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# DROUGHT IN INDIA:

## Challenges & Initiatives



POOREST AREAS CIVIL SOCIETY (PACS) PROGRAMME 2001-2008

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# Introduction

During the first year of the Poorest Areas Civil Society (PACS) Programme, a large civil society effort against poverty in 108 of India's poorest districts, it became clear that drought was going to be a primary issue to address.

A drought-like situation existed in almost all the districts where the programme was operating. Drought was directly affecting lives and livelihoods in these districts. It was evident that the primary objective of the PACS Programme, which is to assist India's poorest to realise their rights and entitlements, would not be achieved unless drought -- and other key issues such as land rights and gender relations -- were addressed.

Drought is a perennial and recurring feature in many parts of India. According to Government of India reports, about 68% of the country is prone to drought in varying degrees. Drought leads to large-scale migration in search of alternative livelihoods, loss of human life due to stress, suicide, starvation or unhygienic conditions, and increased social conflict.

Even in Maharashtra, one of India's most prosperous states, recurring drought has crippled the state's economy, caused a fall in agricultural and non-agricultural wages, severely affected the livelihoods of millions, led to crop damage and death or incapacitation of livestock.

Recognising the severity of the situation, the PACS Programme's Management Consultants and its CSO partners decided to take concerted steps. The PACS Programme proposes to:

- Bring different stakeholders (including those that are not part of the programme) together by providing a platform to assess the impact of recurrent drought and seek solutions to address it
- Explore the possibility of building a consortium of bilateral aid agencies and donors, CSOs, media and academic institutions, along with select government departments, to work towards finding permanent solutions to mitigate drought and build sustainable livelihood mechanisms
- Identify issues for advocacy through regional, state and national-level deliberations and formulate a strategy for policy advocacy.

This booklet is part of the PACS Programme effort. It provides key information on the history and nature of drought in India, current drought management strategies and their inadequacies, and workable drought-proofing solutions.

The booklet also highlights the nature and severity of drought in Jharkhand, which has not received adequate media and government attention, and details PACS Programme initiatives for combating drought in Maharashtra.

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# Understanding Drought in India

*By Naren Karunakaran*

**W**hat is drought? Drought may be defined as an extended period – a season, a year or more – of deficient rainfall relative to the statistical multi-year average for a region.<sup>1</sup> It is a normal and recurrent feature of climate and may occur anywhere in the world, in all climatic zones. Its features or characteristics, of course, vary from region to region.

Simply put, drought is a period of drier-than-normal conditions that lead to water-related problems. When rainfall is below normal for weeks, months or even years, it brings about a decline in the flow of rivers and streams and a drop in water levels in reservoirs and wells. If dry weather persists and water supply-related problems increase, the dry period can be called a 'drought'.

The first evidence of drought is usually seen in rainfall records. To determine the start of a drought, definitions specify the degree of departure from the average precipitation or some other climatic variable over a period of time. This is done by comparing the current situation to the historical average, often based on a 30-year period of record.<sup>2</sup>

Drought cannot be confined to a single all-encompassing definition. It depends on differences in regions, needs and disciplinary perspectives. When rainfall in Libya, for instance, is less than 180 mm it can be described as a drought situation. However in Bali, a mere six days without rain can become a drought.

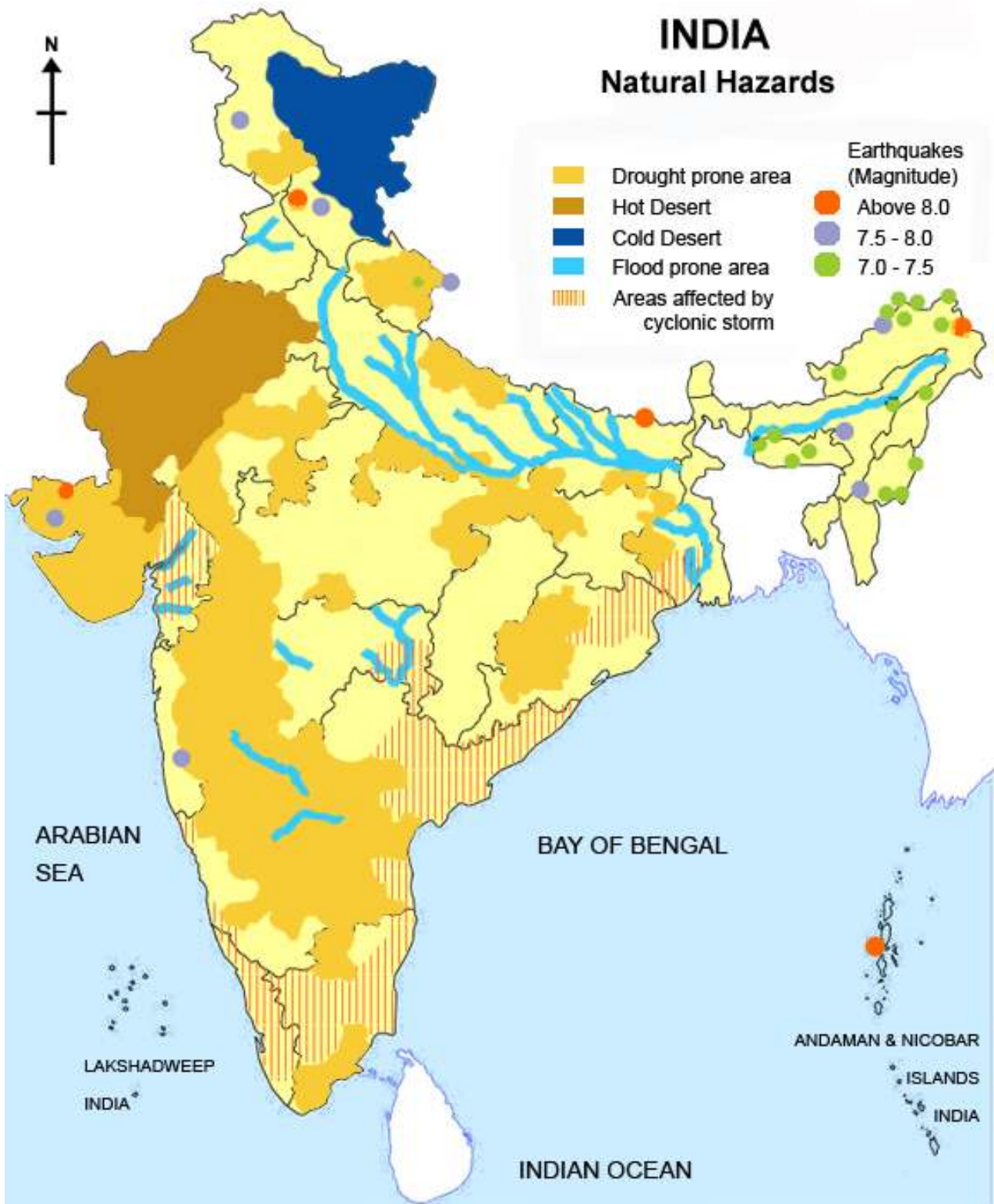
## Chronic drought in India: History and chronology

The major drought years in India were 1877, 1899, 1918, 1972, 1987 and 2002. Large parts of the country perennially reel under recurring drought. Over 68% of India is vulnerable to drought. The 'chronically drought-prone areas' – around 33% – receive less than 750 mm of rainfall, while 35%, classified as 'drought-prone' receive rainfall of 750-1,125 mm. The drought-prone areas of the country are confined to peninsular and western India – primarily arid, semi-arid and sub-humid regions.

An analysis of 100 years of rainfall data reveals that the frequency of 'below-normal rainfall' in arid, semi-arid and sub-humid regions is 54-57%, while severe and rare droughts occurred once every eight to nine years in arid and semi-arid zones.<sup>3</sup> In these zones, rare droughts of severe intensity occurred once in 32 years, with almost every third year being a drought year.

The 1987 drought was one of the worst droughts of the century, with an overall rainfall deficiency of 19%. It affected 59-60% of the crop area and a population of 285 million.

**Rare droughts of severe intensity occurred once in 32 years, with almost every third year being a drought year. The 1987 drought was one of the worst droughts of the century.**



**Administrative districts chronically affected by drought conditions**

States	Districts
Andhra Pradesh	Anantpur, Chittoor, Cuddapah, Hyderabad, Karnool, Mehboobnagar, Nalgonda, Prakasam
Bihar	Munger, Nawadah, Rohtas, Bhojpur, Aurangabad, Gaya
Gujarat	Ahmedabad, Amrely, Banaskantha, Bhavnagar, Bharuch, Jamnagar, Kheda, Kutch, Mehsana, Panchmahal, Rajkot, Surendranagar
Haryana	Bhiwani, Gurgaon, Mahendranagar, Rohtak
Jammu and Kashmir	Doda, Udhampur
Karnataka	Bangalore, Belgaum, Bellary, Bijapur, Chitradurga, Chickmagalur, Dharwad, Gulbarga, Hassan, Kolar, Mandya, Mysore, Raichur, Tumkur
Madhya Pradesh	Betul, Datia, Dewas, Dhar, Jhabhua, Khandak, Shahdol, Shahjapur, Sidhi, Ujjain
Maharashtra	Ahmednagar, Aurangabad, Beed, Nanded, Nashik, Osmanabad, Pune, Parbhani, Sangli, Satara, Solapur
Orissa	Phulbani, Kalahandi, Bolangir, Kendrapada
Rajasthan	Ajmer, Banaswada, Barmer, Churu, Dungarpur, Jaisalmer, Jalore, Jhunjunu, Jodhpur, Nagaur, Pali, Udaipur
Tamil Nadu	Coimbatore, Dharmapuri, Madurai, Ramanathapuram, Salem, Tiruchirapali, Tirunelveli, Kanyakumari
Uttar Pradesh	Allahabad, Banda, Hamirpur, Janan, Mirzapur, Varanasi
West Bengal	Bankura, Midnapore, Purulia
Jharkhand	Palamau
Chhattisgarh	Khargaon

Source "Drought:Assessment, Monitoring,Management and Resources Conservation." R. Nagarajan, Capital Publishing Co, Delhi.

The earliest reference to drought and famine in India can be found in the *Rig Veda*, the *Mahabharata*, the *Jataka* tales of the Buddhists and Chanakya's *Arthashastra*. Marwar (Jodhpur state) faced drought and famine from 1309 to 1313 AD during the reign of Rao Rajpal. Later, in 1570 AD, Emperor Akbar dug the Kukar Talao in Nagaur. Most parts of the country were ravaged by famine in 1783, remembered as *chalisa*. The famine of 1812-13 is referred to as *panchkal*. The 1848 famine led to mass migration from Ajmer in Rajasthan. The state was struck again in 1868-69, 1877-78, 1891-92 and 1899-1900.

The most recent, the drought of 2002, ranks fifth in terms of magnitude but is unique when examined in overall terms of magnitude, spacing, dispersion and duration. In July 2002, rainfall deficiency dropped to 51%, surpassing all previous droughts. The impact of the drought spread over 56% of the land mass and threatened the livelihoods of 300 million people across 18 states. The 2002 monsoon was one of the shortest in recorded history.

**The drought of 2002 ranks fifth in terms of magnitude.**

## Understanding Drought in India

The total loss in rural employment due to shrinkage of agricultural operations during the drought months was estimated at 1,250 million man-days. The GDP in agriculture shrank by 3.1%. The estimated loss of agricultural income was around Rs 39,000 crore.<sup>4</sup>

### *A chronology of drought and famine in India*

Period	Number of famines and droughts	Region
5th century BC	1	Kashmir, Ayodhya (eastern UP), Rajasthan, Gujarat, Maharashtra and Punjab
1st century BC	1	Kashmir
9th century AD	1	Kashmir
10th century AD	2	Kashmir, Punjab, large parts of northern India
11th century AD	2	Delhi, Bihar, Bengal, Orissa, Rajasthan and Kashmir
13th century AD	4	Orissa, Bihar, Assam, Bengal, Rajasthan, Maharashtra and Gujarat
14th century AD	5	Delhi, Rajasthan, Maharashtra, Mysore, Karnataka, Gujarat
15th century AD	5	Rajasthan, Maharashtra, Orissa, Assam and most parts of India, especially the areas along the rivers Ganga and Yamuna
16th century AD	6	Most of the then Bombay presidency and Punjab, Maharashtra, Delhi, Rajasthan, Kutch and central India
17th century AD	6	Gujarat, Maharashtra, Rajasthan and Bengal
18th century AD	24	Bombay presidency, Gujarat, Maharashtra and Madras
19th century AD	38	Rajasthan, Gujarat, Orissa, Maharashtra, Andhra Pradesh, Kashmir, Himachal Pradesh and Bihar
20th century AD	60	Rajasthan, Gujarat, Orissa, Andhra Pradesh, Kashmir, Himachal Pradesh, Bihar, Maharashtra, Jammu and Kashmir

Source 'Drought of Relief', *Down to Earth*, May 2001

The impact of drought can be widespread. It has a far-reaching effect on society, the economy and the environment. The impact of drought on society depends not only on climatic variability and quantity of precipitation but also the demands that people place on food and water supply and their ability to live in harmony with nature (harnessing, conserving the bounties of nature for lean periods, etc).

## Drought classification

There are a number of classifications for drought. A *permanent* drought is characterised by extremely dry climate, drought vegetation and agriculture that is possible only by irrigation; *seasonal* drought requires crop durations to be synchronised with the rainy season; *contingent* drought is of irregular occurrence; and *invisible* drought occurs even when there is frequent rainfall, in humid regions (Thornthwaite-1947).

Physical aspects are also used to classify drought. They may be clubbed into three or four major groups:

**Meteorological drought** is related to deficiencies in rainfall compared to the average mean annual rainfall in an area. There is, however, no consensus on the threshold of deficit that makes a dry spell an official drought. According to the India Meteorological Department (IMD), meteorological drought occurs when the seasonal rainfall received over an area is less than 75% of its long-term average value. If the rainfall deficit is between 26-50%, the drought is classified as 'moderate', and 'severe' if the deficit exceeds 50%.

**Agricultural drought** occurs when there is insufficient soil moisture to meet the needs of a particular crop at a particular point in time. Deficit rainfall over cropped areas during their growth cycle can destroy crops or lead to poor crop yields. Agricultural drought is typically witnessed after a meteorological drought, but before a hydrological drought.

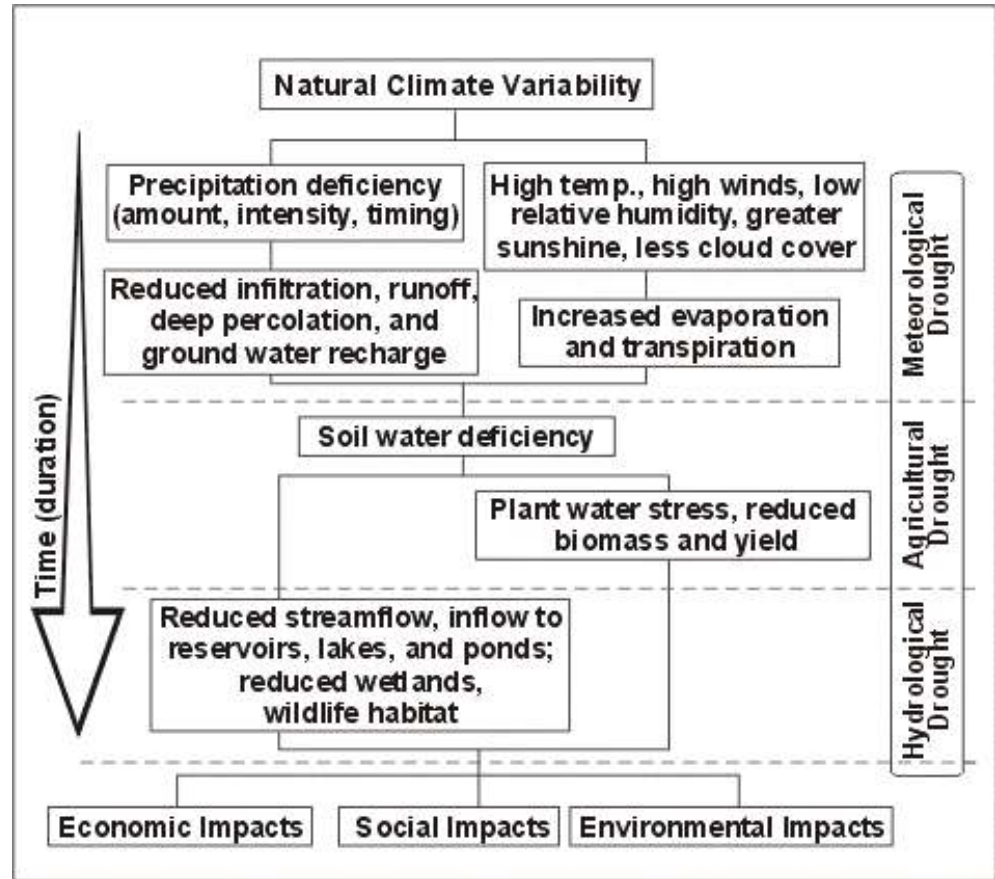
**Hydrological drought** is a deficiency in surface and sub-surface water supply. It is measured as stream flows and also as lake, reservoir and groundwater levels.

A sequence of impacts may be witnessed during the progression of a drought from meteorological, agricultural to hydrological. When drought begins, the agricultural sector is usually the first to be affected because of its heavy dependence on stored soil water. Soil water can deplete rapidly during extended dry periods.

If precipitation deficiencies persist, then people dependent on other sources of water begin to feel the effects of the shortage. Those who rely on groundwater, for instance, are usually the last to be affected.

When the situation returns to normal, and meteorological drought conditions have abated, the 'recovery cycle' follows the same sequence. Soil water reserves are replenished first, followed by stream flows, reservoirs/lakes and groundwater.

There is no consensus on the threshold of deficit that makes a dry spell an official drought.



Source: NDMC, USA

**The principal cause of drought may be attributed to the erratic behaviour of the monsoon.**

Droughts are also classified according to the timing of rainfall deficiency during a particular rainfall season, usually June to September in the Indian context. An analysis of droughts in recent decades indicates that in 1965 and 1979, rainfall deficiency in September was the major cause of drought. These droughts are called 'late season droughts'.

In 1972, 1987 and 2002, rainfall deficiency during the month of July was the maximum. These are called 'early season droughts' and provide sufficient lead-time to mitigate the impact of drought.

**Causes of drought**

The principal cause of drought may be attributed to the erratic behaviour of the monsoon. The southwest monsoon, or 'summer monsoon' as it is called, has a stranglehold on agriculture, the Indian economy and, consequently, the livelihoods of a vast majority of the rural populace. The southwest monsoon denotes the rainfall received between the months of June and September and accounts for around 74% of the country's rainfall.

The coastal areas of peninsular India also receive rain from October to December due to periodic cyclonic disturbances in the Bay of Bengal (the north-east monsoon, or post-monsoon system).

**Broad distribution (seasonal) of rainfall in India**

Season	Months	Percentage of distribution
Pre-monsoon	March-May	10.4
South-west monsoon	June-September	73.4
Post-monsoon	October-December	13.3
Winter rains	January-February	2.9

Source: IMD, GoI

An overwhelming majority of cropped area in India – around 68% – falls within the medium and low rainfall ranges. Large areas are therefore affected if the southwest monsoon plays truant.

**Cropped area falling under various ranges of rainfall  
(percentage distribution)**

Rainfall ranges	Classification	%
Less than 750 mm	Low rainfall	33
750 mm to less than 1,125 Mm	Medium rainfall	35
1,125 mm to 2,000 mm	High rainfall	24
Above 2,000 mm	Very high rainfall	8

Source: Ministry of Agriculture

Most parts of peninsular, central and northwest India – regions most prone to periodic drought – receive less than 1,000 mm of rainfall. The drought of 1965-67 and 1979-80 affected relatively high-rainfall regions, while the drought of 1972, 1987 and 2002 affected low-rainfall regions, mostly semi-arid and sub-humid regions.

**Percentage departure of rainfall from normal long-term average during major drought years**

Region	1918	1965	1972	1979	1987	2002
All India	-26	-18	-25	-19	-19	-19
Northwest	-36	-28	-36	-18	-46	-48
Central	NA	NA	NA	-31	-28	-31
East	-20	-30	-22	-23	14	+2
Peninsular	-32	-22	-31	-14	-27	-27

Source: IMD

While erratic monsoons and drought are intertwined, a host of other reasons, mostly manmade, aggravate drought or create drought-like situations in the country. India, after all, is well-endowed in terms of rainfall, with Cherrapunji receiving an annual

**While erratic monsoons and drought are intertwined, a host of other reasons, mostly manmade, aggravate drought.**

## Understanding Drought in India

rainfall of around 11,000 mm. Even Saurashtra and the Kutch region record rainfall of around 578 mm. India's average rainfall is around 1,170 mm – yet the country suffers recurrent drought.

Over the past decades, individuals, communities and the government have all pursued lopsided water management policies, leading to the water scarcity situation we face today. Reckless over-exploitation of surface and groundwater, for instance, has been one area of deep concern.

India has seen a sharp decline in groundwater levels, leading to a fall in supply, saline water encroachment and the drying of springs and shallow aquifers. Around 50% of the total irrigated area in the country is now dependent on groundwater, and 60% of irrigated food production depends on irrigation from groundwater wells.<sup>5</sup>

In some regions – north Gujarat, southern Rajasthan, Saurashtra, Coimbatore and Madurai districts in Tamil Nadu, the Kolar district in Karnataka, the whole of Rayalseema in Andhra Pradesh and parts of Punjab and Haryana – the decline in water levels due to overexploitation has been to the extent of 1-2 metres/year.

Studies have revealed that declining water levels could lead to a 25% drop in harvests in the near future (Seckler, 1998).

Currently, over 10% of blocks classified by the Central Ground Water Board have been identified as 'overexploited'; blocks where the exploitation is beyond the critical level have been growing at a rate of 5.5% every year (World Bank, 1999). It is estimated that 36% of blocks in the country will be on the critical list by the year 2017 (Moench, 2000).

Punjab alone – the hub of the Green Revolution – with over a million tubewells has been sucking up groundwater resources relentlessly. Over 61% of the hydro-geological blocks in Punjab are categorised as 'dark' (overexploited); 10% fall in the 'grey' zone where recharge is just about equivalent to groundwater extraction.<sup>6</sup>

As the crisis looms large, Punjab has been endeavouring to move away from 'thirsty' crops like paddy to cash crops that do not necessitate the plunder of water resources. In Maharashtra, western parts of the state continue growing water-guzzling sugarcane even as large parts of the area fall within the drought-prone zone.

The rapid depletion of forest cover is also seen as one of the reasons for water stress and drought. India has a forest cover of 76 million hectares, or 23% of its total geographical area – much lower than the prescribed global norm of 33%. Although the scientific evidence is inadequate, forest-water linkages are widely acknowledged, especially the watershed functions of forests, greater availability of water, less soil erosion, more rainfall, flood and landslide control, etc.

Combined with these and a host of other factors – poor irrigation systems, pressure from the increasing industrial use of water (the confrontation between Coca-Cola and the people of Kerala, for instance) – is the appalling indifference displayed towards rainwater harvesting.

**The rapid depletion of forest cover is also one of the reasons for water stress and drought.**

Little has been done over the years to drought-proof the country, when community-based rainwater harvesting measures could easily accomplish this feat. Even Cherrapunji, which has the highest annual rainfall in the country and is one of the wettest places on earth, faces water shortages for nine months in a year primarily because all this water is not harvested!

India receives most of its rainfall in just about 100 of 8,760 hours in a year. It is imperative that this water is captured and stored for use during the rest of the year.

Around 100 mm of rainfall a year, on one hectare of land, even in Barmer (one of the driest regions in India) can yield up to 1 million litres of water – enough to meet the drinking and cooking water needs of 182 people at a liberal 15 litres per day.<sup>7</sup> Of course it's difficult to capture all the rainwater, but even if a plausible 50% were harvested it would mean half-a-million litres a year!

According to estimates, the land required to meet the drinking water needs of an average Indian village varies from 0.10 hectares in Arunachal Pradesh (average population: 236), where villages are small and rainfall high, to 8.46 hectares in the Delhi region where villages are big (average population: 4,769) and rainfall low.

In Rajasthan, the land required varies from a mere 1.68 to 3.64 hectares in different meteorological regions; in Gujarat it varies from 1.72 to 3.30 hectares. Every village in India can, therefore, meet its own drinking water needs if simple water harvesting measures are taken up. Anything more that's harvested can be used for irrigation and other purposes.

Yet little has been done in this regard, barring a few exceptions of community-led initiatives, exposing the country and its hinterland to drought.

### Impact of drought

Drought has a direct and indirect impact on the economic, social and environmental fabric of the country. Depending on its reach and scale it could bring about social unrest. The Employment Guarantee Scheme (EGS) that the Maharashtra government put in place was a direct outcome of the 1971-72 drought.

The immediate visible impact of monsoon failure leading to drought is felt by the agricultural sector. The impact passes on to other sectors, including industry, through one or more of the following routes:

- A shortage of raw material supplies to agro-based industries.
- Reduced rural demand for industrial/consumer products due to reduced agricultural incomes.
- Potential shift in public sector resource allocation from investment expenditure to financing of drought relief measures.

**Little has been done over the years to drought-proof the country, when community-based rainwater harvesting measures could easily accomplish this feat.**

## Understanding Drought in India

Most major droughts in India have been followed by recession. Annual Gross Domestic Product (GDP) growth was negative in 1957-58, 1965-66, 1972-73 and 1979-80.<sup>8</sup> The 1990s, however, reveal a different picture, unlike in the '50s when a decline in agriculture had a significant bearing on both industrial and overall GDP.

The vagaries of nature do not affect the Indian economy as much as they once did. Drought-related shocks and their adverse effect on the economy were limited to a mere 1% of GDP in 2002-03. This can be explained by the fact that the share of agriculture in national income has gradually declined over the decades – from 57% in 1961 and 35% in 1987-88, to 22% in 2002. Even within the manufacturing sector, the share of agro-based industries has come down from 44% in 1961 to 11.4% in 2002.<sup>9</sup>

Another reason why the economy was insulated against the impact of drought was the fact that the country has apparently developed the ability to finance drought relief operations without diverting resources from public investment expenditure in productive sectors. Relief operations have also been largely able to retain the purchasing capacity of the rural population.

However, the poor and marginalised in the rural hinterland, bereft of productive land and starved of food and water, still reel under the effects of drought in an imperfect and corrupt relief system. Below is a quick run-through of the impact of drought, from the obvious (availability of potable water, decline in agricultural production, reduced availability of fodder) to the less obvious (its effects on power generation).

Much of the data concerns the recent drought of 2002, as the Drought Management Division in the Ministry of Agriculture has documented this drought like no other in the past.

### Impact on water resources

#### *Surface water resources*

The Central Water Commission (CWC) has been entrusted the task of monitoring the levels of the 71 major reservoirs in the country since 1983. During the month of July 2002, when the monsoons failed, the total storage build-up was just about 2% of the full reservoir level (FRL). It was 13% of FRL in the 1987 drought for the same month.

#### *Weekly water levels/storage during July as % of FRL capacity*

Year	July 4	July 11	July 18	July 25	August 4
1987	15	20	26	28	28
2002	17	17	17	19	19
Average of last 10 years	22	26	32	38	48

Source: CWC

**Most major droughts in India have been followed by recession.**

**Groundwater sources**

The Central Ground Water Board (CGWB), with over 15,000 hydrograph stations across the country, is responsible for monitoring the country's groundwater. The monitoring, usually done four times a year, is basically a recording of the response of the groundwater regime to natural and artificial conditions, or recharge and discharge.

The sustainability of the groundwater regime during 2002 had become a major cause for concern. Analysis of May 2002 with the May decadal mean data showed that in nine of the 10 drought-affected states, over 50% of wells experienced a drop in groundwater levels. The drought had considerably depleted storage.

Subsequently, in the month of November, an analysis for the same month over the decade showed that water in more than 55% of wells dropped in all 10 states. In Rajasthan and Gujarat, 22% and 22% of wells, respectively, showed a decline of over 4 m. A poor monsoon had failed to replenish the aquifers, as happens seasonally.

**Impact on crop production**

No other drought in the past led to such a drop in food production as the 2002 drought. Foodgrain production dipped by 29 million tonnes to 183 million tonnes (212 million tonnes in 2001).

Over 18 million hectares of cropped area were left unsown during the kharif season. The percentage fall of kharif crop acreage, as compared to the normal, was the highest in Kerala (-59.3%), followed by Rajasthan (-40.9%), Tamil Nadu (-27.3%) and Uttar Pradesh (-19.4%).

During the rabi season, Rajasthan led the pack (-52.1%), as only 31.95 lakh hectares were sown against the normal of 66.69 lakh hectares. The other two states affected during the rabi season were Gujarat (-27.9%) and Tamil Nadu (-24.6%).

**In nine of the 10 drought-affected states, over 50% of wells experienced a drop in groundwater levels.**

**Seasonal impact: Kharif output in drought years**

Deficient rainfall years	Monsoon rainfall (% departure from normal)	Rainfall in July (% drop)	Kharif foodgrain production (% decline)
1972-73	-24	-31	-6.9
1974-75	-12	-4	-12.9
1979-80	-19	-16	-19
1982-83	-14	-23	-11.9
1986-87	-13	-14	-5.9
1987-88	-19	-29	-7.0
2002-03	-19	-49	-19.1

Source: DAC, Ministry of Agriculture

## Understanding Drought in India

Production of rice fell drastically to 75.72 million tonnes (2002-03) as against 93.08 million tonnes during the previous year. Pulses fell to a level of 11.31 million tonnes. As for commercial crops, production of oilseeds declined by 13.7% during the 2002-03 rabi season. Cotton and sugarcane also recorded negative growths of 7.7% and 7.2% respectively.

Kharif production during 2002 was the lowest ever recorded, as July, normally the wettest month and crucial for a good kharif crop, received the lowest rainfall.

Rabi crops are usually supported by irrigation. However, during 2002-03, the fall in rabi output was over 8%, or 8 million tonnes. This makes it the largest rabi drought in any drought year. The drought of 2002 highlighted the vulnerability of irrigated areas to drought.

### Impact on cattle and fodder

Small and marginal farmers are the hardest hit on this front. Water and fodder shortages during a drought situation cause considerable stress to this section of farmers, as they own a bulk of the bovine population. Over 150 million of the 296.49 million-strong bovine population, across 18 states, were affected by 2002's drought.<sup>10</sup>

In Rajasthan alone, over 226 lakh bovines were affected, followed by Madhya Pradesh (192 lakh), Maharashtra (189 lakh) and Orissa (117 lakh). Consequently, during this period, milk production took a dive in states like Rajasthan (a decline of 22%), Madhya Pradesh (8%) and Tamil Nadu (7%) as the animals were unable to reach peak capacity due to inadequate nutritional support. Gujarat, Karnataka, Orissa and Chhattisgarh, however, showed an increase in milk production despite the drought, thanks to better animal management and feeding practices.

During the drought period, prices of fodder went up around 75% above normal. The worst months were November 2002, February 2003 and May-June 2003, despite the large-scale transportation of fodder to affected areas.

### Impact on the power situation

Hydroelectric power stations contribute 25% of the total power generated in the country (2001), a fall from 41% in 1961. Today, thermal power constitutes the bulk of the power generated – 72%. Nuclear energy contributes a mere 3%. Any stress on the water situation, as in a drought, can have serious consequences, especially in states already battling a power deficiency.

Chhattisgarh was debilitated during the dry spell of 2002, as power generation in August and September fell 70-80%. The total power generated during the four-month period – June, July, August, September – was just about 113.22 MKwh as against the previous year's 206.18 MKwh. The situation was grim in Orissa, Rajasthan and Tamil Nadu.

**Small and marginal farmers are the hardest hit by water and fodder shortage.**

In Rajasthan, the Chambal complex (Gandhi Sagar, Rana Pratap Sagar) and the Mahi dam did not receive water inflows, with the result that the total energy availability from these hydel stations dropped to 55 MU from a normal of 1,336 MU. The state had to spend over Rs 200 crore for expensive power from thermal and nuclear power plants. Likewise, Orissa had to spend Rs 554 crore. For Tamil Nadu, the failure of the southwest and northeast monsoon translated to a loss of Rs 690 crore.

The impact of the drought of 2002-03 on hydroelectric power generation led to a decline of 13.9%. The percentage reduction in power generation is the maximum when compared with the drought years of the recent past.

**Impact of drought on hydroelectric power generation (billion KWh)**

Drought year	Expected level	Actual	Loss	% Loss
1979-80	47.1	45.5	1.6	3.4
1982-83	49.6	48.4	1.2	2.4
1987-88	53.9	47.5	6.4	11.9
2002-03	73.9	63.7	10.3	13.9

Source: Ministry of Power/Ministry of Agriculture

**Broader economic impact**

Apart from the direct, tangible impact, droughts have a bearing on a host of areas that impinge on the dynamics of rural and urban economies. While losses in crop production are evident (the value of crop production losses during the 1987-88 drought was Rs 24,349 crore), drought impacts the lives of millions who see their livelihood platforms wither away.

Loss of rural employment, emerging out of a drought situation, is a major issue that engages the central and state. India's rulers and aristocracy, even during medieval times, realised the importance of income-generation when disaster struck. Many of the canals and anicuts we see today were built during those times as relief efforts. Monuments and buildings were erected during times of drought to provide employment to distressed populations.

While it is difficult to put a finger on the precise degree of unemployment caused by drought, a rough estimate can be drawn up from the reduction of coverage in area under various crops. In the recent drought, a total of 18.4 million hectares were left unsown. The man-days utilised vary from crop to crop, ranging from 70 man-days per hectare for oilseeds to 140 man-days per hectare for rice.

Assuming an average of 100 man-days per hectare, the total loss due to a decline in sown area would be 1,840 million man-days. If the average wage rate for agricultural labour is pegged at Rs 60, the total loss of rural employment would be a stupendous Rs 35,000 crore. This is without taking into consideration losses arising out of drought-induced crop yield loss in farms.

**Droughts have a bearing on a host of areas that impinge on the dynamics of rural and urban economies.**

**The value of the total loss in agricultural production during the major drought years ranged from Rs 9,289 crore in 1972-73 to Rs. 37,382 crore in 2002-03**

As for losses in agricultural income, the figures are as high as those for rural employment. Agricultural income embraces crop production, animal husbandry, forestry and a host of allied activities. The value of the total loss in agricultural production during the major drought years ranged from Rs 9,289 crore in 1972-73 to Rs 37,382 crore in 2002-03<sup>11</sup> (at 1994-95 prices).

Major droughts are usually followed by industrial recession. Industry sectors like food and beverages, textiles, tobacco, footwear, apparel, rubber products, chemicals and transportation often take a beating. However, the Indian economy has become resilient enough in recent years to absorb the impact of droughts. Although agricultural GDP declined (3.1 in 2002-03; 5.7 in 2001-02), the GDP growth rate was restricted to a fall of only 1%.

As always there were fears of high inflation. The rate of inflation during the most severe drought years was quite high (25.2% in 1974-75 and 17.2% in 1979-80). The fears, however, were unfounded as the impact on prices was minimal during the drought of 2002-03.

The annual rate of inflation remained below 4% up to mid-January 2003. It rose to 6.2% by the end of March 2003, primarily due to an increase in the price of non-food items and crude oil. The average rate of inflation, at 3.3% for the entire year was lower than that of the previous year (3.6%).

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<sup>3</sup>Relief Administration in India: Country Report 1999'. Anil Sinha, National Disaster Management Division, Ministry of Agriculture.

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<sup>5</sup>Indian Agriculture Research Institute (IARI).

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<sup>7</sup>Drought? Try capturing the rain'. Anil Agarwal. Centre for Science and Environment.

<sup>8</sup>Drought-proofing India'. Ila Patnaik, *The Indian Express*, August 9, 2004.

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## Drought Management

*By Naren Karunakaran*

Over the decades since independence, drought management in India amounted to 'crisis management', a reactive approach to tackling disasters when they are already upon the nation. Ad-hoc manoeuvres were the order of the day, with little reliance on a sturdy early warning mechanism that would help the country prepare for a drought.

This was true even in a country like the United States of America, which did not have a comprehensive, coordinated drought management regime in place till recently. It was only in the late-1990s that the USA started setting its house in order with the passing of the National Drought Policy Act in 1998 that led to the creation of the National Drought Policy Commission.<sup>1</sup>

The commission subsequently conducted a national study/survey and made recommendations for a policy with 'preparedness' as its cornerstone. The guiding principle is – preparedness over insurance, insurance over relief and incentives over regulation.

### Early warning and response mechanisms

India still does not have a well-defined drought policy, although it began considering an 'anticipatory drought management approach' in 1966 when the country was hit by a severe drought-induced food crisis. The task of drought forecasting is entrusted to the India Meteorological Department (IMD) which, over the years, has fine-tuned a methodology for forecasting the intensity of the southwest monsoon on a regional basis.

### National early warning/monitoring system

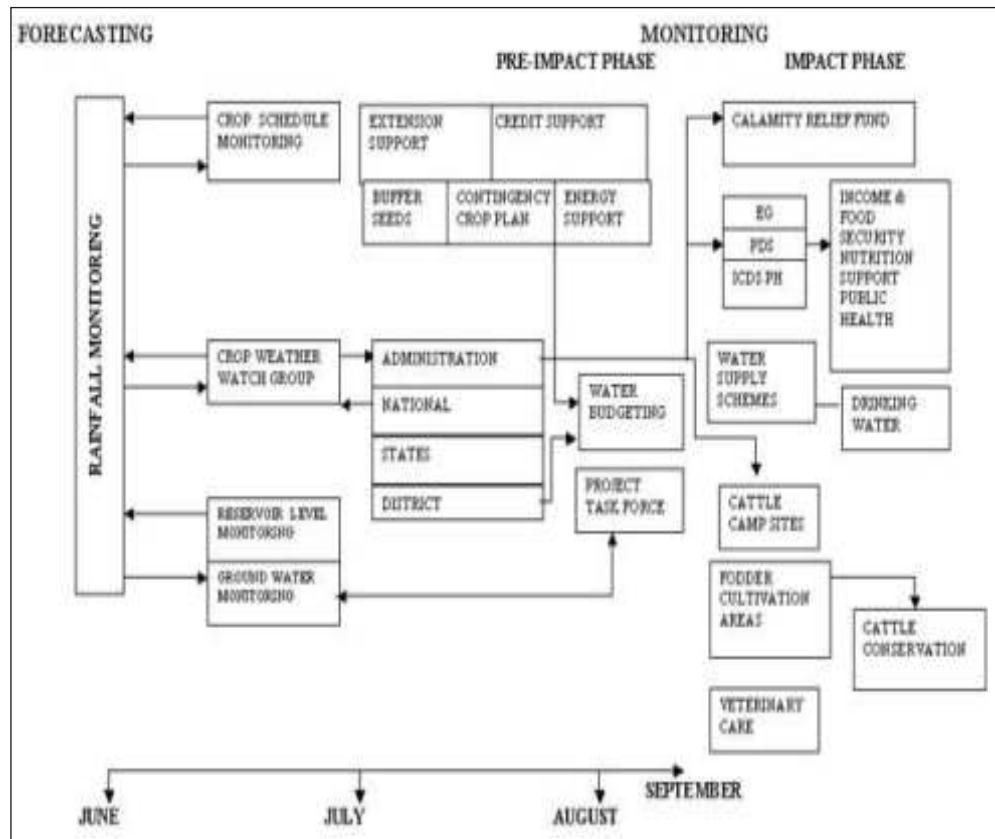
The IMD compiles weekly rainfall summaries on which it determines the occurrence of meteorological droughts on a sub-divisional basis (the country is divided into 36 meteorological sub-divisions).

All such data from the IMD then passes on to an institutional mechanism called the Inter-Ministerial Crop Weather Watch Group (CWWG) in the Ministry of Agriculture, which meets every Monday through the year (it was set up in 1979). The CWWG is manned by experts drawn from several ministries and agencies.

While the earlier reactive mechanism enabled the government to intervene only in the months of November-December, after the summer (kharif) harvest was over, the forecasting system equipped it to take measures in July-August, within the monsoon season itself. It is the CWWG, after careful analysis of data (meteorological, hydrological and agricultural), that presses the 'trigger' to activate the drought response system at various levels.

**Drought management in India amounts to 'crisis management', a reactive approach to tackling disasters when they are already upon the nation.**

**National drought early warning system in India**



Source: 'Drought early warning systems in India'. A R Subbiah. Asian Disaster Preparedness Centre, Thailand

**The NCMC monitors and pilots relief operations when natural calamities of any kind confront the nation.**

**The national response system**

When the trigger is pressed, the central government activates a crisis management mechanism and also releases financial assistance to the states, according to the norms laid down in the awards of the Finance Commission appointed every five years. The states are expected to manage the situation on the ground.

The mechanism pivots around the 'drought relief commissioner' (usually an officer of the rank of additional secretary in the Ministry of Agriculture) who presides over a 'crisis management group' that meets as often as is required. A 'drought monitoring information management system' comes into play collating information on a daily basis, if need be, across all levels – national, state, district and field agencies -- on crop, food, nutrition, social and livestock security and also the health situation. Though not part of it, the CWWG assists the response mechanism.

Above the crisis management group sits the National Calamity Management Committee (NCMC) under the chairmanship of the cabinet secretary. The NCMC monitors and pilots relief operations when natural calamities of any kind confront the nation. When dealing with calamities other than drought, the task of coordinating operations rests with the Ministry of Home Affairs. This is the normal procedure followed.

The 2002 drought, however, saw a departure from the past in terms of setting up a response mechanism. It is being touted as a runaway success for its efficacy. As soon as the CWWG hit the trigger, on July 16, the prime minister set up a 'task force on drought management' under the chairmanship of the deputy prime minister. Its members included ministers of agriculture, finance, food, rural development and the deputy chairman of the Planning Commission.

As the apex body, the task force not only took policy decisions but also reviewed the progress of relief operations. The NCMC merely functioned as a committee of secretaries to chew on issues referred to it by the task force. The apex body enforced a series of measures – from the release of funds to contingency crop plans, drinking water supply, provision of fodder and food-for-work programmes.

The process for releasing funds to the states, under the National Calamity Contingency Fund (NCCF), also became easy, as the constitution of the task force (except for ministers for food and rural development) was similar to that of the High Level Committee (HLC) that normally sanctions financial assistance. The task force therefore doubled as the HLC.

To do away with procedural delays, the task force was empowered under Rule 12 of the Government of India (transaction of business) rules. Its decisions were thus deemed to be a decision of the Cabinet.

### **Response system: The states**

There is no common or approved pattern for the states. The relief minister or the revenue minister heads the system and the coordination of the entire operation is usually in the hands of the state's chief secretary. Many states have a relief commissioner heading the relief department.

At the district level, the collector is in charge of drought/disaster management and is assisted by officials from the revenue and other departments. In some states, officials in the relief department are posted to the district and work under the collector.

### **Drought management: Relief operations**

Under the present doctrine, the primary responsibility of extending financial support to the states to cope with disasters rests with the central government. Over 80% of the total money spent on relief by the state governments comes from the Centre.

The process of sanctions from the Calamity Relief Fund (CRF) and the NCCF is set in motion with a formal declaration of drought by the affected states. It is done on the basis of enabling legislation, codes or manuals and an assessment of damage to crops by undertaking crop-cutting experiments. The drought of 2002, caused by the failure of the monsoons in July, did not allow for such experiments as sowing in many areas had not been carried out (110 lakh hectares across the states). Therefore, drought was declared on the basis of 'eye-estimation'.

**At the district level, the collector is in charge of drought/disaster management.**

## Drought Management

### Once a drought is officially declared, the states start submitting memoranda for assistance from the NCCF.

Once a drought is officially declared, the states start submitting memoranda for assistance from the NCCF. A central team/s (usually headed by an officer of the rank of joint secretary) then fans out to the affected states to assess the situation on the ground and deliberate with the state government. An Inter-Ministerial Group (IMG), headed by the agriculture secretary, scrutinises the recommendations made by the central team.

The IMG applies the norms of expenditure laid down for the CRF and NCCF and moves the scrutiny report to the final authority, the HLC. This time around, the norms had to be relaxed. Usually, agriculture input subsidy is payable to small and marginal farmers when their crop is damaged to an extent of 50% or more due to a calamity.

As large areas remained unsown, it was decided that the area normally brought under kharif cultivation be considered the benchmark. Farmers owning more than two hectares of land were also made eligible (but with a limit of two hectares over the cut-off limit).

The subsidy rates were Rs 1,000, Rs 2,500 and Rs 4,000 per hectare for rainfed, irrigated and perennial crops respectively. The rationale for the input subsidy is not to compensate farmers for losses incurred but to provide ex-gratia payment to help farmers and their families cope with the situation and help them organise their next crop. The compensation aspect is handled by crop insurance schemes. The total fund flow from the Centre to the states has been Rs 12,950.95 crore for drought 2002, which included the value of foodgrain released (Rs 8736.00 crore).

#### **Total assistance from the CRF (central share) and NCCF released to the states.** *Value of foodgrain also included (rupees in crore; foodgrain in MT)*

State	Central share of CRF	Assistance from NCCF	Foodgrain
Andhra Pradesh	249.75	123.51	1,720 (17.20 MT)
Chhattisgarh	34.64	127.51	474 (4.74)
Gujarat	133.46	-	306 (3.06)
Haryana	102.52	-	25 (0.25)
Himachal Pradesh	35.96	14.35	10 (0.10)
Jammu and Kashmir	28.86	-	-
Jharkhand	71.49	-	40 (0.40)
Karnataka	94.03	207.65	720 (7.20)
Kerala	84.79	-	52 (0.52)
Madhya Pradesh	78.97	171.66	780 (7.80)
Maharashtra	198.23	20.00	232 (2.32)
Orissa	138.04	5.29	422 (4.22)
Punjab	101.47	-	-
Rajasthan	350.88	889.61	3,205 (32.05)
Tamil Nadu	84.87	332.09	500 (5.00)
Uttaranchal	40.81	-	50 (0.50)
Uttar Pradesh	184.45	310.06	200 (2.00)
Total	2,013.22	2,201.73	8,736 (87.36)

Source: Ministry of Agriculture

Almost half the allocations made by the HLC under the NCCF went as input subsidies (49.92%) to farmers, with cattle care (19.30%) and employment generation (10.78%) taking major shares. The break-up for drought 2002-2003 is:

Item	Percentage of total amount sanctioned
Input subsidy	49.92
Cattle care	19.30
Drinking water supply – rural	9.75
Drinking water supply – urban	4.80
Employment generation	10.78
Gratuitous relief	1.41
Supplementary nutrition	3.11
Health	0.39
Others	0.54
<b>Total</b>	<b>100.00</b>

- The percentage of relief under employment seems small, as generation of employment was undertaken largely under the food-for-work regime.
- The relatively small expenditure under gratuitous relief, as compared to previous droughts, is due to massive relief employment programmes undertaken during drought 2002-03.
- The allocation under water supply excludes expenditure under the 'emergency' component of the Accelerated Rural Water Supply Programme.
- Expenditure by the railways (Rs 44.64 crore) for free transportation of water and fodder to Gujarat, Rajasthan and Andhra Pradesh has not been included. The sanction for cattle care does not include an amount of Rs 4.69 crore released by the Prime Minister's Relief Fund for goshalas in Rajasthan.

**The NCF and NCCF funds are largely provided to rural populations to tide over the pauperising conditions created by drought.**

### **Crop insurance**

The NCF and NCCF funds are largely provided to rural populations to tide over the pauperising conditions created by drought and to equip them with the wherewithal to prepare for the ensuing sowing season.

Compensation for loss of crops during a drought season is a function of the National Agricultural Insurance Scheme. The newly formed Agricultural Insurance Company of India (AIC) is experimenting with a number of innovative schemes that factor in rainfall deficiency. Varsha Bima, for instance, kicks in when rainfall is 20% below normal. The claim payout to farmers is on a graded slab (rupees per mm of rainfall). The scheme has been tried out in 20 rain gauge areas across the nation.

The NAIS settled claims of over Rs 87,850 lakh for kharif 2002, in the states shown in the table. Total claims paid out for the rabi season were over Rs 9,132 lakh. However, the NAIS scheme is far from perfect as claims are settled only on the basis

of crop-cutting experiments, which means there is a huge time lag between the actual disaster and the final settlement – something that can break the backs of farmers, especially resource-poor ones.

### **NAIS settlement of claims for kharif 2002 (in lakh rupees)**

State	Claims paid
Andhra Pradesh	2,225.41
Chhattisgarh	8,379.80
Gujarat	4,091.75
Himachal Pradesh	443.13
Jammu and Kashmir	-
Jharkhand	23.67
Karnataka	11,795.34
Kerala	16.80
Madhya Pradesh	11,996.32
Maharashtra	2,509.36
Orissa	24,402.92
Tamil Nadu	273.64
Uttar Pradesh	1,666.78
Total	87,850.92

Source: Ministry of Agriculture

The new generation of schemes from the AIC is expected to extend 'farm income protection' to farmers.

The new generation of schemes from the AIC is expected to extend 'farm income protection' to farmers. The pilot Farm Income Insurance Scheme (FIIS), for instance, introduced during rabi 2003-04, not only seeks to cover yield risks but also price risks that ensue due to the vagaries of the marketplace.<sup>2</sup> The attempt is now to link it to the futures market instead of the minimum support price (MSP).

However, a number of issues confront the government and the designers of crop insurance schemes. According to the agricultural census of 1995-96, small and marginal farmers with just about two hectares of land constitute 80.3% of the farm-holding population. They own 36% of the agricultural land.

The success of a crop insurance scheme depends on the scope and extent of coverage. Issues relating to marginal farmers, who still bank on informal sources of finance and may not have the capacity to bear the cost of premiums, have to be addressed. Moreover, it is inevitable that the intervention of governments in terms of making up for losses incurred during disasters will be scaled down over time. Even subsidies for crop insurance premiums are WTO-compliant. The insurance market is expected to grow manifold in the near future as insurance is considered a form of income protection that does not distort market mechanisms, as per WTO norms.

### **Relief: Agricultural credit**

The Reserve Bank of India (RBI) and other financial institutions like NABARD

sought to lessen the burden of farmers in distress by taking a number of measures including:

- Refraining from the recovery of principal or interest on kharif loans during 2002-03.
- Conversion of kharif crop loans to medium-term loans payable over five years.
- Waivers on interest on pending crop loans during 2002-03; no penal interest on individual agricultural loans up to Rs 25,000 borrowed during calamities.
- Release of fresh loans to farmers.
- NABARD issued guidelines to cooperative banks for investment credit – installation of tubewells, purchase of fodder.

The drought of 2002-03 consumed over Rs 6,000 crore in interest waiver losses and deferments alone. The total relief amount therefore would be around Rs 20,000 crore (Rs 13,000 crore from the CRF, NCCF and cost of foodgrain; Rs 900 crore on payment of insurance claims; and Rs 250 crore on emergency water supplies and the states' own resources).

## **Drought management: Major issues**

### **Drinking water**

During the 2002-03 drought, 18 states<sup>3</sup> reported severe drinking water shortages; 11 of them continued to experience problems even the following year. In view of the serious drinking water situation, a separate task force for drinking water was set up under the chairmanship of the secretary, Ministry of Water Resources, in December 2002.

States were informed that they could avail of additional funds from the Accelerated Rural Water Supply Programme (ARWSP). Five per cent of the funds under the programme are earmarked for calamity relief and, accordingly, states were sanctioned Rs 69.89 crore during the year. This is in addition to the regular flow of funds under the ARWSP.

Meanwhile, the Central Ground Water Board (CGWB) constituted its own task force and, during 2002-03, 66 of the board's drilling rigs were deployed across the drought-affected states. Over 250 wells were dug, of which 214 were functional.<sup>4</sup> The board was instructed to hand the wells over to the state governments free of cost to ameliorate the drinking water shortage.

The states deployed water tankers in the rural hinterland. More than 40,000 tankers, with a capacity of 8,000 litres each, supposedly made an average of four rounds every day to the affected villages in the four peak summer months, carrying a total of 116 million kilolitres of water.

**The drought of 2002-03 consumed over Rs 6,000 crore in interest waiver losses and deferments alone.**

According to government estimates, the exercise benefited over 110 million people, including 22 million in urban areas. The entire tanker operation was financed through the NCF and the NCCF.

The railway network was also utilised to supply water to Rajasthan and Gujarat. A total of 2.9 million kilolitres of water were carried through 12 rakes every day (trains with 40 wagons of 20 kilolitre capacity) in the two states. The services were provided free of cost.

### ***Deployment of tankers to supply drinking water***

State	Number of tankers – Rural	Number of tankers – urban
Andhra Pradesh	808	703
Chhattisgarh	NA	583
Gujarat	1,715	NA
Karnataka	NA	NA
Maharashtra	6,492	NA
Orissa	6	78
Rajasthan	3,044	903
Tamil Nadu	10,640	285

*Source: Department of Drinking Water Supply*

The scale of operations to augment drinking water supplies was massive. Rajasthan, for instance, diverted irrigation water for drinking water purposes. In addition, 2,40,703 handpumps were repaired between July 2002 and June 2003. Over 22,000 new handpumps were installed, and 2,250 new tubewells commissioned. Interestingly, 24,895 traditional sources of water were also revived.

### **Contingency crop plans**

The Government of India, from its experience of drought management over the decades, has devised contingency crop plans to tackle the vagaries of nature. These plans came into being in the early '70s and were primarily driven by the Indian Council of Agricultural Research (ICAR).

Contingency crop plans involve choosing suitable crops and/or crop varieties, alternative crop strategies, mid-season corrections and crop life-saving measures. Based on expert inputs – meteorological, agricultural and hydrological – the Ministry of Agriculture lays out the contingency plan.

The plan basically identifies alternative crops and varieties of similar crops that are expected to be adversely affected by the erratic behaviour of the monsoons. In Andhra Pradesh, for instance, it was suggested that if the monsoon revived by mid-August it would be prudent to replace the usual paddy, jowar, maize and ragi with black and green gram.

**Contingency crop plans involve choosing suitable crops or crop varieties, alternative crop strategies and mid-season corrections.**

However, contingency crop plans usually come into play only in the rabi season, as the existing system is not yet capable or mature enough to roll out contingency plans in the kharif season itself. This is primarily because of uncertainties in mapping climate behaviour during the kharif season. Also, because the lead-time needed to organise the delivery of agricultural inputs to farmers is insufficient. It's a logistical nightmare.

The 2002 drought was one of the worst in terms of impact on kharif grain production.

***Kharif production during drought years***

Monsoon season Year	% departure from normal for season	% departure for July	Kharif (grain shortfall) %
1972-73	-24	-31	-6.9
1974-75	-12	-4	-12.9
1979-80	-19	-16	-19
1982-83	-14	-23	-11.9
1986-87	-13	-14	-5.9
1987-88	-19	-29	-7
2002-03	-19	-49	-19.1

*Source: Ministry of Finance, Economic Survey 2002-03, Gol.*

**The Madhya Pradesh example: Contingency crop plan**

In view of depleted water resources, farmers in Madhya Pradesh were advised to grow gram, linseed, toria, rapeseed and mustard (less water-intensive), instead of wheat, during the rabi season. In places where water was available for one or two rounds of irrigation, it was suggested that they sow durum wheat instead of the regular variety, for better yields. Input subsidies of Rs 143 crore were extended to small and marginal farmers, in addition to power tariff subsidies amounting to Rs 856 crore. Mechanisms for market support were also put in place as a hedge against a fall in crop prices below the support price. Procurement agencies consequently purchased 96,000 tonnes of paddy, 54,000 tonnes of coarse grain and 4 lakh tonnes of wheat.

**Relief employment and nutrition security**

The employment situation in rural India, even during normal times, is bad. Employment opportunities are usually seasonal, according to agricultural cycles. During times of drought, the employment situation becomes calamitous, inducing large-scale intervention by government organisations.

Over the decades, the government has formulated and implemented a number of programmes to address the problem of seasonal unemployment. The first such programme, the Rural Manpower Programme (RMP), was launched in 1960 and

**The employment situation in rural India, even during normal times, is bad. During times of drought, it becomes calamitous.**

was followed by a series of other programmes.

During the 1987-88 drought, 55% of the allocated relief resources were used to generate employment. During the 2002-03 drought, the figure stood at 71%, underlining the importance of ensuring income streams during droughts/natural disasters.

The success of financing relief employment during the 2002-03 drought may be attributed to a 2001 innovation – the food-for-work approach where wages were disbursed in the form of foodgrain and a cash component. The scheme was implemented across several drought-affected states that year, with encouraging results. It led to the generation of 45 crore man-days over a period of 15 months. A lot of the work involved creating durable, permanent assets.

The success of the food-for-work approach resulted in the creation of the Sampoorna Grameen Rojgar Yojana (SGRY) -- basically an attempt to adapt the crisis mechanism to addressing the problem of seasonal unemployment.

The SGRY (launched on April 1, 2002), targeting below-the-poverty-line families, allows for cash and foodgrain components in the ratio 1:1. The foodgrain component is paid for by the central government and the cash component is shared between the Centre and the state in the ratio of 3:1. The scheme is implemented in two 'streams'. The first is at the district/intermediate panchayat level and the second at the village panchayat level.

A 'special component' kicks in during times of natural calamities to generate additional man-days to compensate for loss of work due to drought, etc. The implementation of this component lies with the district collector/relief commissioner.

The task force on drought management that was set up decided that the 'normal' component of the SGRY be used for drought mitigation. Components of various other development schemes were dovetailed with the 'special component' of the scheme, mainly to meet the cash component of wages and material costs.

The results are a high watermark in employment generation during a crisis, anywhere in the world. At the peak of enrolment, over 154 lakh families (excluding Maharashtra) benefited. The scheme provided food security to 8 crore people.

The mix of cash and foodgrain in wages attained the twin objective of food security and income generation. Distress migration, usually a fallout of drought, was minimal, as adequate work opportunities were made available close to habitations. The operation also brought the huge stocks of foodgrain in government godowns (63 million tonnes as on July 1, 2002) to near buffer stock norms.

The task force on drought management allocated 87.36 lakh MT of foodgrain to drought-affected states during the period August 2002 to July 2003. A minimum stocking norm of three months Public Distribution System (PDS) was laid down in the consuming states for enhanced food security.

**The success of financing relief employment during the 2002-03 drought may be attributed to the food-for-work approach.**

Affected states, on the basis of adequacy of foodgrain stocks, were categorised as 'adequate,' 'below requirement,' and 'critical level'. In January 2003, for instance, all the states of the northeast, Jharkhand, Orissa, Karnataka and Madhya Pradesh had reached 'critical levels'.

During 2002-03, the railways had the responsibility of moving 217 lakh tonnes of foodgrain to various states across the country for consumption under the Targeted Public Distribution System (TPDS) and other welfare schemes including the SGRY/special component of the SGRY, mid-day meals scheme, the ICDS and the nutrition component of the Pradhan Mantri Gamodaya Yojana (PMGY).

The railways, on average, deployed over 20 rakes per day through the year to move foodgrain to every part of the country. During the most critical phase of the drought – January to July 2003 – over 75% of all foodgrain moved within the country was headed for needy states.

Rajasthan, the worst-affected state, was given special attention. The state lifted 41 lakh MT of foodgrain between July 2002 and July 2003. It distributed the grain to beneficiaries (44.8 million people) under the PDS and food-for-work programme. This was 15 times higher than the normal PDS allocations. Over 2,100 trucks were deployed on a daily basis to move foodgrain to remote parts of the state.

### **Livestock management**

Livestock plays a major role in the livelihood security of small and marginal farmers. Any harm to livestock assets could have serious implications on the ability of people to survive. Severe drought can decimate livestock populations.

Livestock numbers reduced due to drought or disease recover very slowly; recovery of a herd could take several years, depending on the species. Herds of sheep and goat recover fast (around 25% growth a year), but cattle, buffaloes and camels grow slowly in numbers.

The Department of Animal Husbandry and Dairying (AH&D) at the Centre, and its counterpart in the states, preside over issues relating to this sector. They are also responsible for the provision of adequate fodder, etc, to the farming community for the protection of livestock. The action plan for drought relief included measures to augment fodder in affected areas, distribute fodder at reasonable rates, monitor fodder prices and provide feed supplement for affected cattle.

Rajasthan and Maharashtra were the most severely hit with respect to number of livestock affected and the extent of fodder deficit. In Rajasthan, 226 lakh bovines were affected; Maharashtra followed with 189 lakh bovines. The fodder deficit in Maharashtra was worse than that of Rajasthan, at around 241.77 lakh MTs. For Rajasthan the figure was 149.31 Mts.

In view of the serious condition in Rajasthan, the task force on drought management released 30 MTs of damaged foodgrain for use as cattle feed (it was sold at Re 1 per

**Livestock plays a major role in the livelihood security of small and marginal farmers. Any harm to livestock assets could have serious implications on the ability of people to survive.**

## Drought Management

kg to farmers after processing by the Rajasthan Cooperative Dairy Federation). The task force also decided to support cattle camps in the affected states. An outlay of Rs 25 crore was made from the NCCF to assist NGOs in setting up cattle camps or goshalas.

### ***The situation in various states during 2002-03***

State	Number of bovines affected (in lakhs)	Fodder deficit (in lakh Mts)	Fodder seed mini-kits allotted for rabi and kharif
Gujarat	54.84	2	39,000
Andhra Pradesh	153	61.61	16,000
Chhattisgarh	17.22	4.2	7,600
Karnataka	100	60.09	32,830
Madhya Pradesh	192	7.8	44,000
Maharashtra	189	241.77	20,000
Orissa	117	Surplus	25,000
Rajasthan	226	149.31	46,633
Tamil Nadu	86	Surplus	12,720

Source: Ministry of Agriculture

At the height of the drought, 2,632 cattle camps sheltering and feeding 972,144 animals were in operation across the states. The Indian railways pitched in by providing rakes to transport fodder.

### ***Norms for relief expenditure under the head 'cattle care'***

Item	Scale
For replacement of animals, mulch animals, or animals for haulage or livelihood	As per the pattern of subsidy under Swarnajayanti Gram Swarajgar Yojana for small and marginal farmers
For provision of fodder /fodder concentrate	Large animals Rs 12 per day Small animals Rs 6 per day
Procurement, storage and movement of fodder	To be assessed by the National Centre for Calamity Management (NCCM)
Movement of useful cattle to other areas	To be assessed by the NCCM for NCCF/ by state-level committee for CRF

Source: Department of Agriculture and Co-operation, Ministry of Agriculture

While the government played its part, farmers too adopted unconventional methods to keep their livestock healthy. As green fodder was scarce, farmers used sugarcane husk, sunflower heads, groundnut/red gram/green gram husk etc, as cattle feed.

Farmers in Prakasam district in Andhra Pradesh fed subabul leaves to their mulch

animals. They found that not only did it enhance milk production it also increased fat content.

Data on the impact of measures taken with respect to cattle conservation are not easily available. Rajasthan, nevertheless, claims that the state was able to limit cattle mortality to the normal limit of 12-14%, even during the worst period of the 2002-03 drought.

## **Drought-proofing: Harvest rain, involve communities, move from 'drought management' to 'monsoon management'**

Drought is a normal feature of climate, and it will keep occurring at intervals. However, Indian drought management systems as they are today are designed and equipped to view drought as a transient phenomenon to be dealt with on a piecemeal basis, as and when they happen.

Existing practices are essentially fire-fighting models centred on relief, when efforts over the years should have been directed at drought-proofing the country by involving community/civil society and panchayati raj institutions. The building of dams and irrigation systems should have been undertaken along with the revival and strengthening of traditional knowledge in water harvesting and conservation.

Today, drought management is equated with reliance on large-scale resource transfer in the form of income, food, water and fodder to drought-affected regions. This is unsustainable. Drought-prone communities, villages and areas have to learn to adopt and sustain drought-proofing methodologies and harness traditional knowledge, using local resources and wherewithal.

The existing drought management regime, in a way, has done a lot of harm. It has increased the dependence of people and communities on the State. As a result, people in drought-prone areas have jettisoned traditional practices.

Look at what the government's so-called development measures have done to the people of Rajasthan – people who for years have overcome periodic drought by harvesting and husbanding their water resources efficiently. Tankar, diggies and khadins, both at the household and village levels, used to sustain people through drought.

The advent of piped water in Rajasthan, hauled over long distances, has rendered the population more vulnerable to the effects of drought. During a drought the pipes run dry. Over the years, the piped system has dulled the people's traditional water conservation skills. The result – in times of drought they cannot bank on storing devices as they once did.

In the not too distant past, Rajasthani farmers used to build food and fodder reserves during 'normal' years to see them through the drought years. This doesn't happen anymore for they know the State will intervene in a crisis situation to bail them out.

**Indian drought management practices are essentially fire-fighting models centred on relief, when efforts over the years should have been directed at drought-proofing the country.**

Meanwhile, state initiatives in drought-proofing leave a lot to be desired. The government's area development programmes – the Drought Prone Areas Programme (DPAP), the Desert Development Programme (DDP), Integrated Wasteland Development Programme (IWDP) and Employment Assurance Scheme (Watershed) – have little to show in terms of containing the adverse effects of drought. This, despite crores of rupees sunk into the programmes over the decades (the DPAP was launched in 1973-74). As of March 2000, a total of 8,335 watershed projects were under implementation in the programme states. Over Rs 1,211 crore was spent under the DPAP by the end of March 1999.

The emphasis, therefore, has to move towards simple technologies to harness rainwater, against the large-scale exploitation of rivers and groundwater through dams and tubewells. The country's hydrological system is on the verge of collapse. Groundwater has been severely exploited and little has been done to recharge it.

Agricultural scientist M S Swaminathan, way back in the '70s, suggested that India ought to create 'groundwater sanctuaries' that must be left untouched and drawn upon only during water emergencies. He demanded the creation of a National Commission for Monsoon Management, supported by a National Monsoon Management Centre, and said he would like to see the regime of 'drought management' replaced by a more holistic 'monsoon management' system.

The late Anil Agarwal of the Centre for Science and Environment (CSE) also argued for harvesting rain more efficiently. Community-based rainwater harvesting has the potential to drought-proof the entire country. Just 100 mm of rain falling on one hectare of land could yield up to 1 million litres of water!

India has a total land area of over 300 million hectares. Assuming the country's 587,000 villages (1991 figure; now around 600,000) are able to harvest the runoff from 200 million hectares of land, excluding forests, mountains and other uninhabited terrain, it still gives every village access to 340 hectares, or a rainfall endowment of 3.75 billion litres of water.<sup>5</sup> The potential for rainwater harvesting is enormous.

Every village in India can be rendered drought-proof and its water needs met if rainwater is captured during the good years and stored in tanks/ponds, or used to recharge groundwater.

There is also increasing evidence that village-scale rainwater harvesting yields much more water than do big or medium dams. Michael Evenari's work in Israel's Negev desert (average rainfall: 105 mm) establishes the link between the size of the catchment and the quantity of water harvested.

This is primarily because water has to run over greater distances in large catchments before it collects. Some water is therefore lost in puddles, depressions, in evaporation or through infiltration into the soil.

Evenari proved beyond a doubt that small catchments provide the most water from

**State initiatives in drought-proofing leave a lot to be desired. The emphasis has to move towards simple technologies to harness rainwater.**

experiments which showed that 3,000 micro-catchments\* of 0.1 hectares (1,000 square metres) each give a combined quantity of five times more water than one catchment of 300 hectares, even though the land area from which rainwater is harvested remains the same (see table).

Size of catchment (hectares)	Quantity of water harvested (cubic metres/hectare)	Percentage of annual rainfall collected
Micro-catchments*	160 cubic metres/hectare	15.21%
20 hectares	100 cubic metres/hectare	9.52%
300 hectares	50 cubic metres/hectare	3.33%

Source: AA, CSE/ 'The Negev – The challenge of a desert', Michael Evanari, OUP

During drought years, with rainfall less than 50 mm in the Negev desert, micro-catchments work even better. The table clearly shows that in drought years large catchments are virtually useless.

Size of catchment (hectares)	Quantity of water harvested (cubic metres/hectare)	Percentage of annual rainfall collected
Micro-catchments	80-100 cubic metres/hectare	16-20%
Small natural watersheds	20-40 cubic metres/hectare	4-8%
Large than 50 hectares	No appreciable water yield	0%

Source: AA, CSE/ 'The Negev – The challenge of a desert', Michael Evanari, OUP

Simpler, smaller rainwater harvesting measures therefore can change the very dynamics of a village. It can fortify food security, as rain-fed land constitutes the bulk of cultivated land. It can have deep implications on drinking water availability, eradication of poverty, rural unemployment and distress migration from rural to urban areas.

The experiences of the recent past, and the massive scale of operations during 2002-03's drought (contingency relief expenditure: Rs 20,000 crore), have induced policymakers to seriously consider an alternative drought management approach. An approach that will gradually eliminate or reduce the need for relief while increasing the capacity of affected areas/communities to cope with drought on their own. The transition to a 'climate variability management' regime is already being bandied about.

**Small catchments provide the most water. Simpler, smaller rainwater harvesting measures can change the very dynamics of a village.**

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## Drought in Jharkhand: Nature, Impact and Management

*By Ramesh Sharan*

Drought is a recurrent phenomenon in Jharkhand. It affects the livelihoods of the majority of its people, particularly tribals and dalits living in rural areas. Twelve of the 22 districts of the state, covering 43% of the total land area, are covered under the Drought Prone Areas Programme (DPAP). Hunger and starvation deaths are reported almost every year.

Jharkhand is one of the richest states in the country in terms of natural resources. However, the rate of growth in agriculture has been one of the slowest in the country both in terms of production and productivity. Almost 90% of the cultivated area is monocropped. Only 9% of the total cropped area is irrigated. Hence the rural population is very vulnerable to rainfall fluctuations.

The worst-affected are primitive tribal groups which historically are late entrants to settled cultivation and own land on hilly slopes with very low fertility. Tribals constitute around 26% of the total population of the state, and 93% of them live in rural areas.

Another group that is severely affected is the scheduled castes, primarily agricultural workers with very little land.

### Nature of drought

Jharkhand receives almost 1200-1300 mm of rainfall every year but the rains are erratic in many areas. The probability of rainfall failures and coefficient of variations is quite high in the last weeks of June-July and in the last weeks of September-October. Hence, drought in the state primarily occurs at the start or end of the kharif season.

In July, upland crops grow to maturity and seedlings for transplanted rice are established. If there is deficient rain, the upland crop, mainly paddy and maize, which provides food security in August-September, is affected. Seedlings for the transplanted paddy start to wilt or become over-mature.

As most of the land is monocropped, the lowland paddy is crucial for employment and food security. A delay in rainfall affects the transplantation of agahani paddy, the major crop in the area.

October (Hathia) rains are required for paddy and provide the necessary residual moisture for the rabi crop.

**Drought affects the livelihoods of the majority of the people of Jharkhand, particularly tribals and dalits.**

The entire state is not generally affected by drought. However, there are areas which are affected frequently. Over a period of time, new areas become affected by drought, and we see that drought has been officially declared in areas outside the DPAP.

When the rains fail, agriculture is usually the first to be affected because of its critical dependence on stored soil water. First, soil water in the uplands starts to deplete. Then shortage of water starts to affect people collectively and individually. The socio-economic impact of drought occurs sooner in Jharkhand than in other states as frequent droughts have weakened the capacity of the people to bear shock.

While drought is basically caused by erratic and deficient rain, the problem has been aggravated by large-scale open-cast mining; deforestation; irregular and non-scientific mining and quarrying; inefficient management of resources, particularly water resources; and decline in traditional systems of water management.

### Impact of drought

Jharkhand is one of the most food-insecure and malnourished states in the country. NSSO (55<sup>th</sup> round) data reveal that 10.46% of all households in Jharkhand face seasonal food insecurity. Around 2.5% of households face chronic food shortages. Of the families facing food insecurity, 64% face food shortages for two to three months while as many as 28% do not have sufficient food for four to five months. Almost 6% of the food-deficient households have to go hungry for more than half the year. The incidence of food insecurity is higher among ST and SC families.

Assured food supplies exist for only three to four months of the year, after the harvest in late October-early November. Food supplies tend to run short by the end of winter. The starvation period begins by mid-summer (June) and in many cases, continues till the end of October. Seasonal under-nutrition among food-insecure households is normal. People belonging to scheduled castes and primitive tribal groups are worst-affected as they are generally landless and depend on migratory employment for income. When earning members of a family are unable to migrate due to ill health or other reasons, the entire family faces starvation.

The situation obviously becomes much worse when there is a drought. Drought affects all communities but in different ways. Among landless, marginal and small families, male members start to migrate early. Females and the aged are often left behind to take care of themselves. In 2004, some of the starvation deaths reported have been of women and the aged for example the death of Tetari Devi in Ulgara (Mangalpur panchayat, Panki block) and Padarath Giri in Rajarappa (Ramgarh block).

Landless, marginal and small farmers reduce their consumption of cereals, pulses and other items. The consumption of irregular foods like khuddi (broken rice), wild roots, gethi, chakora sag, and other forest produce increases (in some areas people eat these even in normal times). People add more water to dilute the foodgrain.

**Jharkhand is one of the most food-insecure and malnourished states in the country. The situation becomes much worse when there is a drought.**

A decrease in employment opportunities leads to a reduction in wages. People resort to the distress sale of assets, cattle and fuelwood and increase the frequency of trips to the forests for sustenance. The rate of interest on borrowings rises.

Drought also increases health risks from malnutrition and unsafe drinking water.

Medium and large farmers are unable to transplant paddy. The risk of cattle-grazing increases due to reduced social fencing. The crop becomes vulnerable to pests and termites and attack by wild animals that come close to habitation in search of water and food. Theft of standing crops increases. Decrease in the purchase of durable goods and clothes and postponement of social functions is reported.

### Drought management : Household strategies

As drought is a frequent phenomenon in Jharkhand, households, the state and civil society organisations have evolved various strategies for coping before and after drought.

At the household level, the strategies adopted before drought include:

- crop diversification/ crop variety diversification
- livelihood diversification
- staggering of seedling periods
- early migration
- keeping land fallow
- limited re-sowing.

Strategies adopted after drought sets in include:

- increased re-sowing if the rains come
- shift to pulses on upland and medium-level land
- early sowing of rabi crop
- providing irrigation to paddy seedlings
- transplantation of over-mature paddy seedlings to get straw for feeding animals
- migration
- asset depletion
- borrowings
- reduction in consumption

In fragile zones and among the poorest households, reduction in consumption is the ultimate coping mechanism.

### Drought Management : State strategies

When Jharkhand was part of Bihar, drought was not considered as major an issue as

**In fragile zones and among the poorest households, reduction in consumption is the ultimate coping mechanism.**

recurrent floods in northern Bihar. After Jharkhand became a separate state, many drought-prevention measures like promotion of watershed management and minor irrigation projects, restoration of lift irrigation schemes, wells and tanks and bench terracing have been promoted. The state government has reorganised the Relief and Rehabilitation Department and a Disaster Management Wing is expected to be formed.

However, the government's response to drought remains poor. The following issues need to be highlighted:

### Poor recognition of drought

Recognition of drought has two aspects – spatial (identifying areas with deficient rainfall) and temporal (identifying the time drought sets in). Recognition of drought according to these parameters has been unsatisfactory in Jharkhand.

At the start of the monsoon, weekly reports on crop coverage and rainfall should be prepared. However, due to lack of staff and infrastructure at the block level, the reporting is poor. For instance, in 2004, blocks like Chainpur and Satbarwa in Palamu faced severe scarcity and loss of crop coverage, but they were not declared

## Hunger returns to haunt Nawada

**Varghese K. George**

NAWADA, October 10, 2004

THE three starvation deaths in this north Bihar district indicate what is in store for the region, which received just 10 per cent of the normal annual rainfall. Though floods damaged the districts north of the Ganga, 15 districts in the south have already been drought-hit. Thirty kilometres from the town, an elderly couple Dasu Bhuiya and Pachiya Devi of Chapel village in Rajauli block died within a month of failing to find work. Ramavatar Bhuiya (26) also died of starvation, villagers said. "Here we begin to starve the day we stop working due to lack of work, old age or ill health," said one.

Jaiva Devi, the deceased couple's daughter-in-law, said they did not come under any social security scheme. "They did not have the red card (meant for people living below the poverty line) and they were unable to earn," she says. The Rs 30 that her husband Vijay earns daily is hardly sufficient for her four children. "We don't have enough to eat, and supporting the elderly becomes difficult."

The youth chop wood in the surrounding forests and earn Rs 30-40. The elderly, who can only do farm work, find jobs difficult to come by as the saplings have wilted in most parts. Nawada District Magistrate Wasimuddin Ahmad Anjum admitted that the couple should have been covered under the red card. "Whether they starved to death or not is only a suspicion, but they should have been issued a BPL card. The local bodies are responsible for this but often they are not fair," the DM said.

"The number of BPL cards is limited for each district and panchayat. There could be a gap between allotment and requirements," he said.

*The Indian Express*, October 10, 2004.

drought-hit as the block staff could not work due to the pressure of Naxalites.

This apart, the quality and need for reporting crop coverage has declined as land has become an insignificant source of revenue.

Another problem is that rainfall variations within a block are not recognised. For example, people in Patamada village near the Dalma mountain claim they get less rainfall than the rest of the block. As the rainfall gauge is normally located at the block office such variation is undetected. While it may not be possible to have rain gauges in all villages, rainfall variations can be reported through local enquiries.

In August 2004, the whole of Jharkhand was declared drought-affected. Later there was good rainfall in some areas and the crop coverage improved, whereas there was no improvement in the rest of the state. The official declaration of drought has not taken into account differences in the severity of drought. In any case, the severity of drought is fully known only after the winter paddy is harvested. But by then the political pressure to declare an area drought-hit is reduced.

**While it may not be possible to have rain gauges in all villages, rainfall variations can be reported through local enquiries.**

The declaration of drought has been ad hoc. At times drought is declared at the level of blocks. Last year drought was declared at the panchayat level. Significantly, the state Directorate of Agriculture (DoA) does not have block-wise, let alone panchayat-wise, data of crop coverage.

No effort has been made to recognise areas where over 75% of the crop has been lost in successive years. Such loss would warrant the declaration of famine even if the areas are small.

### **Delayed and inadequate action**

Once drought is declared, emergency funds have to be requisitioned. However, in 2001, while drought was declared in the first week of August, the first instalment of funds for the construction of wells in each panchayat was released only in October 2002. The purpose of providing immediate relief was defeated.

Ten quintals of grain were allotted to each panchayat so that people do not die of starvation. However some block officials said that they did not have godowns to store the grain. Besides, they had directions only to store the grain, not distribute it!

There is also a time-lag between the planning and implementation of the DoA's relief package. Seeds distributed under the package reach blocks late; in some cases the seeds are not received at all.

The allocation of funds for drought relief is inadequate and improper. For example, in 2004 the area-wise allocation of funds was based on population rather than the severity of drought.

### **Non-participative planning**

Plans for drought-proofing and emergency measures are made by the DoA in

consultation with some top officials and some large NGOs. District and block officers and farmers are hardly consulted. Farmer meetings are held only after the plan is finalised. Recently some mechanisms have been put in place to talk to farmers about their immediate needs but these are at a rudimentary state.

Panchayati Raj Institutions (PRIs) do not function in Jharkhand as PRI elections have not been held in the last 25 years. Hence people have no forum to participate in the planning and implementation of local-level projects. The absence of PRIs also makes it difficult for the government to allot funds and fix responsibility.

### **Poor implementation of drought relief measures**

In 2001-02 the state government allocated Rs 77.4 million for digging small wells in each panchayat in drought-affected blocks. An additional sum of Rs 241.7 million was allotted in 2002-03. However against the target of 5,040 wells, only 2,458 were constructed.

In 2002-03, a scheme was launched to dig one pond in each village of Palamu and Santhal Parganas through gram sabhas. A large number of works remain incomplete.

In 2004 around Rs 800 million was allotted from the Calamity Relief Fund. But relief work has hardly begun in many areas. Ten quintals of grain have been kept at the panchayat level to give to families in distress. In many villages families have not been given that grain. The government is yet to evolve a foolproof mechanism for identifying distressed families, though this is mandatory under the Famine Code. Surveys to identify hungry families have been conducted by district administrations but in the absence of PRIs, the participation of people has been low and remote areas have hardly been covered.

### **Poor implementation of wage employment programmes**

The implementation of wage employment programmes, which can provide relief in drought years has been poor in Jharkhand. In some cases machines have been used to get work done, defeating the purpose of providing employment to people. There are numerous allegations of under-payment of wages and forging of muster rolls.

The Supreme Court has directed the central government to double the quota of grain given through wage employment programmes, but Jharkhand has not been able to take advantage of the extra allocation as it has not been able to utilise the grain quota given earlier.

The state does not have adequate storage capacity in Food Corporation of India godowns. As a result, grain cannot be released in time.

### **Poor inter-departmental cooperation**

There is poor coordination between the DoA, which is supposed to play a key role in

**Panchayati Raj Institutions (PRIs) do not function in Jharkhand as PRI elections have not been held in the last 25 years.**

## **Drought in Jharkhand**

the declaration of drought and drought crop management, and other departments involved, such as minor irrigation, electric supply, rural development, soil conservation, cooperation, civil supplies and the forest department.

### **Outdated Famine Relief Code**

The government of Jharkhand has not made concerted efforts to modify and review the Famine Relief Code framed during British times.

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## Combating Drought in Maharashtra : PACS Programme Initiatives

A large part of Maharashtra, where the PACS Programme operates in 10 of India's 'poorest' districts, is chronically prone to drought.

While a 'most severe' drought was witnessed in the state in 1972 and 1987, 'moderate' to 'slight' drought is a recurrent feature. Parts of the state suffered drought in 2000, 2001 and 2003, continuing into 2004.

In October 2003 the government of Maharashtra declared that drought prevailed in 71 talukas of 11 districts of the state: Pune, Satara, Sangli, and Sholapur (Pune division), Nasik and Ahmednagar (Nasik division), and Beed, Latur, Osmanabad and Aurangabad (Aurangabad division).

In 2004 the state government said in a memorandum submitted to the central government that the drought situation had continued to deteriorate in the course of the year. Nearly half the state, especially the regions of Vidarbha and Marathwada, had received less than average rainfall (see table).

### *Rainfall shortfall in 2004*

District	Average annual rainfall (mm)	Rainfall in 2004 (mm)	Shortfall (%)
Akola	710	399	-44
Amravati	829	561	-32
Aurangabad	637	638	0
Bandhardara	1179	705	-40
Beed	599	591	-1
Buldhana	680	512	-25
Chandrapur	1161	736	-37
Gadchiroli	1282	977	-24
Gondia	1250	829	-24
Jalna	632	640	+1
Latur	776	679	-12
Nagpur	957	690	-28
Osmanabad	692	525	-24
Pune	963	753	-22
Wardha	905	741	-18
Washim	848	476	-44
Yavatmal	888	587	-34

Source: Regional Meteorological Centre, Mumbai.

**A large part of Maharashtra is chronically prone to drought. In 2004, nearly half the state received less than average rainfall.**

Though 'normal' rainfall was reported in Aurangabad and Jalna districts, neither district could escape distress from drought in 2004.

Drought has severely affected the overall socio-economic situation in the state, crippled its finances, and severely affected the lives and livelihood of the people. Drought has resulted in crop failure, damage to crop quality, death and incapacitation of livestock, falling agricultural and non-agricultural wages, migration of people in search of alternative livelihoods, conflict, suicide and starvation deaths.

### PACS Programme initiatives

In response to the severity of the situation, the PACS Programme and its partners decided at a peer review workshop held in Aurangabad in March 2004 to take up drought as a major issue requiring collective action.

Sampark, a Mumbai-based advocacy organisation supported by the PACS Programme, worked to raise awareness on drought by arranging tours of journalists to the worst-affected districts of Maharashtra, and by lobbying with policy-makers and people's representatives on the issue of drought. The PACS Programme also supported the publication of a report, *Tisri Fasal*, highlighting the problem.

PACS Programme partners organised rallies, padayatras and dharnas in drought-hit areas to raise awareness and mobilise the government machinery to provide fodder, water through tankers and work under the Employment Guarantee Scheme (EGS).



**A 'rasta roko' campaign to highlight EGS issues.**

GreenEarth, the PACS Programme Supportive Supervision Resource Organisation (SSRO) for Maharashtra, kept up a continuous dialogue with all PACS Programme partners, experts, community leaders and senior bureaucrats, and coordinated a rapid assessment of drought in six districts and 50 villages of Maharashtra.

Since immediate intervention and collective action was called for, the following action plan was decided upon, involving all CSO partners under the PACS Programme in the drought-hit areas:

- Involve PACS Programme partners across the drought-prone districts of Maharashtra in making a rapid assessment of the drought situation.

**The PACS Programme and its partners decided to take up drought as a major issue requiring collective action.**

- Provide a platform for all organisations (including those that are not PACS Programme partners) working in the area of drought and chalk out a cohesive strategy for drought alleviation.
- Work towards building a consortium of key opinion-makers and implementers such as CSOs, media, academic institutions, donors and government departments, to find permanent solutions and sustainable livelihood mechanisms in the face of drought.
- Identify issues and strategies for long-term policy advocacy.

## **Rapid assessment study**

A rapid assessment study was conducted by the PACS Programme partners in August-September 2004 across 500 sample villages in nine districts: Parbhani, Beed, Jalna, Aurangabad, Latur, Osmanabad, Nanded, Gadchiroli and Yavatmal. Information was gathered on the following indicators:

- Food availability
- Drinking water
- Employment
- Fodder
- Finance / Credit

### **Food**

In the sample villages of Beed, Osmanabad and Latur districts, it was found that 30% of the population did not have food stored for more than two days. About 40% of the population had food stocks for only 15 days, while only 20-30% had food stocks for six months.

In Kalamb taluka of Osmanabad district, Asmita Institute for Development found that 210 families out of the 500 families surveyed in 70 villages did not have food stocks for more than 15 days.

In Beed taluka, Beed district, a survey conducted by Gramin Vikas Mandal (GVM) across 5,268 households in 26 villages found that 2,035 households had food stocks of less than 15 days, 1,356 households had food stocks for less than a month, and only 120 families had food stocks for over six months.

Of the 788 families surveyed by Sandhi Niketan Shikshan Sanstha in 25 villages in Mukhed taluka, Nanded district, 50% of the families experienced a food shortage. Whatever food grain was available was enough for only a month-and-a-half. Moong and udad (pulses) crops had failed.

The rapid assessment survey recorded six farmer suicides: one from Aurangabad district, and five from Jalna district.



**In Kalamb taluka 210 families out of the 500 families surveyed in 70 villages did not have food stocks for more than 15 days.**



### Water

In the sample villages of Beed, Osmanabad and Latur districts, the survey found that 80% of the major water storage projects and 100% of the minor water storage projects had run dry. About 60% of the villages were provided drinking water by tankers, but the supply was irregular, insufficient and inconvenient.

In a study of 70 villages in Osmanabad district by Paryay, 31 villages had access to drinking water, but people had to walk at least half a kilometre to get it. By the end of August, tankers had to be deployed to supply water in 19 villages. The groundwater table had dipped below 550 feet. Around 95% of the wells had gone dry.

In Beed taluka, Beed district, of the 33 wells in 26 villages, only 17 were operational, while 16 had gone dry. Of the 95 handpumps installed, only 38 were operational. Of the eight borewells, seven were operational. Tap water was available in 14 villages, while water was being supplied through tankers in three villages.

In Nanded, out of 788 families surveyed by Sandhi Niketan, 205 families did not have water to drink. Of the 14 water supply schemes, five were not operational. In 19

## I saw hunger everywhere...

**Anil Shidore**

LATUR, May 4, 2004:

It was 7:15 in the morning, the dawn of another hot day. We were at Udgir, a tehsil town in Latur district of Maharashtra.

Earlier, while I was chatting with some activists, Haribhau Rathod, an activist from a nomadic tribe had said that these days they looked forward to a wedding invitation. Puzzled, I had asked why. Haribhau said they got to eat a full meal only at weddings!



**Jijabai – who would believe she is only 35 years old ?**

The pain and hopelessness in his eyes were obvious.

The next day we set off to some of the remotest tandas (nomadic hamlets) in Latur district.

On a bumpy road to Jalkot, we turned right turn at village Kolnur and drove for nearly half an hour to arrive at Shivajinagar Tanda. The tanda had about 50 homes. Nearly half of them were either locked or empty.

The people had gone in search of work, as casual labour. Their land, if they had a small piece, was uncultivable for lack of irrigation. In the whole tanda, nobody had food in stock; nor did any of the families have any cash reserve. There was no fodder for the animals, no credit available and no water to drink. The nearest water source, of dubious potability, was a steep 30-minute walk way.

Ram Nandu Aade had committed suicide here a few months ago because he couldn't cope with the pressures of living. He had not been able to repay his loans. The villagers

of the 27 villages surveyed by Grass Roots Action for Social Participation (GRASP) in the Paithan, Phulambri and Kannad talukas, water had to be supplied by tankers round the year. In the 96 villages surveyed by Socio Economic Development Corporation (SEDT) in Parbhani district, of the 390 handpumps installed, only 77 were working.

In five villages surveyed in Ambejogai taluka, only one of four wells had water. Only eight of 18 handpumps worked. Water was being supplied through tankers in four villages.

### Fodder

In the surveyed villages of Beed, Osmanabad and Latur districts, 50% of the population had no fodder for their cattle. Nearly 25% of the people had sold their cattle, and most of the cattle had been sent to slaughterhouses. In 70 villages surveyed by Paryay in Osmanabad district, about 1,350 animals had been sold this season. In Ambejogai taluka, fodder that was available was not expected to last beyond November 2004.

said that since the last few years, it had become difficult to get loans even at higher interest rates.

I met several people who said they did not have enough to eat. It is not easy even for the most impoverished to admit that he or she has not had enough food. Even poor people have a sense of pride. They would not like to reveal to a stranger that they have slept on a hungry stomach.

Jijabai Parashuram Rathod's husband and son had gone to work in the nearby village, to earn around Rs 25 per day. She had had two jawar rotis with salt and water. Suffering from severe back pain, she was unfit to work, and so had been left in the village alone. When asked what medication she took, she showed her back which was burnt severely by some metal piece. She expected to be cured with this treatment.

I am sure Jijabai in Shivajinagar tanda will not get proper medication. Even without the medicine, she has poor chances of recovery, since she had not been eating enough.

I could see hunger everywhere. People, old and sick, were being left like this. Left to die, I thought.

In that village of 300 people, nearly 125 had gone out in search of work, and nearly 50 were left back, hungry, ill, to fend for themselves.

When I walked out of Jijabai's house, I saw a huge machine on the road leading to the tanda. I was told the machine was being used to do the work the government had initiated in order to provide employment to the poorest under the Employment Guarantee Scheme. People told me their names were entered in the muster, but the machine was doing the work, and was being paid for!

A machine gets paid instead of people, who are left to die from hunger.

There are several villages and tandas like Shivajinagar. Probably thousands. Nearly 10,000 villages (more probably, but not less) in Maharashtra are severely hit by drought. Nearly 10 million people's basic systems of livelihood are broken and they are desperately fighting to survive.

*Anil Shidore is a team member of GreenEarth, a PACS Programme SSRO based in Pune.*

### Employment

Seasonal migration was common in Marathwada. Most of the migrants work as sugarcane cutters. In 2004 they had not received any advance payment for their work. The payment for 'salgadi' workers (annual contract) had dropped from Rs 18,000 a year to Rs 14,000 a year.

In Osmanabad district, employment under government schemes was available in only one village out of 70. Women working on the farm were given a daily wage of Rs 25, while male workers got Rs 50. Since farmers did not have money to pay for labour, the landless did not have any means of employment or livelihood. About 365 of the 1,650 families surveyed in the 70 villages had migrated in search of jobs.

In Beed taluka, Beed district, the only employment available was agricultural labour, with wages at Rs 50 for men, and Rs 25 per day for women. About 95 men had gone up to 450 km outside their villages in search of employment.

Of the 788 families surveyed by Sandhi Niketan in Mukhed taluka, Nanded district, 482 families had no employment, while 276 families worked as 'salgadi' workers. In Aurangabad district, an entire group from the Shivgad tanda was about to migrate to Aurangabad in search of work, while 74 families had already migrated to Pune from Dhansangvi.

### Finance / Credit

Most of the villagers were in debt. Credit had also become scarce. In Marathwada, nearly 70% of the surveyed population had taken loans from moneylenders. Many had pledged their land and other valuables. About 40% of the surveyed farmers had to sow their crop a second time, for which they had to borrow money from moneylenders. About 20% of the people had sown their crop late due to poor moisture conditions; as a result the crop yield would be nil or poor. Since the kharif crop was yet to be harvested, people had been unable to repay their loans.

In Beed taluka, Beed district, over 1,800 families out of 5,268 surveyed were indebted in some form or the other; 476 had pledged their land and 52 their jewellery.

To sum up:

- Food availability was dismal. Many were going hungry, and few had food in stock.
- Availability of drinking water was very poor. Distribution by tankers was neither enough nor equitable. The water needs of cattle were not sufficiently met.
- Women and children were the worst affected.
- There had been suicide cases in the Marathwada region, and a number of cases of malnutrition and starvation.

**Seasonal migration was common in Marathwada. Most of the migrants work as sugarcane cutters.**

- Migration in search of employment had increased.
- The Public Distribution System (PDS) had not provided any succour.
- Drought was pushing the poor further into a debt trap. It was becoming increasingly difficult for the poor to get credit.

### **Building up a 'drought cadre'**

After conducting three regional workshops with PACS Programme partners in early September 2004 to assess the ground situation and one state-level peer learning workshop later in the month, the PACS Programme chalked out a road map to eradicate drought in Maharashtra within the next ten years.

In order to put the plan into action, it was felt necessary to build up a 'drought cadre' which had a shared vision and purpose, and which was fully equipped with knowledge of all government resolutions and schemes related to drought and drought relief, and issues relevant to drought.

An initial period of three months was earmarked for building up a band of 180 drought relief workers who would be deployed in 900 villages in the nine districts of Parbhani, Beed, Jalna, Aurangabad, Latur, Osmanabad, Nanded, Gadchiroli and Yavatmal.

These workers would be trained to assess, monitor and document the situation in the 900 villages in a common format, study government policies and interface with government officials, and undertake and push for relief and mitigation measures.

The Action Plan, which was to be rolled out once the 'drought cadre' was trained, would work to achieve the following:

#### **Water-related objectives**

- Identify water sources that could be repaired and rejuvenated, and undertake measures to get them operational.
- Train workers in repairing pumps, and make available suitable repair kits.
- Involve gram panchayats in rectifying and reviving water sources.
- Act as pressure groups working to obtain as much good, clean water as possible.
- Work towards the implementation of the law on extracting groundwater such as restriction on digging borewells below 180 feet, etc.
- Work to ensure that water distribution does not get privatised.
- Promote rainwater harvesting measures before the next rains.

#### **Employment-related objectives**

- Stop corruption in EGS implementation.

**Drought was pushing the poor further into a debt trap. It was becoming increasingly difficult for the poor to get credit.**

## Combating Drought in Maharashtra

- Ensure that identified EGS works are begun, and new ones identified.
- Get wages under EGS linked to the consumer price index.
- Work towards ensuring transparency of operations in EGS regarding wages to workers, payment to contractors, tool rentals, water allowance, etc.
- Work towards ensuring that there is no 'contract' system for jobs under EGS.
- Try to open up EGS works on land and soil conservation projects.
- Ensure that EGS budgets are not used for other programmes.
- Ensure that the food grains given as part of EGS wages are aligned with local eating practices.

### Can drought get worse than this?

**Vivek Deshpande**

DEOLI (WARDHA), November 22, 2004

The makeshift structure tied up with rope to hold in place a dingy hut is what Gulab Khandare calls his house. He may not like it but is too helpless to react. Drought's set in and the situation is getting worse.

Picture this: Vast stretches of dead, barren farms, covered with dried up stunted cotton and other crops lie abandoned even as jobless farmers and labourers gather at village chaupals doing nothing.

Reason: They have done their best: Some have sowed thrice; some did it even four times and have stretched their capacities beyond limits. But with produce dwindling to kilos, they have turned into paupers, too numb to respond to the calamity.

Revenue officials have gone through the motion of "eye surveys" to decide the 'anewari', a system to gauge the magnitude of crop damage. Officially, a staggering 8,627 of the 14,882 villages in Vidarbha have less than 50 per cent 'anewari', according to the latest survey. In Deoli tahsil, 111 out of 149 villages are below 50 per cent 'anewari' (below 50 per cent of normal yield). Norms have it that any aid can be disbursed only after the "final, authentic" figure is arrived at in the last survey in January. That means the lives of about 15,000 people in 25-30 villages in the triangular belt connecting Nachangaon, Deoli and Shirpur villages, and many such other areas in Vidarbha, will proverbially continue to hang by the thread.

Officials, however, needn't worry: Most of the farmers don't know what is 'anewari' and how it could help them.

"I haven't seen this kind of a situation in my life," says 65-year-old Khandare. "Over the last 30 days, we have managed to survive by selling phade (courtyard brooms)," he adds. For generations, landless Khandares have worked as farm labourers. Khandare's son Naresh and daughter-in-law Mukta, too, have nothing to do.

"You tell us how we can survive," Khandare asks, even as his granddaughters Darshana, Bhavna and Karishma look on, blissfully unaware of the calamity.

Another farm labourer Dnyanoba Sable, 65, isn't even half that lucky.

### **Food-related objectives**

- Work towards getting the PDS system to be sensitive to the people, and targeted at the people who need PDS the most.
- Ensure that quality food grain is distributed under PDS.
- Ensure that the demand is matched by supply.
- Ensure that PDS beneficiaries get food grains that suit local eating habits.

### **Fodder-related objectives**

- Ensure that fodder is made available within a village for the cattle in that

The cured leprosy patient has no children. But his wife Manabai, who recently contracted the disease, is under treatment at Dattapur Kushtha Dham, 25 kms away. Sable eats once a day and has only tea for the other meal. With no work available and with some 600 rupees he gets every six months under a Centrally-sponsored Niradhar Yojana, that's the most he can afford.

Last year, around the same time, they and other labourers were earning something like Rs 100 per day. "At Rs 4 per kg of cotton picked, women earned Rs 100 a day annually in the harvest season. Today, with no cotton to harvest, it has slumped to Rs 20 a day," says Loni Sarpanch Yashwantabai Mendhe.

Dhanraj Deogade of Ghodegaon managed just 35 kg/acre in his three-acre farm as against the Vidarbha average of three quintals, which itself is much below states like Andhra Pradesh and Gujarat where the average is around 10 quintals.

At this time, he should have been preparing for the Rabi season, but the drought has forced him to trek 15 kms to Nachangaon to sell curd that fetches him Rs 50 per day.

Nachangaon's Rajendra Shinde and Prakash Deshmukh, who had sowed Bt Cotton, have reaped six quintals/acre against 10 quintals/acre reaped in the last two years. "It's not even a breakeven situation," Shinde says.

There are hardly any supplementary vocations here besides cattle-rearing. That too is under threat with drought already drying up the water sources and fodder in short supply.

Collector S Chockalingam, who had visited the belt some two months ago, admits the situation is grim. "Former Chief Minister Sushilkumar Shinde had announced interim aid of Rs 1,000 per hectare to marginal farmers, but it got delayed due to elections. Now I have sent a report and the Nagpur Divisional Commissioner has recommended aid to these farmers," he says. "We are ready to provide jobs immediately, but Wardha farmers are generally reluctant to take them up. That's a problem peculiar to the district, because farmers here get better paid on farm jobs," he argues.

Meanwhile, desperation is beginning to manifest in anger. 'A bank officer had come for recovery. We sternly asked him to go. He said there is a recovery camp on November 25. We said treat it as cancelled," say Loni residents.

Sounds ominous in a region where desperation has been driving the farmers to suicide.

*The Indian Express*, November 22, 2004.

village. (Bring fodder to the cattle rather than take cattle to the fodder camps.)

- Promote the sowing of fodder crops.
- Make waste food grain from godowns available as fodder.
- Build up advocacy on the issue of fodder/on grants for fodder.

### Advocacy issues

The Maharashtra government identifies an area as drought-hit on the basis of average rainfall and 'paisewari' (revenue based on yield). Neither parameter is a true indicator of the status on the ground. It is not the average rainfall received over a year but the right quantity of rain at the right time that determines crop quality and quantity of yield.

Similarly, 'paisewari' is an arbitrary and misleading indicator. Rarely is actual yield recorded, and gram sabhas are not involved in the process.

Drought should be assessed on parameters such as water, food, fodder and employment availability, because the effect of drought has an impact on all these factors of livelihood.

Faulty cropping patterns and unsustainable agro practices such as the uncontrolled use of water, fertilisers and pesticides that degrade the quality of soil aggravate the effects of drought.

In order to tackle these concerns, the following actions were identified:

- Ensure the involvement of gram sabhas for declaring/approving paisewari. Make the process open and transparent. Announce the dates of declaration of paisewari to ensure maximum participation and realistic assessment for paisewari.
- Focus on cadre-building on drought-related issues : EGS, rain measurement, water source improvement, etc.
- Work to bring about policy changes.
- Activate village committees.
- Work to change the policy on social forestry; ensure that only trees/plants that are beneficial to the farmer are planted.
- Promote sustainable agro practices.
- Work to change cropping patterns.
- Make drought an election issue. Obtain commitments from election candidates on the issue of drought.

**'Paisewari' is an arbitrary and misleading indicator. Drought should be assessed on parameters such as water, food, fodder and employment availability.**

## **Documentation and implementation**

The following tasks have been identified for documentation and implementation at the field level:


- Maintain a drought diary by the village-level worker.
- Work for the implementation of an agro-based policy.
- List out BPL families and announce the list in the gram sabhas.
- Undertake mapping of water resources.
- Undertake mapping of 'red alert' areas in terms of drought.

### **Manifesto**


All PACS Programme partners working in the drought-hit areas of Maharashtra participated in formulating a Draft Manifesto on tackling drought. This would be circulated among other organisations working in the area of drought. After their views are obtained, a final Drought Manifesto will be formulated and submitted to the Maharashtra state government for implementation.

### **Drought forum**

Since drought is a recurring and widespread phenomenon affecting huge sections of the population, and a number of organisations have already done considerable work in the area of drought mitigation, PACS Programme partners decided to network with other CSOs on the issue. A combined CSO effort would be better positioned to combat government and public insensitivity and inertia on drought.



**A final Drought Manifesto will be formulated and submitted to the Maharashtra state government for implementation.**



# APPENDIX

## People's Right to Water in Maharashtra: A Manifesto

The manifesto for people's right to water in Maharashtra was an outcome of a convention of non-governmental organisations organised by the National Centre for Advocacy Studies (NCAS) and Action for Agricultural Renewal in Maharashtra (AFARM) at Pune on August 29, 2004. Around 200 activists working in drought-hit parts of the state helped frame this document to secure the right to water. Key sections of the manifesto are reproduced below:

Over the last three or four years in the state of Maharashtra and its five different regions – Marathwada, Western Maharashtra, Vidarbha, Konkan and Northern Maharashtra – many community based organizations and NGOs as well as the people of the regions have been struggling with drought. This Manifesto is born out of this struggle to secure the right to water.

This Manifesto is divided into two parts : Constructive Assertion and Popular Struggle to Oppose.

### A. Constructive Assertion

To the political parties and the Maharashtra administration, we assert:

#### 1. Equality in the right to water

Equality in the right to water is the central assertion of the people and is non-negotiable. All classes of the working people – landless, marginal and small peasants, artisans (balutedars), other working sections, women, adivasis and nomadic tribals as well as their animals shall be guaranteed, as a matter of right, their due share of water, to be determined in an egalitarian manner. They have as much of a right to water as landlords, large farmers and politically well-connected VIPs. There shall be no relation between ownership of land and the right to share of water, both because water is a dynamic resource and because it is made available from public investments.

#### 2. Drought - free Maharashtra

In each of the regions of Maharashtra, 10 lakh hectares of watershed areas shall be taken up for immediate implementation, to be completed in five years. Every five years a further target of 50 lakh hectares shall be completed such that in 15 years a total of 150 lakh hectares is completed all over Maharashtra. This will render Maharashtra immune to the ravages of drought in future. The identification of watersheds shall be done on the basis of the Government of Maharashtra map showing 1505 watersheds covering all of Maharashtra; and watershed development along with soil moisture conservation programmes shall be immediately undertaken. At a treatment rate of Rs. 10,000 per hectare, the total cost equals Rs. 1000 crores per year (Rs. 200 crores per region per year) which is well within the financial means of the State of Maharashtra. Funds are largely available from the EGS sources.

#### 3. Tanker-free Maharashtra

This programme shall be given utmost priority so that drought ravaged villages are freed from the triple burden of tankers, political exploitation and corruption.

#### **4. Community control over community water sources**

Every village and settlement (vasti) has had traditional talavs, tanks, springs, malguzari tanks, ponds, lakes, wells and other community water sources; these shall be immediately rejuvenated so that any resident of the village can slake her thirst at any time. Village hand pumps should be included in this category. The responsibility for immediate maintenance lies with the administration. It is also the legal responsibility of the administration to ensure that no dalit, adivasi or minority is denied access to community water source or distribution system. Any discrimination in this regard with respect to the right to water of these sections or their animals shall be considered a violation of human right and strict legal action shall be immediately taken.

#### **5. Stop new constructions of large dams and large scale projects**

All new constructions of large dams / canals and large projects shall be stopped immediately. Those large dam canal systems which are delayed mid-way through construction should be immediately completed with limited available finances. Control of water distribution shall be transferred from government functionaries to Water Users Associations. This will increase the size and productivity of the command areas. Appropriate legislation should be immediately passed. Any decisions / action related to all of the above issues will be publicly monitored and the manipulations of politicians, contractors and elements of the bureaucracy shall be exposed to public scrutiny.

#### **6. Powers of regulation to the Watershed Committee**

Within each watershed, the powers of regulation should be conferred on the Watershed Committee, to be elected by Gram Sabhas of the villages lying within the watershed. In this way, the power to control water resources shall be retained under social control, thereby ensuring balanced water allocation and usage. In order to increase democratic functioning, various deprived sections of the rural community within the watershed jurisdiction – the poor, dalits, adivasis, women, artisans (balutedars), nomadic tribals and other powerless minorities shall have full rights of representation in these committees, for adequate protection of their rights. The Watershed Committee shall be empowered to make representation before the Water Regulatory Commission in case of conflicts related to water. For this purpose, it will be necessary to establish five regional Sub-Commissions so that geographical access to the Regulatory Authority is rendered easier. The Watershed Committee and their jurisdictions shall be determined on the basis of the aforementioned map showing 1505 watersheds covering Maharashtra. Authority to regulate water allocations and use in a watershed shall be contingent upon the completion of the watershed development work in a watershed. Preservation of water quality and conservation of water shall also be within the powers/ responsibilities of the Watershed Committees.

#### **7. Remove discrimination within urban water supply.**

There is discrimination against the urban poor in terms of water supply to slums. While they receive inadequate water supply of dubious quality through tankers, the urban rich have abundant supplies and never feel the effect of drought. The affairs of municipalities and municipal corporations are in such a mess that there are no maps indicating the layout of water supply pipelines. It is then impossible to investigate within a ward or slum settlement: where the pipeline is located, the diameter of the pipeline and its water carrying capacity, the number of authorized and unauthorized connections and the identities of the beneficiaries involved. Pipeline layout maps shall be made available to the citizens by the municipal bodies on their website within three months and citizens shall have the right to receive copies of all such maps and relevant documents.

### **8. Transparency in information related to water, land and forests: right to information for rural areas**

All information related to their watershed shall be made available for the rural areas as a matter of right. This information shall be displayed by all concerned Departments on the website of the Maharashtra Government within 6 months. This information shall include watershed level data related to water, land and forest categories, displayed in a transparent manner, provided as a matter of right to information and obtainable at every district level.

### **9. Regional water balances to be preserved through sustainable development**

The Sahyadri and Satpura mountain ranges serve as the catchments for all the rivers of Maharashtra and contribute to massive recharge of aquifers in downstream regions and to base flows of rivers. The current patterns of development of these mountain eco-regions are unbalanced, blind and unsustainable. This will lead to greater water stresses all over Maharashtra in the future. The Government of Maharashtra will now have to change its developmental priorities and approaches, else the visible shape of the forthcoming future will be much more troubled.

### **10. Women and marginalized groups are being excluded**

For equitable water distribution, women have to be included in all water-related decision making processes with 50% representation so that they can influence decisions related both to agriculture and domestic uses of water as equal partners. In recent times, water related questions have become an additional burden of injustice for women. Many widows and women headed households do not receive legal recognition and landed property rights. Hence they cannot receive rights to water in the fields and are systematically excluded from decision processes and consequent rights. Other marginalized groups including dalits, adivasis, nomadic tribes, landless and rural poor are similarly excluded and should also receive their rights to water. This is an extremely important issue for bringing about socially equitable distribution of water.

### **11. Water literacy campaign**

Conservation of water should be enforced in all the economic sectors of production – agriculture, industry, municipal and urban consumption etc. The value of water is a part of the right to life and livelihood and it is the responsibility of all sections of society to conserve water.

## **B. Popular Struggle to Oppose**

The holistic analysis by people's organizations has concluded that there are several issues, which shall be opposed through popular struggle:

### **1. Opposition to privatisation of water**

Privatisation of water shall not be accepted in any form. Water is a community and a public resource; it shall continue to be so, that is the cultural tradition of the people. All attempts at privatisation shall be resolutely opposed.

## **2. Opposition to national river linking project**

The national project for interlinking of rivers shall be opposed. Until such time as the available rainfall in each region is properly harnessed through the watershed approach, all projects related to interlinking of rivers are merely diverting attention and resources. Until such time as there is no public accounting and impact assessment of the large dam policies of the last forty years, all mega-projects shall be resolutely opposed.

## **3. Opposition to abuse of irrigation capacities created**

The abuse and overuse of water in sugarcane cultivation should be immediately curtailed. The water so saved should be supplied to surrounding areas which suffer from drought and scarcity. The sugar cooperatives should be encouraged to switch over to alternative water conserving crops. Refusal to do so shall invite closure. Invaluable water is today being used for producing jaggery (gur), which in turn is used to produce liquor; this is not the path of development, it is the path to social destruction. After four decades, people have become aware of this abuse and shall oppose it.

## **4. Water pollution to be a criminal offence**

Water pollution is rapidly increasing in many places due to which water bodies, land, living creatures in nature and the environment are being destroyed. Criminal prosecution should be initiated against all polluters; enforcing this is the duty of the state.

## **5. Opposition to administrative and political apathy**

While reviewing the alarming depletion of ground water in different parts of the state, it is apparent that the administration is neither duly concerned about the future nor about the fate of the poor. We strongly oppose this administrative apathy and callousness.

Hundreds of people's organisations across the state of Maharashtra, coming together in solidarity, hereby resolve to establish a **People's Inquiry Commission**. Hundreds of large and medium dams have been created on the flanks of the Sahyadri mountains due to which countless people have been displaced and forced to migrate. The precious waters from these storages have enriched a small group belonging to small areas of the state. Political empires based on sugarcane and alcohol factories have emerged. These are guilty of massive abuse of water while people from adjacent deprived areas may be wandering in search of a sip of drinking water. The People's Inquiry Commission shall investigate these gross injustices through the procedure of public hearings. The truth about development, its real face, the pain borne by society and the costs borne by the people of Maharashtra shall be placed before them. This is our resolve. There does not appear to be any other alternative before us. Politicians and bureaucrats ....beware!

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**Maharashtra Pani Hakka Magani Parishad**  
**29 August, 2004**

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