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Cyclone Mitigation, Resource Allocation and Post-disaster Reconstruction in South India: Lessons from Two Decades of Research

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This paper opens with a history of development and disaster-prevention strategies in a cyclone-prone area of the east coast of India and traces the evolution in the area of British and Indian governments' programmes and policy over a century. Research over the last 20 years has shown however that the programmes and policies have failed to balance economic growth with safety. Resources intended for the benefit of all have been diverted by alliances of powerful people to a small minority, and recent developments have reduced the physical protection of the area. The result is that increasing numbers of people are vulnerable to the effects of cyclones and floods. The findings suggest that the best way to reduce vulnerability is to improve the socio-economic standing of the most vulnerable and for this to happen these people must have an assured income based on assets that will enable them to acquire social and economic credit-worthiness within the local economy. This paper presents evidence that suggests that non-governmental organisation (NGO)-supported co-operatives are the best way to achieve this through self-help and self-employment schemes. It also suggests that NGOs should be encouraged to take up environmentally and ecologically beneficial activities involving the poorest groups in the communities, in this way combining sustained self-employment with environmental protection.

Keywords: Vulnerability, cyclones, poverty alleviation, power relations, NGOs, co-operatives.

Introduction

Since the introduction of canal irrigation into the cyclone and flood-prone deltas of India's eastern seaboard, and the subsequent population explosion, the major problem for those engaged in coastal management has been to achieve a balance between economic growth and safety (Government of Madras, 1878, 1908). Successive governments have discouraged people from migrating to the overcrowded cities from coastal areas by opening up the land and taking steps to protect the populations from flooding and cyclones (Andhra Pradesh Government, 1977a, 1980a, 1980b, 1981a; Government of Madras, 1938). When protection schemes fail, however, people

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increase their exposure to physical and economic risks, especially the poor (Winchester, 1986, 1992b; Brammer, 1990; Thompson and Penning-Rowsell, 1994; Thompson and Sultana, 1996).

Research has shown that physical risks presented by topography and climate are, for poor people, of secondary importance compared with the economic risks which are principally determined by the power relations formed by alliances of the people who control resources (Wade, 1982, 1984; Winchester, 1986, 1992a; Blaikie et al., 1994). People with resources can protect themselves economically and physically from cyclones and flooding and the speed of their recovery is relative to the size of their asset base (Winchester,1992a). Unfortunately, the poor are vulnerable at every stage and government measures have been ineffective at strengthening their socio-economic resilience, resilience being quantified by the speed of recovery from disastrous events.

This paper focuses on poverty alleviation and makes the case that this should be the central aim of all disaster reconstruction and development programmes. Field evidence from a case study in Divi Seema, an island at the mouth of the River Krishna in the Krishna delta, supports and emphasises views expressed elsewhere (Lipton, 1977; Chambers and Leach, 1989, Chambers et al., 1989a, 1989b) that poverty can only be alleviated by improvements in the socio-economic resilience of the poor. It is the contention of this paper that, just as engineers have seen the relative or absolute failure of many 'hard' engineering structures in hazard mitigation and coastal management, moving in the 1990s towards more natural approaches via 'soft' engineering solutions working with the natural morphological and ecological characteristics of coastal areas, so post-hazard development programmes should move away from focusing on whole populations and target instead the poorest and most vulnerable through programmes based on self-help. It also argues that NGOs could play major roles in carrying out large-scale development programmes in coastal areas (Pearce and Turner, 1990; Zazweta, 1995; Krishna et al., 1997).

This paper sets out the evolution of disaster-prevention strategies in Divi Seema and reveals why different strategies have succeeded or failed. The first part describes Divi Seema and its historical development from 1907 to 1998. It provides an explanation of why cyclone mitigation and disaster management programmes have had so little success in alleviating vulnerability in this area. The second part presents the data and an analysis of 20 years' field-work (1978–98) in Divi Seema that supports this explanation and reveals why some households survive and prosper while others do not. The third part examines the issue of equitable resource allocation and looks at the work of some NGOs working in Divi Seema and elsewhere on the sub-continent. It focuses on the scale of operations and shows why size is the major issue for NGOs, defining which NGOs fail and which continue to operate despite the potentially destructive socio-political power relationship between government and alliances of powerful people. Finally, the paper summarises some of the problems and makes some recommendations.

Cyclone mitigation

Location: Divi Seema

The island of Divi Seema lies at the eastern tip of the Krishna delta; its two distinct topographical areas are the inland plain and the coastal strip, with the land rising

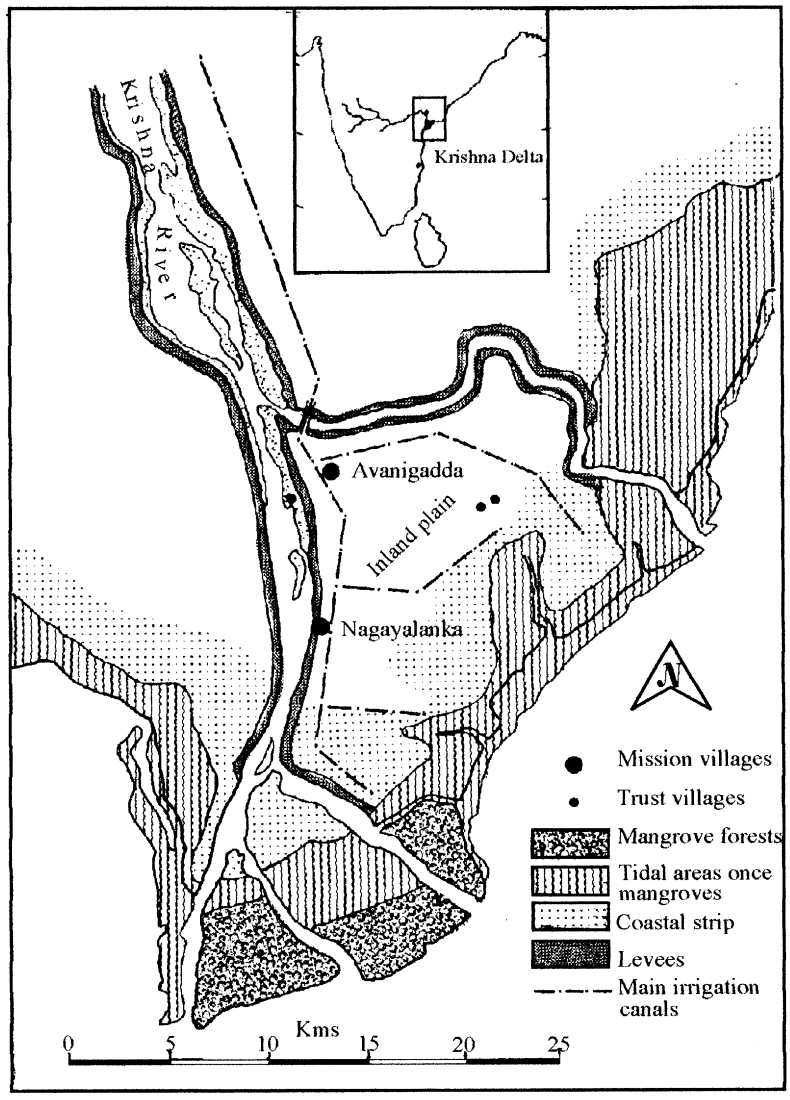

Figure 1 Map of a part of the Krishna River delta showing the island of Divi Seema, the Mission and Trust villages, irrigation canals and principal land and vegetation zones

gently to three metres above sea level at its highest point (see Figure 1). The delta is very fertile being mostly composed of rich alluvial deposits. However, near the coast there are extensive areas of low-lying land where soil salinity levels are high due to seasonal marine flooding; in addition these areas are also frequently waterlogged by watercourse flooding from excessive rainfall during the monsoon (Andhra Pradesh Government, 1977b). The Krishna delta is the second most cyclone- and flood-prone stretch of the eastern seaboard of the Indian sub-continent after the Ganges delta in Bangladesh. Cyclonic storms, usually accompanied by heavy rainfall, strike the delta on average every five years reducing standing crops by up to 20 per cent and every 10 years by up to 50 per cent (Winchester, 1986). In November 1977 a cyclone and storm

surge struck Divi Seema killing 10,000 people in one night and devastating hundreds of square kilometres of crops and property (Andhra Pradesh Government, 1977a; Raghavulu and Cohen, 1979). This cyclone was the initial focus for the author's interest and research into the subject (Winchester,1979). Since 1977 there have been further cyclones in the delta, in 1979, 1981, 1990 and 1994.

History 1907–1977

Canal irrigation was introduced into Divi Seema in 1907, 20 years after the rest of the Krishna delta had been irrigated due to its remoteness and liability to sea flooding (Government of Madras, 1908). As a result of irrigation, large landowners came from the mainland and took over the land as absentee landlords pushing the previous dry land cultivators towards the coast. Between 1907 and 1937 the irrigation system was extended, further marginalising the indigenous inhabitants and pushing them into the dangerous coastal strip where only fishermen had lived previously. Mangrove forests had once protected the coastal strip, acting as windbreaks to cyclones and a deceleration zone for the storm surges accentuated by the delta's extensive offshore shallows (Nageswara Rao and Vaidyanaham, 1978; Dube et al., 1981). By the mid-1930s most of the mangroves had been cut down and by the early 1940s over-population of the coastal strip had led to their total destruction (Figure 1). The British, aware of the increasing physical threats of cyclones and flooding on the expanding population, and seeing the problem in terms of physical safety, built the first coastal earthen *bund* in the late 1930s to protect property further inland and save the repetitive costs of replacing infrastructure (Government of Madras, 1938). At the same time they built embankments (*levées*) on both sides of the river Krishna together with land drainage and associated works. None of these works prevented the low-lying areas from periodic waterlogging.

In the late 1950s, the state government, in accordance with the government of India's First and Second Five Year Plans (1947–60), set up Primary Agricultural Co-operative Societies and transferred 20,000 acres of government land in the coastal strip to fishermen, cultivators and landless labourers. However, by the mid-1960s the land had been taken over by large landlords because the intended beneficiaries could not get credit from the banks for land development and the agricultural inputs had been appropriated by the large landlords and their allies who, working closely together with the merchants and traders (henceforth collectively termed the Alliances) control the agrarian economy of Divi Seema. The Alliances have connections with local politicians, irrigation engineers and banking officials ensuring that nearly all government resources go to them. The two most important resources are water supply (Wade, 1982, 1984) and credit (Winchester, 1986, 1992a). Little development was carried out in Divi Seema after the collapse of the co-operatives and it remained cut off during the rainy seasons, retaining its reputation as a wild place populated by undisciplined people (Washbrook, 1976; Andhra Pradesh Government, 1977a).

Between 1907 and 1977, the population on Divi Seema doubled but the economy remained based on an uneven distribution of wealth, principally in the form of land ownership (Andhra Pradesh Government, 1977b). Ninety per cent of the population were dependent for their staple food and employment on a handful of large landowners. The banks lent only to those who owned land or other major assets as collateral and tended to write-off loans at election times — a practice that is

widespread all over India, but irrelevant to the poor (who have no bank loans). The poor had no choice but to continue to go to the moneylenders (mainly the large landlords, shopkeepers and traders) whose extortionate rates kept most of them in debt for life. The informal market had many other destructive features; one being the system of interlocked contracts in which lenders set conditions on the borrowers to provide their labour and/or produce at disadvantageous terms to the borrowers; another was the arrangement whereby those with rice surpluses offered rice loans preceding the harvest on condition that they were repaid immediately after harvest at the rate of two bags for one (Winchester, 1986).

The economic vulnerability of the majority of the population and the acute physical vulnerability of the area made Divi Seema a disaster in waiting. The disaster duly occurred in 1977, bringing tragedy to thousands but also focusing attention on this neglected area (Raghavulu and Cohen, 1979; Winchester, 1979). The result of the worldwide publicity was a huge aid response and intensive development programmes, all of which altered the surface appearance of the economy, but did little to affect its underlying structure as the findings of 20 years of research have shown.

The 1977 cyclone and subsequent cyclone mitigation programmes

The 1977 cyclone was the turning-point in government cyclone-mitigation policy. There had been previous attempts to produce a cohesive cyclone mitigation policy, notably the recommendations by the Cyclone Distress Mitigation Committee in 1971 (Government of Andhra Pradesh, 1971), but very few recommendations had actually been enacted by the end of the decade. After the devastation of the 1977 cyclone the government accelerated measures to save and protect the coastal populations. The government (as the British had before them) saw the problem of vulnerability as principally attributable to exposure, topography and the 'savagery of nature' (Winchester, 1986: 6). The government also thought that the poor always made difficult situations worse by their intransigence at not taking notice of warnings (Andhra Pradesh Government, 1977a, 1979b; Winchester, 1986, 1992a). This view that still prevails today, particularly in the press.

In response to the calamity of 1977 the government embarked on relief and rehabilitation programmes and a public-works programme (Government of Andhra Pradesh, 1977a, 1977b). The earthen seawall was rebuilt as well as the roads; the irrigation and drainage networks were extended and electricity was extended to all parts of the island. A community cyclone shelter and house-building programme was undertaken, using village labour. The public works provided short-term employment for the poor, but since the roads and irrigation works went to land owned or controlled by the Alliances and their friends in the villages (the elders and elected officials) and since the programmes were targeted at relief rather than development, there have been few long-lasting benefits for the poorest (Winchester, 1986, 1992a). Shelter belts had been planned for a strip 20km wide along the entire coastline but were never planted (Andhra Pradesh Government, 1977a, 1979, 1981a). Many of the cyclone shelters are in use today as 'village halls' for nursery schools, clinics and meeting places, and can be judged a success. However, the 15,000 brick and concrete 'pukka' houses built in conjunction with the aid agencies have been of limited value (Winchester 1986, 1992a). Another devastating cyclone and storm surge hit the Krishna delta in 1979 but the death tolls were less than 10 per cent of those in 1977 due principally to improved

warning systems and evacuation procedures (Andhra Pradesh Government, 1979). Since 1979 there have been cyclones and flooding in the Krishna delta in 1983, 1987, 1990 and most recently in 1995 but in each case there were fewer than a hundred human fatalities.

Changes since 1977

The greatest change since 1977 to the physical and economic landscape of Divi Seema has been the introduction of aquaculture (prawn and fish farming) into areas previously under rice cultivation, particularly on irrigated land at the farthest end of the coastal strip. To make use of poor-quality agricultural land the government promoted aquaculture in the late 1980s and encouraged the banks to give larger loans for aquaculture than for rice cultivation. The result was that the area under agricultural cultivation in the coastal strip of Divi Seema since 1977 has decreased by more than 80 per cent, while the number of noncultivators — namely, landless labourers — increased by more than 50 per cent (Government of India, 1981, 1991). Rice production thus halved with a commensurate decline in agricultural employment. This has produced higher rates of migration for agricultural work to other dangerous coastal areas than ever before, land for grazing has become scarce and animal husbandry — as a supplementary occupation for agricultural labourers — has been severely curtailed as it is limited by fodder availability (personal communication with the president of a coastal village, 1998). In the same period nearly all the trees and thorn bushes growing on the bunds and between the paddy fields in the coastal strip have been cleared, and inland areas, once protected to some extent by the flora of the coastal strip, are now fully exposed to wind damage and flooding. Half the area is now permanently under water, with serious implications for health through the spread of water-borne diseases (Bradley, 1977) — one of these the increasingly prevalent malaria.

In the mid-1990s a virus almost destroyed the fish and prawn stocks and the industry nearly collapsed. Only those with connections to the Alliances who enabled them to write off their aquaculture loans survived to continue with aquaculture. Agricultural labourers suffered most. They lost their traditional access to encroachment lands (low-lying common land) because many cultivators, with small holdings who had sold their land to repay the aquaculture loans, took them over (noted in Table 3). This deprived labourers of one of their traditional insurance ‘buffers’ against bad times (see also Jodha, 1991), as well as further increasing their vulnerability to wage and price fluctuations. Although agricultural wages and the costs of basic foodstuffs have remained at roughly equivalent since 1977, the costs of other necessities such as building materials and agricultural inputs have escalated, and so too have costs for medical and veterinary services and bribes.

Elsewhere in the world, with similar problems to Divi Seema, some problems are being addressed through benign coastal-management programmes. These programmes use the natural morphological and ecological characteristics of coastal areas to increase protection and incorporate environmentally appropriate land uses as employment generators (Baan et al., 1997; Green et al., 1994; Klein et al., 1998; Turner et al., 1998). Land uses include the planting and management of shelter-belt schemes with mangrove and other trees using social-forestry techniques (CIDA, 1995; Saxena, 1995). Institution of shelter-belt and employment schemes could be of great benefit to the people of Divi Seema in the future.

There is no doubt that the provisions of the Cyclone Contingency Plan of Action (Andhra Pradesh Government, 1981a), particularly the provisions concerned with improved warning systems and evacuation procedures, have saved thousands of lives. The specific anti-cyclone measures may have been successful in Divi Seema in regard to loss of life, but the empirical, visual and anecdotal evidence suggests that government anti-poverty and development programmes aimed at strengthening the economic base of the most vulnerable sections of the population, carried out in tandem with the anti-cyclone programmes, have not succeeded as much as was predicted. Empirical evidence to support this statement is presented below.

Research 1978–1998

Sample surveys

Research in Divi Seema has been carried out over 20 years, starting in 1987 (Winchester, 1986, 1992a); the central findings are summarised in Tables 1–4. In the first stage of the field-work programme, methodology was designed to find the links between vulnerability, cyclone and flood impact and recovery with the object of disentangling conflicting views on the subject. Vulnerability in this paper is defined as the relative ability of an individual, household or community to withstand and recover from a shock such as a cyclone or flood (Winchester, 1986: 122, 123, 1992a: 44, 46, 59), or in other words: resilience. By including recovery within this definition, vulnerability is released from the strict confines determined by exposure and aids the understanding that the major forces governing (cyclone) vulnerability are not necessarily physical (see also Blaikie et al., 1994).

The view held by government and technocrats was that recurrent exposure to cyclones and associated flooding increased physical and economic vulnerability and that this could be reduced only if the impact of cyclones and flooding were reduced by physical means (Andhra Pradesh Government, 1977a; Winchester 1992a: 31). The alternative view held by some social scientists (Westgate and O'Keefe, 1976; Baker, 1981; Blaikie, 1981 among others) was that the degree of peoples' vulnerability to and ability to recover from cyclones and flooding were directly related to the forces that governed their everyday lives, that is, the historical development of the area and the underlying power relations within the local political economy, so that peoples' vulnerability was only accentuated by the incidence of cyclones and flooding and not principally caused by them (Winchester, 1992a: 44).

Methodology

Data to test both hypotheses had to distinguish, initially, between variables that have an apparent effect on vulnerability to cyclones and flooding, such as topography and location, from other variables that would appear to have a marginal effect. As a result, topography was chosen as the major variable with caste distribution and occupations as secondaries. My sample area was located in an area where the Society of Jesus (the Jesuits) had carried out a socioeconomic survey after the 1977 cyclone (DSSSS, 1978). My area included 12 villages and, since topography was the major variable, one-half of the sample frame of 202 households came from the coastal strip and one-

half from the inland areas. I also used the Jesuit sample area as the frame for my 'site and condition surveys of the concrete houses' carried out in 1983, 1988 (Winchester, 1992a) and 1997. Diagrammatic village plans were drawn up for the interview programme based on a random sample of every 10th house, but the sample was stratified according to house type since I was initially interested in the role of housing relative to cyclone and flooding vulnerability.

The pilot study of 51 households revealed that housing was considered by all but the wealthier households as having a very low priority relative to reducing vulnerability to cyclones and flooding. It became apparent that the majority of households in the pilot study considered that economic factors affecting social standing determined their survival and recovery from cyclones and flooding to a far greater extent than their incidence. The focus of the field-work programme was consequently altered to take account of this. The results of the surveys of 1981–3 and 1988 produced 'indicators of vulnerability' (Winchester, 1992a) and these became the basis for the 1997/8 surveys for identifying vulnerable households.

Results

Table 1 shows the distribution of losses in 1977 as displayed in government data, according to topography and location. It shows that total human losses are six-times higher in the unprotected coastal areas than in the protected inland areas and total asset losses in the coastal areas are at least twice that of those inland. Table 1 also shows that a very high percentage of animals were lost on the inland plain. Table 2 displays occupations and widens the government classifications of agricultural occupations — cultivators, cultivator/labourers, labourers (Government of India, 1981) by including a fourth classification: 'others' (whose principal occupation is not in agriculture but involves specific caste trades — herders, toddy-tappers, potters — traders, small shopowners or minor government officials). This table shows that cultivators, who have two or three income-earning occupations, sustained fewer losses than (landless) labourers who only have one income-earning occupation. While the cultivators had the lowest percentage losses both in the coastal strip and the inland areas, the labourers had

Table 1 Losses in 1977 as totals and percentages of previous household totals according to topography and location

	Households	Deaths	Assets[a]	Animals
Coastal strip	111	115 (23%)	86 (93%)	163 (93%)
Inland plain	91	18 (5%)	34 (70%)	93 (74%)
Totals as a percentage of previous totals	202	133 (14%)	120 (66%)	256 (85%)

Source: Field-work: 1981–2 (Winchester, 1986: 166)
[a] Assets are plough teams and carts
[b] Original 202 household sample survey 1981–2

Table 2 Losses in 1977 as a percentage of the previous group totals stratified according to topography, location and occupations

Occupation	H/holds (n)[a]	Deaths %	Assets %	Animals %
Coastal				
Cultivator only	(6)	3	38	35
Cult/ labourer	(66)	35	75	88
Others[b]	(26)	26	90	90
Labourer only	(16)	25	—	92
Inland				
Cultivator only	(12)	—	17	18
Cult/labourer	(42)	8	50	60
Others	(12)	7	70	70
Labourer only	(22)	10	—	92

Sources: Winchester 1986: 180–2, 1992: 104.
[a] Original 202 household survey 1981–2
[b] Others are: fishermen, government officials, petty shop keepers and tradesman, some of whom own land and some of whom (the majority) work as agricultural labourers

the highest percentage of human deaths and animal losses. Village surveys three years later (Winchester, 1986) showed that 90 per cent of the houses and animal sheds owned by cultivators in the coastal area had survived the five-metre storm surge that had flattened everything else and showed that those with sufficient resources could protect themselves adequately despite the absence or failure of defence systems (Winchester, *op. cit.*). Table 3 presents data on recovery over the 1977–88 period and reveals that although minor cyclones and floods in 1979, 1983 and 1987 played their part in delaying or reversing the recovery of the labourers, they did not affect the progressive recovery overall of the cultivators (Winchester, 1992a). Table 4 shows that during the 20-year period 1977–97, the cultivators increased the size and extent of all their assets. Other groups also increased their assets, except for land. Cultivator/labourers, petty traders and minor government officials were in 1998 only slightly better off than they were before the 1977 cyclone, but the landless were worse off (Table 4).

A survey of 202 households is a small sample from which to deduce the success or failure of development programmes in reaching the poorest in a population of 70,000. However, the findings set out in the tables give substance to the overall pattern previously discerned and reinforce the view that the historical development of an area, its local political economy and underlying power relations are fundamental to any understanding of the causes of vulnerability.

Compared with pre-1977 in 1998 everyone looked better off; for instance, people wore better clothes; there were tea shops in every village hamlet; there were doctors, clinics and schools in every large village; and there were more shops in the main towns than previously. Appearances, however, masked the reality for the poorest (Winchester, 1990). The survey showed that changes in the physical and economic landscape introduced principally by aquaculture affected the poor in two ways:

- agricultural labourers' debts to moneylenders are no less than they were 20 years ago, and

Table 3 Mean distribution of land ownership and other assets per household, classified by occupations, and relative change over the period 1977 –1988

Occupation	Time	Land ownership (acres)	Other assets (plough teams & carts)	Animals
Cultivator only (n = 12)[b]	1977[a]	4.9	3.4	2.5
	1981	5.1	3.9	4.1
	1988[c]	6.2	5.4	5.0
Relative change	1977–88	1.3	2.0	2.5
Cultivator/ labourer (n = 51)[b]	1977[a]	1.5	0.5	1.3
	1981	1.3	0.6	1.2
	1988[c]	1.6	1.2	1.8
Relative change	1977–88	0.1	0.7	0.6
Others (n = 16)[b]	1977[a]	0.4	0.1	0.6
	1981	0.5	0.1	1.3
	1988[c]	0.6	0.2	1.3
Relative change	1977–88	0.2	0.1	0.7
Labourer (n = 26)[b]	1977[a]	0.0[d]	0.0	0.1
	1981	0.3	0.0	1.3
	1988[c]	0.2	0.0	1.0
Relative change	1977–88	0.2	0.0	0.9[e]

Source: Field-work 1981: 82, 83, 88

[a] Based on anecdotal evidence from the 202 households and verified as far as possible during the 1981–2 field-work programme

[b] Based on total of 105 households

[c] Re-interviews with 39 of the 42 case study households of the 1983 survey plus re-interviews with 66 households from the original 202 sample (January–March 1988)

[d] Landless households own no freehold land. These figures refer to the extent of encroachment land that they cultivate

[e] This figure indicates the effect of the Jesuit programmes which peaked in 1985

- migration for work to other dangerous coastal areas and inland have increased, especially in the last 10 years (Winchester, 1992a).

No matter where they lived, however, the cultivators have prospered since 1977 (Tables 2, 3, 4). In my conversations with them the cultivators informed me that they attributed their survival and progressive prosperity since 1977 to two factors, despite intervening cyclones, floods and poor harvests. These were:

- They already had an established income base from assets (land, animals, equipment) on which to build sufficiently strong houses and sheds to protect themselves and their assets regardless of what the government did before the cyclone.
- As a consequence, they had sufficient social standing and economic credit-worthiness with the Alliances who controlled the distribution of government

Table 4 Mean distribution of land ownership and other assets, per household classified by occupations, and relative change over the period 1977–1997

Occupation	Time	Land ownership (acres)	Other assets (plough teams & carts)	Animals
	1977	4.9	3.4	2.5
Cultivator	1988[a]	6.2	5.4	5.0
only (n=16)[b]	1997[c]	8.2	5.6	6.2
Change	1977–97	3.3	2.2	3.7
	1977	1.5	0.5	1.3
Cultivator/	1988[a]	1.6	1.2	1.8
labourer (n=45)[b]	1997[c]	1.2	1.2	2.8
Change	1977–97 Minus	0.3	0.7	1.5
	1977	0.4	0.1	0.6
Others	1988[a]	0.6	0.2	1.3
(n =15)[b]	1997[c]	0.2	0.1	1.8
Change	1977–97 Minus	0.2	0.0	1.2
	1977	0.0	0.0	0.1
Labourer	1988[a]	0.2	0.0	1.0
(n = 34)	1997[c]	0.0	0.0	0.2
Change	1977–97	0.0	0.0	0.1

Source: Fieldwork 1988, 1997–8
[a] As for note [c] in Table 3
[b] Based on total of 110 households
[c] Two surveys were carried out in March and August 1997 in which 37 of the 42 case study households of the 1983 survey were revisited together with a further 73 households from the original 202 household survey

resources to ensure that they gained access to those resources and so recovered quickly after the cyclone. Having done so, connections with the Alliances have been maintained ever since.

Summary

The research showed that an established income and credit-worthiness are the two key attributes for reducing vulnerability, while location is of less significance. People live in dangerous areas because either they can make money there and the risks they choose to take are offset by the gains they hope to make, or their caste occupation (for instance fishermen) enables them to weigh up risks and make choices. But, most people live in dangerous areas like Divi Seema because they have no choice. Since it is unrealistic to consider moving the populations of the coastal areas, the problem becomes how to reduce the vulnerability of those people most at risk from indifferent or hostile political and economic circumstances.

Resource allocation

NGO projects on the Indian subcontinent

The historical records and the evidence brought forward here suggest that the solution to the problem lies in access to and distribution of resources. Clearly the way government resources have been allocated is ineffective. This has been remedied historically by non-governmental organisations (NGOs) which have offered an alternative approach to resource allocation and distribution. NGOs have some advantage over government agencies by being nominally outside socio-political power relationships. Even though their scales of operations are far smaller than government ones, it is worth examining how the successful NGOs cope with hostile political and economic circumstances.

NGOs face numerous problems on the Indian subcontinent; one is the sheer scale of the poverty that surrounds them, but another is the size of their resources compared with the government's. Many social scientists and economists recognise that poverty is caused by forces governing access to and distribution of resources, enshrined in power relationships (Mitra, 1977; Lipton, 1977; Chambers et al., 1981) which the poor are unable to alter (Chambers, 1982, 1983, 1988). Some Indian NGOs in the early 1980s promoted social activism and civil rights as an alternative to providing economic resources (Kothari, 1983; Sheth, 1983, 1987; Lewis, 1991) but most NGOs kept away from overtly political issues and concentrated on social welfare, health-care and the provision of cheap credit (Hashemi et al., 1991; Black, 1992; Hulme and Montgomery, 1994; Lipton, 1996; Yunus, 1998). One prominent NGO (Action India) after 10 years' work concluded that the most useful activity for an NGO to engage in was to organise the poor to get government resources themselves instead of the NGO providing them (Lewis, 1991).

One problem facing NGOs is to find the most cost-effective size to mobilise the resources they command. The problems connected with poverty are so complex and so massive that large agencies with many areas of expertise are needed. This involves the development of complex management structures that bring with them some of the more negative aspects of bureaucracies. Small NGOs are limited to one or two areas of expertise (health-care, agriculture, credit and so on), but their size makes them adaptable in changing circumstances more quickly and effectively than larger, more cumbersome agencies. However, small NGOs cannot hope to solve the causes of poverty, at best they are palliative and at worst their presence provides an excuse for the authorities to do nothing. One solution is for small NGOs to join together, or form co-operatives with other groups.

Some examples are presented below of NGOs that have been successful in avoiding some of the perils that often befall government programmes; these examples show that the scale of operations is crucial in determining whether organisations achieve their goals. Even though NGO programmes cannot be diverted in the same way as the government's, they can be damaged in other ways, principally by falling foul of the people who control the local political economies (Winchester, 1981, 1986, 1992a, 1992b). Thus, their success depends largely on their relationship with local power structures. This relationship governs whether they survive or not (see also Cassen et al., 1994). For example, the largest NGOs whose scales of operations encompass hundreds of thousands of people over large areas can survive and prosper within

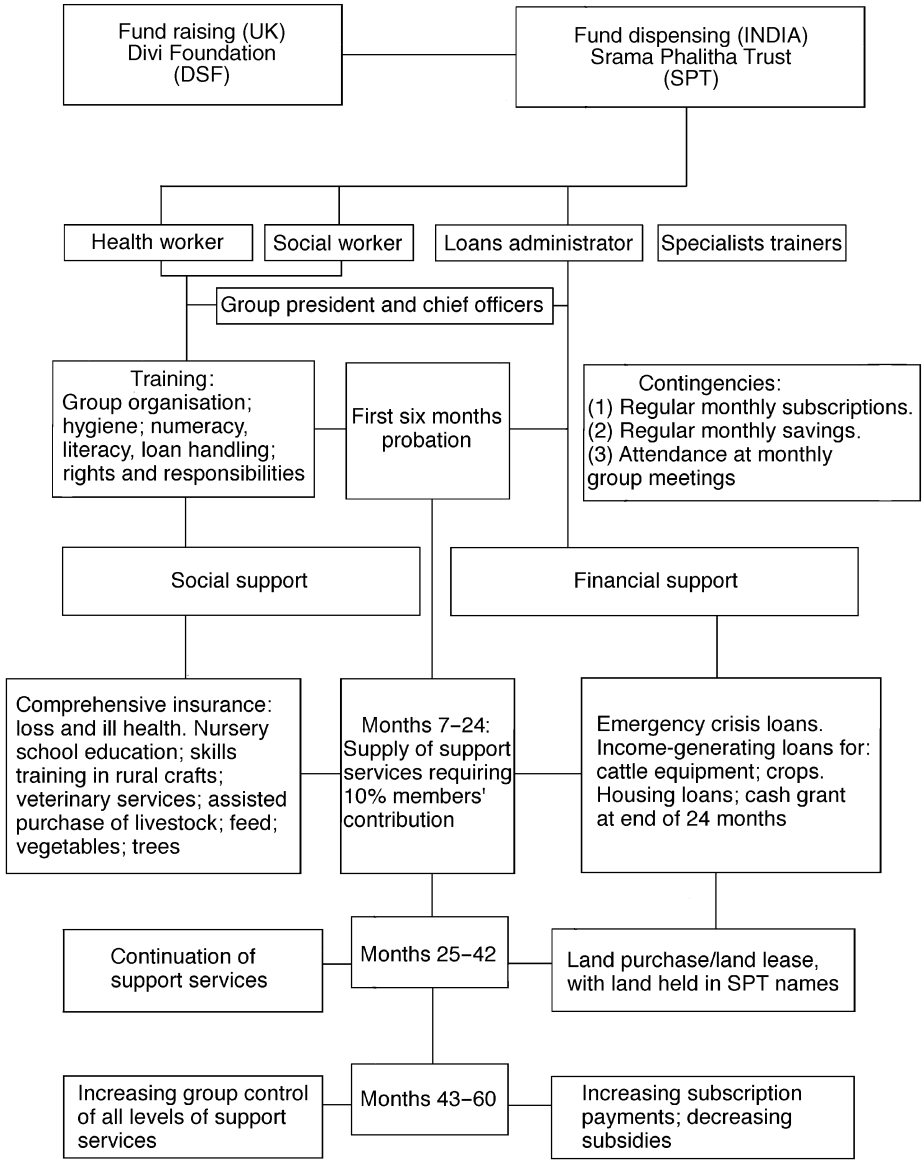

Figure 2 DSWSG structure for one or more groups, showing content and time scale of programmes

initially hostile political economic systems by eventually becoming part of the commercial establishments of those political economies. The intermediate-size NGOs, involving several thousand people can alter some aspects of prevailing socio-economic systems as long as they remain non-confrontational, but — if they leave the field — the former socio-economic *status quo* will re-establish itself. The smallest village-level NGO cannot hope to change the prevailing political and economic systems, but it may survive if it does not confront them (Hartmann and Boyce, 1983; Winchester, 1981, 1992a; Beck, 1994).

Large-scale operations involving tens of thousands of people

One of the best-known examples of a large co-operative NGO consisting of many groups of varying sizes is the Grameen Bank of Bangladesh (Yunus, 1998) which pioneered a micro-credit loan system based on the savings of poor people without financial collateral (see also Johnson and Regally, 1997). These people are incorporated into a structure which provides access to a wide range of social and financial support services with the services forming the backbone for a wide range of multi-sectoral enterprises (see Figure 2) that increase their members' incomes and commensurately reduce their poverty (Khandker et al., 1995; Jain, 1996; Yunus, 1998). Another large well-known NGO supported in its early days by Oxfam, is the Self-Employed Womens' Association (SEWA) of Ahmedabad, Gujarat, India which is a 'parent' organisation geared to supporting a series of worker co-operatives of urban and rural multi-sectoral commercial activities (SEWA, 1981). The combination of many 'independent' commercially oriented groups under the umbrella of SEWA has protected hundreds of small groups of women workers from exploitation and destruction by the people who control the local economies. As a result of their success SEWA is accepted as a respectable commercial force by the powerful urban and rural alliances (Oxfam, 1995).

Intermediate-scale operations for thousands of people

Two intermediate-scale NGOs operating in the Krishna delta have joined forces with larger NGOs to carry out projects which neither could do on their own while remaining independent. The Divi Seema Social Service Society (1977–85), run by the Jesuits, and the Salvation Army (1977–82) came to Divi Seema immediately after the 1977 cyclone and worked in the areas with the highest death tolls on the coastal strip and low-lying inland areas where approximately 25,000 people lived (or one-third of the area's population). They departed after friction between their respective head offices and their field operatives. Both organisations established village credit unions, membership of which gave access to soft loans and subsidised agricultural inputs; their other programmes covered health-care, adult and nursery education and skills training for a wide range of self-employment activities. Membership of credit unions was open to everyone, but the better-off found the prospect of regular payments and compulsory attendance at meetings too tedious and the loans and subsidies too small. Nevertheless they did not feel excluded and consequently did nothing to undermine the programmes. Both NGOs worked with Oxfam and other international aid agencies on large projects (affecting up to 15,000 people). One of these was to take safe drinking-water to remote villages and extend the irrigation network in the tail-end lands. Neither the Jesuits nor the Salvation Army could have accomplished these projects alone. Despite it being their stated intention, neither organised the villagers to take over the programmes when they left so that when they did leave, the banks withdrew their loans, asset accumulation ceased and the tolerable relations between poor villagers and the Alliances evaporated. The collapse of these NGO programmes mirrors the fate of many government projects when a senior officer such as a collector sets up special small-scale anti-poverty projects that cease abruptly once he or she is transferred.

Small-scale operations involving hundreds of people

Three small-scale NGOs now operate in the Krishna delta. From 1985 onwards, two small NGOs have worked continuously in Divi Seema: The Sisters of St Ann's (St Ann's Sisters) at Avanigadda and the Sisters of St Joseph of Cluny at Nagayalanka (Figure 1). Between them they reach perhaps 7,500 people in a population of 75,000 (Government of India, 1991). They have encouraged the formation of women's savings groups, eligibility for which is based on economic criteria and restricted to women who come from families with no assets apart from their own labour, widows, families where the female is the main earner and from families most at risk from the effects of cyclones and floods. Membership in a savings group opens the door to social support and economic programmes more or less immediately. Their programmes tackle the symptoms of poverty — low income, poor nutrition, poor health, lack of education and so on, without significantly altering their socio-economic conditions.

Recently a third NGO has established itself: the Divi Seema Women's Savings Groups (DSWSG) with the explicit aim of tackling the causes of poverty. DSWSG is a typical small NGO made up of social and a financial support arms (Figure 3) capable of providing support to no more than 10 groups of around 30 women each (300 families). Its structure is almost identical to the that of the other two NGOs. In the case of DSWSG, members have to save regularly for six months before becoming eligible for loans although during this time 'community development' services are provided; after six months they become eligible for social and economic support (Figure 2). During its initial phase this NGO has limited its activities to establishing group and loan structures. A second phase of expansion is planned to enable it to achieve its lending aim.

Lessons learned from the successes of the larger NGOs suggest that the most effective survival route for small NGOs like DSWSG would be to join up with other NGOs such as the St Ann's Sisters, under the umbrella of a larger 'parent' NGO. The parent NGO could be a federation of several independent varying-sized groups or it could be a co-operative (like SEWA). The principal function of a parent would be to link the small NGOs with scarce resources through its own nation-wide links to institutions that provide skills expertise, technology and money, of such variety and scale normally unavailable to small NGOs. Figure 3 presents a model for the future structure of the organisation showing the relationship between DSWSG and a parent NGO. A revolving fund is a central feature of the structure; this is a fund into which the women put their own savings and from which they take out loans, matched at regular intervals by grants from DSWSG — and which are the seed-corn capital for the multi-sectoral enterprises.

Conclusions and recommendations

The NGO examples in this paper indicate that the size of an NGO is the crucial factor in its effectiveness in tackling the causes of poverty. The small and intermediate NGOs in the area have had little or no effect on reducing the causes of poverty, although the Jesuits and the Salvation Army had been achieving this on a limited scale before their activities were curtailed. Despite their continuity, the Sisters of St Ann's

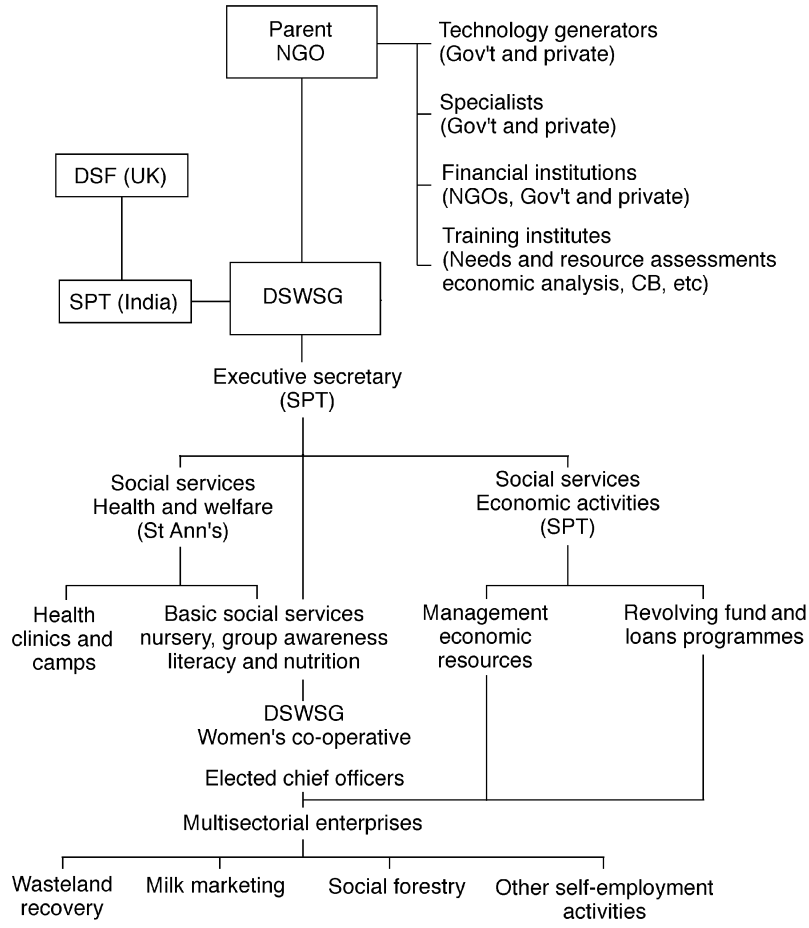

Figure 3 Proposed structure of DSWSG linked with St Ann's and parent NGO

* Note to Figure 3: A revolving fund is a joint bank account in the names of all group members, managed by the women and the coordinator, *into* which the women put their monthly savings (and any other contributions, all of which attract a commercial rate of interest) and *from* which they also take out loans, in turn, at commercial rates of interest. Every 18 months the fund receives a matching grant from DSWSG funds or from government sources.

and the Sisters of St Joseph of Cluny have been unable to reduce the rise in poverty and the DSWSG has yet to achieve its stated aim. By contrast, the track records of Grameen Bank and SEWA show that large co-operative structures can provide a supportive framework which enables poor people to help themselves. The evidence suggests that such structures succeed for three reasons:

- They are big enough to attract sufficient resources to enable their 'beneficiaries' to compete and take their place in the local markets.
- They have a policy and a structure, supplying training and education that enables their 'beneficiaries' to take responsibility for running their programmes.
- They provide a cohesive social network able to withstand individual failures, the corrosive socio-economic forces of local politics and the pressures of the political economy.

The Indian government now faces the same problem at the end of the century as the British government faced at the beginning: that of striking a balance between safety and economic growth. Successive government policies to reduce vulnerability and poverty in the coastal areas have succeeded in reducing loss of life but have failed to reduce poverty due, not to failures in the delivery strategy, but to failures in the delivery structure. Chronically, resources allocated at state level for poverty alleviation get diverted at local level (see also Rao and Erappa, 1987). For decades government civil servants have tried to solve this problem but their efforts have largely been dissipated in a web of local alliances; they have also been hindered by an historically uneasy relationship with local politicians.

The research findings, both historical and empirical, lead to the conclusion that the problems in Divi Seema and other similarly remote areas could be resolved if NGOs could do the following:

- combine together to be of sufficient size and credibility to be able to receive and handle aid directly from the large international financial institutions, such as World Bank and IMF;
- To work, in partnership with government, on huge-scale problems such as coastal management along the eastern coastline of India, a coastline that is continually under threat from cyclones.

Successive governments have been unable to alter local political economies and thereby change significantly the socio-economic and political position of the poorest people, in which case a partnership seems to be the most positive way to break the cycle. The governments would continue to be responsible for the infrastructural elements of coastal management through public-works programmes and other public services. The co-operative NGOs would be responsible for carrying out the economic aspects of the anti-poverty programmes, which have the possibility of reaching millions of people. These programmes are normally well beyond their means. Together these programmes should ensure both protection and reduced vulnerability as well as bringing lasting economic benefits in cyclone and flood-prone coastal areas.

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