC) have higher access to resources than those outside the caste system (SC & ST); this is an observation that appears to be replicated in figure 6.2. However, it is important to assess why this type of pattern has occurred to ascertain in what ways the caste system influences levels of people's vulnerability. One way in which this may be assessed is by analysing the determinants that contribute to vulnerability by the mean RAI scores for each caste classification (see Table 6.2 and Figure 6.3).

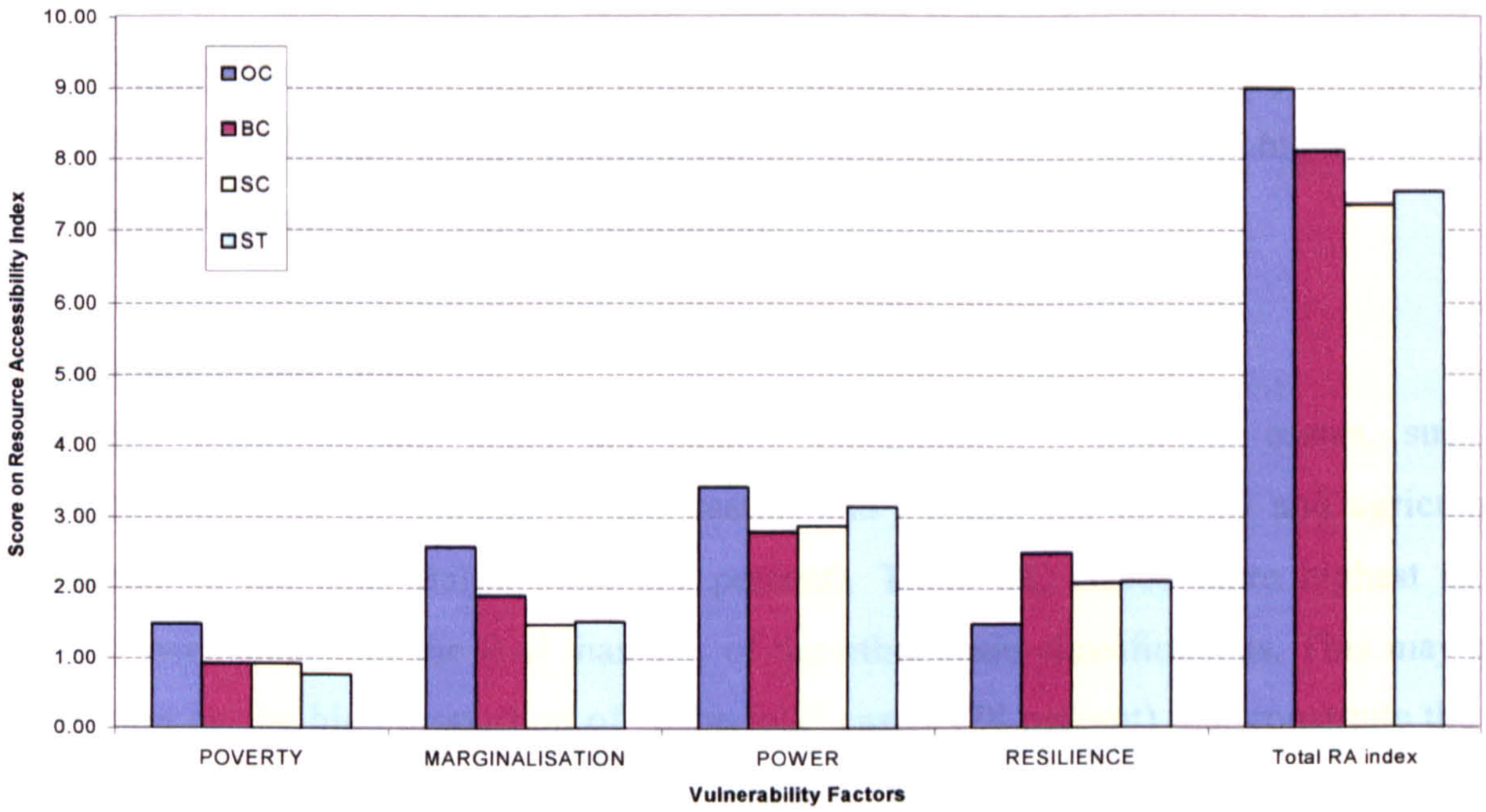
**Table 6.2: Resource Accessibility Index scores by Caste Classification**

| | RESOURCE ACCESSIBILITY INDEX (mean scores) | | | | |
|---|---|---|---|---|---|
| **CASTE** | **POVERTY [b]** | **MARGINALISATION [a]** | **POWER [a]** | **RESILIENCE [a]** | **Total RAI [a]** |
| **OC (n=12)** | 1.50 | 2.58 | 3.42 | 1.50 | 9.00 |
| **BC (n=229)** | 0.93 | 1.90 | 2.79 | 2.50 | 8.11 |
| **SC (n=31)** | 0.94 | 1.48 | 2.87 | 2.06 | 7.35 |
| **ST (n=34)** | 0.76 | 1.53 | 3.15 | 2.09 | 7.53 |

Statistics: a = $\chi^2$ significant, $p < 0.01$; b = $\chi^2$; $p > 0.05$/NS

The information provided in table 6.2 is particularly interesting because it indicates a number of important observations related to which caste classifications score the highest and lowest on the RAI but also where each caste classification appears to have strengths and weaknesses when accessing the resources that can reduce vulnerability. Some of these observations will now be discussed with a view to ascertaining how caste may influence levels of vulnerability.

**Figure 6.3: Mean and Total Resource Accessibility Index scores by Caste Classification**




Initially, the means of the total RAI scores indicate that the high castes of OC and BC have the highest overall access to the 20 resources that constitute the four determinants that can help reduce levels of vulnerability. If the caste system is as pervasive as some of the literature suggests and the contextual analysis suggests, then these figures would be expected, indicating that the highest castes have the lowest levels of vulnerability and the two lowest castes have the highest levels of vulnerability. However, unlike the information displayed in Figure 6.2 the lowest caste classification of ST does not have the lowest RAI mean score (see Figure 6.3). Therefore, despite having a higher proportion of respondents with higher access to resources compared to ST castes, the SC castes actually score the lowest overall, indicating a large disparity between those who do and do not have access to resources within the SC caste classification. At this stage a closer look at these figures by each caste classification would be extremely useful.

**Ordinary Castes (OC)**

A closer look at the figures suggests that the OC castes are relatively wealthier than the other caste classifications and are the least marginalised and most powerful but score low in 'Resilience'. As discussed in some detail in the contextual analysis in Chapter Five, coping strategies such as utilising networks with family members in other villages and involvement with NGOs and CBOs will be strategies typically adopted by those members of society that are poor, powerless and the most marginalised and consequently have few alternative strategies. Therefore if, as the data suggests, the OC castes do not find the need to adopt the types of strategies that will enable them to score well in the 'Resilience' section of the RAI, then the low scores observed are to be expected. Nonetheless, the OC castes appear to have the highest access to resources that can potentially increase their power and reduce their marginalisation and poverty and overall have the highest access to the resources required to reduce vulnerability.

**Backward Castes (BC)**

The BC castes in this study are largely comprised of fisherfolk castes, such as Agnikulakshatriya (57 percent of BC castes) and Pattapu (21 percent) and agricultural labourers of the Setti Balija caste (17 percent). These BC castes score highest in the 'Resilience' section of the RAI than any of the other caste classifications. This may be a reflection on the high proportion of 'fisherfolk' castes (78 percent) that constitute the BC classification in this region of Andhra Pradesh, as they typically live in single caste villages and have been targeted as the recipients of programmes undertaken by non-governmental organisations, particularly with reference to projects aimed at reducing their vulnerability. BC castes score the lowest in the 'Power' portion of the RAI, indicating that they may have the lowest access to important networks with Governmental and village level administration (such as the Panchayat and community leaders). Overall the BC castes rank second behind the OC castes on the scale of those with the most access to the resources required to reduce levels of vulnerability.

**Scheduled Castes (SC)**

In this study the SC castes consist of three castes that are chiefly involved in agricultural labour related occupations, being the Mala (55 percent of SC castes), the Madiga (26 percent) and the Jambuvulu castes (19 percent). These castes (that are sometimes referred to as untouchables) typically live in multi-caste villages that are segregated to some extent by caste classification, possibly a function related to the avoidance of the perceived ritual

or social pollution that is associated with contact with SC castes by higher castes such as OCs. This segregation is evident in some of the multi-caste villages studied during this research (refer to the maps of Patavala in Tallarevu Mandal (East Godavari) and Villukanipalli in Thotapalligudur Mandal (Nellore), in Appendix A for good examples of this segregation). The SC castes score the lowest in the 'Marginalisation' section of the RAI and second lowest (behind ST castes) in the 'Power' and 'Resilience' sections of the RAI. Overall the SC castes score the lowest in the RAI, suggesting that they are the castes with the lowest access to the key resources needed to reduce their relative vulnerability. Therefore, if the SC castes are expected to rank higher in the caste classification system than Scheduled Tribals (ST), why do they appear to be more vulnerable?

By referring back to the comments made by the Executive Secretary of the NGO in Chapter Five, it may be possible to find a reason for this observation. The Executive Secretary stated that the central Indian government and the Andhra Pradesh State government provide their funding towards developmental assistance and vulnerability reduction to communities in terms of "*targeting 'fisherfolk' and Scheduled Tribals (ST), rather than specifically assessing the most vulnerable*". If the BC and ST castes are being targeted, this could imply that SC castes are not being targeted. The data suggests that the SC castes are not the poorest caste classification (falling marginally above the BC castes in the pecking order) but they appear to be the most marginalised. It is difficult to ascertain the causality of circumstances such as these. One argument may be that the government and NGOs do not target the SC castes because they do not need the help because they are not the poorest[61]. The alternative argument could posit that the SC castes have been marginalised for so long that they are forced to adopt other types of strategies to compensate for the lack of support from the Governmental and NGOs.

**Scheduled Tribes (ST)**

The ST tribes involved in this study are the Yenadis (79 percent of the ST tribes) and the Yerukulas (21 percent). If the suggestion that the hierarchy of vulnerability is intrinsically interlinked with the hierarchy of the Hindu caste system, then one would expect to find the ST tribes ranked the lowest in the RAI. However, as the previous discussion has highlighted, factors such as Governmental and NGO policy to target groups such as Scheduled Tribals may skew the figures to some extent. Nonetheless, there is no avoiding

[61] This is one key factor along with other factors, such as, in this study the SC castes typically inhabit inland regions of the coast that are less susceptible to the threats of tropical cyclones

the issue that the ST tribes are ranked the second lowest in the RAI. The RAI figures suggest that the ST tribes are the poorest and the second most marginalised (after the SC castes). Despite this, the ST tribes score the second highest in both the 'Power' and 'Resilience' sections of the RAI. When the factors that constitute the 'resilience' section of the RAI are looked at in more detail the ST tribes score above average with good dependency ratios, maintaining family links in other villages and most significantly 74 percent of the ST respondents live in single caste villages. Likewise, when scrutinising the factors that constitute the 'power' section of the RAI, the ST tribes have the highest level of networks with State, District and Mandal status officials than all the other caste classifications. This may be explained by the increased profile of STs in the political arena, with many political and human rights campaigners espousing increased social and economic support to tribals (*Adivasis*) throughout India with varying degrees of success.

This analysis of the influence of the caste system on access to resources has highlighted the complexity of the topic, with myriad factors affecting the levels of access that each caste can attain. The figures from the Resource Accessibility Index (RAI) suggest that the idea of 'a hierarchy of vulnerability that is influenced by the hierarchy of caste' cannot be discredited. However, it should be noted that the data used for the RAI has been analysed in the simplest of ways and although some of the suggestions made in this analysis may look strong the analytical simplification of such a complex subject could be masking other less apparent issues that could be significant.

Nonetheless, there are a number of ways of testing even further how the hierarchy of the caste system possibly influences 'everyday' aspects of life, such as assessing the levels of education that the respondents have obtained and what types of houses they live in.

**Table 6.3: The types of housing that the caste classifications inhabit**

| | CASTE CLASSIFICATION | | | | |
|---|---|---|---|---|---|
| **HOUSE TYPE** | **OC** | **BC** | **SC** | **ST** | **AVERAGE** |
| Large pukka *(cat.1)* | 17% | 3% | 0% | 0% | 3% |
| Basic pukka *(cat.2)* | 50% | 31% | 16% | 41% | 31% |
| Traditional tiled *(cat.3)* | 33% | 14% | 10% | 6% | 14% |
| Kutcha house *(cat.4)* | 0% | 38% | 58% | 3% | 35% |
| Basic Kutcha hut *(cat.5)* | 0% | 14% | 16% | 50% | 17% |

Statistics: $?^2 = 64.296$; significant $p < 0.01$

## House type[62]

The information portrayed by Table 6.3, indicates that the 'higher' castes (particularly the OC castes) are most likely to live in large framed concrete houses (Category 1: Large pukka houses), while none of the 'lower' caste classifications of SC & ST castes live in these Category 1 houses that are typically the most expensive to construct (refer to Appendix F) and are generally perceived to be most resistant to tropical storms (Shanmugasundaram et al. 2000). At the other end of the housing scale, the Category 5 basic kutcha huts (basically constructed huts made out of wood and mud with minimal load bearing walls) are most likely to be inhabited by the SC and ST castes. No respondents from OC castes live in the basically constructed category 5 or category 4 types of houses.

**Photograph 6.1: Low Quality 'Category Two' House in KMC**

Another interesting observation is related to the relatively high proportion (41 percent) of Scheduled Tribes that live in Category 2 (basic pukka) houses. This can be explained to some extent by the case of one village in Thotapalligudur mandal in Nellore. The village in question is Koduru Mukkantam Colony that is inhabited exclusively by STs from the Yenadi tribe and is a relatively new village that was constructed in the early 1990s as part of the State and District Governments' policy to help Scheduled Tribes in the region. The village is inhabited by 466 people and is set out in a grid pattern with 70 permanent abodes, of which 30 are 'category 2' houses and 40 are 'category 5' basic kutcha huts. Therefore the relatively high proportion of ST respondents that live in Category 2 houses may be attributed to this particular village because twelve out of the fourteen ST respondents that live in these types of houses were from Koduru Mukkantam Colony (KMC). It should also be noted that the quality of the 'category 2' housing in KMC is very

[62] Refer to Appendix F for more details on house types and their estimated construction costs

poor, with many of these very basic cell type houses showing signs of concrete erosion resulting in at least four houses of this type becoming abandoned because the villagers have deemed them uninhabitable (see Photograph 6.1 for an example).

When looking at the extremes of house types in the caste study areas (Category 1 houses compared to Category 5 huts), disparities in ownership indicate that the higher the respondent's caste the better the quality of housing that they live in. On the other hand the lower castes appear to be those most likely to live in poor quality housing that affords the individuals, their families and their limited assets little protection from the rigours that the environment can throw at them.

### EDUCATIONAL ATTAINMENT

Table 6.4 displays the percentage figures related to the levels of education attained by the caste classification of the respondents. Possibly the clearest observation is that 61 percent of the entire 308 respondents have received no education of any type (55 percent of these respondents were women). Another observation that is related specifically to the influence of caste upon essential resources such as education is that none of the respondents belonging to the lowest caste classifications had attained more than a primary level education. The vast majority of the SC and ST respondents (37 out of 38 cases) had never been to school or only completed a couple of years of primary education.

**Table 6.4: The levels of education attained by caste classification**

| | CASTE CLASSIFICATION | | | | |
|---|---|---|---|---|---|
| **LEVEL OF EDUCATION** | **OC** | **BC** | **SC** | **ST** | **Average** |
| No education | 18% | 65% | 61% | 50% | 61% |
| A few years at primary level | 45% | 33% | 35% | 50% | 36% |
| Completed primary | 18% | 0% | 3% | 0% | 1% |
| Secondary | 9% | 0% | 0% | 0% | 1% |
| Tertiary | 9% | 1% | 0% | 0% | 1% |

Statistics: $?^2 = 54.284$; significant $p < 0.01$

These figures either suggest that the central and state governments' attempts to reduce illiteracy in rural India have been ineffective, or provide an example of how everyday pressures on the poorest families in society actually forces them to send their uneducated children to spend their days earning a wage rather than obtaining an education. The reality is most likely a combination of both these factors. The situation is different for the highest caste classification (OC), where nine percent of the OC respondents have attained a college

or university education while 18 percent have been educated to secondary school level or above, while only 18 percent have received no education.

Sadgopal (2003) believes that the Structural Adjustment Programmes recommended (some would say imposed) by the World Bank have had a detrimental impact on the educational system in India resulting in lower quality primary education and thereby affecting the poorer sections of society the most. Sadgopal (2003) believes that cut backs in primary education provision have forced the government to adopt the 'literacy paradigm' or in other words reliance upon literacy as a measure of educational attainment at the cost of other pedagogic skills.

> *"Critical thinking, creativity, scientific temper, analytical abilities, sense of history or philosophy, aesthetic appreciation and other such educational attributes need to be reserved for the privileged – this is the implication of the literacy paradigm and the market forces."* (Sadgopal 2003:98)

This analysis is a rudimentary one that illustrates that the omnipotence of the caste system appears to be reflected in what levels of basic needs the respondents have access to, such as the types of education people attain and what types of housing they use for shelter. The issues raised here illustrate that the caste system is pervasive and significantly it appears to influence who has access to the important resources that can help people to reduce their levels of vulnerability.

These findings reinforce the following assertion by Mencher (1991:109);

> *"The caste system has functioned to prevent the formation of social classes with commonality of interests and purpose. In other words, caste derives its viability from its partial masking of extreme socio-economic differences."*

## GENDER

The incorporation of a thorough analysis of gender related issues have been a central tenet of this thesis. Much of the literature suggests the roles of women in rural Andhra Pradesh are hindered by constraints on their social status and potential opportunities (Agarwal 1990, 1997, 2001; Gupta 1991; Moore 1998; Martin & Lemon 2001). Therefore it is important to assess whether this is the scenario in the case study villages, and if so, the concurrent affects upon women's access to the key resources that can reduce levels of vulnerability. Typically, gender inequalities in rural India have meant that women have

taken the burden of pressures on family life due to issues related to traditionally influenced subaltern roles in household and village affairs, a situation summed up by Bumiller (1991) in her study of the lives of women in India.

> *"Both men and women struggled in the village, but the women, because of their gender, struggled and suffered twice as much as the men."* (Bumiller 1991:79)

As the discussion in Chapter Two has highlighted, the relatively unrepresentative role of women in the Panchayat (Moore 1998), and the exclusion of women from traditional institutions (Agarwal 2001; Beck 1995; Moore 1998; Robbins 2000) and even the newly created participatory institutions (Agarwal 1997; Deepa et al. 2000) has contributed to maintaining the role of women as 'second class citizens' in rural village life. This issue is also tied in with low levels of education that can impede knowledge and access to health care and legal representation and ultimately establish women as some of the most marginalised and powerless people in rural India. However, despite these sometimes ingrained inequalities, the work of organisations such as the Self Employed Women's Association (SEWA) and some policies of the Government of India, the Department for International Development (DFID) and the United Nations have highlighted the important role of women in improving the effectiveness of participatory programs aimed at improving levels of development and in reducing levels of vulnerability.

**Table 6.5: Accessibility to key resources by gender**

| | TYPE OF ACCESS TO KEY RESOURCES | | |
|---|---|---|---|
| **GENDER** | **LOW ACCESS** | **AVERAGE ACCESS** | **HIGH ACCESS** |
| **Male** | 30% | 55% | 15% |
| **Female** | 15% | 55% | 30% |

Statistics: $?^2 = 15.889$; significant, $p < 0.01$

The figures provided in Table 6.5 suggest that women have higher access to the key resources (listed in Table 6.1) than men. While women have relatively higher access to the resources, men have relatively lower access to these same resources, therefore a more thorough analysis of the data is required to determine why this appears to be the case.

**Table 6.6: Mean RAI scores by determinants of vulnerability and gender**

| | RESOURCE ACCESSIBILITY INDEX (mean scores) | | | | |
|---|---|---|---|---|---|
| **GENDER** | **POVERTY** | **MARGINALISATION** | **POWER** | **RESILIENCE** | **TOTAL RAI [a]** |
| **Male** | 0.93 | 1.88 | 2.85 | 1.84 | 7.50 |
| **Female** | 0.94 | 1.80 | 2.87 | 2.90 | 8.51 |
| **Average** | 0.93 | 1.84 | 2.86 | 2.37 | 8.01 |

[a] Statistics: $?^2 = 31.813$; significant, $p < 0.01$

The mean RAI scores for each vulnerability determinant were calculated, the figures of which are displayed in Table 6.6. The figures show that generally men and women have

similar mean scores in the poverty, marginalisation and power sections of the RAI, with the largest and most significant discrepancy occurring in the resilience section of the RAI. The relatively high score of women in the resilience section of the RAI may be attributed, to some extent, by the higher utilisation of kinship networks by women in comparison to men.

During Chapter Two it was suggested that social networks and social institutions have a gendered element as it is considered that male networks tend to be more formal since they are more often involved in formal employment. Male networks include more co-workers and fewer kin than female networks (Moore 1990). Alternatively, women's networks tend to be informal (Neuhouser 1995) and include more kin relative to men's networks (Moore 1990). Women become accustomed to informal networks partly in response to their lack of participation in formal work organisations (Neuhouser 1995) and possibly place a high level of importance on maintaining these informal networks, particularly those with family.

To support this point, Agarwal (1990) points out that women play a significant role in the establishment and maintenance of social relationships for the family but the availability of kinship networks (especially natal kin) is wider for women that live in southern sates of India, such as Andhra Pradesh, in comparison to Northern states such as Punjab, Rajasthan and Uttar Pradesh. This point is particularly important because 56 percent of the women respondents that took part in this survey were born outside the village in which they reside, in comparison to two percent of the men[63]. This is reflected in the figures regarding social networks that the respondents have with family members that live in other villages, in that 69 percent of women posses these types of networks, while only 18 percent of men posses these types of external networks[64]. These observations may be important because the utilisation of such networks can allow respondents access to institutions that they may be restricted from in their village of residence. This is very important if links with natal kin in other villages allow women's access to potentially useful institutions such as CBOs and NGOs. These elements will be analysed in more detail in the following chapter but for now, it would be pertinent to assess whether gender influences one of the potentially key factors that constitute the determinant of resilience; involvement with NGOs (Table 6.7)

[63] Statistics: $?^2 = 107.631$; significant, $p < 0.01$
[64] Statistics: $?^2 = 81.187$; significant, $p < 0.01$

**Table 6.7: Involvement with Non-Governmental Organisations by Gender**

| ARE RESPONDENTS INVOLVED WITII A NGO? | | | |
|---|---|---|---|
| **GENDER** | **YES** | **NO** | **N/A (No NGO in village)** |
| **Male** | 9% | 24% | 67% |
| **Female** | 36% | 10% | 54% |
| **Average** | 23% | 17% | 60% |

Statistics: $?^2 = 33.994$; significant, $p < 0.01$

This table indicates that when NGOs are operating in villages, women are four times more likely than men to be involved with NGO activities. It is difficult to establish why women are more likely to become involved with NGOs, one suggestion could be that many programmes designed by NGOs are actually targeted at females, through the foundation of women's groups (*mahila sanghas*) with the intention of 'empowering' women and increasing their access to formal financial services, such as credit and savings schemes. Another suggestion may be attributed to the lack of participation of men due to their scepticism of NGO projects or motives that may fundamentally challenge the traditional power structures within households and communities in rural India.

This final suggestion might play a large part in the lack of participation of males in NGO activities because if NGOs are attempting to 'empower'[65] women, the male dominated status quo of the past (and to varying extents the present) will certainly be challenged. Another interesting observation from Table 6.7 is related to the responses regarding the belief that there are no NGOs operating in the villages, particularly when we consider that the research was design to incorporate six (50 percent) villages out of the total twelve villages where NGOs are operating. The figures suggest that not only are males least likely to participate with NGOs but they are also least likely to be aware of their activities when they are operating within the village[66]. In contrast to this situation, 27 percent (10 out of 37 cases) of women that live in a Category 3 village (a relatively undeveloped village with no NGO activity) are actually involved with a NGO via the external family links discussed earlier in this analysis.

This discussion regarding the influence of gender on access to the key resources that can reduce levels of vulnerability shows that the case is not as straightforward as some of the literature suggests, in that women are some of the least powerful, least resilient and most marginalised members of rural India (Gupta 1991; Agarwal 1990, 1991; Beck 1995; Deepa

[65] If the definition of 'empowerment' is based on the aim of uplifting the status of females in the household and society by increasing their knowledge, choices and increasing their voices within the political arena.
[66] For example 61% of males in Category 2 villages (recent NGO activity) were not aware of the NGO activities in their village.

et al 2000; Menon Sen & Shiva Kumar 2001). The figures suggest the case of the Indian context providing evidence of the successful organisation and mobilisation of self-help groups that are directed at women and ideally initiated by women (Enarson 2000; Palakudiyil & Todd 2003). However, the motives for women adopting the relatively higher levels of resilience may be linked to the traditionally restricted status that they have held in rural India. Similar to the scenario of the lower castes (highlighted in Chapter Five), women have struggled on an 'everyday' basis and have consequently established networks and strategies to enable them to cope with recurrent crises (Moore 1990; Agarwal 1991; Moore 1998; Enarson 2000). These networks and strategies may also provide useful support during infrequent but large-scale crisis events such as tropical cyclones and therefore contribute to increasing the resilience of women, in comparison to men.

### SOCIO-ECONOMIC STATUS

When discussing the factors related to an individual's socio-economic status in rural India, it is difficult to disentangle typical factors such as occupation, wealth and power from the presence of the caste system. The previous discussion suggests that caste appears to be a factor that determines a person's access to the key vulnerability reducing resources. However, the following analysis will attempt to assess the importance of socio-economic status without specific reference to their caste, although it should be noted that, as earlier chapters have indicated, it is nearly impossible to detach occupation from caste in rural villages in coastal Andhra Pradesh. Nonetheless, the following analysis will attempt to assess the importance of the social status of the respondents as a factor in determining access to the key resources required to reduce levels of vulnerability in coastal Andhra Pradesh.

**Table 6.8: Type of access to key resources by social status**

| | TYPE OF ACCESS (%) | | |
|---|---|---|---|
| **SOCIAL STATUS** | **LOW ACCESS** | **AVE. ACCESS** | **HIGH ACCESS** |
| NGO employee (n=2) | 0% | 0% | 100% |
| Political Party member (n=9) | 22% | 44% | 33% |
| Panch.Pres/Village Elder (=7) | 43% | 43% | 14% |
| Land owner (n=18) | 17% | 72% | 11% |
| Member of CBO (n=39) | 15% | 51% | 33% |
| No special status (n=231) | 24% | 55% | 21% |
| **AVERAGE** | 23% | 55% | 23% |

Statistics: $?^2 = 14.696$; $p > 0.05$/NS

Table 6.8 shows the types of access that respondents have to the key resources by their social status and the following table shows the mean RAI scores for each category of social

status (table 6.9). Table 6.8 indicates that being employed by a NGO can play a huge part in providing high access to the key resources needed to reduce levels of vulnerability, although it should be noted that only two village respondents were actually employed by NGOs, therefore the sample size is very small. Respondents that are members of a political party and respondents that are involved with CBOs have a good proportion (33 percent in each case) of high access to resources. Landowners appear to have the lowest proportion of high access but 72 percent have average access to the key resources listed in the RAI. One of the most surprising observations concerns the relatively low access that Panchayat members and Village Elders possess with 43 percent of these respondents with low access.

**Table 6.9: Mean RAI scores by determinants of vulnerability and social status**

| | RESOURCE ACCESSIBILITY INDEX (mean scores) | | | | |
|---|---|---|---|---|---|
| **SOCIAL STATUS** | **POVERTY** | **MARGINAL-N** | **POWER** | **RESILIENCE** | **TOTAL RAI** |
| NGO employee (n=2) | 1.50 | 2.00 | 4.00 | 3.50 | 11.00 |
| Political Party member (n=9) | 0.89 | 1.89 | 2.89 | 2.33 | 8.00 |
| Panch. Pres/Village Elder (=7) | 0.43 | 2.00 | 2.86 | 2.29 | 7.57 |
| Landowner (n=18) | 1.72 | 2.44 | 2.72 | 1.11 | 8.00 |
| Member of CBO (n=39) | 1.44 | 1.67 | 2.90 | 2.59 | 8.59 |
| No special status (n=231) | 0.80 | 1.81 | 2.85 | 2.43 | 7.90 |
| **AVERAGE** | 0.93 | 1.84 | 2.86 | 2.37 | 8.01 |

When these figures are broken down into the mean scores by the vulnerability determinants and each category of social status (table 6.9), it appears the Panchayat members and Village Elders are the respondents with the greatest levels of poverty along with relatively low levels of resilience. Respondents of this social status score the lowest out of all the categories, which is to some degree a surprise and may be attributed to these respondents not being entirely truthful with the information that they provided[67]. Landowners are the least poor as would be expected, but also score poorly on 'resilience'; an observation that may be explained in the same way as the caste related analysis earlier in this chapter. When respondents are not the poorest or most marginalised, they may not necessarily need to adopt the strategies related to increasing their levels of resources related to strategies of resilience because they possess resources that can help them cope with crises. Despite some of these observations there does not appear to be a clear correlation between social status and access to resources[68], other than it is apparent that a

[67] The levels of poverty claimed by the Panchayat members and the Village Elders has been challenged to some extent via the direct observations undertaken in the villages, which indicated that respondents of this status did not have the highest levels of poverty. A number of Village Elders and Panchayat members claimed not to have certain possessions (such as motorised vehicles and fishing boats) despite the presence of such assets on the land adjoining their property. However, it was not deemed appropriate to challenge them on this matter because it was difficult to prove they possessed the aforementioned assets without harming the spirit of the research environment.

[68] None of the statistics associated with the social status and resource accessibility analyses were significant.

respondent's involvement with NGOs and CBOs may help to provide high access to the key vulnerability reducing resources.

## INVOLVEMENT WITH CBOS AND NGOS

The contextual analysis conducted in Chapter Five highlighted that NGOs appear to target the recipients of their developmental and vulnerability reduction programmes through caste related definitions. All the NGOs that are operating in the case study villages have targeted the BC 'fisherfolk' castes of Agnikulakshatriya and Pattapu that inhabit single caste villages. As discussed earlier, this observation may be symptomatic of funding being made available to NGOs that target 'fisherfolk' communities and that typically the 'fisherfolk' live in single caste communities. The other explanation may be attributed to the possible operational benefits of NGOs operating in single caste villages, in contrast to multi-caste villages where issues over inter-caste relations may cause operational problems. Whatever the cause may be for the way 'fisherfolk' communities are targeted, it is clear that the NGOs in the case study areas have a limited presence.

The gender related analysis conducted earlier in this chapter highlighted the relatively high levels of participation with NGOs by women and low levels of participation by men. In light of this it would be interesting to assess how gender and caste related factors affect respondents levels of participation with Community Based Organisations (CBOs). CBOs are in some cases established by the Government (DWCRA groups), by the villagers themselves (youth groups, women's groups and working co-operatives) and by NGOs (it should be noted that CBOs that have been established and managed by NGOs are classified under NGOs for this analysis).

**Table 6.10: Involvement with CBOs by caste category and gender**

| | | INVOLVED WITH CBO? | |
|---|---|---|---|
| **CASTE** | **GENDER** | **YES** | **NO** |
| OC | Male *(n=6)* | 0% | 100% |
| | Female *(n=6)* | 67% | 33% |
| Average for OC castes | | 33% | 67% |
| BC | Male *(n=119)* | 15% | 85% |
| | Female *(n=110)* | 69% | 31% |
| Average for BC castes | | 41% | 59% |
| SC | Male *(n=12)* | 8% | 92% |
| | Female *(n=19)* | 63% | 37% |
| Average for SC castes | | 42% | 58% |
| ST | Male *(n=15)* | 53% | 47% |
| | Female *(n=19)* | 58% | 42% |
| Average for ST castes | | 56% | 44% |

Statistics: $?^2 = 75.535$; significant, $p < 0.01$;

With reference to respondents' involvement with CBOs, women (67 percent) again participate more than men (18 percent). Another interesting observation from Table 6.10 is that women from the highest two castes, being the OC (67 percent participation) and BC (69 percent participation) have higher rates of participation with CBOs than the two lowest castes, although the difference is marginal (SC 63 percent and ST 58 percent). It is worth acknowledging at this point that participation with a NGO or CBO can be a time consuming process, particularly for women who will inevitably be involved with household and childcare duties along with seasonal paid and unpaid work. Eleven percent of the respondents stated that there have been 'problems' with women being involved with CBOs and NGOs because their participation may entail neglecting some of their household and childcare duties, however this is a concern that is typically voiced by men.

When both genders are factored in with the involvement with CBOs the levels of participation follow a caste stratified theme, with the highest levels of participation being experienced by the lower castes while the higher castes have a relatively lower level of participation. This observation is interesting because, unlike the situation with NGO participation, which is influenced by the communities the NGO chose to work with, CBOs operate in most villages, irrespective of caste composition and heterogeneity of the village. Consequently, although resources may be limited, it appears that CBOs provide an interface for all the village level respondents to be involved with activities that can contribute to reducing their levels of vulnerability. Therefore, as this analysis shows, and earlier sets of analysis have shown, involvement with a NGO can increase a respondent's access to resources but can be limited to the respondents that belong with targeted communities (in this case the 'fisherfolk') while involvement with CBOs is more widely available.

The influence of involvement with NGOs is illustrated in Figure 6.4, which suggests that in villages where a NGO operates, 47 percent of respondents involved with a NGO have high access to resources while only 26 percent of those who are not involved with a NGO have high access. An interesting observation is that in villages where no NGOs operate, only 12 percent of respondents have high access to resources with 28 percent having low access to resources. This implies that even if a respondent does not participate with a NGO, they can benefit indirectly from having a NGO operating in their village. However, this may only be the case because, as stated earlier, the NGOs involved in this study only operate in single caste villages.

**Figure 6.4: Access to resources by the presence of NGOs and involvement with NGOs**

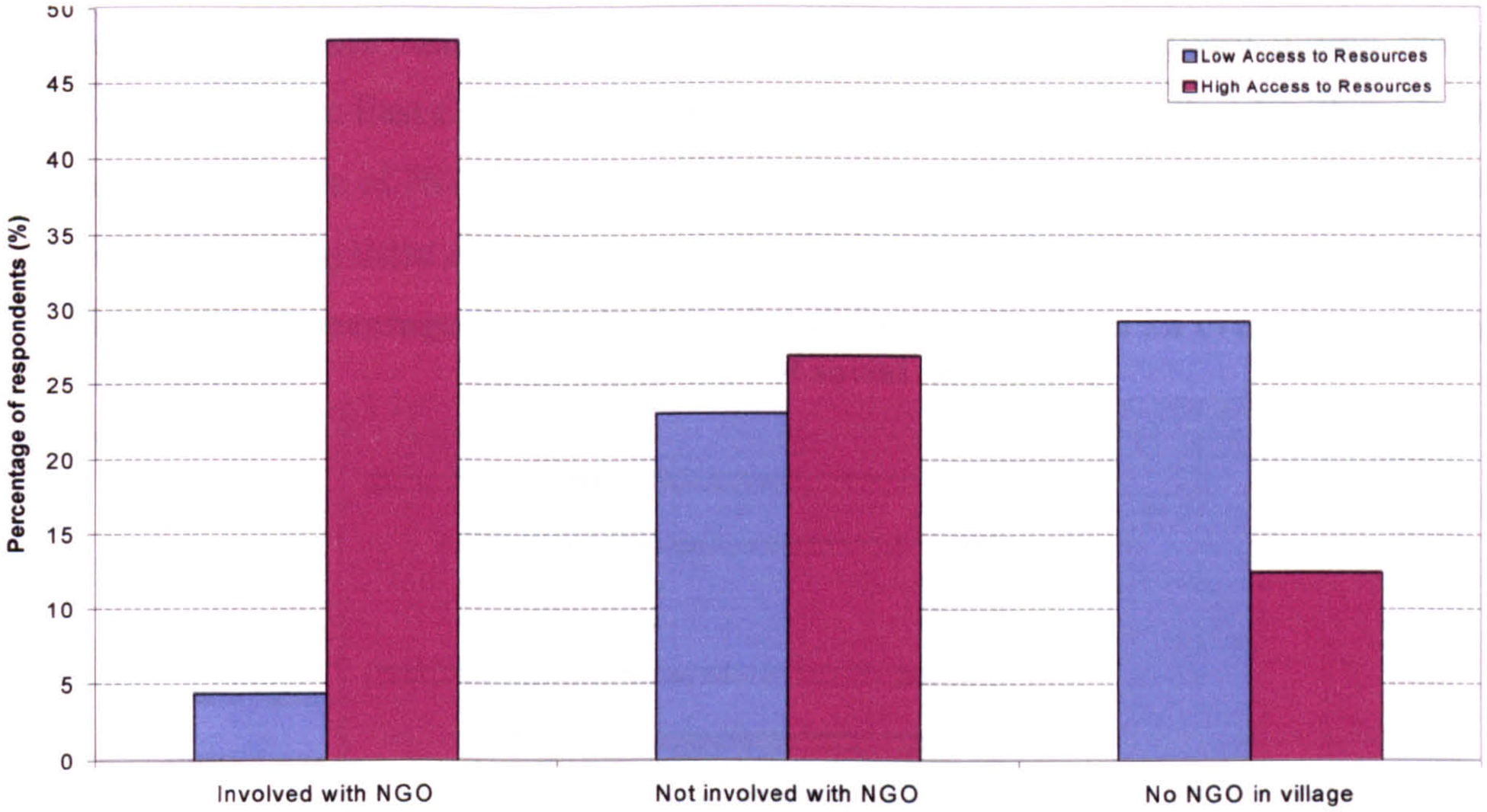



Figure 6.5 shows that participation with a CBO can influence access to resources, in that 31 percent of those that participate have high access to resources, while only 15 percent of the non-participants have high access with 33 percent having low access to resources. This suggests, again, that CBOs (like NGOs) can be useful institutions that can provide a conduit for the types of resources required to reduce levels of vulnerability. The roles that NGOs and CBOs play on an everyday basis can also provide suitable grounds for facilitating the distribution of resources during the relief phase of a disaster event.

**Figure 6.5: Access to resources by participation with Community Based Organisations (CBOs)**

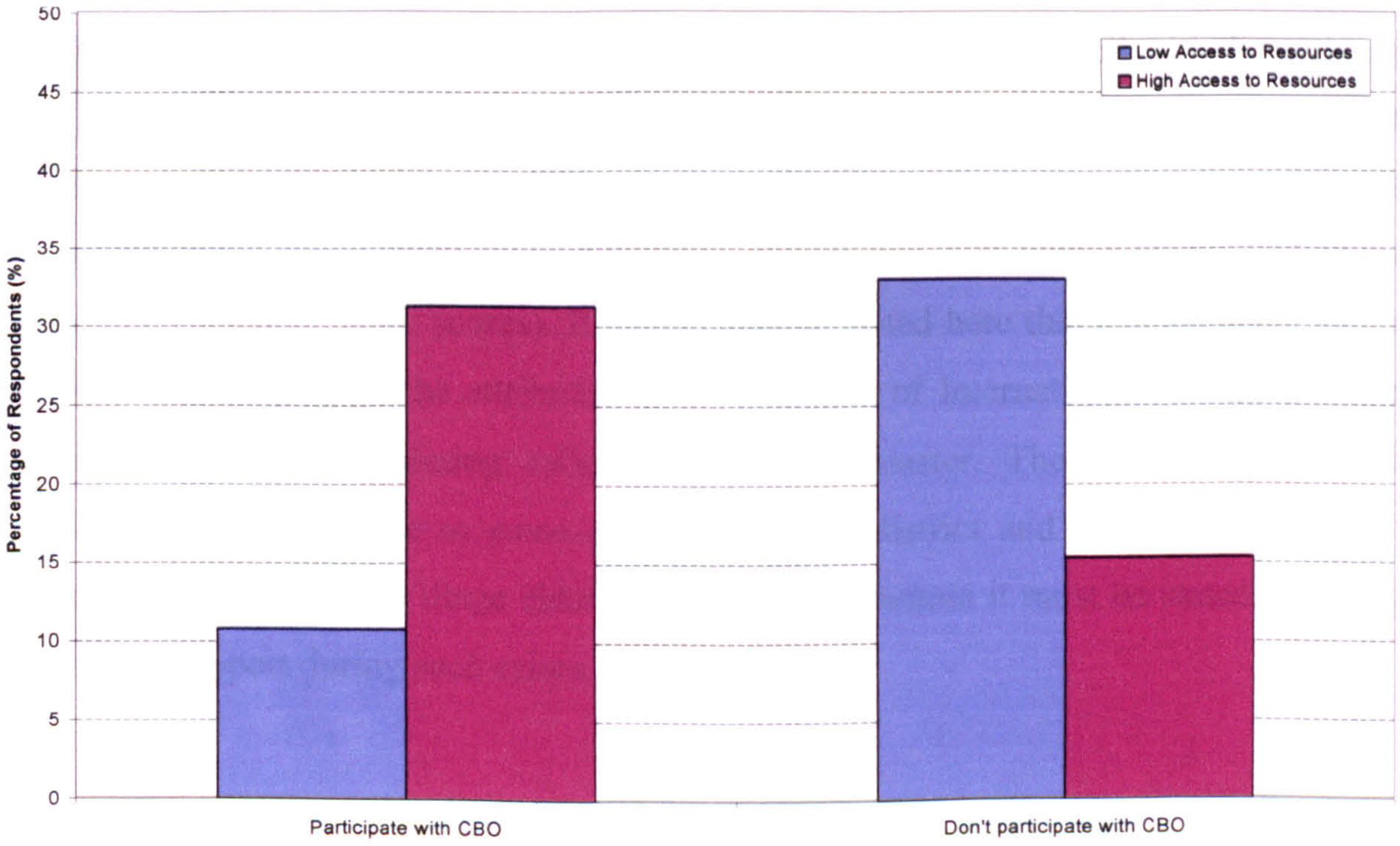
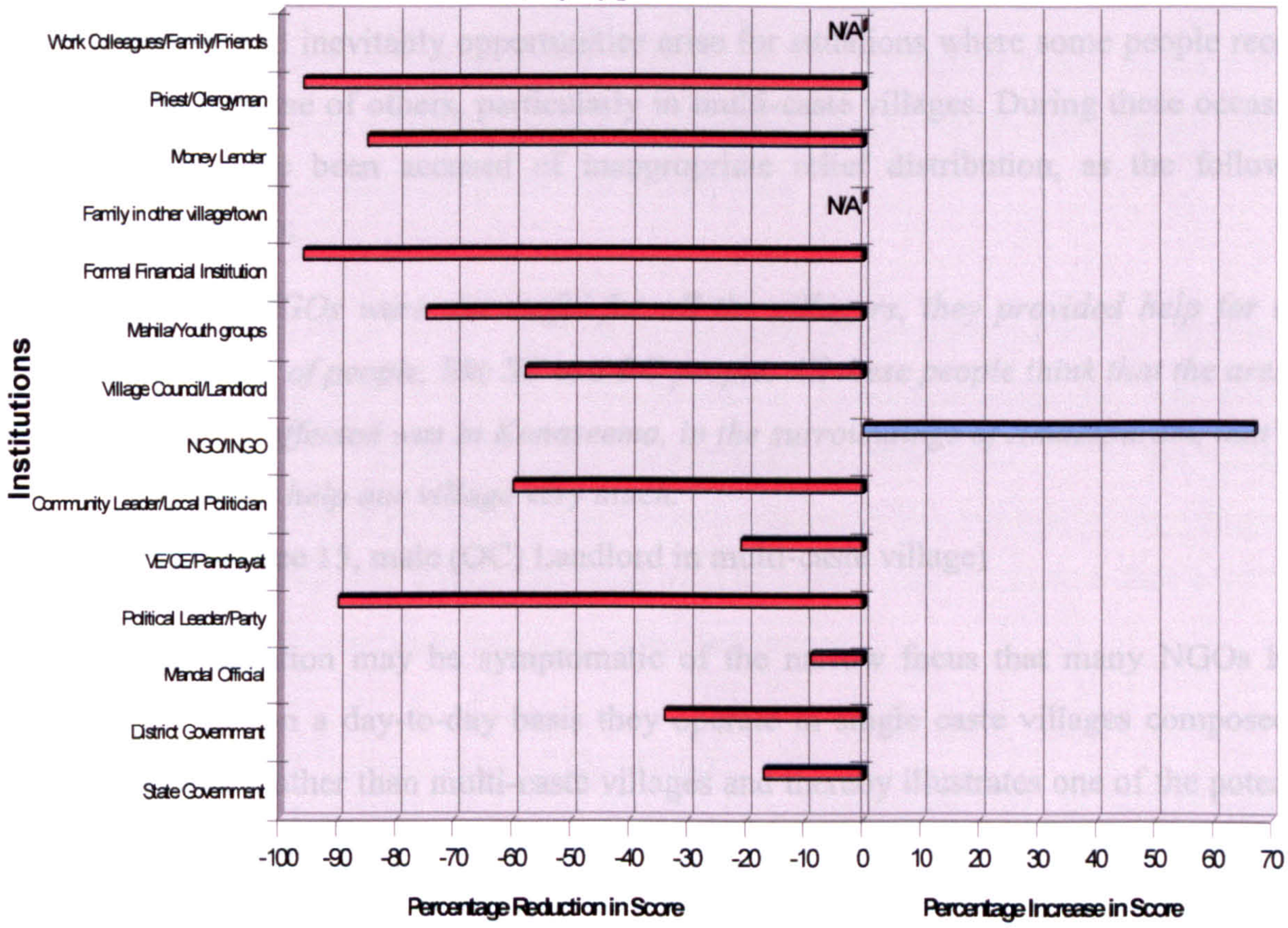


Figure 6.6 is based on data obtained from the sociograms and illustrates the difference in formal social networks between an everyday scenario and a crisis scenario. The graph shows the increased amounts of networks that the respondents utilised during the last cyclone in 1996 in East Godavari and the 1999 floods in Nellore and thereby illustrates the increased presence of NGOs during these crisis periods (a 65 percent increase in networks with NGOs during these crises).

**Figure 6.6: Percentage change in formal social networks from an everyday to crisis scenario, by type of social institution**




The increased presence of NGOs during a crisis event corresponds well with the active role that many NGOs adopt in helping to distribute relief after a disaster has occurred. It is worth noting that the NGOs are the only institution that actually increased their presence during the relief phase (with many becoming almost impotent with a 60 percent or more reduction in their network scores). It should also be noted here that this apparent increase in NGO networks might be attributed to the presence of International non-governmental organisations (INGOs) during relief stages of a disaster. The only institutions that maintained their presence to some degree were the district and state governments, the mandal officers and the Village elders and Panchayat, whom it must be stated are obliged to provide support during such crises.

The efforts of NGOs to distribute relief appears to have been generally received favourably by the respondents with 24 out of 36 (67 percent) accounts of post event activities relaying positive accounts of the work of NGOs.

*"It was mainly the international NGOs and local NGOs that helped us. For over two months we were dependant upon their relief food."*

(Interviewee 27, male (BC) Panchayat President in single caste village)

However, when resources are finite it will be impossible to distribute all the resources that people require and inevitably opportunities arise for situations where some people receive relief at the expense of others, particularly in multi-caste villages. During these occasions some NGOs have been accused of inappropriate relief distribution, as the following account testifies to;

*"I think the NGOs were not useful for all the villagers, they provided help for a limited amount of people, like SC and BC people. All these people think that the area really heavily affected was in Konaseema, in the surroundings of Amalapuram, that's why they didn't help our village very much."*

(Interviewee 15, male (OC) Landlord in multi-caste village)

This sort of situation may be symptomatic of the narrow focus that many NGOs have adopted, in that on a day-to-day basis they operate in single caste villages composed of fisherfolk castes rather than multi-caste villages and thereby illustrates one of the potential problems of operating in a multi-caste village. One major concern is that multi-caste villages may be the types of villages that are similarly affected by the crises that affect single caste 'fisherfolk' villages, but they will not receive the potentially critical support of NGOs that can augment relief supplied by the government because they are villages that do not fit into the remits of the NGOs.

However, it would be unjustified to question the motives of NGOs that, with their limited resources, do not provide support to some villages because fundamentally they cannot provide the resources to everyone in need. Nonetheless, some NGOs have motives that cannot be justified. One respondent relayed an account of how a charlatan NGO took advantage of some vulnerable members of a village, not only increasing the family's vulnerability by making them poorer but also eroding any trust that may have been established with bonafide NGOs.

*"After a cyclone one NGO named JSS came to our houses and they collected five thousand Rupees towards constructing pukka houses but they ran away without starting construction of the houses that they had promised."*

(Interviewee 26, male (SC) from multi-caste village)

Despite accounts such as the one highlighted above, it appears that the influence of NGOs on a respondent's access to resources can be positive, even when the respondent does not participate with the NGO but the NGO is involved with various activities within their village. In a similar vein, CBOs appear to play a role in increasing access to some of the key resources required to reduce levels of vulnerability, particularly regarding the increase of access to resources can increase levels of resilience.

### TYPE OF VILLAGE

Socio-economic features such as the type of house the respondents inhabit or the status of respondents within the village (i.e. village elders, Panchayat members, and political involvement) may be influenced by the homogeneity or heterogeneity[69] of the village in question rather than factors such as type of caste. Likewise, the location of the village and the village's relative role within the local economy may also be factors that contribute towards the types of resources available to the respondent.

#### Heterogeneity and Homogeneity of the village

The contextual analysis undertaken in Chapter Five highlighted that the NGOs typically operated in single caste villages because such villages were less likely to provide intra-village problems related to the participation of under-represented families or individuals. This point is illustrated by Table 6.11, which shows the respondents' opinions when they were asked whether some people in their village benefited from the work of the Government development projects more than others. There appears to be a large difference between the opinions of the respondents from multi-caste villages in comparison to those from single caste villages, with the multi-caste villagers showing higher concerns that others are benefiting more from the projects undertaken than the single caste village respondents.

[69] For the context of this study, the single caste villages are viewed as largely homogeneous and the multi-caste villages are heterogeneous.

**Table 6.11: Perception of whether some people benefit from Government development projects by caste composition**

| | Do you think that some people in the village benefit more? | |
|---|---|---|
| **Caste composition of village** | **Yes** | **No** |
| **Single caste (n=205)** | 16% | 84% |
| **Multi-caste (n=100)** | 45% | 55% |
| **Average (n=305)** | 26% | 74% |

Statistics: $?^2 = 28.415$; significant, $p < 0.01$

Whether these concerns are real concerns or are merely perceived concerns is difficult to substantiate but what is clear from Table 6.12 is that claims that other castes receive higher benefits from the projects, are restricted to multi-caste villages (see figures in bold in Table 6.12). In contrast, the single caste villagers believe that people who are members of DWCRA groups and people involved with NGOs benefit the most from Government projects in their villages.

**Table 6.12: Perceptions of who benefits the most from Government projects, by village type and caste composition.**

| | VILLAGE CATEGORY (1-4)[a] | | | | CASTES IN VILLAGE? [b] | |
|---|---|---|---|---|---|---|
| **WHO BENEFITS?** | **Category 1** | **Category 2** | **Category 3** | **Category 4** | **Single caste** | **Multi-caste** |
| Political Candidates (n=1) | | | | 4% | | 2% |
| Village elders (n=2) | | 10% | 4% | | 6% | 2% |
| Rich people (n=2) | | | 9% | | 6% | 2% |
| Higher castes (n=4) | | | | **13%** | | **9%** |
| Lower castes (n=16) | | | **44%** | **20%** | | **35%** |
| Caste that is numerically dominant (n=6) | | | 9% | **10%** | | **11%** |
| All castes/communities other than respondent's (n=9) | | | | **27%** | | **17%** |
| Members of DWCRA groups (n=25) | **36%** | **80%** | **30%** | 13% | **63%** | 11% |
| People involved with Government programmes (n=1) | | | | 3% | | 2% |
| People involved with NGOs (n=8) | **64%** | 10% | | | **25%** | |
| My caste/community (n=4) | | | 4% | 10% | | |

Statistics [a]: $?^2 = 88.068$; significant, $p < 0.01$; Statistics [b]: $?^2 = 50.216$; significant, $p < 0.01$

These figures indicate that regarding the experiences of Government initiated development and vulnerability reduction projects; there is a higher chance that problems may arise regarding inter-caste related issues in multi-caste villages. As a consequence, the apparent reticence of NGOs to operate in multi-caste villages may be substantiated. Nonetheless, the potential inter-caste problems that can arise related to operating in multi-caste villages should not be a reason for excluding these villages from the support of NGO activities.

**Geographic location of village**

Throughout this case study the geographic location of a village has been intrinsically linked to the predominant occupation of the village and also to the caste composition of the village. The six villages located within five kilometres of the coast are all single caste fisherfolk villages located on low lying land adjacent to the sea or located two or three kilometres from the sea but linked via natural creeks to the fishing grounds of the Bay of Bengal. Villages located further than five kilometres from the sea are typically agricultural or mixed employment villages. The four agricultural villages included in this survey are all multi-caste villages and the two mixed employment villages are both single caste villages located in Nellore (one village a 'category 2' village of fisherfolk and the other a 'category 3' village of STs).

**Figure 6.7: Type of access to resources by village type; location, occupation, category and caste composition**

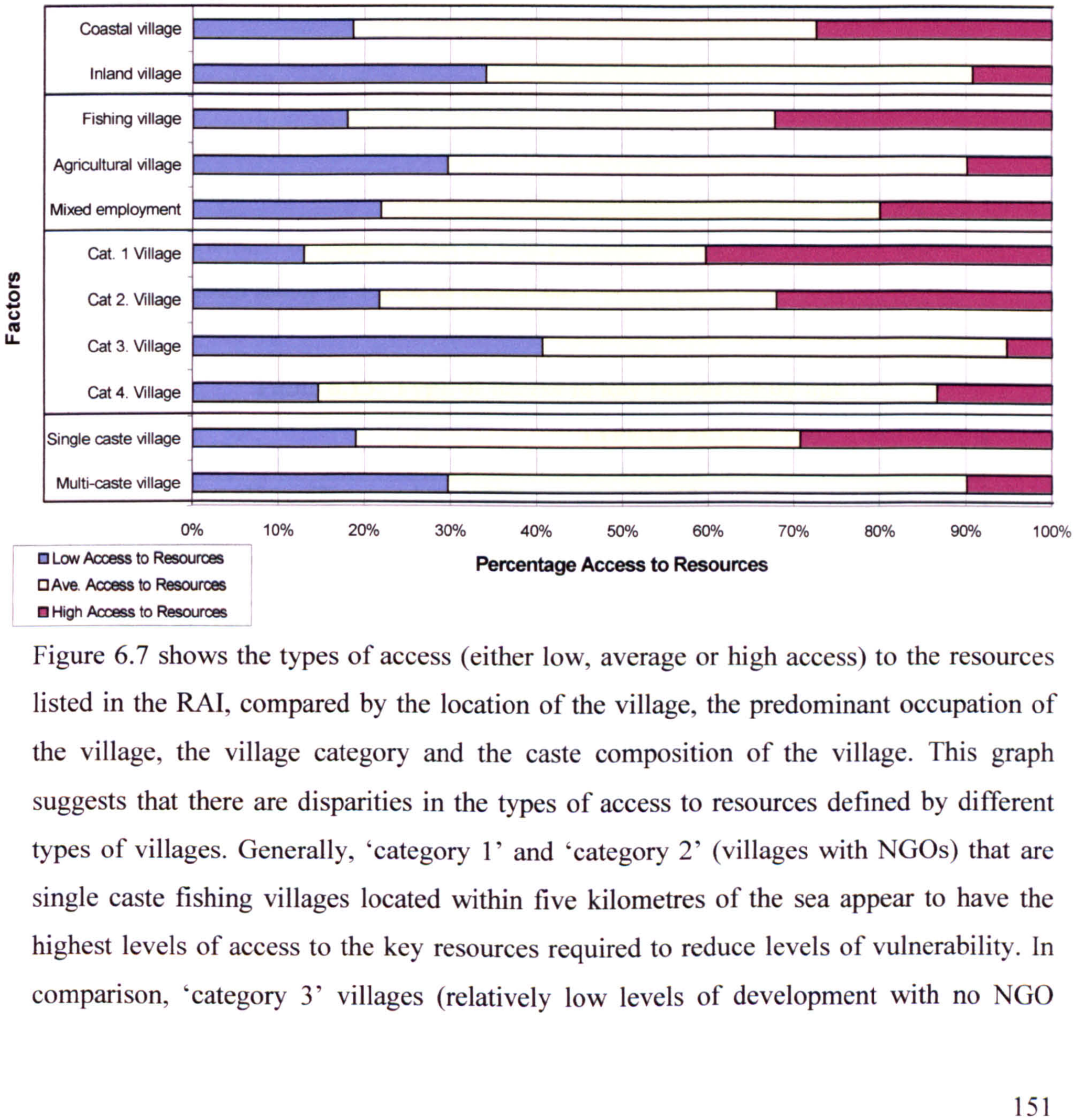



Figure 6.7 shows the types of access (either low, average or high access) to the resources listed in the RAI, compared by the location of the village, the predominant occupation of the village, the village category and the caste composition of the village. This graph suggests that there are disparities in the types of access to resources defined by different types of villages. Generally, 'category 1' and 'category 2' (villages with NGOs) that are single caste fishing villages located within five kilometres of the sea appear to have the highest levels of access to the key resources required to reduce levels of vulnerability. In comparison, 'category 3' villages (relatively low levels of development with no NGO

activity) that are multi-caste agricultural villages located further than five kilometres from the sea appear to have the lowest access to these key resources.

These findings are not particularly surprising, as vulnerability reduction initiatives that can provide cyclone shelters and cyclone resistant housing will understandably target the communities that they perceive as being the most vulnerable, such as the fishing communities that live by the sea. However, the past history of cyclones in Andhra Pradesh have provided a legacy of associated storm surges, that can carry inundation from the sea upon to fifteen kilometres inland (Dube et al 2000). In view of this, it is admirable that the Government has targeted the fishing communities of the Andhra Pradesh coastline, but by targeting these vulnerable communities it is important that other communities are not completely excluded from developmental programmes and vulnerability reduction initiatives.

### AGE

A number of studies (O'Riordon 1986; UNICEF 1989; Guillette 1991) have concluded that the young and the old are some of the most vulnerable members of society. The figures displayed in Table 6.13 suggest that in this particular study age does not appear to be a clear or significant factor in access to resources.

**Table 6.13: Type of access to key resources by age**

| | TYPE OF ACCESS (%) | | |
|---|---|---|---|
| **AGE CATEGORY** | **LOW ACCESS** | **AVE. ACCESS** | **HIGH ACCESS** |
| **20-30 years old (n=43)** | 28% | 46% | 26% |
| **30-40 years old (n=95)** | 21% | 60% | 19% |
| **40-50 years old (n=107)** | 21% | 57% | 22% |
| **50-60 years old (n=32)** | 18% | 41% | 41% |
| **Over 60 years old (n=28)** | 29% | 57% | 14% |
| **Average (n=305)** | 22% | 55% | 23% |

Statistics: $?^2 = 9.768$; $p > 0.05$/NS

However, when researching society in India it should be noted that it can be difficult to disentangle the individual from the household.

> *"The Indian social structure is non-individualistic, basically collective, never free of the intricate linkages with others."* (Gangrade 1998:131)

It is possible that the lack of statistical significance related to age and access to resources reflects this non-individualistic aspect of Indian society, with the extended family living arrangements facilitating the pooling of resources across age groups (Gangrade 1998). However, it is pertinent to note that the idea of supporting the elderly members of a family through their retirement is predominately a privilege for the wealthier households in society. Of the respondents involved in this study, 54 percent of the respondents aged over 60 years old were still working to earn a wage with 29 percent employed in the physically arduous task of manual labour (of the non-workers 25 percent were retired and 21 percent undertook unpaid housework[70]). Although these figures indicate that age is not a significant factor in determining a respondent's access to the key resources listed in Table 6.1, it should be noted that in crisis events the very young and the very old members of a community would invariably be the most vulnerable. It is also important to note that respondents aged over 50 years were the least likely to seek assistance from the Government or aid agencies during a crisis and after a crisis, irrespective of caste or socio-economic status and this is an issue that should be investigated in further depth.

## 6.4 SUMMARY

At the start of this chapter the Resource Accessibility Index (RAI) was introduced and explained. The RAI enables the relative access to the key resources required to reduce levels of vulnerability to be measured for each respondent in the case study areas. The analysis suggests that one of the main factors which may influence access to the key resources is caste classification which appears to also influence the quality of housing and levels of education that the respondents have access to, with the 'higher' castes having more access to the resources than the 'lower' castes. This suggests that there is possibly not only a hierarchy of vulnerability but also a hierarchy of housing and education based on caste, which in turn affect each other.

> *"Authority over resources is established through formal law but the structure of obligations is reformed along axes of classed, casted, and gendered social power."*
>
> (Robbins 2000:439)

As this statement by Robbins suggests, caste classification is not the only factor that has emerged from the analysis, with gender holding a possibly key influence over respondents' access to resources. The analysis included in this chapter suggests that many women can reduce their levels of vulnerability (and therefore their family's levels of vulnerability) by

[70] Statistics: $?^2 = 105.180$; significant, $p < 0.01$

increasing their levels of resilience through membership of CBOs, involvement with NGOs and the utilisation of informal family/kinship networks (as suggested by Agarwal 1990; Moore 1998; Enarson 2000). Involvement with CBOs and NGOs appear to be significant factors in determining not only what resources a respondent can have access to but importantly what resources are available to be accessed by the respondents. However, because NGO operations in the case study villages are restricted to single caste (homogeneous) 'fisherfolk' villages, their influence on the overall reduction of vulnerability in the coastal region is limited. CBOs on the other hand are active in all villages, irrespective of caste composition or occupation and can provide an important platform in which community based initiatives can be structured as long as the entrenched inequalities linked with the traditional caste system and the under-representation of women in the political and decision-making arenas are mitigated for and avoided.

In contrast, social status alone does not appear to be a significant factor in influencing access to key resources, but as explained in the earlier discussion, social status is invariably linked to caste and can therefore be extremely difficult to disentangle from caste. Similarly age does not appear to be a significant factor although the extended structure of many families in the case study areas advocates the pooling of what can be sometimes limited resources. However, it should be noted that the data used for the RAI has been measured in the simplest of ways and although some of the conclusions made in this analysis look strong the analytical simplification of such a complex subject could be masking other more subtle issues. Ideally, further research that is more in-depth and ideally longitudinal would have to be conducted on this topic to establish whether the insights made in this analysis are as important as this data suggests.

Despite these reservations the findings discussed in this chapter suggest that a respondent's access to the key resources that are required to reduce levels of vulnerability appear to be determined to varying degrees by caste, gender, the type of village the person inhabits (these factors are not adversely affected by the RAI cross tabulation concerns addressed earlier in this chapter), along with involvement with NGOs and CBOs. These potentially influential factors cannot occur without the facilitation of interpersonal and inter-institutional social interactions. This thesis posits that high caste people have high access to resources because they possess more numerous and stronger social networks with more important people in society, than the lowest castes.

The social networks element of the analysis has been supported to some extent by the influence of NGOs and CBOs in the relatively high levels of access that women possess in comparison to men. For example, one could argue that when women are involved with NGOs and/or CBOs their vulnerability is relatively reduced. Therefore, it is key to understand that factors such as caste and gender may influence the levels of resources a respondent has access to, but it is also critical to understand how these factors manifest themselves in the real world of everyday village life in coastal Andhra Pradesh. Chapter Seven will now go on to analyse the importance of these social networks and how membership of some institutions may or may not help the most vulnerable to reduce their vulnerability.

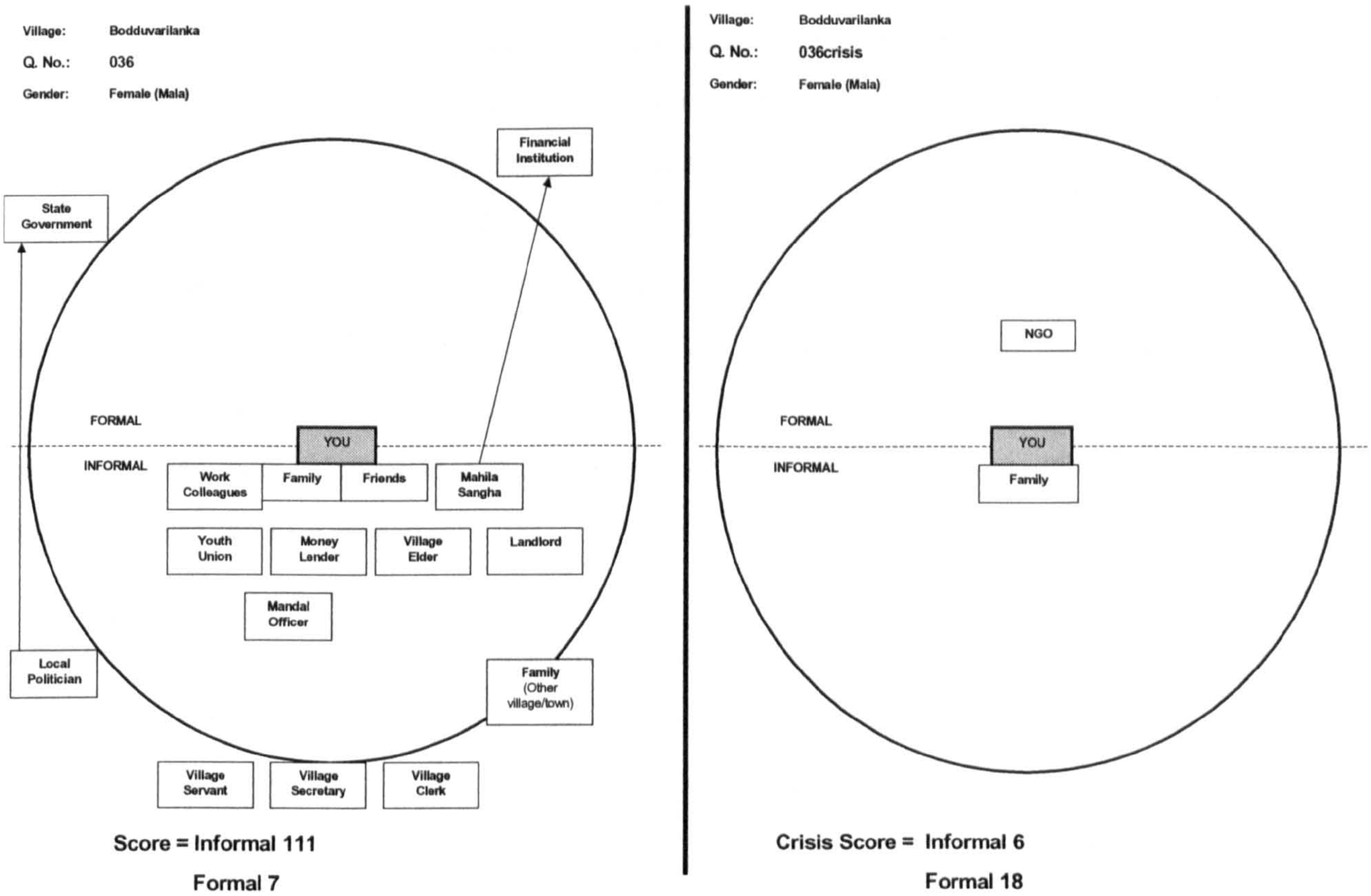
The findings discussed in Chapter Six suggest that respondents' access to the key resources required to reduce levels of vulnerability are determined to varying degrees by caste, gender, involvement with NGOs and CBOs, and the type of village the respondent inhabits. In view of these observations it is important to understand how these factors manifest themselves in the real world of everyday village life in the case study areas, through the social networks that the respondents possess. This chapter will analyse the importance of these social networks and how ultimately membership of some institutions may or may not help the most vulnerable to reduce their vulnerability. This analysis will provide an insight into the village level realities of how resources are accessed and what roles social networks with institutions can play in reducing vulnerability within rural communities and conversely what roles these institutions play in maintaining the ingrained inequalities of access to the key resources that can help reduce vulnerability.

## 7.1 THE INFLUENCE OF SOCIAL NETWORKS

To enable an analysis of the village reality of social networks and social institutional interactions it was necessary to adapt and develop the sociogram as an assessment tool. The sociograms discussed in Chapter Four make the distinction between the formal and informal networks that the respondents possess by institution type in both 'everyday' and 'crisis' scenarios. These institutions were defined by the respondents to ensure that the institutional analysis was placed firmly within the context of the case study villages. The sociogram assessment cards that were administered to the respondents enabled the collection of data that was both qualitative and quantitative. The quantitative data was obtained through sociogram scores (examples of which are provided in figures 7.1 and 7.2) that were calculated using the sociogram scoring system explained in Chapter Four.

The types of social network can be illustrated via the use of copies of the sociogram assessment cards that were administered to each respondent. For example, a respondent's social networks during an 'everyday' situation and a 'crisis' event are shown in figure 7.1, which illustrates the loss of social networks for a typical low caste female Mala (SC) respondent during a crisis event.

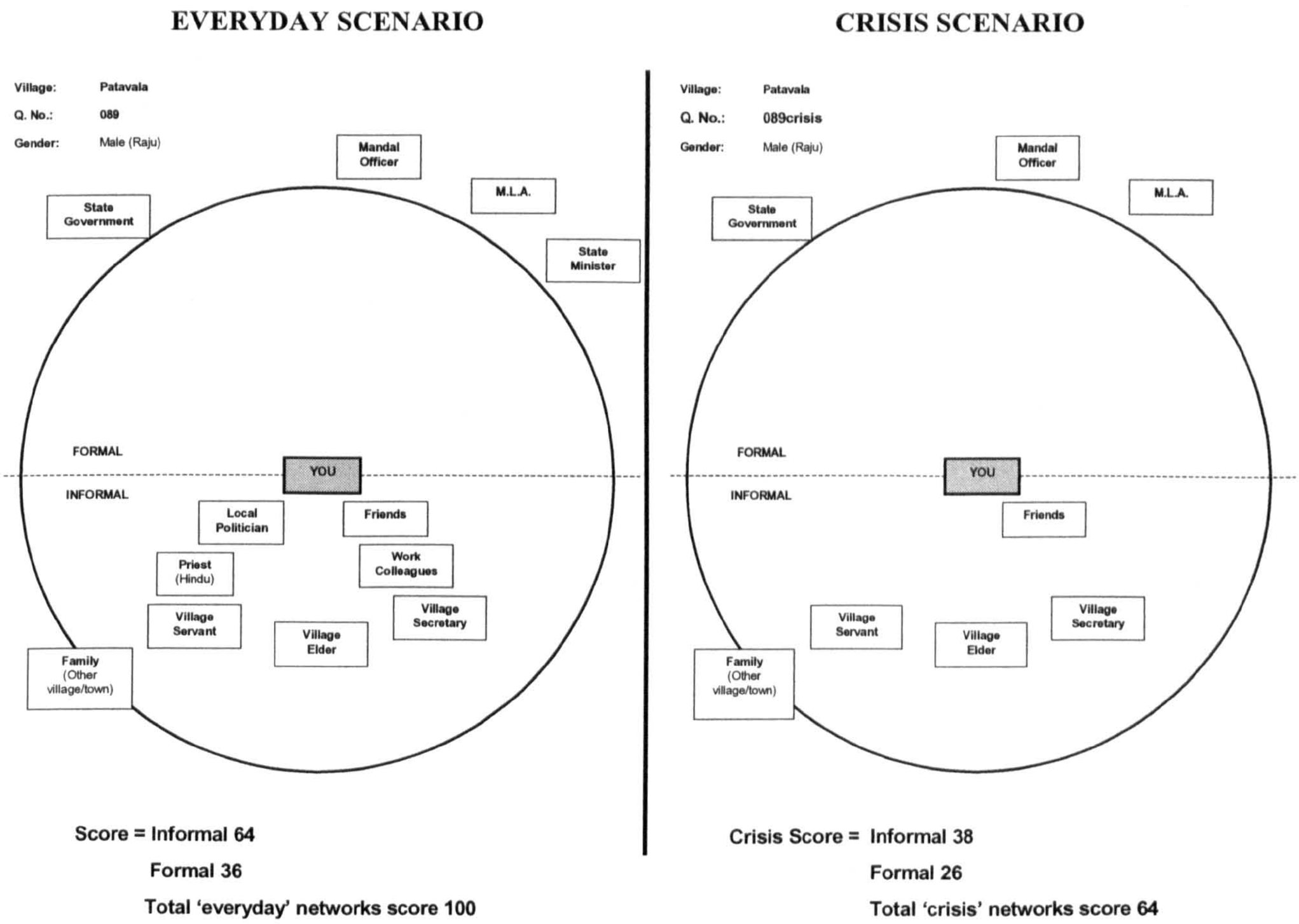
## Figure 7.1: How a low caste respondent's social networks decrease during a crisis




This example of a sociogram assessment card illustrates the case of a respondent that possesses relatively high amounts of everyday social networks that are not resilient to a crisis event with the respondent loosing most of her social networks except for those with her family, with the addition of a formal network with a NGO. The reduction of the respondent's social networks will inevitably reduce her access to the types of social institutions that could have provided her with assistance during and after the crisis. In more simple terms, when a respondent has such a low choice of social institutions to access during a crisis period, their access to any available resources will be minimised, particularly compared to more powerful respondents who have managed to maintain a higher proportion of their social networks. However, in the context of this study it is worth acknowledging that the strength of the respondent's everyday social networks could enable her to reduce her long-term levels of vulnerability via networks with a Mahila Sangha (and the resulting access to a formal financial institution) and networks with family members in another village.

Previous analyses undertaken in this thesis suggest that if levels of vulnerability are to be reduced, it might be important to possess social networks with the key social institutions (such as NGOs, CBOs, community leaders and family members that live in another village) that appear to influence access to resources that can increase resilience and therefore reduce levels of vulnerability. In addition it may also be important to possess and maintain networks with the social institutions that do not typically break their links (or the links are relatively resilient) during a crisis period (such as the Panchayat, village elders and Mandal officials). The resilience of networks with some social institutions is illustrated in figure 7.2, which shows that social networks are also reduced for the typical high caste male, but not to the degree that social networks are lost in the example of the low caste woman, provided in figure 7.1.

**Figure 7.2: How a high caste respondent's social networks decrease during a crisis**




The social networks of the high caste male shown in figure 7.2 indicate that formal networks with social institutions such as Mandal officials and village elders are typically maintained during a crisis event, which can be critical in enabling the respondent to cope with the crisis itself as well as the short term and long term aftermath of the event. The relative resilience of formal social networks during a crisis event can be potentially critical

factors in enabling respondents to access essential relief aid as well as support during the post-event reconstruction phase. The disparity between the mean informal and formal sociogram scores in everyday scenarios and crisis scenarios between the respondents by caste classification (table 7.1) and gender (table 7.2) are provided below.

**Table 7.1: Mean sociogram scores by caste classification and network type**

| | Mean Sociogram Scores | | | | | | |
|---|---|---|---|---|---|---|---|
| | Everyday Scenario | | | Crisis Scenario | | | |
| Caste | Informal networks | Formal networks | Total networks | Informal networks | Formal networks | Total networks | Reduction in total networks |
| OC | 55 | 23 | 78 | 31 | 18 | 49 | 37% |
| BC | 54 | 18 | 72 | 29 | 12 | 41 | 43% |
| SC | 53 | 19 | 72 | 23 | 14 | 37 | 49% |
| ST | 42 | 22 | 63 | 21 | 14 | 35 | 44% |
| Average | 52 | 19 | 71 | 27 | 13 | 40 | 43% |

Table 7.1 shows that the total everyday sociogram scores are generally stratified by caste with the highest castes (OC) possessing the highest levels of social networks (particularly formal social networks) that are the most resilient during crisis events. In contrast the lowest classification of ST have the lowest everyday social networks (despite possessing relatively healthy formal social networks). The figures also reinforce the observations that the higher castes (OC and BC) have the most resilient social networks during crisis events.

**Table 7.2: Mean sociogram scores by gender and network type**

| | Mean Sociogram Scores | | | | | | |
|---|---|---|---|---|---|---|---|
| | Everyday Scenario | | | Crisis Scenario | | | |
| Gender | Informal networks | Formal networks | Total networks | Informal networks | Formal networks | Total networks | Reduction in total networks |
| Male | 47 | 21 | 68 | 25 | 15 | 40 | 42% |
| Female | 58 | 17 | 75 | 30 | 11 | 41 | 45% |
| Average | 52 | 19 | 71 | 27 | 13 | 40 | 44% |

The figures provided in table 7.2 indicate that the findings of Moore (1990) and Neuhouser (1995) regarding the formality of men's social networks in comparison to women's, whose social networks are more informal, comprising relationships with family and friends, are applicable in the context of coastal Andhra Pradesh. Formal social networks with institutions are utilised by males to establish (or re-establish) and maintain the types of affiliations that they perceive to be most useful to them. These formal social networks are not only utilised for accessing physical resources but also in maintaining the important 'connections' that are expected of men, connections that have not been traditionally attainable by women.

Agarwal (1997, 2001) claims that women have been restricted in the past from participation with formal social institutions; therefore they have placed a higher level of importance on maintaining informal social networks, particularly those with their family (Neuhouser 1995). It is only in recent years, with the growth of more informal social institutions such as CBOs (particularly Mahila Sanghas) and NGOs that informal avenues have opened up for women. It is the increased utilisation of social networks with more numerous informal social institutions that has resulted in women outscoring men in social networks scores in both everyday and crisis scenarios. It is the utilisation of these informal social networks that can allow women to access more resources than they could in the past and ultimately can contribute to reducing their levels of vulnerability.

### ACCESS TO RESOURCES

Chapter Six discussed how the matrix developed for the resource accessibility index consists of the four determinants of vulnerability and their individual factors, providing a total of 20 factors in all (five factors per determinant). Thereby, if a respondent possessed access to all the factors he/she would score one point for each factor that they have access to, scoring a maximum of 20 points for their resource accessibility index.

To assess how an individual's social networks may influence access to the four determinants of vulnerability, the scores from the resource accessibility index were calculated for each respondent. Those respondents were then categorised into those that possessed relatively low, average and high levels of social networks[71] and the mean RAI scores for each category were calculated (see Figure 7.3). The contextual analysis provided in Chapter Five highlighted that perceptions of risk were typically related to everyday situations, where issues such as the threats of low agricultural and fish yields, and the lack of basic needs (to prepare for and cope with everyday life as well as crisis events) were prominent. Therefore, it is most pertinent to focus this analysis on the influence of social networks on access to resources in an everyday scenario, a scenario that for many respondents could be regarded as an ongoing crisis.

It should be noted that for this element of the analysis there are circumstances where social networks are also factors that constitute some of the determinants in the RAI (refer to RAI correlation observations discussed in Chapter Six). The overlapping of this analysis

[71] The everyday social network scores are derived from the data provided by the sociograms with the scores ranging from 30 to 138. These scores were categorised on the basis of 33.3% percentiles of the range (108), thereby relatively 'low' social networks ranged from 30-65, relatively 'average' social networks ranged from 66-101 and relatively 'high' social networks ranged from 102 to 138.

regarding some variables explains to some extent the relatively high figures calculated for the determinant of 'Power' (table 7.3) because this determinant consists of five social network related factors (e.g. networks with State/District Government and Mandal officials). However, it should also be observed that the overall levels of individual social networks are calculated on the basis of fourteen social institutions, therefore it is possible that a respondent could possess relatively high levels of social networks without possessing the social networks included in the determinant of 'Power'. The overlapping of these variables does not significantly affect the determinants of 'Poverty', 'Marginalisation' and 'Resilience', nonetheless the correlation issues raised here will be considered during the forthcoming analysis where applicable.

**Figure 7.3: The Influence of social networks upon access to the four main factors that determine vulnerability**

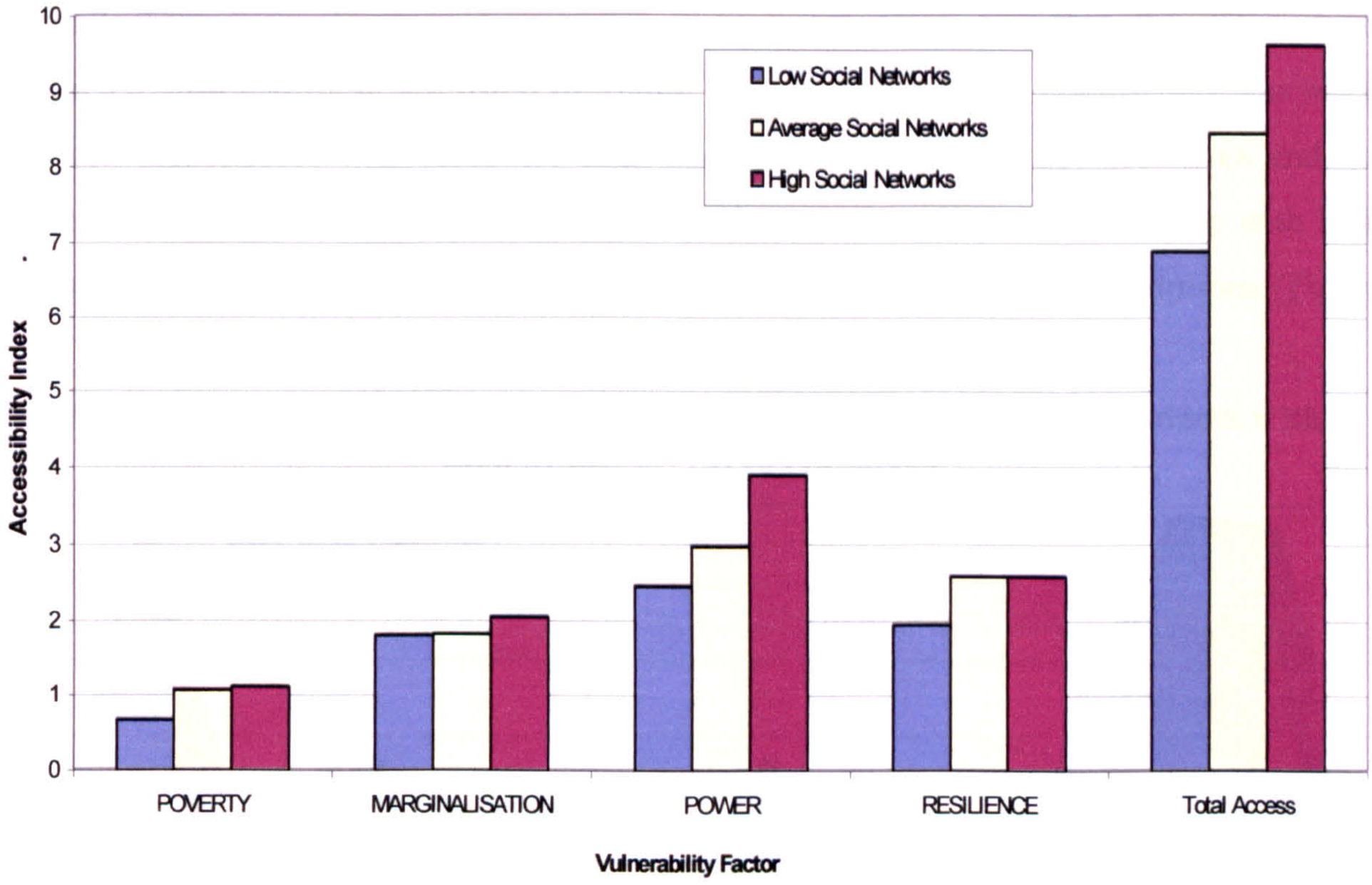



Figure 7.3 illustrates that respondents with the most social networks have increased access to assets, power and resilience and are less marginalised than those with low levels of social networks. Regarding the levels of poverty and resilience there appears to be little difference between the respondents with 'average' and 'high' levels of social networks but what stands out is that there is a disparity between respondents with 'low' and 'high' social networks. The net result of these comparisons is that the respondents with the highest amounts of social networks appear to possess the most assets, are less marginalised and are more resilient to crisis events than respondents with the least amounts of social networks (refer to table 7.3 for details).

**Table 7.3: Mean social network scores by the Resource Accessibility Index (RAI)**

| | MEAN RAI SCORES (by determinant) | | | | |
|---|---|---|---|---|---|
| **Everyday Social Networks** | **Poverty** | **Marginal'n** | **Power** | **Resilience** | **Total Access** |
| Relatively low (n=105) | 0.67 | 1.81 | 2.46 | 1.95 | 6.88 |
| Relatively average (n=182) | 1.07 | 1.82 | 2.98 | 2.58 | 8.46 |
| Relatively high (n=19) | 1.11 | 2.05 | 3.89 | 2.58 | 9.63 |
| Average (n=306) | 0.93 | 1.84 | 2.86 | 2.37 | 8.01 |

Consequently it appears that levels of social networks bear some relationship with an individual's access to the key resources that are factors in determining levels of vulnerability. However to make some sense of this, it is not only important to ascertain to what extent social networks are a key factor, but it is also critical to assess which of these networks with certain social institutions are the most or least significant factors.

## 7.2 THE INFLUENCE OF SOCIAL INSTITUTIONS

Overall there were fourteen key social institutional categories that the respondents interacted with and these are listed in Figure 7.4 and Table 7.4. A comparison was made between respondents with relatively high and low access to the key resources and the percentage access to the fourteen social institutions, to establish whether those with high access to resources also had high 'everyday' access to certain social institutions (Figure 7.4).

**Figure 7.4: The percentage access to Social Institutions by respondents with high or low access to resources**

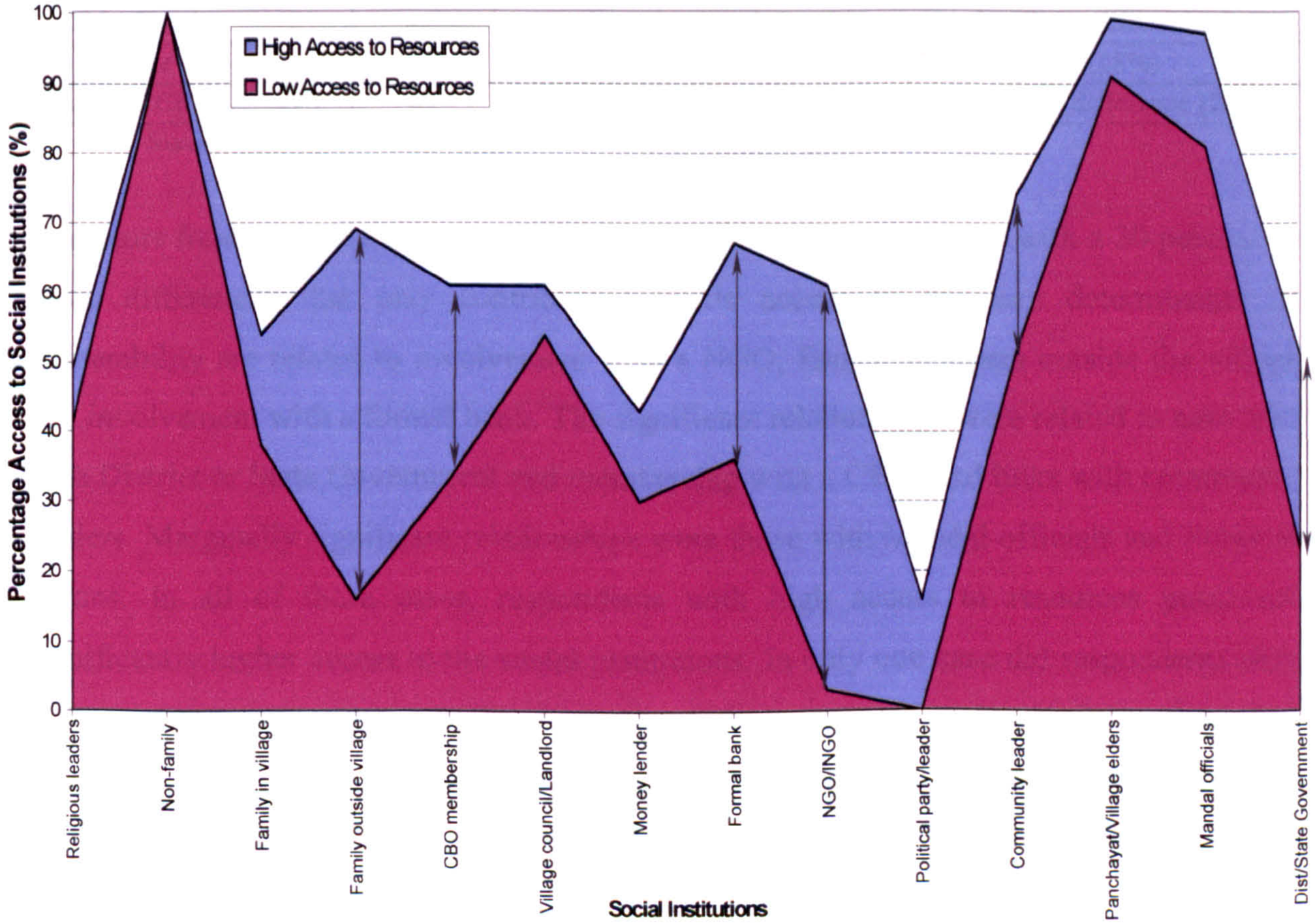


Figure 7.4 shows that in nearly all cases (13 out of 14 cases), respondents with high access to resources appear to have relatively higher access to social institutions than the respondents with low access to the resources. Relationships with institutions that showed a relatively large difference (i.e. 30 percent or more difference) between respondents with high or low access were classed as very significant relationships. Relationships where the difference was between 20-29 percent were classed as significant relationships. These relationships are also statistically significant relationships that have been highlighted by the arrows displayed in figure 7.4.

**Table 7.4: Significance of social networks on accessibility index ratings**

| EVERYDAY NETWORKS | ACCESSIBILITY INDEX | | | Difference between high/low access<br>*Very significant difference => 30%*<br>*Significant difference 20-29%*<br>*Marginal difference 15-19%* |
|---|---|---|---|---|
| | Low | Ave | High | |
| Religious leaders | 41 | 47 | 49 | No significant difference (8%) |
| Non-family | 100 | 100 | 100 | No difference |
| Family in village | 38 | 51 | 54 | Marginally significant difference (16%) |
| Family outside village | **16[a]** | **44[a]** | **69[a]** | Very significant difference (53%) |
| CBO membership | **33[a]** | **51[a]** | **61[a]** | Significant difference (28%) |
| Village council/Landlord | 54 | 58 | 61 | No significant difference (7%) |
| Money lender | 30 | 33 | 43 | No significant difference (13%) |
| Formal bank | **36[a]** | **58[a]** | **67[a]** | Very significant difference (31%) |
| NGO/INGO | **3[a]** | **21[a]** | **61[a]** | Very significant difference (58%) |
| Political party/leader | 0[a] | 3[a] | 16[a] | Marginally significant difference (16%) |
| Community leader | **52[a]** | **58[a]** | **74[a]** | Significant difference (22%) |
| Panchayat/Village elders | 91 | 95 | 99 | No significant difference (8%) |
| Mandal officials | **81[a]** | **84[a]** | **97[a]** | Marginally significant difference (16%) |
| District/State Government | **23[a]** | **40[a]** | **51[a]** | Significant difference (28%) |
| AVE. ACCESSIBILITY | **43** | **53** | **64** | Overall a significant difference (21%) |

[a] Statistically significant; P values < 0.05

It appears from table 7.4 that the most critical relationships (i.e. those with a 30 percent or more difference) that may contribute towards access to the key determinants of vulnerability are related to involvement with a NGO, family members outside the village and involvement with a formal bank. The significant relationships were related to networks with District or State Government and membership with a CBO, and links with community leaders. Marginally significant relationships were those with Mandal officials and Political parties. In all of these cases, respondents with high access to resources possessed significantly higher access to the social institutions. In only one case did respondents with low access to resources actually have the same access to a social institution than respondents with higher access to the resources, this occurred with relationships with non-family, such as work colleagues and friends. These points are summarised in table 7.4 with

the most significant relationships indicated in bold. It should also be noted that relationships with the Panchayat and Village elders are typically available to all the respondents irrespective of their access to resources.

Consequently, it appears that everyday social networks with certain social institutions could have some bearing upon whether the respondents have high or low access to the key resources that constitute the factors that determine vulnerability. At this point it would be interesting to assess the resilience of social networks with each type of social institution in a crisis scenario. Figure 7.5 shows the percentage increase or reduction in the respondent's social networks with the fourteen social institutions from an everyday scenario to a crisis scenario.

**Figure 7.5: The percentage change in networks with Social Institutions from an 'everyday' to 'crisis' scenario**

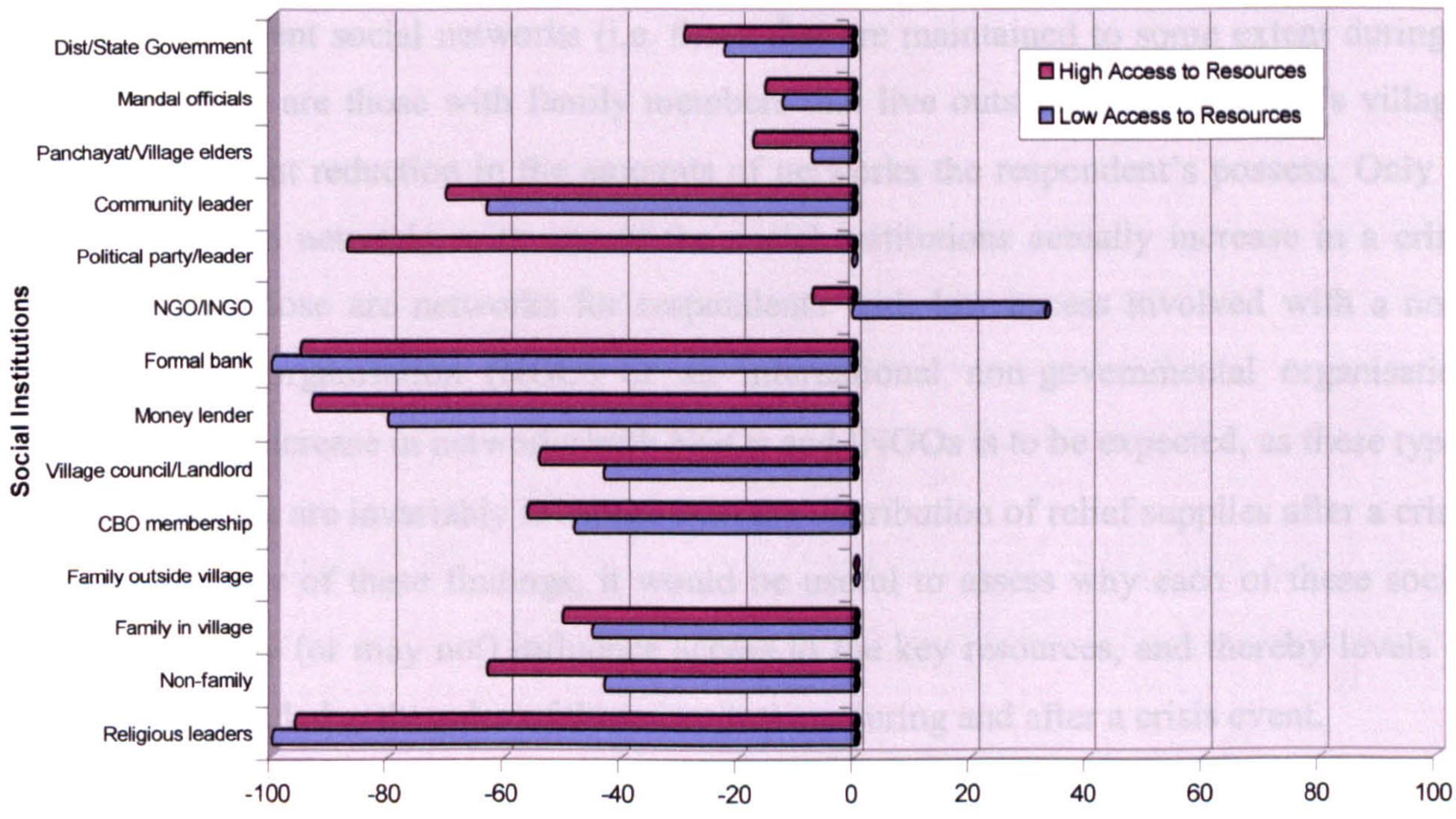



Figure 7.5 illustrates that compared to an everyday scenario respondents with the highest access to resources actually lose more in terms of social networks (overall a 52 percent reduction) than those with the lowest access to the resources (41 percent reduction). However, because respondents with the highest access to resources originally possessed higher levels of social networks, their percentage access to the institutions is still relatively higher in a crisis scenario (34 percent access) than the respondents with the lowest access to resources (25 percent) (table 7.5).

**Table 7.5: Access to Social Institutions in 'everyday' and 'crisis' scenarios**

| | Everyday Access (%) | | Crisis Access (%) | | % Change | |
|---|---|---|---|---|---|---|
| **SOCIAL INSTITUTION** | **Low** | **High** | **Low** | **High** | **Low** | **High** |
| Religious leaders | 41 | 49 | 0 | 2 | -100 | -96 |
| Non-family | 100 | 100 | 57 | 37 *b* | -43 | -63 |
| Family in same village | 38 | 54 | 21 | 27 | -45 | -50 |
| Family in other village | 16 | 69 *a* | 16 | 69 *a* | 0 | 0 |
| CBO membership | 33 | 61 *a* | 17 | 27 | -48 | -56 |
| Village council/Landlord | 54 | 61 | 31 | 28 | -43 | -54 |
| Money lender | 30 | 43 | 6 | 3 | -80 | -93 |
| Formal bank | 36 | 67 *a* | 0 | 3 | -100 | -95 |
| NGO/INGO | 3 | 61 *a* | 4 | 57 *a* | 33 | -7 |
| Political party/leader | 0 | 16 *a* | 0 | 2 | - | -87 |
| Community leader | 52 | 74 *b* | 19 | 22 | -63 | -70 |
| Panchayat/Village elders | 91 | 99 | 85 | 82 | -7 | -17 |
| Mandal officials | 81 | 97 *a* | 71 | 82 | -12 | -15 |
| District/State Government | 23 | 51 *a* | 18 | 36 *b* | -22 | -29 |
| **AVERAGE ACCESS** | 43 | 64 | 25 | 34 | -41 | -52 |

Statistics: a = $?^2$ significant, $p < 0.01$; b = $?^2$ significant, $p < 0.05$; otherwise $p > 0.05$/NS

The most resilient social networks (i.e. those that are maintained to some extent during a crisis scenario) are those with family members that live outside the respondent's village, with no apparent reduction in the amounts of networks the respondent's possess. Only in one instance do networks with one of the social institutions actually increase in a crisis scenario and those are networks for respondents with low access involved with a non-governmental organisation (NGO) or an international non-governmental organisation (INGO). This increase in networks with NGOs and INGOs is to be expected, as these types of organisations are invariably involved with the distribution of relief supplies after a crisis event[72]. In view of these findings, it would be useful to assess why each of these social institutions may (or may not) influence access to the key resources, and thereby levels of vulnerability and also the roles of these institutions during and after a crisis event.

**Religious leaders**

Social networks with religious leaders, such as Hindu priests and Catholic priests display no significant relationship with access to resources. According to the figures, religious leaders are not typically available during a crisis event and thereby are of little support when it comes to helping people cope, although they may play an important role in the post-crisis period through the undertaking of ceremonies related to the death and cremation or burial of family members.

[72] However it should be noted that the figures that indicate a 33% increase in crisis networks with NGOs for respondents with low access to resources may be somewhat misleading as this increase is a result of only one extra respondent gaining access to NGOs during a crisis.

**Non-family networks**

It appears that social networks with friends and work colleagues are strong across the board, irrespective of access to resources and are an important social network to possess. However, these relationships may not possess the physical support required during a crisis that other institutions may offer. Nonetheless, these relationships can provide important psychological support during times of need (Raphael 1986) and the networks could provide avenues that enable access to resources that the respondent might not otherwise have accessed (Agarwal 1990).

**Family members in same village**

These networks have a marginal relationship with access to resources. Limited resources and power, tied with the possibility of suffering the same affects of the crisis, limit the potential support of fellow family members during a crisis, although psychological support and help with care for children and the elderly can be extremely important (Raphael 1986; Gangrade 1998).

**Family members in another village**

Family members that live in another village appear to display a very significant relationship with access to resources. Respondents with strong networks with family members in another village possess the highest access to resource, while those with low networks have the lowest access to resources. There may be a number of reasons for this, such as:

1) broadened horizons in relation to knowledge of entitlements brought about by contact with family members in other villages that may possess increased resources and access to organisations such as CBOs and NGOs.
2) increased access to alternative employment opportunities via these networks facilitating income diversification, and
3) the geophysical issue that family members in another village may not be as vulnerable to hazards (due to geographical location) and are in a better position to help during a crisis because they have not been affected.

Therefore, a key influence that can aid support during a crisis is that family members in another village who have not been as affected (or not affected at all) by the crisis (due to geographical location) will be in a better position to help (and typically will help), than family members within the same affected village. This support can be through the

provision of resources and/or via the provision of shelter. These relationships are potentially critical because the relationships that exist during an everyday scenario are largely maintained during a crisis.

As these networks appear to be significantly related to access to resources it would be appropriate to assess which factors appear to influence social networks with family members in other villages. Table 7.6 shows that the main influences on these social networks in both 'everyday' and 'crisis' situations are gender, whether the respondent was born within or outside their village of residence, involvement with NGOs and CBOs and the caste composition of the village.

**Table 7.6: Factors that influence social networks with family members in other villages**

| | Percentage of respondents with family members in other villages | |
|---|---|---|
| | **Everyday Network** | **Crisis Network** |
| Male | 18% (n=152) | 18% (n=147) |
| Female | 69% (n=154) | 60% (n=145) |
| Born in village | 32% (n=217) | 27% (n=206) |
| Born in other village | 72% (n=89) | 66% (n=86) |
| Involved with CBO | 63% (n=130) | 55% (n=119) |
| Not involved with CBO | 29% (n=176) | 27% (n=169) |
| Involved with NGO | 63% (n=69) | 56% (n=66) |
| Not involved with NGO[a] | 21% (n=52) | 20% (n=50) |
| Single caste village | 40% (n=205) | 37% (n=194) |
| Multi-caste village | 52% (n=101) | 43% (n=98) |

a: Figures only include respondents in villages where NGOs operate
Statistics: $?^2$ = all significant, $p < 0.01$

The respondents with the highest levels of social networks (72 percent) with family members in other villages are those born outside their current village of residence. This may account for the relatively high proportion of women (69 percent) with these networks as it was highlighted in Chapter Six that 56 percent of the female respondents were born outside their village of residence[73] (compared to two percent of males). The respondents that are involved with NGO and CBO activities also display the highest social networks with family members in other villages. More than likely the respondents' involvement with NGOs and CBOs is a direct result of broadened horizons in relation to knowledge of entitlements brought about by contact with family members in other villages that may possess increased resources and access to organisations such as CBOs and NGOs.

[73] It is the tradition in rural India (and to some extent in urban India) when intra caste (and intra *jati*) marriages take place suitable brides will be sought outside the groom's village to minimise the chances of intra family marriages. After such a marriage the bride will typically live in the village of her husband's family.

The significance of the village's caste composition is a difficult factor to explain, but the marginally higher access to external family networks by respondents in multi-caste villages may be attributed to either a) the need for respondents in the more heterogeneous (multi-caste) villages to maintain their external family networks due to a relative lack of solidarity within their village, or b) that the more homogeneous (single caste) villages are actually quite insular with a higher proportion of intra-village marriages than in the more heterogeneous villages. This last assertion is not supported by the data[74] and the most likely factor is that the multi-caste villages are typically agricultural or mixed employment villages that experience higher levels of migratory workers than single caste fishing villages (Palakudiyil & Todd 2003).

This analysis has indicated that respondents that were born outside their current village of residence are typically women and posses the highest levels of these external social networks in both 'everyday' and 'crisis' scenarios. This may also be linked to the higher levels of women's involvement with NGOs and CBOs in comparison to males. Therefore, social networks with family members in other villages are particularly important because such networks are not determined by caste or social status but are networks that some of the most vulnerable members of society (such as women and migrant workers) can utilise.

**CBO membership**

These relationships display a significant relationship because CBOs provide a platform for respondents (that may typically have been marginalised) to access services and resources they may not normally have had access to (Agarwal 1990, 1997). Women can particularly benefit from involvement with CBOs, providing them with access to credit and savings schemes and as importantly, increasing the status of women in villages where they would traditionally have been excluded from decision-making processes (Agarwal 1997; Moore 1998).

Access to CBO networks typically reduces by 52 percent during a crisis event. This situation may be due to the grass roots nature of participation with fellow CBO members (i.e. neighbours) invariably also experiencing similar problems during the crisis period. Possibly the most significant influence of CBOs during a crisis event will be regarding the improved access to credit and savings for the members and additionally the spirit of solidarity that membership to such an institution could encourage (Enarson 2000).

[74] Born in single caste village (75%), born in multi-caste village (62%) Statistic: $?^2 = 5.329$; significant, $p < 0.05$

**Village council/Landlord**

This is not a significant relationship, possibly because the village council has limited powers. Likewise, the landlords do not typically reside in the villages where they own land and therefore any possible networks will be restricted along kinship lines as a consequence. It appears that the village council as an institution can become largely impotent during a crisis event due to limited powers and resources (Reddy et al 1996). Despite a few acts of altruism by some landlords, their influence during a crisis appears to be negligible.

**Moneylender**

Relationships with moneylenders display no significant influence upon access to resources and levels of vulnerability. However, it could be argued that those who rely on credit from a moneylender (with interest rates that can be very high and unregulated) rather than a formal bank, will be less able to cope after a crisis event due to a relatively high debt burden (Addison & Demery 1993). Relationships with the moneylenders are largely non-existent during a crisis event although it should be noted that more people (six percent) with low access to resources rely on moneylenders during a crisis than those with high access to resources (three percent).

**Formal bank**

Involvement with a formal banking institution displays a very significant relationship with levels of vulnerability. This is possibly an example of an institution not necessarily influencing levels of vulnerability but more the case of the factors (i.e. low or high access to resources) influencing whether the respondents have a relationship with the institution. Those with higher access to resources have access to formal banks because they have assets that can be used as security for loans etc. Meanwhile those with low access to the resources may find it difficult to form a network with a formal bank because they lack assets and thereby lack security (Addison & Demery 1993). Although it is worth noting that the data suggests that access to formal banking institutions is significantly increased when respondents are involved with NGOs and/or are members of CBOs[75]. This point highlights the relative importance of how social networks can actually have an influence upon the types of, and levels of access to, other social institutions. Nonetheless, these relationships with formal banking institutions are largely non-existent during a crisis, but

[75] Access to formal banking:

| | | |
|---|---|---|
| CBO members | 80% | |
| Non CBO members | 31%; | Statistics: $?^2 = 74.770$, significant, $p < 0.01$ |
| Involved with NGO | 71% | |
| Not involved with NGO | 50% | Statistics: $?^2 = 11.244$, significant, $p < 0.05$ |

having savings or access to regulated loans through a formal bank should aid the respondents' ability to cope during and after a crisis event.

**Non Governmental Organisations /International Non Governmental Organisations**

The respondents involved with a non-governmental organisation display a very significant relationship with the ability to reduce levels of vulnerability. People with high access to resources have high networks with Non-Governmental Organisation (NGOs), while those with low access to resources have the lowest networks with NGOs. However, it is difficult to ascertain the causal elements of such a relationship. For example, do people have high access to resources because of their networks with a NGO (indicating that NGOs are working effectively)? Alternatively, is it the case of NGOs working with the easy options (people that originally possessed resources) resulting in interventions by NGOs that appear to have been relatively successful but in reality are inappropriately targeted (because those with the least resources are not being targeted). If this last point is the case, then the NGOs are not operating effectively. These queries are difficult to substantiate in this study because the scope of the project has not permitted an in-depth or long-term assessment of the targeting policies and programme effectiveness of NGO activities in the case study areas. Nonetheless it is pertinent to state that the analyses provided in Chapter Five and Chapter Six regarding the villages that NGOs operate in suggests that the latter comment regarding inappropriate targeting may be the most appropriate, in that NGOs have targeted single caste 'fisherfolk' villages such as those inhabited by Agnikulakshatriya and Pattapu Backward Castes (BC), a point reinforced by Table 7.7.

**Table 7.7: Percentage of respondents possessing social networks with NGOs by Caste Classification**

| | Social Networks with NGOs | |
|---|---|---|
| **Caste Classification** | **Everyday Network** | **Crisis Network** |
| OC castes [c] | 0% (n=12) | 0% (n=12) |
| BC castes [c] | 35% (n=229) | 35% (n=217) |
| *Agnikulakshatriya* [d] | *39% (n=130)* | *39% (n=119)* |
| *Pattapu* [d] | *59% (n=49)* | *57% (n=49)* |
| *Other BC castes* [d] | *0% (n=50)* | *2% (n=49) a* |
| SC castes [c] | 0% (n=31) | 7% (n=29) b |
| ST castes [c] | 0% (n=34) | 0% (n=34) |
| **Average** [c] | **26% (n=306)** | **27% (n=292)** |

a. One Chakkali (BC) respondent residing in predominately Agnikulakshatriya village
b. Two Mala (SC) respondents residing in a multi-caste agricultural village
c. Statistics: $?^2 = 30.484$; significant, $p < 0.01$
d. Statistics $?^2 = 72.940$; significant, $p < 0.01$

Table 7.7 illustrates the disparity between the caste classifications regarding active involvement with NGOs with the 'fisherfolk' BC castes monopolising the 'everyday' social interactions. This situation is marginally different in a 'crisis' scenario with two Mala (SC) families and one Chakkali (BC) respondent benefiting from social networks with NGOs while the 'everyday' social networks possessed by the 'fisherfolk' respondents remain largely unaltered. It is worth noting that the one Chakkali (washerfolk) respondent achieved access to a NGO during a crisis largely due to living in a predominately 'fisherfolk' village, in fact this Chakkali respondent belongs to the only non-fisherfolk family in the village. This increase in networks with NGOs and INGOs is to be expected, as these types of organisations are invariably involved with the distribution of relief supplies after a crisis event. However, if the NGOs' attempts at advocating appropriate relief distribution post-crisis event were successful, one would expect to see a more significant increase in NGO networks, particularly with respondents with low access to the key resources. Whether these intra and post event relationships are appropriately targeted is yet to be established and will be difficult to assess without further research being conducted during the intra and post event stages of a crisis event.

Interview accounts of the aftermath of the 1996 cyclone that affected East Godavari were provided by respondents who gave largely positive responses regarding the appropriateness of NGO activities.

> *"I think all the International Organisations and NGOs were the most useful during that period, because they provided lots of food, warming clothes, health care, and kitchen vessels. At that time people needed food, money was not the priority, which is why I am telling you their work was very much appreciated."*
>
> (Interview 8, Male (BC) village elder from single caste village)

Out of the 34 respondents interviewed, 24 stated that they were pleased with the way relief was equally distributed by the NGOs. The following account highlights the impartiality that some NGOs have been commended with but also illustrates the practical problems of relief distribution.

> *"Some relief was distributed in Tallarevu but there was a big rush, so the people who benefited the most were those who had lots of strength, and of course many old people didn't receive that relief. The Government provided us with compensation of one thousand two hundred Rupees for house repairs. Private organisations such as NGOs were the most helpful because they had no partiality, they look at everyone as*

*equal and they provided lots of food, clothes, jower powder and oil for cooking. At the time those items were the most useful things we could get."*

(Interview 11, Female (SC) from multi-caste village)

Therefore, the perception of the way relief was distributed by the NGOs has largely been positive with only three respondents out of the 34 interviewees voicing grievances regarding the appropriateness of relief distribution by NGOs.

*"I think the NGOs were not useful for all the villagers, they provided help for a limited amount of people, like SC and BC people."*

(Interview 15, Male (OC) landlord from multi-caste village)

The account given above is typical of the other grievances made by two respondents from multi-caste villages, in that concerns over the appropriateness of relief distribution by NGOs were based on lines of caste classification. What is key to note here is that it is difficult to accuse the NGOs of inappropriate relief distribution but the data supports the contention that where the NGOs do fail is in the restricted manner in which they only target single caste villages and more specifically the fisherfolk (Agnikulakshatriya & Pattapu) communities in this region. Despite these queries, the work of NGOs related to Task Force Groups and education regarding disaster preparedness can provide essential knowledge and aid coping during both infrequent large-scale crises and smaller scale but regularly occurring crises. Nonetheless, this should be work that transcends caste, occupation and village composition lines in a way that does not compromise their ability to assist the most vulnerable.

**Political party/leader**

There is a slightly significant relationship between networks with political leaders and levels of vulnerability, with the most vulnerable possessing no access to political leaders while sixteen percent of the least vulnerable respondents possess access to political leaders. This possibly occurs because the political leaders are most active in the period prior to elections (Kothari et al 1986; Epstein et al 1998) and the disparity in access may be symptomatic of the political leaders favouring the more powerful members in the society as a ploy to court votes and encourage 'vote pooling' (Kothari et al 1986; Narayanasamy et al 2000). The canvassing of voters does occur to some degree prior to elections but the field study observations and some respondent accounts verified that this 'interest' in the

villager is typically short-term. This is a point observed by Epstein during forty years of research in rural Karnataka in southern India (Epstein et al. 1998).

> *"Political parties are important only immediately before the day of election; as soon as the ballot boxes are closed they cease to matter."* (Epstein et al. 1998:231)

The data was checked to assess which of the respondents possess these networks, based on their caste, social status and gender. The data indicated that there was no significant correlation between respondents that possess or do not posses 'everyday' networks with political leaders based on gender[76] or social status, but it appeared that caste classification was a marginal factor. The data shows that none of the SC and ST caste classifications possessed such networks, while of the 16 respondents that did possess networks with political leaders, two were OC castes (16.7 percent of that caste classification) and fourteen respondents were BC castes (6.1 percent of that caste classification). During a crisis event, relationships with political leaders are non-existent for the most vulnerable but they also contribute little to assist the least vulnerable during a crisis. However, it is worth noting that this may not be the case if a crisis event occurs in the run up to an election, where political involvement in the assistance of communities may well be more visible if not necessarily well directed (Reddy & Sastry 1992).

**Community leader**

There is a significant relationship between networks with community leaders and vulnerability; with the most vulnerable possessing 52 percent access to community leaders while the least vulnerable have more access (74 percent). This observation possibly occurs because community leaders are typically elected and the disparity may be symptomatic of the incumbent leader favouring the more powerful members in the community as a ploy to court votes and encourage 'vote pooling' (Narayanasamy et al 2000). Relationships with community leaders have, according to the figures, little influence on how people cope during a crisis event. However, it cannot be ignored that the role of a community leader could be a critical factor in accessing resources for under represented (or minority) castes during times of relief distribution (Harding 2001).

**Panchayat/Village elders**

There is no significant relationship between the most and least vulnerable and their access to the Panchayat or village elders, but in a way this is a significant finding because the

[76] Eight males and eight females (both 5.2%) possessed 'everyday' social networks with political leaders.

Panchayat is the core of decentralised governance (Shitole 2001) with the majority (95 percent) of the respondents have access to the Panchayat. Networks with the village elders and the Panchayat in particular are potentially important networks during a crisis. These relationships are largely maintained during a crisis event with an average reduction of only 12 percent with respondents with low access to resources losing only seven percent of their networks with the Panchayat. However, it should be noted that women's networks with the Panchayat and village elders reduce by 19 percent compared to a seven percent reduction for males, indicating a gendered element to such relationships.

This gendered element to the reduction of social networks with these key institutions may disproportionately affect the female headed household (Fernandes & Menon 1987; Agarwal 1990), a point supported by the data which shows that women that are the head of households lose 22 percent of their social networks with the Panchayat and village elders, in comparison to a 10 percent reduction for women from male headed households[77]. This observation could be significant because the Panchayat and the village elders are the key institutions responsible for the distribution of village level resources in a crisis (Reddy et al 1996). Therefore, because of the influence of people such as village elders it is critical that they are actually unbiased in the ways that resources are distributed, thereby avoiding cases of nepotism and corruption. However, it is apparent from some interview accounts that it is very important for villagers to maintain good relationships with village elders, even in the relatively homogeneous single caste villages.

> *"The village elders and other rich men distributed rice for selected people only and not for all the villagers. Village elders are only assisting influential persons. The village elders are only interested in not helping the poor people because they didn't distribute the relief equally."*
>
> (Interview 2, Female (BC) from single caste village)

In another case one woman explained that her husband died during the 1996 cyclone but she did not receive the compensation that she was entitled to because of previous recriminations with her village elders.

> *"The village elders didn't send my husband's name to the appropriate Government people. Previously, we had some clashes with the village elders, particularly with the ration dealer in my village. The ration dealer is involved with some corruption in my village and my husband had witnessed some of that corruption. My husband then*

[77] Not statistically significant, p >0.05/NS

*went and complained to some Government people and as a consequence my husband became the village elder's enemy. That is why I did not receive compensation for my husband's death. If I go to the village elders for help, they will not help me."*

(Interview 5, Female (BC) from single caste village)

Therefore, it is worth acknowledging that even though the majority of respondents possess social networks with village elders it appears that it is important to not only possess such networks but to also be on good terms with the village elders and (or ideally), to be a person of some influence, particularly during periods of crisis.

**Mandal officials**

There is a marginally significant relationship between networks with Mandal officials and levels of vulnerability. Respondents with the highest access to resources possess 97 percent networks with Mandal officials while those with the lowest access to resources only have 81 percent access to Mandal networks. The data was analysed to assess whether those who do not possess these networks were marginalised due to caste, social status or gender. The figures suggested that access to Mandal officials was not determined by caste, social status or gender. The only apparent influence upon levels of social networks with Mandal officials was whether the respondent was politically active; with 65 percent of political party members obtaining 'everyday' social networks with Mandal officials compared with the average of 87 percent for all respondents. Relationships with Mandal officials are potentially important influences on how people can cope in a crisis scenario because these officials are, on a local scale, important and powerful decision makers and distributors of resources. It is significant that only 13 percent of networks are lost during a crisis event and reflects well on the involvement of Mandal officials in a crisis situation.

**District and State Government officials**

Table 7.5 showed that there is a significant relationship between networks with the Government between those with high access to resources (51 percent) and low access to resources (23 percent). This disparity appears to reflect poorly on the type of interactions the District and State Governments practise. The figures suggest that the poorest, most marginalised, least powerful and least resilient respondents lack the access to the Government officials that could help them reduce their levels of vulnerability. During a crisis, those with low access to resources have only 18 percent access to the Government while those with the highest access to resources have 36 percent access. It is apparent that

those who need assistance from the Government the most during a crisis do not receive the assistance they need, while the opposite is the case for the least vulnerable. This potentially illustrates the ways in which the most powerful, least marginalised and resilient members of a community can, via networks with influential Government officials, receive resources that should be targeted at the poorest, least powerful or resilient and most marginalised members of the same community. Table 7.8 illustrates some of the factors that appear to influence respondents' social networks with Government officials.

**Table 7.8: Factors that influence respondents' social networks with Government officials**

| | Respondents possessing networks with Government officials (%) | |
|---|---|---|
| | Everyday network | Crisis network |
| Male | 51% | 44% |
| Female | 27% | 17% |
| OC Caste | 76% | 67% |
| BC Caste | 34% | 27% |
| SC Caste | 29% | 17% |
| ST Caste | 71% | 53% |
| Political party member | 59% [b] | 65% [a] |
| Not political party member | 38% [b] | 29% [a] |

Statistics: $?^2$ = all significant unless otherwise indicated, $p < 0.01$
a; Statistic: $?^2$ = significant, $p < 0.05$
b; Statistic: $?^2$ = not significant, $p > 0.05$/NS

This table indicates that the respondents with the highest levels of social networks with Government officials are males, OC and ST castes, and members of a political party. The gendered element of this observation is particularly critical for women that are head of their household, with only 18 percent possessing everyday networks with Government officials, falling to 10 percent during a crisis[78].

The previous analyses have shown that the OC castes appear to have the highest access to Government officials with 76 percent access in an everyday situation compared to 67 percent access during a crisis. However, what is a surprise are the relatively high levels of access that Scheduled Tribals possess with Government officials (71 percent). This relatively high access to Government officials may be somewhat misleading, because it should be noted that all the Scheduled Tribals that possess these types of social networks (24 in total) live in Thotapalligudur Mandal in Nellore (a mandal that generally displays higher levels of formal social networks than the mandals in East Godavari) and that

[78] Statistic: $?^2 = 15.927$; significant, $p < 0.01$

nineteen of these live in a single caste ST village (Koduru Mukkantam Colony). This may indicate that what appears to be relatively lower levels of vulnerability for STs in comparison to Scheduled Castes (SCs) in the caste study areas is somewhat skewed by the data provided by ST respondents from a single caste village that happens to be located in Thotapalligudur mandal in Nellore. This assertion is substantiated to some extent by the data provided in Table 7.9, in that STs from a single caste village in Nellore benefit from social networks with Government officials that are resilient in a crisis situation, to a higher extent than STs that reside in multi-caste villages in East Godavari.

**Table 7.9: Scheduled Tribals (STs) access to social networks with Government officials by caste composition of village**

| | ST respondents possessing networks with Government officials (%) | |
|---|---|---|
| **Caste composition of village** | **Everyday network** | **Crisis network** |
| Single caste village (Nellore) | 76% (n=19) | 64% (n=16) |
| Multi caste villages (E. Godavari) | 56% (n=5) | 22% (n=2) |

Note: Statistic: $?^2$ not significant, $p > 0.05$/NS

This table demonstrates that data can be misleading, particularly when the sample size is relatively small, such as that experienced with the ST respondents (that number thirty four in total) but also relatively extraneous circumstances need to be taken into account when analysing the data. Nonetheless, a key point that has been demonstrated here again, is that the caste composition of a village can be a critical factor that influences access to the types of resources required to aid vulnerability reduction.

It is also interesting to note that of the political party members that hold networks with Government officials ten out of eleven (77 percent)[79] of them belong to the incumbent Telugu Desam Party. Typically social networks with the Government are maintained during a crisis event, indicating the potential importance of being politically active and therefore relatively influential. What these observations demonstrate is that the potentially critical social networks with the Government (that are relatively resilient to crises) are influenced by one's stature as a male, a high caste or political member, with the 'non-influential' members of society, such as women, BC and SC castes and respondents that are not politically active being relatively excluded from these key social networks with the Government.

[79] Statistic: $?^2 = 4.923$; significant, $p < 0.05$

So far this analysis has shown that respondents with the highest access to resources appear to have the most social networks and relatively higher access to social institutions than the respondents with the lowest access to the resources. However, the causality of these relationships has not yet been ascertained and what needs to be assessed is whether social networks influence accessibility to resources or whether access to resources influences social networks. The contextual analysis provided in Chapter Five highlighted that perceptions of risk were typically related to everyday situations, where issues such as the threats of low crops and fish yields, and the lack of basic needs (to prepare for and cope with every life as well as crisis events) were prominent. Therefore, it is most pertinent to ultimately focus this analysis on the influence of social networks on access to resources in an everyday scenario, a scenario that for many respondents could be regarded as an ongoing crisis.

## 7.3 THE RELATIONSHIPS BETWEEN SOCIAL NETWORKS & RESOURCES

Table 7.10 summarises how the four main factors that affect levels of vulnerability are utilised and accessed by the respondents, based on the data collected during this study and the previous analyses. This table will provide the basis for suggesting why some factors that influence vulnerability are utilised by some respondents and not others.

The key issue that table 7.10 highlights is that some of the factors that constitute the determinants of vulnerability appear to be utilised and accessed by certain groups of respondents more than others. The key factors that determine access to resources (or are determined by levels of a respondent's resources) appear to be the respondent's caste, the respondent's gender, caste composition of the respondents village, whether they are members of a CBO, actively involved with a NGO and possess social networks with Government officials. This statement in itself highlights one element of causality in that causality can be defined by logic. For example, a respondent's caste or gender cannot be determined by their access to resources because logically the respondent is born into a certain caste as a man or woman irrespective of their levels of poverty, marginalisation or power (Sahay 2004; Gupta 2004).

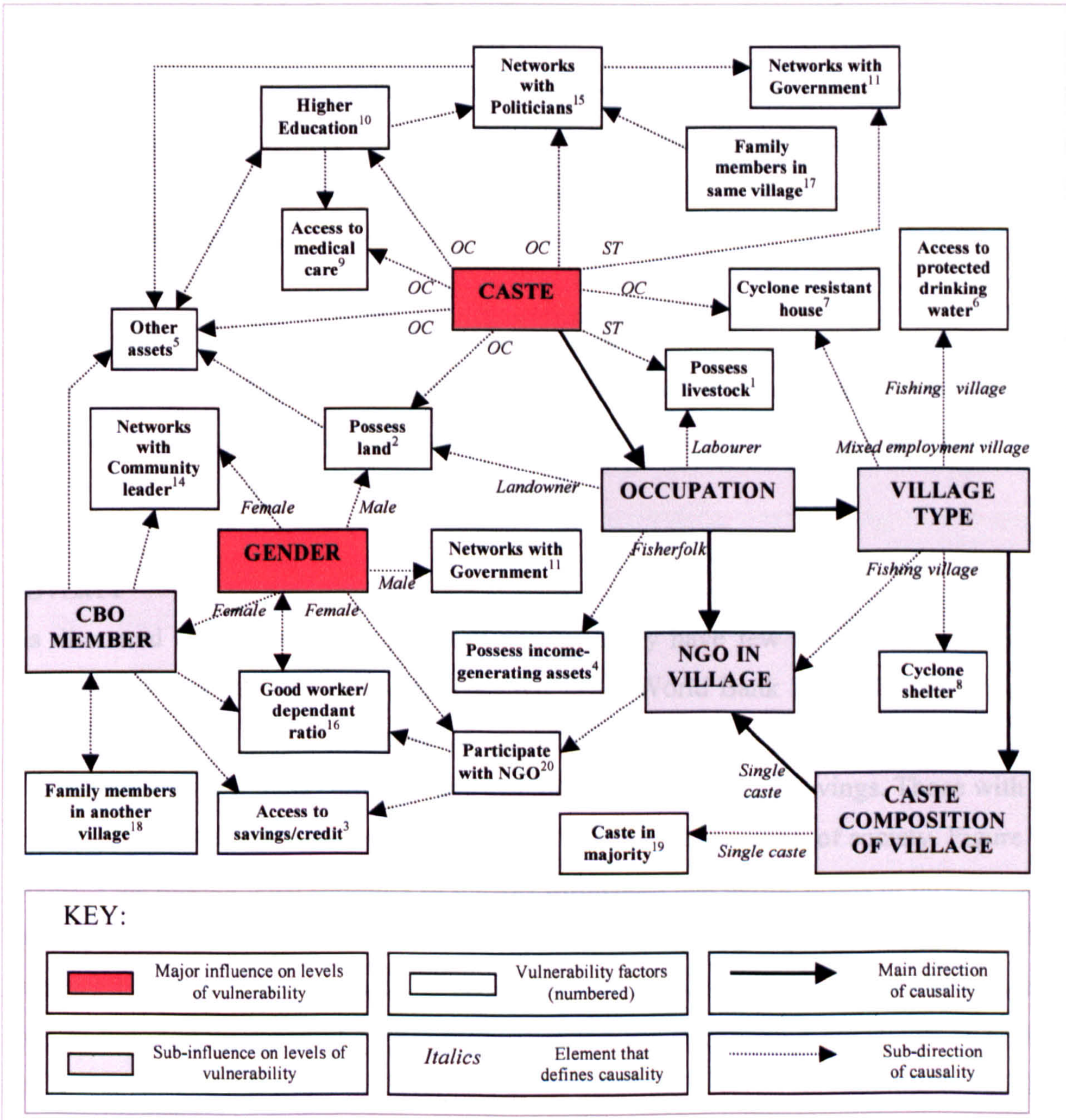
## Table 7.10: How the Four Main Vulnerability Factors are Utilised and Accessed by the Respondents

| DETERMINANT | FACTORS | MAINLY UTILISED BY ... (*GENERALLY NOT UTILISED BY .../NOT AVAILABLE TO...*) |
|---|---|---|
| **Poverty** | Possess livestock? | Labourers (ST); Agricultural villagers; Migrants |
| | Possess or lease land? | Landowners (OC); Males; Agricultural villagers; Political Party members |
| | Savings/access to credit? | Involved with NGO (BC); CBO members; Women; *Not utilised by STs* |
| | Possess income-generating equipment? | Fisherfolk (BC); *Not utilised by STs* |
| | Possess other assets? | Landowner (OC); CBO members; Non-migrants; Educated people; Political Party members |
| **Marginalisation** | Access to protected drinking water? | *Less access for agricultural villages* |
| | Access (possess) a cyclone resistant house? | OC castes; Mixed employment villages |
| | Access to a cyclone shelter? | Fisherfolk (BC); Single caste fishing villages; Involved with NGO (BC) |
| | Access to a Medical Centre within 5kms? | Landowners (OC); Educated people; Political Party members |
| | Higher than primary level education? | OC castes; *Not available to SCs and STs* |
| **Power** | Networks with the State/District Government? | Men; OC and ST castes; Pukka house owners; Political Party members; Mixed employment villages |
| | Networks with Mandal Officials? | **Typically available to all** |
| | Networks with the Panchayat/Village Elders? | **Typically available to all** |
| | Networks with a Community Leader? | Women; CBO members |
| | Networks with a Political Party/Leader? | OC castes; Educated people; *Not available to SCs and STs* |
| **Individual & social resilience** | Good worker/dependant ratio? | Women; Migrants; Labourers; Involved with NGO (BC); CBO members; *Not used by Political Party members* |
| | Family members in the same village? | Political Party members; *Least available to STs; Least available to mixed employment villages* |
| | Family members in another village? | Women; Migrants; Labourers; CBO members; *Not by Educated people* |
| | Caste in the majority within the village? | Single caste fishing villages; BC and ST castes; Panchayat President |
| | Actively involved with a NGO/INGO? | Fisherfolk (BC); Single caste fishing villages; Women; CBO members; *Not by Educated or Political people* |

## CAUSALITY OF RELATIONSHIPS

This analysis investigates whether respondents possess higher access to resources because they possess more (or stronger) social networks with key social institutions or whether it is the case of the respondents possessing relatively higher levels of social networks with key social institutions because they possess relatively higher access to resources? The analyses conducted earlier in this chapter and previous chapters, along with the logic of causality, are the basis for the following analysis and discussion regarding possible causality.

**Figure 7.6: The main socio-economic influences on levels of access to resources that can reduce vulnerability and the causality of those influences.**




**Note:** Networks with Mandal officials, Panchayat members and Village Elders are typically equally available to all the respondents, therefore these vulnerability factors do not, in the context of this research, have a relatively positive or negative influence upon levels of vulnerability.

The causal relationships between the twenty factors (each factor is numbered to correspond to the numbering in Table 6.1) that constitute the determinants of vulnerability and the main influences on access to those resources (such as networks with social institutions, and the respondents' caste and gender) are graphically illustrated by figure 7.6. The main factors, that have been highlighted in the previous analysis, that appear to influence a respondents' levels of access to resources that can reduce vulnerability (e.g. caste) are provided in red boxes, sub-influences are provided in grey boxes (e.g. caste composition of village). In addition solid arrows represent the main direction of likely causality (e.g. caste typically defines the respondent's type of occupation) and broken arrows represent sub-directions of causality (e.g. a fishing village is most likely to have a cyclone shelter). The text in italics indicates the elements that define the causality (e.g. regarding gender, a woman is most likely to be a member of a CBO, a man is most likely to possess land). The main factors that constitute the determinants of vulnerability are represented in white boxes, to provide the reader with an opportunity to follow the types and directions of causality, which will now be explained in detail.

The simplest way to examine the complexity and subtleties of figure 7.6 and to assess the causality of the relationships between social networks and access to resources would be to disentangle the interlinkages of causality that constitute each of the four determinants of vulnerability, starting with 'Poverty'.

### POVERTY

As discussed in Chapter Two, the poor will typically have few assets and little choice about where they live and how they live (Sen 1981; World Bank 1990). For the scope of this study, poverty has been assessed in terms of access to key assets such as land ownership, livestock ownership, income generating equipment and savings. Those with the least access to such resources will be relatively the poorest members of society. Figure 7.7 suggests the disentangled causality of the key influences that define levels of poverty, with the major influences shown in red boxes sub-influences in light grey boxes and the five vulnerability factors per determinant shown in white boxes (related vulnerability factors that do not directly constitute the specific vulnerability determinant are shown in broken white boxes). The following discussions and the accompanying figures attempt to simplify and explain the causality of the key influences on access to resources that can help reduce levels of vulnerability.

**Figure 7.7: Causality of key influences that define levels of Poverty**

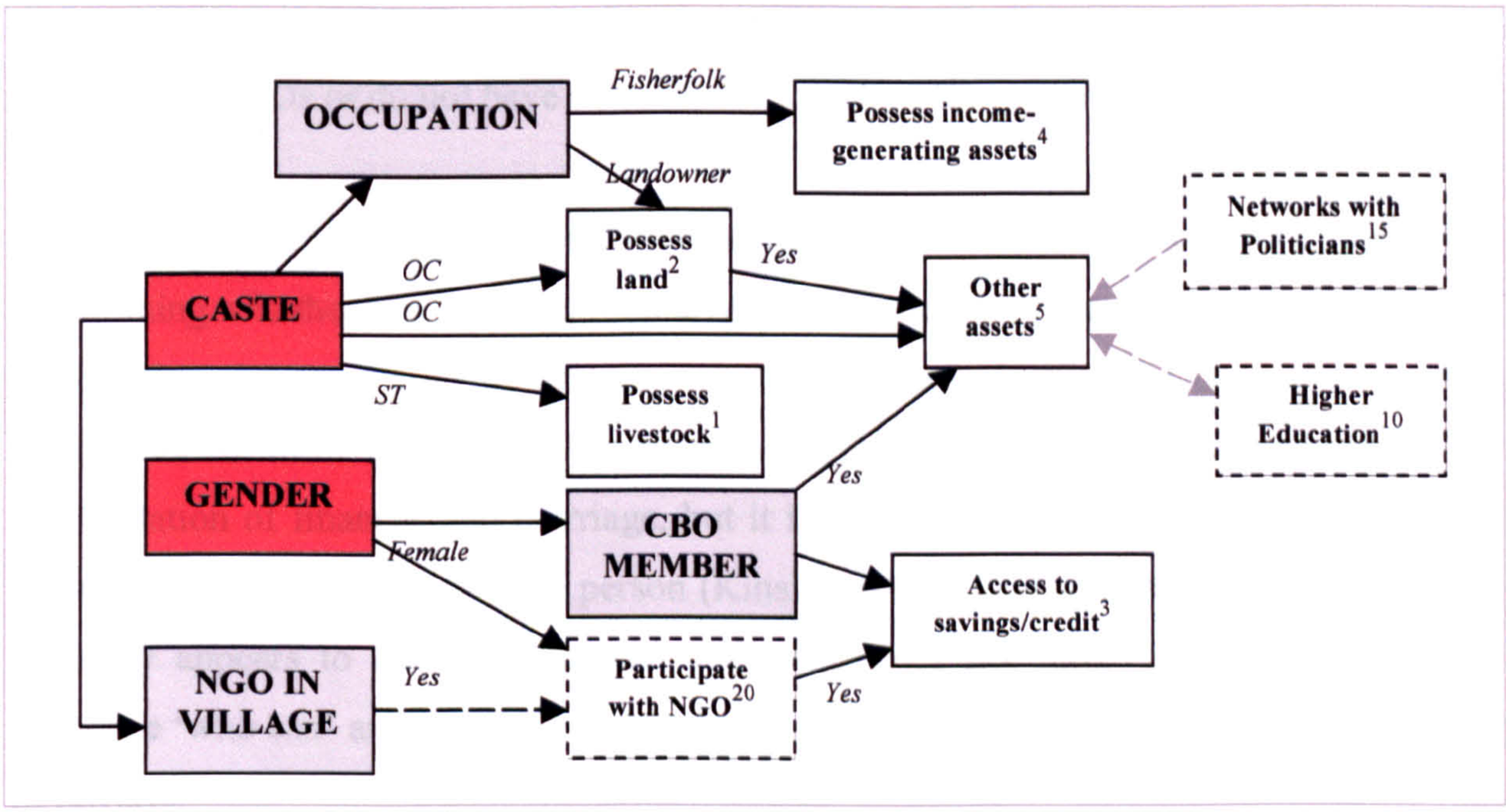



Figure 7.7 shows that the major influences on accessing poverty reducing resources are caste (associated with occupation) and gender (and possible membership of a CBO). In other words, whether a respondent has access to the five factors that constitute the vulnerability determinant of 'poverty' is largely defined by their caste (and therefore their occupation) and/or their gender. For example the analysis of the data suggests that a typical high caste male possesses land and other assets (which will also typically mean that he is well educated) and will also be the least poor. Additionally, when this high caste male's wife or daughter is involved with a CBO it is highly likely that she will gain access to savings and credit schemes. In contrast it appears that a typical low caste Madiga (SC) male will not typically possess land or substantial assets of any type and will therefore be very poor unless a female family member is involved with a CBO and has accessed a credit/savings scheme.

Therefore, this study suggests that the poverty determinant of vulnerability has factors that are influenced largely by caste, gender, occupation and networks with CBOs (and in the case of fisherfolk involvement with a NGO). Non-OC respondents can increase their access to poverty reducing resources via utilising CBOs and NGOs to access savings and credit facilities, but this is an avenue typically adopted by women and in the case of NGOs restricted to single caste fisherfolk villages. It is therefore possible that although males are not typically involved with CBO and NGO activities, they are likely to benefit indirectly from the involvement of their wives and or daughters with the female members of the household bearing the burden of extra commitments associated with CBO or NGO

membership. The respondents with the least access to these resources are the Scheduled Castes and Scheduled Tribes in multi-caste villages, particularly respondents that are not members of CBOs or do not have other family members that are involved with CBOs.

Informal networks with social institutions such as CBOs and NGOs can be important in determining whether the poor (particularly the female poor) can reduce their levels of poverty but the most critical factor appears to be caste. Unlike the class system, it is impossible to work one's way up through the caste system through hard work, the accumulation of finances and marriage, but it is possible to move down the caste system through marriage to a lower caste person (Kinsley 1993). This analysis suggests that caste not only appears to define 'who has' and 'who does not have' but caste appears to influence 'who can' and 'who cannot' access the resources required to improve their levels of poverty.

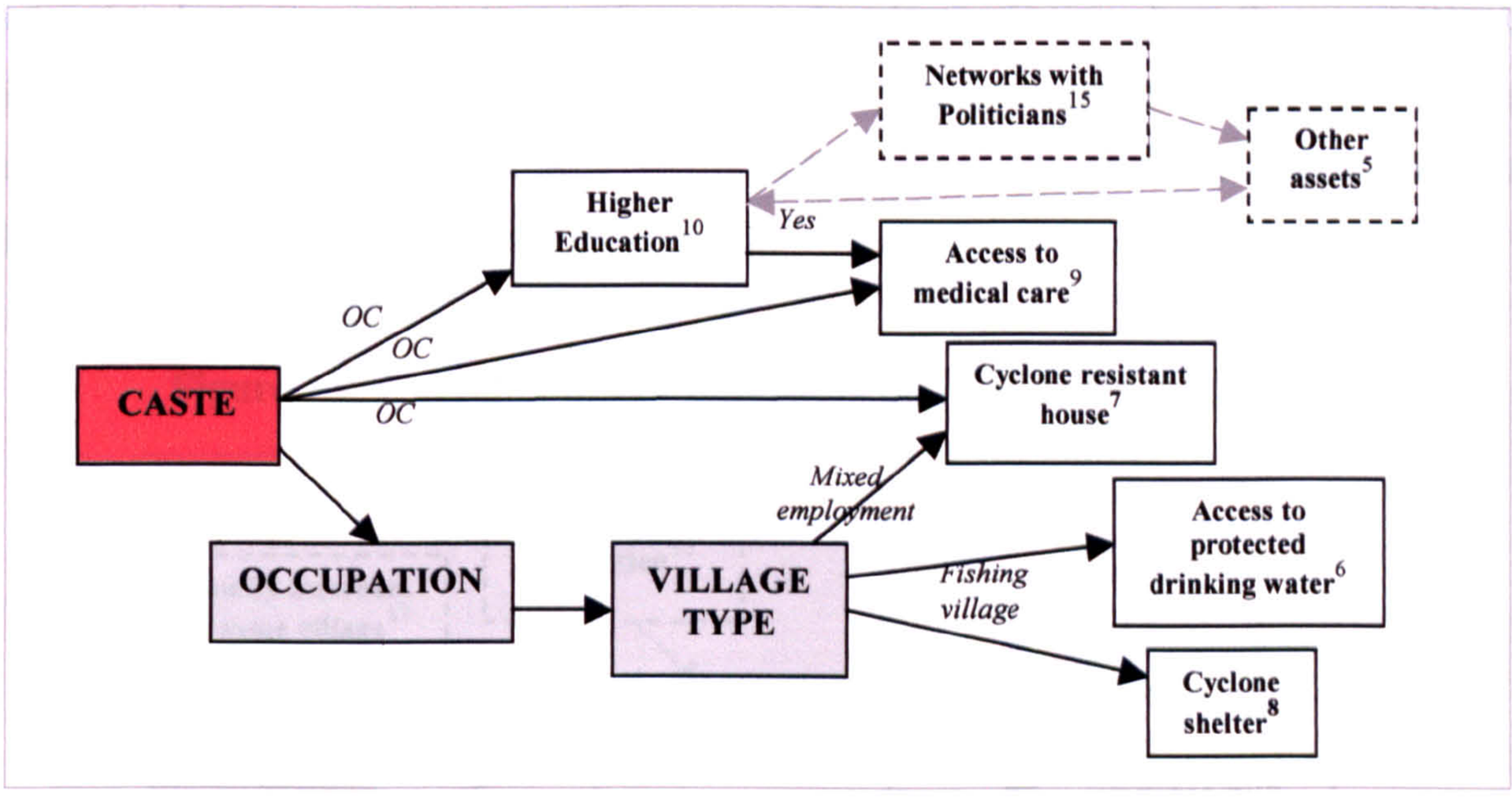
### MARGINALISATION

It was observed in Chapter Two that in the case of India it is not exclusion from society that affects poverty but rather inclusion in a society based on strict hierarchical structures (IILS 1996) resulting in degrees of marginalisation. Consequently, marginalisation is a determinant that could be strongly influenced by social institutions and networks. It has been posited that if the marginalisation of certain members of a village exists the extent of this marginalisation can be assessed in terms of their access to key public services, such as safe drinking water, medical care, education and protection from tropical storms (such as cyclone shelters and cyclone resistant housing). Members of the community with the least access to these key physical public resources are those that are the most marginalised in terms of this research.

Figure 7.8 shows that the major influence on levels of marginalisation is caste, which is intrinsically interlinked with occupation. In other words, whether a respondent has access to the five factors that constitute the vulnerability determinant of 'marginalisation' is largely defined by their caste (and therefore their occupation). The respondents with the most access to these key physical public resources are the OC castes having the highest access to cyclone resistant housing, medical care and higher than primary level education. The logic of causality suggests that this must be the case because it is illogical to state that since an educated person lives in a cyclone resistant house it makes them an OC caste. The

respondent's caste pre-defines what resources they have access to because it is an attribute of that respondent that cannot be changed.

**Figure 7.8: Causality of key influences that define levels of Marginalisation**

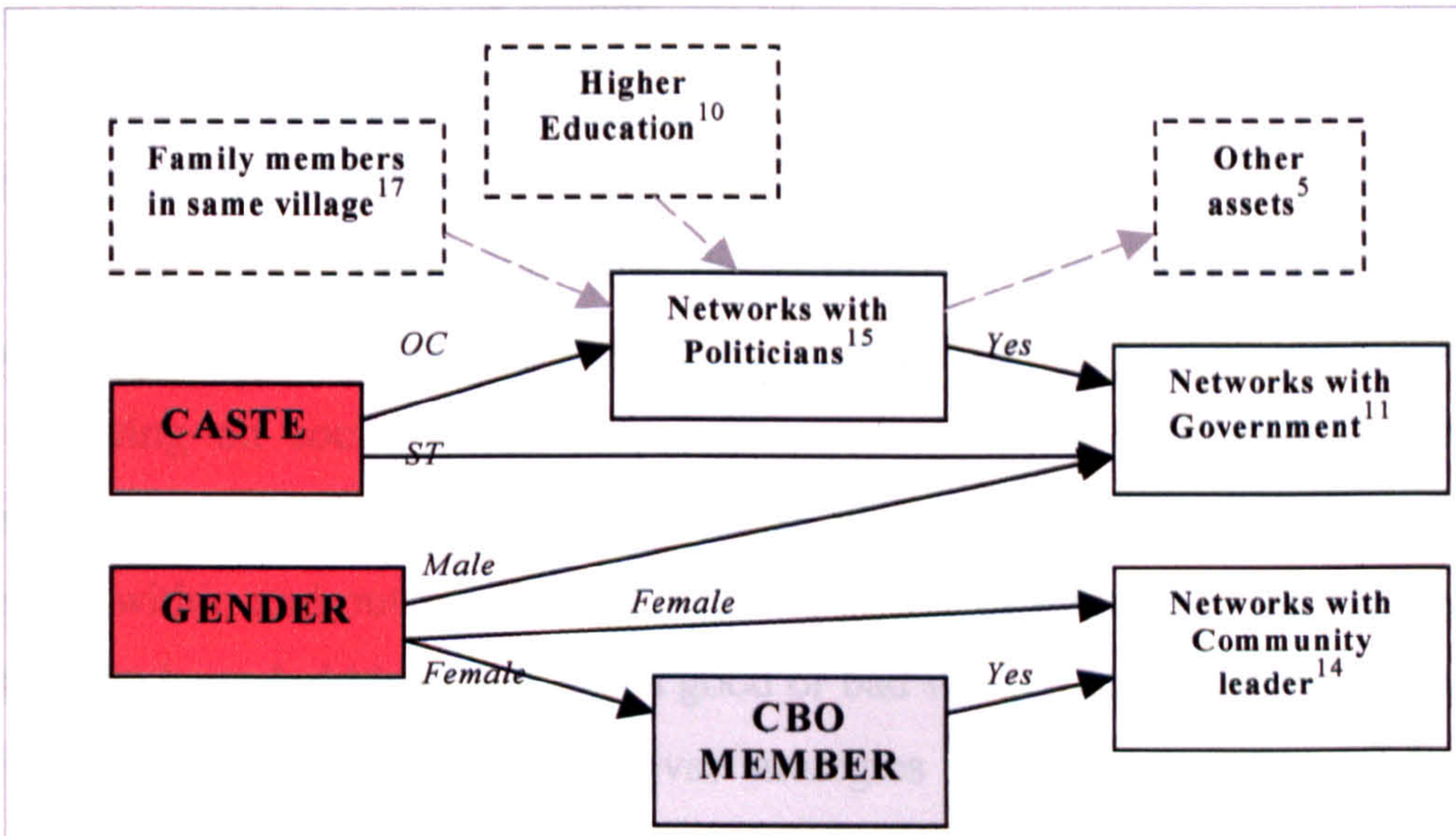



Fisherfolk (BC) castes have the highest access to cyclone shelters, but this a direct result of the occupation of their village and thereby determined by the geographical location of their villages (that are typically located within five kilometres of the coast). Consequently, the respondents that appear to be the most marginalised in terms of this research are the 'low' caste classifications of Scheduled Castes (SC) and Scheduled Tribes (ST) that are most likely to live in agricultural villages located more than five kilometres from the coast. Therefore it is possible that policies aimed at certain occupational groups (such as 'fisherfolk') are in reality aimed at certain castes due to the persistent interlinkages of caste and occupation in rural India. With caste being such an important influence on 'who does' and 'who doesn't' have access to these key public resources the assumption that ingrained caste related inequalities persist in the government departments that are charged with providing the said public resources cannot be discredited. This also implies that because caste is omnipotent in Indian society that newly created social institutions (as well as long established social institutions) may actually subscribe to caste based ideologies (Agarwal 1990; 1997; Robbins 2000), whether they intent to or not, promulgating policies that can exacerbate problems related to marginalisation.

## POWER

Inequalities based on socio-political structures and traditional roles are influenced by social institutions that in some cases have been accused of corruption and nepotism (Davies & Hossain 1997; Narayanasamy et al (eds.) 2000). Therefore in the context of this study, power has been assessed in terms of access to key institutions such as State and District Government, Mandal officials, the Panchayat, Community leaders and political representation. Those with the least access to these five key public service officials are likely to be those with the lowest levels of relative power.

**Figure 7.9: Causality of key influences that define levels of Power**




*Note:* Social networks with Mandal officials, Panchayat members and village elders are not significantly influenced by any specific factors, typically being accessible to all the respondents.

Figure 7.9 illustrates that the major influences on levels of 'power' are caste, gender and membership with a CBO. Respondents with the least access to these five key public service officials appear to be again largely defined by caste with the BC and SC castes being those with the lowest levels of relative power. The data suggests that STs castes fair a little better than the BC and SC castes, but this appears to be largely attained via their social networks with Government officials. While men benefit from potentially resilient formal social networks with Government officials women appear to compensate with less resilient informal social networks with community leaders.

For example, an OC male can possesses numerous and resilient formal social networks with important social institutions because he is high caste and will also inevitably be well educated and possess assets. This arrangement is likely to be reciprocal with the high caste

male being in a position to influence villagers with less power and to pay bribes (or pool votes) to higher officials while the trade off results in favourable policies/rewards/funds being directed from the officials towards the high caste male. In addition it is possibly important to not only possess networks with these institutions but to also be on good terms with them and (or ideally), to be a person of some influence, particularly during periods of crisis. However, it should be noted this is an uncorroborated example of how corruption, nepotism and the misappropriation of funds can be channelled through societal networks. Nonetheless, despite these disparities, the apparent equality of access to Mandal officials, Panchayat members and village elders provide a good illustration of how effective Mandal and village level decentralised government can be in providing services to all members of society irrespective of caste or gender.

### INDIVIDUAL & SOCIAL RESILIENCE

The types of social institutions and the strength of individuals' and families' social networks may influence survival strategies such as 'drawing upon communal resources' and 'drawing on social relationships' (Agarwal 1990). Resilience has therefore been assessed in terms of the individual's access to non-governmental organisations, family members within and outside their village, the power of their caste within the village and whether the household benefits from a good or bad worker/dependant ratio. Those with the least access to these important survival strategies will be those deemed to display the lowest levels of individual resilience.

**Figure 7.10: Causality of key influences that define levels of Resilience**

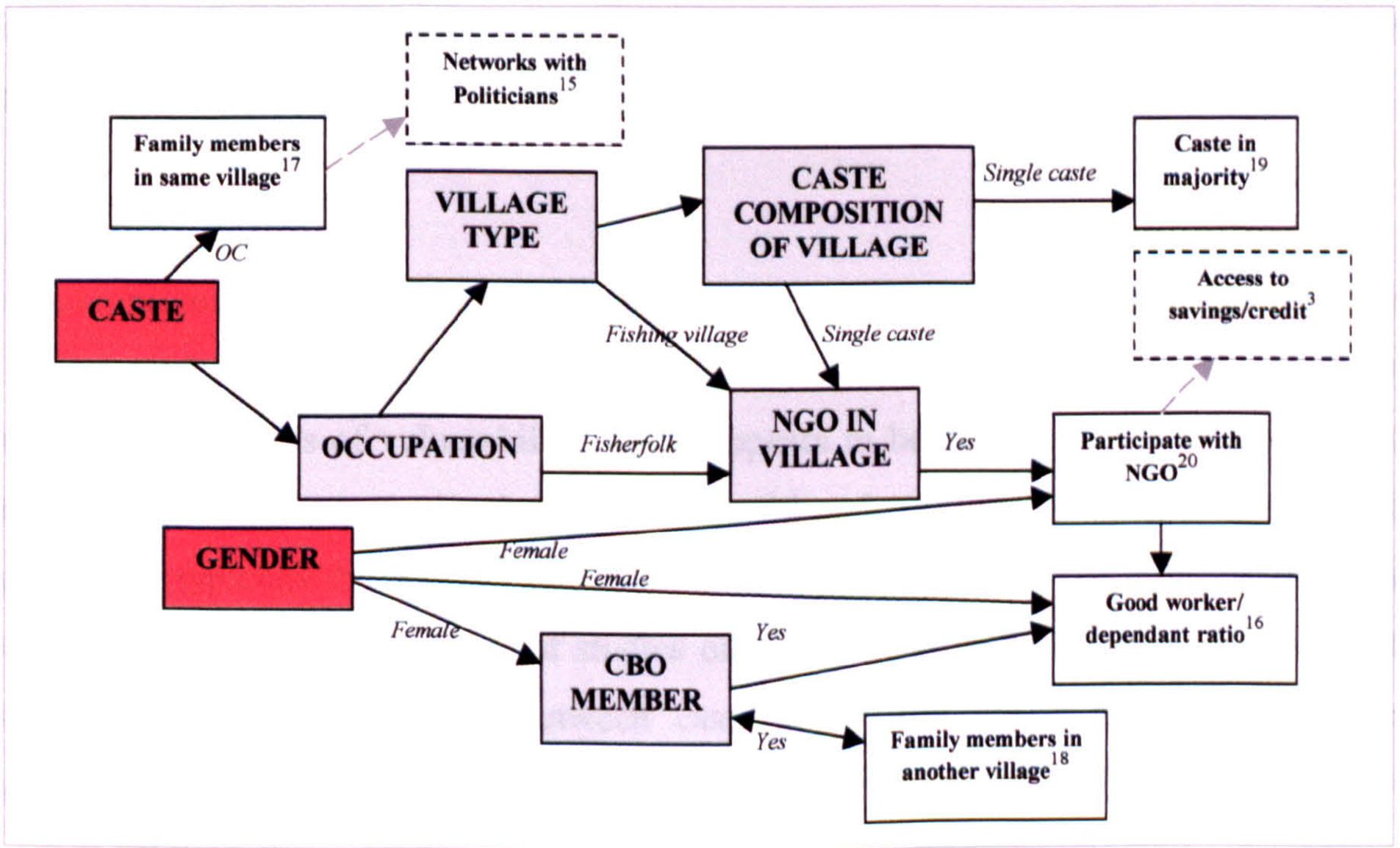


Figure 7.10 shows that the major influences on levels of resilience appear to be caste (which is intrinsically interlinked with occupation) and gender (and the associated involvement of women with NGOs and CBOs). Caste appears to determine, a) those who do not need to adopt resilience related strategies (such as OC castes), b) those whose resilience is augmented by NGO activities (such as BC fisherfolk castes) and c) those are forced to utilise a number of resilience related resources (such as STs, SCs and non-fisherfolk BC castes). The analysis of the data suggests that typically, the factors that can improve the most needy respondents' levels of resilience are not so much adopted as enforced. For example, intra-village family networks are utilised by families that will typically have been based within the village for a number of generations. Alternatively, women and migrant workers that were not born in their current village of residence do not have large intra-village family networks and therefore utilise inter-village networks with their natal family members (as noted by Fernandes & Menon 1987 and Agarwal 1990). In a similar vein, a good worker/dependant ratio is likely to be a by-product of economic pressures on the family that force them to make their children become wage earners rather than attend school (World Bank 1993b) because this coping strategy is not adopted by the most educated, powerful and least poor members of this study.

One factor where the respondents appear to have some choice in whether they are involved or not, is related to active involvement with a NGO. However, even this factor is restricted to the way in which NGOs only operate in single caste fisherfolk villages, thereby excluding a large proportion of villages and consequently a huge range of villagers from their operations. This is a concern because the data and literature (Agarwal 1990, 1997; Enarson 2000) suggests that involvement with a NGO can increase access to other factors that can reduce levels of vulnerability such as access to savings and credit.

### MAIN CAUSAL FACTORS

The most prominent factor that stands out from the previous analysis is that caste appears to have a vital influence on 'who does' and 'who does not' have access to the resources that can reduce levels of vulnerability. Caste appears to be the key factor that influences who is poor, who is marginalised, who is powerful and who has resilience. The analysis suggests that typically the poor are poor because they are low caste; this is an assertion that has proven to be contentious in past studies on the topic (Abercrombie et al 2000). The correlation found in this study between caste status and economic status has been suggested before (Mencher 1974, 1991; Searle-Chatterjee 1994; DFID 1999; Robbins

2000), however there has been a lack of studies that have supported their claims via sound or contemporary empirical evidence. The lack of empirical evidence is a problem that has been raised by the Minority Rights Group International (2004) who state that international organisations such as the United Nations and the International Labour Organisation have seriously understated the socio-economic problems associated with caste disparities in rural India. Therefore this study has contributed in some degree towards the debates on caste and class in India by suggesting that caste appears to influence socio-economic disparities in contemporary rural India. Consequently, studies on poverty, inequality and marginalisation (amongst other issues) should consider the potential caste related disparities that can influence who is poor and marginalised and the concurrent impacts of these issues upon class status and socio-economic opportunities.

Therefore, it is misleading to look at the vulnerability determinant of 'poverty' in isolation from the other aspects of vulnerability because the determinants of 'marginalisation', 'power' and 'resilience' can provide an insight into how caste related inequalities persist. This analysis suggests that lower castes (who appear to be the poorest) are marginalised to the extent that they lack access to important physical public resources and opportunities to improve their plight. The lower castes can be marginalised because they typically live in multi-caste villages where higher castes dominate (though not necessarily numerically) the decision-making processes to the extent that the vested interests of the powerful and wealthy higher castes are maintained, thereby marginalizing the lower castes. This study indicates that when the poor and powerless lower castes are marginalised, they are forced to access resources related to increasing resilience that they can use for the benefits of their own household. Resilience related resources that can help respondents (and their households) reduce levels of vulnerability, are typically accessed by women via their membership and involvement with CBOs and NGOs. This observation highlights the importance of women's labour (Moser & McIlwaine 1997) and social networks (Moore 1990; Agarwal 1990) in vulnerability reduction.

This thesis has attempted to assess the extent that social networks with social institutions influence access to the key resources required to reduce levels of vulnerability and in doing so it has highlighted some of the potentially key issues that have been raised in the preceding discussion. However, the complexity of the subject matter has required certain simplifications that have been made to the data and the related analysis that may have fundamentally masked the subtleties one would expect from this multifaceted topic. The

limited scope, timescale and resources of this study have not enabled the most suitable type of research to be conducted on such a complex topic, which would preferably compose of a multi-disciplinary and ideally longitudinal study. Such a study would be more likely to provide the required depth of meaning behind some of the potentially important observations made in this thesis but it is hoped that this work can provide a platform upon which further related studies can be founded. For example, some of the subtleties that have been alluded to can be illustrated by the account of a female SC respondent (the name has been changed to maintain the respondent's anonymity) and her experiences of utilising resilience related factors in an attempt to reduce her family's levels of poverty, powerlessness and marginalisation (Box 7.1).

**Box 7.1: Laxsmi's Story**

Laxsmi is a 25 year old Mala (SC) woman; she lives in a multi-caste agricultural village located six kilometres from the coast. Laxsmi's husband is employed for most of the year as an agricultural labourer earning 70 rupees per day. On a daily basis Laxsmi is typically busy collecting water from the neighbouring village, looking after her two young children, a boy aged 5 and a daughter aged 8, tending her chickens and preparing meals. When labour in the fields is short, Laxsmi also works as an agricultural labourer and earns 40 rupees per day before undertaking all her other daily duties. However, earning money by working in the fields is only possible if one of her neighbours can look after her children for her, or when her mother visits from Laxsmi's village of birth, located 20 kilometres away. Laxsmi's two young children have not been provided places at the local primary school (possibly due to their caste) and soon she will be forced to send them out to work to boost the family's daily income.

Laxsmi's home is very basic with no electricity and provides a minimal amount of shelter, being constructed of bamboo and mud walls with a roof of thatch. Because Laxsmi is a Scheduled Caste (SC) her family lives on the outskirts of the village along with other SC families, providing a tight-knit but somewhat marginalised community. The main problem with the location of the SC settlement is its proximity to the open fields that are used as latrines by many villagers and scattered with human faeces. Her two young children suffer from a continuous stream of ailments such as respiratory problems related to the smoky interior of her home, and diarrhoea and sickness possibly caused by the water that Laxsmi sometimes collects from the nearby irrigation canals. This annoys Laxsmi because there is a water pump connected to a borehole only 50 metres from her home but this has been restricted by 'tradition' for the use of OC and BC castes only, leaving Laxsmi to walk two kilometres, up to three times a day, to collect water from a standpipe located in a neighbouring village. When Laxsmi complains to her husband he gets angry and beats her and regularly he visits the home of his friend, where he sometimes spends 50 rupees a night on drinking illegally distilled alcohol (*arrack*).

Over the last year, things have gradually been improving for Laxsmi, particularly since, on the recommendation of her sister in a neighbouring village, she joined a *Mahila Sangha* (women's group) associated with the Government's DWCRA groups. Initially, Laxsmi did not tell her husband about her involvement with the *Mahila Sangha* because she knew he would disapprove but after six months, she had saved nearly 500 rupees and was entitled to a minimal interest loan of 2,000 rupees that she used to purchase some chickens and a cock and the materials required to make a chicken coop. As a result Laxsmi can now supplement her husband's small income by selling eggs and occasionally chicken meat in the village. Initially, Laxsmi's husband was not in favour of her involvement with the *Mahila Sangha* but last month when Laxsmi purchased a second hand bicycle so that she could sell her eggs and chicken in other villages, he finally agreed that involvement with the *Mahila Sangha* had benefited the family. They also hope that one day they can afford text books for their two children so that can study at the school located in a neighbouring SC community. In addition the *Mahila Sangha* members have approached the Panchayat and State Government about providing the SC community with access to safe drinking water. If the Panchayat's promise that they will make sure a standpipe is provided within the next six months comes to fruition, the daily rigours of Laxsmi's life may be reduced to the extent that she, along with her husband can actually concentrate on improving the quality of their housing and their family's lives in general.

Initially, Laxsmi and her family were marginalised in their village lacking access to important physical resources, were relatively poor and lacked strong social networks with potentially useful social institutions. However, via Laxsmi's utilisation of resilience related factors such as involvement with a community-based organisation (through the assistance of her sister in another village), Laxsmi has managed to save some money and obtained a loan to purchase livestock and a means of transport (reducing her family's levels of poverty). Laxsmi's involvement with the CBO has marginally increased her power via improved social networks with the Panchayat and State Government with the possibility that her family's (and the SC community as a whole) level of marginalisation will be reduced by access to safe drinking water. These changes in Laxsmi's everyday circumstances can enable Laxsmi and her family to gradually increase their overall resilience to everyday crises and infrequent large-scale crises such as those associated with tropical cyclones and floods. Therefore, increased access to resources has provided Laxsmi and her family increased resilience, via a network with a social institution (the CBO) that she did not previously have access to.

## 7.4 SUMMARY

The previous analysis has highlighted what appear to be the key socio-economic and institutional factors that can influence a respondent's access to the resources that can help to reduce their levels of vulnerability. The topic is complex and as one would expect there are myriad interconnecting factors that play their part in affecting levels of relative vulnerability to both everyday crises and also large-scale crises associated with tropical cyclone and flood disasters. When there are so many factors (some more or less apparent than others) that influence how respondents' access resources it can be problematic to generalise particularly when the aforementioned limits regarding the analysis and interpretation are taken into consideration. Nonetheless, in the case of the findings provided in this research there appear to be two key influential factors that stand out (caste and gender) because it appears that they are not only significant influences in themselves but because they can also affect other influences to varying degrees. The findings suggest that networks with certain social institutions can help to reduce relative levels of vulnerability. Because of the apparent omnipotence of the caste system, the most vulnerable members of the case study villages access informal social institutions that may be more egalitarian in their operations than the formal institutions that are possibly restricted by caste related attitudes and beliefs. The potentially most effective social institutions appear to be family members in other villages, CBOs and NGOs (if the

respondents are fisherfolk castes). These informal institutions can enable the respondents (particularly female respondents) to access the resilience related resources required to help them cope with their relatively high levels of vulnerability (Agarwal 1990).

Regarding the utilisation of these networks, gender appears to be a very important factor because it plays a significant part in determining who is involved with CBOs and NGOs (women) and who has access to the relatively resilient formal social networks (men). Men adopt formal networks with potentially influential social institutions (Neuhouser 1995) while women, through their traditional lack of participation with formal social institutions, adopt informal social networks with institutions such as CBOs and NGOs (Moore 1990; Neuhouser 1995). Consequently, women possess higher levels of social networks than men but many of these networks are not resilient to crisis events. Nonetheless these networks, particularly the resilient networks with family members in another village, enable women to access resources that can increase their power and resilient and reduce levels of poverty for their household (Enarson 2000).

However, the most critical factor in the overall levels of vulnerability experienced by the respondents in this study is regarding a social institution that the respondents cannot choose whether they are a member or not, because the social institution in question is the caste system. When the definition of a social institution provided by Béteille (1992) in Chapter Two is reassessed it is pertinent to state that caste is a social institution in itself because "*An institution is not simply any social arrangement, but one whose members acknowledge its moral claims over them, and are prepared to submit to its demands, at least some of the time, even when they find those demands unreasonable.*" (Béteille 1992:18)

If caste is the social institution above all social institutions in rural India, why do Hindus[80] in Andhra Pradesh persist in subscribing to the demands of caste ideologies (and caste identities) even if they find those demands unreasonable? Szerszynski (1992) provides a possible answer to this query when discussing how the breaching of caste morals is seen as a 'social offence rather than a sin', suggesting that Hindu societies are 'shame' cultures rather than 'guilt' cultures. This implies that Hindu societies are morally tied to external conformity to social codes, rather than 'inner motives'. This is an assertion supported by Cohn (1971:146) when he stated *"In the minds of many villagers there is clearly a conflict*

[80] Non Hindus also subscribe to the ideologies and practices of the caste system (Caplan 1980)

*between what they really think is right – the furthering of their own ends – and the public ideology."*

Caste is a public ideology, but furthermore it is a social institution rooted in thousands of years of tradition, which has apparently contributed to the inequalities experienced in rural India that have been highlighted in the preceding chapters and claimed by a number of academics and institutions (Srinivas 1962, 1976; Venkateswarlu 1986; Gupta 1991; Upadhaya 1997; Dhesi 1998; DFID 1999; Robbins 2000). Therefore, it is possible that entrenched caste related inequalities persist in the governmental, and to some degree non-governmental, agencies that are responsible for providing these resources. However the strength of caste as an ideology has been challenged by Jodhka (2004) who believes that caste is almost dead as an ideology but persists strongly as an identity.

Nonetheless, caste appears to be influential in rural Indian society therefore it is important to recognise that newly created social institutions as well as long established social institutions may operate in ways that enable powerful groups aligned along caste (Mendelsohn 1993; Deepa et al 2000; Martin & Lemon 2001), and gendered (Agarwal 1997, 2001) grounds to maintain their vested interests. However, in recent years there appears to be some reticence by researchers to assess empirically to what extent caste related disparities persist (Agrawal 2004) and how the possible perpetuation of these disparities are manifest in the political reality of rural India (Deshpande 2003; Minority Rights Group International 2004). For example, of the 144 India related publications that have been analysed in the literature review that has contributed towards this thesis, factors such as the origin of the researcher/research centre and the main focus of the publication (i.e. development issues, social exclusion, gender issues and disasters/vulnerability) can have a bearing upon the extent that caste is used as an analytical variable in research. For more information of this please refer to the article (Bosher *unpublished*) in Appendix G.

The findings of this thesis reinforce the general views of Sen Sharma (2000), in that caste is a powerful and discriminatory factor upon a person's social status, even during these early years of the twenty first century, considered to be an era of egalitarian principles and a secular constitution in India that espouses positive discrimination to help the plight of low castes and 'untouchables'. Therefore, these observations should be considered and investigated in further depth if vulnerability reduction initiatives in coastal Andhra Pradesh and rural India are ever going to be appropriately targeted and effective.

## 8.1 CONCLUSIONS

The introductory chapters to this thesis explained that understanding the social and economic forces that create levels of vulnerability to hazards and govern society's ability to cope should have the same emphasis as understanding the physical processes. This enquiry investigates what social networks and institutions are available (created or imposed) to people that enable them to cope with large scale crises and everyday situations. The social institutions prevalent in the villages have been assessed regarding which appear to be the most and least successful in contributing to the reduction of vulnerability and aiding the coping mechanisms of individuals and families. Consequently, this research has ascertained what roles social institutions do play and possibly should play in reducing vulnerability to a wide range of random or regularly recurrent threatening events, and it also identifies the socio-economic obstacles that may have contributed towards the ineffectiveness of past vulnerability reduction initiatives in coastal Andhra Pradesh.

### THE INSTITUTIONAL REALITY

The literature reviewed in this thesis[81] along with the contextual analysis in Chapter Five suggested that the resilience of caste attitudes and practices is a major factor regarding disparities in levels of poverty and power in rural India. This concern has raised the question that if the hierarchical caste system is so pervasive in the predominately Hindu regions of coastal Andhra Pradesh, is this hierarchy reproduced in the ways in which people can access the resources they require to reduce their vulnerability? On the basis of this thesis, the answer to this query is that the caste system appears either directly or indirectly to influence who does and who does not have the best access to the majority of resources required to reduce levels of vulnerability. Caste is an ingrained social construct that is indirectly supported by Government policies, and is prominent throughout many of the social institutions discussed in this thesis. Therefore it is important to understand the elite nature of India to make sense of India's policies (Sen 1990).

It has been suggested (Davies & Hossain 1997) that social institutions determine who is and who isn't included and that these institutions are resistant to change therefore opportunities for individuals to transcend caste boundaries will typically be restricted via institutionalised restrictions. The following discussion will highlight which social

[81] Such as the work of Srinivas 1962, 1976; Venkateswarlu 1986; Sen 1990; Gupta 1991; Mendelsohn 1993; IILS 1996; Upadhaya 1997; Dhesi 1998; DFID 1999; Gopalkrishnan 1999; Robbins 2000; Deepa et al 2000; Martin & Lemon 2001

institutions are, according to this study, the most and least effective in helping the most vulnerable to reduce their levels of vulnerability.

**Table 8.1: Influential Social Institutions by Caste, Gender and Caste Composition of Village**

| | KEY FACTORS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | Caste Classification | | | | Gender | | Village Castes | | |
| Social Institution | OC | BC | SC | ST | M | F | Single | Multi | Comments |
| CBOs | | X | X | X | | X | | X | Resources limited |
| NGO | | X | | | | X | X | | Limited targeting |
| Mandal officials | X | X | X | X | X | X | X | X | Potential for corruption |
| Panchayat/ V. Elder | X | X | X | X | X | X | X | X | Can sometimes be exclusive |
| Fam. other village | | | X | X | | X | | X | Women/migrants |
| Formal bank | | X | X | X | | X | X | X | Via CBO/NGO |
| Political leaders | X | | | | X | | | | Effective for elites |
| Gov't officials | X | | | X | X | | | | Effective for elites and STs |

Table 8.1 summarises which of the social institutions appear to be the most influential in helping some or all sections of society reduce their levels of vulnerability through increasing access to resources. The table indicates which members of society the social institutions predominately assist (represented by 'X'), classified by caste classification, gender and the caste composition of the village. Table 8.1 highlights that some institutions are available to all members of society (such as the Panchayat and Mandal officials) and that some institutions are restrictive in which members of society they are available to or utilised by (such as political leaders and Government officials).

Social institutions that provide access to key resources for limited and possibly 'elite' sections of society such as the high castes and/or educated and politically active members of society will be the least effective social institutions in enabling the most vulnerable to access key resources. In addition the social institutions (such as religious leaders, landlords and the village council) that are not widely available and/or do not provide access to key vulnerability reducing resources are deemed to be non-influential and thereby ineffective social institutions.

Some of the social institutions discussed in this thesis appear to be useful for some members of society more than others (Table 8.1). The resources required to reduce levels of vulnerability are finite and it is essential that agencies assess which members of society they should provide assistance to (Boyce 2000) and in what ways the assistance should be provided. Therefore it would be appropriate to assess which institutions are effective for the most vulnerable members of the case study areas. The respondents that posses the

lowest levels of access to the twenty factors that constitute the four determinants of vulnerability are considered in the context of this thesis to be the most vulnerable. From the analysis in Chapter Six it was concluded that the most vulnerable members of the case study villages are most likely to be the lowest castes (Scheduled Castes and Scheduled Tribals), migrant workers and the respondents from multi-caste villages (these last two factors are typically linked).

The findings regarding discrepancies in levels of human development, such as levels of poverty, power and marginalisation, in rural India being defined by caste are not unique. The British government's Department for International Development (DFID) have stated that STs & SCs have the lowest levels of human development in India and believe that although legislation in India has made positive steps towards reducing such discrepancies it's effectiveness has been diluted by patchy implementation and the resilience of caste attitudes and practices, particularly in rural areas (DFID 1999). An example of how these attitudes and practices manifest themselves in many rural villages across India is regarding the geographic composition of multi-caste villages. Observations by Cannon (Cannon, cited in Blaikie et al 1994) in north India in 1976 and 1979 noted that the homes of lower classes and untouchables were typically located in the flood prone low-lying areas around settlements. This observation is pertinent for this particular study because in the multi-caste villages, caste-defined segregation is common and typically the lower castes will be confined to the geographic periphery of the villages. However, the most important point to make here is that social institutional activities are at the root of this type of segregation along casted lines via the marginalisation of the lower castes. It is the assessment of how social institutions appear to influence levels of poverty, marginalisation, power and resilience (and therefore levels of vulnerability) in the political reality of village life in India that makes this study a contribution to knowledge. However, the complexity and subtleties of the topic researched along with the restricted scope and timescale of the study has resulted in the aforementioned limitations in the analysis and interpretation of the data.

**Effective Networks**

Involvement with CBOs and NGOs, with the concurrent access to formal financial institutions, appears to be a social interaction utilised predominately by women, which can increase their access to the key vulnerability reducing resources. In light of the traditional constraints in the home and political arena that many women face in rural India (Moore

1998), membership with a CBO and/or NGO provides an avenue for many women to access resources that they would not otherwise have been able to access (Enarson 2000).

Regarding effectiveness for the most vulnerable members of society, the CBOs typically have limited resources but are operational in all the case study villages with membership being largely unaffected by the individual's caste and the caste composition of the village where they reside. CBOs have been effective in enabling some of the most vulnerable members to reduce their levels of vulnerability via increased access to formal financial institutions, government officials and coping strategies related to diversifying sources of income and post harvest technologies, along with increased access to health care (Agarwal 1990).

In contrast, NGOs typically have more resources than the CBOs because they receive funding from national and international Governments as well as international NGOs and other developmental bodies, but this study highlights that the villages that they target are not necessarily the villages with the highest levels of vulnerability. This study suggests that NGOs will generally target single caste villages where the perceived homogeneity of the village will provide a suitable basis for villager participation, ultimately leading to a 'successful project' devoid of the potential conflicts that could be experienced in a multi-caste village. In the world of NGO activities, 'successful projects' are more likely to lead to further funding than 'unsuccessful projects'. Consequently this study suggests that NGOs have been effective in enabling the most vulnerable members of the villages in which they operate to reduce their levels of vulnerability via increased access to formal financial institutions, government officials and coping strategies related to diversifying sources of income and post harvest technologies, along with increased access to health care and disaster preparedness activities. Nonetheless, NGOs that target single caste fisherfolk (BC) villages are not necessarily targeting the most vulnerable communities because this study suggests that SC and ST castes in multi-caste villages appear to be the most vulnerable, particularly if they have migrated to the village to seek work and/or through marriage.

Despite these concerns it should be acknowledged that even if NGOs do not target the most vulnerable they do help communities that are still relatively vulnerable to everyday crises as well as infrequent but large scale crises associated with tropical cyclones and flooding. Some of the literature (Enarson 2000; Menon-Sen & Shiva Kumar 2001;

Palakudiyil & Todd 2003) and evidence from personal observations and communications with women in villages where NGOs operate and do not operate suggests that women involved with NGOs have become more emancipated regarding their personal rights and are typically more militant regarding problems related to caste and gender related inequalities associated with decision-making and political activity, than women that are not involved with NGO activities.

The other key social networks that appear to be effective in providing access to key resources are networks with family members in another village, particularly for women and migrant workers. Both women and migrant workers (irrespective of gender) have social networks with family members in another village because they have moved to their present village of residence through marriage (women) and because they have moved to their present village of residence to seek work (migrant workers). Therefore, while women and migrant workers lack intra-village family networks they possess inter-village family networks that could prove more useful during a crisis event, especially a large-scale one such as a cyclone related disaster, than intra village family networks. The family members in another village may be able to provide higher levels of support to the respondent because they may not have been affected by the same crisis, whereas if they resided in the same village they would also have been similarly affected.

Table 8.1 indicates that the social networks with Mandal officials, the Panchayat and village elders are largely available to all sections of the case study villages, irrespective of gender, caste or any other factors discussed in this thesis. The apparent equality of access to Mandal officials, Panchayat members and village elders provide a good illustration of how effective Mandal and village level decentralised government can be in providing services to all members of society irrespective of caste or gender. However, questionnaire responses and interview accounts from some respondents highlight that maintaining a friendly relationship with village elders can be critical if the benefits of such a relationship are to be reaped or lost in the future.

Because village level governance involving the Panchayat and village elders committee appears to be effective it is of concern that personal disagreements between individuals and a village elder could have severe consequences for the individual regarding accessing resources. In light of this, it should not be taken for granted that the Panchayat and village elders committee are always effective (Narayanasamy et al. 2000), in fact in situations

when the Panchayat and/or a village elder is autocratic the repercussions on village level democracy could be extremely problematic, particularly in relief activities post-disaster event (Reddy & Sastry 1992).

**Ineffective Networks**

The least effective social institutions can be gauged by the quality of social networks with the social institutions in an everyday situation and also by using a crisis scenario as an amplifier of social linkages. In an everyday situation the least effective social networks appear to be those associated with religious leaders, moneylenders and political leaders. Networks with religious leaders do not significantly appear to influence who does or does not have access to key resources but they may play an important psychosocial role during ceremonies related to seasonal festivals and ceremonies related to the death of family members and friends. Although moneylenders do not appear to influence who does and who does not have access to resources, but it could be argued that respondents that possess networks with money lenders, rather than more regulated formal financial institutions will be more likely to be among the most vulnerable (Addison & Demery 1993) as association with a money lender implies the lack of involvement with CBOs or NGOs, institutions that can act as conduits for access to formal banking facilities. The respondents that possess social networks with political leaders are typically high caste males that have received good levels of education and are consequently not the most vulnerable members of the case study villages. Therefore, political leaders are an institution that may assist people to access resources required to reduce levels of vulnerability but the beneficiaries of their assistance are most likely to be the least vulnerable elites, because they do not appear to help the most vulnerable.

During a crisis scenario social networks with institutions such as religious leaders, moneylenders, formal financial institutions and political leaders are largely non-existent, while networks with family members in the same village and non-family networks will typically be constrained by the impact of the crisis event. While access to district and state government officials is available it appears from the analysis in the previous chapters that those who need assistance from the Government and District officials the most do not receive the assistance they need while the opposite is the case for the least vulnerable. This discussion illustrates the discriminatory nature of politics and social interactions in rural India. However, while some of these observations may look strong the subtleties of social interactions could be masking other issues that have not been uncovered by this study.

## THE DOMINANT SOCIAL NETWORKS & INSTITUTIONS

The dominant influence upon which respondents possess the key resources that can reduce levels of vulnerability appears to be related to their caste. Because the research conducted in this thesis was explorative and inductive, and not normative and deductive, it should be highlighted that significance of caste is a result of the research and was not the starting point. Caste is a social institution in itself and hence a network that influences not only the behaviour of the respondents but the policies and activities of other social institutions. Caste not only appears to define 'who has' and 'who does not have' but caste also influences 'who one can' and 'who one cannot' possess networks with, and therefore caste appears to influence access to the resources required to improve levels of poverty, marginalisation and power.

With caste appearing to play such an important influence on 'who does' and 'who doesn't' have access to key vulnerability defining resources, the idea that ingrained caste-related inequalities persist in the agencies that are responsible for providing these resources cannot be denied. This also implies that because caste is apparently omnipotent in rural Indian society that newly created social networks and institutions (as well as long established social networks and institutions) may subscribe to caste-based ideologies (as suggested by Agarwal 1997 and Robbins 2000), whether they intend to or not, promulgating policies that exacerbate problems related to marginalisation and poverty. Although a number of publications[82] have stated that caste status influences levels of poverty there has been dispute in academia as to what extent caste affects class in Indian society (Abercrombie et al 2000).

For example, recent trends in the taxonomy used in studies[83] on poverty and inequality in rural India have referred to inequalities in rural India along the lines of class distinctions with caste being relegated in many analyses in purely descriptive terms. Such studies have contributed to the lack of contemporary empirical studies on caste related inequalities in rural India (Deshpande 2003; Agrawal 2004; Minority Rights Group International 2004). Given the paucity of data (in contrast to a wealth of assumption) on caste issues, interventions in the field should be preceded by both qualitative and quantitative analysis of the target or participating populations (Agrawal 2004), to ensure that resources are not being concentrated among already privileged groups. This study has contributed in some

[82] Such as Mencher 1974, 1991; Venkateswarlu 1986; Searle-Chatterjee 1994; DFID 1999; Robbins 2000; Sen Sharma 2000; Kabeer 2002

[83] By authors such as Bhalla & Lapeyre 1997; John 2000; Lal & Aggarwal 2000; Gaiha et al 2001; Das 2004; and the majority of World Bank related publications such as World Bank 1997, 1999, 2001

degree, empirically and theoretically, towards this debate on caste related issues in rural India.

When the poor and powerless lower castes are marginalised, they are forced to utilise resources associated with resilience. This is why the earlier analyses shows that the higher castes (OCs) are the least poor, the least marginalised and the most powerful and consequently do not utilise resilience related resources. They do not utilise resilience related resources because they do not need (or they feel that they do not need) such resources because they possess assets, land, friends in 'high places' and access to good quality housing and medical care. Therefore, caste appears to determine, a) those who do not need to adopt resilience related strategies (such as OC castes), b) those whose resilience is augmented by NGO activities (such as BC fisherfolk castes) and c) those who are forced to utilise a number of resilience related resources (such as STs, SCs and non-fisherfolk BC castes).

When studies (such as Walker & Ryan 1990; Béteille 2000; Winchester 2001; Gaiha et al 2001; Das 2004) state that levels of vulnerability can be reduced by making the poor less poor, the major assumption that underlies this statement is that 'everything boils down to money'. In the case of many developing nations, this assumption is possibly pertinent but in the context of this study, undertaken in rural villages in coastal Andhra Pradesh, the assumption is not applicable, possibly because proposed free market policies have not achieved much success due to poor governance (Roy & Tisdell 1998) and due to the persistence of caste related traditions (Wilson 2004) and practices in the arena of Indian business (Gopalkrishnan 1999). Consequently, it is unlikely that democratic politics and free market economics will disarticulate caste identities (Gupta 2004).

The key point is that in rural India 'it does not only boil down to money' because caste appears to be the key factor that influences not only who is poor, but also who is marginalised, who is powerful and who is resilient. As discussed in Chapter Seven, unlike the class system in the United Kingdom it is impossible to work or buy one's way up the hierarchy of caste (Gupta 2004). Despite an era of egalitarian principles and a secular constitution in India that espouses positive discrimination to help the plight of low castes and 'untouchables' the caste system is pervasive (Sen Sharma 2000).

In view of these observations it is worthwhile drawing attention to a research paper by Upadhaya (1997) that draws on Pierre Bourdieu's (1977, 1986, 1992) cultural theory of class differentiation and domination, based on the concept of symbolic power. Upadhaya (1997) uses one facet of the practise theory of Bourdieu, which concentrates on the reproduction of class by distinguishing between four types of capital being;

- **Economic capital** such as money and commodities,
- **Symbolic capital**, the prestige and renown attached to a family and a name,
- **Social capital**, such as resources that can be derived from networks of social relations and the obligations and trust arising from them, the investment in such networks can have short or long-term benefits, and
- **Cultural capital**, includes education, knowledge and skills which can be institutionalised in the form of educational qualifications, or objectified in the cultural goods which people strive to acquire.

Regarding families that wish to improve their status within society, Upadhaya (1997:190) states that in the context of rural Andhra Pradesh *"aspiring families must transform their economic capital into social, cultural and symbolic capital"*, however this statement must be accompanied with a caveat, because:

> *"Dominant classes close ranks by monopolising opportunities to acquire the necessary information goods, and others are unable to compete because of their limited social networks or inappropriate cultural capital. The dominant class, or classes, which includes newly-emerged regional capitalist groups, rich farmers, as well as middle class professionals, has constructed an exclusive culture for itself, access to which it regulates through its control over resources such as the right education and elite social networks, the later partly governed by caste."*
>
> (Upadhaya 1997:192).

This statement highlights the hierarchical nature of rural Indian society and links resource accessibility with the importance of obtaining influential social networks. This suggests that unless the dominant classes/castes in rural Andhra Pradesh are prepared to subscribe to egalitarian ideologies that may challenge their domination, it may be extremely difficult for the low caste (non-influential) to improve their levels of social, cultural and symbolic capital, and thereby improve their lives and their resilience to large and small scale crises.

Nonetheless it should be noted that the observations made here regarding the discriminatory influence of the caste system on accessing vulnerability reducing resources provide a mere vignette in time. The implementation of appropriate policies (such as those suggested later in this chapter) over the next few years may be the only ways to enlighten whether the caste defined disparities between the 'haves and 'have nots' will reduce in the future.

## 8.2 SUMMARY

This thesis has investigated what roles social networks and institutions may play and possibly should play in reducing vulnerability to both infrequent large-scale crisis events and everyday crisis events in the political reality of village life in coastal Andhra Pradesh. In doing this, the investigation has highlighted that the respondents typically view 'risk' as an everyday concept related to the lack of basic needs and employment shortages rather than large scale but infrequent crises associated with tropical cyclones and floods. The contextual analysis also uncovered that the respondents perceive their 'community' along the lines of caste and/or caste classifications[84]; on reflection this was an early indicator as to the omnipotence of caste related issues in the case study villages.

Vulnerability has been assessed via the measurement of the respondents' access to context specific resources that act as indicators of levels of relative vulnerability. Access to these physical and non-physical social resources was assessed via a mixture of research methods that allowed for multiple sources of data to verify the quality of information provided. The simplification of the data used in the Resource Accessibility Index (RAI) enabled the assessment of each respondent's access to certain key resources. However such simplifications should be accompanied by caveats related to problems associated with over simplification affecting the depth of the data and the possibilities of missing subtle but intrinsically important linkages.

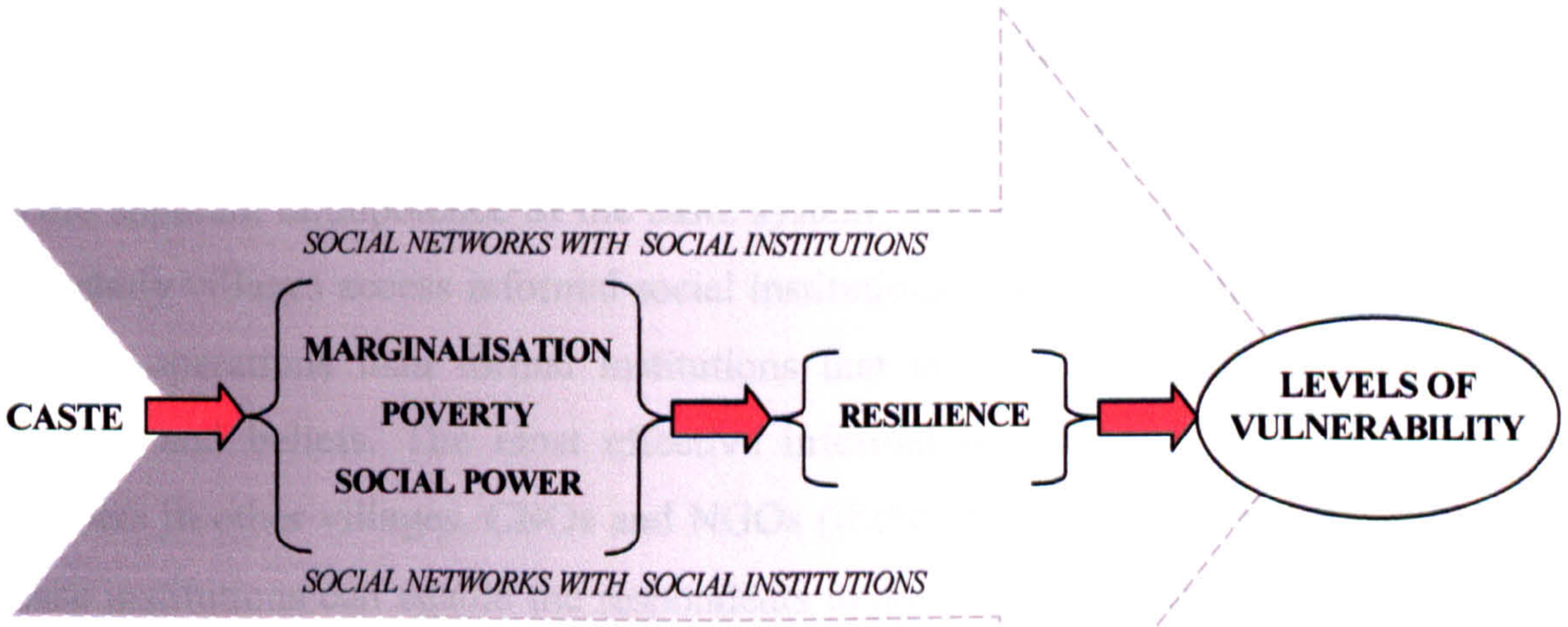
The analysis provided in Chapter Six showed that the main factors that appear to influence levels of vulnerability were caste, gender, the type of village the respondent inhabits and their involvement with CBOs and NGOs. The caste element of the analysis showed that there appears to be a hierarchy of vulnerability based along the lines of caste classification, with the 'highest' castes being the least vulnerable while the 'lowest' castes being the most vulnerable. This observation was also found regarding levels of education and the quality

[84] Wilson (2004) recently noted during research conducted in Madhya Pradesh that the respondents defined their 'community' in terms of sub-caste.

of housing. Unlike other studies undertaken on vulnerability, social status and age (Blaikie et al 1994; Peacock et al (eds.), 1997) did not appear to be the key factors determining levels of vulnerability possibly because social status is intrinsically linked with caste and the extended family composition of the typical case study household masks age related disparities. To appreciate the nuances of age related disparities, a more in-depth and focused study in the case study villages would need to be undertaken.

The assessment of social networks and social institutions in Chapter Seven highlighted that respondents with high levels of social networks appear to be the least vulnerable and those with low levels of social network appear to be the most vulnerable. The most significant social institutions were family members in another village, CBOs, NGOs and officials from the District/State Government. These social institutions were significant because respondents utilising networks with these institutions were invariably less vulnerable than respondents that did not posses such networks. It is apparent that certain informal social networks are a means for the poor, marginalised and powerless (particularly women) to access resources that can aid them to reduce their levels of vulnerability. Therefore, the observations made during this thesis can be summarised in figure 8.1, which illustrates how caste influences the social networks that affect levels of marginalisation, poverty and social power and therefore levels of vulnerability.

**Figure 8.1 The Influence of Social Networks on Levels of Vulnerability**



The least vulnerable respondents are those that already possess high levels of resilience (such as the non-poor, non-marginalised and the socially powerful). On the other hand, the most vulnerable respondents that are the poorest, most marginalised and powerless, are forced to utilise social networks that can assist them in increasing their levels of resilience with the ultimate aim of reducing their vulnerability. In both scenarios, social networks are the critical interactions through which the caste ideologies that affect attitudes and practises influence levels of vulnerability in village India. However, although the results discussed here may appear to be decisive it needs to be acknowledged that the broad focus of this study (in contrast to an in-depth focus on particular issues) could be masking other issues that could ultimately be uncovered by more focused in-depth follow up studies. Despite these reservations it is pertinent to state that this thesis provides two main conclusions being;

- **Levels of vulnerability in rural India do not merely relate to economics.** It appears that many of the respondents in this study are poor, marginalised and powerless because they are low caste; therefore they are the most vulnerable because they are low caste. The findings of this study suggests that caste is the dominant social institution that influences levels of vulnerability because it not only affects the most vulnerable respondents' current levels of vulnerability but also restricts their ability to change their circumstances through enduring caste defined inequalities with regards to accessing the resources that might help them to reduce their levels of vulnerability. In view of this it is important to disassociate caste and class unless a correlation is proven, because caste is not a purely economic phenomenon. Consequently, it is fair to state that economic advancement alone is unlikely to usurp patterns of caste discrimination in rural areas.
- **Networks with certain social institutions can help to reduce vulnerability.** Because of the apparent omnipotence of the caste system, the most vulnerable members of the case study villages access informal social institutions that are possibly more egalitarian in their operations than formal institutions that may be restricted by caste related attitudes and beliefs. The most effective informal institutions appear to be family members in other villages, CBOs and NGOs (if the respondents are fisherfolk castes). These institutions can enable the respondents to access the resilience related resources required to help them cope with their relatively high levels of vulnerability. However, it would be pertinent to state that because caste persists in playing such an influence on levels of vulnerability it appears that to date the support obtained by the lower castes has not been as effective as the restricting effects of caste related attitudes and beliefs.

It has been stated that despite efforts by policy makers and development agencies over the past two decades the vulnerability of some coastal communities in Andhra Pradesh has not been significantly reduced (Winchester 2000; O'Hare 2001). It is highly possible that the inefficiencies of these efforts are related to institutionalised inequalities based along caste defined lines. It would be pertinent to state that the majority of people in rural India subscribe to caste related ideologies, whether they intend to or not. Governmental agencies are likely to subscribe to caste related ideologies through habit, tradition or nepotism (Narayanasamy et al 2000; Robbins 2000), and non-Governmental agencies are likely to conduit resources through channels influenced by institutions that subscribe to traditional ideologies (Sen 1999; Wilson 2004). Consequently, it is not surprising that in rural Andhra Pradesh there is a hierarchy of vulnerability that appears to correlate closely with the hierarchy of the caste (*Varna*) system.

## 8.3 POLICY AND GENERAL RECOMMENDATIONS

One of the key conclusions made by this thesis is that levels of vulnerability in rural India do not only relate to money because caste appears to be the key factor that influences not only who is poor, but also who is marginalised, who is powerful and who is resilient. Although caste related inequalities have been blamed in the past for disparities regarding levels of poverty (Mencher 1974, 1991; Venkateswarlu 1986; Searle-Chatterjee 1994; DFID 1999; Robbins 2000; Kabeer 2002) there has been limited empirical evidence to support these assertions (Agrawal 2004). Similarly, there has previously been little empirical evidence to support the conclusions made in this thesis regarding how caste status can adversely influence the socio-economic determinants that affect levels of vulnerability.

Appropriate policies by the central Indian Government, State Governments and Non-Governmental Organisations (local, national and international) that are given time to take hold, could contribute in some way to a reduction in caste defined disparities between the 'haves' and 'have-nots' and thereby reduce levels of vulnerability for those who are the most vulnerable.

- The most important recommendation that needs to be made is possibly the most difficult to achieve, because the biggest problems in the most vulnerable case study villages are associated with the lack of basic needs for either the whole village or for some sections of the village (typically defined by caste classification). The levels of basic needs will need to be improved in the case study villages, and a multitude of

similar villages throughout Andhra Pradesh (and the rest of India) via appropriately targeted and efficient social policies (Roy & Chai 1999) that transcend caste boundaries. If the levels of basic needs in these villages are improved for all, then it is possible that the most vulnerable will be in a better position to help themselves with the corollary that the following recommendations will almost certainly become less critical.

- Decentralised decision-making at village level through the village elders committee and the Panchayat appears to be largely effective. Nonetheless accounts provided by some respondents have illustrated that while social networks with these institutions can be largely effective for the majority there can be cases where personal disagreements with village elders or Panchayat members can severely restrict the effectiveness of social networks and an individuals' access to resources. Therefore, the standard of governance provided through village level institutions should not be viewed as a given (Roy & Tisdell 1998). When Governmental assistance, NGO projects or relief aid is to be channelled via village elders and the Panchayat it is essential that assessments are made by the donor agencies regarding the effectiveness of these village level institutions and investigate claims of corruption, nepotism and the misappropriation of funds.
- Community based organisations (CBOs) appear to be effective social institutions in assisting the most vulnerable to access resources that can help them reduce their relative levels of vulnerability. Although access to and the utilisation of CBOs does not appear to be restricted by the caste composition of the village or occupation of the villagers, it is clear that the services that CBOs provide are not typically used by males. In view of the ways that CBOs appear to improve access to vulnerability reducing resources for women it would make sense that if these resources were accessed via the involvement of men with similar CBOs the overall impact upon families, communities and villages could also be extremely beneficial. Therefore, a suitable recommendation would be to encourage men to become involved with CBO activities by designing projects that would appeal to (and encourage the participation of) men. This should be undertaken in a way that does not negatively affect the success of projects already involving women.
- The ways that NGOs target their recipient villages need to be improved, leading to an increased focus on reducing vulnerability in the most vulnerable communities, irrespective of the caste composition of the village. These improvements can be encouraged via policy changes by donor agencies, in a number of ways:

a. Audits by donor agencies should be aimed at assessing the appropriateness of the recipient villages selected by NGOs/Government programmes.
b. Careful assessment of which NGO interactions have and have not been appropriate and effective should be conducted by donor agencies and the NGOs themselves. It is important for the donor agencies to keep their expectations 'real' and achievable.
c. Careful auditing of NGO accounts by donor agencies, particularly regarding potential financial discrepancies between what the NGO claims as expenses related to wages and the purchase of equipment (i.e. 4x4 jeeps), and what proportion of the funding provided to such organisations is actually used for the benefit of the recipient villages.
d. Governmental initiatives aimed at targeting specific communities based on caste/caste classification (i.e. fisherfolk, BCs and STs) should be reconsidered. When a single caste village receives developmental assistance because of its caste classification, it is possible that conflict will arise from neighbouring villages that have not received assistance because they are not the same caste (irrespective of whether the complainants are perceived as being from 'higher' or 'lower' castes). This problem will inevitably be exacerbated when respondents are selected in a multi-caste village based on their caste/caste classification, thereby leaving the excluded villagers resentful and leading to disharmony within the village (because in reality the 'high' castes are as likely to complain about 'low' castes receiving assistance than 'low' castes complaining about 'high' castes receiving assistance). It is apparent that NGOs are more than aware of this last scenario and appears to be a factor in why they target single caste villages.
e. Multi-caste villages need to be targeted if appropriate (and according to this study it should be more appropriate than it currently is). However, if multi-caste villages are to be assisted it is essential that all the villagers are involved, irrespective of caste, caste classification, occupation or gender. This is obviously easier to recommend in a thesis than it is to practise in the typical Indian village but it is nonetheless essential to recognise that organisations and agencies should not be involved in projects aimed at reducing vulnerability (and overall levels of development) if they want project implementation and general participation to be easy, because it will not be easy. Typically, the pressure applied by donors on NGOs to show quantifiable benefits from the projects that they undertake can be restrictive. It would be fair to suggest that a vulnerability reduction project in a multi-caste village could be more problematic than one initiated in a single-caste

village but if this potential problem is factored into the expected outcomes of the project by the donor (i.e. by allowing more time before improvements are experienced in the recipient villages) then there should be no reason why the project cannot be successful but a reviewed temporal scale will invariably be required before quantifiable results will be apparent.

The recommendations made here indicate the scale of work required if vulnerability reduction is to be not only achieved but achieved in ways that minimise, and ideally eliminate, the problems of the past where in some cases the poorest, powerless and most marginalised members of rural villages in coastal Andhra Pradesh have not benefited from vulnerability reduction initiatives.

## 8.4 SUGGESTIONS FOR FURTHER RESEARCH

Chapter Two highlighted the diversity of Indian society and stated that this study can be to some extent generalised throughout rural India but is fundamentally location specific, focusing on the political reality of villages in coastal Andhra Pradesh. Although some findings related to inequality of resource accessibility and the roles of some social institutions could reasonably be compared to vulnerability related studies in northern Indian states such as Gujarat and West Bengal, the specific nuances of each State, District, and Mandal would require a location specific study to be conducted if the findings of this study are to be compared and thereby accurately verified or discredited.

This thesis initially set out to investigate what the main problems were in coastal Andhra Pradesh regarding levels of vulnerability to large scale but infrequent crises (such as those associated with tropical cyclone and flood disasters). The scope of the study was to ascertain what the main problems were from the respondents' perspectives and therefore the primary scope for the project was large. As the study progressed and the data was collected and analysed it became apparent that the respondents were largely concerned with the 'everyday' context that contributed to their levels of vulnerability to frequent problems related to the lack of basic needs, low fish catches and agricultural yields and the consequent problems with employment. The apparent importance of the everyday context meant that it became difficult to narrow the scope of the study enough to obtain the depth of data and analysis that was initially expected. Consequently this thesis has attempted to assess the myriad interconnecting issues that contribute towards people's vulnerability in the case study areas without being able to pursue each issue in greater depth. Therefore,

further research would have to be conducted on the topics discussed in this thesis to establish whether the observations highlighted are as important as the data suggests. Therefore it would be appropriate to suggest that further research should be conducted in India to assess whether the findings discussed in this thesis are applicable within Andhra Pradesh as well as for other states in India; these suggestions are outlined below.

- Similar research should be undertaken on the influence of social institutions and social networks on levels of vulnerability within Andhra Pradesh. However, such research would ideally be undertaken by a multi-disciplinary team that would be equipped to investigate key issues in enough depth to uncover some of the subtleties of such a complex topic.
- Similar research should be undertaken on the influence of social institutions and social networks on levels of vulnerability in other parts of India, particularly northern India where the influence of the caste system may be different to that experienced in Andhra Pradesh.
- The assessment of the social institutional effectiveness in reducing levels of vulnerability would be enhanced if a study was conducted on the roles that NGOs specifically play in reducing levels of vulnerability and the philosophies and practicalities in which NGOs target recipient villages.
- Finally, the sociograms used in this study have provided a wealth of qualitative and quantitative data that has proven essential towards the analysis of social networks and social institutional activity. It is suggested that the sociogram tool is tested in further studies, either related to vulnerability or adapted to suit other research focuses or other research contexts.

In addition to further research in India, the findings of this study would be augmented by similar studies (and the suggestions for further research that are highlighted above) conducted in a number of other developing nations. These studies could highlight the effectiveness of social institutions that vulnerable societies utilise in large scale but infrequent crises events as well as regularly occurring but smaller scale crises. Analysis of social institutional roles from a local perspective will give developmental and vulnerability reduction agencies and practitioners a better understanding of the socio-political structures of the communities with whom they work, with the ultimate intention that the interventions they initiate in the future will be better targeted and ultimately be more appropriate and sustainable that they have been in the past.

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# APPENDIX A

## CASE STUDY VILLAGE MAPPING SURVEY

[Key to village maps]

A.1 Peddavalasala village map

A.2 Laxmipathipuram village map

A.3 Bodduvarilanka village map

A.4 Patavala village map

A.5 Cheriyanam village map

A.6 Pandi village map

A.7 Malakondayapuram village map

A.8 Koppigunta village map

A.9 Kottapattapalem village map

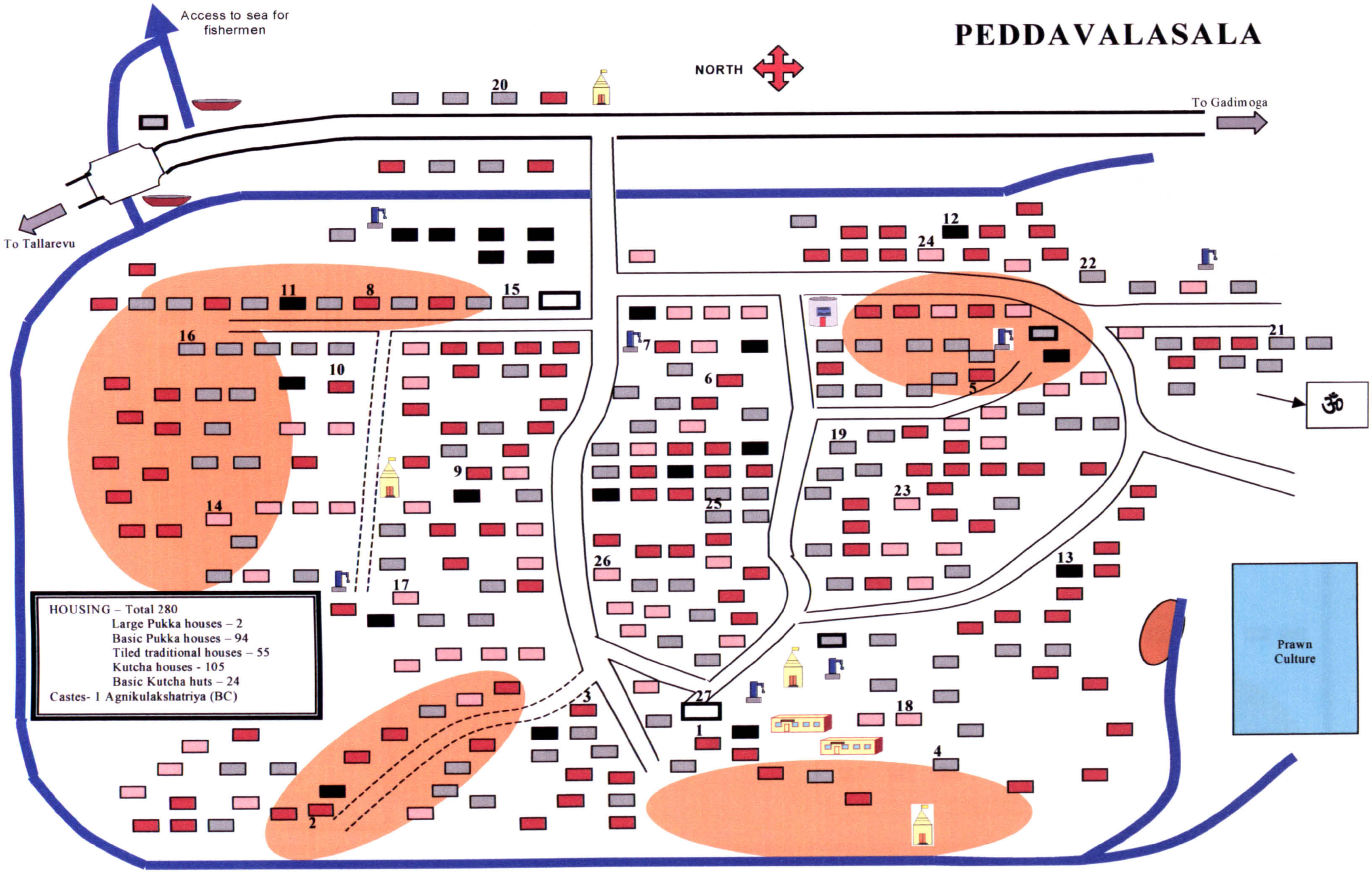
A.10 Venkateswarapalem village map

A.11 Koduru Mukkantam Colony village map

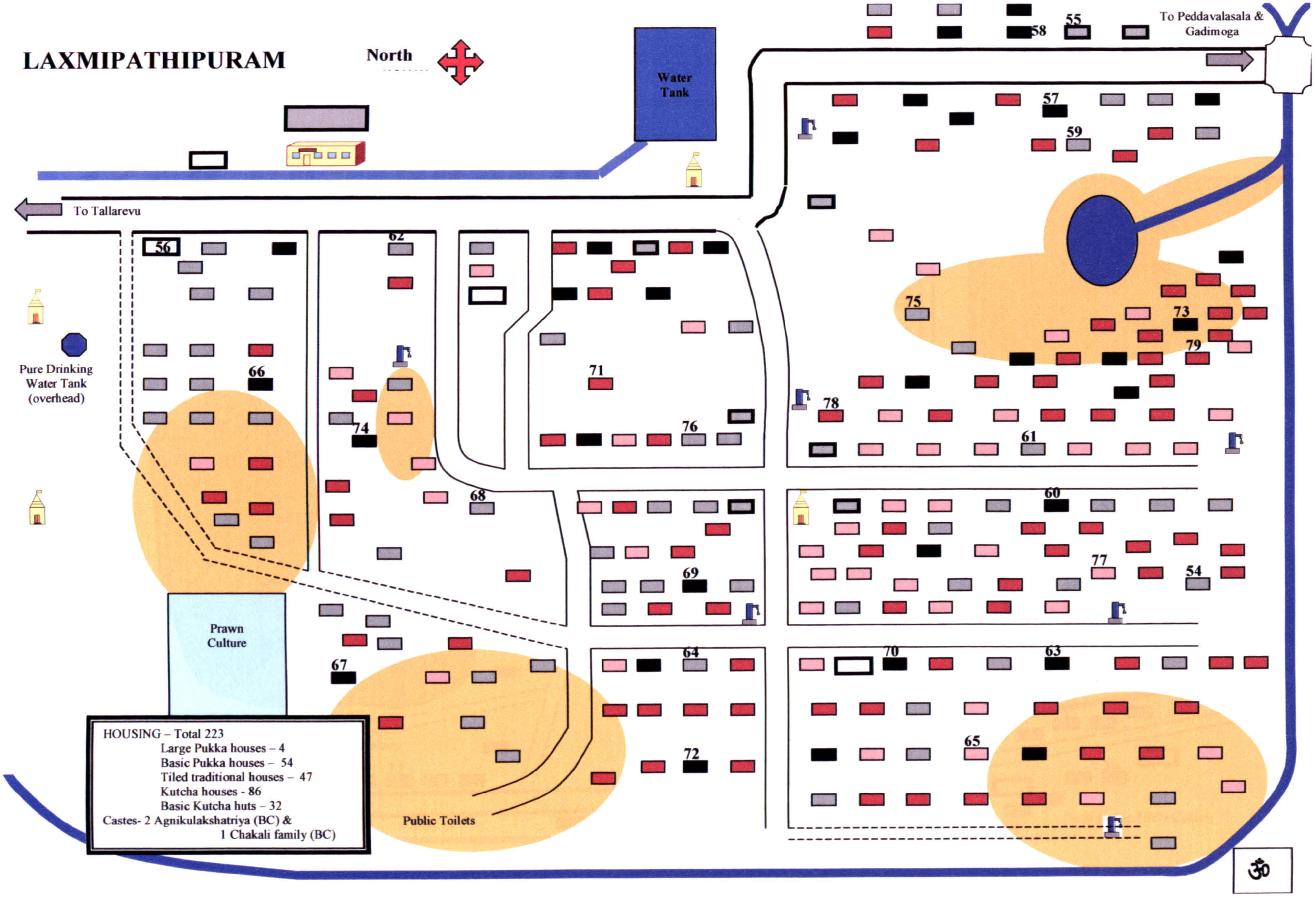
A.12 Villukanipalli village map

| KEY TO VILLAGE MAPS | |
|---|---|
| | **CANAL**<br>Irrigation canal, also used for navigational access to rivers and sea |
| | **MAIN ROAD** |
| | **MOTORABLE ROAD** |
| | **DIRT TRACK** |
| | **BRIDGE** |
| | **CATEGORY 5 BASIC 'KUTCHA' HUT**<br>Walls are not load bearing and roof is not supported by poles |
| | **CATEGORY 4 'KUTCHA' HOUSE**<br>Walls constructed of load bearing walls and a supported roof of thatch |
| | **CATEGORY 3 TILED HOUSE**<br>Older version of 'Pukka' house with brick walls and tiled roof |
| | **CATEGORY 2 BASIC CONCRETE 'PUKKA' HOUSE**<br>2 or 4 roomed concrete boxes of basic design |
| | **CATEGORY 1 LARGE CONCRETE 'PUKKA' HOUSE**<br>Large framed concrete houses, typically with more than one floor |
| | **CYCLONE SHELTER** |
| | **SHOP**<br>General convenience stores and shops selling fresh sea food |
| | **COMMUNITY HALL** |
| | **DR AMBEDKAR STATUE** |
| | **SCHOOL** |
| | **PRIMARY HEALTH CARE CENTRE** |
| | **WATER STANDPIPE**<br>Water supplied from drinking water tanks |
| | **DRINKING WATER TANK**<br>Typically covered concrete tanks, sometimes elevated to create sufficient head |
| | **HINDU TEMPLE** |
| ॐ | **FUNERAL GROUNDS (CREMATION)** |
| | **CHURCH** |
| | **AREA FOR DOCKING BOATS** |
| | **LOW LYING AREAS PRONE TO FLOODING FROM HEAVY RAIN** |
| | **PUBLIC DEFECATION AREA** |

# PEDDAVALASALA



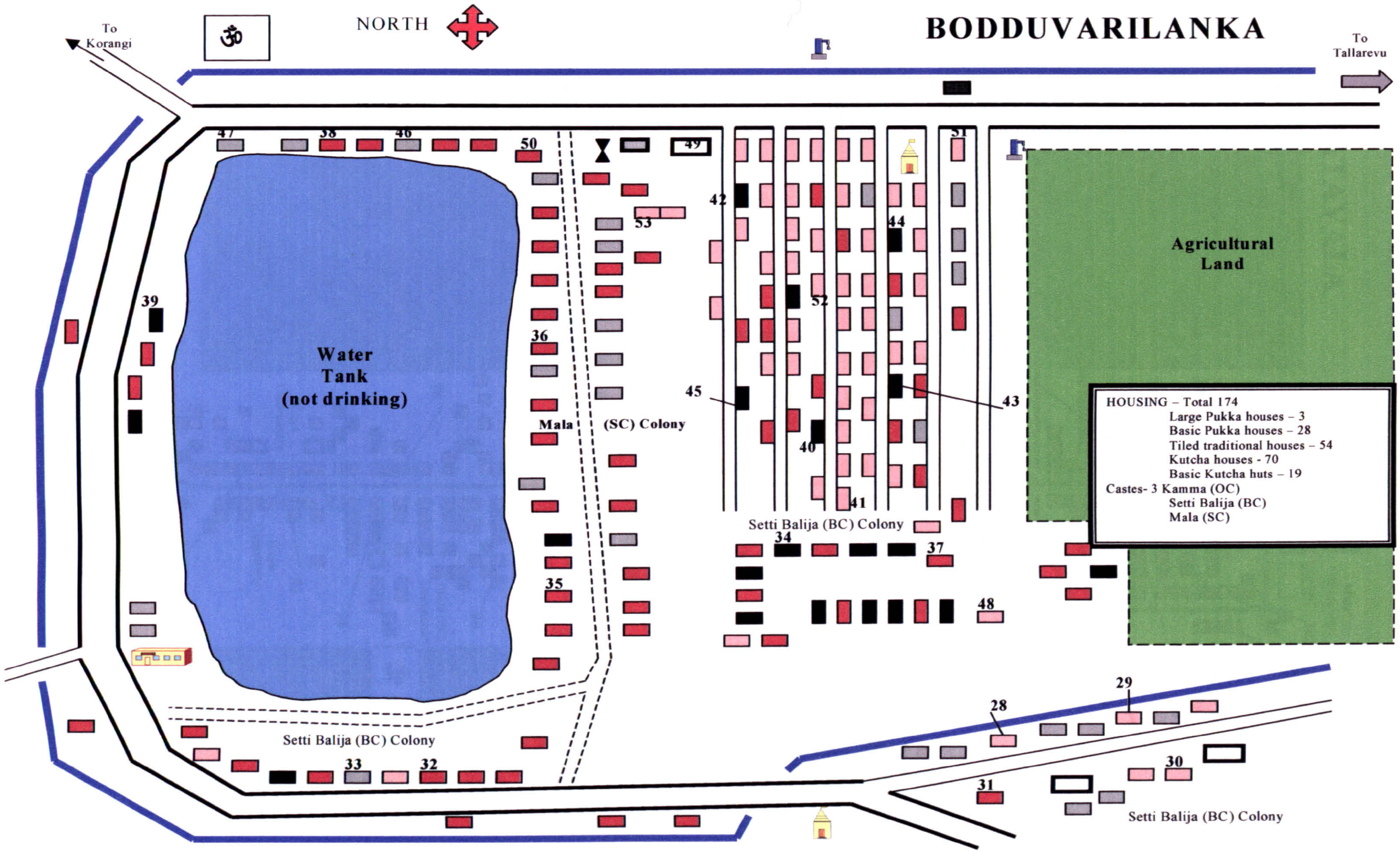
# LAXMIPATHIPURAM



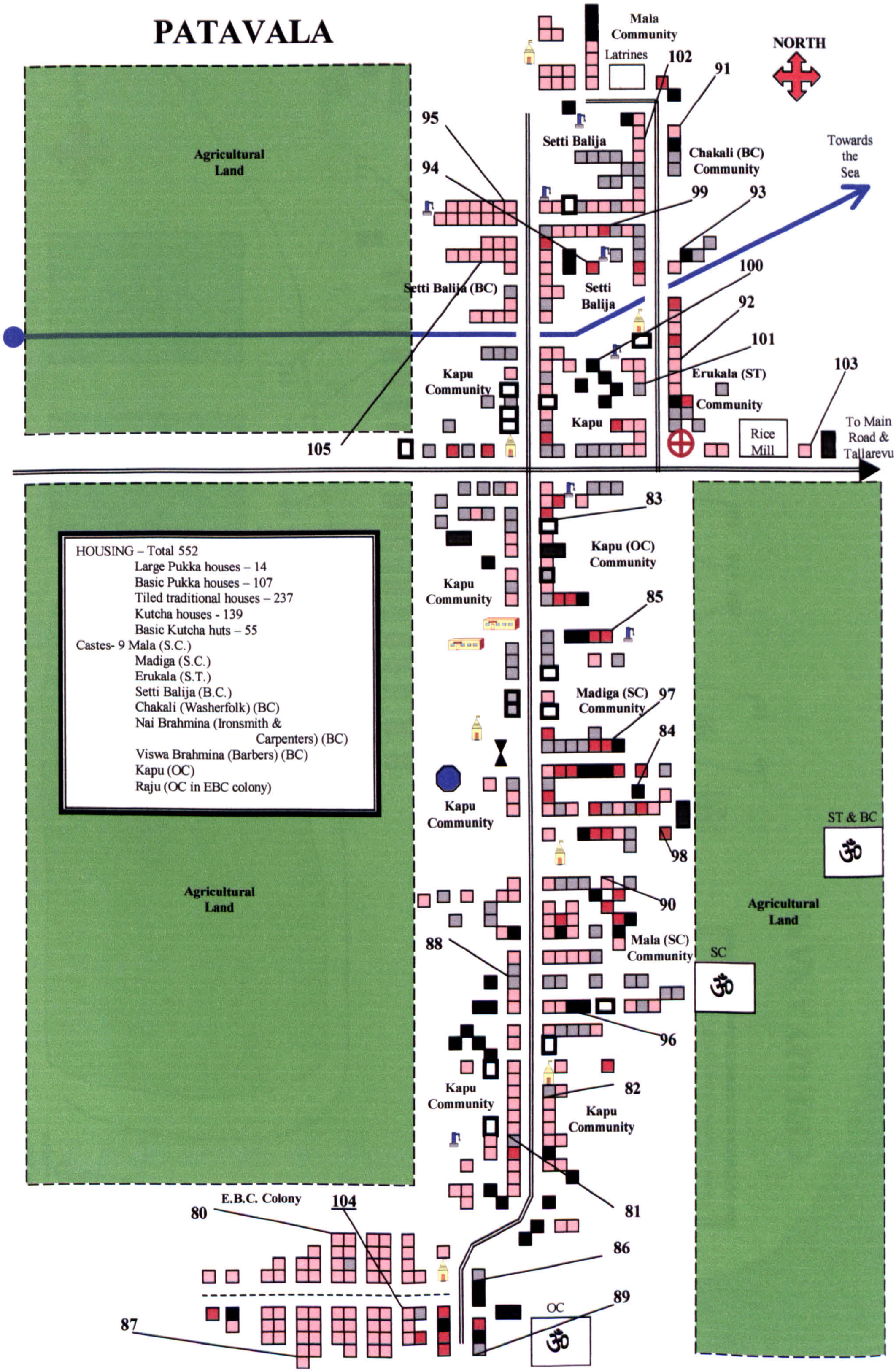

HOUSING – Total 223
- Large Pukka houses – 4
- Basic Pukka houses – 54
- Tiled traditional houses – 47
- Kutcha houses - 86
- Basic Kutcha huts – 32

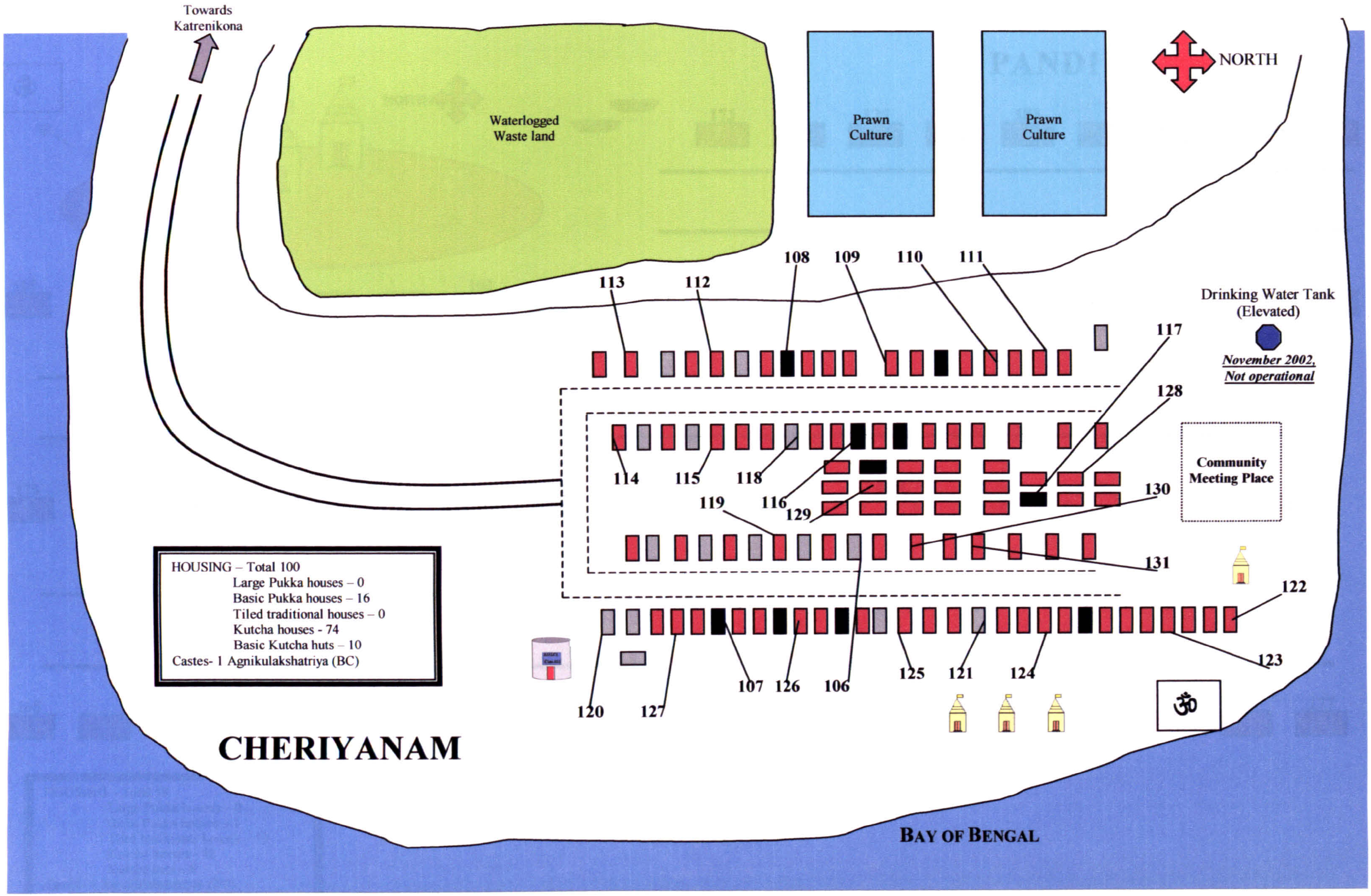
Castes- 2 Agnikulakshatriya (BC) &
1 Chakali family (BC)

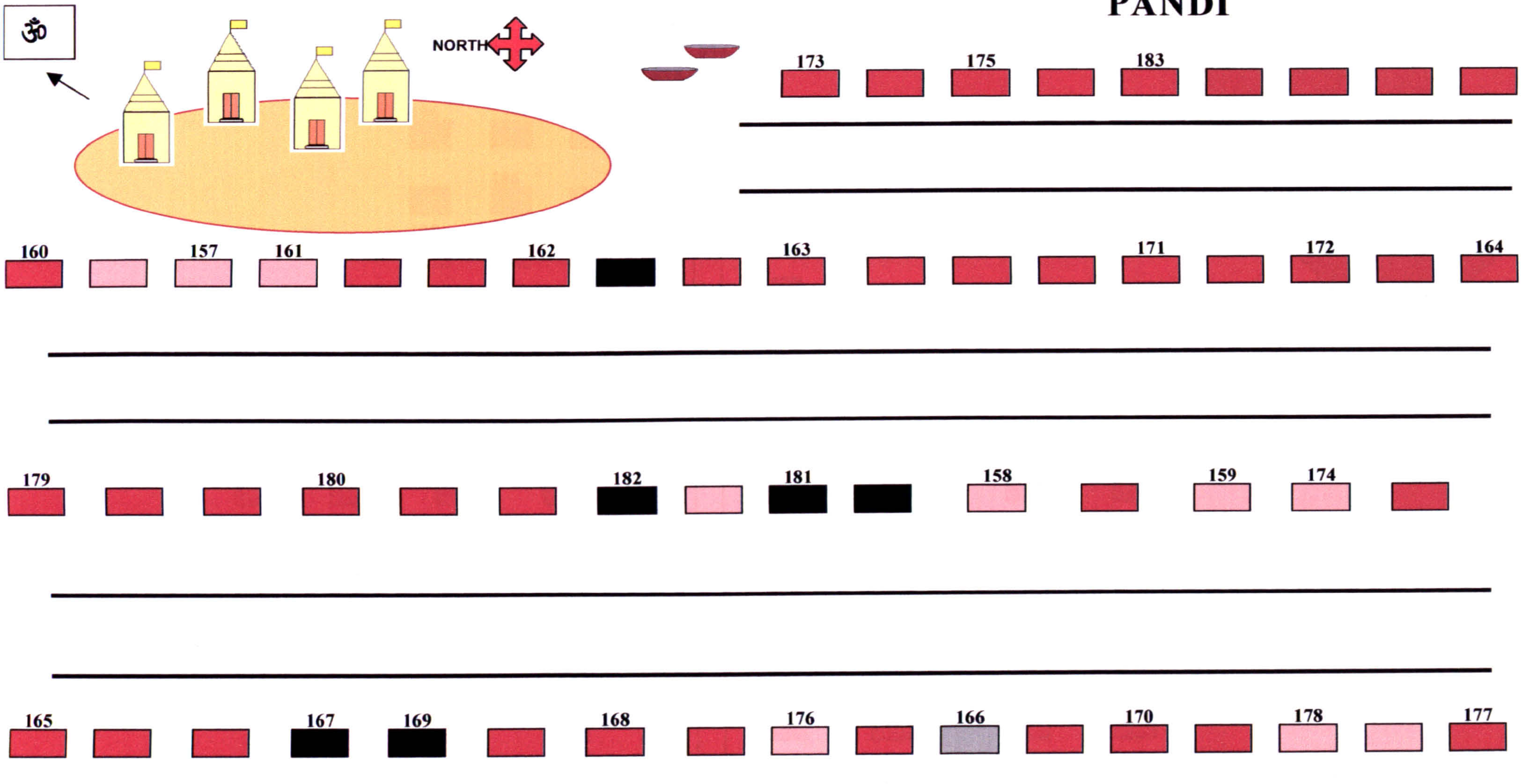
ॐ


To Korangi
NORTH
BODDUVARILANKA
To Tallarevu
Water Tank (not drinking)
Mala (SC) Colony
Setti Balija (BC) Colony
Agricultural Land
HOUSING – Total 174
Large Pukka houses – 3
Basic Pukka houses – 28
Tiled traditional houses – 54
Kutcha houses - 70
Basic Kutcha huts – 19
Castes- 3 Kamma (OC)
Setti Balija (BC)
Mala (SC)
Setti Balija (BC) Colony
Setti Balija (BC) Colony
Setti Balija (BC) Colony
47
38
46
50
49
53
42
44
51
39
36
52
45
43
40
41
34
37
35
48
33
32
29
28
30
31

# PATAVALA


Agricultural Land
Mala Community
Latrines
102
91
NORTH
95
Setti Balija
Chakali (BC) Community
Towards the Sea
94
99
93
Setti Balija (BC)
Setti Balija
100
92
101
Kapu Community
Erukala (ST) Community
103
Kapu
Rice Mill
To Main Road & Tallarevu
105
HOUSING – Total 552
Large Pukka houses – 14
Basic Pukka houses – 107
Tiled traditional houses – 237
Kutcha houses - 139
Basic Kutcha huts – 55
Castes- 9 Mala (S.C.)
Madiga (S.C.)
Erukala (S.T.)
Setti Balija (B.C.)
Chakali (Washerfolk) (BC)
Nai Brahmina (Ironsmith & Carpenters) (BC)
Viswa Brahmina (Barbers) (BC)
Kapu (OC)
Raju (OC in EBC colony)
Kapu Community
83
Kapu (OC) Community
85
Madiga (SC) Community
97
84
Kapu Community
98
90
Agricultural Land
ST & BC
88
Mala (SC) Community
SC
96
Kapu Community
82
Kapu Community
81
E.B.C. Colony
104
80
86
89
OC
87

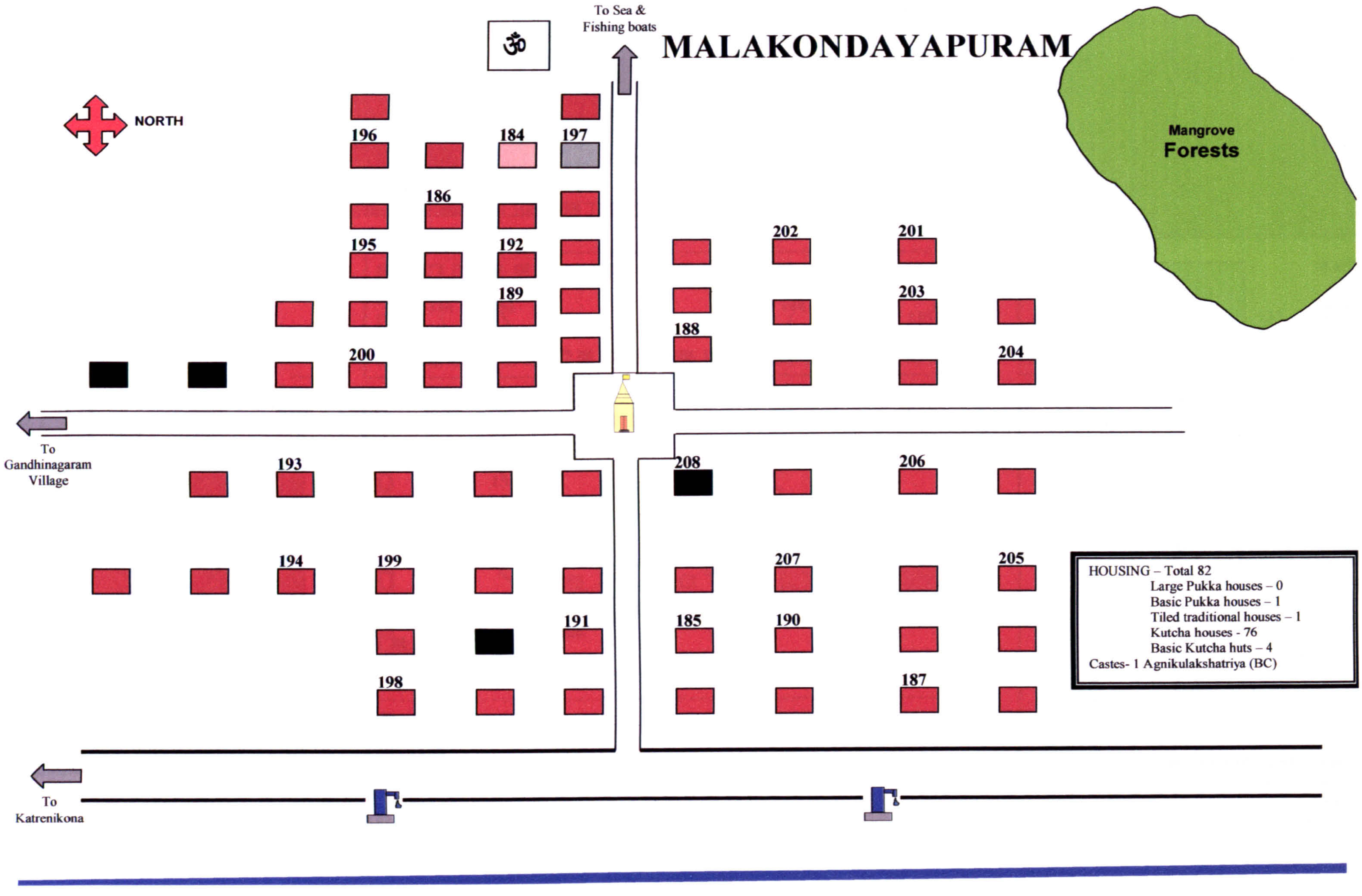

Towards
Katrenikona
Waterlogged
Waste land
Prawn
Culture
Prawn
Culture
NORTH
113
112
108
109
110
111
117
128
Drinking Water Tank
(Elevated)
November 2002,
Not operational
Community
Meeting Place
114
115
118
119
116
129
130
131
122
123
120
127
107
126
106
125
121
124
HOUSING – Total 100
Large Pukka houses – 0
Basic Pukka houses – 16
Tiled traditional houses – 0
Kutcha houses - 74
Basic Kutcha huts – 10
Castes- 1 Agnikulakshatriya (BC)
CHERIYANAM
BAY OF BENGAL



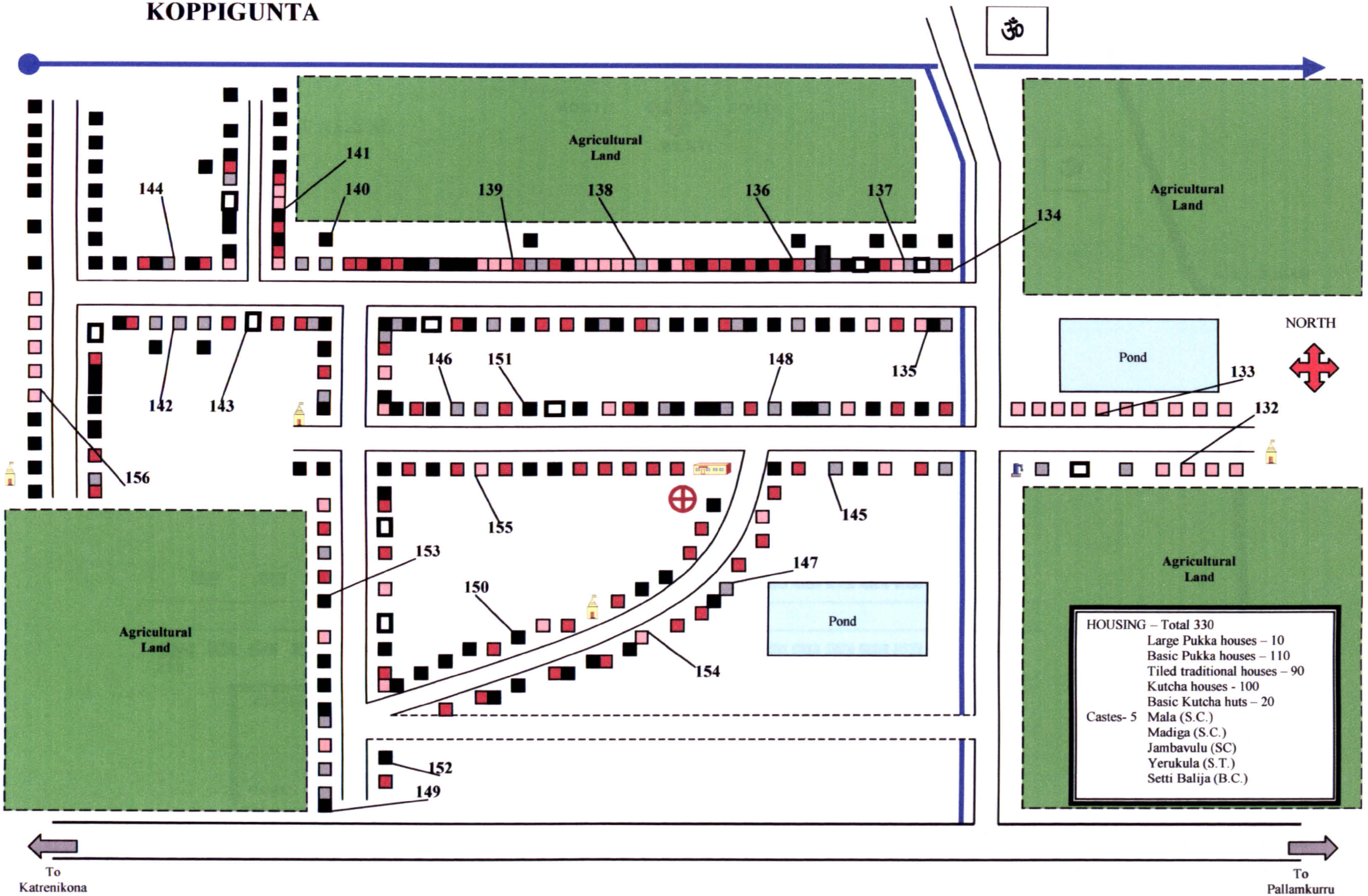

HOUSING – Total 59
- Large Pukka houses – 0
- Basic Pukka houses – 1
- Tiled traditional houses – 10
- Kutcha houses - 42
- Kutcha huts – 6

Castes- 1 Agnikulakshatriya (BC)

# MALAKONDAYAPURAM



# KOPPIGUNTA


ॐ
Agricultural Land
141
140
139
138
136
137
144
134
Agricultural Land
NORTH
Pond
133
132
146
151
148
135
142
143
156
155
145
153
147
150
Pond
154
Agricultural Land
152
149
Agricultural Land
HOUSING – Total 330
Large Pukka houses – 10
Basic Pukka houses – 110
Tiled traditional houses – 90
Kutcha houses - 100
Basic Kutcha huts – 20
Castes- 5 Mala (S.C.)
Madiga (S.C.)
Jambavulu (SC)
Yerukula (S.T.)
Setti Balija (B.C.)
To Katrenikona
To Pallamkurru

# KOTTAPATTAPALEM

EAST
NORTH SOUTH
WEST

ॐ

BUCKINGHAM CANAL

229 216 217

233 228 225 232

231 227 219 221 220

230 215 224 223 222

226 213 214 212

218 209 210 211

HOUSING – Total 90
Large Pukka houses – 0
Basic Pukka houses – 80
Tiled traditional houses – 0
Kutcha houses - 0
Basic Kutcha huts – 10
Castes- 1 Pattapu (BC)

To Narukuru

BAY OF BENGAL

EAST
NORTH
SOUTH
WEST

BUCKINGHAM CANAL

To Narukuru

HOUSING – Total 114
Large Pukka houses – 4
Basic Pukka houses – 80
Tiled traditional houses – 0
Kutcha houses - 10
Basic Kutcha huts – 20
Castes- 1 Pattapu (BC)

234
236
237
240
242
247
241
243
244
245
250
248
249
235
252
251
258
253
254
255
256
246
238
257
239

# VENKATESWARAPALEM

# KODURU MUKKANTAM COLONY

WEST
SOUTH NORTH
EAST

259 261 272

260 263 262

271

283

275 276

265 267 273

Prawn Culture

270 266 269

274 279

264

268 282

277 281

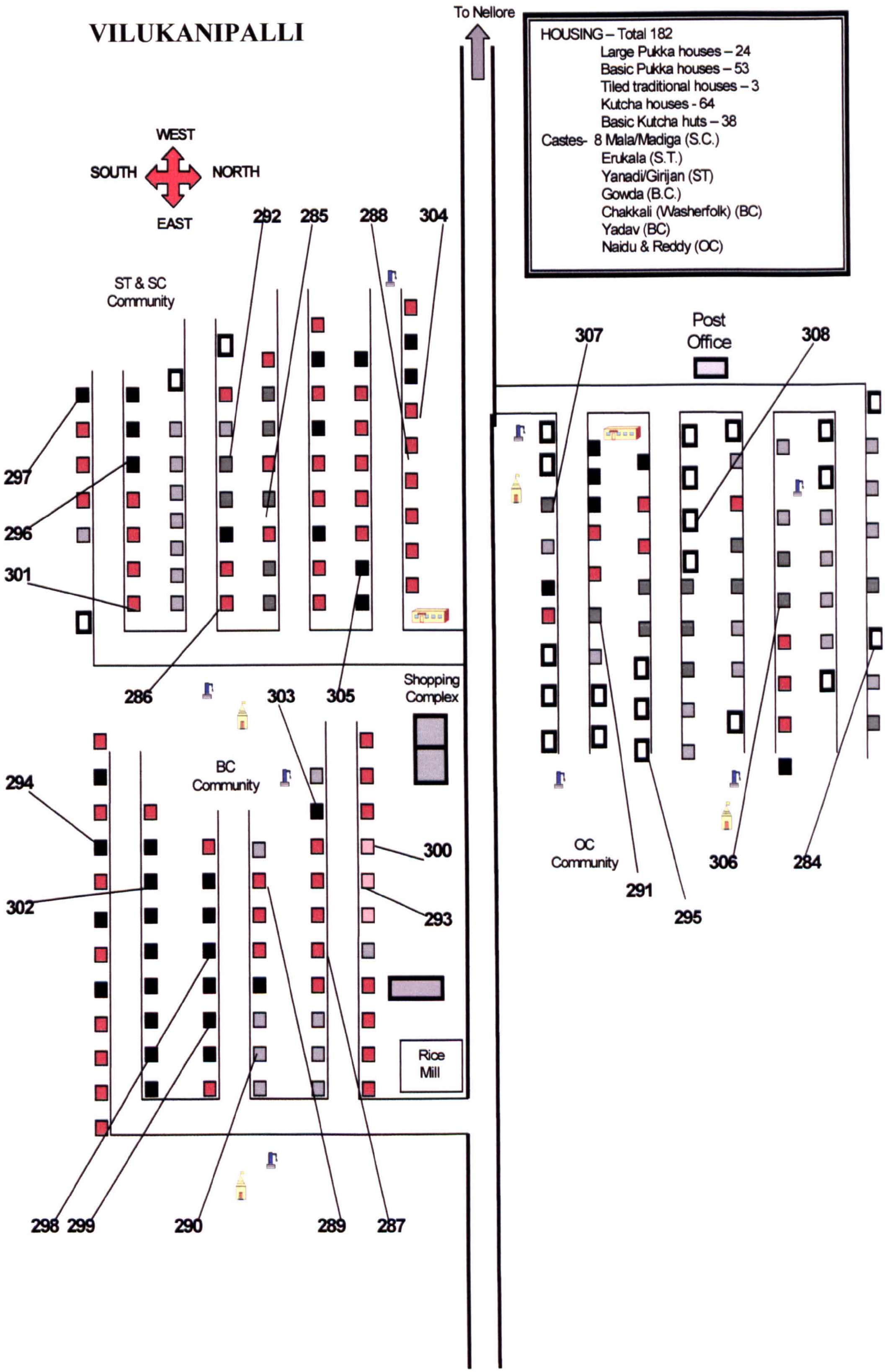
280

278

HOUSING – Total 70
Large Pukka houses – 0
Basic Pukka houses – 30
Tiled traditional houses – 0
Kutcha houses - 0
Basic Kutcha huts – 40
Castes- 1 Yanadi/Girijan (ST)

To Narukuru

# VILUKANIPALLI




HOUSING – Total 182
- Large Pukka houses – 24
- Basic Pukka houses – 53
- Tiled traditional houses – 3
- Kutcha houses - 64
- Basic Kutcha huts – 38

Castes-
- 8 Mala/Madiga (S.C.)
- Erukala (S.T.)
- Yanadi/Girijan (ST)
- Gowda (B.C.)
- Chakkali (Washerfolk) (BC)
- Yadav (BC)
- Naidu & Reddy (OC)

# APPENDIX B

## QUESTIONNAIRE SURVEYS

B.1 Category 1 (village level) questionnaire (English)

B.2 Category 1 (village level) questionnaire (Telugu)

B.3 Category 2 (NGO & Government) questionnaire (English)

CONFIDENTIAL INFORMATION

**FLOOD HAZARD RESEARCH CENTRE**

**MIDDLESEX UNIVERSITY**

**LONDON, ENGLAND**

# ANDHRA PRADESH SOCIAL SURVEY

## Category 1 Survey 2002

fhrc
Flood Hazard Research Centre

**FOR OFFICIAL USE ONLY**

Questionnaire number .....

Checked by: .....

Date checked: ...../...../2002

---

District: East Godavari / Nellore (*delete non-applicable*)

Mandal: .....

Village: .....

Address of participant

.....

.....

Interviewer: .....

Date: ...../...../2002

Time interview started .....

Time interview completed .....

Duration of interview (minutes) .....

| **Comments about interview (continue overleaf if necessary)** |
|---|
| |

**NOTES FOR INTERVIEWER**

1. Interview to be conducted in the respondent's home
2. Any statement in *italics* is for interviewer's information only
3. Any statement in parentheses is for interviewer's information only
4. Coded answers are for interviewer's information only.
5. If any question is not applicable write N/A: code -7
6. If participant refuses to answer any question: code –9
7. If participant answers don't know: code –8
8. Interviewers are to fill in Q1 – Q3 by observation only

**(TO BE READ OUT TO PARTICIPANT)**

**Purpose of the survey**

We are carrying out a survey on behalf of Middlesex University, England, on the way village level social institutions interact with the disaster management and development projects that are carried out along the coasts of East Godavari and Nellore. The purpose of this survey is to learn from the people who live in these villages about their experiences and interacts in relation to disaster management and developmental activities. We are doing this because it is important that your experiences should be explained and your opinions should be understood, and then made available to as many people as possible who are involved in disaster management and development in Andhra Pradesh.

**Confidentiality**

Due to the nature of this work, none of the information that you give us will be reported in any way that will identify any specific individuals.

**Benefit to you**

By providing information for this survey, you will be helping to increase our knowledge of villagers' needs in the coastal regions of Andhra Pradesh. Hopefully, this will help to educate the policy makers and thereby assist with policy design in the future.

**Thanks for your assistance**

Finally, may we take this opportunity to thank you for agreeing to help in this survey; your time is very much appreciated.

*Interviewer observation*

**1. What is the participant's gender?**

| | |
|---|---|
| Male | 1 |
| Female | 2 |

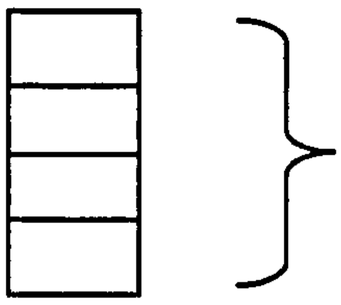
**2. Information regarding any people present at interview not to be included in matrix below**
*(Detail gender, age and relationship to respondent)*

.....

.....

**3. What are the primary materials that the house is constructed of?**

Roof
Load bearing walls
Plinth/platform
Floor



House type

| | | |
|---|---|---|
| 1. Reinforced concrete | 6. Corrugated metal | 11. Thatch |
| 2. Concrete | 7. Earth | 12. Tiles |
| 3. Cinder Brick | 8. Bamboo | 13. Stone/rock |
| 4. Mud brick | 9. Wood | 14. Other (specify) |
| 5. Cement | 10. Mud over branches | ..... |

## HOUSEHOLD

**4. How long have you lived in this village?** **years**
*(If less than 10 years where did you live previously and why did you move here?)*

.....

**5. Can you tell me who lives in your house?**
*(Include the respondent first and indicate those present at interview with a *)*

| Present | Name | Sex | Age | Relationship to respondent | Occupation |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |

**6. Other than this household, do you have other family members living in this village?**
*(If yes please specify their relationship)*

| | |
|---|---|
| YES | 1 |
| NO | 2 |

.....

**7. Do you have other family members living in a town/city?**
*(If yes please specify name of town/city and relationship)*

| | |
|---|---|
| YES | 1 |
| NO | 2 |

.....

**8. Is there anybody else that contributes, sends food or money, to the household although they do not live with you?** *(If yes, who and where do they live?)*

YES NO

.....

**9. Who is the head of the household?** .....

## VILLAGE AMENITIES

10. What is your main source of drinking water? ☐

| | |
|---|---|
| 1. Deep well | 5. Piped water system |
| 2. Shallow/dug well | 6. Borehole with hand pump |
| 3. Pond | 7. Other..... |
| 4. River/canal | |

11. What is your main source of fuel? ☐

| | |
|---|---|
| 1. Wood/branches collected from village | 5. Bought wood |
| 2. Wood/branches collected from forest/mangroves | 6. Kerosene |
| 3. By products of paddy | 7. L. P. Gas |
| 4. Dung | 8. Other ..... |

12. What is the main method of toilet waste disposal available to you? ☐

| | |
|---|---|
| 1. Piped sewerage system | 5. Night dirt disposal |
| 2. Private family latrine | 6. Open field on outskirts of village |
| 3. Shared latrine with other families | 7. River or sea |
| 4. Pit latrine | 8. Other ..... |

13. What types of transport does your household own? ☐ ☐ ☐ ☐
*(List all types but no more than four)*

| | |
|---|---|
| 1. Bullock cart | 6. Boat (sail) |
| 2. Bicycle | 7. Boat (motorised) |
| 3. Scooter/moped | 8. Rickshaw/auto |
| 4. Car/van/pickup | 9. Other ..... |
| 5. Boat (unpowered) | 10. None |

14. If you have a community meeting place, where is it?

.....

## THE COMMUNITY

15. Which villagers or groups belong to YOUR community?

.....

.....

.....

16. At any time have your community organised a meeting to discuss village problems?

| | |
|---|---|
| YES | 1 |
| NO | 2 |
| Don't know | -8 |

17. Where do you discuss the problems of the community?

.....

18. Do you think that the people in this <u>village</u> help each other? YES NO

19. Could you please give me an example of why you think this?

.....

.....

.....

.....

.....

## PERCEPTIONS OF RISK

**20. What in your view, are the most damaging effects of cyclones and floods?**

.....

.....

.....

**21. Is the failure of crops/poor fish catches more damaging to you than the effects of cyclones or floods?**

YES NO

**Please explain your answer?**

.....

.....

**22. What are the greatest threats to your livelihood?**

.....

.....

**23. What in your view are the three biggest problems that the village is currently faced with?**

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

**24. Who do you think can solve these problems?**

| | |
|---|---|
| Problem 1 | |
| Problem 2 | |
| Problem 3 | |

## CYCLONES

**25. How many cyclone shelters are located in your village?** ☐

**26. What year was the last cyclone or flood that affected your village?** ☐
*(If not known or not applicable Go to 30)*

**27. If you can think back to this event, what did you and your family do at these stages;**

| STAGES OF THE EVENT | WHAT WERE THE RESPONDENT'S ACTIONS? |
|---|---|
| **Before the event?** | |
| **When warning was received and during the event?** | |
| **After the event had occurred?** | |

**28. Again, if you can think back to this event, do you think the actions of the government were useful or not?**

Useful Not Useful Don't know *(Go to 30)*

**29. Please give me an example of why you believe this is the case?**

.....

.....

.....

## COMMUNITY SUPPORT

**30.** **Who are the most important people in your village?**
*(For example MLAs, MPs MPTCs. Please specify names and their membership to organisations/groups)*

.....

.....

**31.** **Who are the most important people in your community?**
*(For example MLAs, MPs MPTCs. Please specify names and their membership to organisations/groups)*

.....

.....

**32.** **Can you go to these people for help if you or your family have a problem?** YES NO
*(If yes which ones?)*
*(If no, why can't you go to them for help? Then Go to 34)*

.....

.....

**33.** **Do these people help you?** YES NO
*(Please give an example?)*

.....

.....

**34.** **Is there any committee or community organisation dedicated to addressing the needs and problems of the village?**

| | |
|---|---|
| YES | 1 |
| NO | 2 |
| Don't know | -8 |

**35.** **Which organisations exist in this village that work most to help solve community problems?**

| Name | Activities | Do you participate in decision making? If not why? | How often are meetings held? | How does your family benefit from the activities? |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

*(If the respondent does not participate with any organisations Go to question 37)*

**36.** **What are the benefits to you personally from your participation?**

.....

.....

**37.** **Do you think that some people or groups of people in the village benefit more than others do from the projects?**
*(If yes, who?)* YES NO

.....

.....

**38.** **Have there been any problems between the projects or organisations working in the village?**
*(If yes, which projects and why?)* YES NO

.....

.....

**39.** **Are there problems over women participating in these projects?**
*(If yes, why? Probe for example?)* YES NO

.....

.....

## GOVERNMENT PROGRAMMES

**40. Are you aware of any government programmes that are involved in reducing the impacts of cyclones or floods?**

| | | |
|---|---|---|
| YES | 1 | |
| NO | 2 | *(Go to 46)* |

**41. Which is the most successful government programme dealing with this issue, in your opinion?**

**Please give the name of the government programme and its' activities.**

Name of Programme .....

Activities .....

**42. How has the program reduced the risks from cyclones and floods for,**

| | |
|---|---|
| **The community?** | |
| **Your family?** | |
| **You?** | |

**43. Are there any government programmes dealing with cyclone and flood risks, which you believe, are not effective?**

| | | |
|---|---|---|
| YES | 1 | |
| NO | 2 | *(Go to 46)* |

**44. Please give the name of the government programme and its' activities.**

Name of Programme .....

Activities .....

**45. Why do you feel the programme has not been effective?**

.....

.....

.....

**46. What do YOU think the government <u>should</u> do to prepare for cyclones and floods that they are not presently doing?**

.....

.....

.....

## DECISION MAKING

**47. Who in your opinion makes the important decisions in your household?**

.....

**48. If there is a decision to make in your household, how does this usually occur?**

| | |
|---|---|
| The main decision maker decides and informs other family members | 1 |
| The decision-maker asks family members what they think and then decides | 2 |
| The family hold a discussion and decide together | 3 |
| Other | 4 |
| Don't know | -8 |
| Not applicable | -7 |

**49. Who in your opinion makes the important decisions in your village?**

.....

**50. If there is a decision to make in your village, how does this usually occur?**

| | |
|---|---|
| The main decision maker (leader) decides and informs other village members | 1 |
| The decision-maker (leader) asks village members what they think and then decides | 2 |
| The members of the village hold a discussion and decide together | 3 |
| Other | 4 |
| Don't know | -8 |
| Not applicable | -7 |

**51. Do you feel that compared to 5 years ago, your influence on decision making has;**

| | Increased | Stayed the same | Decreased |
|---|---|---|---|
| In the family | 1 | 2 | 3 |
| In the village | 1 | 2 | 3 |

## PARTICIPATION

**52. During the last year, who has participated in voluntary (unpaid) work aimed at improving conditions in the village?**

.....

.....

.....

**53. List the two most important public works projects or actions undertaken by the members of the village in the past 5 years** *(i.e. drinking water supply, cyclone resistant housing)*

1) .....

2) .....

**54. In your opinion, which villagers/communities/groups are most involved in providing support and solutions to village problems?** *(Probe about status, gender, age etc)*

.....

.....

.....

**55. In your opinion, which villagers/communities/groups are <u>not</u> involved but you believe should be?**

.....

.....

.....

## COPING MECHANISMS

**56. Who do you seek support from during the following three stages of cyclone or flood events?**

| | For the safety of you and your family? | For financial help? |
|---|---|---|
| **Before the cyclone/flood?** | | |
| **During the last cyclone/flood?** | | |
| **After the last cyclone/flood?** | | |

**57. How does the government help you with;**

**Safety?** .....

.....

**Financial help?** .....

.....

**58. Are your experiencing any problems with government officials?** YES NO
*(If yes, which officials and which department?)*

.....

.....

**59. Has belonging to this community helped you to <u>reduce</u> the risks to your livelihood and the effects of cyclones/floods?**
*(Whatever they answer please ask for an example)*

YES NO

.....

.....

.....

## PERSONAL

**60.** **What caste are you?** .....

**61.** **What level of schooling did you receive?**

| | |
|---|---|
| None | 1 |
| A few years at primary level | 2 |
| Completed primary | 3 |
| Secondary | 4 |
| College/University | 5 |

**62.** **When you want to buy something but do not have the money, what would you do?**

.....

.....

**63.** **Last year, what was the most difficult month for your family? Why?**

.....

.....

.....

**64.** **Did you go to someone else for financial support?** YES NO
*(If yes, who? If no, why?)*

.....

.....

**65.** **Did you participate in the last elections?** YES NO
*(If no, why not? And Go to 67)*

**As a voter?** ☐ **As a candidate?** ☐

.....

**66.** **Who encouraged you to exercise your right to vote?**

| | | |
|---|---|---|
| **You (independently)** | YES | NO |
| **Landlord** | YES | NO |
| **Village head** | YES | NO |
| **Community leaders** | YES | NO |
| **Others (specify)** ..... | YES | NO |

**67.** **Are you or your family, members of any political party?** YES NO
*(If No Go to 68)*

**For how many years?** ☐ **The name of the party?** ☐

**68.** **Are there anymore comments you would like to make before we finish?**

.....

.....

.....

.....

.....

**This is the end of the survey, thank you for your time and patience, it is very much appreciated. It may be necessary to briefly speak to you at a later date, if this is required it will be arranged at your convenience. Finally I would just like to reiterate that any information that you have provided will be treated with the utmost confidentiality.**

# B2: CATEGORY 1 QUESTIONNAIRE (TELUGU VERSION)

**(Scanned images from original questionnaire)**

CONFIDENTIAL INFORMATION

**FLOOD HAZARD RESEARCH CENTRE**

**MIDDLESEX UNIVERSITY**

**LONDON, ENGLAND**

**ANDHRA PRADESH SOCIAL SURVEY**

**Category 1 Survey 2002**

fhrc
Flood Hazard Research Centre

**FOR OFFICIAL USE ONLY**

Questionnaire number .....

Checked by: .....

Date checked: ...../...../2002

---

District: East Godavari / Nellore (*delete non-applicable*)

Mandal: .....

Village: .....

Address of participant .....

.....

Interviewer: .....

Date: ...../...../2002

Time interview started .....

Time interview completed .....

Duration of interview (minutes) .....

**Comments about interview (continue overleaf if necessary)**

**NOTES FOR INTERVIEWER**

1. Interview to be conducted in the respondent's home
2. Any statement in *italics* is for interviewer's information only
3. Any statement in parentheses is for interviewer's information only
4. Coded answers are for interviewer's information only.
5. If any question is not applicable write N/A: code -7
6. If participant refuses to answer any question: code –9
7. If participant answers don't know: code –8
8. Interviewers are to fill in Q1 – Q3 by observation only

(ఈ క్రింది విషయములను ఈ కార్యక్రమంతో పాల్గొన్న వ్యక్తికి చదివి వినిపించవలెను.)

పరిశీలించడానికి కారణము:

Middlesex University, England వారి తరపున "వరదల ఆపద యోచన" గురించి ఈ పరిశీలన తూర్పుగోదావరి, నెల్లూరు నదీ తీర ప్రాంతములలో చేయడమైనది. తద్వారా అక్కడ నివసిస్తున్న ప్రజలు, రైతులు వరదలలో ఆదుకునే సంస్థల గురించి మరియు అది నిర్వహించే కార్యక్రమము గురించి తెలుసుకొనెదరు. దీనివలన వారు వరదల వల్ల ఎన్ని బాధలు పడ్డారో దానికి పరిష్కార మార్గం తెలుస్తుంది. మేము ఈ యోచన ఎందుకు చేస్తున్నామనగా, రైతులు పడ్డ బాధలు మరియు వారి ఉద్దేశ్యములు తెలుసుకొనవచ్చును. అంతేకాక ఆంధ్రప్రదేశ్‌లోని తూర్పుగోదావరి, నెల్లూరు నదీ తీర ప్రాంతములలో ఎవరైతే పని చేస్తున్న వారికి కూడా ఎంతో ఉపయోగకరంగా ఉంటుంది.

**రహస్యము:**

ఈ పరిశీలనలో మీరు ఇచ్చిన సమాచారము ఎవ్వరికీ తెలియజేయడం జరగదు మరియు మిమ్ములను గుర్తించడం జరగదు.

**మీకు ఉపకారం:**

మీరు ఇచ్చిన సమాచారం చాలా మందికి ఉపయోగపడుతుంది. ముఖ్యంగా ఆంధ్రప్రదేశ్‌లోని తీర ప్రాంతంలలో ఉన్న ప్రజలకు ఎంతైనా సహాయము చేసినవారవుతారు అంతేకాక ఈ కార్యక్రమాలు చేపట్టే వారికి కూడా ఎంతైనా ఉపయోగపడుతుంది.

**ధన్యవాదములు:**

చివరిగ మా ఈ పరిశీలనలో అన్ని విధాలా మీ సహాయ సహకారములు అందించినందుకు మేము మీకు ధన్యవాదములు తెలుపుకొంటున్నాము.

*Interviewer observation*

1. **What is the participant's gender?**

Male 1
Female 2

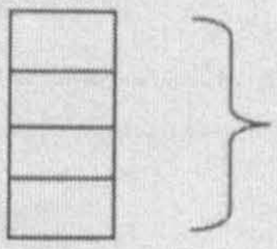
2. **Information regarding any people present at interview not to be included in matrix below**
*(Detail gender, age and relationship to respondent)*

.....

.....

3. **What are the primary materials that the house is constructed of?**

Roof
Load bearing walls
Plinth/platform
Floor



House type

| | | |
|---|---|---|
| 1. Reinforced concrete | 6. Corrugated metal | 11. Thatch |
| 2. Concrete | 7. Earth | 12. Tiles |
| 3. Cinder Brick | 8. Bamboo | 13. Stone/rock |
| 4. Mud brick | 9. Wood | 14. Other (specify) |
| 5. Cement | 10. Mud over branches | ..... |

4. ఇంటి వివరములు:

ఎంత కాలముగా మీరు ఈ గ్రామములో నివసించుచున్నారు? సం॥లు

(10సం॥ల కన్నా తక్కువైన, ఇంతకుముందు ఎక్కడ నివసించిరి మరియు ఎందుకు ఇక్కడకు తరలి వచ్చిరి)

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5. మీరు నాకు చెప్పగలరా మీ యింటిలో ఎంతమంది నివసించుచున్నారు?

(సమాధానం ఇచ్చి వ్యక్తిని మొదట చేర్చి తరువాత ఇంటర్వ్యూ చేయునపుడు హాజరైన వారి వివరములు సూచించండి)

| ప్రస్తుతం | పేరు | లింగము | వయసు | ప్రతివాదితో గల సంబంధము | వృత్తి |
|---|---|---|---|---|---|
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6. ఈ యింటినందు కాక గ్రామంలో వేరెక్కడైనా మీ కుటుంబ సభ్యులు నివసిస్తున్నారా?

అవును 1
కాదు 2

---

7. ఏ పట్టణమునందుగాని, నగరంనందు గాని మీ కుటుంబ సభ్యులు నివసించుచున్నారా?

(అవును, అయితే ఆ పట్టణ, నగర వివరములు మరియు సంబంధము)

అవును 1
కాదు 2

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8. మీతో నివసించకపోయినా డబ్బుల కొరకు లేదా ఆహారం కొరకు మీకు ఇంకా ఎవరైనా సహాయం చేస్తారా? (అవును అయితే వారు ఎవరు, ఎక్కడ నివసిస్తారు? అవును కాదు

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9. మీ ఇంటి యజమాని ఎవరు? .....

## గ్రామ సౌకర్యాలు:

10. గ్రామములో ఎటువంటి మంచినీటి సౌకర్యము కలదు? [ ]

1. లోతుబావి
2. త్రవ్విన బావి
3. కొలను
4. నది/మంచినీటి కాలువ
5. కులాయి నీటి సౌకర్యము
6. చేతి పంపు
7. ఇతరములు . . . . . .

11. గ్రామములో ఎటుంటి వంటచెరకు సౌకర్యము కలదు? [ ]

1. గ్రామపరిధాల నుండి తెచ్చిన కలప/కట్టెలు
2. అడవులు/మడ అడవులు నుండి తెచ్చిన కలప /కట్టెలు
3. వరి నుండి వచ్చిన ఉత్పత్తి
4. పేడ
5. కొన్న వంటచెరకు
6. కిరసనాయిలు
7. ఎల్.పి.గ్యాస్
8. ఇతరములు. . . . . .

12. గ్రామములో ఎటువంటి మరుగుదొడ్లు సౌకర్యము కలదు? [ ]

1. మురికి కాలువ
2. స్వంత కుటుంబ మరుగుదొడ్లు
3. ఇతర కుటుంబములతో కలిసి ఉన్న మరుగు దొడ్లు
4. పల్లపు మరుగుదొడ్లు
5. రాత్రి సమయాల్లో మురికి పోవు సౌకర్యము
6. గ్రామశివార్లలో బయిరంగస్థలం
7. నది, సముద్రము
8. ఇతరములు. . . . . .

13. మీ ఇంట్లో ఎటువంటి రవాణా సాధనాలు ఉన్నవి? [ ] [ ] [ ] [ ]
(వివరాలు తెల్పండి, కాని4కి మించరాదు)

| | |
|---|---|
| 1. ఎద్దుల బండి | 6. పడవ (తెడ్డు) |
| 2. సైకిలు | 7. పడవ (మోటారు) |
| 3. స్కూటర్/మోపెడ్ | 8. రిక్షా |
| 4. కారు (సొంత/అద్దె) | 9. ఇతరములు |
| 5. పడవ (విద్యుత్ లేని) | 10. ఏమీ లేవు |

14. మీ గ్రామానికి ప్రజల సమావేశ స్థలము ఉందా? ఉంటే ఎక్కడ వుంది?

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## తెగ:

15. ఏ గ్రామస్థులు మీ తెగకు చెందిన వారు?

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16. ఎప్పుడైనా మీ తెగకు చెందిన గ్రామస్థులు మీ గ్రామ సమస్యలు చెర్చించుకొనుటకు సమావేశము అయ్యారా?

అవును 1
కాదు 2
తెలీదు -8

17. మీ తెగకు సంబంధించిన సమస్యలను గురించి ఎక్కడ చర్చించుకుంటారు?

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18. గ్రామస్థులు ఒకరికొకరు సహాయపడతారని మీరు అనుకుంటున్నారా? అవును కాదు

19. పై దాని గురించి ఏదైనా ఉదాహరణను ఉదహరించండి?

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20. మీ దృష్టిలో తుఫాను లేక వరద తాకిడి వల్ల ఎదురయ్యే ముఖ్య సమస్యలు ఏమిటి?

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21. వంట నష్టము లేక చేపలు వడకపోవుటము వల్ల వచ్చే నష్టము, తుఫాను లేక వరదలు వల్ల వచ్చే నష్టము కన్నా ఎక్కువా?
మీ జవాబును వివరీకరించండి అవును లేదు

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22. మీ జీవనాధారమును దెబ్బతీసే సమస్యలు ఏమిటి?

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23. మీ దృష్టిలో, మీ గ్రామం ప్రస్తుతం ఎదుర్కుంటున్న మూడు ముఖ్యమైన సమస్యలు ఏమిటి?

1. ---
2. ---
3. ---

24. ఎవరు మీ సమస్యలను పరిష్కరించగలరని అనుకుంటున్నారు?

1. ---
2. ---
3. ---

## తుఫానులు:

25. మీ గ్రామములో ఎన్ని తుపాను పరంక్షణ ఆశ్రమములున్నవి? ☐

26. గడచిన కాలంలో మీరు ఎదుర్కొన్న తుఫాను/వరద ఎప్పుడు వచ్చింది? ☐
(తెలియకపోతే 30 కి వెళ్ళండి)

27. ఈ సంఘటనా సమయంలో మీరు/మీ కుటుంబం ఏమి చేసినది?

| సంఘటనా ఘట్టాలు | మీ చర్యలు ఏమిటి |
|---|---|
| సంఘటన ముందు | |
| హెచ్చరికలు వచ్చిన తరువాత | |
| ఈ సంఘటన అయ్యిన తరువాత | |

28. ఈ సంఘటన వదర్భములో మీ ప్రభుత్వం చేపట్టిన పనులు ఉపయోగమా? నిరుపయోగమా?
ఉపయోగము నిరుపయోగము తెలియదు(30 కి వెళ్ళుము)

29. మీరు ఎందుకు ఇలా అంటున్నారో ఒక ఉదాహరణ ఇవ్వండి?

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గ్రామప్రజల ఆధారం

30. మీ గ్రామములో అతి ముఖ్యమైన వారు ఎవరు?
(ఉదాహరణకు ఎం.ఎల్.ఎలు, ఎం.పి.లు మొ॥ గు వారి పేర్లు తెలుపండి)

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31. మీ తెగలో అతి ముఖ్యమైన వారు ఎవరు?
(ఉదాహరణకు ఎం.ఎల్.ఎ.లు, ఎం.పి.లు మొ॥ గు వారి పేర్లు తెలుపండి)

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32. మీరు మీ సమస్యలకు గాని మీ కుటుంబసమస్యలు గాని పరిష్కరించుటకు వారి వద్దకు వెళతారా? (అవును అయితే ఎవరి వద్దకు) అవును కాదు
(కాకపోతే ఎందుకు వెళ్ళరు? 34 కి వెళ్ళండి)

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33. వారు మీకు సహాయము చేస్తారా. (ఒక ఉదాహరణకు ఇవ్వండి) అవును కాదు

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34. మీ గ్రామ సమస్యలు పరిష్కరించుట కోసం ఏదైనా సంఘం/ స్వచ్ఛంద సంస్థ ఇక్కడ పనిచేస్తున్నదా?

అవును 1.
లేదు 2.
తెలీదు -8.

35. ఏ విధమైన సంస్థలు ప్రజల సమస్యలను పరిష్కరించడానికి గ్రామంలో పనిచేస్తున్నాయి?

| పేరు | కార్యక్రమాలు | చర్చలలో మీరు పాల్గొన్నారా? లేక పోతే ఎందుకు? | చర్చలు జరిగి ఎంతకాలం అయినది | చర్చల వల్ల మీ కుటుంబముకు వచ్చే లాభాలు? |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

36. నీవు పాల్గొనటం వల్ల నీకు స్వతహాగా వచ్చిన లాభము ఏమిటి?

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37. గ్రామాలలో కొద్ది మంది జనం లేక జనసమూహాలు ఇతర ప్రాజెక్టుల నుండి ఎక్కువ లాభాలు పొందుతున్నారు నీకు తెలుసా?(అవును అయితే ఎవరు) అవును కాదు

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38. అక్కడ గ్రామాలలోని కార్యక్రమాలు లేదా వ్యవస్థలమధ్య సమన్వయలు కలిగి ఉన్నవా?
(అయినట్లయితే, ఏ ప్రాజెక్టు, మరియు ఎందుకు) అవును కాదు

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39. అక్కడ ఇటువంటి ప్రణాళికలలో ఆడవారు పాల్గొనడానికి ఏమైనా సమస్యలు ఉన్నాయా?
(అయినట్లయితే, ఎందకు ఉదహరించండి) అవును కాదు

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ప్రభుత్వ సంస్థలు

40. అక్కడ గ్రామాలలో ఏదైనా ప్రభుత్వ సంస్థలు లేక వ్యవస్థలు ఏదైనా ప్రత్యేకమైన సహకారాలకు ప్రాతినిస్తున్నాయా?

అవును 1
కాదు 2 (46ß వెళ్ళుము)

41. ప్రభుత్వ సంస్థయొక్క పేరు మరియు కార్యక్రమము యొక్క పేరు తెలపండి?
కార్యక్రమము యొక్క పేరు.....
కార్యక్రమము .....

42. ప్రభుత్వ కార్యక్రమములు తుఫాను ప్రమాదము నుండి రక్షించినదా?

| | |
|---|---|
| తెగను | |
| కుటుంబమును | |
| మిమ్మలని | |

43. నిరువయోగంగా ఉన్న ప్రభుత్వ వథకాలు ఏమన్నా ఉన్నాయా? అవును 1
లేవు 2 (46ß వెళ్ళుము)

44. ప్రబుత్వ వథకాల పేర్లు తెలిపి, వాటి క్రింద అమలు జరిపిన కార్యక్రమాలను తెలుపండి?
పథకము పేరు.....
కార్యక్రమాలు.....

45. కార్యక్రమము సరిగా లేదని ఎందుకనుకొంటున్నారు?

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46. ప్రభుత్వం తుఫాను/వరద కార్యక్రమాలు ఏవిధంగా చేస్తే బాగుంటుందని అనుకొంటున్నారు?

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నిర్ణయాధికారం

47. నీ అభిప్రాయం ప్రకారం నీ కుటుంబంలో ఎవరు ముఖ్యమైన నిర్ణయం చేస్తారు?

---

48. నీ యొక్క కుటుంబం నిర్ణయం చేసినట్లయితే, సాధారణంగా ఇది ఎలా సంభవిస్తుంది?

1. ముఖ్యమైన నిర్ణయం చేసే వ్యక్తి నిర్ణయించి మరియు ఇతర కుటుంబ సభ్యలకు తెలియచేస్తారు 1
2. నిర్ణయం చేసే వ్యక్తి కుటుంబ సభ్యులకు వారు ఏమి నిర్ణయించారు అని అడుగుతారు. 2
3. కుటుంబ సభ్యులు సంభాషణను చర్చించి కలిసి నిర్ణయిస్తారు. 3
4. ఇతర విధములుగా 4
5. తెలియదు -8
6. వర్తించదు -7

49. నీయొక్క అభిప్రాయం ప్రకారం నీ గ్రామంలో ఎవరు ముఖ్యమైన నిర్ణయం తీసుకొంటారు?

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50. నీయొక్క గ్రామంలో నిర్ణయం తీసుకొన్నట్లయితే, సాధారణముగా ఇది ఎలా సంభవిస్తుంది.

1. ముఖ్యమైన నిర్ణయం తీసుకొనే వ్యక్తి(లీడర్) నిర్ణయించి మరియు ఇతర గ్రామసభ్యులకు తెలియచేస్తారు. 1
2. నిర్ణయం చేసే వ్యక్తి గ్రామ సభ్యులను వారు ఏమి ఆలోచించారు అని అడిగి నిర్ణయిస్తారా. 2
3. గ్రామ సభ్యులు కలసి చర్చించి మరియు నిర్ణయిస్తారు 3
4. ఇతర విధములుగా 4
5. తెలియదు -8
6. వర్తించదు -7

51. గడిచిన 5 సం॥లతో పోల్చుకొంటే, నీ నిర్ణయాధికారం

| | పెరిగినది | అదే స్థితిలో ఉన్నది | తగ్గినది |
|---|---|---|---|
| నీ కుటుంబంలో.. | 1 | 2 | 3 |
| నీ గ్రామంలో... | 1 | 2 | 3 |

పాల్గొనుట

52. గడిచిన సం॥లో గ్రామాభివృద్ధికి (స్వచ్ఛందంగా) పాటువడిన వారు ఏవరైనా ఉన్నారా?

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53. గడిచిన 5 సం॥లలో ఏమైనా 2 ముఖ్యమైన ప్రజాకార్యక్రమాల్లో గ్రామ సభ్యులు పాల్గొన్నారా( మంచినీటి నదుపాయం, తుఫాను నిరోధక గృహాలు)

1. ---

2. ---

54. గ్రామంలో సమస్యలను పరిష్కరించడానికి, నీకు తెలిసి, ఎవరెవరు సహాయపడుతున్నారు?

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55. గ్రామంలో ఏ సంఘము-సభ్యులు సమస్యలను-కార్యక్రమాలను పరిష్కరించడంలో నిమగ్నము కాలేదని మీరు అనుకుంటున్నారు?

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పునరావాన కార్యక్రమాలు.

56. మీరు క్రింద తెలుపబడిన మూడు స్థాయిలలో, ఎవరి సహాయం, తీసుకున్నారు.

| | నీ/నీ కుటుంబ క్షేమము | ఆర్థిక సహాయము |
|---|---|---|
| తుఫాను/వరద ముందు | | |
| ముందు వచ్చిన తుఫాను/వరద | | |
| తుఫాను/వరద తరువాత | | |

57. నీకు ప్రభుత్వం ఏ విధముగా సహాయపడింది?

నీ క్షేమం కొరకు:.....

ఆర్థిక సహాయం:.....

58. నీకు ప్రభుత్వ అధికారులతో ఏమన్నా ఇబ్బందులు ఉన్నాయా?

(అవును అయితే, ఎవరితో) ఉన్నాయి లేవు

..... ..... .....

..... ..... .....

59. నీవు ఈ తెగకు చెందడం వల్ల నీకు తుఫాను వల్ల వచ్చే ప్రమాదం ఏమన్నా తగ్గిందా?

(ఉదా॥ అడగండి) అవును లేదు

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CONFIDENTIAL INFORMATION

THE EXTENT TO WHICH SOCIAL INSTITUTIONS INFLUENCE THE VULNERABILITY REDUCTION AND DISASTER MITIGATION OF COMMUNITIES IN CYCLONE PRONE AREAS OF COASTAL ANDHRA PRADESH, SOUTH INDIA.

DISASTER RESEARCH CENTRE

వ్యక్తిగతం:

60. మీరుఏ కులమునకు చెందినవారు?.....

61. మీరు ఏ విధమైన విధ్యను పొందియున్నారు?

| | |
|---|---|
| ఏమిలేదు | 1 |
| ప్రాధమిక స్థాయిలో కొన్ని సం॥లు | 2 |
| పూర్తయిన ప్రాధమిక స్థాయి | 3 |
| ద్వితీయ స్థాయి | 4 |
| కళాశాల విద్య | 5 |

62. నీవు ఏదైనా వస్తువు కొనాలనుకొన్నప్పుడు నీ దగ్గర డబ్బులు లేకపోతే ఏమి చేస్తావు?

63. గడిచిన సం॥లో, మీ కుటుంబమునకు అతి కష్టమైన వెల ఏమిటి? ఎందుకు?

64. నీవు ఎవరివద్దనైనా సహాయం కోసం వెళతావా. అవును కాదు
(అవును అయితే, ఎవరు? కాదు అయితే ఎందుకు?)

65. మీరు మొన్న జరిగిన ఎన్నికలలో పాల్గొన్నారా? అవును కాదు
(లేకపోతే ఎందుకు లేదు? 67కి వెళ్ళండి)

ఓటరుగా ☐ అభ్యర్థిగా ☐

66 నిన్ను ఓటు వేయమని ఎవరు ప్రోత్సహించారు?

| | | |
|---|---|---|
| మీరు (మీకు మీరు) | అవును | కాదు |
| భూస్వామి | అవును | కాదు |
| గ్రామాధికారి | అవును | కాదు |
| మీ తెగ పెద్దలు | అవును | కాదు |
| ఇతరులు (తెలుపండి). . . . . | అవును | కాదు |

67. మీరు కానీ, మీ కుటుంబములోని వ్యక్తులు కానీ, ఏదైనా పార్టీలో అభ్యర్థిగా పని చేసారా?

చేసాము లేదు

ఎన్ని సంవత్సరములు: ☐ పార్టీ పేరు: ☐

68. మీరు ఇంకా ఎమన్నా చెప్పదలుచుకున్నారా? మేము అడిగినవి కాకుండా?

ఈ పరిశీలన ఇంతటితో సమాప్తం. మీ సమయమును, సహనమును మాకు కేటాయించినందుకు మీకు ధన్యవాదములు. ఇది ఎంతో గర్వించదగినది. అవసరమయితే, మరొక్కసారి మీకు అనువైన తేదీన మరింత వివరముగా చర్చించెదము. చివరగా మీరు మాకిచ్చిన ఈ సమాచారమును అత్యంత రహస్యముగా ఉంచెదము.

CONFIDENTIAL INFORMATION

# THE EXTENT TO WHICH SOCIAL INSTITUTIONS INFLUENCE THE VULNERABILITY REDUCTION AND DISASTER MITIGATION OF COMMUNITIES IN CYCLONE PRONE AREAS OF COASTAL ANDHRA PRADESH, SOUTH INDIA.

FLOOD HAZARD RESEARCH CENTRE

MIDDLESEX UNIVERSITY LONDON, ENGLAND

**Category 2 Survey 2002**

fhrc
Flood Hazard Research Centre

**FOR OFFICIAL USE ONLY**

Questionnaire number .....

Checked by: .....

Date checked: ...../...../2002

District: East Godavari / Nellore (*delete non-applicable*)

Mandal: .....

Participant's name: .....

Organisation/Government Department .....

Position held by participant .....

Interviewer: .....

Date: ...../...../2002

Time interview started .....

Time interview completed .....

Duration of interview (minutes) .....

**Comments about interview (continue overleaf if necessary)**

**NOTES FOR INTERVIEWER**

1. Interview to be conducted in the respondent's office/work place
2. Any statement in *italics* is for interviewer's information only
3. Any statement in parentheses is for interviewer's information only
4. Coded answers are for interviewer's information only.
5. If any question is not applicable write N/A: code -7
6. If participant refuses to answer any question: code –9
7. If participant answers don't know: code –8

**(TO BE READ OUT TO PARTICIPANT)**

**Purpose of the survey**

We are carrying out a survey on behalf of Middlesex University, England, on the way village level social institutions interact with the disaster management and development projects that are carried out along the coasts of East Godavari and Nellore. The purpose of this survey is to learn from the people who administer, work or live in these villages about their experiences and interacts in relation to disaster management and developmental activities. We are doing this because it is important that your experiences should be explained and your opinions should be understood, and then made available to as many people as possible who are involved in disaster management and development in Andhra Pradesh.

**Confidentiality**

Due to the nature of this work, none of the information that you give us will be reported in any way that will identify any specific individuals.

**Benefit to you**

By providing information for this survey, you will be helping to increase our knowledge of villagers' needs in the coastal regions of Andhra Pradesh. Hopefully, this will help to educate the policy makers and thereby assist with policy design in the future.

**Thanks for your assistance**

Finally, may we take this opportunity to thank you for agreeing to help in this survey; your time is very much appreciated.

## QUESTIONS FOR NGOs ONLY

1. **What in your view, are the most damaging effects of cyclones and floods?**

.....

.....

.....

2. **Is the failure of crops/poor fish catches more damaging to the villagers than the effects of cyclones or floods?**

YES NO

**Please explain your answer?**

.....

.....

3. **What are the greatest threats to their livelihoods?**

.....

.....

4. **What in your view are the three biggest problems that these villages are currently faced with?**

| | |
|---|---|
| 1 | |
| 2 | |
| 3 | |

5. **Who do you think can best solve these problems?**

| | |
|---|---|
| Problem 1 | |
| Problem 2 | |
| Problem 3 | |

6. **Which village organisations / groups / institutions do the government work through concerning village / community problems?**

| Name | Activities | Do ALL villagers participate in decision making? If not why? | How often are meetings held? | How do the villagers benefit from the activities? |
|---|---|---|---|---|
| | | | | |
| | | | | |
| | | | | |
| | | | | |

7. **Do you think that some people or groups of people in the villages benefit more than others from the projects?**
*(If yes, who?)* YES NO

.....

.....

8. **Have there been any problems between the projects or organisations working in the villages?**
*(If yes, which projects and why?)* YES NO

.....

.....

9. **Are there problems over women participating in these projects?**
*(If yes, why? Probe for example?)* YES NO

.....

.....

**10.** **In your view, which Government programmes are the most effective in reducing impacts of cyclones and floods?**

Name of Programme .....

Activities .....

**11.** **How has the program reduced the risks from cyclones and floods for the communities?**

.....

.....

**12.** **Do you think that the programmes dealing with cyclones and floods, provided by the government, are what the people need?** *(Please explain your answer)* YES NO

.....

.....

**13.** **Which social (village) institutions <u>support</u> AND also <u>do not support</u> the government in their cyclone and flood preparedness programmes?** *(Please detail the villages, institutions and support and problems encountered)*

**Support:**

.....

.....

.....

.....

**Not support:**

.....

.....

.....

.....

**14.** **Are you experiencing any problems with government officials?** YES NO
*(If yes, which officials and which department?)*

.....

.....

.....

## QUESTIONS FOR GOVERNMENT OFFICIALS & NGOS

**15.** **Which social institutions do you work through in the villages?**

.....

.....

**15a.** **Which are the most efficient?**

.....

.....

**16.** **In your view (experience) which social (village) institutions are the most effective in preparing people for cyclone and flood disasters?**

.....

.....

.....

**17.** **One hears about community development programmes but who are the communities for which these programmes are designed?**

.....

.....

.....

**18.** **What other groups of people are in, what is termed, the 'communities'?**

.....

.....

.....

19. **Are you aware of which groups/communities constitute the following villages?**

| MANDAL | VILLAGE | THE COMMUNITY? |
|---|---|---|
| TALLAREVU | Peddavalasala *(Gadimoga P.)* | |
| | Laxmipathipuram *(Gadimoga P.)* | |
| | Bodduvarilanka *(Kotha Korangi P.)* | |
| | Patavala *(Patavala P.)* | |
| KATRENIKONA | Cheriyanam *(Cheriyanam P.)* | |
| | Pandi *(Palam P.)* | |
| | Malakondayapuram *(Palam P.)* | |
| | Koppigunta *(Koppigunta P.)* | |

20. **Which of the above villages suffers the most on account of loss of livelihoods?**

.....

.....

.....

21. **Which group(s) of people suffers the most on account of loss of livelihoods?**

.....

.....

22. **Which groups of people are the most supportive of each other after a cyclone or flood disaster? Why?**

.....

.....

23. **Which village institutions provide support and solutions to village problems?** *(Probe about status, gender, age etc)*

.....

.....

.....

.....

24. **In your view, who are the most important people in the villages?**
*(For example MLAs, MPs MPTCs. Please specify the villages, names and their membership to organisations/groups)*

.....

.....

25. **If you can think back to the last cyclone or flood event, what did the Government do at these stages;**

| STAGES OF THE EVENT | WHAT WERE THE GOVERNMENT'S ACTIONS? |
|---|---|
| Before the event? | |
| When warning was received and during the event? | |
| After the event had occurred? | |

26. **How do the government and officials help the villagers with;**

**Safety?** .....

.....

**Financial help?** .....

.....

## QUESTIONS FOR GOVERNMENT OFFICIALS ONLY

**27.** **Are you aware of any NGOs that are involved in reducing the impacts of cyclones or floods?**

YES 1
NO 2 *(Go to 29)*

**28.** **What is the name of the NGO?** .....

**29.** **What does your department/organisation do during the following three stages of cyclone or flood events?**

| | For the safety of villagers? | Financial assistance for villagers? |
|---|---|---|
| **Before the cyclone/flood?** | | |
| **During the last cyclone/flood?** | | |
| **After the last cyclone/flood?** | | |

**30.** **Who do you think the villagers seek support from in their community during the following three stages of cyclone or flood events?**

| | For their safety? | For financial help? |
|---|---|---|
| **Before the cyclone/flood?** | | |
| **During the last cyclone/flood?** | | |
| **After the last cyclone/flood?** | | |

**31.** **Are there anymore comments you would like to make before we finish?**

.....

.....

.....

.....

.....

**This is the end of the survey, thank you for your time and patience, it is very much appreciated. It may be necessary to briefly speak to you at a later date, if this is required it will be arranged at your convenience. Finally I would just like to reiterate that any information that you have provided will be treated with the utmost confidentiality.**

# APPENDIX C

## SOCIOGRAM SCORING

C.1 Institution Cards
[Examples only]

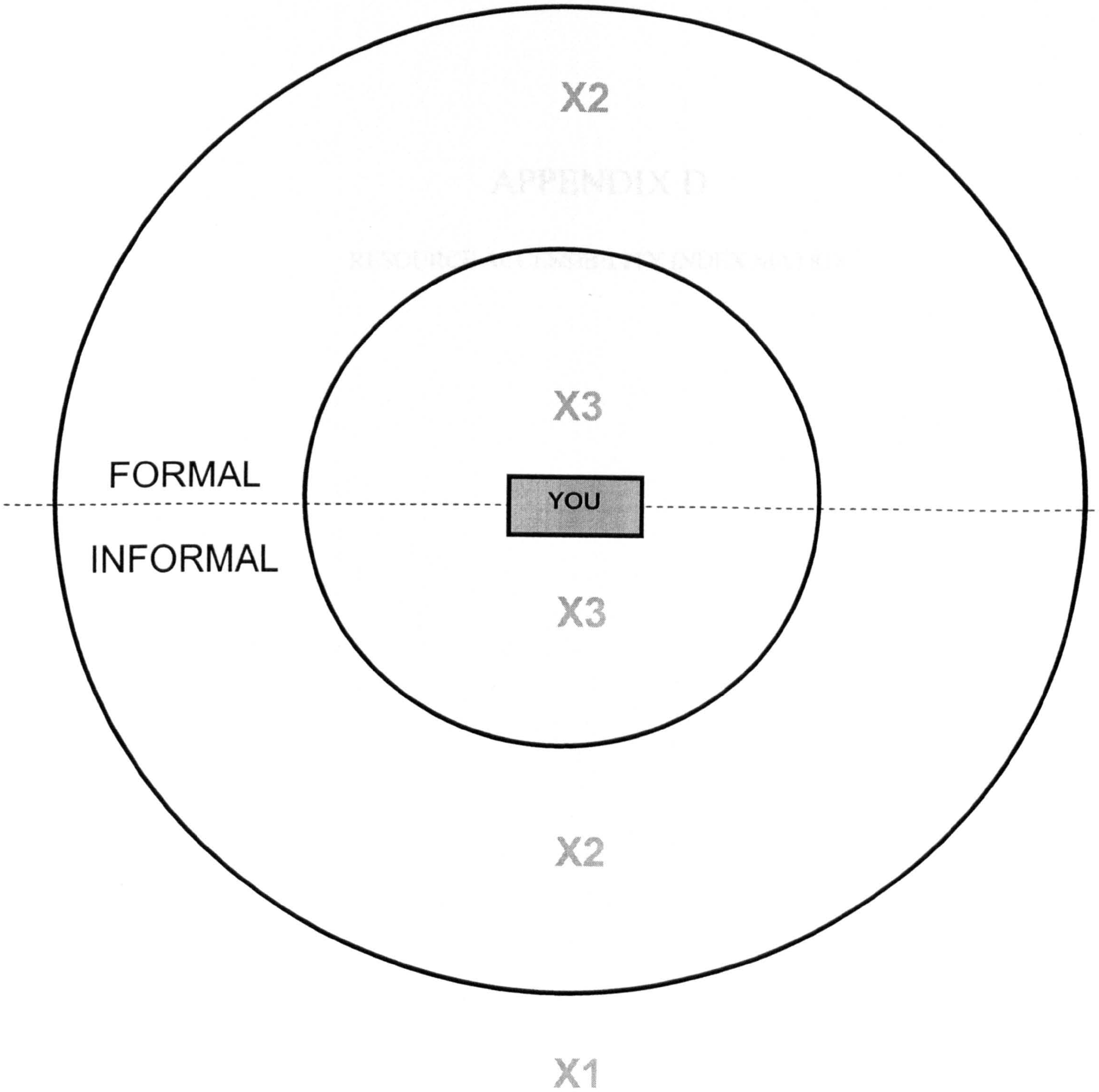
C.2 Scoring Template

# C1: SOCIOGRAM INSTITUTION CARDS

| | | |
|---|---|---|
| **FRIENDS** | **FAMILY MEMBERS IN SAME VILLAGE** | **WORK COLLEAGUES** |
| **PRIEST/RELIGIOUS LEADER** | **FAMILY MEMBERS IN OTHER VILLAGE** | **MONEY LENDER** |
| **FORMAL FINANCIAL INSTITUTION (BANK)** | **WOMEN'S GROUP** | **YOUTH GROUP** |
| **VILLAGE CLERK** | **VILLAGE SECRETARY** | **CO-OPERATIVE** |
| **COMMUNITY LEADER** | **NGO** | **INTERNATIONAL NGO** |
| **VILLAGE ELDER** | **COMMUNITY ELDER** | **LANDLORD** |
| **PANCHAYAT MEMBER** | **PANCHAYAT PRESIDENT** | **POLITICAL PARTY/LEADER** |
| **MANDAL OFFICIAL** | **M.L.A.** | **M.P.T.C** |
| **DISTRICT GOVERNMENT OFFICIAL** | **STATE GOVERNMENT OFFICIAL** | **OTHER**<br>**(Specify).....**<br>**.....** |

Note: These cards are only a representation of the original cards that were smaller in size and written in Telugu.

# C.2: SOCIOGRAM SCORING TEMPLATE



# APPENDIX D

## RESOURCE ACCESSIBILITY INDEX MATRIX

# APPENDIX D: RESOURCE ACCESSIBILITY INDEX SCORE MATRIX

| | RESOURCE ACCESSIBILITY INDEX MATRIX | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MARGINALISATION | | | | | POWER | | | | | POVERTY | | | | | RESILIENCE | | | | | |
| No. | Safe water | Cyclone resistant house | Cyclone shelter | Medical centre | Post primary education | State Govt. network | Mandal officials network | Panch/VE networks | Community leader network | Political network | Own livestock | Own land | Savings | Income gen. equipement | Other assets | Good dependancy ratio | Family in same village | Family outside village | Caste in majority | NGO/INGO involvement | TOT |
| 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 10 |
| 2 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 8 |
| 3 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| 4 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8 |
| 5 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 11 |
| 6 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 10 |
| 7 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 7 |
| 8 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 9 |
| 9 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 6 |
| 10 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 8 |
| 11 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 5 |
| 12 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 7 |
| 13 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 14 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 8 |
| 15 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 12 |
| 16 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 8 |
| 17 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 7 |
| 18 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 11 |
| 19 | 1 | 1 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 12 |
| 20 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 |
| 21 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 10 |
| 22 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 11 |
| 23 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 0 | 12 |
| 24 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 8 |
| 25 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 8 |
| 26 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 9 |
| 27 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 8 |
| 28 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 29 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 6 |
| 30 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 7 |
| 31 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| 32 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 4 |
| 33 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 6 |
| 34 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 7 |
| 35 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 5 |
| 36 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 7 |
| 37 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 8 |
| 38 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 39 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 7 |
| 40 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 4 |
| 41 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 5 |
| 42 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 6 |
| 43 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 5 |
| 44 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 3 |
| 45 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 |
| 46 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 6 |
| 47 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 5 |
| 48 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 4 |
| 49 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 9 |
| 50 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 3 |
| 51 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 5 |
| 52 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 6 |

RESOURCE ACCESSIBILITY INDEX MATRIX

| No. | | |

| | RESOURCE ACCESSIBILITY INDEX MATRIX | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MARGINALISATION | | | | | POWER | | | | | POVERTY | | | | | RESILIENCE | | | | | |
| No. | Safe water | Cyclone resistant house | Cyclone shelter | Medical centre | Post primary education | State Govt. network | Mandal officials network | Panch/VE networks | Community leader network | Political network | Own livestock | Own land | Savings | Income gen. equipement | Other assets | Good dependancy ratio | Family in same village | Family outside village | Caste in majority | NGO/INGO involvement | TOT |
| 105 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 7 |
| 106 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 107 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 6 |
| 108 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 109 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 8 |
| 110 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 111 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 7 |
| 112 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 8 |
| 113 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 114 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 8 |
| 115 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| 116 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 117 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 118 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 8 |
| 119 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 9 |
| 120 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 11 |
| 121 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 12 |
| 122 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 9 |
| 123 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 8 |
| 124 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 9 |
| 125 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 11 |
| 126 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 10 |
| 127 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 11 |
| 128 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 10 |
| 129 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 9 |
| 130 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 10 |
| 131 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 8 |
| 132 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 9 |
| 133 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| 134 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 7 |
| 135 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 6 |
| 136 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 9 |
| 137 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 8 |
| 138 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 8 |
| 139 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 5 |
| 140 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 7 |
| 141 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 7 |
| 142 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 7 |
| 143 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 8 |
| 144 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 8 |
| 145 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 9 |
| 146 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 11 |
| 147 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 10 |
| 148 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 9 |
| 149 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 8 |
| 150 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 9 |
| 151 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 8 |
| 152 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 9 |
| 153 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 9 |
| 154 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 8 |
| 155 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 0 | 7 |
| 156 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 7 |

| | RESOURCE ACCESSIBILITY INDEX MATRIX | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MARGINALISATION | | | | | POWER | | | | | POVERTY | | | | | RESILIENCE | | | | | |
| No. | Safe water | Cyclone resistant house | Cyclone shelter | Medical centre | Post primary education | State Govt. network | Mandal officials network | Panch/VE networks | Community leader network | Political network | Own livestock | Own land | Savings | Income gen. equipement | Other assets | Good dependancy ratio | Family in same village | Family outside village | Caste in majority | NGO/INGO involvement | TOT |
| 157 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 8 |
| 158 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| 159 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 9 |
| 160 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 161 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 162 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 8 |
| 163 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 0 | 8 |
| 164 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 165 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 166 | 1 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 |
| 167 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 7 |
| 168 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 169 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| 170 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 171 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 7 |
| 172 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 10 |
| 173 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 0 | 9 |
| 174 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| 175 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 11 |
| 176 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 10 |
| 177 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 11 |
| 178 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 9 |
| 179 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 11 |
| 180 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 8 |
| 181 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 11 |
| 182 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 1 | 1 | 12 |
| 183 | 1 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 184 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 7 |
| 185 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 9 |
| 186 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 10 |
| 187 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 7 |
| 188 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 8 |
| 189 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 190 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 8 |
| 191 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 10 |
| 192 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 9 |
| 193 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 9 |
| 194 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 8 |
| 195 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 6 |
| 196 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 8 |
| 197 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 8 |
| 198 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| 199 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 8 |
| 200 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 10 |
| 201 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 202 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 9 |
| 203 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 204 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 205 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 1 | 1 | 10 |
| 206 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8 |
| 207 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 5 |
| 208 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 7 |
| 209 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 210 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 211 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 212 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 10 |

| | RESOURCE ACCESSIBILITY INDEX MATRIX | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MARGINALISATION | | | | | POWER | | | | | POVERTY | | | | | RESILIENCE | | | | | |
| No. | Safe water | Cyclone resistant house | Cyclone shelter | Medical centre | Post primary education | State Govt. network | Mandal officials network | Panch/VE networks | Community leader network | Political network | Own livestock | Own land | Savings | Income gen. equipement | Other assets | Good dependancy ratio | Family in same village | Family outside village | Caste in majority | NGO/INGO involvement | TOT |
| 213 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 11 |
| 214 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 11 |
| 215 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 216 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 8 |
| 217 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 10 |
| 218 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 9 |
| 219 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 11 |
| 220 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 11 |
| 221 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| 222 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 11 |
| 223 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 8 |
| 224 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 10 |
| 225 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 1 | 11 |
| 226 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 10 |
| 227 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 13 |
| 228 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 10 |
| 229 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 1 | 10 |
| 230 | 1 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 9 |
| 231 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 10 |
| 232 | 1 | 0 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 8 |
| 233 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 10 |
| 234 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 10 |
| 235 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 1 | 1 | 1 | 11 |
| 236 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| 237 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 9 |
| 238 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 11 |
| 239 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 1 | 1 | 1 | 12 |
| 240 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 8 |
| 241 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 10 |
| 242 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 9 |
| 243 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 10 |
| 244 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 8 |
| 245 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 1 | 0 | 9 |
| 246 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 10 |
| 247 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 11 |
| 248 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 249 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 7 |
| 250 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 8 |
| 251 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 7 |
| 252 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 10 |
| 253 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 6 |
| 254 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 |
| 255 | 0 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 7 |
| 256 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 8 |
| 257 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 6 |
| 258 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 8 |
| 259 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 9 |
| 260 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 6 |

| | RESOURCE ACCESSIBILITY INDEX MATRIX | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | MARGINALISATION | | | | | POWER | | | | | POVERTY | | | | | RESILIENCE | | | | | |
| No. | Safe water | Cyclone resistant house | Cyclone shelter | Medical centre | Post primary education | State Govt. network | Mandal officials network | Panch/VE networks | Community leader network | Political network | Own livestock | Own land | Savings | Income gen. equipement | Other assets | Good dependancy ratio | Family in same village | Family outside village | Caste in majority | NGO/NGO involvement | TOT |
| 261 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 9 |
| 262 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 8 |
| 263 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 1 | 0 | 8 |
| 264 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 7 |
| 265 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 9 |
| 266 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 0 | 7 |
| 267 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 9 |
| 268 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 1 | 0 | 9 |
| 269 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 8 |
| 270 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 6 |
| 271 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 9 |
| 272 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 8 |
| 273 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 6 |
| 274 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 7 |
| 275 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 9 |
| 276 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 8 |
| 277 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 8 |
| 278 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 6 |
| 279 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 1 | 0 | 7 |
| 280 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 1 | 1 | 0 | 6 |
| 281 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 6 |
| 282 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 6 |
| 283 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 6 |
| 284 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 10 |
| 285 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 9 |
| 286 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 8 |
| 287 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 7 |
| 288 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 9 |
| 289 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 9 |
| 290 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 6 |
| 291 | 1 | 1 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 10 |
| 292 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 9 |
| 293 | 1 | 1 | 0 | 0 | 0 | 1 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 9 |
| 294 | 1 | 0 | 1 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 8 |
| 295 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 7 |
| 296 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 6 |
| 297 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 6 |
| 298 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 7 |
| 299 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 9 |
| 300 | 1 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 7 |
| 301 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 5 |
| 302 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 8 |
| 303 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 7 |
| 304 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 1 | 1 | 0 | 0 | 10 |
| 305 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 7 |
| 306 | 1 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 0 | 1 | 0 | 0 | 7 |
| 307 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 0 | 1 | 0 | 0 | 0 | 7 |
| 308 | 1 | 1 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 1 | 1 | 1 | 0 | 0 | 0 | 8 |
| TOT | 281 | 106 | 98 | 78 | 5 | 121 | 267 | 292 | 186 | 16 | 7 | 17 | 48 | 57 | 160 | 158 | 158 | 135 | 201 | 80 | 2471 |

# APPENDIX E

## 2001 CENSUS OF INDIA DATA

E.1 Tallarevu Mandal Census Figures

E.2 Katrenikona Mandal Census Figures

[Unpublished Census figures obtained from Mandal offices in Tallarevu & Katrenikona]

## E.1: Tallarevu Mandal Data, East Godavari District, Andhra Pradesh (May 2002)

| Panchyat | Village | Population | | | Population Below 6 years | | | Literacy Rate | | | Illiteracy Rate (age above 6 years) | | | Main Workers (Full-time) | | | Marginal Workers (Occassional Work) | | | Non Working People | | | BASED ON ECONOMICAL STATUS (MAIN & MARGINAL) WORKERS | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | Cultivators: Owned Leased or Shared Land | | | | Agricultural Labour | | | | Home Industry Workers | | | | Other workers | | | |
| | | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | Male | Female | Total | % | Male | Female | Total | % | Male | Female | Total | % | Male | Female |
| CHOLLANGI | CHOLLANGI | 1530 | 784 | 746 | 194 | 102 | 92 | 895 | 467 | 428 | 441 | 215 | 226 | 296 | 269 | 27 | 262 | 149 | 113 | 972 | 366 | 606 | 21 | 1.4 | 21 | | 371 | 24.2 | 260 | 111 | 8 | 0.5 | 4 | 4 | 158 | 10.3 | 133 | 25 |
| | GOLLA PETA | 1465 | 728 | 737 | 186 | 93 | 93 | 749 | 363 | 386 | 530 | 272 | 258 | 247 | 226 | 21 | 340 | 227 | 113 | 878 | 275 | 603 | 30 | 2.0 | 30 | | 452 | 30.9 | 347 | 105 | 0 | 0.0 | | | 105 | 7.2 | 76 | 29 |
| CHOLLANGI PETA | CHOLLANGI PETA | 1492 | 745 | 747 | 184 | 95 | 89 | 801 | 382 | 419 | 507 | 268 | 239 | 537 | 394 | 143 | 143 | 39 | 104 | 812 | 312 | 500 | 9 | 0.6 | 9 | | 608 | 40.8 | 384 | 224 | 0 | 0.0 | | | 63 | 4.2 | 40 | 23 |
| | KOBBARI CHETTU PALEM | 899 | 461 | 438 | 128 | 58 | 70 | 498 | 266 | 232 | 273 | 137 | 136 | 299 | 274 | 25 | 117 | 14 | 103 | 483 | 173 | 310 | 11 | 1.2 | 9 | 2 | 138 | 15.4 | 83 | 55 | 0 | 0.0 | | | 267 | 29.7 | 196 | 71 |
| G.VEMAVARAM | G.VEMAVARAM | 2042 | 1036 | 1006 | 275 | 136 | 139 | 1102 | 587 | 515 | 665 | 313 | 352 | 734 | 634 | 100 | 58 | 9 | 49 | 1250 | 393 | 857 | 155 | 7.6 | 144 | 11 | 624 | 30.6 | 488 | 136 | 0 | 0.0 | | | 13 | 0.6 | 11 | 2 |
| | GANDI VARI PALEM | 803 | 408 | 395 | 127 | 62 | 65 | 412 | 222 | 190 | 264 | 124 | 140 | 236 | 228 | 8 | 54 | 3 | 51 | 513 | 177 | 336 | 24 | 3.0 | 24 | | 161 | 20.0 | 111 | 50 | 0 | 0.0 | | | 105 | 13.1 | 96 | 9 |
| | RAYA MERAKA | 417 | 219 | 198 | 78 | 46 | 32 | 248 | 118 | 130 | 91 | 55 | 36 | 126 | 118 | 8 | 47 | 2 | 45 | 244 | 99 | 145 | 0 | 0.0 | | | 154 | 36.9 | 105 | 49 | 0 | 0.0 | | | 19 | 4.6 | 15 | 4 |
| | MATLA PALEM | 1315 | 683 | 632 | 190 | 101 | 89 | 873 | 471 | 402 | 252 | 111 | 141 | 429 | 371 | 58 | 91 | 9 | 82 | 795 | 303 | 492 | 28 | 2.1 | 25 | 3 | 254 | 19.3 | 156 | 98 | 1 | 0.1 | | 1 | 237 | 18.0 | 199 | 38 |
| PATAVALA | PATAVALA | 4006 | 2065 | 1941 | 452 | 234 | 218 | 2513 | 1311 | 1202 | 1041 | 520 | 521 | 446 | 385 | 61 | 1310 | 890 | 420 | 2250 | 790 | 1460 | 231 | 5.8 | 217 | 14 | 1289 | 32.2 | 872 | 417 | 28 | 0.7 | 18 | 10 | 208 | 5.2 | 168 | 40 |
| | RAMANNA PALEM | 742 | 368 | 374 | 104 | 53 | 51 | 550 | 276 | 274 | 88 | 39 | 49 | 190 | 184 | 6 | 130 | 7 | 123 | 422 | 177 | 245 | 1 | 0.1 | 1 | | 1 | 0.1 | 1 | | 8 | 1.1 | 2 | 6 | 310 | 41.8 | 187 | 123 |
| | KOTHURU | 653 | 321 | 332 | 129 | 66 | 63 | 321 | 175 | 146 | 203 | 80 | 123 | 145 | 131 | 14 | 127 | 57 | 70 | 381 | 133 | 248 | 11 | 1.7 | 11 | | 42 | 6.4 | 17 | 25 | 0 | 0.0 | | | 219 | 33.5 | 160 | 59 |
| | SANTHI MALA | 622 | 304 | 318 | 103 | 49 | 54 | 355 | 191 | 164 | 164 | 64 | 100 | 166 | 151 | 15 | 84 | 21 | 63 | 372 | 132 | 240 | 22 | 3.5 | 22 | | 139 | 22.3 | 86 | 53 | 17 | 2.7 | 9 | 8 | 72 | 11.6 | 55 | 17 |
| | RAGHAVENDRA PURAM | 463 | 237 | 226 | 48 | 19 | 29 | 320 | 164 | 156 | 95 | 54 | 41 | 32 | 30 | 2 | 153 | 115 | 38 | 278 | 92 | 186 | 12 | 2.6 | 12 | | 139 | 30.0 | 102 | 37 | 4 | 0.9 | 4 | | 30 | 6.5 | 27 | 3 |
| KOTHA KORANGI | KOTHA KORANGI | 1162 | 540 | 622 | 117 | 59 | 58 | 837 | 391 | 446 | 208 | 90 | 118 | 408 | 274 | 134 | 36 | 16 | 20 | 718 | 250 | 468 | 20 | 1.7 | 19 | 1 | 256 | 22.0 | 133 | 123 | 6 | 0.5 | 2 | 4 | 162 | 13.9 | 136 | 26 |
| | PATHA KORANGI | 1561 | 781 | 780 | 171 | 77 | 94 | 1043 | 556 | 487 | 347 | 148 | 199 | 351 | 330 | 21 | 341 | 134 | 207 | 869 | 317 | 552 | 43 | 2.8 | 40 | 3 | 625 | 40.0 | 404 | 221 | 1 | 0.1 | | 1 | 23 | 1.5 | 20 | 3 |
| | BODDU VARI LANKA | 704 | 381 | 323 | 85 | 43 | 42 | 430 | 237 | 193 | 189 | 101 | 88 | 393 | 243 | 150 | 0 | | | 311 | 138 | 173 | 18 | 2.6 | 18 | | 356 | 50.6 | 206 | 150 | 0 | 0.0 | | | 19 | 2.7 | 19 | |
| | CHINA BODDU VENKATAYA PALEM | 2501 | 1281 | 1220 | 424 | 220 | 204 | 973 | 528 | 445 | 1104 | 533 | 571 | 739 | 715 | 24 | 74 | 25 | 49 | 1688 | 541 | 1147 | 3 | 0.1 | 3 | | 50 | 2.0 | 16 | 34 | 11 | 0.4 | 6 | 5 | 749 | 29.9 | 715 | 34 |
| | PEDA BODDU VANKATAYA PALEM | 1614 | 788 | 826 | 280 | 145 | 135 | 891 | 420 | 471 | 443 | 223 | 220 | 432 | 403 | 29 | 176 | 64 | 112 | 1006 | 321 | 685 | 3 | 0.2 | 3 | | 116 | 7.2 | 9 | 107 | 20 | 1.2 | 16 | 4 | 469 | 29.1 | 439 | 30 |
| | HOPE ISLAND | 343 | 155 | 188 | 88 | 36 | 52 | 75 | 35 | 40 | 180 | 84 | 96 | 111 | 83 | 28 | 10 | | 10 | 222 | 72 | 150 | 0 | 0.0 | | | 0 | 0.0 | | | 0 | 0.0 | | | 121 | 35.3 | 83 | 38 |
| | SEETHA RAMA PURAM | 4019 | 1998 | 2021 | 493 | 242 | 251 | 2642 | 1335 | 1307 | 884 | 421 | 463 | 739 | 664 | 75 | 873 | 528 | 345 | 2407 | 806 | 1601 | 79 | 2.0 | 76 | 3 | 970 | 24.1 | 638 | 332 | 47 | 1.2 | 25 | 22 | 516 | 12.8 | 453 | 63 |
| POLEA KURRU | POLEA KURRU | 3609 | 1835 | 1774 | 490 | 254 | 236 | 2063 | 1091 | 972 | 1056 | 490 | 566 | 1151 | 968 | 183 | 174 | 17 | 157 | 2284 | 850 | 1434 | 200 | 5.5 | 182 | 18 | 912 | 25.3 | 643 | 269 | 21 | 0.6 | 11 | 10 | 192 | 5.3 | 149 | 43 |
| | CHINA BAPANA PALLI | 349 | 184 | 165 | 34 | 21 | 13 | 202 | 103 | 99 | 113 | 60 | 53 | 112 | 102 | 10 | 73 | 9 | 64 | 164 | 73 | 91 | 6 | 1.7 | 6 | | 169 | 48.4 | 95 | 74 | 0 | 0.0 | | | 10 | 2.9 | 10 | |
| TALLA REVU | TALLA REVU | 10304 | 5189 | 5115 | 1180 | 586 | 594 | 6919 | 3730 | 3189 | 2205 | 873 | 1332 | 3365 | 2788 | 577 | 668 | 147 | 521 | 6271 | 2254 | 4017 | 202 | 2.0 | 195 | 7 | 2055 | 19.9 | 1230 | 825 | 116 | 1.1 | 59 | 57 | 1660 | 16.1 | 1451 | 209 |
| GADI MOGGA | LAXMI PATHI PURAM | 1393 | 680 | 713 | 190 | 98 | 94 | 527 | 295 | 232 | 676 | 289 | 387 | 377 | 364 | 13 | 332 | 40 | 292 | 684 | 276 | 408 | 7 | 0.5 | 5 | 2 | 284 | 20.4 | 15 | 269 | 10 | 0.7 | 2 | 8 | 408 | 29.3 | 382 | 26 |
| | CHINA VALASALA | 2098 | 1064 | 1034 | 367 | 194 | 173 | 806 | 424 | 382 | 925 | 446 | 479 | 592 | 559 | 33 | 179 | 51 | 128 | 1327 | 454 | 873 | 7 | 0.3 | 7 | | 164 | 7.8 | 44 | 120 | 0 | 0.0 | | | 600 | 28.6 | 559 | 41 |
| | PEDA VALASALA | 1935 | 964 | 971 | 394 | 184 | 210 | 641 | 348 | 293 | 900 | 432 | 468 | 657 | 629 | 28 | 8 | 1 | 7 | 1270 | 334 | 936 | 4 | 0.2 | 4 | | 34 | 1.8 | 26 | 8 | 4 | 0.2 | 1 | 3 | 623 | 32.2 | 599 | 24 |
| | GADI MOGGA | 3223 | 1618 | 1605 | 474 | 233 | 241 | 1466 | 840 | 626 | 1283 | 545 | 738 | 964 | 901 | 63 | 245 | 11 | 234 | 2014 | 706 | 1308 | 1 | 0.0 | 1 | | 359 | 11.1 | 91 | 268 | 7 | 0.2 | 2 | 5 | 842 | 26.1 | 818 | 24 |
| LACHI PALEM | LACHI PALEM | 250 | 127 | 123 | 20 | 10 | 10 | 219 | 115 | 104 | 11 | 2 | 9 | 91 | 89 | 2 | 0 | | | 159 | 38 | 121 | 0 | 0.0 | | | 86 | 34.4 | 84 | 2 | 0 | 0.0 | | | 5 | 2.0 | 5 | |
| | BAPANA PALLI | 570 | 273 | 297 | 60 | 30 | 30 | 487 | 235 | 252 | 23 | 8 | 15 | 286 | 168 | 118 | 0 | | | 264 | 105 | 179 | 13 | 2.3 | 13 | | 269 | 47.2 | 151 | 118 | 0 | 0.0 | | | 4 | 0.7 | 4 | |
| UPPANGALA | UPPANGALA | 1626 | 807 | 819 | 177 | 92 | 85 | 1080 | 576 | 504 | 369 | 139 | 230 | 320 | 314 | 6 | 409 | 163 | 246 | 897 | 330 | 567 | 71 | 4.4 | 67 | 4 | 536 | 33.0 | 302 | 234 | 14 | 0.9 | 6 | 8 | 108 | 6.6 | 102 | 6 |
| | TANGETI PARRU | 430 | 209 | 221 | 37 | 19 | 18 | 334 | 179 | 155 | 59 | 11 | 48 | 161 | 119 | 42 | 83 | 7 | 76 | 186 | 83 | 103 | 51 | 11.9 | 51 | | 182 | 42.3 | 68 | 114 | 4 | 0.9 | 1 | 3 | 7 | 1.6 | 6 | 1 |
| PILLANKA | PILLANKA | 1199 | 627 | 572 | 102 | 52 | 50 | 893 | 488 | 405 | 204 | 87 | 117 | 496 | 384 | 112 | 21 | | 21 | 682 | 243 | 439 | 78 | 6.5 | 78 | | 311 | 25.9 | 191 | 120 | 12 | 1.0 | 12 | | 116 | 9.7 | 103 | 13 |
| | KOTHALANKA | 470 | 233 | 237 | 40 | 21 | 19 | 315 | 168 | 147 | 115 | 44 | 71 | 284 | 144 | 140 | 0 | | | 186 | 89 | 97 | 0 | 0.0 | | | 284 | 60.4 | 144 | 140 | 0 | 0.0 | | | 0 | 0.0 | | |
| GOVA LANKA | GOVA LANKA | 1397 | 705 | 692 | 165 | 86 | 79 | 954 | 508 | 446 | 278 | 111 | 167 | 426 | 337 | 89 | 295 | 31 | 264 | 676 | 337 | 339 | 9 | 0.6 | 6 | 3 | 698 | 50.0 | 349 | 349 | 1 | 0.1 | | 1 | 13 | 0.9 | 13 | |
| | GOPALAPURAM | 300 | 144 | 156 | 52 | 26 | 26 | 188 | 84 | 104 | 60 | 34 | 26 | 90 | 73 | 17 | 42 | 1 | 41 | 168 | 70 | 98 | 3 | 1.0 | 3 | | 123 | 41.0 | 66 | 57 | 0 | 0.0 | | | 6 | 2.0 | 5 | 1 |
| IN.JARAM | IN JARAM | 3382 | 1693 | 1689 | 336 | 167 | 169 | 2365 | 1248 | 1117 | 681 | 278 | 403 | 1037 | 809 | 228 | 304 | 168 | 136 | 2041 | 716 | 1325 | 58 | 1.7 | 58 | | 485 | 14.3 | 326 | 159 | 280 | 8.3 | 140 | 140 | 518 | 15.3 | 453 | 65 |
| | GOPU LANKA | 339 | 168 | 171 | 44 | 23 | 21 | 250 | 124 | 126 | 45 | 21 | 24 | 138 | 109 | 29 | 0 | | | 201 | 59 | 142 | 35 | 10.3 | 35 | | 66 | 19.5 | 51 | 15 | 0 | 0.0 | | | 37 | 10.9 | 23 | 14 |
| | ARATI KAYA LANKA | 449 | 217 | 232 | 36 | 16 | 20 | 184 | 18 | 166 | 229 | 183 | 46 | 245 | 124 | 121 | 0 | | | 204 | 93 | 111 | 0 | 0.0 | | | 244 | 54.3 | 123 | 121 | 0 | 0.0 | | | 1 | 0.2 | 1 | |
| SUNKARA PALEM | SUNKARA PALEM | 3906 | 2009 | 1897 | 363 | 182 | 181 | 2607 | 1432 | 1175 | 936 | 395 | 541 | 1221 | 929 | 292 | 345 | 185 | 160 | 2340 | 895 | 1445 | 90 | 2.3 | 85 | 5 | 1101 | 28.2 | 721 | 380 | 81 | 2.1 | 29 | 52 | 294 | 7.5 | 279 | 15 |
| NEELA PALLI | NEELA PALLI | 4368 | 2174 | 2194 | 517 | 277 | 240 | 2583 | 1401 | 1182 | 1268 | 496 | 772 | 1427 | 1138 | 289 | 264 | 128 | 136 | 2677 | 908 | 1769 | 91 | 2.1 | 75 | 16 | 687 | 15.7 | 463 | 224 | 108 | 2.5 | 81 | 27 | 805 | 18.4 | 647 | 158 |
| GEORGE PETA | GEORGE PETA | 4521 | 2319 | 2202 | 555 | 307 | 248 | 3200 | 1731 | 1469 | 766 | 281 | 485 | 1188 | 1003 | 185 | 468 | 291 | 177 | 2865 | 1025 | 1840 | 111 | 2.5 | 105 | 6 | 926 | 20.5 | 636 | 290 | 36 | 0.8 | 26 | 10 | 563 | 12.9 | 527 | 56 |
| P.MALLA VARAM | P.MALLA VARAM | 1612 | 809 | 803 | 126 | 66 | 60 | 1066 | 558 | 508 | 420 | 185 | 235 | 589 | 443 | 146 | 9 | 5 | 4 | 1014 | 361 | 653 | 89 | 5.5 | 88 | 1 | 379 | 23.5 | 242 | 137 | 12 | 0.7 | 9 | 3 | 118 | 7.3 | 109 | 9 |
| | PATHI GONDHI | 2366 | 1230 | 1136 | 263 | 133 | 130 | 1605 | 889 | 716 | 498 | 208 | 290 | 1103 | 742 | 361 | 166 | 16 | 150 | 1097 | 472 | 625 | 177 | 7.5 | 173 | 4 | 1005 | 42.5 | 509 | 496 | 17 | 0.7 | 11 | 6 | 70 | 3.0 | 65 | 5 |
| | MULA POLAM | 1494 | 769 | 725 | 165 | 79 | 86 | 830 | 466 | 364 | 499 | 224 | 275 | 883 | 518 | 365 | 54 | 16 | 38 | 557 | 235 | 322 | 133 | 8.9 | 91 | 42 | 795 | 53.2 | 435 | 360 | 3 | 0.2 | 2 | 1 | 6 | 0.4 | 6 | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mandal Total | 79943 | 40330 | 39613 | 10044 | 5090 | 4954 | 48471 | 25705 | 22766 | 21428 | 9535 | 11893 | 24259 | 19861 | 4398 | 8565 | 3596 | 4969 | 47119 | 16873 | 30246 | 2157 | 2.7 | 2012 | 145 | 18899 | 23.6 | 11423 | 7476 | 877 | 1.1 | 478 | 399 | 10891 | 13.6 | 9544 | 1347 |

Source: Mandal Revenue Officer, Tallarevu Mandal Office

## E.2: Katrenikona Mandal Data, East Godavari District, Andhra Pradesh (May 2002)

| Panchyat | Village | Population | | | Population Below 6 years | | | Literacy Rate | | | Illiteracy Rate (age above 6 years) | | | Main Workers (Full-time) | | | Marginal Workers (Occassional Work) | | | Non Working People | | | BASED ON ECONOMICAL STATUS (MAIN & MARGINAL) WORKERS | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | | | | | | | | | | | | | | Cultivators: Owned Leased or Shared Land | | | | Agricultural Labour | | | | Home Industry Workers | | | | Other workers | | | |
| | | Total | Male | Fem | Total | Male | Fem | Total | Male | Fem | Total | Male | Female | Total | Male | Fem | Total | Male | Fem | Total | Male | Fem | Total | % | Male | Fem | Total | % | Male | Fem | Total | % | Male | Fem | Total | % | Male | Fem |
| CHEYYERU | Cheyyeru | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Cheyyeru Agraharam | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 7831 | 3898 | 3933 | 867 | 442 | 425 | 4820 | 2621 | 2199 | 2144 | 835 | 1309 | 3471 | 2206 | 1263 | 657 | 268 | 389 | 3703 | 1422 | 2281 | 515 | 6.6 | 475 | 112 | 2995 | 34.4 | 1433 | 1262 | 419 | 5.4 | 218 | 207 | 493 | 6.3 | 422 | 71 |
| LAXMIVADA | Laxmivada | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 1083 | 554 | 529 | 92 | 51 | 41 | 774 | 427 | 347 | 217 | 76 | 141 | 508 | 310 | 198 | 38 | 19 | 19 | 537 | 225 | 312 | 45 | 4.2 | 45 | 5 | 465 | 42.9 | 265 | 200 | 2 | 0.2 | 75 | 1 | 34 | 3.1 | 26 | 8 |
| PENUMALLI | Penumalli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 1904 | 941 | 963 | 217 | 102 | 115 | 1228 | 664 | 564 | 459 | 175 | 284 | 789 | 525 | 264 | 116 | 50 | 66 | 999 | 366 | 633 | 111 | 5.8 | 111 | 16 | 548 | 28.8 | 315 | 233 | 120 | 6.3 | 12 | 45 | 126 | 6.6 | 90 | 36 |
| BANTUMILLI | Bantumilli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 752 | 381 | 371 | 47 | 27 | 20 | 577 | 321 | 256 | 126 | 33 | 95 | 303 | 220 | 83 | 179 | 35 | 144 | 270 | 126 | 144 | 71 | 9.4 | 71 | 31 | 395 | 52.5 | 303 | 192 | 16 | 2.1 | 10 | 4 | 0 | 0.0 | 0 | 0 |
| UPPUDI | Uppudi | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 1781 | 911 | 870 | 200 | 118 | 82 | 1066 | 595 | 493 | 493 | 198 | 295 | 636 | 479 | 157 | 187 | 117 | 70 | 958 | 315 | 643 | 176 | 9.9 | 176 | 6 | 592 | 33.2 | 367 | 205 | 17 | 1.0 | 103 | 7 | 38 | 2.1 | 31 | 7 |
| KATRENIKONA | Katrenikona | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Thimmapuram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Ramasamthota | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Vettapalem | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mondipora | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G.Pora | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 13183 | 6686 | 6497 | 1765 | 886 | 879 | 7416 | 4233 | 3183 | 4002 | 1567 | 2435 | 4680 | 3591 | 1289 | 1489 | 388 | 1101 | 6814 | 2707 | 4107 | 562 | 4.3 | 562 | 61 | 4246 | 32.2 | 2113 | 2135 | 137 | 1.0 | 31 | 34 | 1284 | 9.7 | 1130 | 154 |
| KUNDALESWARAM | Kundaleswaram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 1883 | 932 | 951 | 178 | 87 | 91 | 1278 | 684 | 594 | 427 | 161 | 266 | 653 | 514 | 139 | 312 | 67 | 245 | 918 | 351 | 567 | 54 | 2.9 | 50 | 4 | 600 | 31.9 | 301 | 299 | 75 | 4.0 | 0 | 44 | 236 | 12.5 | 199 | 37 |
| NADAVAPALLI | Nadavapalli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | R.Pela | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Pallipalem | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | K.Gunta | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G.N. Palli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 3021 | 1484 | 1537 | 328 | 147 | 181 | 1795 | 1024 | 771 | 898 | 313 | 585 | 1097 | 784 | 313 | 294 | 100 | 194 | 1630 | 800 | 1030 | 156 | 5.2 | 156 | 7 | 867 | 28.7 | 443 | 424 | 0 | 0.0 | 3 | 0 | 368 | 12.2 | 292 | 76 |
| DONTHIKURRU | Donthikurru | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Koppigunta | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G.D.Kurru | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 4106 | 2047 | 2059 | 432 | 225 | 207 | 2709 | 1459 | 1250 | 985 | 383 | 602 | 1301 | 961 | 340 | 457 | 244 | 213 | 2348 | 842 | 1506 | 177 | 4.3 | 177 | 16 | 1306 | 31.8 | 802 | 504 | 3 | 0.1 | 41 | 0 | 272 | 6.6 | 239 | 33 |
| PALLAMKURRU | Pallamkurru | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Pada Harijanapeta | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Sapevaripeta | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mokkalathippa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G.Gavaram | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Battu Cheruvu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Pora | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Mollatimoga | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G.T.P.Kurru | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 12282 | 6200 | 6082 | 1618 | 824 | 794 | 6550 | 3644 | 2906 | 4114 | 1732 | 2382 | 4384 | 3203 | 1191 | 1117 | 269 | 848 | 6771 | 2728 | 4043 | 448 | 3.6 | 448 | 60 | 3799 | 30.9 | 2056 | 1743 | 96 | 0.8 | 41 | 57 | 1166 | 9.5 | 987 | 179 |
| KANDIKUPPA | Kandikuppa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | G.Thippa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 12767 | 6435 | 6332 | 2092 | 1056 | 1036 | 6153 | 3062 | 2091 | 4522 | 2317 | 3205 | 4641 | 3414 | 1427 | 1186 | 455 | 731 | 6740 | 2566 | 4174 | 258 | 2.0 | 358 | 23 | 2233 | 17.5 | 1169 | 1064 | 20 | 0.2 | 7 | 13 | 3506 | 27.5 | 2447 | 1059 |
| PALLEM | Pallem | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CHERRIYANAM | Cherriyanam | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 1589 | 760 | 829 | 327 | 151 | 176 | 496 | 131 | 185 | 764 | 478 | 466 | 413 | 371 | 42 | 357 | 63 | 294 | 819 | 326 | 493 | 5 | 0.3 | 5 | 1 | 322 | 20.3 | 58 | 264 | 16 | 1.0 | 4 | 12 | 427 | 26.9 | 368 | 59 |
| KOPPUGANTI | Koppuganti | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| GADANIPALLI | Gadanapalli | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 3433 | 1731 | 1702 | 366 | 174 | 192 | 2074 | 1187 | 887 | 993 | 370 | 623 | 1330 | 987 | 343 | 336 | 100 | 236 | 1767 | 644 | 1123 | 266 | 8.3 | 266 | 23 | 1142 | 33.3 | 626 | 516 | 6 | 0.2 | 4 | 2 | 232 | 6.8 | 194 | 38 |
| BRAHMA SAMEDYAM | Brahma Samedyam | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Kothapalem | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Neellarevu | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Belusuthippa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Maserithippa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | Total | 8078 | 4075 | 4003 | 1323 | 666 | 657 | 2471 | 1515 | 956 | 4284 | 1894 | 2390 | 3191 | 2344 | 847 | 452 | 111 | 341 | 4386 | 1606 | 2780 | 9 | 0.1 | 9 | 0 | 300 | 3.7 | 90 | 210 | 163 | 2.0 | 68 | 95 | 3220 | 39.9 | 2302 | 918 |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Mandal Total | Total | 73693 | 37035 | 36658 | 9652 | 4856 | 4696 | 38431 | 21749 | 16682 | 25410 | 10330 | 15080 | 27807 | 19911 | 7896 | 7177 | 2298 | 4881 | 38930 | 14824 | 23856 | 2683 | 3.9 | 2514 | 369 | 9512 | 12.9 | 10261 | 9251 | 1092 | 1.5 | 577 | 521 | 11402 | 15.5 | 8727 | 2675 |

Source: Mandal Revenue Officer, Katrenikona Mandal Office

# APPENDIX F

## HOUSE CLASSIFICATIONS

[Photographs and estimated construction costs of each of the five house types]

**Category 1 House (Large Pukka)**
Estimated cost of construction [1]
100,000 Rs. – upward (£1,493 – upward) [2]

**Category 2 House (Basic Pukka)**
Estimated cost of construction
45,000 – 80,000 Rs. (£672 - £1,194)

| | Rupees |
|---|---|
| NGO | 20000 |
| AP Government | 20000 |
| Beneficiaries | 5000 |
| TOTAL | 45000 |

**Category 3 House (Traditional Tiled)**
Estimated cost of construction
40,000 – 60,000 Rs. (£597 – £896)

**Category 4 House (Kutcha House)**
Estimated cost of construction
10,000 – 15,000 Rs. (£149 - £224)

**Category 5 House (Basic Kutcha Hut)**
Estimated cost of construction
1,000 – 7,000 Rs. (£15 - £105)

[1] Cost does not include land purchase expenses
[2] Figures rounded up to nearest Pound. Based on exchange rate of 67 Indian Rupees to £1 sterling, dated 01.02.2002

# APPENDIX G

## "TO WHAT EXTENT IS CASTE USED AS A VARIABLE IN THE ANALYSES AND DISCUSSION OF SOCIAL ISSUES IN RURAL INDIA?"

By Lee Bosher

[Discussion article submitted to the 'Economic & Political Weekly', Mumbai, in September 2004]

# To what extent is caste used as a variable in the analyses and discussion of social issues in rural India? By Lee Bosher

There appears to be disagreement in a great deal of the literature that has been published over the last forty years on issues pertaining to inequality, levels of development or underdevelopment, access to resources and opportunities in rural India, as to whether caste or class is the key factor that determines socio-economic problems. This has been noted by Abercrombie, Hill & Turner (2000) who acknowledge that there is dispute in academia as to what extent caste affects class and other social issues in Indian society. However, considering that caste has been an integral part of Indian society for many years there is a surprising paucity of empirical studies on how caste affects people's economic status in contemporary India (Agrawal 2004). This is a potential problem in modern India studies that has been broached by the Minority Rights Group International (2004) who believe that international organisations such as the United Nations and the International Labour Organisation have seriously understated the socio-economic problems associated with caste disparities in rural India. In view of the lack of empirical evidence regarding these possible caste disparities this article intends to initiate a discussion about the pros and cons of using caste as an analytical variable in the assessment of social problems in India[1].

In recent years a number of academics have been reporting about inequalities in rural India along the lines of class distinctions with caste being relegated in many analyses in purely descriptive terms (by authors such as Bhalla & Lapeyre 1997; John 2000; Lal & Aggarwal 2000; Gaiha et al 2001; Das 2004; and the majority of World Bank related publications such as World Bank 1997, 1999, 2001). This treatment of class over caste typically disassociates links that may be present between the two phenomena (Deshpande 2003). For example, some authors suggest that the poor are poor because of their traditional occupations (FAO 2000; Geetha & Kiran Kumar 2001) because people involved with these occupations have been restricted in the workplace through lack of alternative training, skills or opportunities (Searle-Chatterjee 1994). Many commentators on the topic of caste in rural India accept that traditionally a person's occupation has been largely governed by their caste (Kinsley 1993; Deliége 1992; 1999). In view of this it is surprising that those who talk in terms of occupation restricting employment opportunities, and therefore the potential to improve their economic status, appear reticent to acknowledge the influence of caste related restrictions on employment opportunities (and also restrictions that still occur in rural India due to 'ritual purity' and dominant castes maintaining vested interests). This is an example of how caste disparities can be either underestimated or (which would of greater concern) intentionally ignored as to not cause offence to those people in 'high places' who possibly perpetuate policies that maintain caste related inequalities.

Rather than accepting that caste related inequalities are becoming weakened in what the central government would like us to believe is a progressively egalitarian India it is possible that these inequalities are being masked by the increasing trend of researchers and policy makers to refer to inequalities in India through the discourse of class. This discussion raises the question of whether researchers and policy makers should be empirically investigating the extent that caste related inequalities persist. This query has arisen as a result of the extensive literature reviews and postgraduate research that I have conducted over the last three years. The simple tables included in this discussion are derived from the literature that the author has reviewed on the topics of caste, general Indian sociology, development studies, gender studies, poverty studies, social exclusion, disaster management and vulnerability (amongst a number of other topics). Only those publications where discussions have been made of topics related to the Indian context have been included in this assessment[2]. Of the 144 publications included in this review 80% are specifically focused on the Indian context, with the rest focused on regional or broader contexts (where issues regarding social exclusion, vulnerability and poverty in India are discussed to some degree, such as the discussions in Chambers (1983) and Blaikie et al (1994)).

**Table 1: Origin of researcher/Location of research centre**

| | Caste variable analysed in discussion? | |
|---|---|---|
| Origin of researcher/inst. | Caste integral to discussion or analysis | Caste is underplayed/ omitted in discussion |
| India (n=72) | 33% | 67% |
| Europe (n=64) | 48% | 52% |
| USA (n=6) | - | 100% |
| Oceania (n=2) | - | 100% |
| Total (n=144) | 38% | 62% |

The figures in Table 1 suggest that the origin of the researcher (i.e. my origin is Europe) and/or the location of the research centre (i.e. National Institute of Rural Development in India, the Institute of Development Studies in Europe or the World Bank in USA) may have a bearing upon the extent[3] that caste related disparities are incorporated into the discussion and analysis of social exclusion, poverty, vulnerability etc. For example, is it fair to state that European researchers (or research centres) are more likely to become embroiled in research related to issues associated with caste inequalities than Indian researchers or research centres, as the figures suggest? If so, why?

**Table 2: Decade of Publication**

| | Caste variable analysed in discussion? | |
|---|---|---|
| Decade of publication | Caste integral to discussion or analysis | Caste is underplayed/ omitted in discussion |
| 1960s (n=5) | 60% | 40% |
| 1970s (n=5) | 60% | 40% |
| 1980s (n=15) | 60% | 40% |
| 1990s (n=68) | 40% | 60% |
| 2000-04 (n=51) | 26% | 74% |
| Total (n=144) | 38% | 62% |

The figures in Table 2 suggest that the decade that the literature was published may have a bearing upon the extent that caste related disparities are integrated into the discussion and analysis of the main factors that affect vulnerability. Initially, it should be noted that I have consciously avoided much of the outdated literature (i.e. 1960s and 70s) related to social mobility, exclusion, and vulnerability in India because it has been superseded by more recent work. However, this caveat does not explain why it appears that caste has increasingly been underplayed (or used in merely descriptive terms) in the discussions and analyses of literature since the 1990s. Have the predictions of a modern Indian society where caste, occupation and gender related barriers would be weakened by increasing political power and economic growth (attained through free market policies) proven to have been too optimistic? Do the current policy makers (who are in many cases also policy makers of the past) attempt to 'mask' caste related inequalities by underplaying the role of caste in favour of talking in terms of class?

The figures in Table 3 will need some explanation. There are twelve authors who have written two or more publications that have been important elements of the literature included in this review. Of those twelve authors, six authors have three publications (such as Srinivas 1962, 1976, 1984) and one (Winchester 1981, 1992, 2000, 2001) has four publications included in the analysis. During the review of the literature for the thesis a change in discourse was noticed from earlier publications by certain authors in comparison to later publications by the same authors (although the subject matter was fundamentally the same).

**Table 3: Order of publication**

| | Caste variable analysed in discussion? | |
|---|---|---|
| Order of publication | Caste integral to discussion or analysis | Caste is underplayed/ omitted in discussion |
| 1st (n=12) | 58% | 42% |
| 2nd (n=12) | 50% | 50% |
| 3rd (n=7) | 14% | 86% |
| 4th (n=1) | - | 100% |
| Total (n=32) | 44% | 56% |

Note: 1st refers to earliest & 2nd, 3rd or 4th refers to latest publication by twelve authors of multiple publications included in this review. Only one author (Winchester) has four publications that are included in this review.

The figures in Table 3 possibly suggest that when academics were starting on the long and perilous road through academia they were more likely to discuss caste issues but as their careers progressed caste dropped off the agenda. For example in Winchester's 1981 article he wrote in terms of caste being an important factor in determining levels of vulnerability, in his 1992 book he devoted less space and discussion (as a proportion of the text) to caste issues. In his later work published in 2000 and 2001 he writes in terms of poverty and elites with no reference to caste, thereby omitting discussions on how caste may affect poverty and the prevalence of elitism. It is difficult to ascertain whether the omission (or underplaying) of caste as an analytical variable is;

a) because as an academic's studies progress they find out that caste is actually not as important as they initially believed and other less obvious issues such as kinship (i.e. Béteille 1992) or class (i.e. Srinivas 1976) have become more important in contemporary Indian society, or
b) because academics have realised that they are not in fact doing themselves any favours by publishing about a socio-politically sensitive subject like caste and potentially findings themselves 'out of favour' with their academic institution and/or the Government (who are potential donors of research grants and consultancy work), and/or
c) because it is possible that research funds are more likely to be made to institutions/individuals that talk in terms of class instead of caste, because speaking in terms of class fits comfortably into the free market policy remit of the World Bank, the National Government and many state Governments.

Of the 144 publications included in this review, 120 were specifically focused on the Indian context. These India specific publications are the focus of the figures displayed in Table 4 that suggest that although it is assumed by many that caste is a factor in social exclusion, poverty, vulnerability etc., the integration of caste related issues into the discussions and analyses of publications that are specifically focused on these topics is poor to say the least. For example, none of the three publications on social exclusion in India included caste as a variable in their analyses, only four out of 27 publications on disasters/vulnerability in India, eight out of 23 publications on development in India, and only one out of seven publications on gender studies in India include caste as a variable for analysis or discussion.

**Table 4: Main focus of publications that predominately concentrate on the Indian context**

| | Caste variable analysed in discussion? | |
|---|---|---|
| Focus of Indian context publications | Caste integral to discussion or analysis | Caste is underplayed/ omitted in discussion |
| Caste issues (n=19) | 95% | 5% |
| Development issues (n=23) | 35% | 65% |
| Poverty issues (n=9) | 22% | 78% |
| Disasters/vulnerability (n=27) | 15% | 85% |
| General Indian Sociology (n=32) | 56% | 44% |
| Social exclusion (n=3) | - | 100% |
| Gender studies (n=7) | 14% | 86% |
| Total (n=120) | 43% | 57% |

Therefore, on the basis of this discussion it is pertinent to state that some of the most recent literature on development studies, poverty, marginalisation and gender in rural India consistently lacks sufficient understanding or analysis of how contemporary caste related inequalities can persistently affect levels of poverty, marginalisation and vulnerability for the majority of India's population. It is important to disassociate caste and class unless a correlation is proven, because caste is not a purely economic phenomenon and therefore it is fair to state that economic advancement alone will not cancel out patterns of caste discrimination (Gupta 2004). Consequently, given the paucity of data (in contrast to a wealth of assumption) on caste issues, interventions in the field that are initiated under the banners of participatory development, poverty alleviation and vulnerability reduction should be preceded by both qualitative and quantitative analyses of caste related disparities (in conjunction with gender related disparities) amongst the target or participating populations (Agrawal 2004), to ensure that resources and opportunities are not being concentrated among already privileged groups.

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## Endnotes

[1] Refer to Sundar (2000) for a discussion regarding the pros and cons of using caste as a Census 2001 category

[2] A list of the 144 publications included in this discussion can be provided by e-mail on request.

[3] The lack of integration (or the underplaying) of caste as a variable in the analyses or discussions contained within each publication are defined by whether a) caste related disparities are acknowledged (without reference to an empirical study) in the early sections of the publication, but these are not then integrated into ensuing discussions, or b) caste is merely discussed in descriptive terms, for example, "*Purna, a government official living in a low-caste labourers' hamlet, talks about his experience with a cultural association.*" (Das 2004:37).