Labour and Natural Disasters:

A Pilot Study on the Impact of the Earthquake on most Vulnerable Sections of Workers in Surendranagar District, Gujarat

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Table of Contents

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Surendra Pratap
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Preface

Gujarat, a state prone to natural disasters due to its geographical location, was hit by an earthquake measuring 6.9 on Richter scale in the morning of 26 January, 2001. The epicenter was about 20 kms. north-east of Bhuj, a central town in Kutch district of Gujarat. The entire town of Bhuj, with a population about 1,50,000, was razed to ground, killed over 20,000 people, and injured more than 1,66,812 people, officially. Nearly 6,94,407 houses were damaged and 3,08,299 of them were razed to the ground.

The aftermath effects of natural disasters and calamities are most severe for vulnerable sections of the affected population. Their precarious existence does not allow them access to external social and economic resources required for rehabilitation. Their livelihood systems shattered, they sufferer over a long period of time.

Various studies have shown that rehabilitation efforts in Gujarat were not sensitive to the needs of most vulnerable sections of workers, which include landless agriculture workers, salt pan workers and charcoal workers.

In this context CEC initiated a pilot study with the objectives to assess the extent of destruction caused by the earthquake on the livelihood systems of the most vulnerable section of workers; the extent to which they had been rehabilitated after the earthquake; and to propose policy changes for rebuilding their livelihood systems.

The study was conducted in February 2002 among 190 household samples in Surendranagar district, one of the severely affected districts by earthquake in Gujarat through a semi-structured interview schedule. Focus group discussions were also conducted and a few government officials and representatives of NGOs working in the area were also interviewed.

The study found that more than 60 per cent of landless rural workers in the region belonged to the SCs, around 35 per cent belonged to OBCs and a few from Muslims. Illiteracy was high at 50 per cent. They alternated between the occupations of saltpan, agriculture, construction and charcoal making; many migrated out for work.

The earthquake had serious impacts on employment of workers during February-March 2001. The landless agriculture workers were living with all their possessions in temporary shelters outside their houses, and out of fear of loosing their possessions they were hesitant to go out in search of employment. Salt making in little Rann of Kuchh was stopped for two months, viz, February and March. Therefore, all the salt pan workers were unemployed for these two months. Construction activity resumed only after July 2001 causing severe loss of livelihood for those engaged in construction.

The workers who had migrated to different areas for employment came back after the earthquake and none, except only a few, could not re-migrate in that season. In the next season also, i.e., in September, 2001, the workers migrating to Kuchh, Ahemdabad and Morbi to work as salt workers, brick kiln workers and tile workers respectively, could not migrate, as their houses were still not reconstructed. They had either received no monitory assistance or only first installment of it to repair/reconstruct their houses.

The study found that disasters and calamities have specific impact on women and their livelihood. Women experienced drastic reduction in employment opportunities.

No 'cash for work' scheme was formulated or implemented under the earthquake relief programme. However, since the drought period was still continuing, the drought relief scheme were implemented, but the earthquake was not even considered as one of the factors for determining the days of employment to be generated. The employment generated under the drought relief programme was not sufficient to compensate the loss of employment due to the drought itself, let alone the losses due to the earthquake.

The impact of the earthquake on the livelihood system of the workers was felt over several months and the normal situation could not be restored even till the end of the year, 2001.

In the aftermath of the earthquake, it was nearly impossible to get small interest free loans for subsistence from either relatives or friends. A few farmers who provided loans, gave it at high interest rates. According to workers, on many occasions they had to survive only on roti and salt.

The study raises the need for having a worker and employment perspective in disaster management.

New Delhi
May 2002

J John
Executive Director

Introduction

Gujarat is one of the regions of the country that are most frequently hit and worst affected by the natural disasters. One or the other types of natural calamities hit the State continuously for a period of four years extending from 1998 to 2001. In 1998, it was hit by cyclone and then by heavy rains and subsequently by floods. It had to face a cyclone again in 1999, which was followed by heavy rains. For a period of two years (1999-2000 to 2000-2001) there was a drought. The devastating earthquake, 2001, hit Gujarat when it was still passing through severe droughts (Table 1).

Table 1. Damages due to natural calamities in Gujarat State 1998-2001

Item	Cyclone 1998	Heavy Rains 1998	Floods 1998	Cyclone 1999	Heavy Rains 1999	Drought 99-00	Drought 00-01	Earth Quake 2001
No. of District Affected	14	12	7	3	15	17	22	21
No. of Villages Affected	2938		85			8666	12240	7904
Human deaths	1261	24	24	453	46	2		16927
Animal deaths	12747		2900	50448				18600
Population Affected (in lakhs)	46.8	7.5	1.15			200	250	15857

Source: * Different Annual Reports of Ministry of Agriculture & Co-operation
* Different Government Reports on Natural Calamities
* Memorandum on scarcity: 1999-2000 (GOG)

The earthquake measuring 6.9 on Richter scale hit the western state of Gujarat in the morning of 26 January 2001. The epicenter was about 20 kms. north-east of Bhuj, a central town in Kutch district of Gujarat. The earthquake the entire state, the worst hit was Bhuj, having a population of about 1,50,000. Almost entire town was destroyed. There was hardly any house in the town which was not damaged. Over 20000 people died in the State in this earthquake. All talukas of Kutch district were in Zone V (very high vulnerability zone). Surendranagar, Jamnagar, Rajkot, Patan and Banaskantha were in zone IV (high vulnerability zone) and other affected districts were declared under I, II & III zones, according to the damage caused by the earthquake (as per GR No. CLS-162001-1403 (5)-S.3 dated 14/3/2001 by Revenue Department, Government of Gujarat).

This has been the most powerful earthquake to strike the nation since 1950. According the

official sources, about 20,000 people were killed and 1,66,812 were injured. Nearly 6,94,407 houses were damaged, 3,08,299 of them were completely destroyed (Government of Gujarat, 2001; a)[*]. A total of 180 talukas and 7,904 villages were affected. More than 450 villages were razed to the ground, and more than 20,623 cattle were killed (Table 2).

Table 2. Details of damages/losses caused by the earthquake in different districts of Gujarat:

District	No. of Affected Talukas	No. of Affected Villages	Total Population	Affected Population	Human Deaths	No. of Injured	Cattle Death
Kutchh	10	949	1262507	1262507	18399	136048	19470
Ahmedabad	11	392	4687491	3894000	751	4040	20
Rajkot	14	686	2514122	1594000	433	11951	171
Jamnagar	11	685	1563558	1563000	119	4930	549
Surat	8	94	3397900	397989	46	190	1
Surendranagar	10	661	1208872	1154000	113	2909	121
Banaskantha	8	452	2013519	719000	32	2770	162
Kheda	10	350	1793138	35121	0	28	4
Bharuch	8	248	1148052	460000	9	44	76
Gandhinagar	4	210	1026728	35000	8	241	2
Patan	8	349	935203	664000	38	1695	15
Junagadh	14	554	2018446	597787	8	89	3
Navsari	5	331	1085692	87783	17	52	1
Porbandar	3	157	376113	376113	9	90	8
Vadodara	6	85	3039127	186092	1	270	1
Bhavnagar	11	535	2060315	445226	4	45	4
Anand	8	124	1647759	4687	1	20	6
Mehsana	9	611	1648251	1648251	0	1339	6
Sabarkantha	8	68	1761086	128000	0	56	1
Amreli	11	273	1484300	599000	0	5	2
Valsad	5	108	1087680	5985	0	0	0
Total	**182**	**7904**	**37759859**	**15857541**	**19988**	**166812**	**20623**

Source: Some basic information of the earthquake affected Surendranagar district; published by PATHEYA, DISHA, Ahmedabad. 2001.

Besides, more than 10,000 small and medium industrial units went out of production. Handicrafts in Kutch suffered enormously and 50,000 people lost their source of income. Salt

[*] Package of rehabilitation and reconstruction for earthquake victims in Gujarat; Directorate og Information, Government of Gujarat, Gandhinagar, 2001

farms were closed. Tiles and ceramic units were also affected severely.

Around 1,340 villages and 18 towns faced serious disruption of water supply. Failure of pumping sets supplying water for irrigation also affected agriculture of the region. As this was the season of cumin and cotton-cash crops, the disruption of irrigation facilities in the region, which was already facing a drought situation badly affected farmers as well as landless agriculture workers.

Natural disasters affect everyone; but on a long-term basis, the recovery will be the most difficult for vulnerable sections of people. This is because they do not have access to material and financial resources. They have least access to resourceful external factors; and would loose all means of livelihood. It is this destruction of livelihood systems that makes them the worst sufferers over a long period of time. Earthquakes, floods, cyclones and all other such natural disasters cause not only damage to property, loss of lives and economic disruption, but they also destroy the livelihood system of the population, and in this particular respect always, the most affected are poor and the socially disadvantaged sections of population. Experiences from the natural disasters in different parts of our country teach us the same lesson. Experiences of the Super Cyclone in coastal Orissa in 1999 also lead us to the same conclusions.

Several factors, including exposure to hazards, ability to reduce the impact of hazards and the social vulnerability of the people, determine how well and quickly they are able to recover from the losses and rebuild their lives. The extent of social vulnerability is greatly dependent on the access to and control over resources that could mitigate impact of natural disasters and become instrumental in the speedy reconstruction of livelihood systems. Vulnerability factors are therefore embedded in the social and economic structure of a society and across societies along caste, ethnic, cultural and gender lines. Natural disasters tend to accentuate these inequities. Relief and rehabilitation executed without considering the vulnerability factors may lead to iniquitous distribution of resources and denial of resources to some at the worst.

This study puts forward an argument that the rehabilitation programmes that followed the devastating earthquake were not sensitive to the needs of most vulnerable section of workers, viz., landless agriculture workers, salt pan workers and charcoal workers. The relief and rehabilitation policies simply do not talk about vulnerable section of workers and no packages are announced to rebuild the livelihood system of most vulnerable section of workers. The relief and rehabilitation policies are basically directed to reduce the loss of lives, property damage and economic disruption and compensate the losses in these terms.

Probably this was for the first time in the history that any natural disaster in India attracted such a huge amount of monetary and material support from national as well as international agencies. The money and materials were channeled to short term relief measures like making temporary shelters, providing cloths, blankets and cash doles/ food kits for few days subsistence to earthquake victims; and long term relief measures like restoration of industrial production,

reconstruction of schools, reconstruction of villages, monetary assistance for reconstruction/ repair of houses, restoration of water supplies etc. Subsidies and waiver of minimum charges of electricity was announced under relief package for industries. Financial assistance was provided to artisans and weavers to purchase tool kits and purchase/ repair looms. Under agriculture relief package, subsidies to repair/ reconstruct structures and irrigation assets on farms were announced. Subsidies and compensations were also announced for salt farmers. Direct assistance to landless rural workers in the region was provided only in terms of temporary shelters, cash dole/ food kit for few days subsistence and cash assistance for reconstruction/ repair of houses which were damaged/ destroyed in the earthquake (Government of Gujarat, 2001;b)**.

It is evident from the above that as far as the vulnerable sections of workers are concerned, the emphasis is basically on short term relief, which is no doubt important and necessary. However, one cannot ignore the need for long term rehabilitation, which for the most vulnerable section of workers is possible only by helping them in rebuilding their livelihood system. The most vulnerable sections of workers are drawn mainly from the landless rural workers. The employment and earnings of landless rural workers are below subsistence level even in normal situations. In the region chosen for the study, they were already experience starvations like situation due to the prolonged droughts. The earthquake further deepened this crisis by making them unemployed for months together and putting downward pressure on their monthly and annual earnings. This factor was completely ignored in relief and rehabilitation policies and programmes. No cash for work scheme was implemented under the earthquake relief programme. The earthquake was not even considered among the factors to determine the days of employment to be generated under the drought relief programme.

** Earthquake in Gujarat; Directorate of Information, Government of Gujarat, Gandhinagar,2001

The Objectives of the Present Study and Methodology

Objectives:

The objective of the study was to look at:

- The extent of destruction the earthquake had caused to the livelihood systems of the most vulnerable section of workers
- The extent to which they had been rehabilitated after the earthquake
- If not rehabilitated through governmental or non-governmental actions, to identify the reasons.
- To propose policy changes and strategies for rebuilding the livelihood systems of the most vulnerable section of workers.

It is generally agreed that the landless rural labour is the most vulnerable section of workers. Major categories of vulnerable section of workers of the region i.e., landless agriculture workers, salt pan workers and charcoal workers etc., are also mainly drawn from the landless rural workers. Landless rural workers are mainly drawn from dalit communities; they are without any resource whatsoever to fall back upon in the event of crisis and they do not have easy access to credit. Consequently, it becomes extremely difficult for them to recover from the crisis.

Hence, this study basically focuses on the landless rural workers with special emphasis on landless agriculture workers, salt pan workers and charcoal workers in Surendranagar district of Gujarat.

Methodology:

Household survey was conducted using semi-structured interview schedule. Besides, focus group discussions and personal observations were also used as method to gather information. Few government officials and NGO activists working in the area were also interviewed.

Selection of Sample Villages[1]:

Selection of the sample villages was made on the basis of available information about the earthquake-affected villages published by government agencies as well as NGOs. Also the Researcher gathered first hand information by way of visiting the affected villages in the area. For the purpose of the sample survey only those villages were selected where more than 10 houses of landless rural workers collapsed in the earthquake. Sample survey was conducted in the following villages: (i). Bisawadi (ii) Odu (iii) Badgaon (iv) Bajana (v) Sablas (vi) Kharagoda and (vii) Sedla.

The earthquake in Surendranagar district hit severely the villages surrounding the little Rann of Kutch. The selected seven villages are also located in the same region.

The Sample Survey[*]

The random sampling method could not be strictly followed. The situation was such that when

[1] All the NGO activists the Researcher met during his first field visit told that in severely affected areas of Kutch a lot many NGOs are working and so many surveys were conducted by them and government agencies. According to Harinesh Pandya of 'Janpath', the NGOs in the region are not honestly sharing their database with each other. Because of this attitude and due to lack of proper coordination, there were excessive surveys, and the people of the region feel cheated as in their perception surveys could not help them in getting relief and rehabilitation. Therefore, most of the NGO activists he talked to, were of the opinion that in severely affected areas of Kutch, particularly at that time, the responses in the household survey might be tampered with. They also suggested that it will be almost impossible to get the field investigators of the kind we were looking for to overcome the language barrier. According to them, in the severely hit areas of Kutch and in the areas surrounding it, almost all the Gujarati speaking intellectuals with some social orientation and activism were engaged by one or the other NGOs and at this moment no NGO could afford to spare any of its workers for our household survey. Hence, in consultation with the Director, CEC, the Researcher decided to conduct the study in Surendranagar district instead of Kuchchh. Agriculture workers union of DISHA also agreed to help if the study was conducted in Surendranagar, as its agriculture workers union was working in the district.

[*] **Problems in Conducting the Survey**

After the earthquake in Gujarat, many NGOs and government agencies were involved in relief works. The government agencies and some NGOs also conducted surveys for listing the earthquake affected households in the sample villages. In some villages, the government had to resurvey the households. The NGOs which did not conduct any survey, were also visiting the villages with some relief package. All this continued untill recent past, and in one way or the other it is still going on. This has led the village folks to form an opinion that the outsiders coming to the village on four-wheeled vehicles would be carrying ‘money bags’ for them. We also realized this as soon as we reached in a ward. Here the local villagers surrounded us and when they came to know that we were conducting a survey of landless workers, every one tried to persuade us to fill up one ‘form’(interview schedule) in his name. In every ward we had to thoroughly explain the objectives of the survey and to tell them clearly that this survey was not meant to provide any direct help to them. However, even after being apparently convinced, they in some way or the other continued trying to get a ‘form’ filled up in their name. In one village, one old woman started crying loudly alleging that every time any one came with some relief package or for survey, her neighbours managed to get the benefits and she was denied the same. Incidentally we were sitting in front of her neighbour's house and had completed the sample survey of that village and no blank interview schedule was left. However, to pacify her, we had to go to her and act as if we were filling her ‘form’. Actually, the house of this old woman had collapsed and she had received the monetary help (about Rs. 30000) also. But according to her, the amount was insufficient to reconstruct the house. Moreover, she was of the firm opinion that her neighbour managed to get more benefits every time. This story was not an isolated case, but was in some way or the other repeated in every village we visited.

we entered in any ward of landless workers, many workers of that ward surrounded us. We had to record the responses of respondent households in a ward sitting at one place and we could not visit each and every respondent's residence. We had to select respondents from among the workers who were available on the day survey was conducted. Therefore, we decided to do the sampling in such a way that our samples represent as comprehensive picture as possible of the life of landless workers. Therefore, we tried to focus our attention on the following aspects in selecting the samples:

1. Different castes which majority of landless workers belonged to
2. Different wage occupations in which landless rural workers were engaged.
3. Landless rural workers whose houses got damaged in the earthquake (Almost all the working class houses in these villages were affected by the earthquake. The houses, which did not collapse, had cracks in walls).
4. Migration of workers.

Since, no information regarding caste wise population of landless rural workers and migration aspects was available for the purpose of the sampling, the Researcher totally relied on the oral information gathered from the workers, peasants and members of panchayat of a particular village. Sample survey was conducted in second half of February 2001. More than 5% households of landless rural workers were from each of the seven villages selected. The total number of interview schedules filled was 200. The filled up interview schedules were thoroughly examined and 10 of them were rejected for inconsistencies. Hence, final data analysis was based on 190 interview schedules.

The Setting

Gujarat is situated at the west coast of India. The Arabian Sea bound the state on the west, Pakistan and Rajasthan in the north and north-east respectively, Madhya Pradesh in the south-east and Maharashtra in the south. The state covers an area of 1,96,024 sq. km. According to the 2001 Census, the total population of Gujarat is 50,596,992 (Male: 26,344,053 and Female: 24,252,939).

The diverse ethnic groups represent Gujarati population including Nagar Brahman, Bhatia, Bhadela, Rabari, and Mina castes and Bhangi, Koli, Dubla, Naikda, Bhil and Macchi-Kharwa tribes. Members of the Scheduled Castes and of the aboriginal tribes form nearly one-fifth of the state's population. There is one entirely tribal district of Dangs. Ahmedabad district has the highest proportion of Scheduled Castes. Gujarati and Hindi are the official languages of the state. The most urbanised part of the state is the Ahmadabad-Vadodara (Baroda) industrial belt. Major towns that were once capitals of princely states are Rajkot, Junagadh, Bhavnagar (Bhaunagar), and Jamnagar.

About two-thirds of the population is engaged in agriculture, the gross area cropped amounting to about half of the total land area. Wheat and millet are the staple food crops, with rice production being concentrated in the wetter areas. Sugarcane production is increasing, while cotton, tobacco, and oilseeds (especially groundnuts) are some of the profitable cash crops. Gujarat produces about one-third of India's groundnut crop and about one-third of the country's tobacco. Cash crops are characteristic of the state's agricultural economy. One of India's most industrialized states, Gujarat maintains a variety of industries, the principal ones being general and electrical engineering. Textiles, vegetable oils, chemicals, soda ash, and cement are other main industries in the state. New industries include the production of fertilizers and petrochemicals. Petroleum production began in 1960, and an oil refinery is located in Vadodara.

A thermal-power station is located at Dhuvaran. The state also receives power from the Tarapur nuclear facility in Maharashtra State. The incomplete Sardar Sarovar dam on the Narmada River was projected to become the state's largest producer of hydroelectric power and to provide water for extensive irrigation. Gujarat had a total railway length of 5,268 kms and total road length of 72,950 kms when survey last conducted for 31 march, 1999. Its National Highways constitute about 4.5 per cent of the total length of the National Highways in India. Coastal shipping routes link with many ports of Gujarat. Kandla is a major international shipping terminal. There is air service both within the state and to major Indian cities outside.

District Surendranagar and Taluka Dasada

Surendranagar district is surrounded by little Rann of Kutch at its north-west. Mehsana district

makes its northern boundary and Ahmedabad makes its eastern boundary. The district is divided into nine development blocks or talukas. Dasada taluka is located at its north-western part which is surrounded by the little Rann of Kutch. Basic information relating to district Surendranagar and taluka Dasada (see table.3 & 4).

Table 3. General Basic Information about Surendranagar District 1991

Area (sq.km)	10436.2.
Density (per sq.km.)	116
Resident Villages (no.)	648
Rural Population (no.)	846149
Urban Population (no.)	362723
Total Population(no.)	1208872
S.C. Population (no.)	136538
S.T. Population (no.)	9481
Literate- Male (no.)	3521801
Literate- Female (no.)	195182
Total Literate (no.)	547362
Rural Literate (no.)	327366
Urban Literate (no.)	219996
Main Workers (no.)	420688
Marginal Worker (no.)	68786
Non Workers (no.)	719398
Cultivators (no.)	136501
Forest Labourer (no.)	16783
Mine Workers (no.)	2029
Agriculture Labourers (no.)	117726
Non House Workers (no.)	32365
Construction Labourer (no.)	8008
Industry and Comm.(no.of units)	29404
Communication Work (no. of units)	12602
Other Service (no.of units)	36007
Household Workers (no.)	15163
Area Under Crop (ha.)	699738
Area Under >1 Crop (ha.)	37605
No. of Villages (no.)	651

Source: Census of 1991

Table 4. General information about the earthquake affected Taluka Dasada, District Surendranagar, Gujarat: 2001

Area (sq.km.)	1630.1
Density (sq.km.)	88
Resident Villages (no.)	87
Rural Population (no.)	119138
Urban Population (no.)	24132
Total Population (no.)	143270
S.C. Population (no.)	20686
S.T. Population (no.)	193

Source: Census, 1991

Survey Findings

I. Family size: Average size of family in our sample was 4.7 persons. The size of the household ranged from one to 10 members. More than 47% households reported only one to four members. In more than 33% households the family size was reported to be five to six members and less than 20% households reported seven to 10 members as size of family.

It was clearly evident that the joint family system was no more dominant in the working class families. In two villages, Badgaon and Bajana few workers reported that they were living in rented one-room accommodation in their own village for about Rs. 100 per month. Generally, the workers get separated from the joint family and form a nuclear family after marriage. This social phenomenon has certain pros and cons which certainly increase the vulnerability of workers.

II. Caste composition:

A majority of landless rural workers in the region were drawn from the SCs. In our sample Vankar (SC) formed the majority of the landless rural workers, as 56.8% households of landless workers in our sample were drawn from this caste. Harijan, Rawad and Bajania and Bhangi were other SCs in our sample from which also landless rural workers were drawn.

A significant section of landless rural workers also belonged to the OBCs, as 32.6% landless workers' households in our sample were drawn from Koli caste. Bharwad was another OBC caste from which few landless workers were present in our sample.

A few landless workers in our sample were also drawn from the general caste category, viz., Sipai zat of Muslims.

According to workers, this phenomenon of proletarianisation of peasantry in Sipai Muslim and Bharwad castes started only few decades back. The workers told that the process of marginalisation and proletarianisation in Bharwad caste herdsmen was accelerated by the prolonged drought period in the region, when the grazing fields had almost disappeared.

III. **Education:**

Around 50% heads of households in the sample were illiterate. It is interesting to note that SC households' heads in our sample were comparatively better in education than OBCs, viz.; Bharwad, Koli and Sipai Muslims. Koli caste in the region is generally engaged in salt making. They generally migrate to Little Rann of Kutch for 8-9 months in a year. Therefore, there is virtually no scope of schooling for them. But all the Koli households were not engaged in salt making. For example, Koli households in Sablas and Visawadi were not engaged in salt making

and these Koli households reported more literacy for the head of households than the other salt making households. Bharwad caste is traditionally a cattle-rearing caste and a majority of the households belonging to this caste were generally engaged in rearing cows and buffaloes and selling milk.

Males of these households spend the whole day moving hither thither with their herds in search of grassing land. They generally started grassing their herds from childhood. As a result, the possibility of schooling for them is non-existent. However, from our field observations it appears that there was a drastic change in the lifestyle of Bharwads in last few decades. A significant section of them is now not leading the life of herdsmen. Many of them have become farmers and some of them have joined other occupations as well. Many of them keep only one to three buffaloes and generally feed them at home. Many of them have joined the ranks of landless rural labour. Therefore, it appears that now there is better chances of promoting schooling among the Bharwads. However, we did not collect any information regarding the state of schooling of children.

IV. Occupational profile:

Total number of workers in the sample households was 477 (281 male workers and 196 female workers). Average number of earning members or workers per household was 2.5 and 17.4% workers were engaged as salt pan workers. In a normal year, during the peak seasons of agriculture, at the most 73% workers were engaged as agriculture labour, 1% workers were engaged as construction workers and 7.8% (in some seasons up to 11.2%) workers migrated to different destinations to work in different wage occupations. In off seasons of agriculture, at the most 5.6% workers switched over to charcoal making, significant section of workers was also engaged as casual daily wage labour in salt industry in off seasons of agriculture.

V. Impact of the earthquake on the livelihood systems of the most vulnerable section of the workers

We have already discussed that the most vulnerable section of workers is drawn from the landless rural workers. Landless rural workers in our sample had no livestock or other assets such as land to support their family earnings. They were completely detached from any means of production, wage work was their only source of earning. It is now well established and it is supported by this study as well that even in the normal situations the earnings of lanldess workers in rural areas is insufficient for their subsistence. Therefore, any natural or man made disaster which reduces employment opportunities or puts downward pressure on wages and earnings or puts even a little economic burden in any form, the vulnerability of the landless rural workers gets increased. Hence, in the present study we focus attention on the following aspects to assess the impact of the earthquake on the vulnerable section of workers:

1) Impact on occupational pattern and employment
2) Impact on female employment

3) Impact on wages and earnings
4) Visible economic losses

The women employment is separately discussed keeping in view the fact that their earnings are more reliable source for subsistence of family.

To assess the impact of the earthquake, we have done a comparative analysis of different variables for three yearly cycles, viz., the normal year, the drought year and the earthquake year. The earthquake hit the region when a prolonged period of drought was still continuing. In the earthquake year, till June 2001, when the rain came, the impact of the drought was mixed with the impact of the earthquake. Hence, to assess the net impact of the earthquake and the drought separately, a comparative analysis of the normal year (1998), the drought year (2000) and the earthquake year (2001) is done for different variables or vulnerability factors.

(i). Occupational pattern and employment

It is now well established and widely accepted that the casualization of labour is a dominant phenomenon in rural areas. Agriculture labour is no more agriculture labour in the traditional sense of the term. Now it has multiple identity in the sense that it is engaged in different wage occupations in different seasons and rarely it gets more than 100 days of employment in a year in agriculture. Invasion of capital in agriculture sector leading to capital intensive agriculture and mechanisation of agricultural operations results in marginalisation and proletarianisation of peasantry on the one hand and casualisation of labour on the other (Kannan 1988*, See also Table 5&6). Breman (1996)** reports that Gujarat is one of the states leading in the shift at the rural household level from self-employed to wage labour both in and out of agriculture.

Table 5. Marginalisation and Proletarianisation of Peasantry in India

period	*% of rural households with nil or marginal holdings(0-10-h)*
1961	57.6
1971-72	60.3
1981-82	67.2
1991--92	70.1

Source: NSSO, 1998

* Kannan, K. P. (1988),Of Rural Proletarian Struggles: Mobilisation and Organisation of Rural Workers in South-West India; Oxford University Press, N. Delhi

** Breman, J.(1996), Footloose Labour Workig in India's Informal Economy, Cambridge University Press,USA

Table 6. Casualisation of Rural Workers in India

	Male		Female	
Year	**Regular employed(%)**	**Casual employed(%)**	**Regular employed(%)**	**Casual employed(%)**
1977-1978	10.6	26.6	2.8	35.1
1903?????	10.3	29.2	2.8	35.3
1907-88????	10	31.4	3.7	35.5
1993-94	8.3	33.8	2.8	38.8

Source:NSSO, Sarvekshana, various issues

This phenomenon has double impact on the landless agriculture workers. On the one hand, they are freed from the bondage of landlords. They also get freedom to bargain for their wages and to engage themselves in any wage occupation and with any employers providing better working conditions and better wages. However, if sufficient employment opportunities are not existing outside agriculture, this freedom becomes freedom to starve. The present study asserts that this phenomenon is not only dominant in the regions with well developed infrastructure facilities and advanced agriculture, but this is a dominant feature in the backward regions as well. For instance, Surendranagar district of Gujarat, with almost no irrigation infrastructure and where the cost of irrigation goes to the extent of one fourth of the crop (in case of cumin crop). In our sample, all the workers except the salt pan workers, i. e., the tile workers and the brick kiln workers reported diversified wage occupations.

During the agriculture seasons, majority of them were mainly engaged as agriculture labour[**], but in off-seasons they were doing other wage occupations i. e., charcoal making, construction work, etc. A significant section of the landless rural workers also migrated for three to nine months to different destinations and work in different wage occupations. In normal situations and in comparatively more labour intensive crops (cumin) also the average days of employment in agriculture was not more than 16 days per month. The employment in agriculture was available generally for six months, viz., January-March and September-November. In normal year (1998), only in May, the average days of employment was 23.5 days. However, this is misleading, as there was almost no employment available in agriculture in the month of May. These workers were actually engaged by the cotton contractors to take out cotton from its broken hard fruit

[**] In our sample, few workers reported double wage occupations in a month. However, the major wage occupation was only one. The contribution of secondary wage occupation in employment days was very little (less than 2 days per month). Since this was not a general trend, for the purpose of analysis the employment days contributed by secondary wage occupations were added in that of contributed by major wage occupation and it was assumed as they were engaged only in the major wage occupation.

cover on piece-rate basis which was the lowest paying job (Rs. 10-15 per day). Workers had to do this work only because they had no other wage work during this month. This operation was later mechanised and therefore in drought year (2000) and earthquake year (2001) no employment was reported in agriculture in May.

A comparative analysis of employment in three phases of the year viz., January-April, May-August and September-December, for the three years under study, shows clear-cut impact of the earthquake on vulnerable sections of the workers. It also shows that it had long-term impacts on livelihood system of workers. The three phases of the year are demarcated mainly to show the off seasons and seasons in agriculture. However, they coincide to show off-seasons and seasons of employment in other major wage occupations as well. The first and third phases are on seasons of employment in agriculture and other major wage occupations. The second phase mainly represents the off season of employment. Charcoal making is an off season activity, therefore the workers were engaged in charcoal making only from April to July. Salt pan workers migrated to little Rann of Kutch in September and came back at the end of May. The tile workers and brick kiln workers also migrated in September and came back in May. The workers migrating to Saurashtra to work in agriculture (mainly in groundnut crop) farms also started in September and came back at the end of November.

First Phase (January-April):
During this season, two major crops provide employment to landless agriculture workers, viz., cotton and cumin. Major share of employment in this season is provided by cumin crop. This is most profitable cash crop of the region. Rains or no rains, the farmers grow this crop. If there is a good harvest, they can earn profits even after paying one fourth of the crop as cost of irrigation to big farmers who are the owners of private pumping sets. Therefore, there was not much impact of draught on the employment in agriculture particularly in the period between January and March, which is crop period for cumin. However, impact of draught is visible in April, which is harvesting period for cotton crop. In April, the agriculture employment dropped from 41.2 per cent in normal year to absolute zero in a drought year. On the other hand, if we look on the situation of agriculture employment in the earthquake year, the impact of the earthquake can be clearly observed from February onwards. The percentage of workers engaged in agriculture dropped from 71.9 per cent in February of normal year and 69.8 per cent in February of the draught year to 11.5 per cent in February of the earthquake year.

For March, the percentage dropped from 71.9 per cent in normal year and 63.9 per cent in drought year to 41.7 per cent in earthquake year. In April, no employment was available in agriculture both in drought year and earthquake year. It is evident from the above that a significant section of the landless agriculture workers started working in agriculture fields in March after the earthquake. However, looking at this fact in isolation is misleading and it dilutes the intensity of the impact of the earthquake. We must keep in our mind that in March in the earthquake year only 41.7 per cent workers were engaged as agriculture labour, even when 17.4

per cent + 4 per cent + 3 per cent + 0.8 per cent other workers also entered in the agriculture labour market, who were earlier engaged as salt pan workers, migrated to Kutch, Patadi and other destinations in normal year and drought year (table in Appendix).

In our sample, 17.4 per cent workers were salt pan workers. In the normal year and the drought year, they migrated to little Rann of Kutch for about nine months. They migrated in September and came back in June. However, the salt making in Little Rann of Kutch was stopped after the earthquake on January 26, 2001, and consequently the migrant salt workers had to return home. Salt making in Little Rann of Kutch restarted only in April. Therefore, the salt pan workers could not work on their pans for more than two months and incurred heavy losses. The workers migrating to Kutch (4 per cent) for salt making also came back home. They could not migrate even in the next season (starting from September 2001), as their houses were still not reconstructed or repaired. The tile workers and brick kiln workers were also in similar situations and similarly affected by the earthquake (table in Appendix).

During this phase of the year, 3% workers in our sample migrated to Patadi in normal year and also in the earthquake year. They were engaged as labour sharecroppers in cumin crop. The terms and conditions for these labour share croppers were such that they would provide all the labour inputs needed in this labour intensive crop and would get one-tenth share of the produce after the harvest. Generally, these workers made huts in the farms and stayed there with family, day and night, for almost three months. However, after the earthquake they returned home and could not work in the farms for the crucial month of February. Only in March, one male member from each of these households could go back to Patadi leaving their females back at home to look after their belongings which were still in the make shift shelters. Hence, according to the workers, the harvest was not good and they incurred heavy losses and construction activity was also stopped in the aftermath the earthquake.

Only 0.4% to 1.5% workers in normal year and 0.2% to 0.8% workers in drought year were engaged as construction worker during the period of February-April, and the percentage of the workers engaged in this activity dropped to absolute zero during these months in the earthquake year.

Now, if we look at the total picture of employment and unemployment for all workers in the sample households for these months and make a comparative analysis of the normal year, the drought year and the earthquake year, we can get a net impact of the earthquake for this period. The impact of the earthquake on employment was most severe in the month of February. Percentage of the total workers employed in different wage occupations dropped from 97.6% in February in the normal year and 95.8% in February of the drought year and came down to only 11.5% in the earthquake year. For March, the figures dropped from 97.4% in the normal year and 97.2% (including 7.9% workers engaged in the drought relief work) in the drought year to 59.5% (including 16.3% engaged in the drought relief work) in the earthquake year. In April the

percentage of workers engaged in different wage occupations dropped from 86% in the normal year (including 56.9% engaged in the drought relief work) in the drought year to 79.5% (including 60.3% engaged in the drought relief work) in the earthquake year.

It is evident from the above that the employment days generated by the drought relief work, was insufficient to compensate the loss of employment caused by the drought. The scheme was implemented for maximum two months only which provided about 21 days of employment per month to the workers engaged. No such scheme was implemented under the earthquake relief programmes. The earthquake was not even considered as a factor to determine the days of employment to be generated under relief schemes implemented after the earthquake when the drought was still continuing. This was neither meant for, nor sufficient to compensate the losses of employment due to the earthquake. Chart 1 and table 7 clearly show a steep decline in the percentage of workers engaged during the February-March period in the earthquake year (as one can see the distance between the lines of the normal year or the drought year on the one hand and the earthquake year on the other, on the charts is quite alarming).

Table. 7. The Impact of the earthquake on percentage of workers engaged and average days of employment

Month	Normal year(1998)				Drought year(2000)				earthquake year(2001)			
	% Male workers engaged	% Female workers engaged	% workers engaged	Total average days of Emp	% Male workers engaged	% Female workers engaged	% workers engaged	Total average days of Emp	% Male workers engaged	%Female workers engaged	%workers	Total average days of Emp
January	99.1	98.7	99.2	19.4	95.9	95.7	96.6	15.3	97.7	95.2	96.8	14.9
February	97.0	97.7	97.6	18.8	95.5	95.7	95.8	14.6	16.1	5.1	11.5	1.4
March	98.2	95.9	97.3	18.3	96.7	98.0	97.2	15.0	73.5	39.2	59.5	7.5
April	96.5	70.1	86.0	16.0	92.4	68.1	82.0	18.8	80.6	78.0	79.5	18.3
May	82.9	52.3	72.0	15.9	90.0	90.6	90.0	20.3	69.6	65.2	67.9	15.6
June	4.5	4.5	4.6	0.8	14.4	12.1	13.5	1.7	1.7	1.5	1.6	0.3
July	0.7	1.5	1.0	0.2	9.5	4.0	7.2	0.6	0.0	0.0	0.0	0.0
August	43.3	37.7	41.2	5.9	33.2	13.2	23.0	1.9	25.1	16.8	21.6	2.7
September	95.4	95.7	96.2	16.5	81.9	80.9	83.6	13.0	89.7	96.7	92.7	13.2
October	90.1	97.2	96.4	17.4	88.3	71.1	81.7	13.4	87.6	77.3	83.7	12.7
November	84.8	94.2	92.5	15.8	76.9	64.2	73.7	12.2	80.8	76.9	79.3	11.6
December	50.7	35.5	44.6	7.4	40.0	30.9	36.5	6.5	43.1	27.9	36.9	5.9

Second phase (May-August):
We have already discussed that this period is generally considered as off-season in agriculture and other major wage occupations. However, in the normal year, there were some opportunities for wage work in agriculture, 17.6% workers were engaged by the cotton contractors as household workers on piece-rate basis to take out cotton from the broken hard fruit cover. We have already discussed that this process was later mechanised, therefore, no employment was reported in May in either the drought year or the earthquake year.

The salt making also continued till May. In the earthquake year also, the salt pan workers went back to the little Rann of Kutch and continued their work till May. In this off-season, a significant section of workers were engaged as daily wage workers in salt making in Kharagoda and as charcoal workers in the normal year and the drought year. However, in the earthquake year, no employment was reported in these two occupations. The workers told that there was a decline in salt production, therefore, no daily wage work was available in salt industry for workers of far away villages. Another reason, according to them, was that the government officials had started surveying and assessing the extent of damage to the earthquake hit houses during this period, therefore, male members who were generally engaged in salt wage work (females were not engaged as daily wage labour in salt industries) had to stay back at home or to go to the block headquarters to pursue their case of compensation.

As far as charcoal making is considered, there was no direct impact of the earthquake on this activity. However, indirectly the earthquake affected the business. In our sample, no worker reported employment in charcoal making in the earthquake year. The second reason discussed above for daily wage workers in salt industry applied to this case as well. Besides, the monsoon reached the region on time in the earthquake year, which might have also affected the charcoal making. The construction activity in the earthquake year restarted only in August. In this off-season, generally few workers were engaged as construction workers in the normal year and the drought year. This opportunity was not available to the workers during these months in the earthquake year.

If we look at the total picture of employment and unemployment of workers in this period, we can safely conclude that the impact of the earthquake was severely felt during this period also. The total percentage of workers employed in different wage occupations dropped from 90% in the drought year in May to 67.9% in the earthquake year. For June, the figures dropped from 13.5% in the drought year to 1.6% in the earthquake year. In May, the major share of employment was provided by the drought relief schemes both in the drought year and the earthquake year, as 62.8% workers were engaged by the drought relief schemes in the drought year and 50.5% were engaged in the earthquake year in the month of May.

The difference between the ratio of the workers engaged in May during the drought year and the

earthquake year is the net impact of the earthquake. However, decline in employment opportunities in June and July during the earthquake year was also caused due to timely rain in the earthquake year which affected the mobility of workers. During June and July, the workers in the drought year were engaged either in charcoal making or as casual daily wage workers in the salt industry or they moved here and there and got engaged in different other wage occupations. In the earthquake year, the rain affected charcoal making and also the movement of workers, but decline in casual employment in the salt industry was certainly caused by the earthquake, as it affected the salt production in the little Rann of Kutch.

In August, when off-season continues but season starts in agriculture in later half of the month we can see that even after the timely rain in the earthquake year, the agricultural activities were not restored to the normal level. The percentage of workers employed in agriculture in the earthquake year (19.4%) was far below that of the normal year (40.8%). Therefore, the ration of the total workers engaged in different wage occupations in August during the earthquake year (21.6%) was still far less than that of the normal year (41.2%). This was the period just after the monsoon season, when the reconstruction/ repair of houses damaged by the earthquake was started.

Third phase (September-December):
This is the period when agricultural activities were, to a large extent, restored to the normal level. Moreover, in this period, the reconstruction / repair of the houses affected by the earthquake were in full swing. First instalment of money for reconstruction /repair of the houses was already released by the state government, hence, the employment in construction activities was slowly picking up during this period. As a result, the ration of workers engaged as construction workers increased from 0.2% in September of the normal year and 1.2% in the drought year to 6% in the earthquake year. Salt making was already restored to normal level. However, the impact of the drought was not completely neutralised. In this period the impact of the earthquake was felt by the workers who were migrating to different destinations in the drought year and the normal year.

The workers who were migrating to Kutch, Morbi and Ahemdabad in the normal year and the drought year to work as salt workers, tile workers and brick workers respectively, could not migrate in this season, because their houses were still not reconstructed/ repaired. They had either received no money or only first instalment of money to repair/reconstruct their houses. Therefore, they had to stay back at home to reconstruct/ repair their houses and to pursue the government officials in order to procure the money for the same. For the same reasons, the percentage of workers migrating to Saurasthra to work in ground nut farms declined drastically in the earthquake year. During the drought year there was steep rise in the ratio of the workers migrating to Saurashtra during September-November.

During the normal year, only 6.4% workers migrated to Saurashtra, however, it increased to 20.3% in the drought year. In the earthquake year, this percentage again declined to 7.5%. If we

look at these figures in isolation, it seems natural that the restoration of normal agricultural activities due to the timely rain in the earthquake year led to decline in the number of migrating workers. However, this was not the case. Average days of employment and wages in migrating destinations were much higher than in local areas. According to the workers, there was assured employment for them for about 20 day per month with a wage rate of Rs.40-50 per day, if they migrated to Saurashtra during this period. Therefore, they preferred to migrate to Saurashtra for these three months.

The impact of the earthquake during this period can be observed in chart 1-4. The distance between the lines showing percentage of workers employed and average days of employment for the normal year, the drought year and the earthquake year gives the net impact of the drought and the earthquake.

Average annual days of employment for all workers in the sample households:

Month-wise analysis of total average days of employment for all workers in the sample households is given in table 7. Total average days of employment' is very important in comparative study of employment situation in three years considered for the study and to assess the impact of the drought and the earthquake, since it considers the unemployment factor.

Total average days of employment is calculated by:

$$\frac{\text{Sum of (Average days of employment in particular occupations in particular months} \times \text{No. Of workers engaged in particular occupations in particular months)}}{\text{Total No. of workers in sample households}}$$

Chart 4 presents the impact of the earthquake on total average days of employment for all workers for all months. As we can see the impact is most severe during February-March followed by September-November period. Severity of the impact on employment is reduced by the drought relief schemes during April-May. However, the chart also shows the overall impact of the earthquake till December 2001.

An analysis of average annual days of employment provide overall picture of the impact of the drought and the earthquake on livelihood system of the workers. During the normal year workers were getting employment for 152.4 days per year. It is evident that in the normal years also workers were not getting sufficient employment for their subsistence, despite their all efforts and migrating to distant places. During the drought year, average annual employment days drastically declined, however, it was to some extent compensated by the drought relief schemes. There was a further steep decline in the annual average employment days in the earthquake year and the figures dropped from 133.6 days in the drought year to 104.1 days in the earthquake year. The

drought relief schemes were insufficient to neutralise the impact of the earthquake. However, this scheme contributed a significant share of employment days in the earthquake year as well as in the drought year. If we exclude the average employment days generated by the drought relief schemes, the average annual days of employment was only about 100 days in the drought year and 70 days in the earthquake year.

(ii). Women employment

Long term impact of the earthquake on the employment of women workers was same as on their male counterparts. However, the short-term impact on women employment was more severe and it was alarming particularly in February and March, immediately after the earthquake. Women employment in February declined drastically from 97.7% in the normal year and 95.7% in the drought year to 5.1% in the earthquake year. During March also there was a steep decline in women employment in the earthquake year in comparison to the previous years. During March 39.2% women workers were in employment in the earthquake year, while 96.2% women workers in the normal year and 89% women workers in the drought year reported employment in March (Chart 2).

There was every possibility of adverse impact of the earthquake on women employment in April and May 2001 as well. The employment generated by the drought relief schemes in the villages was the only factor, which neutralised the adverse impacts on women employment for these two months to some extent. 17.3% women workers in March, 61.2% in April and 48.4% of them in May were engaged by the drought relief programmes.

Generally, during the period between February and April, most of workers were living in temporary shelters outside their house even when there houses were not completely destroyed by the earthquake. Almost all the working class houses in the region had cracks in walls, if not completely destroyed. Therefore, females could not go out for work, they had to stay back in temporary shelters with children and old age persons to look after their belongings.

(iii). Wages and Earnings

The landless workers in the region were engaged as agriculture workers, construction workers, charcoal workers and salt pan workers in local area, and they migrated to Kutch, Ahmedabad, Morbi and Patadi and Saurashtra to work as salt workers, brick kiln workers, title workers and labour sharecroppers and agriculture labour respectively. The workers migrating to work as labour sharecropper in cumin crop and salt pan workers and also charcoal workers were not working on daily wage rates. Payment to them was made on the basis of production. Labour sharecroppers were getting 1/10 th. share of the produce as three months wage. Generally one worker was engaged for one acre of cumin crop. The price of average production of cumin in one acre was about Rs. 32,000. Therefore, a worker got about Rs. 3200 as his wage for three months. Hence, the wage rate for sharecropper was about Rs. 35 per day.

Salt pan workers were paid on piece rate basis, at the rate of about Rs. 6-10 per 100 kg of salt produced. Generally two workers managed a normal pan measuring about 150x200 feet, and total salt production in one such pan was about 400 MT. Hence, the payment to a landless salt pan worker for 400 MT, at the rate of Rs. 8 per 100 Kg* was about Rs. 32000. The workers had to bear the expenses of water and diesel etc for themselves, and the expenses on these heads for eight months was about Rs. 16000. The net payment for nine months for two workers was about Rs 16000. Hence, they earn about Rs. 25-27 per day.

Charcoal workers were also paid on piece-rate basis. They got about Rs. 40 per kg of charcoal produced. In general, one worker after 16 days of continuous work produced 15 kg of charcoal. Hence, he earned about Rs. 600 for 16 days i.e., Rs. 37. 50 per day. However, in some operations, he engages his wife and children as well. As a result, the actual wages for a worker was only Rs. 30 to Rs. 33 per day.

In other wage occupations, the workers were engaged according to the prevailing daily wage rates. The wages varied from occupation to occupation, region to region, season to season and also according to the nature of the work. Generally, the wages in agriculture fluctuated from Rs. 20 to Rs. 35. However, in some agricultural operations, such as taking out cotton from broken hard cover of the fruit, wages were only Rs. 10 to Rs. 15 per day. In some other agriculture operations such as watering the cumin crop, the wages were as high as Rs. 40 to Rs 50 per day.

In construction, wages for skilled labour varied from Rs. 80 to Rs. 100, while the wages for unskilled labour varried from Rs. 40 to Rs. 50. For workers migrating to Kutch for salt making wage rate varied from Rs. 40 to Rs. 45 per day. Wage rate for workers migrating to Morbi and Ahmedabad to work as tile workers and brick kiln workers, varied from Rs. 40 to Rs. 43.

Wage rate for workers migrating to Saurashtra fluctuated between Rs. 40 to Rs. 50, and casual daily wage workers in salt industry were getting between Rs. 30 to Rs. 45. The payment in cash for work scheme under the drought relief programme was made on the basis of the work done by the workers. However, most of the workers were getting about Rs. 35 per day. In other wage occupations, the rate of wages fluctuated from Rs. 20 to Rs.35.

There was no visible impact of the drought or the earthquake in terms of the wage rates. However, the impact of both the natural calamities was very serious on the earnings of workers, since there was a sharp decline in the average days of employment. Average earnings of all workers for different months for all the three periods i. e., the normal year (1998), the drought year (2000) and the earthquake year (2001) is given in table7.

* Landless salt pan workers generally get Rs.6-Rs. 8 per 100 kg of salt produced by them depending on the quality of the salt.

The average earning of workers* in a particular month is calculated by:

$$\frac{\text{Sum of (Average days of employment in particular occupations} \times \text{Average wage in particular occupations} \times \text{No. of workers engaged in particular occupations)}}{\text{Total No. of workers in sample households}}$$

Average days of employment and average wage rate for different occupations is given in the table in appendix.

The impact of the earthquake on average total monthly earning of all workers is the same as on total average days of employment of all workers, as both of them are closely interrelated. Chart 5 shows that the impact of the earthquake on average earnings of workers is more severe during February-March followed by the period from September to November. Chart 1 and Chart 4 are also showing impact of the earthquake on percentage of workers engaged and on total average days of employment respectively.

Table 8 provides month wise analysis of monthly average earnings of all workers in sample households. It is clear from this table that the impact of the earthquake was felt in all three phases of the year. And the impact was not neutralized even after implementing the drought relief scheme and timely monsoon during the earthquake year, and it was felt till the end of the earthquake year. However, the employment generated by the drought relief schemes and by the timely rain restoring normal agricultural activities reduced the severity of earthquake to some extent, otherwise the average annual earnings of workers would have dropped further creating a famine like situation. The drought relief schemes in some villages during March and April and in others in April and May contributed significantly to the average earning of workers. Major share of average earning and for majority of workers all the earnings in these months were contributed by these schemes (table in appendix).

The highest average earning was during: Rs. 617.79 in April, 2001 and Rs. 530.09 in May, 2001 (Table 8). During the period of September-December (and August also) the major share of average earnings of workers was contributed by the agriculture where normalcy was restored by the timely rain. However, it is very clear that the average earning of workers during September-November period was below the average earning of workers in the drought period which shows that the impact of the earthquake was not neutralized till the end of the earthquake year. Due to the earthquake the percentage of workers migrating to Saurashtra drastically declined leading to a decline in the average annual earning of workers. We have already discussed that employment days per month and wages per day were higher in Saurashtra than in agriculture of the local region, therefore, restoration of normal activities in agriculture in the local region could not

*In calculating the earning of salt pan workers and the workers migrating to Patadi, it is assumed that the losses of earnings to these workers due to decline in production was equal to the total average wage for those months during which they could not work in the fields due to the earthquake.

compensate the losses incurred due to decline in percentage of workers migrating to Saurashtra.

Table.8. Impact of the earthquake on average monthly earning of workers in the sample households

	Average earning of workers		
Month	Normal Year	Drought Year	Earthquake Year
Jan	568.29	444.19	435.19
Feb	545.99	433.69	30.80
March	560.59	465.59	233.70
April	619.99	661.99	617.79
May	498.19	702.19	530.09
Jun	28.65	68.65	10.95
July	5.03	21.45	0.00
Aug	142.30	52.90	74.90
Sept	516.89	490.19	344.79
Oct	525.89	453.99	369.79
Nov	488.59	451.29	359.09
Dec	267.39	241.79	200.19

Table. 9. Impact of the earthquake on average annual earning of workers

Year	Average annual earning
Normal Year	4767.77
Drought Year	4487.89
Earthquake Year	3207.26

Table 9 provides year-wise analysis of annual average earning of all workers in the sample households. The figures on average annual earnings in the normal year, the drought year and the earthquake year given in the table provide the net impact of the drought and the earthquake on the average earning of workers in the region. The average earning of workers in the sample households declined from Rs. 4767.78 in the normal year to Rs 4487.89 (including earnings contributed by the drought relief schemes) in the drought year. And it further declines to Rs. 3207.26 (including earnings contributed by the drought relief schemes) in the earthquake year there was a decline of Rs. 1280.63 in the average annual earnings of workers in the earthquake year in comparison to the drought year. This was the net impact of the earthquake. Even if we consider that every family received cash dole of Rs. 450.00 under 36% received food kit; (we will discuss it in details a little latter) or every worker received Rs 180.00 (average number of earning members in the sample households being 2.5), even then, the net loss to the average earning of workers due to the earthquake was Rs. 1100.63. Chart 6 clearly shows this steep

decline in the average annual earning in the earthquake year.

As per the calculations made by the Government of Gujarat, at the start of the Eighth Five Year Plan (1991), in order to prevent slipping below the poverty line on an average one household (two adults and three children) needed an income of Rs. 40.00 per day, i.e., an annual income of Rs.14600.00 (Breman,1996)*. The average size of household in our sample was also 4.7 members. However, even in the normal year the average annual income of a household was only Rs.11919.45 (average annual income of a worker being Rs. 4767.78 and average number of the earning members per household being 2.5). During the earthquake year, the annual household income dropped to Rs.8018.15 (average annual income of a worker being Rs. 3207.26 and average number of earning member per household being 2.5).

The average annual earnings of households of salt workers were comparatively higher than that of the other workers, as they had an assured employment for nine months. During the normal year and the drought year, the average annual earning of these households was Rs.15750.00 (average annual earning of a worker being Rs.6300.00 and average number of earning members per household being 2.5). However, the average annual earning of salt workers dropped drastically in the earthquake year. Consequently, these households also slipped below the poverty line. The average annual income of households of landless salt workers in the earthquake year was only Rs.12250.00 (average annual earning of a salt worker being Rs.4900.00 and average number of workers per household being 2.5). One can easily imagine that during the earthquake year, households of most vulnerable sections of workers, viz., landless agriculture workers, salt workers, charcoal workers and other catagories of landless workers were continuously in a starvation like situation throughout the earthquake year.

(iv). Economic losses due to the earthquake and helps received

Landless agriculture workers generally do not possess any property other than house. Therefore, in our sample, all the respondents reported no other loss of property due to the earthquake but their houses. 35.7% of the respondents reported 100 percent damage to their houses, while 18.9% reported 50% damage, 42% reported 75% damage, 30% reported cracks in walls of houses and 5.2% reported 25-33% damage to their houses. 0.03% households had no houses of their own and they were living on rent. 23% of those reporting 100% damage to their houses received no help for reconstruction. 27% of those reporting 50% damage and 24% of those reporting cracks in walls also received no help for repair or reconstruction of their houses. 26% of those reporting 100% damage and 75% of those reporting 75% damage and 55% of those reporting 50% damage to their houses received only less than Rs. 10,000 which was insufficient to repair/ reconstruct the houses.

According to villagers, this problem was due to irregularities on the part of the government officials responsible for surveying the quake-affected houses and listing them down in particular

*Breman, J.(1996), Footloose Labour workig in India's Informal Economy, Cambridge University Press,USA

category. Workers told that many influential farmers in their villages managed to get listed their houses in the category of 100% damage, in reality their houses were either only partly damaged or undamaged. In some villages of the taluka like Odu, the villagers staged dharna (sit-in protest) in front of the taluka headquarters and demanded a re-survey of the quake-affected houses. On the demand and pressure built up by the people, the government had to re-conduct surveys in many villages of the taluka.

Other problems:
In four out of seven villages in our sample, the water supply failed due to the earthquake. According to the workers, the problem continued for two months and during this period they had to fetch the water from wells, about 100m to 250m away from the house.

Other helps:
Most of the sample households, except for a few, received at least one of the following materials/ money distributed by NGOs and government agencies: (1) blanket (2) tent (3) food kit (4) cash dole (cash dole of Rs.450 was provided by the government for subsistence of family for 10-15 days). The NGOs distributed blankets, food kits and tents.

It was reported that there was no proper system for distribution of materials to needy persons. One of the NGOs' activists reported that when he was distributing blankets in Kharagoda, a person literally threatened him at the knife-point and looted a few blankets. This was not an isolated case, but such incidence happened at many places as well. On account of such loot as well, according to the same activist, some needy persons in many villages could not get relief materials. In our sample, 56% households reported that they received cash dole of Rs. 450, 42% received blankets/ tents and 36% received food kit. It is clear that many households received more than one item i.e., cash dole plus food kit or cash dole plus blanket etc. But it is also clear that there were irregularities in distributing the relief materials/ cash dole, as more than 40% quake-affected households could not get cash dole.

Loans and advances
In our sample, only 3.2% households reported that they had taken loans either from the relatives/ friends or from the landlords in the village. 50 per cent of them had taken loan of less than Rs. 5000 and the rest of more than Rs.5000. The households reporting loan amount less than 5000 told that this was for the purpose of day-to-day subsistence. The others told that the purpose of loan was marriage and medical treatments, etc. These loans were reported for the period between 2000-2001. The households reporting loans for subsistence had taken these loans in March-April 2001.

Around 50 per cent households in our sample reported that they had taken advance from the employers. About 70 per cent of those taking advances reported that they had taken advances in January 2002 from landlords and the rest had taken advance from salt contractors for the same

season.

The landless agriculture workers who had taken advances from landlords were engaged for cultivation of the cumin crop on the condition that they will provide all the labour inputs needed for the crop production and they will get one-tenth share of the crop after harvest. This labour practice is a very recent phenomenon in the area of study. In our sample few workers migrating to Patadi reported such labour practice in cumin crop in Patadi even in 1998, but now it is a dominant practice for the cumin crop in the whole region.

As far as salt workers are concerned, they generally got 50% of the payment in advance which is determined on the basis of a rough estimate of the production of salt per pan in a particular year. Final payment is made on the basis of the actual output of the worker after deducting the advance amount. Besides these loans and advances, the workers also told that whenever there were no earnings they purchased subsistence goods from the village shop on loan. In our discussions with workers, it was revealed that in the post earthquake period, it was nearly impossible to get small interest free loans for subsistence from relatives or friends since every worker was in crisis and farmers also generally did not prefer to give subsistence loans to workers. Few farmers provided loans but with high interest rates. According to workers, this situation had very serious impact on their diet. On many occasions they had to survive only on *roti* and salt.

Summary of Findings

1. The earthquake hit the region under the study when it was already going through a drought situation. The employment situation was already grim due to the drought and this problem was further aggravated by the earthquake.
2. There was not a perceptible impact of the drought on employment in agriculture during January-March. But the earthquake had serious impacts on employment of workers during February-March period. The landless agriculture workers were living with all their possessions in temporary shelters outside their houses and out of fear they were hesitant to leave their shelters and go out in search of employment.
3. Salt making in little Rann of Kutch was stopped for two months, viz, February and March. As a result of this stoppage, all the salt pan workers were unemployed for these two months. They suffered losses of earnings due to production losses
4. Construction activity was also stopped in the region after the earthquake. The workers reported their engagement in construction activity only after July.
5. The workers migrating to different destinations also return home after the earthquake and none, except only a few, could re-migrate in that season. In the following season too, i.e., in September, 2001, the workers migrating to Kutch, Ahemdabad and Morbi to work as salt workers, brick kiln workers and tile workers respectively, could not migrate, as their houses were still not reconstructed. They had either received no money or only first installment of money to repair/ reconstruct their houses. The number of workers migrating to Saurashtra to work as agriculture labour also declined drastically in the post earthquake period due to the above reasons. Average days of employment and wages in migrating destinations were much higher than in native places. Therefore, it contributed losses to the annual earnings of workers.
6. The impact of the earthquake on women employment was more alarming, women employment declined from 95.7% in February 2000 to 5.1% in February 2001, and from 89% in March 2000 to 39.2% in March 2001, while the male employment declined from 95.5% in February 2000 to 16.1% in February 2001 and from 89.1% in March 2000 to 73.5% in March 2001.
7. No 'cash for work' scheme was formulated or implemented under the earthquake relief programme. The earthquake was not even considered as a factor in determining the days of employment (cash for work) to be generated under the drought relief programme. The employment generated by the drought relief programme was insufficient to compensate the losses of employment due to the drought.
8. Timely monsoon in 2001 to some extent compensated the losses of employment opportunities by restoring normalcy in agriculture activities. However, the employment opportunities generated by the timely rain and by the drought relief programme both taken together, could not neutralise the impact of the earthquake. The impact of the earthquake on the livelihood system of workers was felt for a prolonged period and a normal situation could not be restored even till the end of the year, 2001.
9. The average annual earning of the workers in the sample households was Rs.4767.78 in the

normal year and it declined to Rs. 4487.89 (including earnings from the drought relief programme) in the drought year. There was further decline of Rs.1280.63 and the total average annual earning of the workers in the earthquake year and it reached to Rs.3207.26 (including earnings from the drought relief programme). Even if we assume that every family received cash dole amounting Rs.450.00 (56% households received cash dole and 36% received food kit under the earthquake relief programme), or every worker received Rs.180.00 (average number of earning members per family in our sample was 2.5), even then, loss to the average annual earning of workers due to the earthquake was Rs.1100.63. This was the net impact of the earthquake.

10. In the absence of any earning the workers purchased subsistence goods from the village shop on loan. In the earthquake year, it was nearly impossible to get small interest free loans for subsistence from relatives or friends as they all were facing the same hardship. Farmers also generally did not prefer to give subsistence loans to workers. Only a few farmers provided loans but with high interest rates. This situation had very serious impact on their diet. According to workers, on many occasions they had to survive only on *roti* and salt.
11. There were irregularities on the part of the government officials responsible for surveying the quake-affected houses and listing them down in particular categories. Consequently, 23% of the households reporting 100% damage to their houses received no help for reconstruction. 27% of those reporting 50% damage and 24% of those reporting cracks in walls also received no help for repair or reconstruction of their houses.

Conclusion and Policy implications

The earthquake had very serious impact on the livelihood system of the landless rural workers. The impact was not short-term, as it was perceived in government policies, but was long term as it was felt even till December 2001.

The diet of the workers was badly affected. This will certainly have long-term impact on the health of workers and their family members, and subsequently on the chances of their livelihood.

The impact of the earthquake was all the more severe on the life and earnings of women workers, as the loss of employment opportunities for them was far greater than their male counterparts.

Following suggestions emerge from our study for relief and rehabilitation policies addressing such natural calamities:

1. Cash for work scheme should be implemented for landless workers for a longer period to help in restoration of their livelihood system and not merely for few days' survival.
2. Surveys to assess and estimate the material losses should be conducted by adopting a participatory approach. The final results of the surveys should be discussed in the meetings of the workers so that the possibilities of irregularities are minimised.

CEC in Brief

Centre for Education and Communication is a Society registered in 1983 (Registration Number S/13682/83) under the Societies Registration Act,1860.

Centre for Education and Communication is a resource centre for labour, in particular of those in the unorganised and informal sectors. It functions as a centre for workers' education and participatory labour research.

CEC creatively responded to the challenges posed by the autonomous workers' movements that emerged in 1980s. Now, it is aware of the economy's integration into the global market and the consequent changes in the structure and nature of employment.

CEC perceives its role as to

1. critically understand the changes in the employment structure,
2. positively contribute, through its various activities, to the enhancement of dignity of labour, and towards this end,
3. evolve appropriate strategies, at national and international levels, in collaboration with all trade unions and labour organisations, labour support organisations and peoples' movements.

CEC places itself in the interface of social action and academic research, aligning on the one hand with the activist groups and the struggles of formal and informal sector workers, tribals, women, victims of development, environmental groups etc., and on the other hand with the section of academic community who prefers to constantly interact with people's organisations and movements. It is a two way process; learning from the people and contributing to the enlargement of their horizon.